DEPARTMENT OF THE INTERIOR

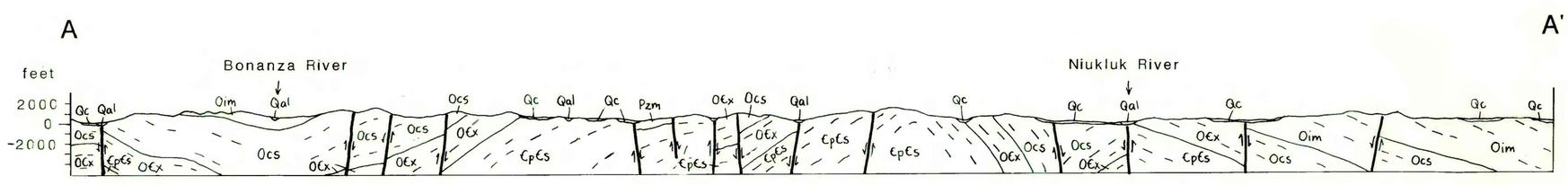
UNITED STATES GEOLOGICAL SURVEY

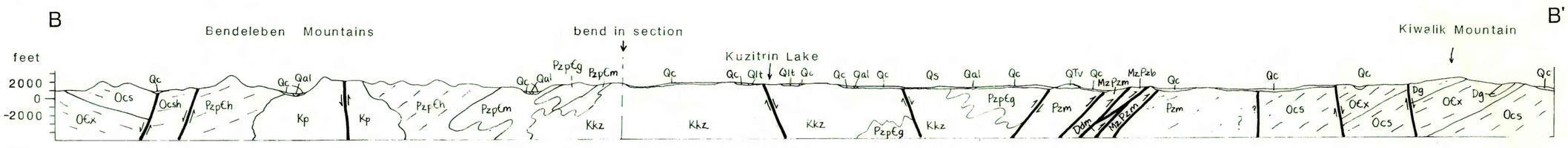
OPEN-FILE REPORT

86-276

PLATE 2 OF 3

GEOLOGIC CROSS-SECTION





LIST OF MAP UNITS

SURFICIAL DEPOSITS

Qbm	MODERN BEACH DEPOSITS (Holocene)
Qb	BEACH DEPOSITS (Pleistocene)
Qe	DUNE SAND DEPOSITS (Pleistocene)
Qs	SILT AND PEAT (Quaternary)
Qlt	LAKE TERRACE DEPOSITS (Pleistocene)
Qd	GLACIAL DRIFT, UNDIVIDED (Late Quaternary)
Qc	SILTY COLLUVIUM, UNDIVIDED (Quaternary)--Includes slope deposits, glacial deposits highly modified by weathering, and volcanic rocks covered by a thick mantle of silt
Qal	ALLUVIUM, UNDIVIDED (Quaternary)
QTkg	KOUGAROK GRAVEL (Quaternary, Tertiary)

VOLCANIC ROCKS

Qlj	LOST JIM BASALT (Holocene)--Single basaltic lava flow and vent deposits undisrupted by frost brecciation
Qv	VOLCANIC ROCKS, UNDIVIDED (Quaternary)--Basalt and basaltic andesite flows and associated vent deposits slightly to strongly fragmented by frost riving and locally overlain by windblown silt
QTv	VOLCANIC ROCKS, UNDIVIDED (Quaternary and Tertiary)--Basalt and basaltic andesite flows and associated vent deposits thoroughly fragmented by frost action
TKv	FELSIC VOLCANICS (Tertiary, Cretaceous)--Sericitized, limonitized tuff, flow, flow-breccia or vent-breccia

