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Base from U. S. Geological Survey

Geology mapped in 1980 and 1981

SCALE 1:24 000

1 ½ 0 1 MILE

1 0 5 0 1 KILOMETER

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GEOLOGIC MAP OF THE DEER CREEK CHURCH QUADRANGLE, DAWSON COUNTY, MONTANA

By

R.B. Colton, J.P. McGraw and S.L. Durst

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CORRELATION OF MAP UNITS

Qal, Qac, Qe		Holocene	QUATERNARY
	?	Pleistocene	
Tpg		Pliocene	TERTIARY
Tmg		Miocene	
Trg			
Unconformity			
Tfu		Paleocene	

DESCRIPTION OF MAP UNITS

Qal **Alluvium (Holocene)**--Light-brown and gray, well-stratified and well-sorted clay, silt, sand, and gravel. As much as 6 m (20 ft) thick under the flood plains of larger creeks; generally less than 3 m (10 ft) under flood plains of smaller streams. Unit limited to areas characterized by meander or braided patterns on aerial photographs. Surface of unit may be subject to occasional flooding

Qac **Alluvium and colluvium (Holocene)**--Light-brown and gray, poorly sorted and well-stratified clay, silt, sand, and gravel deposited by slope wash and gravity processes. As much as 10 m (33 ft) thick, but generally less than 5 m (16 ft). The color and texture of the colluvium reflect the parent material upslope. May interfinger with alluvium; includes alluvial fans and much windblown clay, silt, and sand. Soil profiles range from well-developed to poorly developed

Qe **Eolium (Holocene to Pleistocene)**--Light-brown to light-gray clay, silt, sand, granules, and pebbles. Pebbles were carried up into eolium by bioturbation. Present mainly as a thin veneer as much as 2 m (6 ft) thick on Rimroad Formation (Trg)

Tpg **Sand and gravel, undivided (Pliocene)**--Light-brown to light-gray, well-stratified and well-sorted sand and gravel. Thickness is as much as 10 m (33 ft), but generally less than 3 m (10 ft). Unit generally limited to altitudes between 936 m (3,070 ft) and 817 m (2,680 ft). May contain some Pleistocene sand and gravel

Tmg **Sand and gravel, undivided (Miocene)**--Light-brown to light-gray, well-stratified to poorly stratified, well-sorted to poorly sorted sand and gravel. Thickness is as much as 10 m (33 ft), but generally less than 6 m (20 ft). Unit generally limited to altitudes between 960 m (3,150 ft) and 936 m (3,070 ft). May include some Pliocene sand and gravel

Trg **Rimroad Formation of Howard (1960) (Miocene)**--Light-brown to gray, well-sorted to poorly sorted, and well-stratified to poorly stratified sand, gravel, and volcanic ash 4 m (13 ft) thick. The Rimroad Gravel of Howard (1960) contains volcanic ash 7.1±1.4 million years old and much sand, silt, and clay in addition to gravel. Therefore, the name is revised to Rimroad Formation and the age is limited to Miocene. The age of the volcanic ash was determined by counting fission tracks in zircons from the ash by Nancy B. Naeser (Colton, Naeser, and Wilcox, 1983). Total thickness is 22 m (40 ft); average thickness is 6 m (20 ft). Base of the formation is at an altitude of approximately 970 m (3,180 ft)

Tfu **Tongue River Member (Collier and Knechtel, 1939) of Fort Union Formation (Paleocene)**--Yellowish- and light-brown shale and sandstone containing numerous lignite beds. Estimated thickness of remaining strata is more than 215 m (700 ft)

w **Water**

—— **Contact**--Dashed where approximately located

—·— **Lineament**--Mapped from aerial photographs

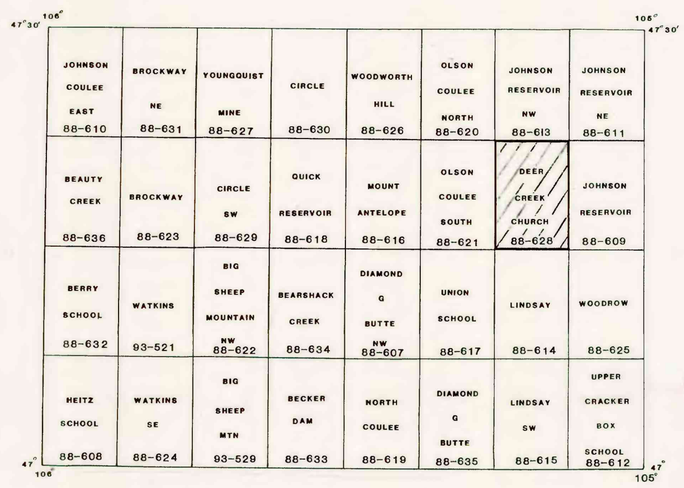
Gravel pit

REFERENCES

Collier, A.J., and Knechtel, M.N., 1939, The coal resources of McCone County, Montana: U.S. Geological Survey Bulletin 905, 80 p.

Colton, R.B., Naeser, N.D., and Wilcox, R.E., 1983, Seven million-year-old ash on Missouri-Yellowstone River drainage divide near Circle, Montana: Geological Society of America Abstracts, Rocky Mountain and Cordilleran Sections, v. 15, no. 5, no. 24842, p. 414.

Howard, A.D., 1960, Cenozoic history of northeastern Montana and northwestern North Dakota with emphasis on the Pleistocene: U.S. Geological Survey Professional Paper 326, 160 p.



INDEX TO QUADRANGLES IN THE CIRCLE 30' x 60' QUADRANGLE. MAPPED QUADRANGLE SHOWN BY STRIPES; NUMBERS ARE OPEN-FILE NUMBERS