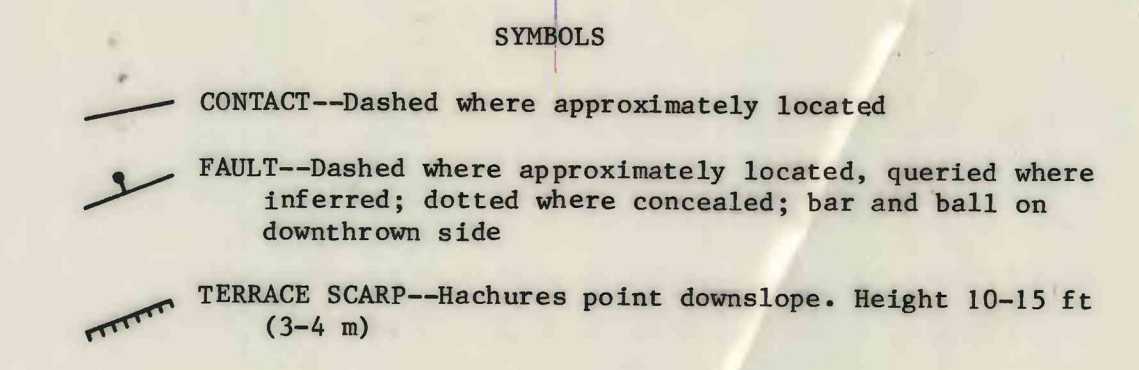


DESCRIPTION OF MAP UNITS

Surficial units, where mapped, generally are 5 ft (1.5 m) or more thick and 300 ft (90 m) or more wide. Areas of bare bedrock or deposits smaller than the above dimensions are unlabeled.

- Qal** ALLUVIUM (HOLOCENE)--Bouldery cobble gravel, sand, and silt along Animas River. Includes channel and overbank deposits on the floodplain and deposits in minor alluvial fans and terraces 40 ft (12 m) or less above the Animas River. All deposits stratified and unconsolidated but lack soil development. Clasts composed of sandstone, quartzite, hornblende gneiss, porphyry, and granitoid rocks. Thickness probably exceeds 20 ft (6 m)
- Qnt** NAHA AND TSEGI ALLUVIUMS (HOLOCENE)-- Gray, brownish-gray, or dark reddish-brown, humus-rich, stratified silty clayey alluvium in valley bottoms. Locally includes thin to thick beds of sand and thin layers of pebbles. Includes contemporaneous intergrading fan alluvium from tributaries and colluvium from valley walls. Correlated to Naha and Tsegi Alluviums of Hack (1942) based on elevation above of modern streams and weak soil in top of units, making them older than Qal which has no soil. Clasts mainly sandstone, siltstone, and shale with some chert and quartzite. As much as 20 ft (6 m) thick
- Qsw** SHEETWASH ALLUVIUM (HOLOCENE AND PLEISTOCENE)--Cobbly, sandy, or silty clay to sandy cobble gravel. Thin, crudely layered deposits on crests and slopes of low drainage divides; locally mixed with unsorted colluvium, and eolian silt in the modern soil zone. Locally capped by 1-3 ft (0.3-1 m) brown clayey wind-blown silt. Commonly a thin layer of abundant round cobbles is draped over tops of undulating hills developed in soft shale. Clasts are sandstone and siltstone 37%; diorite-monzonite porphyry 33%; quartzite 21%; granite, rhyolite (?), and granodiorite 7%; chert and other 2%. Deposit in northwest part of quadrangle derived from a high alluvial terrace of an ancestral La Plata River that lies just west of the quadrangle (A 600,000 year-old volcanic ash rests on the terrace, thus the terrace is older). East of Bridge Timber Mountain, deposits are derived from the Bridgetimber Gravel. Thickness 1-5 ft (0.3-1.5 m)
- Qc** COLLUVIUM (HOLOCENE AND PLEISTOCENE)--Poorly sorted silty or clayey soil mixed with rounded cobbles. Cobbles derived from alluvial gravels upslope. Thickness 3-10 ft (1-3 m)
- Qls** LANDSLIDE DEPOSITS (HOLOCENE AND PLEISTOCENE)--Unsorted loose debris ranging in size from clay to large blocky boulders. Hummocky, steeply to moderately sloping often with a steep scarp at the head and a bulbous toe downslope. A youthful landslide, easily seen west of U.S. Highway 550 in the Animas Valley, occurs in sandstone in center of section 5, T. 34 N., R. 9 W. Thickness 5-15 ft (1.5-3 m)
- Qls/c** MIXED LANDSLIDE AND COLLUVIUM (HOLOCENE AND PLEISTOCENE)--Jumbled soil and rock fragments locally mixed with cobble gravel derived from Tbt. Thickness 1-15 ft (0.3-4.5 m)
- Qfa** FAN ALLUVIUM (UPPER QUATERNARY)--Generally fine-grained, dark-yellowish-brown sandy or silty clay to yellowish-gray, poorly sorted gravely sand; crudely bedded and beds dip toward valleys at 5-15 degrees. Clasts in fans in Ridges Basin are mainly sandstone derived from local Cretaceous bedrock. Thickness 10-30 ft (3-9 m)
- Qpo** OUTWASH (PLEISTOCENE; PINEDALE GLACIATION)--Cobbly alluvium containing medium boulders in loose sandy matrix. Clasts are sandstone, limestone, hornblende gneiss, quartzite, porphyry, and granitoid rocks. Terraces lie 40-70 ft (12-21 m) above Animas River. A soil of moderate strength is developed in the upper part: A silty and humus-rich A horizon 3 in. (8 cm) thick overlies a brown clayey B horizon 8-20 in. (20-51 cm) thick; sparse calcium carbonate veinlets and coatings indicate weak Cca horizon development. Thickness of unit about 20 ft (6 m)

