Mineral-Resource potential of the Dragoon Mountains Rare II Further Planning Area, Cochise County, Arizona

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This open file report summarizes the results of a Bureau of Mines wilderness study and will be incorporated in a joint report with the U.S. Geological Survey. The report is preliminary and has not been edited or reviewed for conformity with the U.S. Bureau of Mines editorial standards. Work on this study was conducted by personnel from Intermountain Field Operations Center, Building 20, Denver Federal Center, Denver, CO 80225.
FOREWORD

The U.S. Bureau of Mines and U.S. Geological Survey jointly conduct mineral surveys of lands which in the U.S. Forest Service Roadless Area Review and Evaluation (RARE II) program have been designated for further planning. These evaluations are used in the RARE II program which conforms with the Multiple-Use Sustained-Yield Act of 1960 (74 Stat. 215; 16 U.S.C. 528-531), the Forest and Rangeland Renewable Resources Planning Act of 1974 (88 Stat. 476, as amended; 16 U.S.C. 1601 note), and the National Forest Management Act of 1976 (90 Stat. 2949; 16 U.S.C. note). Reports on these surveys provide the President, Congress, the U.S. Forest Service, and the general public with information essential for determining the suitability of land for inclusion in the National Wilderness Preservation System.

This report is on the Dragoon Mountains RARE II Further Planning Area, Cochise County, Arizona.
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MINERAL-RESOURCE POTENTIAL OF THE DRAGOON MOUNTAINS RARE II FURTHER PLANNING AREA, COCHISE COUNTY, ARIZONA

Terry J. Kreidler, U.S. Bureau of Mines

INTRODUCTION

During 1979 and 1980, the Bureau of Mines conducted a field investigation of the Dragoon Mountains RARE II Further Planning Area to evaluate the mineral resource potential (Plate 1). Mines, prospects, and mineralized areas were examined and sampled during the field investigation.

Location, size, and geographic setting

The Dragoon Mountains RARE II Further Planning Area, located in central Cochise County, in the southeastern corner of Arizona, comprises 32,820 acres (13,200 ha) of the Coronado National Forest (fig. 1). Tombstone is about 14 mi (22 km) southwest, Benson about 20 mi (32 km) west, and Willcox about 25 mi (40 km) northeast of the area.

Access is good from all directions on periodically maintained Forest Service and county roads. The roads are particularly good on the north and south ends because of the past mining activity in these areas.

The Dragoon Mountains are an elongate north-south trending range with elevations from 5000 to 7500 ft (1500-2300 m) marked by rugged topography and dense brush. Though several major drainages have incised steep-walled, canyons, none are perennial streams.

Mining Activity

The Dragoon Mountains were first prospected during the rush following the silver strike at Tombstone in the 1870's. Since then mining and exploration activity has been sporadic, the last burst taking place in the late 1940's and early 1950's. During the spring and summer of 1980, no mining or exploration activity had taken place within the RARE II boundary. Activity
near the area in 1980 included core drilling by Phelps-Dodge Corp., 3 to 4 miles (5 to 6.5 km) to the southeast, minor trenching on silver veins within one mile (1.6 km) of the southern boundary, and renovation and re-timbering of the Golden Rule mine, north of the area.
Figure 1.-Index map of the Dragoon Mountains RARE II Further Planning Area.
MINING DISTRICTS AND MINERALIZED AREAS

The Dragoon Mountains RARE II Further Planning Area includes parts of two mining districts, the Dragoon (Golden Rule) on the north and the Middle Pass (Middle March) on the south. Fifteen patented mining claims are in or adjacent to the Dragoon Mountains RARE II Area. Unpatented claims that have been recorded as being in or near the area number close to 3,000. Most of these were staked between 1880 and 1940 and generally have vague location descriptions so that the locations can not be accurately determined. Nearly all of the claims have been staked in the Dragoon or Middle Pass mining districts.

The Dragoon mining district, at the north end of the Dragoon Mountains, was prospected for gold and silver in the 1870's. Producing ore as early as 1873, the Golden Rule mine, also known as the Old Terrible, ½ mile (0.8 km) north of the boundary, has been the only major mining operation in this district. Approximately 9,500 tons (8,700 mt) of gold-lead ore was mined before 1930 (Keith, 1973). Since then, production has been minor and sporadic.

