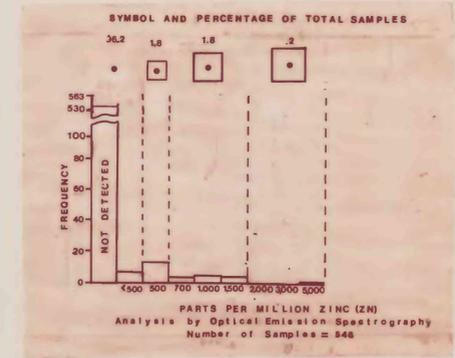
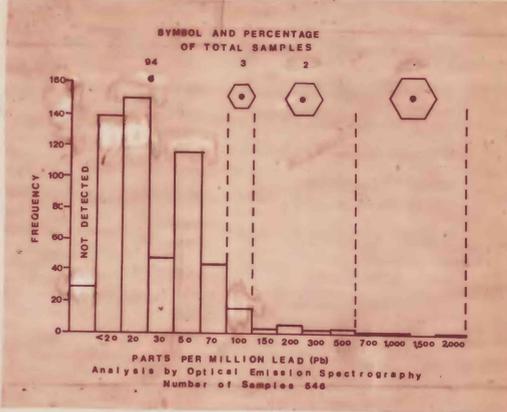
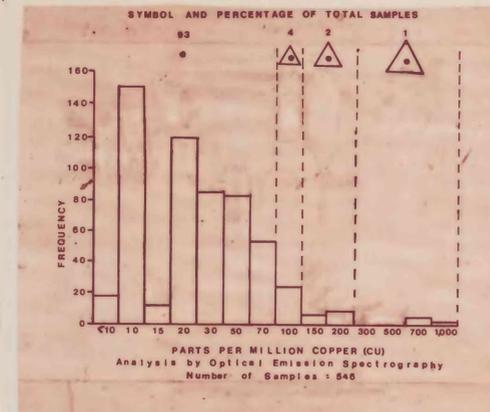


EXPLANATION

- GEOLOGY GENERALIZED FROM HESSIN AND OTHERS (1978)
- CORRELATION OF MAP UNITS
- UNCONSOLIDATED DEPOSITS
- Qaf QUATERNARY
 - Qd
 - Qm
- SEDIMENTARY ROCKS
- Tnc TERTIARY
 - Td
- IGNEOUS ROCKS
- Tg TERTIARY
 - Tf TERTIARY OR MESOZOIC
 - Tmg TERTIARY OR MESOZOIC
 - Kg CRETACEOUS
- METAMORPHIC ROCKS
- Pzg PERMIAN
 - Pcu PALEOZOIC
 - Pxc
 - Pzq
 - Pzp
 - Ppa
 - Ppf
 - Ppc
 - Pca
 - Pcb
 - Pcc
 - Pcd
 - Pce
 - Pcf
 - Pcg
 - Pch
 - Pci
 - Pcj
 - Pck
 - Pcl
 - Pcm
 - Pcn
 - Pco
 - Pcp
 - Pcq
 - Pcr
 - Pcs
 - Pct
 - Pcu
 - Pcv
 - Pcw
 - Pcx
 - Pcy
 - Pcz
- DESCRIPTION OF MAP UNITS
- UNCONSOLIDATED DEPOSITS
- Qaf ALLUVIUM, COLLUVIUM, AND MINOR GLACIAL AND EOLIAN DEPOSITS
 - Qd ALLUVIAL FAN AND GLACIAL OUTWASH DEPOSITS
 - Qm DUNE SAND
 - Qm MORAINAL DEPOSITS
- SEDIMENTARY ROCKS
- Tnc HERRIN GRAVEL AND COAL-BEARING FORMATION
 - Td DETRITAL ROCKS
- IGNEOUS ROCKS
- Tg FELSIC TUFF AND LAVA
 - Tf GRANITE AND QUARTZ MONZONITE
 - Tmg UNDIVIDED GRANITIC AND DIORITIC ROCKS
 - Kg UNDIVIDED GRANITIC AND MINOR DIORITIC ROCKS
- METAMORPHIC ROCKS
- Pzg GREENSTONE AND CHERT
 - Pcu ULTRAMAFIC ROCKS
 - Pxc CATACLASTIC SCHIST AND GNEISS
 - Pzq GREENSTONE, QUARTZITE, MARBLE, COARSE META-ARENITE, GREENSTONE, AND META-TUFF
 - Pzp QUARTZITE, SLATE, CALC-PHYLLITE, AND MARBLE
 - Ppa AUGEN GNEISS AND MINOR AMOUNTS OF OTHER GNEISSIC ROCKS
 - Ppf GNEISS, SCHIST, AUGEN GNEISS, AMPHIBOLITE, AND MARBLE
- GEOLOGIC SYMBOLS
- CONTACT, APPROXIMATELY LOCATED
 - FAULT OR PROBABLE FAULT, DOTTED WHERE CONCEALED
- GEOCHEMICAL SYMBOLS
- SAMPLE SITE--represents background values at sites where there are no anomalous values
 - ANOMALOUS VALUES--Explained on histograms
 - ▲ COPPER
 - LEAD
 - ZINC



DISCUSSION

This map shows the distribution and abundance of copper, lead, and zinc in 546 heavy-mineral concentrate samples collected in the Big Delta quadrangle in 1975 and 1977. This sampling was a part of geochemical studies made for the Alaska Mineral Resource Assessment Program. The heavy-mineral concentrates were separated from stream sediments collected in the active channels of streams draining areas ranging from approximately 10 to 25 km². The areas within the quadrangle that show a low density of sample sites, particularly along the major northeast-trending fault and in the northwestern part of the quadrangle, were areas where dense brush and trees prevented helicopter landings. Areas in the southwestern and south-central parts of the quadrangle were not sampled because they are covered by thick unconsolidated deposits of Quaternary material, which limits effective geochemical sampling within the present program.

The heavy-mineral concentrates were panned in the field to remove most of the low-density minerals. The panned samples were sieved through a 20-mesh (0.8 mm) screen in the laboratory and the -20 mesh fraction was further separated with bromoform (specific gravity, 2.86) to remove the remaining low-density mineral grains. Magnetite and other strongly magnetic heavy minerals were removed from the heavy-mineral fraction by the use of a hand magnet. The remaining heavy minerals were passed through a Frantz Isodynamic Separator and a nonmagnetic fraction was obtained at a setting of 0.6 amperes. A split of this fraction was pulverized and analyzed by semiquantitative emission spectrography (Grimes and Marranzino, 1968). Map plots and histograms were produced from the analytical results. The range of anomalous values for each element was determined from the histograms and was subdivided into two or more plotting intervals represented by the symbols shown on the map and histograms.

Complete analytical data for all of the sample sites shown on this map are available in a U.S. Geological Survey Open-File Report by R. M. O'Leary and others (1978).

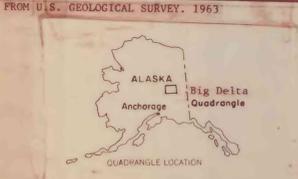
The use of trade names is for descriptive purposes only and does not constitute endorsement of these products by the U.S. Geological Survey.

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GEOCHEMICAL MAP SHOWING THE DISTRIBUTION AND ABUNDANCE OF COPPER, LEAD, AND ZINC IN THE NONMAGNETIC HEAVY-MINERAL CONCENTRATE SAMPLES IN THE BIG DELTA QUADRANGLE, ALASKA

BY T. D. HESSIN, P. M. TAUFEN, E. F. COOLEY, AND C. M. McDOUGAL
1978

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