

DISCUSSION

This map shows the distribution and abundance of gold in stream sediments in the Nabesna quadrangle, Alaska. The geochemical data are plotted on a base map showing the topography, generalized geology, and sample sites. Stream sediment samples were collected from active streams, then air-dried and sieved. The -80 mesh (-177 microns) fractions were analyzed for gold by atomic absorption methods. Complete analytical data for geochemical samples collected by the U.S. Geological Survey in the Nabesna quadrangle are available on a computer tape (O'Leary, Van Trump, and others, 1975) that can be obtained from National Technical Information Service, Department of Commerce, Springfield, Va. 22151.

The map was prepared on a DEC 10 computer at the U.S. Geological Survey Computer Center in Denver, Colorado. Metal values, expressed in parts per million (ppm), were obtained in the following manner: The raw (analytical) data were plotted on a rectangular coordinate system with intersections (mesh points) 1.6 km (1 mile) apart on the map and 6.4 km (4 miles) apart on the perspective diagram. The original data points were transposed to grid intersections by drawing 3.2-km-diameter (map) and 12.8-km-diameter (diagram) circles centered on the intersections, then shifting the coordinates of data points within each circle to the coordinates of the intersection. With the shift of coordinates, each point was weighted according to its distance from the mesh point; as a result, nearby data points influenced the final value at the mesh point more than outlying data points. After the data were weighted and projected to a mesh point, the values at that point were averaged. An N following a value on the map indicates that gold was not detected within the grid area, and either does not occur, or occurs below that value; an L following a value indicates that gold was detected, but in amounts below that value, which is the smallest amount of gold that can be measured by atomic absorption methods. Where the average value at a mesh point is greater than the highest N or L value within the circle, the N or L is dropped and the average value printed.

The computer-generated perspective diagram shows the distribution and abundance of gold in stream sediments in the quadrangle in easy-to-visualize, 3-dimensional perspective. The angle of perspective is 30° from the horizontal (H.A. = 30.0) and 30° from the vertical (V.A. = 30.0). The range of gold values is 0.02 to about 0.50 ppm and each contour interval is equal to one-sixth of this range or approximately 0.08 part per million. The range in gold values on the perspective diagram is less than the range in values on the map because the original data are averaged over a larger area (12.8-km vs 3.2-km diameter circles).

For most stream sediments sampled in the Nabesna quadrangle, gold either was not detected, or was present in amounts too small to be measured (<0.02 ppm). Values of 0.1 part per million or greater are considered to be anomalous (see accompanying histogram) and are shown as shaded areas on the map. The gold values printed on the map have been multiplied by 100 to save space and to speed preparation by the computer.

Gold anomalies in the Nabesna quadrangle are mainly within or near the larger plutons. The largest and strongest anomaly, in the northwest corner of the quadrangle, is associated with hornblende diorite of the Lower Mesozoic diorite complex, and includes the Porcupine Creek gold placer area and a disseminated gold deposit (Richter and Matson, 1968). Smaller anomalies are associated with the Bond Creek and Baultoff porphyry copper deposits in the middle Cretaceous Nabesna and Klein Creek plutons (Richter and others, 1975). Small anomalies not known to be associated with plutonic rocks occur near the heads of Stone Creek (T. 6 N., R. 16 E.) and the Little Tok River (T. 11 N., R. 12 E.). The Stone Creek and Little Tok River anomalies occur in Upper Mesozoic marine sedimentary rocks of the Nutzotin Mountains sequence (Richter, 1975) and may indicate gold-bearing plutonic rocks at a shallow depth. The other two anomalies are in terrane largely covered by surficial deposits; their significance is unknown.

