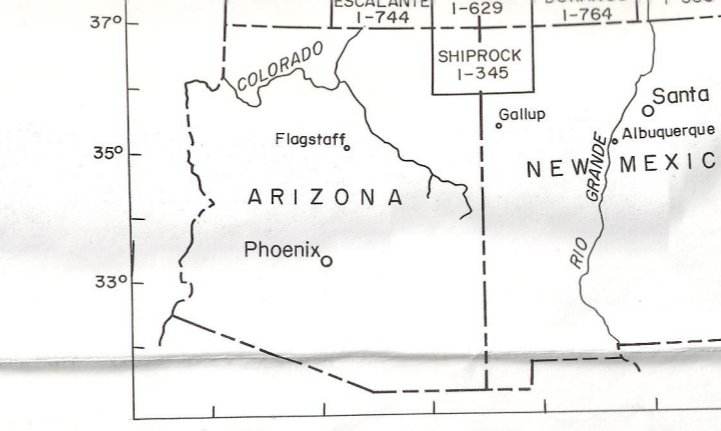
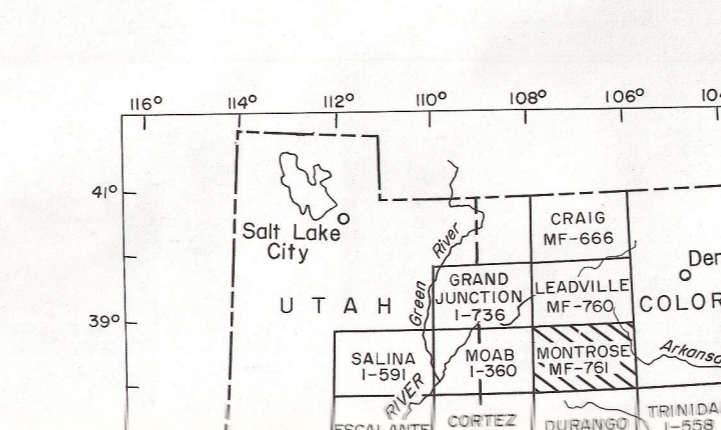
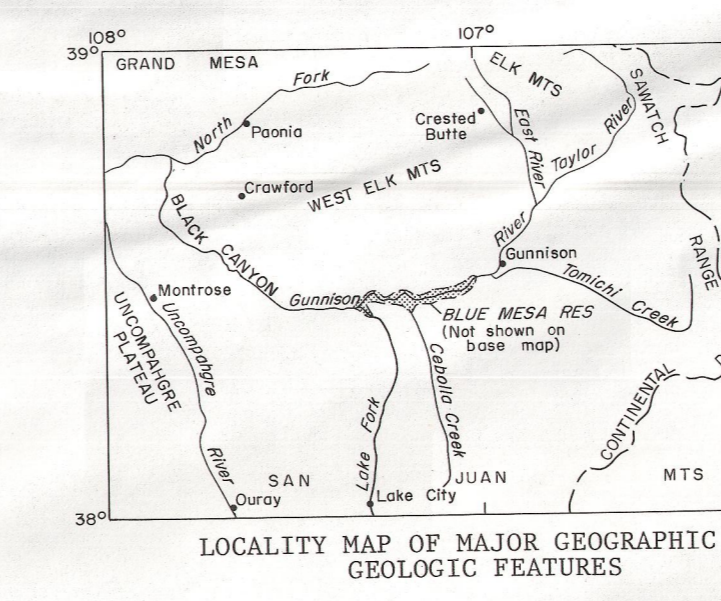


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PRELIMINARY GEOLOGIC MAP OF THE MONTROSE 1° x 2° QUADRANGLE, SOUTHWESTERN COLORADO

Compiled by
Ogden Tweto, T. A. Steven, W. J. Hall, Jr., and R. H. Moech
1976

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DESCRIPTION OF MAP UNITS
(Formations for which no map symbols are shown are grouped with other stratigraphic units to form map units.)

Qa ALLUVIUM (HOLOCENE)—Gravel, sand, and silt in stream valleys and alluvial fans.

Q1 LANDSLIDE DEPOSITS (HOLOCENE AND PLEISTOCENE)—Includes some rock glaciers and talus.

Q0 UNCONSOLIDATED DEPOSITS (PLEISTOCENE)—Young gravel (Ball Lake and younger)—Stream, terrace, and outwash gravels. Interbedded bouldery glacial deposits (T11) and associated sand and gravel deposits (Q0a). Old glacial drift (pre-Ball Lake)—Dissected bouldery glacial deposits (T11) and associated gravels; marginal form subbed or lacking.

Q0a HIGH-LEVEL ALLUVIUM (PLEISTOCENE AND/OR PLEISTOCENE)—Bouldery alluvial deposits high above modern streams.

Td DRY BRINK DEPOSITS (PLEISTOCENE AND MIOCENE)—Light-brown sandy siltstone and interbedded friable sandstone, conglomerate, and volcanic tuff. Thickness 25,000 ft (1,200 m) west of Salida.

