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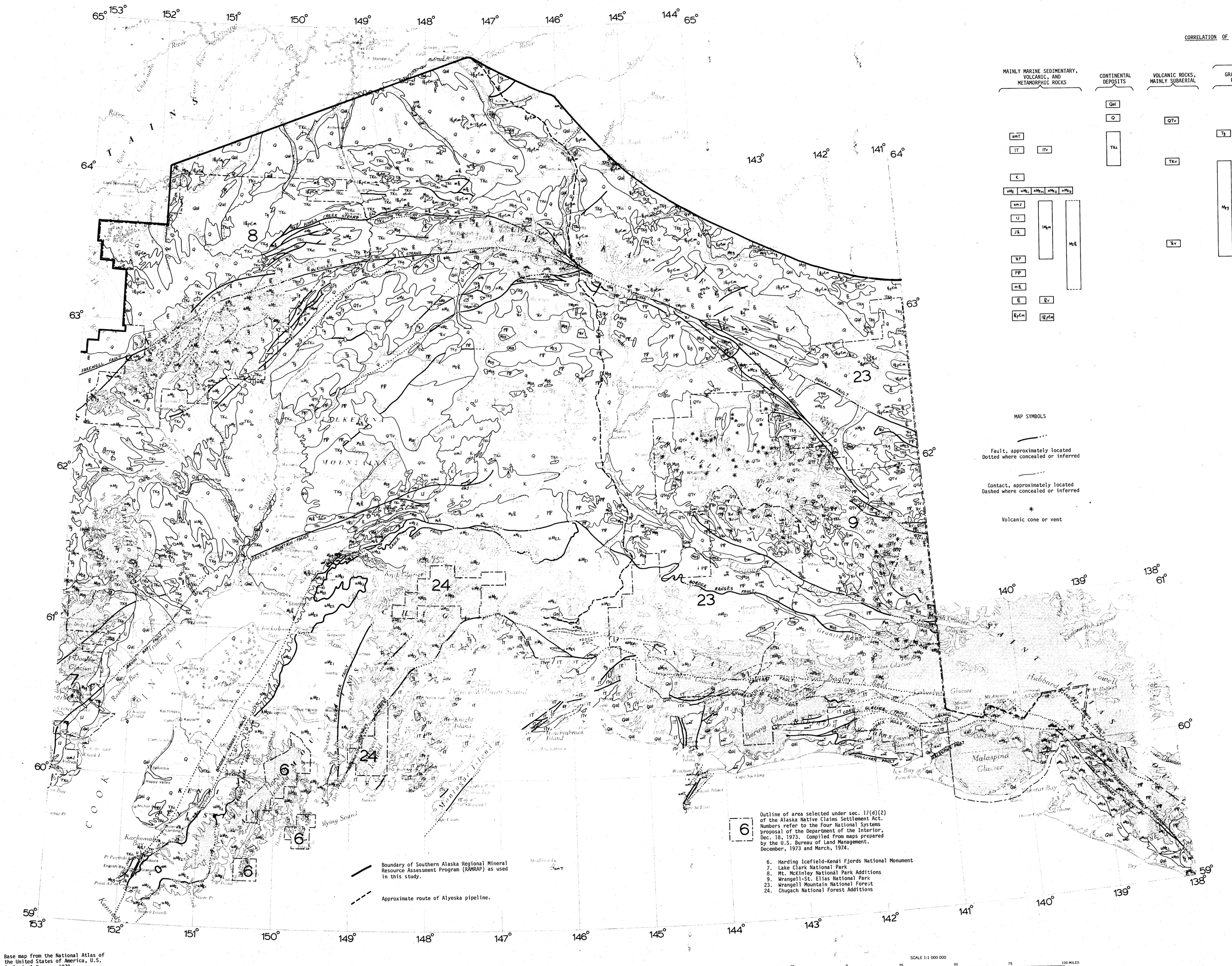
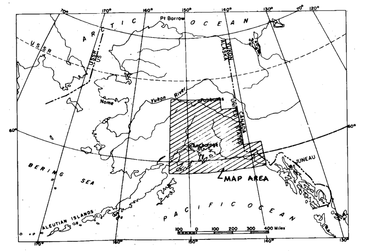


Base map from the National Atlas of the United States of America, U.S. Geological Survey, 1970



