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

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MONTANA BUREAU OF MINES AND GEOLOGY

OPEN-FILE REPORT 88-621

Base from U. S. Geological Survey

Geology mapped in 1980 and 1981

SCALE 1:24 000

1 ½ 0 1 MILE

1 .5 0 1 KILOMETER

GEOLOGIC MAP OF THE OLSON COULEE SOUTH QUADRANGLE, DAWSON COUNTY, MONTANA

By

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

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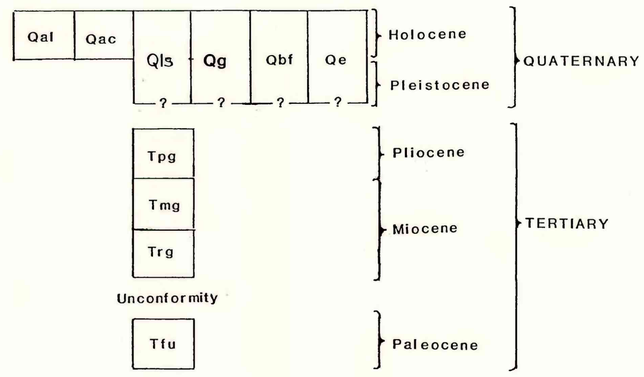
CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qal **Alluvium (Holocene)**--Light-brown and gray, well-stratified and well-sorted clay, silt, sand, and gravel. As much as 3 m (10 ft) thick under the flood plain of Upper Sevenmile Creek to less than 2 m (6 ft) under flood plains of tributaries. 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 gravity and slope wash. As much as 6 m (20 ft) thick, but generally less than 3 m (10 ft). Color and texture of colluvium reflect 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

Qbf **Baked and fused bedrock (clinker) (Holocene to Pleistocene)**--Red to orange baked shale, sandstone, and siltstone of the Fort Union Formation that was heat-metamorphosed by combustion of lignite. Hard, dense, metamorphosed sediments are known as porcellanite; locally, sediments fused and melted to form black, vesicular, glassy, scoriaceous rock called buchite, which forms linings of chimneys and veins in porcellanite. As much as 6 m (20 ft) thick, but generally less than 3 m (10 ft)

Qls **Landslide deposits (Holocene to Pleistocene)**--Slumps and earthflows. Size of material ranges from clay and silt to boulders. Thickness ranges from 1 to 8 m (3 to 26 ft)

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 as a thin veneer as much as 2 m thick on older alluvial deposits (Trg)

Qg **Sand and gravel, undivided (Holocene to Pleistocene)**--Light-brown to light-gray, well-stratified to poorly stratified, and well-sorted to poorly sorted sand and gravel. Thickness as much as 5 m (16 ft), but generally less than 3 m (10 ft)

Tpg **Sand and gravel, undivided (Pliocene)**--Light-brown to light-gray, well-stratified to poorly stratified, and well-sorted to poorly sorted sand and gravel. Unit generally limited to altitudes between 929 m (3,050 ft) and 731 m (2,400 ft). May contain some Pleistocene sand and gravel. Thickness as much as 10 m (33 ft), but generally less than 3 m (10 ft)

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 as much as 10 m (33 ft), but generally less than 6 m (19 ft). Unit generally limited to altitudes between 975 m (3,200 ft) and 929 m (3,050 ft). May include some Pliocene and Pleistocene 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 975 m (3,200 ft). May include some small thin Pliocene and Pleistocene sand and gravel deposits.

Tfu **Tongue River Member (Collier and Knechtel, 1939) of Fort Union Formation (Paleocene)**--Yellowish- or light-brown shale and sandstone containing numerous lignite beds. Estimated thickness more than 989 m (3,200 ft)

w **Water**

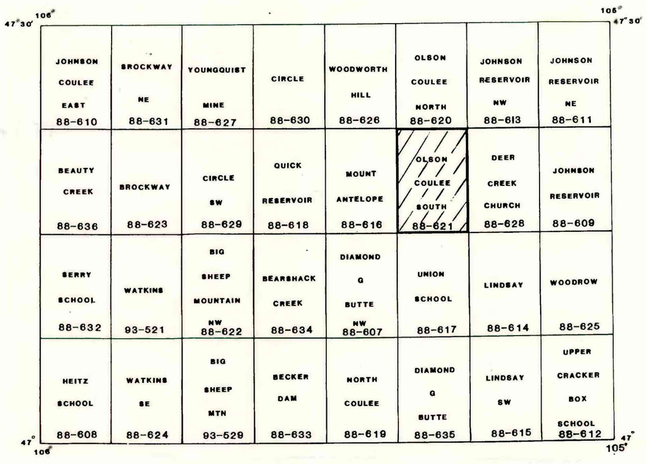
—— **Contact**--Dashed where approximately located

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, 107 p.



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