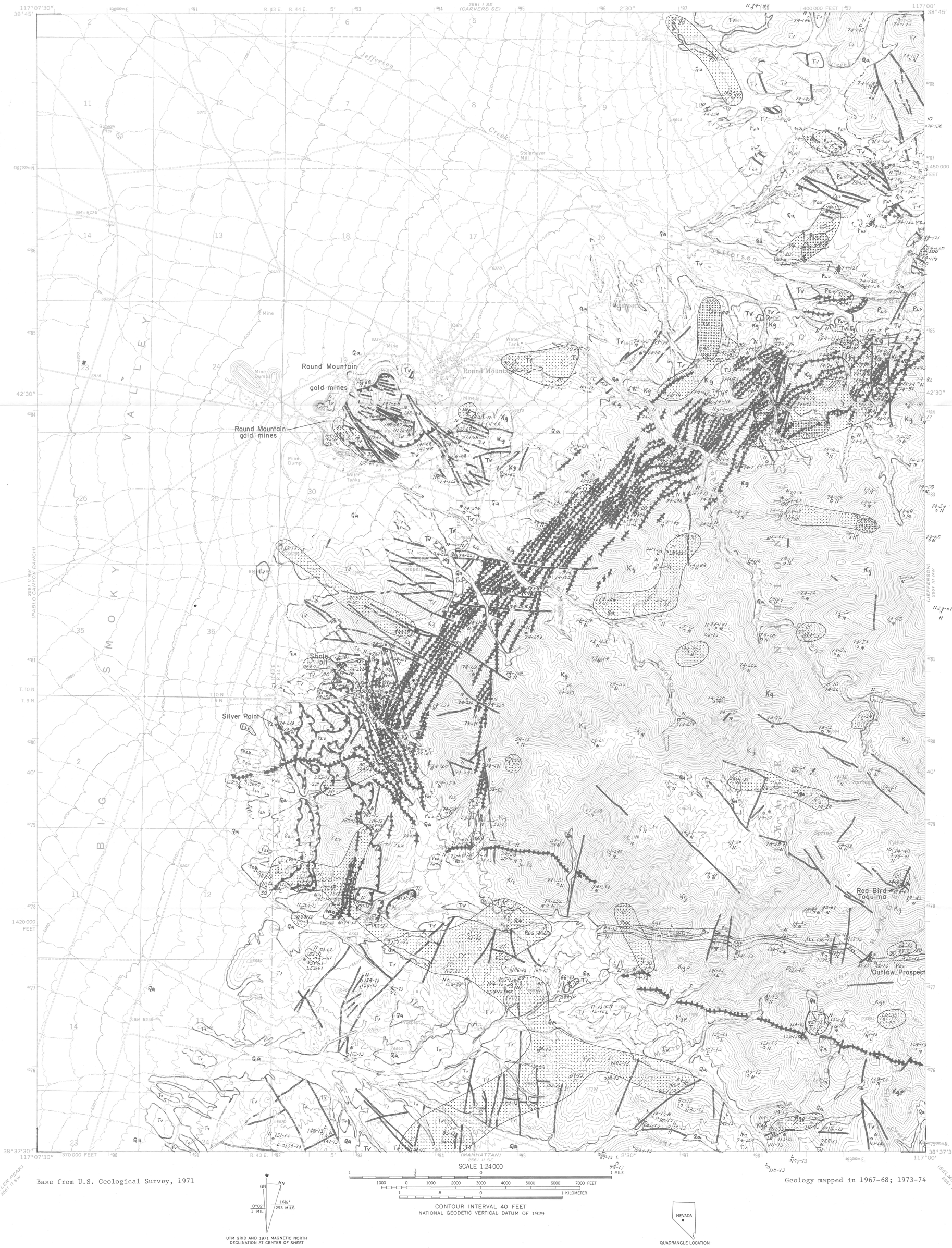
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES MAP MF-835K
B, ROUND MTN. QUAD., NEVADA



SCALE 1:24 000

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Base from U.S. Geological Survey, 1971