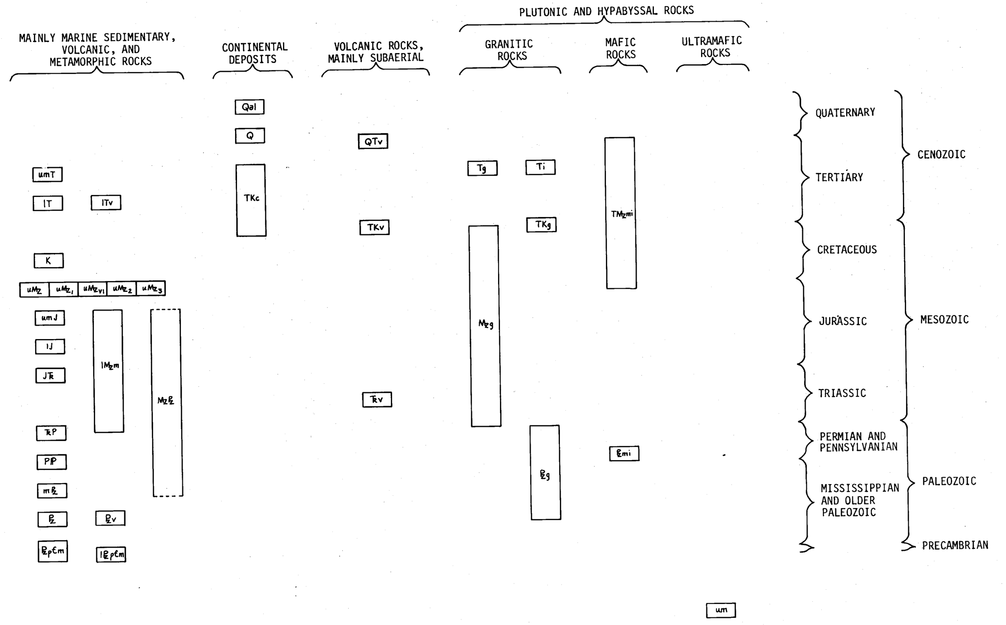
GENERALIZED GEOLOGIC MAP OF THE EASTERN PART OF SOUTHERN ALASKA

COMPILED BY

HELEN M. BEIKMAN, C.D. HOLLOWAY AND E.M. MACKEVETT, JR.