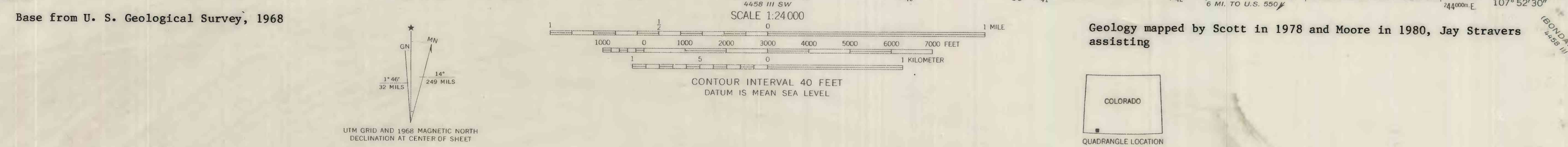
- Qbl** LOESS (PLEISTOCENE; BULL LAKE? GLACIATION)--Clayey silt strongly oxidized to a moderate-reddish-brown color. Plastic and sticky when wet, hard when dry. A soil is developed: an A horizon 1.5 ft (0.5 m) thick having a moderate prismatic structure overlies a very clayey B horizon 40-in. (1 m) thick having strong prismatic structure; Cca horizon about 3-4 ft (1 m) thick having calcium carbonate coatings, veinlets, and small hard nodules. Upper part of soil eroded in places. Thickness of unit 2-6 ft (0.5-2 m), but variable owing to erosion
- Qbo** OUTWASH (PLEISTOCENE; BULL LAKE? GLACIATION)--Bouldery, cobbly, stratified, fairly well-sorted alluvium. Clasts are well rounded and are composed of granite, quartz diorite, granodiorite, quartz monzonite, hornblende gneiss, quartzite, sandstone, and dolomite. Contains B horizon 20 in. (0.5 m) thick and calcium carbonate crusts 1 mm thick on bottoms of clasts. Eight-foot boulders and common 3-4 foot ones in upper part suggest a catastrophic flood. Terrace lies 90-120 ft (27-36 m) above the Animas River. Thickness 20 ft (6 m)
- Qio** OUTWASH (PLEISTOCENE; ILLINOIAN? GLACIATION)--Sandy cobble and pebble gravel; fairly well-sorted alluvium with few boulders. Forms a continuous terrace consisting of two levels above the river: 360-370 ft (110-113 m) and 340-350 ft (98-101 m). North of the quadrangle, boulders (many 8 ft across) become common in the upper part of the 350-ft level, suggesting a catastrophic flood in Illinoian(?) time. The upper level is capped by 10-15 ft (3-4 m) of reddish-brown loess (not mapped) having two distinct Cca horizons; in places the upper Cca horizon equals parts of the lower horizon indicating two periods of loess deposition and subsequent soil formation. Thickness about 25 ft (7.5 m); locally more than 45 ft (14 m) observed in gravel pit 200 m east of quadrangle boundary (SW1/4 NW1/4 sec. 7U, T. 34 N., R. 9 W.)
- Qpg** PEDIMENT GRAVEL (PLEISTOCENE)--Sandstone, quartzite, and porphyry cobbles and pebbles in a sandy, silty, and clayey matrix on east-sloping pediment surface that is younger than gravels capping Bridge Timber Mountain but perhaps older than Qio (because Qio appears to cut it). Derived from Tbt deposits on Bridge Timber Mountain. Crudely bedded, poorly sorted; covered by 3-6 ft (1-2 m) reddish-brown clayey silt loess. Thickness 10-20 ft (3-6 m)
- Tbt** BRIDGETIMBER GRAVEL (PLIOCENE; BLANCAN)--Rounded pebbles, cobbles, and boulders in a grayish brown sandy matrix. Upper part is oxidized reddish brown; a matrix of weathered sand, silt, and clay and variously colored disintegrated clasts of weak rocks supports both hard and rotten clasts of siliceous to intermediate volcanic and dike rocks, sandstone and siltstone, quartzite, and minor quartz and granitic rocks. Composition suggests deposition by ancestral La Plata River draining the La Plata Mountains. Bridgetimber Gravel is believed Pliocene because of thorough weathering of clasts and its great elevation--1,000 ft (305 m) above the La Plata River in the Kline Quadrangle to the west and 2,000 ft (610 m) above the Animas River. Thickness 40 to more than 100 ft (12-30 m)



REFERENCE

Hack, J. T., 1942, The changing physical environment of the Hopi Indians of Arizona: Peabody Museum Papers v. 35, 85 p.

This report (map) is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards (and stratigraphic nomenclature).



GENERALIZED SURFICIAL GEOLOGIC MAP OF THE BASIN MOUNTAIN QUADRANGLE, COLORADO

By
David W. Moore and Glenn R. Scott
1981