

DESCRIPTION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

Place mine tailings (Holocene)-Symmetrical to irregular piles of artfully water-worn, sorted gravel and in situ shaly rock central part of map area...

Sedimental deposits (Holocene to Pleistocene)-Unconsolidated fluvial, terrace, colluvial, glacial, and eolian deposits...

SEDIMENTARY AND VOLCANIC ROCKS

Basaltic andesite (Miocene)-Scattered exposures of very fine grained to aphanitic, dark to medium gray, locally vesicular, augitic basaltic andesite...

Volcanic rocks of Yena River area (Tertiary and Late Cretaceous)-Cherty subaerial lava flows of andesite, dacite, rhyolite, and minor basaltic andesite...

Iditarod Volcanics (Tertiary and Late Cretaceous)-Dominated subaerial volcanic rocks consisting of a heterogeneous basalt unit, altered flows, and andesitic rock units...

Andesite to basaltic subaerial lava flows and mafic volcanic breccia (Tertiary and Late Cretaceous)-Subaerially extruded basaltic andesite, andesite, and minor dacite...

Tuff, volcanic breccia, altered andesite to dacite flows, and volcanoclastic sandstone (Late Cretaceous)-Heterogeneous assemblage of tuff, agglomerate, cherty tuff, crystal, and water-laid and altered intermediate lava flows...

Knaukwam Group (Late Cretaceous; Campanian to Cenomanian)-In map area, the Knaukwam Group consists predominantly of sedimentary rocks...

Quartzite sandstone and siltstone (Late Cretaceous; Campanian to Turonian?)-Quartzite sandstone, and silty sandstone representing shallow-marine and locally non-marine facies...

Alkal granite (Tertiary and Cretaceous)-Poorly exposed, medium-grained, alkali feldspar granite found in the central area of the quadrangle...

Dihaba River mafic and ultramafic rocks-Assemblage of poorly exposed mafic and ultramafic rocks of north-central part of quadrangle...

Greenish-chert, pelitic schist, and metagranite (Paleozoic and Proterozoic?)-Generally poorly exposed, mixed assemblage of greenish-chert metagranite rocks...

Metamorphic rocks-Includes pelitic schist, calcareous schist, and quartzite, and minor granitic orthogneiss...

Volcanic breccia and tuff (Late Cretaceous)-Hornblende-andesitic volcanic breccia and calcic- altered tuff...

Sandstone and siltstone (Early Cretaceous)-Medium-grained to very fine grained sandstone, siltstone, and siltstone exposed only as colluvial chips...

Migmatite and amphibolite (Tertiary and Late Cretaceous)-Migmatite and amphibolite exposed in the southeastern part of the quadrangle...

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1Mm

Chert, volcanic rocks, metasediments, and limestone (Triassic to Mississippian)-Aphanitic, mostly shaly, and locally recrystallized, cherty limestone and minor fossiliferous shallow-water limestone. Unit primarily exposed along the Dihaba River Fault Zone in the north-central part of the map area...

INTRUSIVE AND ULTRAMAFIC ROCKS

Porphyritic granodiorite plug (early Tertiary)-Unit consists of one exposure in T. 26 N., R. 46 W. Small granodiorite body containing phenocrysts of hornblende and albite...

Hypabyssal granitic porphyry dikes, sills, and plugs (Tertiary and Late Cretaceous)-Porphyritic to fine-grained granitic intrusions...

Plutonic dike and sill (Tertiary and Late Cretaceous)-Three small bodies of subvolcanic dike to andesite are exposed in the east-central part of the quadrangle...

Monzonitic quartz monzonite, syenite, granodiorite, diorite, and minor lamprophyre (Tertiary and Late Cretaceous)-Small stocks and plutons of fine to coarse-grained, phanitic to hypaphanitic, chloritiferous...

Altered intermediate mafic dike (Tertiary and Late Cretaceous)-Porphyritic biotite-chloritiferous-plagioclase + olivine dike, which is partly to extensively altered to chlorite-chlorite-silica assemblages...

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XI

Idono Complex (Early Proterozoic)-Pegmatite metapelite rocks-Lower amphibolite and minor metasedimentary rocks. Outcrop exposure is limited to a dozen localities; most are rubble in quarry but well exposed. The compositionally diverse metapelite rocks consist of a mixture of quartzite, mica schist, and orthogneiss. Amphibolite varies little in composition and includes orthogneiss of tonalitic, granitic, quartz diorite, and quartz monzonitic character...

CONTACTS-Approximately located (solid line). Faults-Approximately located. Dashed where inferred; dotted where concealed; queried where uncertain. Arrows indicate direction of movement.

THRUST FAULTS-Approximately located; queried where uncertain. Shave on upper plate.

FOLDS-Showing trace of axial surface and direction of plunge, where known.

F1 anticline, **F2 overturned anticline**, **F3 overturned syncline**, **F4 fold**-See accompanying pamphlet.

Strike and dip of beds or flows-Ball indicates top known inclined.

Overturned, **Strike and dip of inclined foliation**, **Hornfels**, **Potassium-argon sample locality**-Numbers refer to table 1.

Chemistry sample locality-Major oxides and trace elements: numbers refer to table 2.

Fossil sample locality-Numbers refer to table 4.

Paleocurrent-Azimuth shows: numbers refer to table 5.

Archaeologic sample locality-Numbers refer to table 6.

REFERENCES CITED

Angeloni, L.M., and Miller, M.L., 1985. Cretaceous facies metamorphic rocks of the north-central Iditarod quadrangle, in Bartsch-Winkler, Susan, et al., U.S. Geological Survey Bulletin 1476, p. 2-13.