Geology mapped in 1967–68; 1973–74

UTM GRID AND 1971 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

GN MN
0°02' 1 MIL
16½° 293 MILS

NEVADA
QUADRANGLE LOCATION

EXPLANATION

Qa	ALLUVIUM (QUATERNARY)
Tv	VOLCANIC ROCKS (TERTIARY)
Td	DIORITE (TERTIARY)
	RHYOLITE (TERTIARY)
Kg	GRANITE (CRETACEOUS)
Kgp	PORPHYRITIC GRANITE (CRETACEOUS)
Pzs	SEDIMENTARY ROCKS (PALEOZOIC)
	HIGH-ANGLE FAULT
	LOW-ANGLE FAULT
	CONTACT
123-73	SAMPLE LOCALITY

ISOPLETHS--Separate areas characterized by the reported element concentrations. Number shows boron content in parts per million. N, not detected; L, detected but below limit of determination

- Less than 20 ppm B
- 20–150 ppm B
- 200–1,000 ppm B

DISCUSSION

This series of geochemical maps shows the distribution and abundance of iron, copper, lead, zinc, molybdenum, silver, antimony, arsenic, tungsten, barium, potassium, and boron in the Round Mountain quadrangle, Nye County, Nevada. These maps are intended to provide help in exploration for possible concealed mineral deposits in the quadrangle.

Samples were collected from bedrock throughout the quadrangle to assess the abundance and distribution of metals and other elements that outline mineralized systems and may indicate exploration targets. The samples were collected from the most intensely mineralized rock in any given locality, and are from shear or fault zones, fractures, jasperoid bodies, veins, and altered rocks. None of the samples necessarily represents a body of rock large enough to be mined economically.

Iron-oxide stain is the most conspicuous effect of mineralization in the rocks of the quadrangle, and most of the geochemical samples were collected because of the presence of iron-oxide stain. The iron oxide is almost certainly the result largely of weathering of pyrite in mineralized rocks. Accordingly limonite pseudomorphs after cubic pyrite are widespread.

All the elements discussed were determined by the semiquantitative spectrographic method by H. G. Neiman, M. W. Solt, and J. C. Hamilton. The elements were reported in the series 1, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1, and so on. Approximate lower limits of determination for the elements reported here are: Fe, 0.001 percent; K, 0.7 percent; Cu, 1 ppm (parts per million); Pb, 10 ppm; Zn, 300 ppm; Ag, 0.5 ppm; Mo, 3 ppm; Sb, 200 ppm; As, 1,000 ppm; W, 100 ppm; Ba, 2 ppm; and B, 20 ppm. Under favorable conditions greater sensitivity is attainable for some of these elements.

The isopleths of element abundance on maps in this series were arbitrarily selected. The contour intervals were chosen to show, within the limitations of the analytical data, areas of generally low (probably background and lower than normal) values, areas of probably anomalous values, and areas of highly anomalous values. I emphasize that the isopleth lines surround areas in which the collected samples show the indicated values; most rock adjacent to and between sample localities may contain much lower elemental values than do the collected samples.

Most of the geochemical samples collected in the Round Mountain quadrangle contain no boron detectible by the semiquantitative spectrographic method. Because the relatively low limit of detection for boron (about 20 ppm) these samples can be inferred to contain background, or perhaps lower but not higher than background, amounts of boron for the rock types sampled. Abnormally high values of boron in the range 20–150 ppm occur widely throughout the quadrangle: in the vicinity of the small diorite stock east of Round Mountain, in the vicinity of a postulated buried stock south of Round Mountain, and in an irregular zone mostly in volcanic rocks in the south part of the quadrangle. Highest amounts of boron (200–1,000 ppm B) are found peripheral to the diorite stock east of Round Mountain.

The association of abnormally high amounts of boron with zones of igneous intrusion, and the irregular distribution of boron in volcanic rocks not related to the position of a specific volcanic unit, suggest that the boron enrichment was a product of hydrothermal alteration. Exceptionally high boron content locally in the vicinity of the diorite stock east of Round Mountain reflects the abundance of tourmaline that formed in granite and rhyolite peripheral to the stock. The tourmaline mineralization in association with metal enrichment in the vicinity of the diorite stock is reminiscent of tourmaline mineralization that occurred with formation of some of the Andean porphyry-copper deposits.

GEOCHEMICAL AND GENERALIZED GEOLOGIC MAP SHOWING DISTRIBUTION OF BORON IN THE ROUND MOUNTAIN QUADRANGLE, NYE COUNTY, NEVADA

By
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