5230 0003

Elko County General
Item 109

Geologic Setting and Ore Deposits

Leppy Peak, the only part of the Leppy Range in Elko County, consists mainly of limestone and dolomites ranging in age from Devonian to Permian. The sedimentary rocks are tilted westward and cut by a network of faults, most of which strike N. 10° to 30° W. Around the foothills of Leppy Peak the sedimentary rocks are overlain by patches of Jarbidge(?) rhyolite of Tertiary age, and by sediments of somewhat younger Tertiary age. Hill 5275 in the southern part of the district is composed of typical coarse-grained Jarbidge(?) rhyolite, overlain by a flow of medium-grained rhyolite of the same(?) formation. Inset A

Surface areas of the Wendover district below an altitude of about 5,200 feet were covered by the waters of Lake Bonneville 18,000 years ago and again 13,000 years ago (Morrison, 1966, p. 88). At those times the lake extended from the Toana Range west of Wendover 130 miles eastward to the Wasatch Range, and from the Escalante Desert (Lund, Utah) northward 320 miles to Red Rock Pass between Swan Lake and Downey, Idaho. The lake then overflowed at Red Rock Pass, rapidly cutting a channel from an altitude of 5,085 feet down to 4,785 feet, through which the discharge rate into the Snake River may have reached 15 million cubic feet per minute--a little more than the present flow over Niagara Falls. The lake further receded by evaporation so that by 11,300 years ago (Jennings, 1953, p. 186), the lake surface was a little lower than 4,310 feet and a little above the altitude of the Salt Flats (4,233-4,242). In recent years the altitude of the Great Salt Lake, which is a remnant of Lake Bonneville 50 miles wide and 80 miles long, was 4,200 feet at five different times from 1860 to 1960; at those times the maximum depth was 35 feet, and the average depth about 13 feet. The lake has fluctuated from 11 feet above that level in 1873 to 8 feet below it in 1963.

When Lake Bonneville was full, the weight of water, about 10^{13} tons, caused the floor of the lake to sink; removal of the water allowed it to rise--more in the center of the basin where the lake had been 1,100 feet deep than at the edges. This isostatic rebound explains why the Bonneville shoreline is now found at altitudes ranging from 5,085 feet at Red Rock Pass to 5,300 feet in the Cedar Mountains near the center of the basin (Crittenden, 1963, p. E9). On Leppy Peak the altitude of the Bonneville shoreline is 5200 feet.

