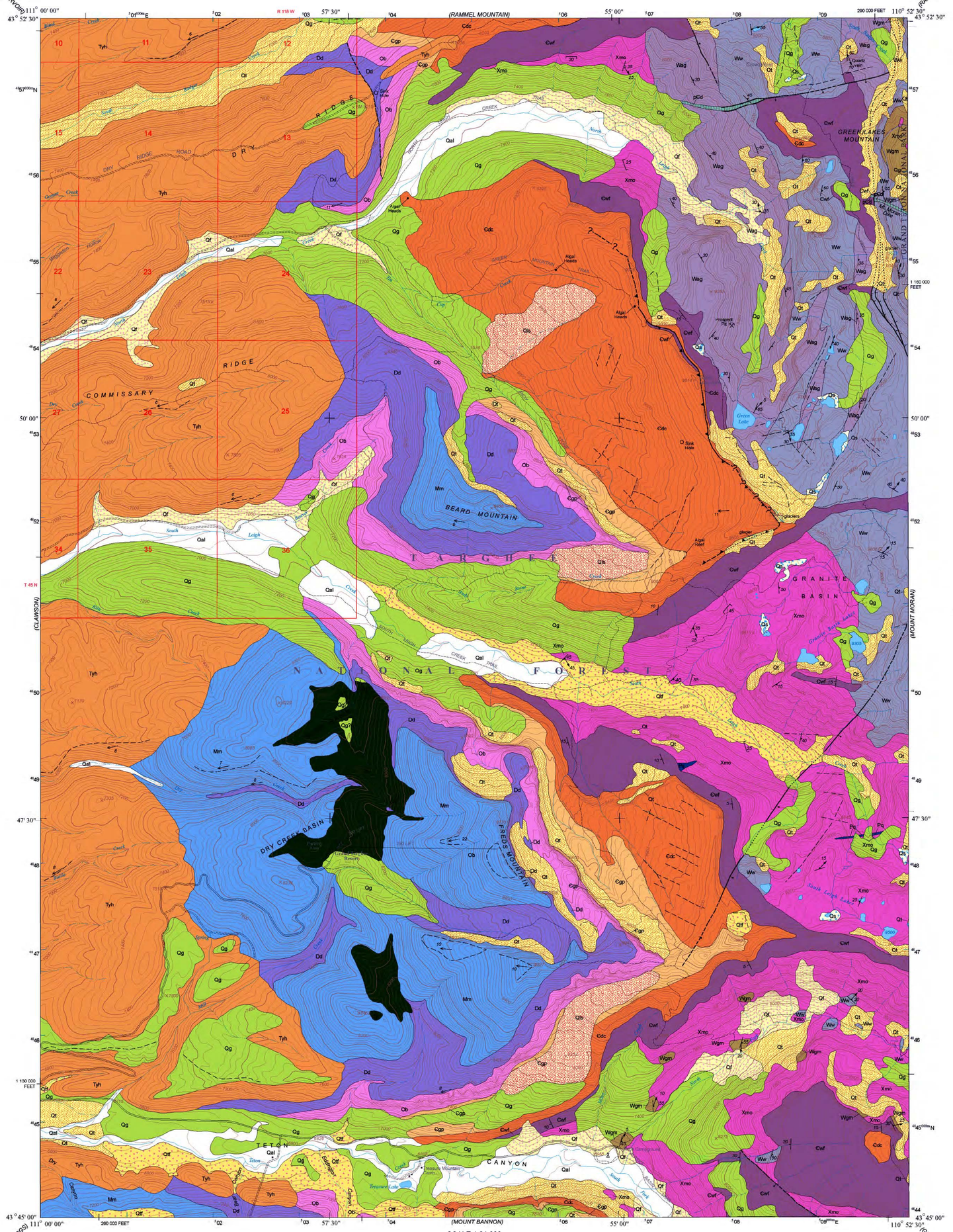
WYOMING STATE GEOLOGICAL SURVEY
Lance Cook, State Geologist
Laramie, Wyoming

Geology — Interpreting the past to provide for the future

Prepared in cooperation with the
U.S. GEOLOGICAL SURVEY

J. DAVID LOVE HISTORICAL GEOLOGIC MAP SERIES
GEOLOGY OF THE TETON - JACKSON HOLE REGION

Map LMS-5
Granite Basin Quadrangle, Teton County, Wyoming



SCALE 1:24,000

North American Datum (NAD27). Projection 10,000-foot grid ticks: Wyoming coordinate system, west zone (Lambert conformal conic). Blue 1000-meter Universal Transverse Mercator ticks, zone 12

Hydrography, hypsography, public land survey, and transportation base by U.S. Geological Survey, various years

Digital base files prepared by Wyoming State Geological Survey, 2000

UTM GRID AND 1968 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET (DIAGRAM IS APPROXIMATE)

CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 20 FEET

WYOMING
QUADRANGLE LOCATION

Compiled largely by photogeologic methods in 1971; based in part on field studies by J.D. Love in 1958, 1970, and 1971, and by J.C. Reed, Jr. in 1970 and 1971

Digital cartography by Abby L. Kirkaldie and Bret L. Noecker

CORRELATION OF MAP UNITS

Qal, Qs, Qt, Qf, Qtf, Qls	Holocene	QUATERNARY
UNCONFORMITY		
Qg	Pleistocene	QUATERNARY
UNCONFORMITY		
Tyh	Pliocene	TERTIARY
UNCONFORMITY		
	Eocene	TERTIARY
UNCONFORMITY		
Mm		MISSISSIPPIAN
Dd		DEVONIAN
UNCONFORMITY		
Ob		ORDOVICIAN
UNCONFORMITY		
Cgp	Upper and Middle Cambrian	CAMBRIAN
Cdc		CAMBRIAN
Cwf	Middle Cambrian	CAMBRIAN
UNCONFORMITY		
Eq	Proterozoic (Precambrian Z, Y, or X)	PRECAMBRIAN
pCd	Middle or Early Proterozoic (Precambrian Y or X)	PRECAMBRIAN
Xmo	Early Proterozoic (Precambrian X)	PRECAMBRIAN
Wgm	Late Archean (Precambrian W)	PRECAMBRIAN
Ww		PRECAMBRIAN
Wag		PRECAMBRIAN

MAP SYMBOLS

Formation contact

Fault - Sense of motion or displacement not specified, dashed where approximately located

Normal fault - Dashed where approximately located; dotted where concealed; queried where inferred. Bar and ball on downthrown side where relative displacement can be determined

Thrust fault - Dashed where approximately located; queried where inferred. Sawteeth are on upper plate

High angle reverse fault - Dashed where approximately located; dotted where concealed. Teeth pointed to upthrown side

Linear feature conspicuous on aerial photographs - In bedrock units generally indicates trace of joint, fracture zone, or bedding. In surficial deposits indicates crest of morainal ridge, protalus rampart, ridge on glacier, or outline of talus lobe

Strike and dip of beds

20 **Generalized direction of dip with strike**

35 **Generalized direction of dip without strike**

20 **Strike and dip of inclined compositional layering**

25 35 **Strike and dip of inclined foliation; arrow indicates direction and plunge of inclined fold or mineral lineations**

40 **Strike and dip of inclined foliation; arrows indicate direction of horizontal mineral lineations**

45 **Strike and dip of inclined planar flow structures in granitic rocks**

Mine or prospect

Algal heads

Sink hole

DESCRIPTION OF MAP UNITS

Surficial deposits (Holocene)

Qal **Floodplain deposits** - Stream-laid deposits of gravel, sand, silt, and clay in valley bottom; fan deposits; glacial outwash and stream-laid ice-contact deposits

Qs **Swamp deposits** - Dark-gray and brown clay, silt and fine sand rich in vegetal material

Qt **Talus deposits** - Locally derived coarse angular rock fragments that accumulated on steep slopes and at the base of cliffs

Qf **Alluvial fan deposits** - Crudely stratified gravel, sand, and clay spread outward from mouths of ravines and canyons; shows linear sorting along distributaries: finer grained debris becomes progressively more abundant toward downstream margins of fans

Qtf **Talus deposits, rockfall, alluvial fan, and colluvial deposits** - Locally derived coarse angular rock fragments that accumulated on steep slopes and at the base of cliffs; slope wash of silt- to boulder- sized fragments derived from underlying and adjacent formations

Qls **Landslide debris** - Chaotically mixed boulders and fine-grained rock debris marked by hummocky, generally bouldery surfaces

Qg **Glacial deposits (Pleistocene)** - Till, commonly having distinct morainal form but also includes ground moraine. Thin, patchy remnants of till and lag gravels from very old moraines are not shown. Glacial deposits are on map by Richmond (1973)

Tyh **Huckleberry Ridge Tuff (Pliocene)** - Compound cooling unit of ash-flow tuff. Gray to brown generally densely welded and divitrified but locally glassy or partly welded. Most parts contain abundant phenocrysts of quartz, sanidine, and sodic plagioclase; sparse opaque oxides, clinopyroxene, and fayalitic olivine. Thickness 0 to 700 feet (0 to 200 m).

