68-109

DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

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Preliminary report on the engineering geology of the Boulder quadrangle, Boulder County, Colorado

MAP EXPLANATION

Surficial deposits (Engineering soils)

Symbol	Description
fw	Sanitary landfill
fe	Earthwork
GS	Cobbly gravel and sand
Smb	Silty bouldery sand and gravel
Smo	Organic silty sand and gravel
SCp	Pebbly sand, silt and clay
GCb	Bouldery gravel and clay
B	Sandstone blocks
Cm	Silty clay

Sedimentary bedrock

Symbol	Description
cs-ms	Highly swelling claystone and siltstone
cs-sh	Moderately swelling claystone and shale
ms-sh	Slightly swelling siltstone and shale
cs-ms	Nonswelling claystone and siltstone
ms-cs-ls	Siltstone, claystone and limestone
ms	Red siltstone
ss	Soft sandstone
ss-ms	Sandstone and siltstone
$\overline{ss}$-ms-cs	Hard sandstone, siltstone and claystone
$\overline{ss}$	Hard sandstone
cgl-ms	Conglomerate and siltstone
ls	Limestone

Igneous and metamorphic bedrock

Symbol	Description
bg	Biotitic gneiss
gt	Granite
pa	Pegmatite and aplite
db	Dark heavy rock
fr	Thoroughly fractured rock

Known Inferred Possible

Landslide deposits

Map symbols enclosed in parentheses (SCp) indicate predominant soil texture or rock lithology of the landslide deposit

Known landslide deposits.--Areas where slopes of earth, rock, or manmade fill failed during the time of this field study (June 1967 to May 1968), or where recent failure can be demonstrated from aerial photographs, maps, and written reports and records. Includes areas where: landslide deposits have been removed by excavation, LSx; landslides have been stabilized artificially by redistribution of material, LSs; continued landslide activity probable, LSa. Locations accurately shown. Areas generally less than 200 feet in maximum horizontal dimension

Inferred landslide deposits.--Areas where slope failures in earth or rock masses were not demonstrable when mapped for this study, but where landsliding is inferred from geologic or topographic evidence, to have occurred at some time in the past. Boundaries shown by short dashed lines are approximately located

Possible landslide deposits.--Areas where slope failures in earth or rock masses were neither known nor inferred when the area was mapped for this study, but where certain geologic or topographic features suggest the possibility that landsliding may have occurred at some time in the past. Boundaries shown by short dashed line with queries are located with questionable accuracy

Contact

Dashed where approximately located; short dashed where gradational or inferred; dotted where concealed

Fault, showing dip

A fracture, or fractured zone, in rock where there has been movement parallel to the surface along which fracturing occurred. In most places, faults contain breccia (crushed, angular rock) and gouge (clay and finely divided rock fragments). In granite and biotite gneiss, faults grade into shear zones of thoroughly fractured rock (fr). Symbols dashed where approximately located; short dashed where inferred; dotted where concealed

Dike

Tabular body of igneous rock. Map unit symbol not shown for granitic to dioritic rock; other rocks as indicated; pegmatite and aplite: pa; dark heavy igneous rocks: db

Vein, showing dip

Mineralized deposit forming tabular body in altered or fractured rock. Vein and host rock exposed in places in long, narrow prospect pits. Symbol dashed where approximately located

Anticline Syncline

An anticline is an elongated fold in which beds are inclined away from the fold axis; a syncline is an elongated fold in which beds are inclined toward the fold axis. Symbol short-dashed where inferred or concealed

Inclined Overturned

Strike and dip of bedding in sedimentary rocks

Inclined Vertical

Strike and dip of foliation in metamorphic rocks

Shaft Prospect pit Adit or tunnel

A A'

Line of geologic section