1977

CORRELATION OF MAP UNITS



MAP SYMBOLS

Fault, approximately located
Dotted where concealed or inferred

Contact, approximately located
Dashed where concealed or inferred

Volcanic cone or vent

DESCRIPTION OF MAP UNITS

MAINLY MARINE SEDIMENTARY, VOLCANIC, AND METAMORPHIC ROCKS

		Partial List of Included Units
uwT	UPPER AND MIDDLE TERTIARY ROCKS -- Siltstone, sandstone, organic shale, locally abundant subbituminous coal; minor volcanic rocks of late Miocene age. Mainly marine sedimentary rocks; complementic sandy mudstone (marine siltite) of Miocene and Pliocene age	Yakataga Formation Poul Creek Formation Katalla Formation Tokun Formation
lT	LOWER TERTIARY ROCKS -- Marine and continental clastic rocks of Paleocene and Eocene age. Intensely deformed. Includes some coal-bearing rocks	Kulthieth Formation Arkose Formation Clastic rocks of Orca Group Stillwater Formation
lTv	LOWER TERTIARY VOLCANIC ROCKS -- Mafic pillow lavas and pyroclastic rocks, minor chert, limestone, and shale of Paleocene and Eocene age. Intensely deformed	Volcanic rocks of Orca Group
K	CRETACEOUS ROCKS -- Shelf deposits of sandstone, siltstone, shale, limestone, claystone, conglomerate, mudstone, and porcellanite ranging in age from Early Cretaceous (Valanginian) to Late Cretaceous (Maastrichtian). Includes some deep-sea deposits, which are apparently abyssal, turbidite-type submarine and subaerial andesitic fragmental volcanic rocks; volcanic flows, tuffs, and tuffaceous rocks; and minor chert and limestone; approximately half of shale and sandstone of Maastrichtian age on Kodiak and Afognak Islands	Chisana Formation Kennicott Formation Matanuska Formation Tebenkof Formation Chitina Formation Valdez Formation Matanuska Formation Kachemak Formation Kaguyak Formation
uKs	CRETACEOUS AND JURASSIC ROCKS -- Argillite, shale, graywacke, conglomerate, lava, tuff, and agglomerate; almost barren of fossils. Mainly Upper Jurassic (Tithonian) to Lower Cretaceous (Valanginian) in places moderately to highly (amphibolite facies) metamorphosed	
uJKv	CRETACEOUS AND UPPER JURASSIC(?) ROCKS, IN PART METAMORPHOSED -- Graywacke, slate, argillite, with minor conglomerate, volcanic flows, tuff, and agglomerate; fossils rare. Mainly Upper Jurassic to Chugach mapping. Mainly of Late Cretaceous (Maastrichtian) age, but includes some rocks of Early Cretaceous and possible Late Jurassic age. Intensely deformed. Mildly metamorphosed locally to greenschist facies	Valdez Group Tokositna Group
uJKgv	CRETACEOUS AND UPPER JURASSIC(?) SEDIMENTARY AND VOLCANIC ROCKS, IN PART METAMORPHOSED -- Chiefly slate and graywacke, with local areas of basaltic flows, pillows and tuffaceous, tuff breccia, and agglomerate; minor chert, sheared diabase, and pillow basalts in Seldovia-Homer Peninsula	Valdez Group
uJKmg	CRETACEOUS AND UPPER JURASSIC (?) ROCKS, IN PART METAMORPHOSED -- A dominantly clastic sequence of siltstone, graywacke, argillite, and conglomerate; sandstone characteristically juxtaposed with a distinctive assemblage of chert, jasper, argillite, tuffaceous rocks, radiolarian cherts, argillite, and minor ultramafic rocks and gabbro. Mildly metamorphosed (prehnite-pumpellyite facies) in part a melange	McHugh Complex Tokositna Group melange
uJKg	LOWER CRETACEOUS AND UPPER JURASSIC ROCKS -- Shallow- and deep-water marine sandstone, siltstone, and conglomerate; includes sheared massive lenses of sedimentary and volcanic complexes of Late Jurassic (Oxfordian)to Early Cretaceous (Berremian) age. Includes a sequence of non-marine clastic rocks at the top	Gravina-Nutzotin belt
uJmS	UPPER AND MIDDLE JURASSIC ROCKS -- Siltstone, sandstone, shale, and conglomerate; may locally include rocks of late Jurassic age	Chinitna Formation Tuxedni Group Naut Glacier Formation Tuxedni Group Kelly River Formation Hoholitna Conglomerate
lJ	LOWER JURASSIC ROCKS -- Sandstone and argillite interbedded with volcanic flows and pyroclastic rocks in the Cook Inlet area and southern Talkeetna Mountains	Talkeetna Formation
