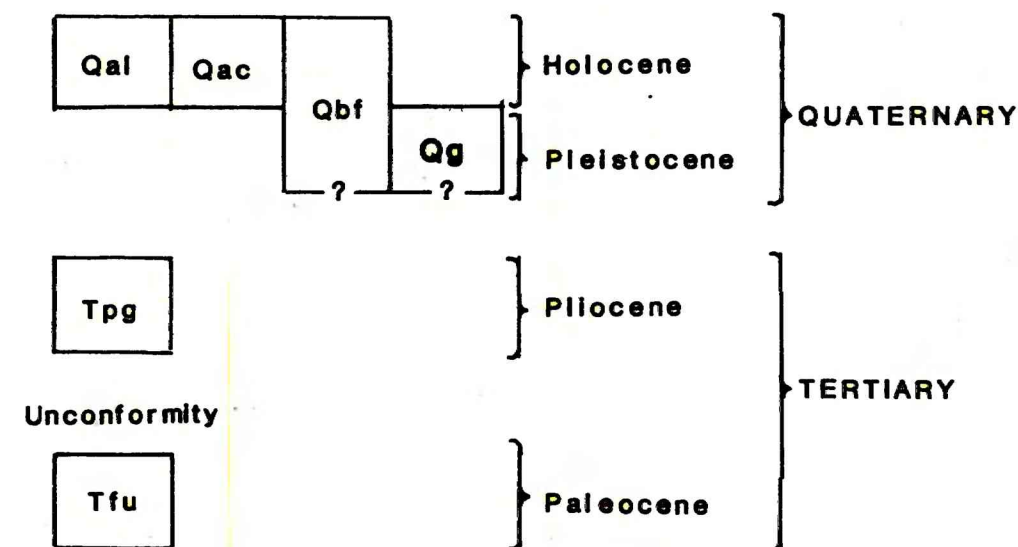


CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- Qal Alluvium (Holocene)**—Light-brown and gray, well-stratified and well-sorted clay, silt, sand, and gravel. Unit limited to areas characterized by meander or braided patterns on aerial photographs. Surface of unit may be subject to occasional flooding. As much as 6 m (20 ft) thick under flood plains
- 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). 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
- 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 7 m (25 ft) thick, but generally less than 4 m (13 ft)
- Qg Sand and gravel, undivided (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). Unit generally limited to altitudes below 808 m (2,650 ft)
- Tpg Sand and gravel, undivided (Pliocene)**—Light-brown to light-gray, well-stratified and well-sorted sand and gravel. Thickness as much as 12 m (40 ft), but generally less than 6 m (20 ft). Unit generally limited to altitudes between 869 m (2,850 ft) and 796 m (2,610 ft). May contain some Pleistocene sand and gravel
- 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 formation remaining under highest parts of quadrangle is more than 244 m (800 ft)

- w Water  
— Contact—Dashed where approximately located

REFERENCE

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

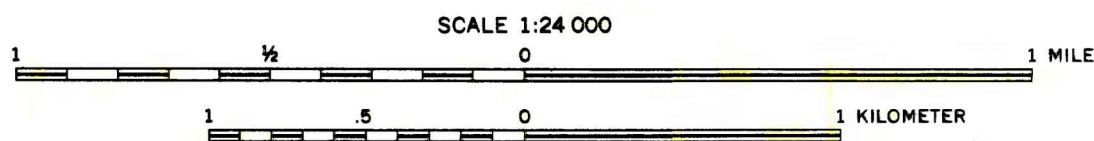
JOHNSON COULEE EAST 88-810	BROCKWAY NE 88-831	YOUNGBUSH SINE 88-827	CIRCLE NW 88-830	WOODWORTH HILL 88-826	OLSON COULEE NORTH 88-820	JOHNSON RESERVOIR NW 88-813	JOHNSON RESERVOIR NE 88-811
BEAUTY CREEK 88-828	BROCKWAY SW 88-829	CIRCLE SW 88-828	QUICK RESERVOIR 88-818	MOORE ANTELOPE 88-818	OLSON COULEE SOUTH 88-821	DEER CREEK 88-822	JOHNSON RESERVOIR 88-809
BERRY SCHOOL 88-882	WATKINS 88-821	SHEEP MOUNTAIN NW 88-822	DEARBORN CREEK 88-824	DIAMOND SUTTE NW 88-827	UMON SCHOOL 88-817	LINDSAY 88-814	WOODROW 88-825
WHITE SCHOOL 88-808	WATKINS SE 88-824	SHEEP MTH 88-820	BECKER BAR 88-823	NORTH COULEE 88-819	DIAMOND SUTTE 88-826	LINDSAY SW 88-815	UPPER CRACKER BOX 88-812

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

This report is preliminary and has not been reviewed for conformity with  
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stratigraphic code. Any use of trade, product, or firm names is for descriptive  
purposes only and does not imply endorsement by the U.S. Government.

Base from U. S. Geological Survey

Geology mapped in 1980 and 1981



GEOLOGIC MAP OF THE JOHNSON RESERVOIR QUADRANGLE,  
DAWSON COUNTY, MONTANA

By

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