WYOMING STATE GEOLOGICAL SURVEY
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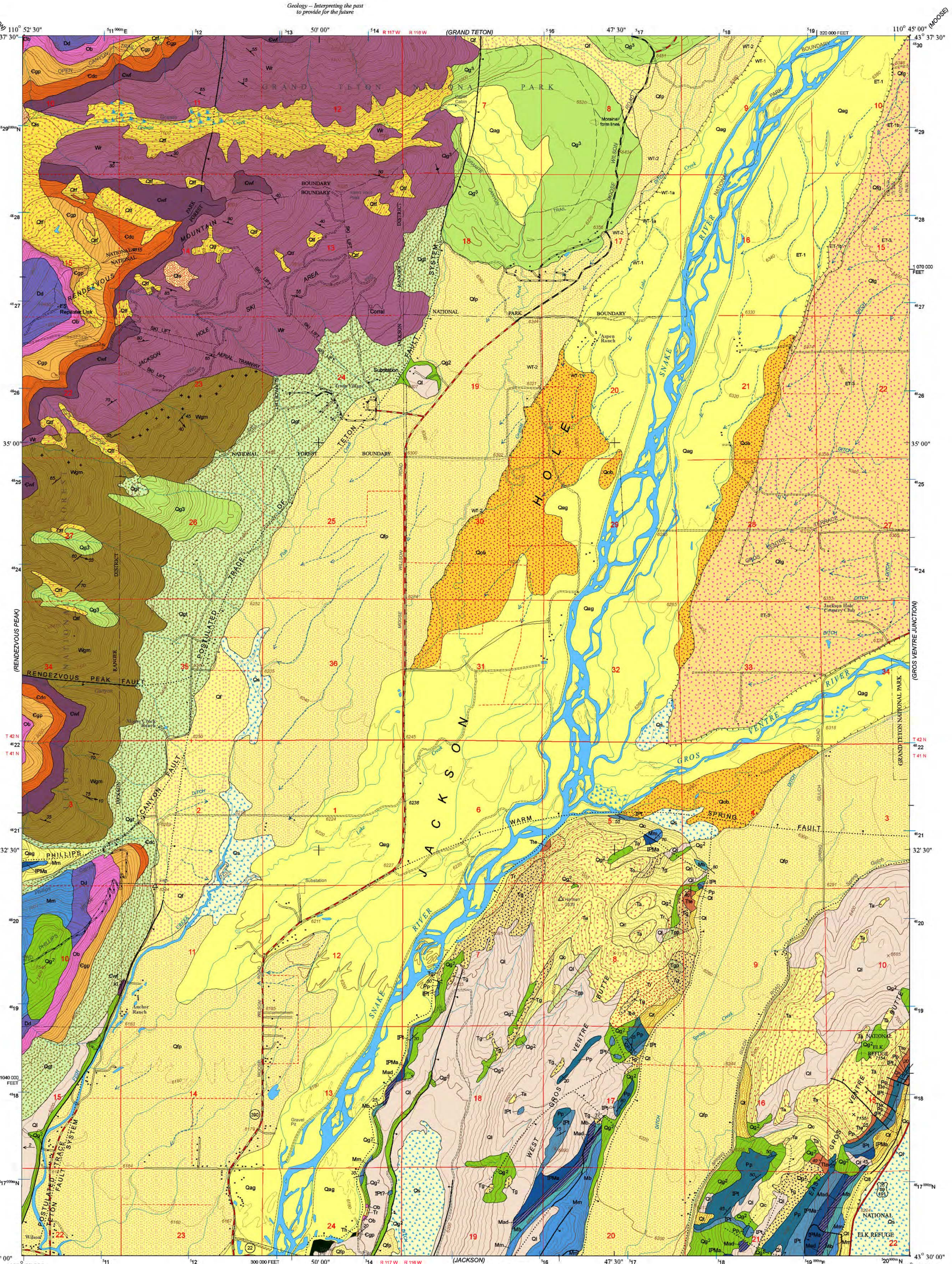
Laramie, Wyoming

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-2
Teton Village Quadrangle, Teton County, Wyoming



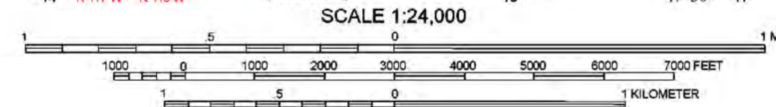
North American Datum (NAD27). Projection 10,000-foot grid ticks: Wyoming coordinate system, west zone (Lambert conformal conic). Blue 1000-meter Universal Transverse Mercator ticks, zone 12

