

CORRELATION OF MAP UNITS

af	} Holocene	} QUATERNARY
Qco Qpp		
Qes	} Pleistocene	}
Qlo Q1		
Qs		
Tcr	} Oligocene	} TERTIARY
UNCONFORMITY		
Tda Tdc Tds Tdo Tdv	} Paleocene	}
Tdec		
UNCONFORMITY		
Tdc Tds Tdec		

- DESCRIPTION OF MAP UNITS**
- af ARTIFICIAL FILL (HOLOCENE)--Comprises road and highway fills, trash dumps and sanitary landfills, stock-tank dams, and dams for flood control
 - Qco COLLUVIUM (HOLOCENE)--Hillside materials composed of loosely consolidated debris from upslope bedrock and surficial deposits
 - Qpp POST-PINEY CREEK ALLUVIUM (HOLOCENE)--Composed mostly of sand, silt, and fine gravel; some clay; commonly contains plant debris. Occupies modern stream channels, flood plains, and modern alluvial fills
 - Qp PINEY CREEK ALLUVIUM (HOLOCENE)--Clay, silt, sand, and gravel. Occupies some drainageways and forms low terraces (0-10 feet; 0-3 m) adjacent to modern stream channels; occupies valley floors. Includes post-Piney Creek deposits (Qpp) too small to map
 - Qes EOLIAN SAND (HOLOCENE AND PLEISTOCENE)--Loose fine sand deposited on upland surfaces by the wind
 - Q1o LOESS (PLEISTOCENE)--Silt, clay, and fine sand deposited by wind. Preserved on upland surfaces
 - Qb BROADWAY ALLUVIUM (PLEISTOCENE)--Loosely consolidated clay, silt, sand, and gravel; abundant plant debris. Forms low terraces 10 to about 25 feet (3-7.6 m) above modern streams
 - Q1 Louvers Alluvium (PLEISTOCENE)--Clayey sand and gravel. Forms terrace remnants or colluvial deposits on upland surfaces. Only found in the eastern part of the mapped area, where it is about 30-80 feet (9-24 m) above principal tributaries to Cherry Creek
 - Qs SLOCUM ALLUVIUM (PLEISTOCENE)--Clayey sand and gravel. Forms dissected pediment and colluvial deposits on upland surfaces. Occurs in the eastern and western parts of the mapped area, where it is 50-200 feet (15-61 m) above Cherry Creek and the Platte River, respectively
 - Tcr CASTLE ROCK CONGLOMERATE (OLIGOCENE)--Cemented bouldery gravel and cobbly sandstone. Found only on highland surfaces in the southeast part of the mapped area
 - Tda DAWSON ARKOSE, UPPER PART (PALEOCENE) Arkose sandstone facies--Course-grained sandstone composed chiefly of quartz and feldspar; local clay lenses
 - Tdc Conglomerate facies--Cemented bouldery gravel
 - Tds Sandstone facies--Friable fine-grained sandstone composed chiefly of quartz with clay binder
 - Tdo Claystone facies--Soft olive-gray claystone and siltstone
 - Tdso Interbedded sandstone and claystone facies--Mapped as a unit where sandstone and claystone beds are too thin to separate at map scale
 - Tdv Variegated (multicolored) claystone facies--Soft silty claystone in many pastel colors
 - Tde DENVER FORMATION, UPPER TONGUE (PALEOCENE) Rocks undifferentiated as to lithology--Composed mostly of sandstone and claystone beds; mapped as a unit where individual beds are too thin to separate at map scale
 - Tdes Sandstone facies--Friable fine-grained sandstone, commonly in shades of brown, composed of quartz, feldspar, and clay with weathered fragments of volcanic rock (andesite)
 - Tdec Claystone facies--Soft gray and brown claystone containing weathered fragments of volcanic rock (andesite). A single bed occurs near the top of the Dawson Arkose in the southern part of the mapped area; the remainder occurs interbedded with basal Dawson strata and below the Dawson

- CONTACT**
- CONTACT
 - STRIKE AND DIP OF BEDS
 - STRIKE AND DIP OF JOINTS IN BEDROCK--Crossed symbols indicate point of measurement
 - Inclined
 - Vertical
 - SPRING
- TYPES OR ARTIFICIAL FILL**
- Stock-tank dam
 - Flood-control dam
 - Road and highway fill
 - Landfill or trash dump
 - LANDSLIDE DEPOSIT--Arrow indicates direction of movement
 - CLAY OR GRAVEL QUARRY

ABOUT THE MAP AND TABLES

The map and accompanying tables are designed to be of use to scientists and nonscientists alike. Physical characteristics of the bedrock units and surficial units are described in table 1 (sheet 2) and table 2 (sheet 3), respectively. Those deposits that are known to be less than 5 feet (<2 m) thick are not mapped or described. Residuum and weathered and unweathered bedrock are not differentiated on the map.

Qualitative comparisons of engineering characteristics shown in the tables are based on test results and on observations made during geologic mapping. The qualitative aspect emphasized in table 3 (sheet 3) is solely for the comparison of one unit to another, and not to a specific standard. Users of the map who require more detailed knowledge of the characteristics of the geologic units should arrange for investigation of the units of interest by a qualified specialist.

Results of engineering tests are presented in tables 4 and 5 (sheet 3)

This map and the tables are designed solely as guides for land-use planning. The information contained herein should not be used in lieu of detailed field and laboratory investigations. More detailed information should be gathered by specialists before specific land-use modifications are undertaken.

ADDITIONAL READING

Nearby areas

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Flawn, P. T., 1970, Environmental geology--Conservation, land-use planning, and resource management: New York, Harper & Row, Harper's Geoscience Ser., 313 p.

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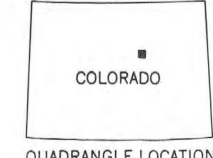
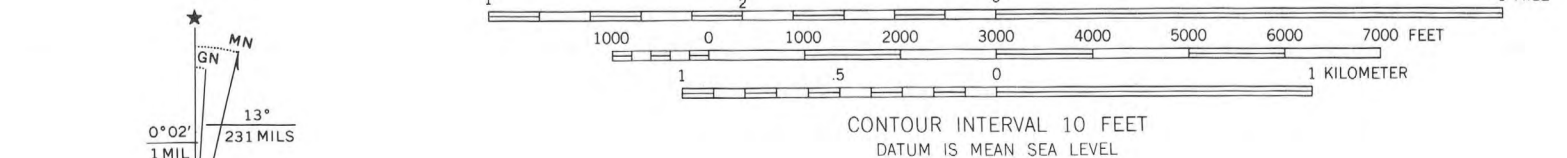
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Base from U.S. Geological Survey, 1965

SCALE 1:24,000

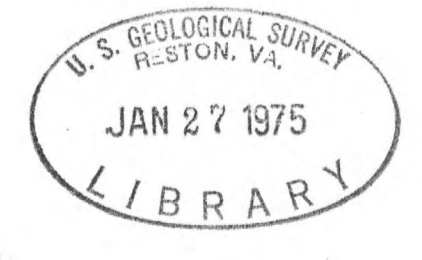
Geology mapped in 1972-73



GEOLOGIC MAP AND ENGINEERING DATA FOR THE HIGHLANDS RANCH QUADRANGLE, ARAPAHOE AND DOUGLAS COUNTIES, COLORADO

By
John O. Maberry and Robert M. Lindvall

1974



For sale by U.S. Geological Survey, price \$

Colorado (Highlands Ranch quad.) Geol. 1:24,000, 1974. Sheet MF-631, Sheet 1 of 3.