JS	JURASSIC AND TRIASSIC ROCKS, IN PART METAMORPHOSED -- Shallow- to deepwater limestone with minor dolomite, shale, and chert (Triassic); argillite, shale, and chert with minor basaltic (Triassic?) Triassic shale, tuff, tuffaceous conglomerate and breccias, and schistose tuff with sandstone and pillow basalt; Triassic and Jurassic(?) metamorphosed gabbro and dolomite, Tonsina marble, and subordinate metapelite of Late Triassic and Early Jurassic age at southern tip of Kenai Peninsula	Chitistone Limestone Nizina Limestone Dinwoody Formation Kamishak Formation
uMzgm	LOWER MESOZOIC METAMORPHIC ROCKS -- Metasedimentary, metavolcanic, and metaplutonic rocks; chiefly greenschist facies; includes Triassic(?) rocks of metamorphosed country rock (inclusions) throughout the Alaska Range batholith	
TR	TRIASSIC AND PERMIAN ROCKS, IN PART METAMORPHOSED -- Mainly Triassic and Permian rocks of the Chugach terrane, including the well-exposed Alaska Range; argillite and limestone with siltstone and conglomerate and abundant gabbroic sills (Triassic); Permian(?) rocks of the Chugach terrane, consisting of mafic, quartzite, greenschist, chlorite-schist, garnet schist, and subordinate gneiss in Aleutian Range batholith; mainly of Late Triassic age	Upper part of Mankomen Group
PzV	PERMIAN AND PENNSYLVANIAN ROCKS -- Basaltic and andesitic lavas and tuffs, minor limestone, chert, argillite, and shale; gabbro, and local ultramafic intrusives; rocks locally metamorphosed to greenschist facies and, locally, amphibolite facies	Skolai Group Station Creek Formation Tetelna Volcanics
uPz	MIDDLE PALEOZOIC ROCKS -- Pyroclastic rocks and ash flows interbedded with minor limestone, argillite, and conglomerate; locally to quartz-orthoclase-biotite schist and gneiss on north-central flank of Alaska Range. Includes Totatlanika Schist (Devonian and Silurian) and Tonsina Rhyolite (MDO) and Devonian by Gilbert and Redden (1971)	Totatlanika Schist
Pz	PALEOZOIC ROCKS -- Argillite, graywacke, phyllite, quartzite, slate, limestone, and chert of lower Paleozoic (Cambrian through Devonian) age. Mainly north of upper Chitina Valley, in Wrangell Mountains, and in Talkeetna Mountains; amphibolite. In south-central Alaska Range, limestone, slate, and conglomerate with some fossils of Devonian age. West of Cook Inlet, mainly Devonian(?) and Silurian(?) rocks; mildly metamorphosed. Inequigranular rocks in northeast corner of map area; slightly to moderately metamorphosed to greenschist facies. Rocks in Cook Inlet area include unnamed rocks formerly included in Birch Creek Schist; metamorphosed in places to greenschists and amphibolite facies	Seldovia Rock Group (Canadian Usage) Adams Formation Funnel Creek Formation Nikolai Greenstone Road River Formation McCann Hill Formation Chisana Formation Tonsina Formation Birch Creek Schist(?)
Ꞓu	PALEOZOIC VOLCANIC ROCKS -- Greenstone with some metadiorite, metagabbro, and interbedded phyllite of Devonian age and older	
uMzR	MESOZOIC AND EARLY PALEOZOIC ROCKS, IN PART METAMORPHOSED -- Metavolcanic, metasedimentary, and metaplutonic rocks near Iliamna Lake; Triassic(?) and Permian rocks in the Cook Inlet of Peninsula Valley. Also includes mildly (Jurassic) and older(?) high-grade regionally metamorphosed rocks in the Talkeetna Mountains; Triassic, Jurassic, Permian, and Pennsylvanian age in the Chugach Mountains	
ꞒpZ-m	PALEOZOIC AND EARLY PRECAMBRIAN METAMORPHIC ROCKS -- Schist and gneiss of many different compositions, primarily of greenschist and amphibolite facies, most of which were formerly included in the Birch Creek Schist. Probably includes some rocks of the Totatlanika Schist	Totatlanika Schist (?) Birch Creek Schist (?)
ꞒpZ-d	LOWER PALEOZOIC AND EARLY PRECAMBRIAN METAMORPHIC ROCKS -- Undifferentiated metasedimentary and metaigneous rocks of Devonian age and older north of the Denali fault in the Healy-Clear area. Mainly quartzofeldspathic and micaceous clastic rocks, including the Kanuyak Peak formation and rocks formerly included in the Birch Creek Schist in the north-central part of the map area	Kanuyak Peak Formation Birch Creek Schist (?)

