Alaska Division of Geological & Geophysical Surveys

Report of Investigations 97-14a
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# GEOLOGIC MAP OF THE EASTERN HALF OF THE MCGRATH QUADRANGLE, ALASKA

by

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1997

## DESCRIPTION OF MAP UNITS

*See text for complete descriptions and correlation of map units*

### UNCONSOLIDATED DEPOSITS

#### ALLUVIAL DEPOSITS

- Qa — Stream alluvium, undifferentiated
- Qaf — Alluvial-fan deposits
- Qat — Terrace alluvium

#### COLLUVIAL DEPOSITS

- Qca — Colluvial-alluvial deposits
- Qct — Talus
- Qcl — Landslide deposits

#### EOLIAN AND RELATED DEPOSITS

- Qsp — Silt and peat
- Qe — Eolian deposits

#### GLACIAL AND RELATED DEPOSITS

- Qg — Active glaciers
- Qrg — Rock glaciers and rock-glacier deposits
- Qof — Outwash-fan deposits
- Qdo — Outwash
- Qdot — Outwash terrace
- Qdic — Ice-contact deposits
- Qdt — Till, undifferentiated
- Qdtf — Till of Farewell glaciations
- Qdts — Till of Selatna glaciation
- Qdtlm — Till of Lone Mountain glaciation
- Qdtplm — Till of Pre-Lone Mountain glaciation

### SEDIMENTARY AND VOLCANIC ROCKS

- QTg — Consolidated till and outwash
- Tcf — Felsite conglomerate
- Tcg — Coal-bearing sandstone, shale, and conglomerate
- Ts — Sandstone and shale
- Tcl — Limestone conglomerate

#### SHEEP CREEK, WINDY FORK, AND TERRA COTTA VOLCANIC FIELDS

- Tvs — Volcaniclastic sandstone and lacustrine silt
- Tvt — Intermediate to felsic air-fall tuff
- Tva — Andesite flows and lapilli tuff
- Tvd — Massive dacite
- Tvld — Lapilli dacite
- Twd — Vent facies dacite
- Tvab — Andesite breccia
- Tvlr — Lapilli rhyodacite
- Tvgt — Green tuff
- Tvl — Lahar deposits
- Tvf — Felsic tuff and flows
- Tvm — Basalt and basaltic andesite

#### VELESKA LAKE VOLCANIC FIELD

- TKvd — Dacite flows and dikes
- TKvf — Rhyolite tuff
- TKvm — Basaltic andesite
- TKvt — Air-fall tuff of intermediate composition

#### KAHILTNA TERRANE

- KJsh — Sandstone and shale
- KJs — Coarse sandstone and minor siltstone
- KJc — Pebble to boulder conglomerate and minor sandstone

#### MCKINLEY TERRANE

- KJm — Slate and metasiltstone

#### PINGSTON TERRANE

- Trls — Limestone and shale

#### YUKON-TANANA TERRANE

- uPzs — Volcanogenic phyllite
- uPzc — Phyllitic chert and siliceous phyllite

#### FAREWELL COMPOSITE TERRANE

**MYSTIC SUBTERRANE**

**Tatina River Volcanics**

- Us — Phosphatic shale and green volcaniclastic sandstone
- Trab — Pillow basalt and gabbro
- Trs — Shale, coarse volcaniclastic sandstone, and chert

**Sheep Creek Formation**

- PDs — Sublithic sandstone, limestone-chert conglomerate, and minor limestone
- lDl — Massive algal limestone
- lDd — Dolomite

**St. Johns Hill Formation**

- uDl — Massive micritic limestone
- Dls — Limestone and minor siltstone

**DILLINGER SUBTERRANE**

**Barren Ridge Limestone**

- DSl — Calcarenite, calcareous siltstone, and laminated limestone

**Terra Cotta Mountains Sandstone**

- uSsl — Thin-bedded calcareous sandstone, graptolitic shale, and silty limestone
- mSvs — Phyllite, volcaniclastic sandstone, and chert
- mSl — Argillaceous graptolitic limestone
- mSs — Feldspathic-lithic sandstone, limey siltstone, and argillite

