

EXPLANATION

**UNCONFORMITY**

**Mesaverde Formation**  
Kmv, upper part: brown to gray, fine- to medium-grained sandstone, and gray shale; commercially important coal beds in lower part. Maximum thickness about 2,300 feet. A light-gray, locally conglomeratic, sandstone of the Polesone Ohio Creek Formation is locally present at the top and is mapped with the Mesaverde. Kmv, Rollins Sandstone Member: light-gray to white cliff-forming sandstone. Maximum thickness about 180 feet.

**Manitou Shale**  
Km, JL  
Dark-brown to gray nonresistant clay shale. Niobrara equivalent, a light-gray calcareous shale, is present in upper lower part. Juana Lopez Member: a sandy calcareous shale and calcareous sandstone, is present about 300 to 350 feet above base. Base of Juana Lopez Member (JL) is shown locally. Maximum thickness of Manitou about 1,000 feet.

**Dakota Sandstone and Burro Canyon Formation**  
Kdb  
Dakota Sandstone: light-gray to brown resistant quartzite sandstone, locally carbonaceous; some dark-gray carbonaceous shale; chert-pebble conglomerate locally present in lower part. Forms steep slopes and cliffs. Maximum thickness about 150 feet.  
Burro Canyon Formation: light-gray lenticular chert-pebble conglomerate and sandstone; light-gray to green claystone. Maximum thickness about 100 feet.

**Morrison Formation**  
Jm  
Varicolored (mostly gray, green, and red) claystone and sandstone; lenticular beds of sandstone, siltstone, and conglomerate; contains some persistent sandstone beds in lower part. Maximum exposed thickness about 380 feet.

**Green River Formation**  
Ter  
Probably calcareous siltstone and shaly marlstone. Largely obscured by surficial material which is not shown on map.

**Wasatch Formation**  
Tw  
Varicolored (mostly red, maroon, yellow, and gray) claystone and shale; sandstone, and conglomerate. Largely obscured by surficial material which is not shown on map. Maximum thickness about 1,800 feet.

**West Elk Breccia**  
Twe  
Largely volcanic breccia and conglomerate.

**Intrusive porphyritic rocks**  
Tip  
Mostly rhyolitic in composition. Larger intrusive bodies are predominantly localizable in structure. Smaller bodies include dikes and sills.

**Glacial drift**  
Qd  
Bouldery fill consisting of fresh basalt boulders and cobbles in a matrix of sandstone, siltstone, and clay. Pinedale(?) age.

**Alluvial and colluvial deposits**  
Qal, Qf, Qta, Ql  
Qal, alluvium: clay, silt, sand, and gravel.  
Qf, alluvial fans: terrestrially deposited clay, silt, sand, and gravel.  
Qta, talus deposits: mostly rubble of porphyritic intrusive rocks adjacent to Mount Lamborn, Lansdown Peak, and Saddle Mountain.  
Ql, landslide deposits: heterogeneous mixture of rocks derived from local or nearby sources. The extensive landslide mass south of Saddle Mountain is derived chiefly from a large plateau of the West Elk Breccia to the east.

**Alluvial gravels derived from Grand Mesa and the intervening area north of North Fork of the Gunnison River**  
Qgv, Qgm, Qgo  
Fan and pediment gravels, and other alluvial deposits. Gravel of all three map units is similar in lithology and consists of basalt boulders and cobbles in a matrix of sand and silt. The basalt was derived from flows capping Grand Mesa. Map units Qgv and Qgm also include some non-bouldery alluvium of local derivation. Qgv, gouger gravels: situated at 2 or 4 levels. Pinedale(?) age.  
Qgm, middle gravels: situated at 2 or more levels. Bull Lake(?) age.  
Qgo, older gravels. Pre-Bull Lake age.

**Terrestrial gravels and other alluvial deposits at various levels above present drainage grade**  
Qad  
Terrestrial gravels and other alluvial deposits at various levels above present drainage grade. Gravely conglomeration consist mostly of intrusive and volcanic rocks derived from the West Elk Mountains. Age relationships to other Pleistocene deposits not well established.