CONTINENTAL DEPOSITS

Qal	ALLUVIUM -- Quaternary alluvium, also includes minor glacial, lacustrine, swamp, landslide, and beach deposits	
Q	OLDER ALLUVIUM -- Older Quaternary deposits of alluvium, alluvial fans, glacial material, sand, dune sand, loess, terrace and pediment gravel, and some marine clay	Bootlegger Cove Clay
TKc	TERTIARY AND (OR) CRETACEOUS CONTINENTAL ROCKS -- Conglomerate, sandstone, siltstone, claystone, shale, coal beds, lignite, minor amounts of tuff, volcanic breccia, limestone, stone, tuff, tuffaceous rocks, chert, and coarse sandstone with interbedded mudflow deposits. Rocks range in age from Pliocene to Late Cretaceous.	Nenana Gravel Upper part of Kenai Group Sanctuary Formation Chickaloon Formation Grubstake Formation Lignite Creek Formation Chickaloon Formation Healy Creek Formation Cantwell Formation Usibelli Formation Tanana Formation Wickersham Formation Cantwell Formation Arkose Ridge Formation Tanlakenia Formation

VOLCANIC ROCKS, MAINLY SUBAERIAL

QTv	QUATERNARY AND TERTIARY VOLCANIC ROCKS -- Mainly andesite and basaltic andesite flows and associated pyroclastic rocks of southern Alaska Range and Aleutian Islands; basaltic flows and associated pyroclastic rocks of Wrangell Mountains (andesite and granite fulcinian) and pyroclastic rocks northeast of the Tanana River. In Talkeetna Mountains, dominantly dacitic pyroclastic and subordinate volcanic rocks, rhyolitic to andesitic in composition	Wrangell Lava
TKv	TERTIARY AND (OR) UPPER CRETACEOUS VOLCANIC ROCKS -- Tertiary lava, tuff, tuff breccia, pumice breccia, volcanic conglomerate, and tuffaceous sedimentary rocks; andesitic lava, breccia, and tuff in Wrangell Mountains; andesite, dacite, and mainly rhyolite and trachyte with some andesite, south of the central Alaska Range; mafic and felsic flows, tuffs, and breccias in the Talkeetna Mountains; andesite and basalt south of Mckinley on younger age west of Cook Inlet; rhyolitic and andesitic porphyritic flows, tuffs, and breccias of early Tertiary or Late Cretaceous age in northwest part of map area	Nikolai Greenstone
Ꞓv	TRIASSIC VOLCANIC ROCKS -- Basaltic lava, commonly amygdaloidal, and associated pyroclastic rocks; chert and limestone in small basal conglomerate; of Middle and (or) Late Triassic age	

GRANITIC ROCKS

Tg	TERTIARY GRANITIC ROCKS -- Middle and Late Tertiary quartz diorite to granite in the Alaska-Aleutian Range batholith; Middle Tertiary granodiorite and quartz diorite in the central Alaska Range; shallow-seated dacite, rhyodacite, granodiorite, and quartz diorite in the Wrangell Mountains; Middle Tertiary quartz diorite, quartz monzonite, and granodiorite in the Gulf of Alaska area and eastern Chugach Mountains. Oligocene quartz diorite, granodiorite, and granite in the Kodiak area; Middle Tertiary granite in northwestern Talkeetna Mountains. Includes metamorphosed and migmatized country rocks, originally of Mesozoic age	
Ti	TERTIARY INTRUSIVE ROCKS -- Hypabyssal rocks of felsic to mafic composition in the Talkeetna Mountains	
TKg	TERTIARY AND CRETACEOUS GRANITIC ROCKS -- Late Cretaceous and early Tertiary granodiorite to granite in the Alaska-Aleutian Range batholith; Tertiary granodiorite and quartz diorite in the Talkeetna Mountains. Quartz monzonite, granodiorite, and quartz diorite with subordinate granite, in the Kodiak area; Cretaceous granite in the Wrangell Mountains, including rocks of Tertiary age, northeast of the Tanana River; Cretaceous granodiorite with subordinate granite, quartz diorite, and quartz monzonite; Cretaceous granite and pegmatitic granodiorite in the central Alaska Range	
MKg	MESOZOIC GRANITIC ROCKS -- Cretaceous and Jurassic quartz diorite with subordinate granodiorite and diorite. Mesozoic granitic rocks ranging in composition from diorite to granite, but mainly granodiorite and quartz diorite in the Alaska-Aleutian Range batholith; granodiorite with subordinate quartz monzonite and quartz diorite in the central Alaska Range; quartz diorite in the Talkeetna Mountains (includes subsurface migmatite gneiss; diorite as well as metamorphic rocks of amphibolite grade); quartz diorite and granodiorite in the Wrangell Mountains; Tanana River, Late Triassic or Early Jurassic granodiorite, locally quartz monzonite, quartz diorite, or diorite	
Ꞓg	PALEOZOIC GRANITIC ROCKS -- Quartz diorite, quartz diorite porphyry, monzonite and syenite of probable Pennsylvanian and (or) Permian age	

MAFIC ROCKS

TKgm	TERTIARY AND (OR) MESOZOIC MAFIC ROCKS -- Basalt and basaltic breccia, in places highly altered; gabbro; and diabase sills, ranging in age from Late Jurassic to Tertiary	
Ꞓm	PALEOZOIC MAFIC ROCKS -- Gabbroic rocks of probable Pennsylvanian and Permian age. May include rocks of Triassic age	

ULTRAMAFIC ROCKS

um	ULTRAMAFIC ROCKS -- Includes serpentinite, dunite, peridotite, and pyroxenite ranging in age from Paleozoic to Tertiary	

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.