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 1997 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET (DIAGRAM IS APPROXIMATE)

SCALE 1:24,000



CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 20 FEET

QUADRANGLE LOCATION

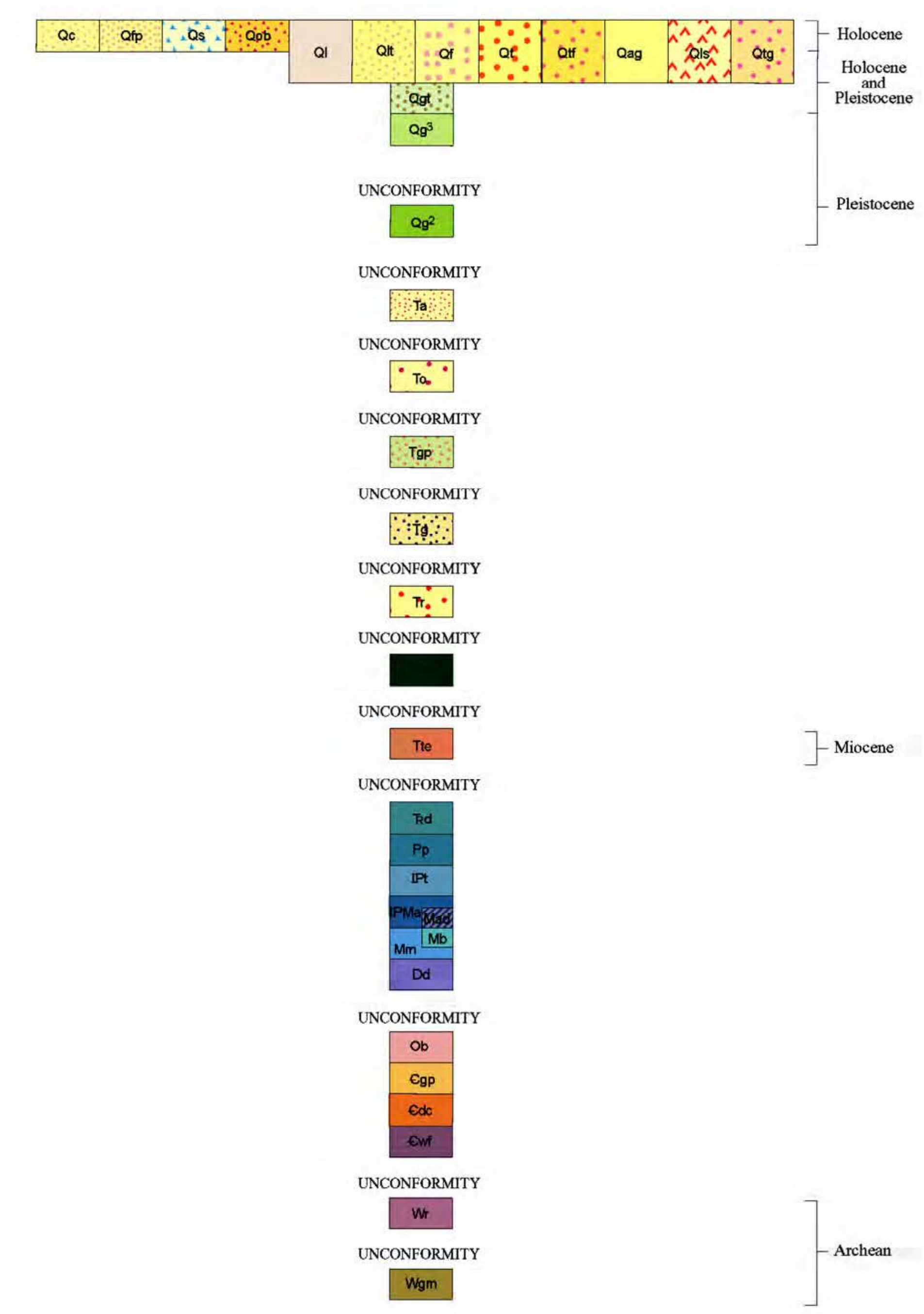
Geology by J.d. Love, 1955-98, J.C. Reed Jr., 1970, and John Montagne, 1955