Hominy Peak Formation (Eocene) - Andesitic mudflow breccia, venteccia, conglomerate, and sandstone. Brown to dull green with light gray tuff and thin claystone zones at base and near top; lenses of gold-bearing quartzite boulder conglomerate in lower part; fossil trees common. Contains slide blocks of Precambrian, Paleozoic, and Mesozoic rocks from 10 to 150 feet (3 to 46 m) in diameter. Thickness about 2000 feet (600 m)

Mm **Madison Limestone (Upper and Lower Mississippian)** - Blue-gray limestone, gray dolomite, and, near top, thin beds of black and red shale and sandstone. Thickness about 1100 feet (330 m)

Dd **Darby Formation (Upper and Middle Devonian)** - Brown fetid dolomite interbedded with yellow, gray, pink, and black shale and thin sandstone. Thickness about 350 feet (100 m)

Ob **Bighorn Dolomite (Upper Ordovician)** - White brittle very fine-grained Leigh Dolomite Member at top. Thickness of Leigh Dolomite Member about 15 feet (15 m). Lower unit gray hard siliceous cliff-forming dolomite; thickness of lower unit about 375 feet (115 m)

Cgp **Gallatin Limestone (Upper Cambrian) and Park Shale Member (Middle Cambrian) of the Gros Ventre Formation** - Gallatin is tan to gray-mottled glauconitic; contains edgewise conglomerate beds; thickness 200 to 250 feet (60 to 80 m). Park Shale Member of Gros Ventre is soft fissile green shale with red-weathering glauconite-rich layers and some thin limestones; thickness about 240 feet (70 m)

Cdc **Death Canyon Limestone Member of the Gros Ventre Formation (Middle Cambrian)** - Blue-gray hard mottled cliff-forming limestone; 25 feet (8 m) of green shale about 65 feet (20 m) above base; thickness 300 feet (90 m)

Cwf **Wolsey Shale Member of the Gros Ventre Formation and Flathead Sandstone (Middle Cambrian)** - Green to gray-green highly fissile micaceous shale; about 100 feet (30 m) thick

Eq **Quartz veins (Proterozoic or Precambrian Z, Y, or X)** - White to light pink quartz, massive to strongly foliated and lineated

pCd **Diabase (Middle or Early Proterozoic or Precambrian Y or X)** - Dark greenish-gray fine- to medium-grained; in undeformed but slightly metamorphosed dike

Xmo **Mount Owen Quartz Monzonite (Early Proterozoic or Precambrian X) and related pegmatite** - Medium- to fine-grained light-colored massive to weakly flow-foliated biotite quartz monzonite containing dikes, pods, and irregular masses of muscovite- and biotite-bearing pegmatite

Wgm **Layered gneiss and migmatite (Late Archean or Precambrian W)** - Complexly interlayered fine- to medium- grained biotite gneiss and schist, quartz-plagioclase gneiss, amphibole gneiss and schist, and amphibolite. Layers range from 0.4 inches to 6 or 7 feet in thickness; some extend only 6 or 7 feet, while some are continuous for 600 to 1000 feet or more. Locally sequence contains layers of anthophyllite schist, cordierite gneiss, impure marble, and magnetite iron formation

Ww **Webb Canyon Gneiss (Late Archean or Precambrian W)** - Medium- to coarse-grained strongly foliated non-layered biotite- and hornblende-bearing quartz monzonite gneiss, commonly cut by small discordant dikes of hornblende-bearing pegmatite

Wag **Augen Gneiss (Late Archean or Precambrian W)** - Medium-grained strongly foliated and lineated rudely layered to nonlayered medium- to dark-gray biotite gneiss containing conspicuous augen of white microcline 0.4 to 1.6 inches in diameter. Locally contains thin layers of amphibolite and biotite gneiss lacking feldspar augen

REFERENCES CITED

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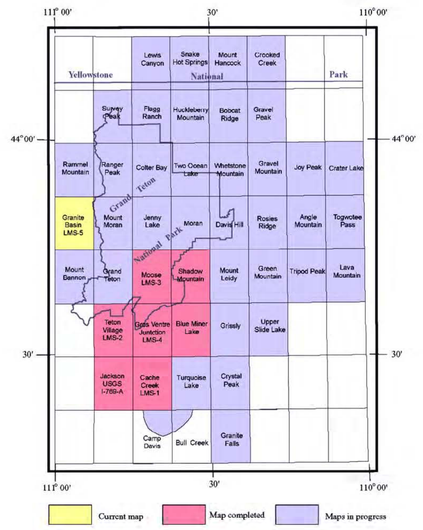
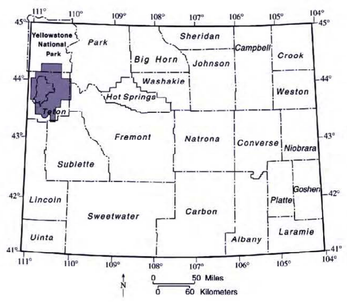


INDEX TO LOVE MAP SERIES SHOWING LOCATION OF 7.5-MINUTE QUADRANGLES AND MAPPING PROGRESS



GENERAL LOCATION MAP

GEOLOGIC MAP OF THE GRANITE BASIN QUADRANGLE, TETON COUNTY, WYOMING

by

John C. Reed, Jr. and J. David Love

2001