**Pediment gravel**  
Qp  
Isolated high-level gravel remnants near Mount Lamborn.

**QUATERNARY**  
Upper Cretaceous  
Lower Cretaceous  
Upper Jurassic

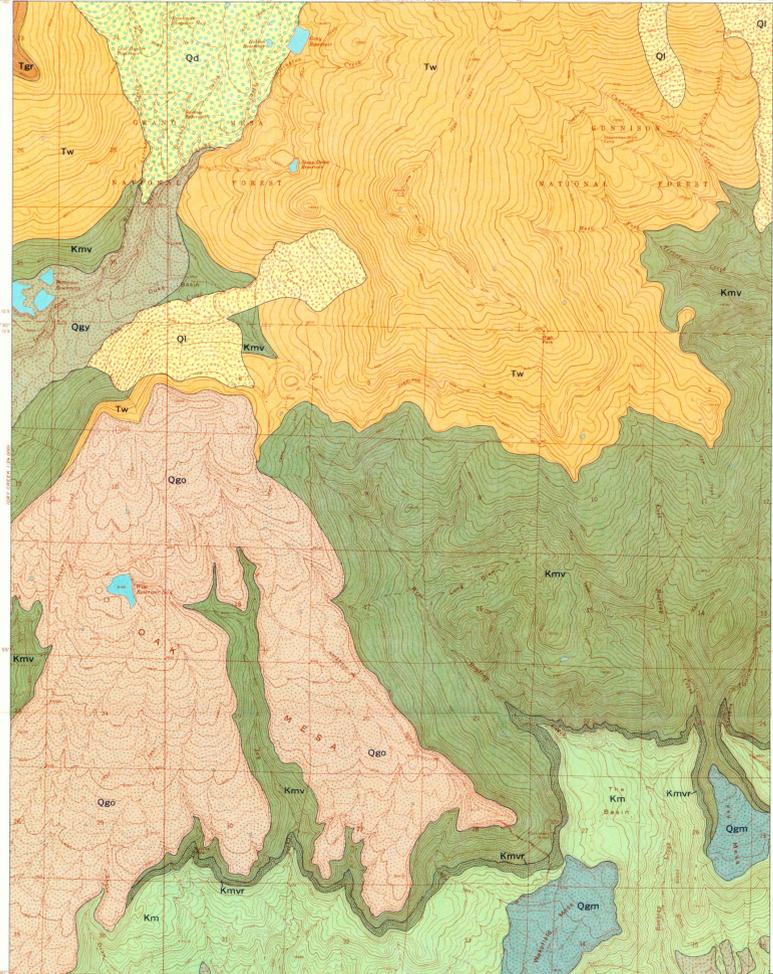
**TERTIARY**  
Upper Jurassic

**JURASSIC**  
CRETACEOUS

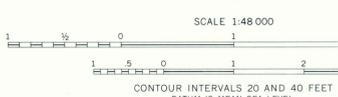
**Contact, approximately located**

**Fault**  
Dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side.

**Structure contours, approximately located**  
6000  
6100  
Drawn on base of Dakota Sandstone; shown only in vicinity of Dakota outcrop. Contour interval 100 feet.



Base from U.S. Geological Survey 1:24,000  
Gray Reservoir, Hotchkiss, Paonia,  
Grand View Mesa, and Crawford, 1965



1972-67057  
Geologic mapped in 1967-68. Outcrop of Mesaverde Formation in sec. 36, T. 14 S., R. 91 W. and sec. 1, T. 15 S., R. 91 W. was adapted from an unpublished manuscript map by V. H. Johnson

RECONNAISSANCE GEOLOGIC MAP OF THE HOTCHKISS AREA, DELTA AND MONTROSE COUNTIES, COLORADO

By  
W. J. Hail Jr.  
1972