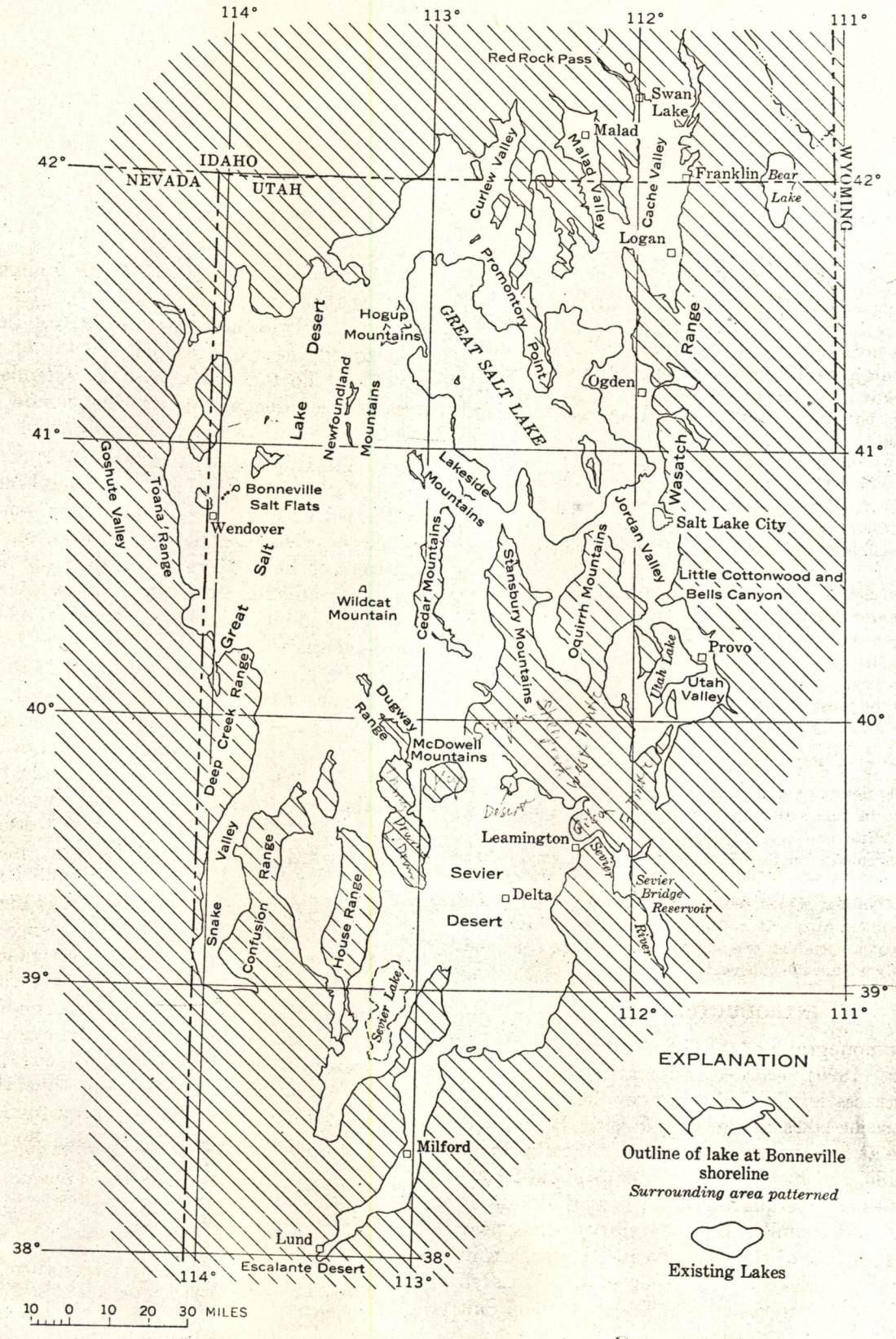

FIGURE 1.—Map of Lake Bonneville.

