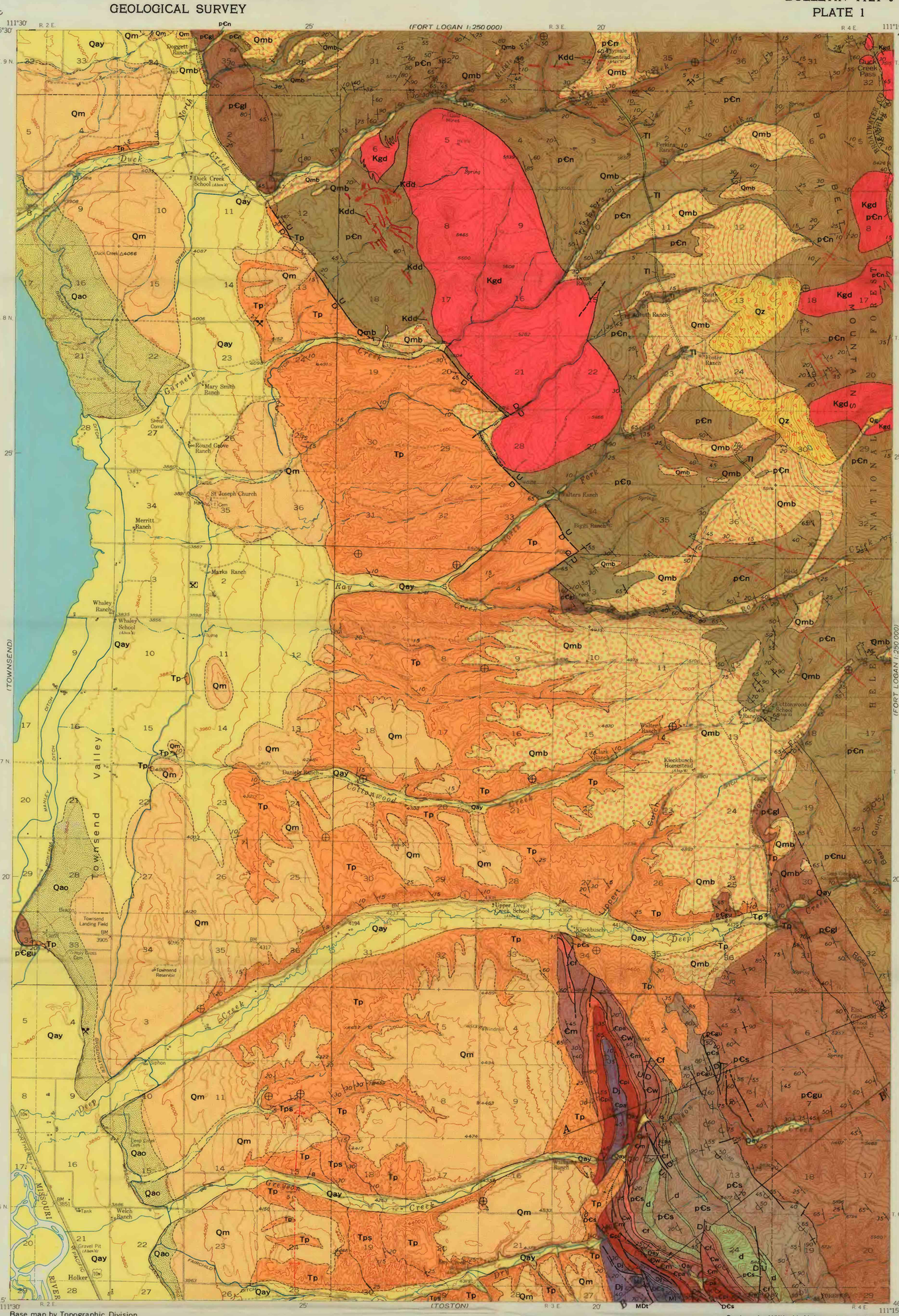


Base map by Topographic Division
U. S. Geological Survey, 1950

Geology by Willis H. Nelson, John S. Bader, and L. J. Patrick Muffler, 1956–57

EXPLANATION

QUATERNARY

Qay — Younger alluvium

Qao — Older alluvium

Qm, Qmb — Mantle
Qm, *mantle; clay, silt, sand, and rock fragments, most less than 6 inches across*
Qmb, *bouldery mantle; clay, silt, sand, and abundant rock fragments, many more than 6 inches across*

Qz — Landslide deposits

Qg — Protalus deposits

TERTIARY

Oligocene, Miocene and Pliocene

Tp, Tps — Deposits of Tertiary age
Tp, *light-gray to orange-pink tuffaceous conglomerate, sandstone, claystone, and clayey limestone, mostly poorly sorted, weakly indurated, and rudely bedded. Average size of fragments decreases from east to west*
Tps, *shard-rich member, similar to remainder of formation but has many beds that contain abundant shards*

UNCONFORMITY

TERTIARY (?)

