

An understanding of the rock types in the Telluride quadrangle is important to current and future land use. This knowledge should be helpful to construction and development and to the possible economic exploitation of natural resources other than the mineral deposits. This map should be used in conjunction with the geologic map of the Telluride quadrangle (Burbank and Luedke, 1966) and the potential geologic hazards map (Luedke and Burbank, in press) in this land-use map series.

Bedded sedimentary rocks consisting of limestone, shale, siltstone, sandstone, and conglomerate underlie the west and central parts of the quadrangle; bedded volcanic rocks underlie the north, east, and south parts. All of these bedded rocks are intruded locally and cut by crystalline igneous rock, of which only the larger masses are shown. The bedrock is covered in places by small to large patches of surficial material.

EXPLANATION

- NOTE: Unit sh-cs has swelling potential.
- af** ARTIFICIAL FILL—Tailings-pond deposits of the Pandora mill. Mining dumps and artificial fill, except for these tailings ponds, are not shown on the map.
 - um** UNCONSOLIDATED SILT, SAND, AND GRAVEL—Poorly to moderately well sorted; subangular to well-rounded grains; minor clay, some cobbles, and varying amounts of soil. Contains a few angular boulders several feet (about a metre) in diameter; deposit at depth might be slightly cemented by iron oxides. Can be excavated by handtools or light power equipment except for boulders. Equivalent geologic map units: alluvium and colluvium.
 - ub** BLOCK-BOULDER DEPOSITS—Loosely unsorted to wedged angular resistant rock fragments ranging in diameter from about 1 inch (2.5 cm) to several feet (1 m). Most deposits are poorly accessible. Light to heavy power equipment necessary for excavation. Equivalent geologic map units: talus and rock glacier deposits.
 - us** UNCONSOLIDATED SAND AND SILT WITH COBBLES AND BOULDERS—Unsorted clay, silt, sand, gravel, and subangular to rounded cobbles and boulders. Includes some soil; fragments mostly volcanic rocks. Equivalent geologic map units: glacial drift and alluvial cone (fan) deposits.
 - ur** RUBBLE—Unsorted and chaotic detritus containing blocks of different rock types several 10's to locally 100's of feet (10 to 300 metres) on a side in a fine to coarse sized matrix. Includes varying amounts of soil. Can be excavated by handtools and light power equipment; locally explosives and heavy power equipment necessary. Equivalent geologic map unit: landslide deposits.
 - SEDIMENTARY BEDROCK**
 - ls** LIMESTONE—Dark-gray impure dense crystalline limestone in thin crinkled beds and broken slabs. Forms ledges where flat-lying. Highly fractured and high porosity. Poor source of lime. Excavation requires drilling and blasting. Equivalent geologic map unit: Pony Express Limestone Member of the Wanakah Formation.
 - sh-cs** SHALE AND CLAYSTONE (MUDSTONE)—Dark-gray to multicolored (red, green, purple) thin-bedded shale and massive limy mudstone. Locally silty and sandy and has moderate to high swelling clay potential. Erodes easily. Handtools or light power equipment needed for excavation. Equivalent geologic map units: Mancos Shale and Brushy Basin Shale Member of the Morrison Formation.
 - ss** SANDSTONE—Thin- and even-bedded to massive light-colored soft friable sandstone. Well-sorted fine grains weakly cemented with carbonate. Excavation with light power equipment but locally may require use of explosives. Equivalent geologic map units: Bill Creek Sandstone Member of the Wanakah Formation and Entrails Sandstone.
 - ss-sh** SANDSTONE WITH SHALE—Gray to yellow thin-bedded to massive well-cemented sandstone with thin interbeds of limestone, mudstone, and grayish-black silty sandstone. Sandstone fine to medium grained, locally conglomeratic. Fracturing with highly varied spacing. Forms cliffs and ledges. Rocks on dip slopes susceptible to landslides. Excavation requires drilling and blasting. Equivalent geologic map units: Dakota Sandstone, Salt Wash Sandstone Member of the Morrison Formation, and the unnamed upper part of the Wanakah Formation.
 - ss-ms** SANDSTONE AND SILTSTONE—Red well-sorted and well-cemented thin- to thick-bedded sandstone and siltstone; some beds of shale and pebble conglomerate. Forms ledges and is moderately fractured. Excellent for flagstone and other dimension stone. Equivalent geologic map unit: Dolores Formation.
 - ss-cgl** SANDSTONE AND CONGLOMERATE—Well-indurated poorly sorted irregularly bedded gray and red sandstone, conglomeratic sandstone, and conglomerate, and discontinuous beds and lenses of shale, mudstone, and siltstone. Sandstone beds are micaceous and cemented with clay and calcareous iron oxide cement. Pebbles, cobbles, and boulders subangular to round. Forms ledges and benches and blasting necessary to excavate. Equivalent geologic map units: Telluride Conglomerate and Cutler Formation.
 - IGNEOUS BEDROCK**
 - va** VOLCANIC ROCK (LIGHT COLORED)—Light-gray, red, and yellow very fine grained crystalline rocks with a few to many small dark and light grains, small angular dark rock inclusions, and some small flat lenticular inclusions or cavities. Locally contain some thin black glassy layers. Moderately to well indurated; much fractured and slabby. Locally very much altered and weathered. Commonly form cliffs; poorly accessible. Equivalent geologic map units: Gilpin Peak Tuff and Eureka Tuff.
 - vb** VOLCANIC ROCKS (DARK COLORED)—Dark-gray very fine grained crystalline hard rock with dark and light grains. Form cliffs; poorly accessible. Require drilling and blasting to excavate. Equivalent geologic map units: Hanson Formation, Burns Formation, and Peacayue Formation.
 - vc** VOLCANIC CONGLOMERATE—Green and purple hard volcanic conglomerate. Pebbles, cobbles, and boulders of crystalline rock as much as a foot or two (about one-half metre) in diameter in a very fine matrix. Units slightly altered throughout but resistant to erosion; locally forms high cliffs. Fractures have varied spacing. Excavation requires drilling and blasting. Equivalent geologic map unit: San Juan Formation.
 - ir** INTRUSIVE ROCKS—Light to dark very fine grained to very coarse grained crystalline rocks. Ease of excavation dependent partly on hardness as determined by size of mass and number and spacing of fractures. Equivalent geologic map units: all large intrusive igneous rock masses.

