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

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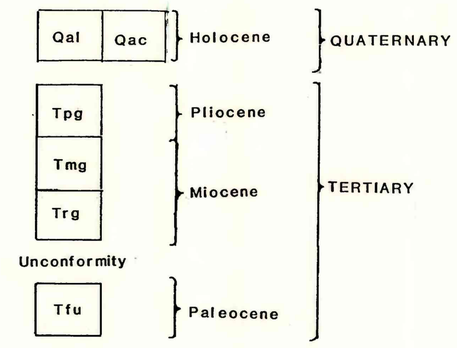
MONTANA BUREAU OF MINES AND GEOLOGY

OPEN-FILE REPORT 88-617

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 6 m (20 ft) thick under the flood plains of Upper Sevenmile and Clear Creeks to less than a few meters 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 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 small alluvial fans and much windblown clay, silt, and sand. Soil profiles range from well-developed to poorly developed

Tpg **Sand and gravel, undivided (Pliocene)**--Light-brown to light-gray, well-stratified and well-sorted sand and gravel. Thickness is as much as 12.2 m (40 ft), but generally less than 3 m (10 ft). Unit generally limited to altitudes between 945 m (3,100 ft) and 870 m (2,850 ft). May contain some Pleistocene sand and gravel

Tmg **Sand and gravel, undivided (Miocene)**--Light-brown to light-gray, well-stratified to poorly stratified and well-sorted to poorly sorted sand and gravel. Thickness is as much as 6 m (20 ft). Unit generally limited to altitudes between 975 m (3,200 ft) and 945 m (3,100 ft). May include some Pliocene sand and gravel

Trg **Rimroad Formation of Howard (1960) (Miocene)**--Light-brown and gray, well-sorted to poorly sorted and well-stratified to poorly stratified sand and gravel. Base of unit is at an altitude of 975 m (3,200 ft) in southwest part of quadrangle, and about 990 m (3,250 ft) in the northwest part of the quadrangle. Maximum thickness is approximately 24 m (80 ft); remnants are generally less than 15 m (50 ft) thick. May contain some small thin Pliocene sand and gravel deposits. 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)

Tfu **Tongue River Member (Collier and Knechtel, 1939) of Fort Union Formation (Paleocene)**--Yellowish-gray and light-yellowish-brown shale and sandstone containing numerous lignite beds. Estimated thickness exposed in quadrangle is about 120 m (400 ft)

w **Water**

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

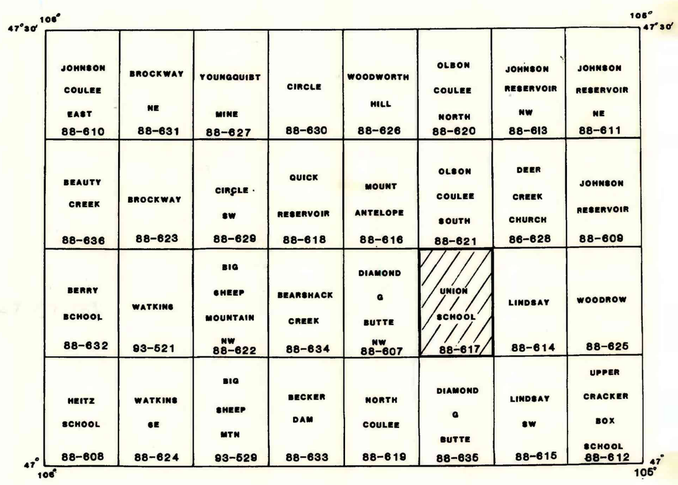
Gravel pit

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, 107 p.



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

GEOLOGIC MAP OF THE UNION SCHOOL QUADRANGLE, DAWSON AND PRAIRIE COUNTIES, MONTANA

By

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1994