The Golden Rule is located on Cambrian Abrigo Limestone that has been faulted and intruded by Tertiary rhyolite dikes and rhyolite phrypy. Ore minerals (cerrusite, anglesite, galena, pyrite and oxidized zinc minerals) occur with coarsely crystalline quartz, calcite, and iron oxide minerals in vuggy fissure veins; the gold is associated mostly with the iron oxides. Recorded production through 1929 amounts to 9543 oz (300,000 g) gold and 158 tons (144 mt) lead worth about $224,000 (Wilson, 1934).

Other mines and their production in the Dragoon mining district include the Hubbard (Democrat-Sherman) on the west side of the RARE II area, 330 tons (300 mt) of zinc ore in the late 1940's; the Seneca just east of the boundary, 216 tons (196 mt) zinc-lead ore in the 1940's; Buena Vista and Horse Fall mines west of the area, 75 tons (68 mt) lead ore in the early
1930's; and the Burrito de Fierro one mile (1.6 km) west, 230 tons (209 mt) lead-zinc-gold ore, in the late 1950's and early 1960's (Keith, 1973), and the Rainbow shaft, in Jordan Canyon, no production data available. These mines produced ore from small replacement bodies in limestone near the contact with Stronghold Granite or rhyolite dikes.

Total reported production of the Dragoon mining district through 1970 amounted to about 19,000 tons (17,000 mt) of ore yielding about 9700 oz (302,000 g) gold, 72,000 oz (2,240,000 g) silver, 178 tons (162 mt) lead, 124 tons (113 mt) zinc and 9 tons (8 mt) copper with a total value estimated at $340,000 (Keith, 1973).

The Middle Pass mining district is at the south end of the Dragoon Mountains. Some mining and prospecting was done in the district as early as the 1880's, though most of the activity occurred between 1920 and 1950. The deposits have all been small mantos and chimneys of pyrometasomatic replacement in Paleozoic limestones near the contact with Stronghold Granite or rhyolite dikes. Among the larger mining operations in this district are (1) the Abril mine, 30,000 tons (27,000 mt) zinc-copper-lead ore; (2) the San Juan mine, 15,000 tons (13,600 mt) of zinc ore; and (3) the Middle March mine, 11,000 tons (10,000 mt) copper-zinc ore (Keith, 1973). These mines are located less than 1 mi (1.6 km) outside the RARE II boundary.

Total reported production of the Middle Pass mining district, through 1970, amounted to about 76,000 tons (69,000 mt) of ore containing some 337 oz (10,500 g) gold, 147,000 oz (4.6 million g) silver, 4,626 tons (4200 mt) of zinc, 1005 tons (915 mt) of copper, 137 tons (125 mt) of lead 2.5 tons (2.3 mt) scheelite concentrate, and 75 tons (68 mt) of hand sorted barite, with a cumulative value of about $1,725,000 (Keith, 1973).
ASSESSMENT OF MINERAL-RESOURCE POTENTIAL

Silver values in 16 of 128 samples from in or near the RARE II area ranged from 1.5 to 5.0 oz/ton; the other samples were in the 0.2 to 0.6-oz/ton range. Some samples, most notably those from the San Juan mine, the Pittsburg-Manhattan area, and the Hubbard mine, had anomalous zinc concentrations, ranging from 3 to 30 percent.

The RARE II area and its immediate environs have a low potential for large low-grade deposits of base metals, the type for which southern Arizona is famous. Because known ore deposits in the Dragoon Mountains, whether in or near the RARE II area, are small pyrometasomatic replacement bodies in limestone near the contact with the granite or rhyolite dikes, finding any large commercial deposits in the area is unlikely. The southeast part of the RARE II area has a moderate potential for small deposits of medium-to high-grade zinc with accessory lead, copper and silver.

Figure 2 shows the preliminary determination of the mineral-resource potential based on work by the U.S. Bureau of Mines.
Area of low potential for copper, lead, zinc, and silver deposits.

Area of moderate potential for lead-gold deposits.

Area of moderate potential for silver bearing lead-zinc deposits.

Figure 2.—Map of the Dragoon mountains RARE II Further Planning Area showing a preliminary determination of the mineral-resource potential.
REFERENCES