REFERENCES

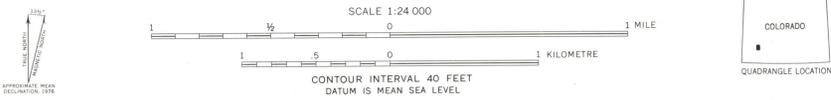
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Luedke, R. G., and Burbank, W. S., (in press), Map showing potential geologic hazards in the Telluride quadrangle, San Miguel, Ouray, and San Juan Counties, Colorado: U.S. Geol. Survey Misc. Inv. Ser. Map I-973-B.

SOME PROPERTIES OF MAJOR ROCK TYPES IN THE TELLURIDE QUADRANGLE, COLORADO

Map unit	Ease of excavation	Permeability	Foundation and slope stability	Possible uses
um	Easy	Moderate to high	Moderate to good	Aggregate (sand and gravel)
ub	Easy to moderate	High	Poor	Road fill, subbase
us	Easy to moderate	Low to moderate	Poor to moderate	Road fill(?)
ur	Easy to difficult	Low	Generally poor	Road fill(?)
ls	Moderate to difficult	Moderate to high	Moderate to good	Crushed stone, aggregate, road metal, granules(?)
sh-cs	Easy	Low	Poor	Road fill(?)
ss	Easy to moderate	Moderate to high	Moderate	Crushed stone, silica sand if crushed and treated for impurities
ss-sh	Moderate to difficult	Moderate	Moderate to good	Crushed stone, dimension stone, road fill, subbase, silica sand(?)
ss-ms	Moderate to difficult	Moderate	Good	Dimension stone, crushed stone, road fill, subbase
ss-cgl	Moderate to difficult	Low to moderate	Good	Road fill, subbase
va	Difficult	Low	Moderate to good	Road fill, subbase, crushed stone
vb	Very difficult	Low	Good	Road fill, subbase, crushed stone
vc	Difficult	Low	Good	Road fill, subbase
ir	Very difficult	Low	Good	Road fill, subbase, riprap, crushed stone

Base from U.S. Geological Survey, 1955
10,000-foot grid based on Colorado coordinate system, south zone
1000-metre Universal Transverse Mercator grid ticks, zone 13,
shown in blue



**MAP SHOWING TYPES OF BEDROCK AND SURFICIAL DEPOSITS IN THE TELLURIDE QUADRANGLE,
SAN MIGUEL, OURAY, AND SAN JUAN COUNTIES, COLORADO**

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