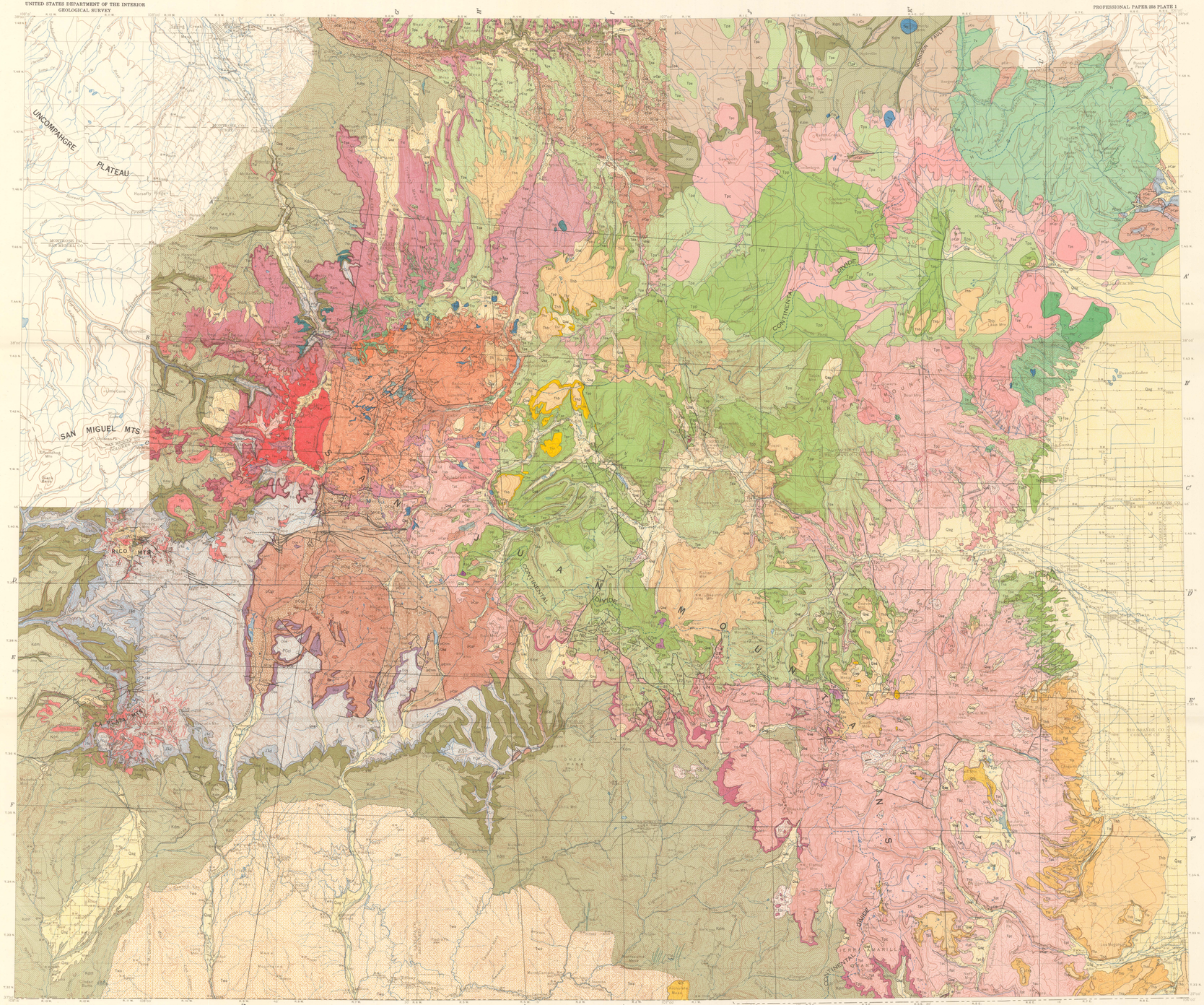


Compiled from maps by U.S. Geological Survey and Hayden Survey and from other sources

GEOLOGIC MAP OF THE SAN JUAN REGION, COLORADO

Scale 1:250,000

5 0 25 Miles

Contour interval 200 and 1000 feet
Datum is mean sea level

INTERIOR-GEOLOGICAL SURVEY, WASHINGTON, D. C. M-R-7313

Geology prepared by Whitman Cross and E. S. Larsen, Jr.; published in Bulletin 843, with slight revisions in 1952

EXPLANATION

BEDDED ROCKS

QUATERNARY

- Qag — Alluvium, landslides, rock streams, mud flows, and glacial deposits of Wisconsin, Durango, and Cerro stages
- Qlb — Latite and basalt — *Local flows*

EROSION SURFACE

TERTIARY

Pliocene (?)