NOME GROUP

Metasedimentary Rocks

Ddm	DOLOSTONE AND MARBLE (Devonian)--Black to dark gray dolostone and marble with relict sedimentary structures and megafossils
Sd	DOLOSTONE (Silurian)--Light to dark gray fine-grained dolostone
Od	DOLOSTONE (Ordovician)--Pink to light gray weathering, gray to tan fine-grained dolostone with distinct color mottling
€d	DOLOSTONE (Cambrian)--Light or medium gray to pinkish orange dolostone which weathers gray to orange; may contain a few percent quartz and white mica
DObm	BLACK MARBLE (Devonian through Ordovician)--Black to dark gray marble and subordinate dolostone which is commonly well-layered, showing rhythmic alternation of coarse and fine crystalline layers
D€bm	BLACK MARBLE (Devonian through Cambrian)--Black to dark gray marble and subordinate impure fissile marble; may show rhythmic alternation of purer, coarse crystalline marble and more impure, fine crystalline layers. Mafic dikes and plugs common
D€ks	CALC-SCHIST (Devonian through Cambrian)--Medium-grained calc schist interlayered with DObm and OCbm
Oim	IMPURE CHLORITE MARBLE (Ordovician)--Buff to orange weathering impure marble characterized by lenses and layers of chlorite-albite schist
Ocs	CASADEPAGA SCHIST (Ordovician)--Light green and greenish-brown mafic- and calcareous-rich schist
O€x	MIXED UNIT (Ordovician, Cambrian)--Interlayered pure and impure marble, quartz-graphite schist, and lesser pelite, calc-schist, and mafic schist
€pCs	SOLOMON SCHIST (Cambrian, Precambrian)--Tors of resistant, well-foliated quartz-rich pelitic schist, locally containing chloritoid, glaucophane and garnet; minor calc-schist
Pzim	IMPURE MARBLE (Paleozoic)--Buff to orange weathering impure marble containing white mica, chlorite, albite, quartz and graphite; probably facies equivalent of the impure chlorite marble unit (Oim)
Pzwm	WHITE MARBLE (Paleozoic)
Pzm	MARBLE, UNDIVIDED (Paleozoic)
Pzd	DOLOSTONE, UNDIVIDED (Paleozoic)

Metaigneous rocks

Dg	GRANITIC ORTHOGNEISS (Devonian)--Light gray to orange-weathering fine-grained orthogneiss of Kiwalik Mountain
Pzg	GRANITIC ORTHOGNEISS (Paleozoic)
PzpCf	FELSIC SCHIST (Paleozoic, Precambrian)

HIGH-GRADE ROCKS OF THE KIGLUAIK, BENDELEBEN AND DARBY RANGES

Metasedimentary rocks

Oimh	IMPURE MARBLE (Ordovician)--Orange-weathering, well-foliated marble; upgraded equivalent of the impure chlorite marble unit (Oim); above biotite grade
Ocsh	CALCAREOUS AND MAFIC SCHIST (Ordovician)--Brown to green weathering mafic, calcareous, and feldspathic schist; above biotite grade; upgraded equivalent of Casadepaga schist (Ocs)
O€xh	INTERLAYERED MARBLE AND QUARTZ-GRAPHITE SCHIST (Ordovician, Cambrian)--Predominantly marble and quartz-graphite schist above biotite grade; upgraded equivalent of mixed unit (OCx)
€pCsh	PELITIC SCHIST (Cambrian, Precambrian)--Pelitic schist with centimeter-thick lenses and layers of quartz; above biotite grade; upgraded equivalent of Solomon schist
PzpCsh	HIGH-GRADE SCHIST, UNDIVIDED (Paleozoic to Precambrian)--Metasedimentary and metaigneous schist and gneiss above biotite grade; contains rocks which may be equivalent to units described above
PzpCm	HIGH-GRADE MARBLE, UNDIVIDED (Paleozoic to Precambrian)--Light-gray weathering coarse-grained pure and impure marble
PzpCg	MIGMATITE (Paleozoic to Precambrian)
PzpCs	METASEDIMENTS (Paleozoic to Precambrian)--Amphibolite facies metasediments of various lithologies associated with the Windy Creek pluton and Donatut Granite

Metaigneous rocks

PzpCa	AMPHIBOLITE (Paleozoic to Precambrian)--Garnet amphibolite rubble crop in western Bendeleben Mountains
PzpCo	ORTHOGNEISS (Paleozoic to Precambrian)

ROCKS OF THE KUGRUK FAULT ZONE

TKs	SANDSTONE (Tertiary, Cretaceous)--Siltstone, sandstone, and pebbly sandstone with locally abundant coal seams
TKc	CONGLOMERATE (Tertiary, Cretaceous)--Conglomerate composed predominantly of carbonate and mafic clasts
MzPzm	MYLONITIC METABASITE (Mesozoic, Paleozoic)--Fine-grained, medium bluish-gray metabasite with fine, laminar foliation and rounded, light-green clinopyroxene grains; contains blue amphibole and lawsonite where exposed in the Bendeleben quadrangle
MzPzb	METABASALTIC ROCKS (Mesozoic, Paleozoic)--Dark red, green and gray vesicular basalt and basaltic pyroclastic rocks metamorphosed to lower greenschist facies
MzPzs	SERPENTINITE (Mesozoic, Paleozoic)
MzPzt	SPRUCE CREEK TONALITE (Mesozoic, Paleozoic)

