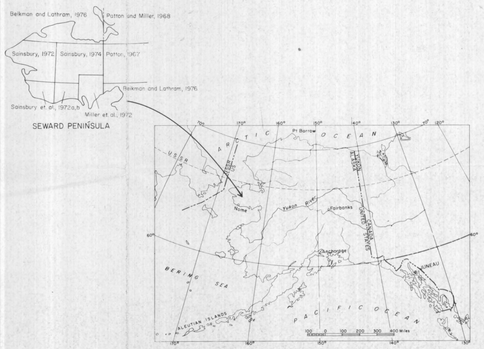
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

U.S. GEOLOGICAL SURVEY
OPEN FILE MAP
OF 77-167-A

Base from National Atlas 1:2,000,000 series:
NORTHERN ALASKA, SHEET #40, 1970.



Location of Seward Peninsula and index map showing principal sources of geologic data

Outline of area selected under sec. 17(d)(2) of the Alaska Native Claims Settlement Act. Numbers refer to the Four National Systems proposal of the Department of the Interior, Dec. 18, 1973. Compiled from maps prepared by the U.S. Bureau of Land Management, December, 1973 and March, 1974.

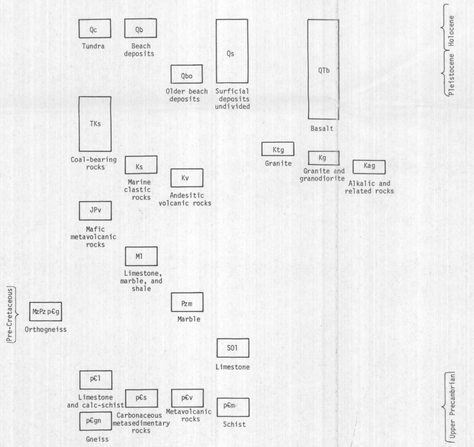
11. Chukchi Imuruk National Reserve
16. Coastal National Wildlife Refuge

SCALE 1:1 000 000
25 0 25 50 75 100 MILES
25 0 25 50 75 100 KILOMETERS

EXPLANATORY NOTE

This preliminary map is the first of several data compilations being prepared as a foundation for evaluating the mineral resource potential of Seward Peninsula. In addition to the sources of geologic data credited in the index map, Sainsbury's recent (1975) summary of his extensive geologic studies on Seward Peninsula has been particularly helpful. The map, unit descriptions, and correlations reflect as closely as possible the geology as published in the principal sources of geologic data. Important sources of additional and more detailed descriptive data are referenced in the description of map units.

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Surficial deposits, sedimentary rocks, and metamorphic rocks.

Qc — (Holocene) Tundra; dense vegetation mat consisting of herbaceous and shrubby plants. Shown only in areas where it forms an extensive and essentially continuous mantle on bedrock or other surficial materials. (Sigafoos, 1958).

Qb — (Holocene) Younger beach deposits; sand and gravel deposits related to present beach environment.

Qs — (Holocene and Pleistocene) Surficial deposits undivided; includes silt, sand, gravel, and glacial drift. Commonly covered by tundra (Qc).

Qbo — (Pleistocene) Older beach deposits; sand and gravel deposits shown only in Port Clarence and Cape Rodney areas. Commonly covered by tundra (Qc) and/or other surficial deposits (Qs). An important source of placer gold in the Nome area.

TKs — (Tertiary and Late Cretaceous) Predominantly nonmarine clastic rocks including conglomerate, sandstone, siltstone, shale, claystone, and coal. Impure calcareous sediments are present locally along the Kugruk River. Rocks of Tertiary age known definitely only from the basin in the upper reaches of the Kuzitrin River. Similar basins probably include Imuruk Basin, McCarthy's Marsh, and Death Valley. Rocks of Late Cretaceous age, and possibly in part of Tertiary age, are found in the Kugruk River valley and in a north-trending belt east of the Darby Mountains. Coal-bearing sediments are present in a small exposure in the Sinuk River area of southwestern Seward Peninsula. Sub-bituminous coal has been mined in the Kugruk River valley and the restricted Tertiary basins may be potential sites for sedimentary-type uranium deposits.

Ks — (Cretaceous) Dominantly marine clastic rocks including graywacke, calcareous graywacke, conglomerate, and mudstone. Derived mostly from older Mesozoic volcanic and plutonic rocks and are part of the volcanogenic Yukon-Koyukuk province that borders Seward Peninsula along it's eastern margin. (Patton, 1973).