Digital cartography by Fred H. Porter, A.L. Kirkaldie, and P.A. Ranz

GEOLOGIC MAP OF THE TETON VILLAGE QUADRANGLE, TETON COUNTY, WYOMING

by
J. David Love and John C. Reed, Jr.
2000

CORRELATION OF MAP UNITS



MAP SYMBOLS

Formation contact

Fault - Sense of motion or dispacement not specified

Normal fault - Dotted where concealed or inferred. Bar and ball on downthrown side

Strike and dip of beds

Inclined

Generalized direction of dip without strike

Strike and dip of inclined foliation; arrow indicates direction and plunge of inclined fold or crenulation axis

Strike of vertical foliation

Strike and dip of compositional layering; arrow indicates direction and plunge of inclined fold or crenulation axis

Morainal form lines

CP-11 **U.S. Geological Survey phosphate trench and number**

Selected stream channel - Most have been abandoned because of subsequent drainage changes

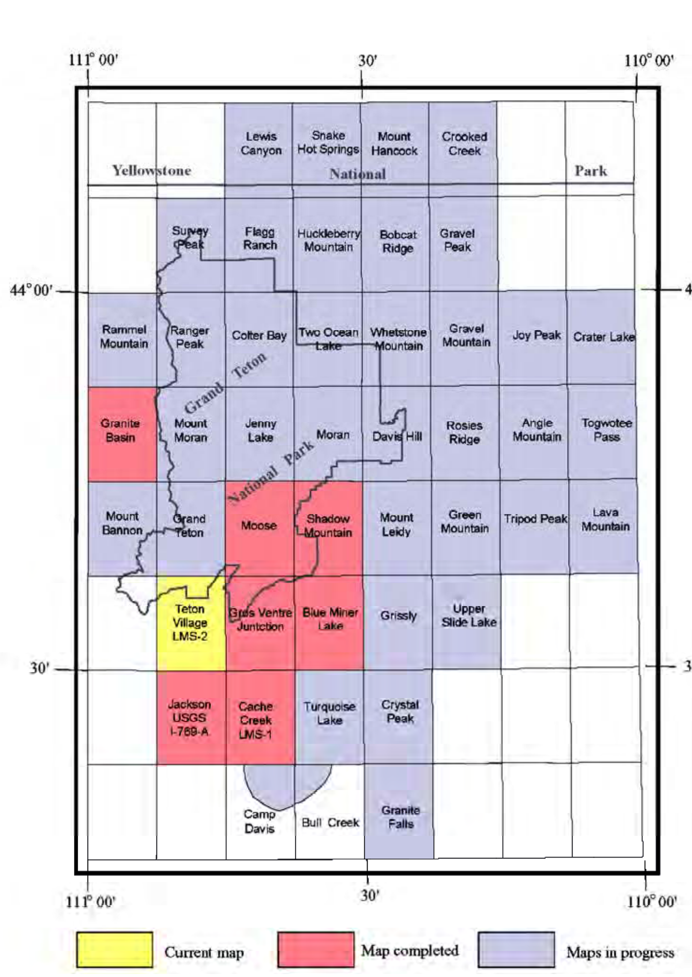
Terrace margin - Solid hachured line where two mappable types of deposits are separated by terrace margin or where same type of deposit is on both sides of terrace margin; hachures on downslope side. WT-1 or ET-1 are the youngest, WT-2 or ET-3 are the oldest. Scale of map precludes showing terrace details

Terraces related to opposite sides of Snake River:
East side:

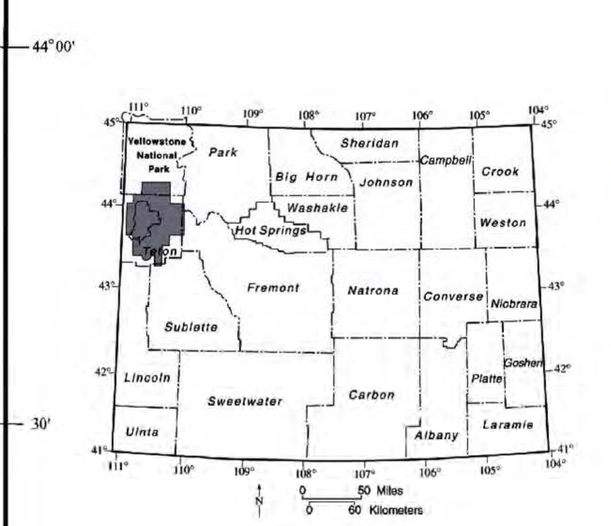
ET-1 At and within 10 feet (3 m) of present river level
ET-1b 10 feet (3 m) above terrace ET-1
ET-3 40 feet (12.2 m) above terrace ET-1b (terrace ET-2 is not recognizable in this quadrangle)