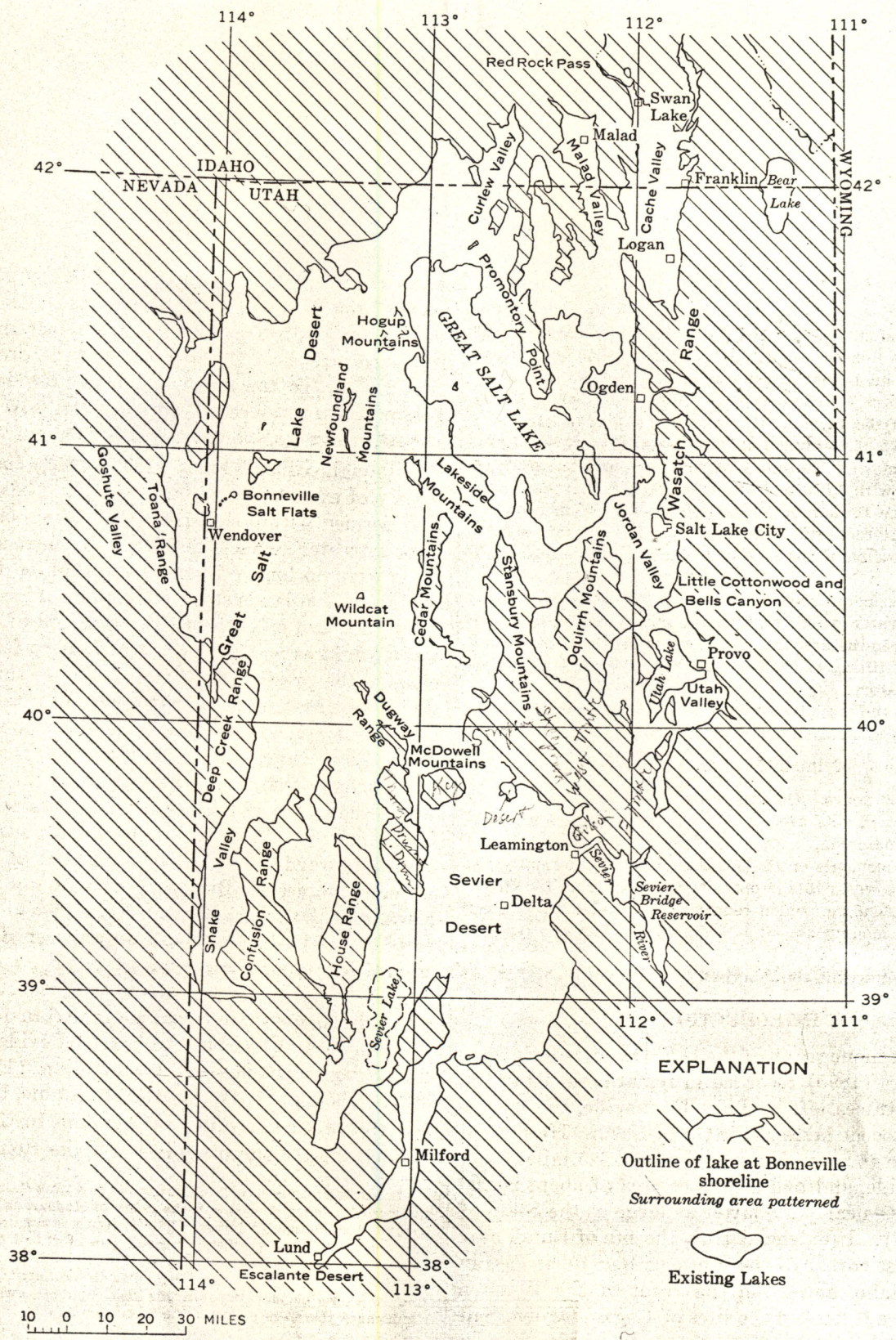

FIGURE 1.—Map of Lake Bonneville.

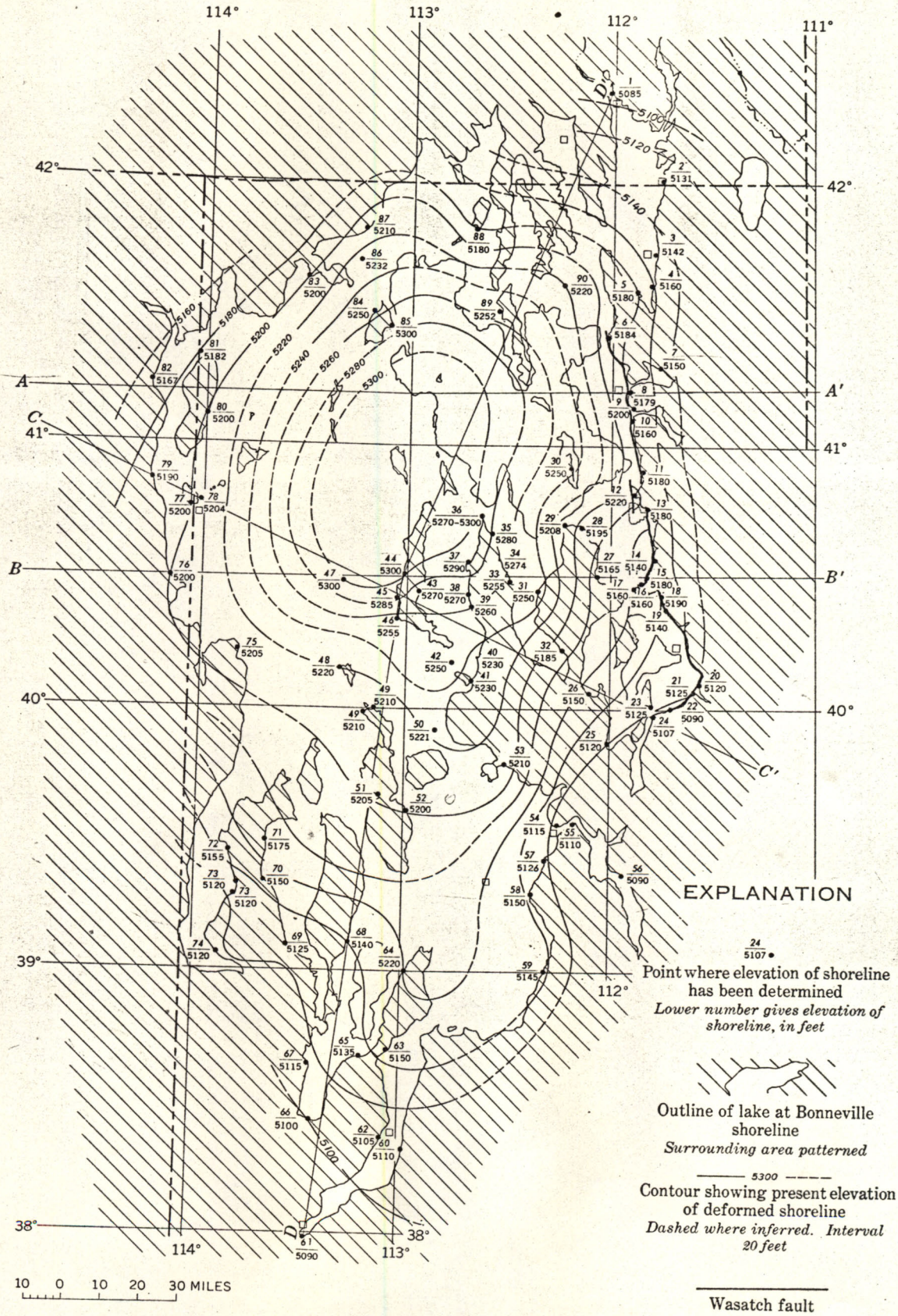

FIGURE 3.—Map showing deformation of the Bonneville shoreline.