Kv — (Cretaceous) Andesitic volcanic rocks including flows, tuff, breccia, agglomerate, and volcanogenic sediments. Mostly Early Cretaceous. Principally exposed west of Kiwalik River where they are intruded by mid-Cretaceous plutons (Kg). Base metal sulfides, silver, and gold are present in altered and mineralized rocks of the Granite Mountain area. (Miller and Elliott, 1969, Patton, 1973).

JPv — (Jurassic? to Permian?) Mafic metavolcanic rocks with minor sheared serpentinite in a thin northerly trending belt near the southeast boundary of the peninsula. Age unknown but lithologically correlated with rocks of a Permian to Jurassic(?) ophiolitelike assemblage present along parts of the Yukon-Koyukuk province margin. (Patton, 1973).

Ml — (Mississippian) Dark limestone, marble, and subordinate shale near Tin City and north of the Imachuck River. Area north of the Imachuck River probably includes rocks of several other units.

Pzm — (Paleozoic) Chiefly light- to dark-gray calcareous and dolomitic marble but with lesser limestone, dolomitic limestone, dolomite, and clastic sedimentary rocks. Widely distributed and sparsely fossiliferous; fossils commonly suggestive or definitive of a Devonian age but in part probably includes older rocks.

SOl — (Silurian and Ordivician) Fossiliferous limestone, argillaceous limestone, and shale; locally with chert lenses and nodules. Form a complexly faulted and in large part allocthonous terrane in the western map area. Stratigraphic thickness probably exceeds 3000 m. Locally includes rocks of Devonian age and possibly some rocks of Cambrian, and late Precambrian age. Principal host rocks to major tin, tungsten, beryllium, and fluorite deposits of the York Mountains. (Sainsbury, 1969).

MzPz pCg — (Mesozoic, Paleozoic, or Precambrian) Generally seriate, fine- to medium-grained, mica-plagioclase-K-feldspar-quartz orthogneiss; originally granodiorite or granite. Known at three widely separated localities; the Kiwalik Mountain area, north of Serpentine Hot Springs, and at Cape Nome. The orthogneiss at Kiwalik Mountain is surrounded by low-grade metasedimentary rocks (pCs) but the other localities are within other gneissic rocks (pCgn). The occurrences at Cape Nome and north of Serpentine Hot Springs may be equivalent to Precambrian orthogneiss of the Kiglualk Mountains. Rocks may be any age older than Cretaceous. (Hudson, 1977).

pCl — (late Precambrian) Buff-to orange-weathering, thin bedded, argillaceous limestone and dolomitic limestone in the western Seward Peninsula and micaceous calc-schist elsewhere. Quartz veinlets common. A thick apparently unfossiliferous sequence present over large parts of Seward Peninsula and considered to depositionally underlie lower Ordivician limestone and overlie carbonaceous sedimentary rocks in the York Mountains. May be in part of Cambrian age. (Sainsbury, 1969).

pCs (g) — (late Precambrian) Medium to dark-gray, thin-bedded, carbonaceous and siliceous sedimentary rocks and metasedimentary rocks including graywacke, siltstone, slate, phyllite, phyllitic schist, schist, metasiltite, calcareous and micaceous schist, and minor dark-gray, fine-grained marble; characteristically thin-bedded, carbonaceous, and siliceous. The unit is informally known as "York Slate" but the textural and metamorphic grade is variable. In the York Mountains graywacke and siltstone are present but elsewhere these rocks are mostly of greenschist facies and commonly exhibit multiple foliations. Quartz, albite, white mica chlorite, and carbonate are the principal mineralogic components. Small metamorphosed mafic intrusives (g) are present locally. Amphibolite facies schists, derived in part from this unit, are present in the Kiglualk, Bendeleben, and Darby Mountains (pCmu). In the York Mountains, rocks of this unit are depositionally transitional below unfossiliferous limestones of inferred late Precambrian age (pCl). Many lode and placer gold deposits are spatially associated with this unit. (Sainsbury, 1969, Hudson, 1977).

pCv (g) — (late Precambrian) Greenish-gray metavolcanic rocks and associated metasedimentary rocks including lenses of schistose marble. These rocks are of greenschist-facies and commonly contain chlorite, epidote, albite, quartz, calcite, amphibole, and sphene. Glaucophane and garnet-bearing rocks are present locally. They are believed to represent volcanic centers and intercalations within metasedimentary rocks of the pCs map unit. Numerous small intrusive bodies of altered mafic rocks (g) are present locally. (Sainsbury and others, 1970).

MAP SYMBOLS

Contact

Major fold axis showing direction of plunge

Fault, sawteeth on upper plate, dashed where concealed or inferred.

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PRELIMINARY GEOLOGIC MAP OF SEWARD PENINSULA, ALASKA

Compiled by

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1977