**Post River Formation**

- lSl — Boundary limestone
- SOsh — Graptolitic shale, siltstone, and chert

**Lyman Hills Formation**

- OCls — Silty limestone and shale

**MINCHUMINA SUBTERRANE**

- PzpCs — Metaquartzite and calcareous phyllite

### INTRUSIVE ROCKS AND HORNFELS

#### TERTIARY INTRUSIVE ROCKS AND HORNFELS

- Tia — Andesite-trachyandesite sills and dikes
- Tif — Felsic sills and dikes
- Tim — Mafic sills and dikes
- Tid — Undifferentiated sills and dikes
- Tids — Dike swarm and hornfels
- Twg — Windy Fork granite
- Tgd — Hartman pluton granodiorite
- Tqdm — Quartz monzonite, monzonite breccia, and quartz porphyry
- Tgr — South Fork granite
- Thf — Hornfels and skarn

**Middle Fork Plutonic Complex**

- Tgqm — Granite, quartz monzonite, and monzodiorite
- Tgb — Alkali gabbro
- Tgsy — Granite to quartz syenite
- Tsy — Syenite

#### LATE CRETACEOUS INTRUSIVE ROCKS AND HORNFELS

- TKqm — Mount Estelle granodiorite
- TKm — Gabbro-granodiorite
- TKhf — Hornfels and skarn

#### PRE-CRETACEOUS INTRUSIVE ROCKS

- Kdg — Gabbro and diorite sills
- Trum — Ultramafic to diorite sills
- MzPzi — Gabbro and diorite sills and dikes

## MAP SYMBOLS

- Contact - Approximately located
- High-angle fault - Arrows show direction of relative movement; U=upthrown side; D=downthrown side; dashed where approximately located; dotted where concealed
- Thrust fault - Sawteeth on upper plate; dotted where concealed.
- Photogeologic lineament
- Anticline - showing trace of axial plane; dashed where inferred or concealed; dotted where questionable.
- Syncline - showing trace of axial plane; dashed where inferred or concealed; dotted where questionable.
- Overturned Anticline - showing trace of axial plane and direction of plunge; dashed where inferred or concealed; dotted where questionable.
- Overturned Syncline - showing trace of axial plane and direction of plunge; dashed where inferred or concealed; dotted where questionable.

