

LIST OF MAP UNITS

The complete description of map units and references are in the accompanying booklet

SURFICIAL DEPOSITS

HUMAN-MADE DEPOSITS

af Artificial fill (upper Holocene)

mw Mine waste (upper Holocene)

ALLUVIAL AND ORGANIC DEPOSITS

Qa Valley-floor alluvium (upper Holocene)

Qao Alluvium and organic-rich sediment, undivided (Holocene and upper Pleistocene)

Qta Terrace deposits (upper Pleistocene)

GLACIAL DEPOSITS

Qg Glaciofluvial deposits (upper Holocene)

Qta Till of post-Pinedale? age (lower Holocene? and upper Pleistocene)

Qte Till of Pinedale age (upper Pleistocene)

Qti Till of pre-Pinedale age, undivided (middle Pleistocene)

MASS-WASTING DEPOSITS

Qta Talus deposits (upper Pleistocene)

Qc Colluvium (Holocene and upper Pleistocene)

Qrgw Valley-wall rock-glacier deposit (Holocene)

Qrgf Valley-floor rock-glacier deposit (Holocene)

Qls Landslide deposits (Holocene and upper Pleistocene)

ALLUVIAL AND MASS-WASTING DEPOSITS

Qao Alluvium and colluvium, undivided (Holocene and upper Pleistocene)

Qao Older alluvium and colluvium, undivided (upper and middle Pleistocene)

Qf Debris-fan deposits (Holocene)

DIAMICTON DEPOSITS

Qtd Diamicton (lower Pleistocene? and upper Tertiary)

BEDROCK DEPOSITS

Tlw Later white porphyry (Oligocene)

Tsqm Sparse quartz monzonite porphyry (Eocene?)

Tqpm Quartz monzonite porphyry - megacrystic variety (Eocene)

Tqp Quartz monzonite porphyry (Eocene)

Tmd Monzodiorite porphyry (Eocene?)

Tmp Monzonite porphyry (Eocene?)

Td Diorite rocks of Buckskin Gulch (Paleocene and Eocene)

Tpd Pebble dike (Eocene?)

PPm Maroon Formation (Middle Pennsylvanian)

PPmu Maroon and Minturn Formations, undivided (Early Permian to Middle Pennsylvanian)

Pm Minturn Formation (Middle Pennsylvanian)

Pml Minturn Formation, limestone beds (Middle Pennsylvanian)

Ml Leadville Limestone (Mississippian)

Dc Chaffee Formation (Upper Devonian)

Dd Dyer Dolomite Member

Pd Parting Quartzite Member

Ocm Manitou Formation (Ordovician to Upper Cambrian)

Cd Dotsero Formation (formerly Peerless Formation) (Late Cambrian)

Cs Sawatch Quartzite (Late Cambrian)

Yqm Quartz monzonite (Middle Proterozoic)

Yxp Pegmatite, apatite, and related rocks (Middle to Early Proterozoic)

Yxm Mafic Dikes (Middle to Early Proterozoic)

Xgg Granitic gneiss (Early Proterozoic)

Xgp Porphyritic granodiorite (Early Proterozoic)

Xb Biotite gneiss (Early Proterozoic)

Xph Layered plagioclase and hornblende gneiss (Early Proterozoic)

Xm Migmatite (Early Proterozoic)

MAP SYMBOLS

Contact—Approximately located

Fault—Dashed where approximately located, dotted where concealed.

Landslide scarp

Moraine crest

Anticline—Dashed where concealed

Overturned anticline—Dashed where concealed

Syncline—Dashed where concealed

Hornfels—Partly bleached and contact metamorphosed sedimentary rocks containing epidote and other alteration products

Thin cover of glacial till

Strike and dip of bedding or contacts

Inclined—Showing direction and angle of dip

Strike and dip of foliation

Inclined—Showing direction and angle of dip

Vertical

Strike and dip fault

Inclined—Showing direction and angle of dip

Vertical

Fold axis

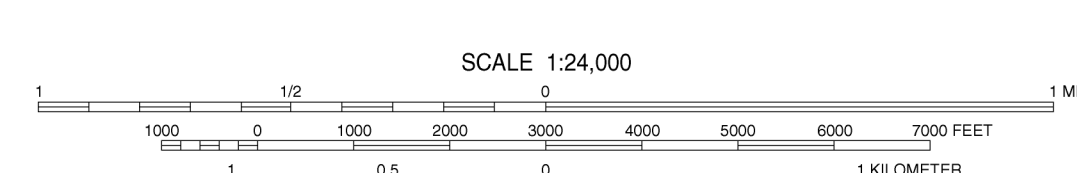
Alignment of cross sections

A—A'

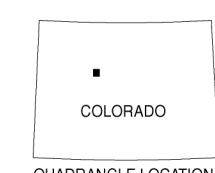
Base from U.S. Geological Survey, 1994
Polyconic projection, 1927 North American datum
10,000-foot grid based on Colorado coordinate system, central zone

TIME NORTH
MAGNETIC NORTH

APPROXIMATE MEAN
DECLINATION, 1998



CONTOUR INTERVAL, 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



1	2	3
4	5	6
7	8	

1 Copper Mountain
2 Beckwith
3 Breckenridge
4 Climax
5 Canon
6 Mount Sherman
7 Fairplay West
8 Fairplay East

ADJOINING 7.5' QUADRANGLES

Geology mapped in 2003
Digital map prepared by Jason Wilson

GEOLOGIC MAP OF THE ALMA QUADRANGLE, PARK AND SUMMIT COUNTIES, COLORADO

By Beth L. Widmann, Paul J. Bartos, Richard F. Madole, Kathryn E. Barba, and Marilyn E. Moll
2004



Bill Owens, Governor,
State of Colorado
Russell George, Executive Director,
Department of Natural Resources
Ronald W. Catlett, Director,
Division of Minerals and Geology
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