- Tbb — Latite-basalt — *Uniform widespread flows*
- Tbr — Rhyolite — *Local flows and tuff beds*

Hinsdale formation

EROSION SURFACE

- Tfl — Fisher quartz latite — *Local accumulations of flows and tuff beds of coarsely porphyritic rocks*

EROSION SURFACE

- Tc — Creede formation — *Local sand, gravel, and shale tuff carrying plant remains. Some flows of rhyolite*

EROSION SURFACE

Potosi volcanic series

- Tpp — Pindra rhyolite — *Uniform and widespread flows of quartz latite near Ica, Pinkerton, and Potosi Peaks, with some tuff of rhyolitic latite, and thick rhyolite flows with some tuff*

EROSION SURFACE

- Tph — Huerto quartz latite — *Three volcanic piles composed of irregular flows and breccia beds of hornblende-and pyroxene-quartz latite*
- Tpa — Alberoto rhyolite — *Mostly quartz-hornblende rhyolite in thick regular flows and tuff beds; on the north and east margins of the monoclines below the rhyolite thin widespread flows of trilatemite rhyolite alternate with tuff beds*

EROSION SURFACE

- Tps — Sheep Mountain quartz latite — *Several volcanic bodies of quartz latite*
- Tpt — Treasure Mountain rhyolite — *Uniform and widespread flows and tuff beds*

EROSION SURFACE

- Tpc — Conejos quartz latite — *A great complex of flows and clastic beds of quartz latite. Crowns near the margin of the mass*

EROSION SURFACE

Miocene

NORTHWESTERN AREA

- Tr — Sunshine Peak rhyolite — *Great flows of rhyolite with quartz phenocrysts; some intrusives included*

EROSION SURFACE

Silverton volcanic series

- Tsh — Henson tuff — *Well-bedded fine-grained quartz latite*
- Tsa — Pyroxene-quartz latite — *Flows and clastic beds of dark-colored quartz latite*
- Tsb — Burns quartz latite — *Flows and fine-bedded tuff*

EROSION SURFACE

- Tse — Eureka rhyolite — *Chiefly flows*
- Tsp — Picayune quartz latite — *Flows and tuff beds*

EROSION SURFACE

- Tsj — San Juan tuff — *Bedded tuff-conglomerate and breccia made up of quartz latite*
- Tlf — Lake Fork quartz latite — *Local volcanic pile of irregular flows and breccia beds*

NORTHEASTERN AREA

Pre-Ponce age

- Tr — Tracy Creek quartz latite — *Mostly flows*
- Tb — Beidell quartz latite — *Flows and clastic beds*

Miocene (?)

- Tv — Undifferentiated volcanics mostly of pre-Conejos age, but including some Conejos and some Sheep Mountain and Alberoto — *Mostly rhyolite and quartz latite*
- Tlp — Silverton volcanic series — *Undifferentiated*

Oligocene (?)

- Tsp — Telluride conglomerate in the northwestern part
- Tsl — Blanco Basin formation in the southeastern part — *Red and white sandstone and conglomerate derived from pre-Cambrian rocks; Ridgway till of Pleistocene age included in places*

Paleocene and Eocene

UNCONFORMITY

- Twa — Wasatch and Torrejon formations — *Fluviatile deposits with no volcanic fragments*
- Ka — Animas formation (Late Cretaceous and Paleocene) — *Sand and gravel derived partly from volcanic rocks of Cretaceous or Paleocene age*

UNCONFORMITY

Lower and Upper Cretaceous

- Kdd — Mc Dermott formation, Kirtland shale, Fruitland formation, Pictured Cliffs sandstone, Lewis shale, Mesaverde group, Mancos shale, and Dakota sandstone — *Mc Dermott formation, sandstone, and conglomerate made up mostly of volcanic fragments*

Upper Jurassic

- Jme — Morrison formation and Entrada sandstone

UNCONFORMITY

INTRUSIVE ROCKS

- Thr — Intrusive latite and basalt of Hinsdale age — *Small stocks and irregular bodies*
- Tli — Intrusives of Los Pinos age — *Dikes of quartz latite*
- Tfi — Intrusives of Fisher age — *Stocks and dikes of diorite, quartz latite porphyry, etc.*
- Tpa — Intrusives of Alberoto age — *Dikes and less regular bodies of rhyolite and quartz latite*
- Tps — Intrusives of Sheep Mountain age — *Small stocks of granodiorite*
- Tc — Intrusives of Conejos age — *Stocks, sills, laccoliths, and dikes of various rocks*
- Tsi — Intrusives of Beidell age — *Small bodies of quartz latite rock*
- Trhp — Rhyolite and granite porphyry — *Various intrusive bodies of rhyolite, microgranite, and granite porphyry*
- Tqp — Quartz latite — *Dikes, sills, stocks, and granodiorite bodies. Quartz latite and granodiorite*
- Tbi — Quartz latite and basalt — *Dikes, stocks, and other intrusive bodies*
- Tbr — Stocks, laccoliths, and sheets — *Granite to gabbro, granular to porphyritic*
- Tlp — Lamprophyre and diabase — *Dikes and less regular bodies*
- Tlf — Intrusives of Lake Fork age — *Volcanic rock and other intrusives of granodiorite*

Late Cretaceous Early Paleocene

- Kmp — Intrusive quartz monzonite porphyry — *Laccoliths, sills, and other bodies*

Explanation continued at right

BEDDED ROCKS

QUATERNARY

- Jd — Dolores formation — *Quartzite and limestone (marine) Red grit and sandstone with lots of fossiliferous limestone conglomerate at base*

UNCONFORMITY

TRIASSIC AND JURASSIC (?)

