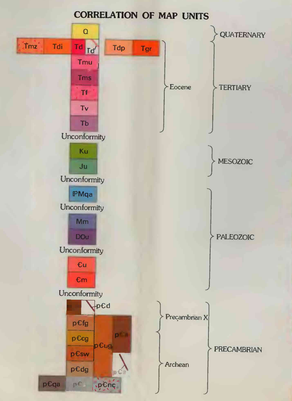
CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Q SURFICIAL DEPOSITS (QUATERNARY)—Includes glacial, colluvial, lacustrine, and alluvial deposits. Many small deposits not shown

INTRUSIVE ROCKS (TERTIARY)

Td Basaltic, andesitic, and dacitic dikes

Tgr Granodiorite porphyry—Youngest phase of Emigrant stock in Emigrant Creek

Tdp Dacite porphyry —Includes some andesitic and rhyodacitic rocks. Occurs as dikes, sills, laccoliths, stocks, and irregular-shaped bodies. Dotted where strong pyritic alteration is evident in the Emigrant stock

Tdi Diorite porphyry—Small stock (or plug) at head of Mill Creek

Tmz Intrusive andesitic breccia, syenogabbro, monzonite, granodiorite, and granite dikes of the Independence stock

VOLCANIC ROCKS (TERTIARY)

Tmu Upper flow sequence of the Mount Wallace Formation (Eocene)—Lava flows and flow breccias

Tms Slough Creek Tuff Member of the Mount Wallace Formation (Eocene)—Welded and nonwelded ash-flow tuffs. Includes massive vitrophyre zones locally

Tf Lava flows and flow breccias (Eocene)—Includes the lower flow sequence of the Mount Wallace Formation (Sunlight Group), and lava flows in the basal Washburn Group

Tv Volcaniclastic rocks of the Washburn and Sunlight Groups (Eocene)—Dominantly vent and near-vent breccias. Includes reworked volcaniclastic deposits (lahars and epiclastic facies) and minor lava flows

Tb Vent facies (Eocene)—Andesitic breccias and andesite of Emigrant-Mill Creek area

SEDIMENTARY ROCKS (MESOZOIC)

Ku Cretaceous rocks undivided—Includes Colorado Shale and Kootenai Formation; shale, sandstone, mudstone, and conglomerate

Ju Jurassic rocks undivided—Includes Morrison, Swift, Rierdon, and Piper Formations; sandstone, shale, and limestone

SEDIMENTARY ROCKS (PALEOZOIC)

IPMqa Quadrant Sandstone (Pennsylvanian) and Amsden Formation (Pennsylvanian and Mississippian)—Quartzite, shale, siltstone, and limestone

Mm Madison Limestone (Mississippian)—Limestone

DOu Devonian and Ordovician rocks undivided—Includes Three Forks Shale, Jefferson Limestone, and Bighorn Dolomite; dolomite, limestone, and shale

Cu Upper Cambrian rocks—Includes Grove Creek and Snowy Range Formations and Pilgrim Limestone

Cm Middle Cambrian rocks—Includes Park Shale, Meagher Limestone, Wolsey Shale, and Flathead Sandstone

INTRUSIVE ROCKS (PRECAMBRIAN)

Mafic dikes—Unmetamorphosed dolerite and gabbro (Precambrian X)

pCfg Falls Creek Gneiss[1] (Precambrian X)—Leucocratic granitic gneiss

pCug Undifferentiated gneiss (Precambrian X and Archean)

Mafic dikes and irregular bodies (Precambrian X and Archean)—Metamorphosed, mostly amphibolite, but includes metadiabase

pCcg Mount Cowen Gneiss[1] (Archean)—Augen gneiss

pCaw Stillwater Igneous Complex (Archean)—Stratiform mafic to ultramafic rocks, metamorphosed

pCdg Mount Delano Gneiss[1] (Archean)—Banded gneiss interlayered with ortho-amphibolite

METASEDIMENTARY AND METAIGNEOUS ROCKS (ARCHEAN)

pCqa Quartzite and amphibolite—Amphibolite (mostly metaigneous) as sills, probably gradational with Davis Creek Schist[1]

pCs Schist, quartzite, hornfels—Includes Davis Creek Schist[1] and hornfels units near base of Stillwater Complex

pCnc Nappe core rocks—Includes Barney Creek Amphibolite[1], George Lake Marble[1], and Jewel Lake Quartzite[1]; amphibolite, dolomitic marble and marble, and quartzite; minor schist and iron-formation

[1]Reid and others (1975)

CONTACT—Dashed where approximately located

FAULT—Showing dip where ascertained; dashed where inferred; dotted where concealed; U, upthrown side; D, downthrown side

FAULT—Where apparent movement is horizontal

STRIKE AND DIP OF BEDS

HORIZONTAL BEDS

INCLINED FOLIATION—Showing strike and dip of foliation and plunge of lineation where ascertained

VERTICAL FOLIATION—Showing strike and dip of foliation and plunge of lineation where ascertained

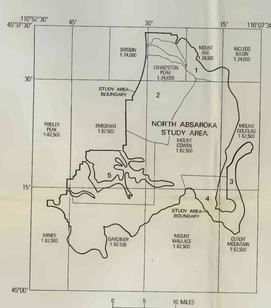
APPROXIMATE DIP OF LAYERED ROCKS

JOINT OR FRACTURE
Inclined
Vertical

ALTERED ROCK

LANDSLIDE SCARP

LONGITUDINAL DIRECTION OF FLOW OF LANDSLIDE, SLUMP, OR ROCKFALL



INDEX SHOWING TOPOGRAPHIC QUADRANGLE MAPS AND SOURCES OF GEOLOGIC DATA

1. Richards (1957)
2. Reid and others (1975)
3. Page and others (1973)
4. Rubel (1964)
5. W. J. McMannis (unpublished data, 1973)

Base from U.S. Geological Survey 1:62,500 Mt. Cowen, 1938–40; Mt. Douglas, 1939; Mt. Wallace, 1940; Cutoff Mountain, 1942; Emigrant, Fridley Peak, Gardiner, Minter, 1955; 1:24,000 Livingston Peak, McLeod Basin, Mt. Rae, Brisbin, 1951
Grid in meters; 70 000 E.=long 110°30'W., 30 000 N.=lat 45°15'N

APPROXIMATE MEAN DECLINATION 1982

GEOLOGIC MAP OF THE NORTH ABSAROKA WILDERNESS STUDY AREA, PARK AND SWEET GRASS COUNTIES, MONTANA

SCALE 1:62 500

CONTOUR INTERVALS 20, 40, 50 and 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Geology mapped by J. E. Elliott, 1973–74, W. H. Raymond, 1973–74, and D. L. Gaskill, 1974, assisted by K. L. Stark and J. D. Robinson, 1973, and K. L. Stark, G. R. Wessel, and R. L. Schmemund, 1974. Geology of parts of the area modified from Richards (1957), Reid and others (1975), Page and others (1973), Rubel (1964), and W. J. McMannis (unpublished data 1973)