West side:

WT-1 At and within 10 feet (3 m) of present river level
WT-1a 10 to 15 feet (3 to 4.6 m) above terrace WT-1
WT-2 10 to 15 feet (3 to 4.6 m) above terrace WT-1a



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



GENERAL LOCATION MAP

DESCRIPTION OF MAP UNITS

Holocene surficial deposits

Qc **Colluvium** - Slopewash of silt- to boulder-sized fragments derived from underlying and adjacent formations

Qfp **Flood-plain deposits** - Sand, silt, and clay; lesser amount of gravel at surface distinguishes these deposits from those along topographically lower nearby major stream valleys

Qs **Swamp deposits** - Clay, silt, and fine sand, dark-gray and brown; rich in vegetal debris

Qob **Overbank deposits** - Gravel adjacent to major stream flood channelways; grades laterally to sand, silt, and clay in short distances from the channels; confined to areas adjacent to major streams

Holocene and Pleistocene surficial deposits

Ql **Loess** - Silt, light-gray, structureless, homogeneous, wind-deposited. Gastropods from several localities have a C [14] age ranging from 13,000 to 19,000 years

Qlt **Loess and talus deposits**- Loess and talus, intermixed; confined to lower parts of steep slopes

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

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

Qtf **Talus and alluvial fan deposits** - Intermixed debris of both types of deposits, confined to canyons and steep slopes in Teton Range

Qag **Gravel deposits** - Gravel deposited along flood channelways of major streams; composed chiefly of quartzite roundstones

Qls **Landslide debris** - Chaotically mixed boulders and finer grained rock debris emplaced by mass movement

Qtg **Terrace gravel** - Predominantly gravel of rounded quartzite fragments deposited by meltwater from adjacent glaciers

Qgt **Glacial and talus debris** - Intermixed glacial and talus debris on steep lower east slope of Teton Range

Pleistocene surficial deposits

Qg3 **Glacial debris of third (and youngest) (Pinedale) major glaciation** - Morainal debris with sharp, unmodified surface topography; confined to major canyons in the Teton Range; composed largely of rock debris derived from the Teton Range

Qg2 **Glacial debris of second (Bull Lake) major glaciation** - Very old formless piles of erratics and lag deposits of large and small erratics, in places mixed with outwash gravel, sand, and silt; most erratics are not locally derived. May include slightly younger morainal debris with subdued surface topography; capped by loess and soil in most places; contains some debris brought in from the north and northeast

Tertiary sedimentary and volcanic rocks

Ta **Rhyodacite of uncertain age** - Rhyodacite, pink, brown, or black, coarsely porphyritic; chiefly flows and intrusive masses. Thickness at least 1000 feet (305 m)

To **Perlitic rock** - Dark-gray granular perlitic rock, soft; contains abundant obsidian fragments. Thickness 100 feet (30 m)

Tgp **Glass porphyry** - Porphyry, light-gray, coarsely crystalline, felsic, intrusive

Tg **Gray basalt** - Basalt (?), gray, dense, fine-grained, homogeneous; slabby parting in flows; greenish-yellow to black scoria locally at base and in other horizons. Maximum thickness 500 feet (152 m)

Tr **Red flow-breccia and pumice** - At top is red dense lava flow as much as 200 feet (61 m) thick, underlain by 50 to 100 feet (15 to 30 m) of red flow-breccia and pumice. At base locally is 100 feet (30 m) of ribbon-laminated red and gray hard densely welded tuff containing angular fragments of black obsidian

Horneblende - rich, dacite (?) intrusive - Dark-gray coarse-grained porphyritic rock containing abundant fragments of Precambrian black gneiss

Tte **Teewinot Formation (Upper Miocene)** - White, stratified pumicite, gray, brown, and pink gravel, sandstone, and obsidian-rich gravel. Age of upper part on East Gros Ventre Butte about 7.5 million years. On northeast margin of West Gros Ventre Butte lower part contains angular boulders of Precambrian gneiss, Paleozoic and Mesozoic rocks, and white pumicite fragments. Thickness up to 120 feet (30 m). Age of basal part on west butte is about 12 million years

Trd **Dinwoody Formation (Lower Triassic)** - Siltstone, brownish-gray to olive-drab, slabby, thin-bedded, hard, dolomitic; contains thin partings of fine-grained dolomitic sandstone and silty limestone. Thickness 450 to 500 feet (137 to 168 m)

