U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
U.S. BUREAU OF LAND MANAGEMENT AND THE MONTANA BUREAU OF MINES AND GEOLOGY

MISCELLANEOUS FIELD STUDIES
MAP MF–2281

Base from U.S. Geological Survey, 1968

Polyconic projection

SCALE 1:24 000

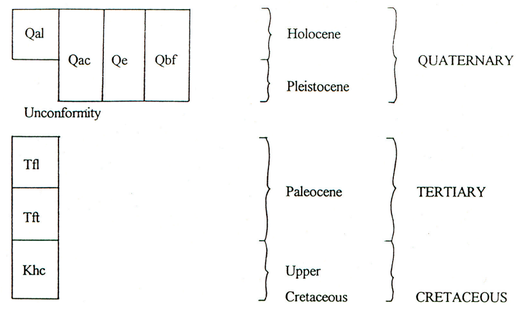
1 ½ 0 1 MILE

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qal **Alluvium (Holocene)**--Light-brown and gray, poorly to well-stratified and well-sorted clay, silt, sand, and gravel. Unit limited to areas characterized by meander and braided-stream patterns. Unit may be subject to occasional flooding. Thickness as much as 6 m (20 ft)

Qac **Alluvium and colluvium (Holocene and Pleistocene)**--Brown to gray, poorly stratified to nonstratified pebbly clay, silt, and sand deposited by gravity and sheet wash on valley slopes. Color and texture of colluvium reflect parent material. May contain and interfinger with alluvium of various ages. Includes alluvial fans. Thickness as much as 12 m (40 ft), but generally not more than 6 m (20 ft)

Qe **Eolium (Holocene and Pleistocene)**--Light-brown to light-gray, nonstratified to crudely stratified deposits of windblown clay, silt, and sand. Granules occur mainly as a veneer about 1 m (3 ft) thick and generally no more than 3 m (10 ft) thick

Qbf **Baked and fused bedrock (clinker) (Holocene or Pleistocene)**--Red to orange baked shale, sandstone, and siltstone of the Fort Union Formation that was heat metamorphosed by combustion of lignite in Pleistocene or Holocene time. Hard, dense, metamorphosed clinker is known as porcellanite. Locally, the sediments fused and melted to form black, vesicular, glassy, scoriacious rock called buchite, which lines chimneys cutting through less altered rock. Coal ash occurs at base of porcellanite. Thickness varies between 15 m (50 ft) and 30 m (100 ft). Located in central part of quadrangle

Fort Union Formation (Paleocene)--Outcrops of coal beds are not shown on this map, but are shown in Dobbin (1929)

Tfl **Lebo Member**--Gray shale containing lenses of gray and yellow sandstone. Commonly forms well-dissected badlands. Big Dirty coal bed is basal part of the member (Pierce, 1936, p. 59). Zone of orange-weathering concretions in top 10 m (33 ft). Upper and lower contacts gradational. Thickness about 52 m (170 ft) (Pierce, 1936, p. 59). Located in east-central part of the map area

Tft **Tullock Member**--Light-yellow, even-bedded sandstone and gray shale; two or three coal beds in upper 33 m (110 ft); widespread coal bed 21 m (69 ft) below base of Lebo Member. Top of member is placed at top of ledge-forming sandstone bed 1-3 m (3-10 ft) thick, or at base of Big Dirty coal bed. Thickness 80 m (260 ft) (Pierce, 1936, p. 55)

Khc **Hell Creek Formation (Upper Cretaceous)**--Greenish-yellow shale and light-brown sandstone. Lower 140 m (460 ft) is mostly gray and brown, "salt and pepper," crossbedded sandstone alternating with beds of light-gray and greenish-yellow shale. Basal part of formation contains crossbedded conglomerate lenses containing quartzite pebbles and limonite as much as 3 cm (1 in) in diameter and armored claystone balls as much as 23 cm (9 in) in diameter. Dinosaur bones are scattered throughout the formation, but are more abundant in conglomeratic lenses. Base rests unconformably on Fox Hills Formation. Total exposed thickness is inferred to be approximately 100 m (330 ft)

Contact--Dashed where approximately located

w **Water**

Yardang--Located in southeast part of quadrangle

Long, narrow cigar-shaped sandstone concretions--6 m (20 ft) in diameter and 200 m (650 ft) long. Located in northeast part of quadrangle

REFERENCES CITED

Pierce, W.G., 1936, The Rosebud Coal Field, Rosebud and Custer Counties, Montana: U.S. Geological Survey Bulletin 847-B, p. 43-120 [plate 11, scale 1:62,500].

Dobbin, C.E., 1929, The Forsyth Coal Field, Rosebud, Treasure, and Big Horn Counties, Montana: U.S. Geological Survey Bulletin 812-A, p. 1-55 [plate 7, scale 1:125,000].

Geology mapped in 1979-80

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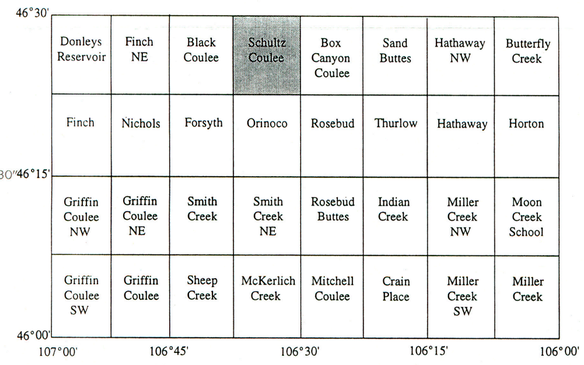

INDEX OF 7 1/2-MINUTE QUADRANGLES WITHIN THE FORSYTH 30′ × 60′ QUADRANGLE; QUADRANGLES MAPPED IN THIS REPORT ARE SHADED

PHOTOGEOLOGIC AND RECONNAISSANCE GEOLOGIC MAP OF THE SCHULTZ COULEE QUADRANGLE, ROSEBUD COUNTY, MONTANA

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