Tl — Lamprophyre dike

CRETACEOUS (?)

Upper Cretaceous(?)

Kgd, Kdd — Quartz diorite
Coarse-grained light-gray foliated quartz diorite and quartz monzonite, and associated dikes and sills. Kdd

CARBONIFEROUS

MISSISSIPPIAN

Upper Devonian and Lower Mississippian — Lower Mississippian

Ml — Lodgepole limestone
Pale-yellowish-brown to medium-gray well-bedded fine-grained limestone; minor amounts of intercalated limy shale

DEVONIAN AND MISSISSIPPIAN

MDt — Three Forks shale
Yellowish-gray shale and limy shale; outcrops scarce

DEVONIAN

Upper Devonian

Dj — Jefferson dolomite
Brownish-gray dolomite and dolomitic limestone, mostly petroliferous

CAMBRIAN AND DEVONIAN

D€s — Rocks between the Pilgrim limestone and the Jefferson dolomite
Gray, yellowish-gray, and red limestone and limy shale

CAMBRIAN

Upper Cambrian

€pi — Pilgrim limestone
Gray and yellowish-gray slightly dolomitic limestone, in part mottled and in part oolitic; minor amounts of limy shale

Middle Cambrian

€pa — Park shale
Dark-greenish-gray and dark-brownish-gray fissile shale

€m — Meagher limestone
Gray and grayish-orange mottled limestone

€w — Wolsey shale
Yellowish-green and greenish-yellow micaceous shale, mostly limy and sandy or silty; a little red shale

€f — Flathead quartzite
Red and pink feldspathic quartzite, mostly crossbedded

UNCONFORMITY

PRECAMBRIAN

d — Diabase sills and dikes

Belt series

p€s — Spokane shale
Red silty shale and a little red siltstone, red shale, green shale, and a few limy beds

p€gu, p€gl — Greyson shale
p€gu, *upper member, shale, argillite, siltstone, and quartzite.*
p€gl, *lower member, similar to upper member but includes more quartzite and a little conglomerate*

p€nu, p€n — Newland limestone
p€n, *lower member, gray slightly dolomitic microgranular argillaceous limestone.*
p€nu, *upper member, gray slightly dolomitic microgranular argillaceous limestone and claystone; shale and siltstone, mostly limy*

Contact
Dashed where approximately located; short dashed indefinite boundaries of surficial deposits; dotted where concealed

U D
Fault
Dashed where approximately located; short dashed where inferred; dotted where concealed. Direction of movement, where known, is shown on the map by U, *upthrown side;* D, *downthrown side; and on the cross sections by arrows*

Anticline
Showing trace of axial plane; dashed where approximately located; short dashed where inferred

Syncline
Showing trace of axial plane; dashed where approximately located; short dashed where inferred

Overturned syncline
Showing trace of axial plane and direction of dip of limbs

10
Strike and dip of beds

65
Strike and dip of overturned beds

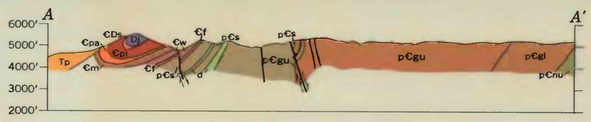
90
Strike of vertical beds

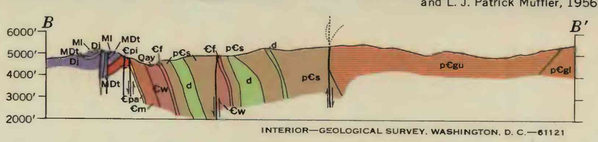
Horizontal beds

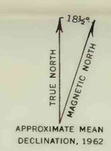
Gravel and borrow pits

Thorium test pit

Dry oil test well







INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—61121

GEOLOGIC MAP AND SECTIONS OF THE DUCK CREEK PASS QUADRANGLE, MONTANA

SCALE 1:62 500

1 ½ 0 1 2 3 MILES

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL