

CONDENSED DESCRIPTION OF MAP UNITS

Note: Map unit is queried where correlation is uncertain. Unit symbols that are written as fractions indicate a thin veneer of one deposit (upper symbol) overlying another deposit (lower symbol).

SURFICIAL DEPOSITS

HUMAN-MADE DEPOSITS

af Artificial fill (latest Holocene)—Consists of fill and waste rock placed during construction of roads and dams

ALLUVIAL DEPOSITS

Qa₁ Alluvium one (Holocene)—Chiefly poorly sorted, clast-supported, unconsolidated, sandy pebble and cobble gravel, gravelly sand, and sandy silt along modern drainages, including a broad area in the northeast part of the quadrangle. Generally lacks any appreciable soil development or has very weakly developed A/B horizons in silty beds

Qa₂ Alluvium two (early Holocene and late Pleistocene)—Sediment is similar to unit Qa₁. Locally has weak to moderate soil development, including thin argillic B horizon and Cca horizon with stage I to weak stage II carbonate morphology

Qa₂₋₃ Alluvium one and two, undivided (Holocene and late Pleistocene)—Mapped where limited exposures and poorly preserved landforms preclude distinction of units Qa₁ and Qa₂

Qaw Sheetwash (Holocene and late Pleistocene)—Consists of pebbly silty sand, sandy or clayey silt, and sandy silty clay. Locally includes playa and slackwater deposits

Qa₃ Alluvium three (late middle Pleistocene?)—Sediment is similar to unit Qa₁. Has moderate- to well-developed argillic B horizons and stage II to weak stage III carbonate morphology in Cca horizon

Qa₂₋₃ Alluvium two and three, undivided (early Holocene to late middle Pleistocene)—Mapped where limited exposures and poorly preserved landforms preclude distinction of units Qa₂ and Qa₃

Qa₄ Alluvium four (middle Pleistocene)—Chiefly poorly to moderately well-sorted, clast-supported, unconsolidated, sandy pebble and cobble gravel with rare boulder-sized clasts, gravelly or silty sand, and sandy silt. Where preserved, soils are calcic and have strong Cca horizons and weak K horizons with stage III to weak stage IV carbonate morphology

Qa₃₋₄ Alluvium three and four undivided (middle Pleistocene)—Mapped where limited exposures and poorly preserved landforms preclude distinction of units Qa₃ and Qa₄

Qa₅ Alluvium five (middle Pleistocene)—Sediment and pedogenic soil is similar to unit Qa₄, but unit occurs slightly higher in landscape than unit Qa₄. Locally subdivided into younger (Qa_{5a}) and older (Qa_{5b}) deposits

MASS-WASTING DEPOSITS

Qc Colluvium (Holocene and late Pleistocene)—Consists of poorly sorted, sandy or silty, fine to coarse gravel and gravelly sand and silt

Qls Landslide deposits (Holocene and Pleistocene)—Heterogeneous deposits on the south side of South Garland Mesa that are dominantly composed of jumbled blocks of bedrock that have slumped off the mesa flanks, primarily as rotational landslides and minor earthflows

ALLUVIAL AND MASS-WASTING DEPOSITS

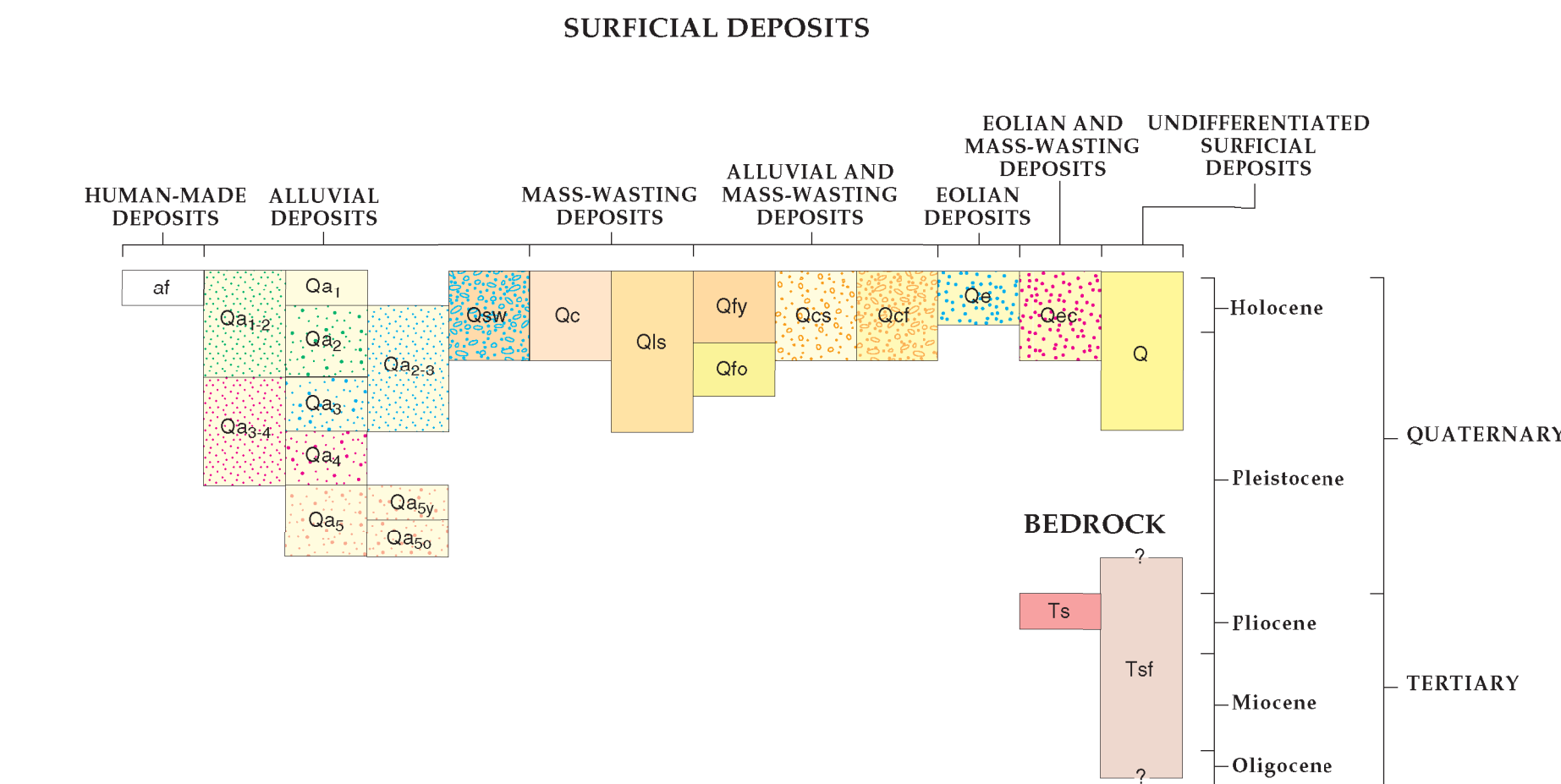
Qty Younger fan deposits (Holocene and late Pleistocene?)—Poorly sorted, clast-supported gravelly alluvium and matrix-supported debris-flow deposits in fans. Ranges from sandy pebble and cobble gravel to slightly gravelly silt and sand

Qca Colluvium and sheetwash, undivided (Holocene and late Pleistocene)—Mapped where these deposits are gradational and have boundaries that are difficult to discern or where they occur side by side but are too small to depict as individual polygons at the map scale

Qcf Colluvium and fan deposits, undivided (Holocene and late Pleistocene)—Mapped where these deposits are gradational and have boundaries that are difficult to discern or where they occur side by side but are too small to depict as individual polygons at the map scale

Qlo Older fan deposits (late? Pleistocene)—Sediment is similar to that of unit Qty, but occurs higher in the landscape

CORRELATION OF MAP UNITS



EOLIAN DEPOSITS

Qe Eolian sand (Holocene)—Light-yellowish-brown to tan, medium to fine sand

EOLIAN AND MASS-WASTING DEPOSITS

Qea Eolian sand and colluvium, undivided (Holocene and late Pleistocene)—Mapped in the Basaltic Hills where contacts between the two types of deposits are gradational and difficult to discern or where they occur side by side but are too small to depict as individual polygons at the map scale

UNDIFFERENTIATED SURFICIAL DEPOSITS

Q Surficial deposits, undifferentiated (Quaternary)—Shown on cross section only

BEDROCK

Tsf Santa Fe Group (upper Oligocene?, Miocene, Pliocene, and Quaternary?)—Chiefly tan, light-brown, light- to medium-yellow-brown, and light- to medium red-brown fine- to medium-grained sandstone, pebbly sandstone, sandy pebble conglomerate, minor cobble conglomerate, and sandy siltstone, light- to medium-reddish-brown, grayish-red, tan, and rarely greenish-gray mudstone and shale, and volcanic ash. Typically only weakly lithified

Ts Servilleta Basalt (Pliocene)—Includes thin flows of medium- to dark-gray tholeiitic basalt that are intercalated with sediments in the upper part of the Santa Fe Group. Distinguishing characteristics of Servilleta flows include small olivine phenocrysts, diktyxtastic texture, and locally common vesicle pipes and segregation veins

MAP SYMBOLS

Qca/Qa3 Multiple unit symbol—Indicates a thin veneer of one deposit (upper symbol) overlies another deposit (lower symbol)