Pp **Phosphoria Formation (Permian)** - Dolomite, chert, phosphorite, and black shale. Dolomite and chert are dark-gray to brown, sandy, chiefly in upper part; phosphorite and black shale in middle and lower parts. Thickness 180 feet (55 m)

IPt **Tensleep Sandstone (Pennsylvanian)** - Sandstone, light-gray, weathering yellowish-brown, fine-grained, hard, brittle, quartzitic in some zones. Middle and lower parts contain many beds of gray fine-grained limestone and dolomite. Contact with underlying Amsden Formation transitional. Thickness about 450 feet (137 m)

IPMa **Amsden Formation (Pennsylvanian and Mississippian)** - Shale and siltstone, brick-red, red-brown, and green, interbedded with white dolomite and limestone. Several zones contain ocher-colored and carnelian-red chert nodules. Thickness exclusive of Darwin Sandstone Member about 450 feet (137 m)

Mad **Darwin Sandstone Member (Upper Mississippian)** - Gray to brownish-pink, fine- to medium-grained sandstone with some large rounded frosted quartz grains; crossbedded; moderately soft and porous; red shale partings near top. Thickness 75 to 100 feet (23 to 30 m)

Mm **Madison Limestone (Upper and Lower Mississippian)** - Limestone, light- to dark-gray, thick-bedded to massive in part, thin-bedded and dolomitic in part, especially near base. Abundant horned corals occur in more massive beds. Many layers contain black chert nodules. Thickness about 1100 feet (335 m)

Mb **Bull Ridge Member (Upper Mississippian)** - Shale and siltstone interbedded with orange-red to tan sandstone, tan to pink dolomite breccia, and blue-gray ledge-forming limestone that contains highly distinctive red and "zebra-striped" gray and black chert nodules. Thickness 50 to 100 feet (15 to 30 m). Has previously been included in the upper part of the Mission Canyon Limestone, in the upper member of the Madison Limestone, or mapped as all or part of hte Brazer Limestone, "strawberry beds," or basal part of the Amsden Formation

Dd **Darby Formation (Upper and Middle Devonian)** - Upper part is dolomitic siltstone and shale, dull-yellow, thin-bedded; lower part is brown fetid vuggy siliceous brittle dolomite containing sparse thin limestone beds. Thickness 300 feet (91 m)

Ob **Bighorn Dolomite (Upper Ordovician)** - Dolomite, light- and dark-gray, mottled, siliceous; forms ragged gray cliffs. Leigh Dolomite Member, about 50 feet (15 m) thick, forms slope at top and consists of chalk-white very fine-grained brittle dolomite. Thickness of formation about 200 feet (61 m)

Cgp **Gallatin Limestone and Park Shale (Upper and Middle Cambrian)** - Gallatin Limestone is dark-gray, weathering tan, mottled, hard; forms cliffs; lower part contains flat-pebble "edgewise" conglomerate; some green flaky shale near middle. Park Shale is dark green to drab, soft, flaky; several zones of algal heads. Thickness of Gallatin Limestone about 200 feet (60 m); of Park Shale about 200 feet (60 m)

Cdc **Death Canyon Limestone (Middle Cambrian)** - Limestone, blue-gray, with brown mottling, hard, fine-grained, dense, thin-bedded; crops out in cliffs; middle part contains 30 feet (9 m) of flaky green shale containing abundant trilobites. Thickness 370 feet (113 m)

Cwf **Wolsey Shale and Flathead Sandstone (Middle Cambrian)** - Wolsey Shale is green to olive-drab, soft, micaceous, more silty near base; lower part is very glauconitic and interbedded with sandstone; glauconite weathers to red hematitic color; thickness about 13 feet (40 m). Flathead Sandstone is an indurated white, pink, and brown sandstone, conglomerate, and orthoquartzite; forms cliffs. Total thickness about 200 feet (60 m)

Wr **Rendezvous Metagabbro (Precambrian W or Archean)** - Metagabbro, gray to dark-green, coarse-grained, nonlayered, with dark-green clots of horneblende in matrix of light-gray plagioclase

Wgm **Layered gneiss, granite, and migmatite (Precambrian W or Archean)** - Complex interlayered biotite gneiss, quartz plagioclase gneiss, and amphibolite. Crosses indicate presence of numerous pods and lenses of metagabbro, probably boudinaged sills or dikes of Rendezvous Metagabbro

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