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WILLOW CREEK DISTRICT

LOCATION

The largest portion of the Willow Creek district is within the Tonopah Resource Area but the southern foothills of the Quinn Canyon Range lie within Lincoln County and are within the Caliente Resource Area. For the purposes of this study, however, we have included most of the Quinn Canyon fluorite district within our area of interest. The area covered in reconnaissance fashion extends from the vicinity of Section 1, Township 2 North, Range 54 East on the Lincoln-Nye County line northeast along the Quinn Canyon Range to just northeast of Adaven. A good portion of this area is within the Humboldt National Forest.

HISTORY

Kral (1951) credits the first discoveries in the Willow Creek district to Charles Sampson and David Jenkins who located the Rustler claim east of Nyala on an arsenical gold-silver deposit. Other small deposits containing gold and silver were discovered nearby, and shipments were made from some during the periods 1917-1926, and 1938-1939, and in 1948. No production is recorded but Kral (1951) estimates metallic production of not over $100,000.

Fluorite was discovered in the northeast part of the district in 1934 and other deposits were discovered to the west near Quinn Canyon in 1941 (Papke, 1979). Fluorite deposits in the Lincoln County part of the district were not staked until 1952-1953. While only about 29,5000 tons of fluorspar have been produced from this district, it contains the largest concentration of fluorspar deposits in Nevada (Papke, 1979). There has been no activity related to fluorspar production in the Quinn Canyon area for many years. There was, however, considerable activity related to precious metal exploration taking place in the district in 1984. Several major mining companies, including Superior Oil, Cominco American, and Amoco Minerals had large claim blocks within the district at that time.

GEOLOGIC SETTING

The southern part of the Quinn Canyon Range consists mainly of volcanic rocks through which several isolated blocks of Paleozoic carbonate rocks are exposed. A rhyolite plug cuts the volcanic rocks in Cottonwood Creek, southeast of Adaven. The carbonate rocks range in age from Cambrian Windfall Formation through Devonian Guilmette Formation. These rocks are complexly faulted. The volcanic rocks consist mainly of thick sections of welded ash-flow tuff and both Paleozoic carbonates and the tuffs have been cut by rhyolite plugs and east-northeast trending rhyolite dikes. The occurrence of thick ash flows in the domed central part of the Quinn Canyon Range and the occurrence of numerous rhyolite plugs and flows on the southwest and south flanks all strongly suggest that the range is, in part, a resurged caldron. The rocks are intensely fractured and faulted and hydrothermal alteration is locally intense (Stainsbury and Kleinhampl, 1969).

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ORE DEPOSITS

The fluorite deposits in this district are thoroughly described by Papke (1979) and his work should be consulted for details concerning the various mines and prospects. Our reconnaissance work was designed to investigate the potential for metallic mineralization in the district and our descriptions and sampling reflects this emphasis.

Generally, two types of fluorite deposits are described by Papke (1979), deposits associated with large masses of jasperoid in carbonate rocks, and deposits associated with breccia zones in altered volcanic rocks. The jasperoid bodies as well as the breccia zones and related fluorite deposits generally are aligned along north-northeast directions parallel to rhyolite dikes which cut the older rocks in the district. An impressive feature of the district which is not emphasized in the literature is the size and extent of some of the jasperoid masses. These, and the rhyolite dikes, stand out in topographic relief and can be visually traced for great distance along strike. The structural control for the fluorite deposits, the jasperoid-filled structures and the dikes may be related to the resurged caldron. The fluorite deposits themselves may be just one manifestation of a much larger mineralized system.

GEOCHEMICAL RELATIONSHIPS

Samples taken in this study were not specifically of high-grade fluorite, rather they were taken from silicified breccias and jasperoid at or near the fluorite occurrences. Gold was found to be present, in small amounts, in 17 of the 22 samples taken in the area. Arsenic and antimony values were generally low, but high values were obtained from two known precious metal occurrences on the north side of the district. The presence of gold in association with fluorite occurring along major structures marked with jasperoid and silicification makes the Quinn Canyon area an obvious target for precious metal exploration.

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