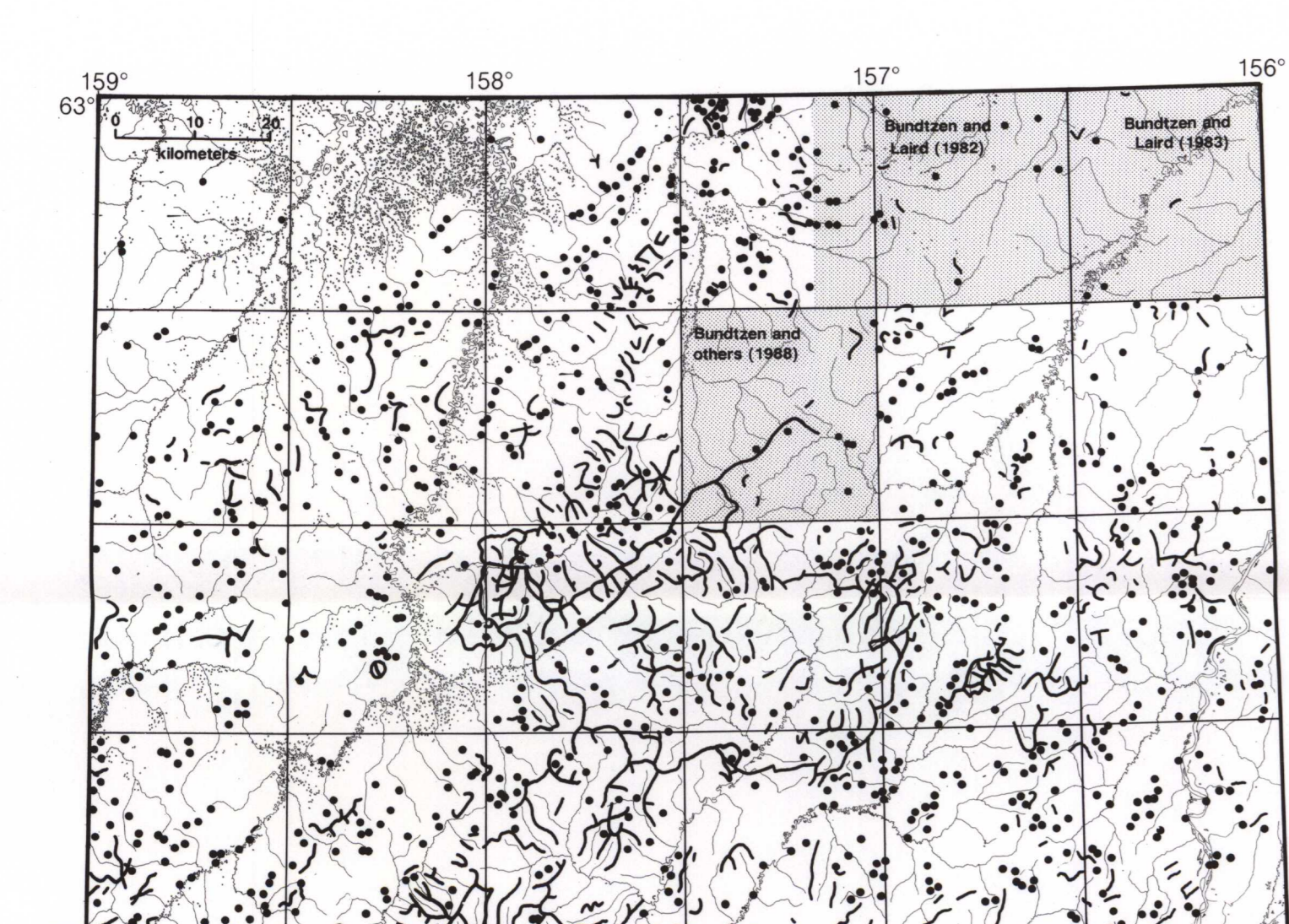
Arthur, G.J., Zmuda, C.C., Foley, M.K., Criss, R.E., Patton, W.W., Jr., and Miller, T.W., 1980. Isotopic and trace element variations in the Ruby batholith, Alaska, and the nature of the deep crust beneath the Ruby and Anghuevich terranes. *Journal of Geophysical Research*, v. 85, no. B11, p. 15,941-15,955.

Bow, S.R., and Elder, W.F., 1992. Depositional and tectonic framework of the Upper Cretaceous Knaukwam Group, southwestern Alaska, in Bradley, D.C., and Ford, A.H., eds., Geologic Studies in Alaska by the U.S. Geological Survey Geologic Survey Professional Paper 1989, p. 8-16.

Busby, J.P., 1988. Geotectonics of the Golden Horn and related mineralization in the Flat area, Alaska. *Farfield Bulletin*, Alaska Division of Geological and Geophysical Surveys, Miscellaneous Publication 1979-90, Report 88, p. 1-18.

Bundtzen, T.K., and Laird, G.M., 1982. Geologic map of the Iditarod D-2 and eastern D-3 quadrangles, Alaska. Alaska Division of Geological and Geophysical Surveys Geologic Report 72, scale 1:63,300.

CONTOUR INTERVAL 200 FEET
NATIONAL GEOGRAPHIC DATUM OF 1929



LOCATION OF FIELD OBSERVATION POINTS (DOTS) AND FOOT TRAVERSES (LINES) IN THE IDITAROD QUADRANGLE (1984-1989). SHADED 1:63,300-SCALE QUADRANGLES PRIMARILY COVERED PRIOR TO THIS STUDY.

GENERALIZED GEOLOGIC MAP OF THE IDITAROD QUADRANGLE, ALASKA, SHOWING POTASSIUM-ARGON, MAJOR-OXIDE, TRACE-ELEMENT, FOSSIL, PALEOCURRENT, AND ARCHAEOLOGICAL SAMPLE LOCALITIES

By

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1994

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