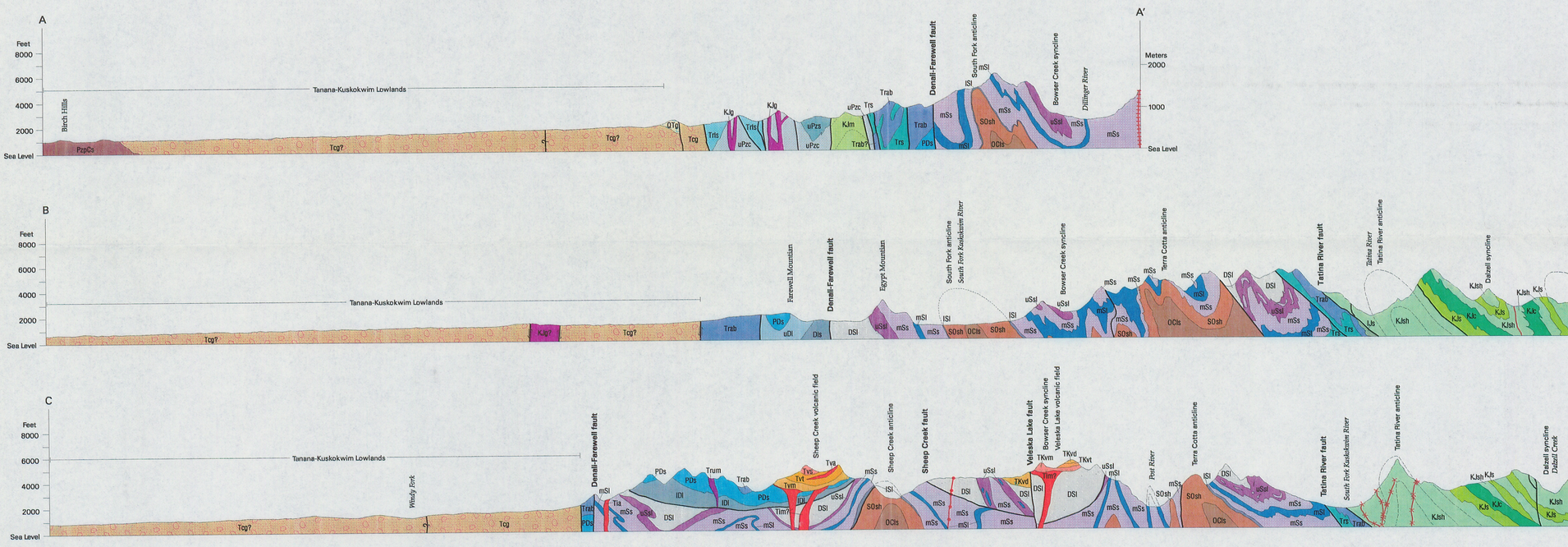
Strike and dip of beds

- 23 — Inclined
- Vertical
- 60 — Overturned

Ice limit advances - Increasing roman numerals depict drift limits of decreasing age. Each glaciation may include numerous stades.

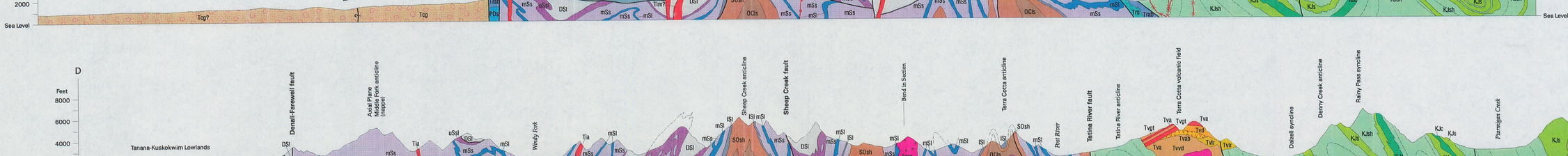
- Unnamed Holocene glaciations
- Farewell glaciation
- Selatna glaciation
- Lone Mountian glaciation
- Pre-Lone Mountian glaciation

19 — Location of selected mineral deposits and energy resources. See Table 1 in accompanying text.
















Vertical Exaggeration 2X
Quaternary deposits not shown

Base from U.S. Geological Survey, McGrath Quadrangle
Compiled in 1985, revised 1978, 1980, and 1982. Map not field checked.
Projection and 10,000-meter grid Universal Transverse Mercator, zone 5.
1927 North American datum

Location Index







SCALE 1:125,000

5 0 5 10 Miles
5 0 5 10 15 Kilometers

CONTOUR INTERVAL 200 FEET
DOTTED LINES REPRESENT 100-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929
1984 MAGNETIC DECLINATION AT SOUTH EDGE OF THE MCGRATH QUADRANGLE SHEET VARIES 22° TO 23°30'EAST

Sources of Geologic Data




**Bedrock geology field investigations by:**
T.K. Bundtzen (1980-1984, 1988-1989, 1993), W.G. Gilbert (1981-1984, 1989), E.E. Harris (1988-1989, 1993), D.N. Solie (1981-1982, 1984, 1988-1989), and J.T. Kline (1980-1982, 1988-1989). Additional contributions by M.S. Lockwood (1982-1983), J.G. Clough (1981, 1983), T.E. Smith (1982-1983), Kate Bull (1981-1982), K.M. McDonald (1982), Kristin Kline (1981), D.B. Dickey (1981), John Ebel (1982), Larry Lueck (1980), G.M. Laird (1989), Grant Abbott (1989, 1993), S.P. Gordey (1989), R.B. Blodgett (1982-1983, 1989), D.J. Szumigala (1983), and Carolyn Parker (1983).
For detailed published maps see index map and references.
**Surficial geology field investigations by:**
J.T. Kline (1980-1982, 1988-1989) and T.K. Bundtzen (1981-1984, 1988).
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Geologic Data Modeling System

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