INTRUSIVE IGNEOUS ROCKS

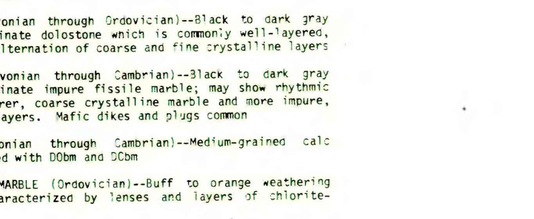
Tm	MAFIC DIKES (Tertiary)--represented by symbol
Ta	QUARTZ LATITE (Tertiary)--Light tan to orange weathering dikes, sills and plugs of rhyolitic to andesitic composition; represented by symbol
Kog	OONATUT GRANITE (Late Cretaceous)--Monzogranite and lesser syenogranite; 69.2±2 Ma and 71.2± Ma (K-Ar, biotite)
Kp	PARGON PLUTON (Cretaceous)--Granodiorite and quartz monzonite
Kb	BENDELEBEN PLUTON (Cretaceous)--Monzogranite, granodiorite, quartz monzonite and quartz monzodiorite; 81.8±2 Ma (K-Ar, biotite)
Kkz	KUZITRIN PLUTON (Cretaceous)--Monzogranite; 83.0±1.4 Ma (K-Ar, biotite)
Kku	KUGRUK PLUTON (Cretaceous)--Quartz monzonite to quartz monzodiorite; 94.9±2.9 Ma (K-Ar, hornblende)
Kae	ASSES EARS STOCK (Cretaceous)--Monzogranite to syenogranite
Kcb	CROSSFOX BUTTE STOCK (Cretaceous)--Monzongranite to quartz monzonite
Kvb	VIRGINIA BUTTE STOCK (Cretaceous)--Quartz monzonite to syenite; 94.8±1.9 Ma (K-Ar, biotite)
Knh	NIMROD HILL STOCK (Cretaceous)--Monzonite
Kd	DARBY PLUTON (Cretaceous)--Monzogranite, locally granodiorite; 94 Ma (K-Ar, biotite, hornblende)
Kwc	WINDY CREEK PLUTON (Cretaceous)--Quartz monzonite
Kkd	DIORITE (Cretaceous)--Hybrid diorite of Kachauik pluton
Kkgm	GNEISSIC MONZONITE (Cretaceous)--Gneissic monzonite of the Kachauik pluton
Kkg	GRANODIORITE (Cretaceous)--Granodiorite to quartz monzonite phase of the Kachauik pluton
Kkms	MONZONITE-SYENITE (Cretaceous)--Monzonite-syenite phase of the Kachauik pluton; 99.3±3 Ma (K-Ar, hornblende)
Kdc	DRY CANYON STOCK (Early Cretaceous)--Nepheline syenite; 108±3 Ma (K-Ar, hornblende)
Kad	ALKALINE DIKES (Cretaceous)--Nepheline syenite and pseudoleucite porphyry; 96.3±3 Ma (K-Ar); represented by symbol
Kpg	PEGMATITE (Cretaceous)--represented by symbol
Kfg	FOLIATED GRANITE (Cretaceous)--Leucocratic syenogranite, locally monzogranite
Kgu	GRANITIC ROCKS, UNDIVIDED (Cretaceous)

EXPLANATION

- fault, strike-slip or vertical, dashed where inferred, dotted where buried
- 70 strike and dip of bedding
- 30 strike and dip of metamorphic foliation
- dike; Tm
- dike; Ta
- dike; Kpg
- dike; Kad
- approximate boundary of Kugruk fault zone
- rock pervasively sheared where exposed
- ★ 83AGe23 location of radiometric age sample and sample number