Qa2? Queried unit symbol—Indicates unit correlation is uncertain

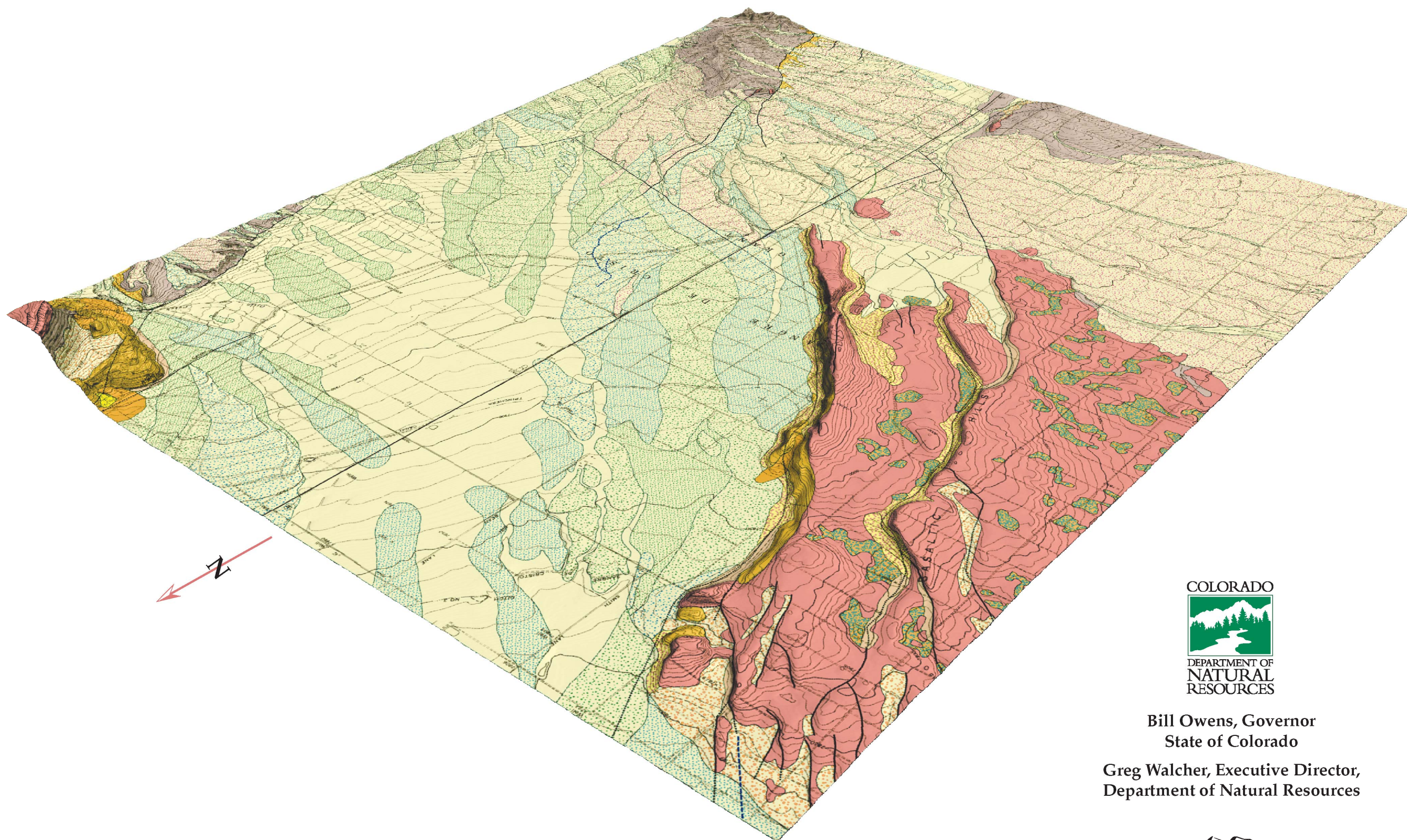
N Fault—Dashed where approximately located; dotted where concealed; queried where uncertain; bar and ball on downthrown side; N indicates the surficial deposit on that side of the fault is not displaced by the fault

- Lineament of possible tectonic origin
- Lineament of unknown origin
- Incipient landslide scarp
- Strike and dip of beds—Angle of dip shown in degrees; estimated measurements are shown in blue
- Apparent strike and dip of basalt flow—Estimated dip less than 30°
- Location and identification number of geochemical rock sample
- Location and identification number of geochemical rock sample with ⁴⁰Ar/³⁹Ar age date provided by D.E. Miggins (2001, written commun.)
- Location and identification number of volcanic ash bed
- Location and identification number of test hole

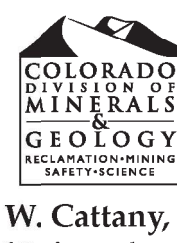
ACKNOWLEDGMENTS

This geologic map was funded in part by the U.S. Geological Survey National Cooperative Geologic Mapping Program and by State of Colorado Department of Natural Resources Severance Tax Operational Funds.

SHADED-RELIEF MAP OF THE FORT GARLAND SW QUADRANGLE WITH GEOLOGY AND TOPOGRAPHY OVERLAY, OBLIQUE VIEW LOOKING SOUTHEAST



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GEOLOGIC MAP OF THE FORT GARLAND SW QUADRANGLE, COSTILLA COUNTY, COLORADO

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2003