- PCcl — Cutler and Rico formations — *Red beds of Permian? age*
- Hermosa formation — *Limestone, shale, sandstone, and grit of Pennsylvanian age*
- Molas formation — *Red calcareous shale of Pennsylvanian age*
- Erosion interval
- Leadville limestone — *Of early Mississippian age*

UNCONFORMITY

CARBONIFEROUS AND PERMIAN

Upper Devonian

- Dsw — Ouray limestone — *Lenticlic limestone, of Mississippian age (included in places)*
- Elbert formation — *Limestones and quartzite*

DEVONIAN

- Dc — Chaffee formation — *In the extreme northeastern part of area*

UNCONFORMITY

Upper Cambrian

- Ꞓi — Ignacio quartzite — *Fine-bedded quartzite*

ORDOVICIAN

- Ꞓfm — Fremont limestone — *Upper Ordovician*
- Harding sandstone — *Middle Ordovician*
- Manitou limestone — *Lower Ordovician*

CAMBRIAN

- Ꞓim — Limestone of Iron Hill — *Massive limestone, probably of hydrothermal origin*

UNCONFORMITY

- pꞒnm — Needle Mountains group — *Unmetamorphosed sandstone, quartzite and schist*
- Valleecito conglomerate

UNCONFORMITY

- pꞒgr — Irving granstone — *Metamorphosed andesitic and diabasic rock*

UNCONFORMITY

PRE-CAMBRIAN (?)

- pꞒsg — Ancient schists and gneisses — *Banded crystalline rocks, mostly of igneous origin*
- pꞒu — Undifferentiated pre-Cambrian — *Includes granitic rocks, schists, and gneiss*

INTRUSIVE ROCKS

- pꞒih — Intrusives of Iron Hill — *Mostly syenite, syenite-porphyry, quartz, Gabbro, nepheline syenite, syenite, diabase, and lamprophyre*

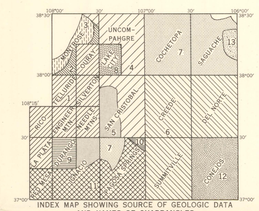
PRE-CAMBRIAN

- pꞒgr — Pre-Cambrian granitic intrusive rocks — *Gabbro, diorite, syenite, granodiorite, quartz, quartz-porphyry, granite, and granite-porphyry. Some post-Needle Mountains and in part older*

22 — Fault
Number referred to in text

Inferred fault

Fault concealed by surface deposits



INDEX MAP SHOWING SOURCE OF GEOLOGIC DATA AND NAMES OF QUADRANGLES

1. Published folios on a scale of 1:62,500 by W. Cross and associates. (Geology revised in places)
2. Reconnaissance by E. S. Larsen, Jr. assisted by J. W. Vanderwilt
3. Reconnaissance by W. W. Atwood and assistants
4. Detailed mapping on a scale of 1:125,000 by W. Cross and E. S. Larsen assisted by J. Fred Hunter. Pre- Cambrian of Uncompahgre and Montrose quadrangles from published map by J. Fred Hunter
5. Detailed mapping on a scale of 1:125,000 by W. Cross and E. S. Larsen, Jr. assisted by L. F. Noble
6. Detailed reconnaissance on a scale of 1:125,000 by W. Cross and E. S. Larsen, Jr. assisted by J. Fred Hunter
7. Rapid reconnaissance on a poor base map by W. Cross and E. S. Larsen, Jr. assisted by J. Fred Hunter
8. Detailed mapping on a scale 1:62,500 by W. Cross assisted by L. H. Woolsey, Albert Johannsen, Howland Bancroft, W. H. Emmons and G. F. Kay
9. Detailed mapping on a scale of 1:62,500 by W. Cross assisted by A. C. Spencer, Ernest Howe, and W. H. Emmons
10. Detailed reconnaissance on a scale of 1:125,000 by E. S. Larsen, Jr. assisted by J. W. Vanderwilt
11. From published map by J. B. Reeside, Jr.
12. Detailed reconnaissance on a scale of 1:125,000 by W. Cross and E. S. Larsen, Jr. assisted by C. S. Ross.
13. From U. S. Geological Survey Prof. Paper 169, by W. S. Burbank