To SANTA FE FORMATION (PLEISTOCENE AND MIOCENE)—Light-brown sandy siltstone and friable sandstone. Range is applied in San Luis Valley to rocks generally equivalent to Dry Union Formation in Arkansas River valley.

Tbb BASALT OF BIRDVALE SUITE (MIOCENE)—Dense black basaltic flows 200 to 300 ft (1,000 ft) thick, and interbedded tuffs, breccias, and volcanic conglomerates.

Tb1 BASALTIC SURVEY ROCKS (MIOCENE)—dikes and plugs.

Dike DIKE (MIOCENE)—In plugs, dikes, sills, laccoliths, and small stocks.

Tp1 RHYOLITIC ASH-FLOW TUFF OF BIRDVALE SUITE (MIOCENE)—Represented only by Sunshine Peak Tuff in small area near Lake City.

Taf ASH-FLOW TUFF (OLIGOCENE)—Ash-flow tuffs from caldera centers and the San Juan Mountains and in the Swatch Range. Range from crystal-poor rhyolite to crystal-rich basaltic andesite. Includes several named tuff units in northern part of San Juan volcanic field (Olson and others, 1968; Steven and others, 1974).

Tt1 INTER-MANIFOLD FLOW QUARTZ LATTICE LAVAS AND BRECCIAS (OLIGOCENE)—Fine-grained to porphyritic intermediate lavas and breccias from many local centers.

Tt1q INTER-MANIFOLD FLOW QUARTZ LATTICE LAVAS AND BRECCIAS (OLIGOCENE)—Porphyritic quartz latite and minor rhyolite in thick flows and associated breccias.

To OLIGOCENE SEDIMENTARY DEPOSITS—Gravels, water-laid tuffs, and breccias in various stratigraphic positions within the volcanic sequence. Coarse gravels northeast of Twain Laticite. Breccias northeast of Twain Laticite derived from Swatch Range.

Tm1 MIDDLE TERTIARY INTRUSIVE ROCKS (MIOCENE AND OLIGOCENE)—Granodioritic, quartz monzonitic, and granitic rocks in stocks, dikes, sills, laccoliths, and irregular bodies.

Tp1 PRE-ASH FLOW ANDRETTIC LAVAS AND BRECCIAS (OLIGOCENE)—Vent-faces lavas and breccias at numerous widely scattered volcanic sources surrounded by cooling spines of volcanoclastic debris. Includes extensive bodies of San Juan, Lake Fork, Conejos, and West Elk Formations as well as many local units.

Tm1 WALL MOUNTAIN TUFF (OLIGOCENE)—Reddish-brown, densely welded moderately crystalline tholeiitic ash-flow tuff. Maximum thickness about 500 ft (150 m), but generally is 100 ft (30 m) or less. Tuff is of Swatch Range provenance and older than the tuff of San Juan provenance; preserved in quadrangle only in small bodies in Arkansas River valley and Nopogoite Range.

Tc2 CREEK RIVER FORMATION (Eocene)—Marlstone, oil shale, siltstone, and sandstone. This body near north-west corner of quadrangle are near the southern depositional edge of the formation.

Tc1 TELLEZIDE COMPLEX (Eocene)—Siltstone, red conglomerate, grit, and sandstone, and lesser thicknesses of siltstone, sandstone, and shale. Maximum thickness about 500 ft (150 m).

MASATON FORMATION (Eocene AND PALEOCENE)—Variegated lignite, siltstone, sandstone, and conglomerate. Maximum thickness about 1,800 ft (550 m).

ORIO CREEK FORMATION (PALEOCENE)—Sandstone and conglomerate. Thickness about 400 ft (120 m).

MASATON AND ORIO CREEK FORMATIONS

Tt1c TELLEZIDE COMPLEX (Eocene) AND CIMARRON RIDGE FORMATION (UPPER CRETACEOUS)

Cimarron Ridge Formation—Interbedded rhyolitic sandstone and siltstone. Maximum thickness about 600 ft (183 m).

Tt1c LARAMIDE INTRUSIVE ROCKS (EOCENE, PALEOCENE, AND UPPER CRETACEOUS)—Granodioritic and quartz monzonitic stocks, sills, and dikes.

Dike or sill

Km1 HESAPERIDE FORMATION (UPPER CRETACEOUS)—Brown to gray, fine- to medium-grained sandstone and gray shale; commercially important coal beds in lower part; Rollins Sandstone Member at base. Maximum thickness about 2,300 ft (700 m).

Km HANCOCK SHALE (UPPER CRETACEOUS)—Dark-gray to dark-brown clay shale; locally calcareous or sandy. Maximum thickness 5,000 ft (1,5 km).

Kd DAKOTA SANDSTONE (UPPER CRETACEOUS)—Light-gray to light-brown resistant sandstone, locally carbonaceous; some dark-gray carbonaceous shale, coal beds, and conglomerate. Maximum thickness about 200 ft (60 m).

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