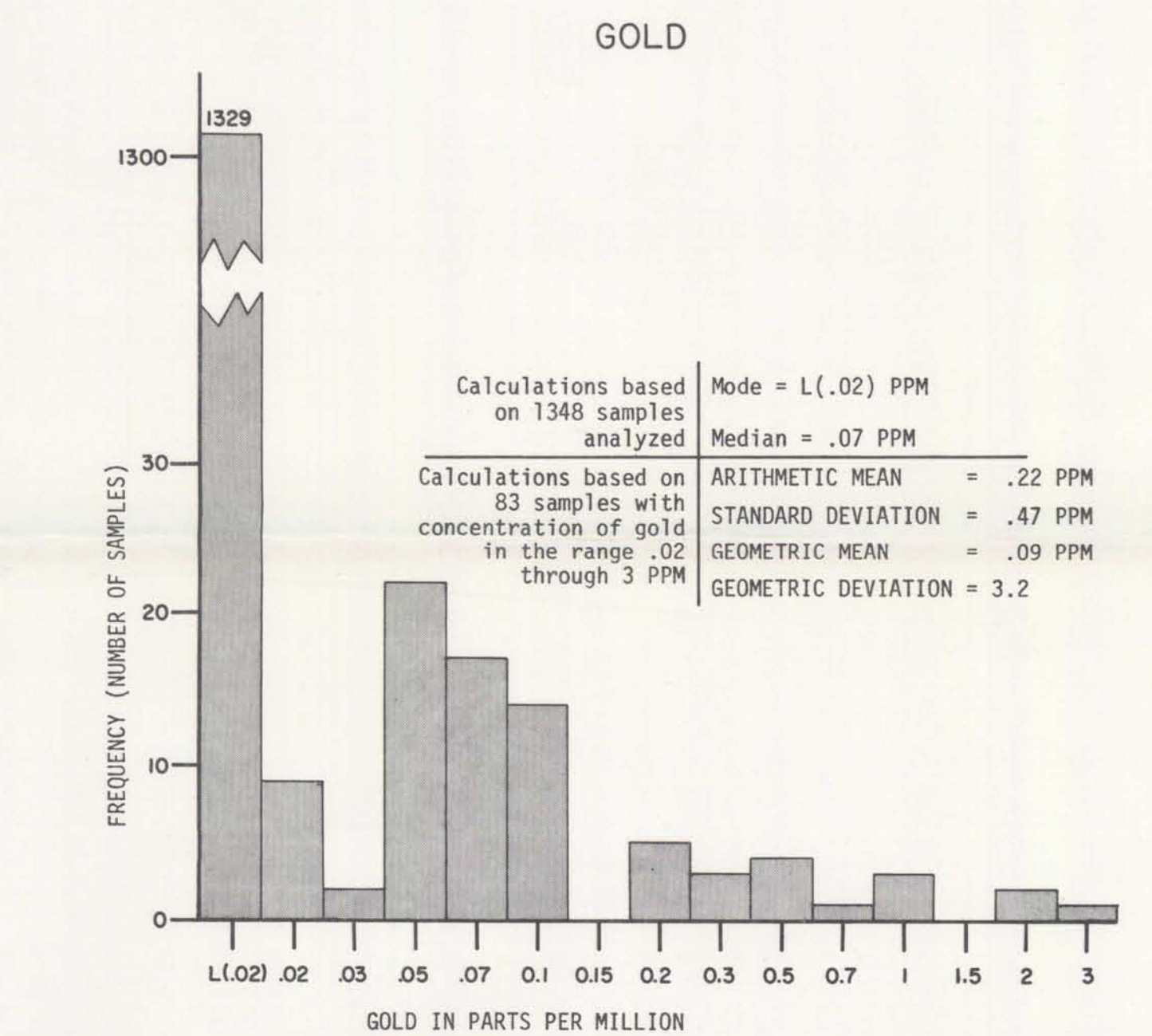
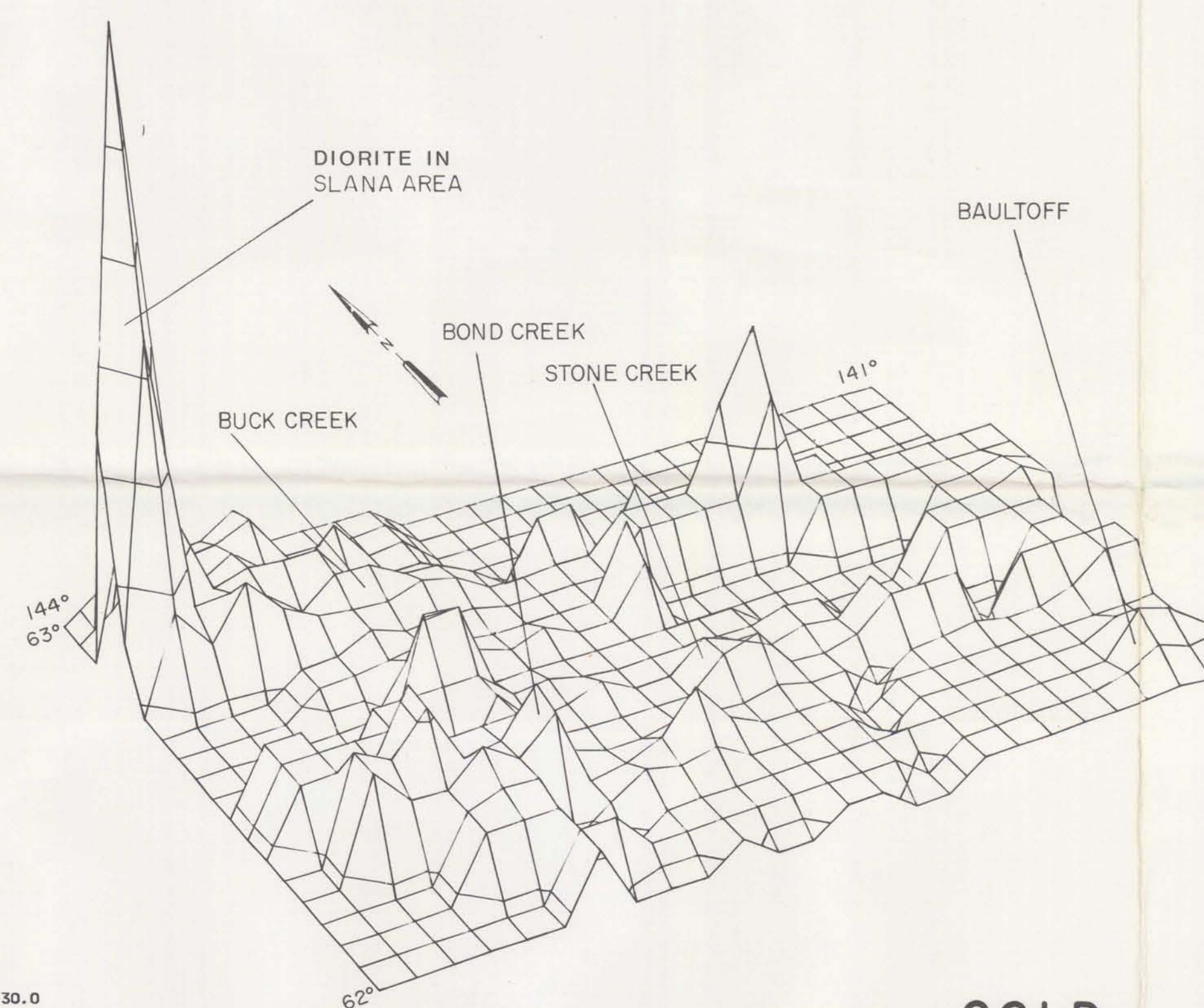
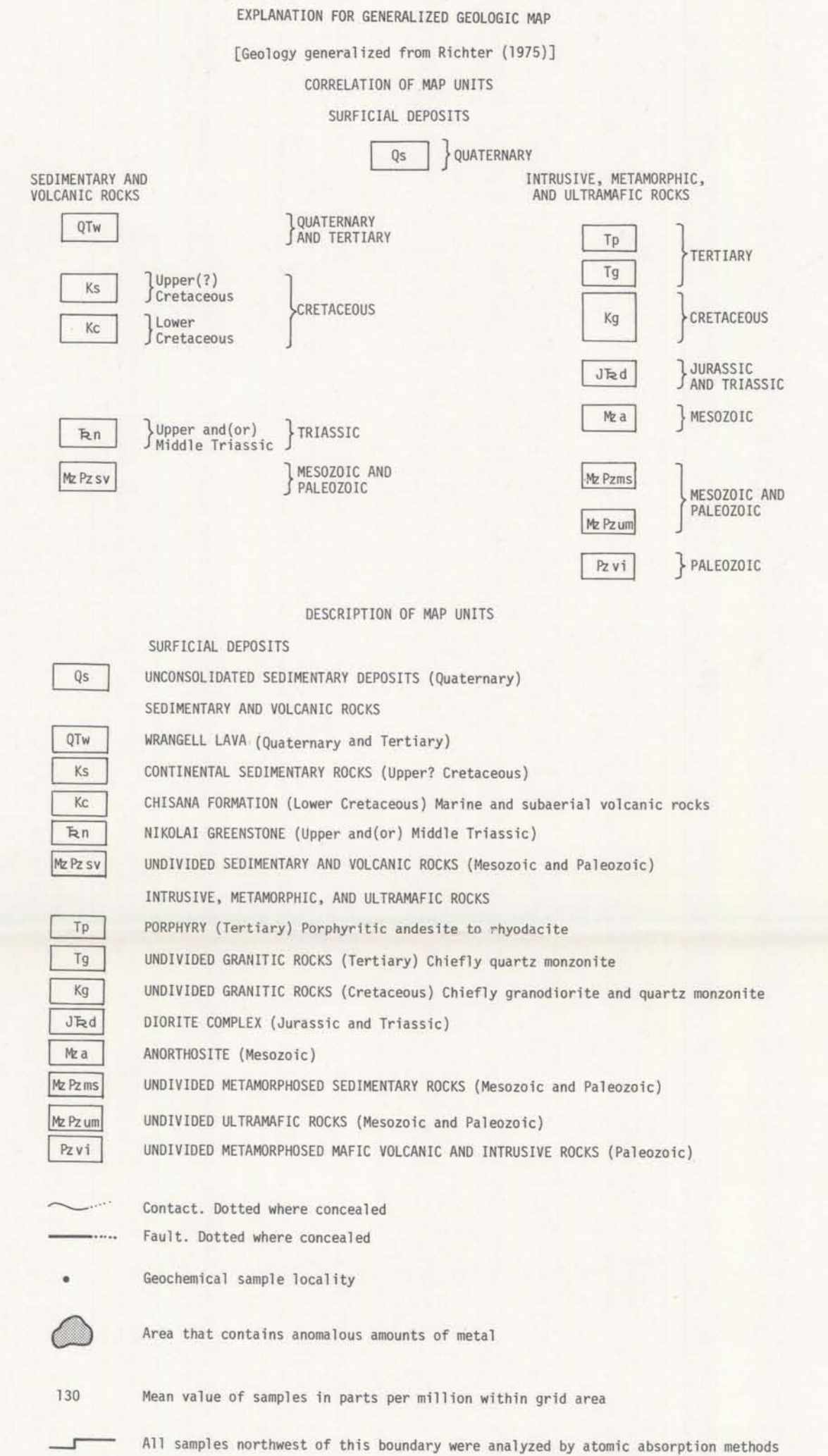
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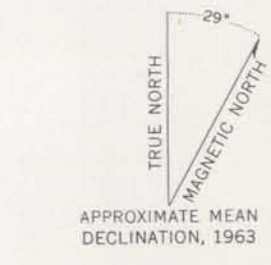
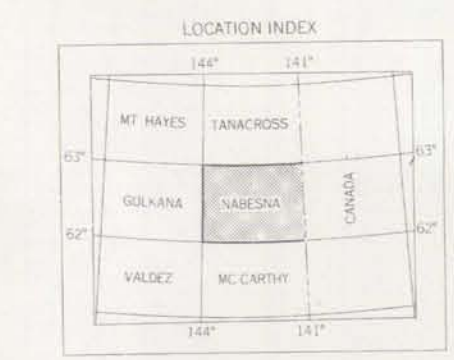
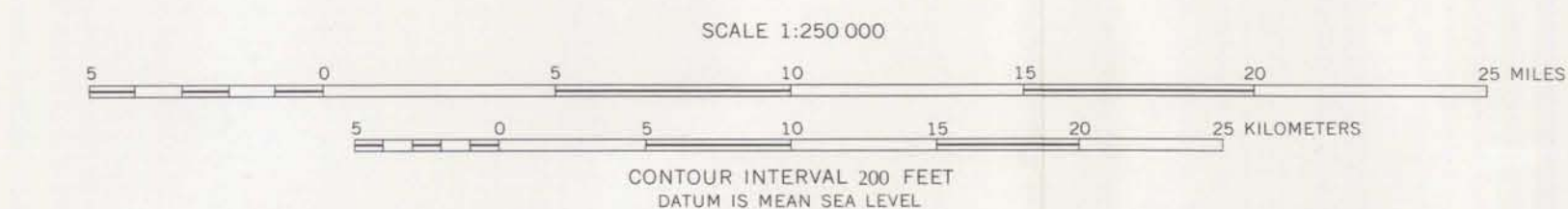
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HISTOGRAM SHOWING STATISTICAL DATA FOR GOLD

BASE BY U. S. GEOLOGICAL SURVEY, 1965



V.A. = 30.0
H.A. = 30.0
RANGE: 0.0200 — 0.4973

GOLD

GEOCHEMICAL AND GENERALIZED GEOLOGIC MAP SHOWING DISTRIBUTION AND ABUNDANCE OF GOLD IN THE NABESNA QUADRANGLE, ALASKA

BY SHERMAN P. MARSH
1975

Background information for this folio is published as U.S. Geological Survey Circular 718, available free of charge from the U.S. Geological Survey, Reston, Va. 22092.

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