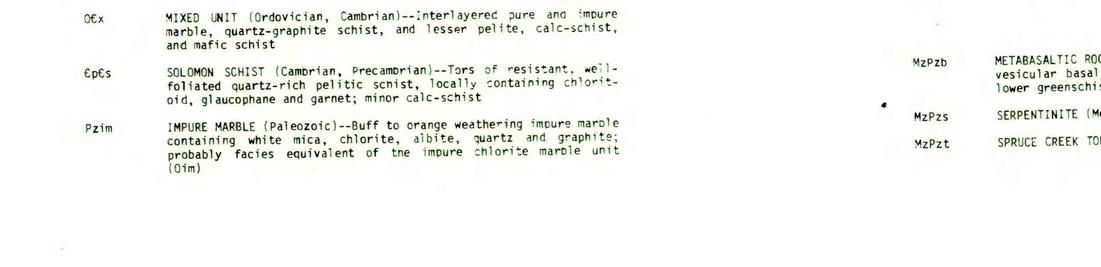
CORRELATION OF MAP UNITS

GLACIAL DEPOSITS & SEDIMENTARY ROCKS



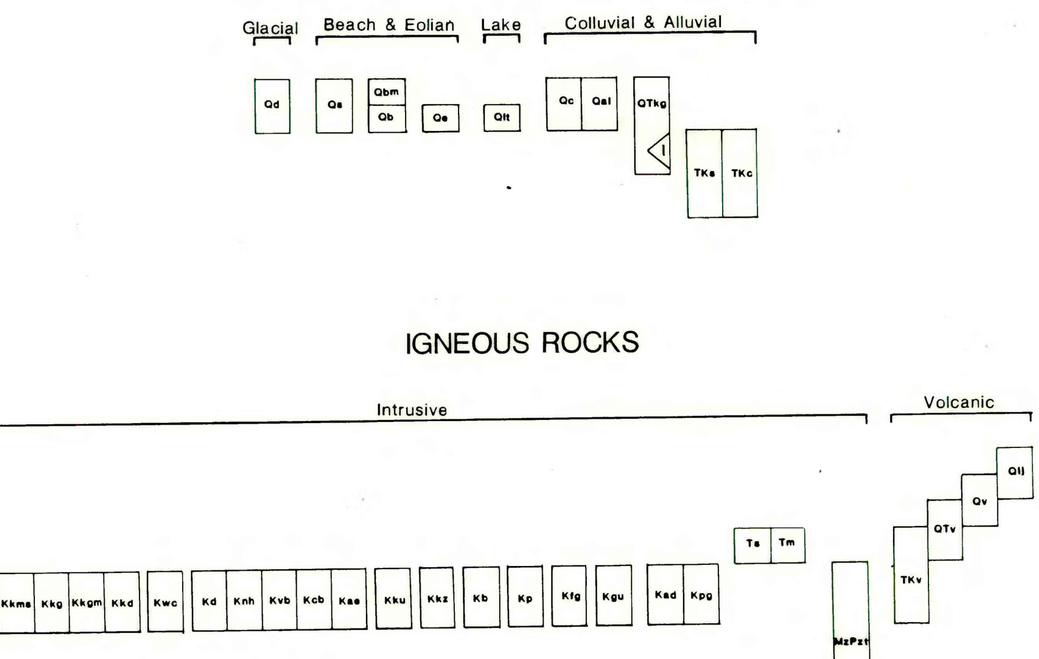
- Holocene, Pleistocene — QUATERNARY
- TERTIARY
- CRETACEOUS

IGNEOUS ROCKS

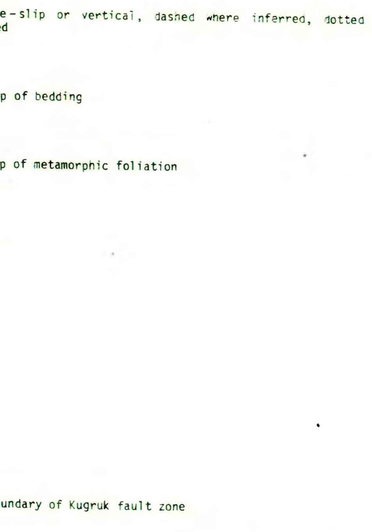


- Holocene
- Pleistocene
- Late Cretaceous, Early Cretaceous — TERTIARY, CRETACEOUS — MESOZOIC

METAMORPHIC ROCKS



- MESOZOIC
- DEVONIAN
- SILURIAN — PALEOZOIC
- ORDOVICIAN
- CAMBRIAN
- PRECAMBRIAN



PREVIOUS REGIONAL MAPPING

1. Sainsbury, C. L. 1974
2. Miller and others, 1972
3. Sainsbury and others, 1972
4. Smith, P. S. 1910

This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.