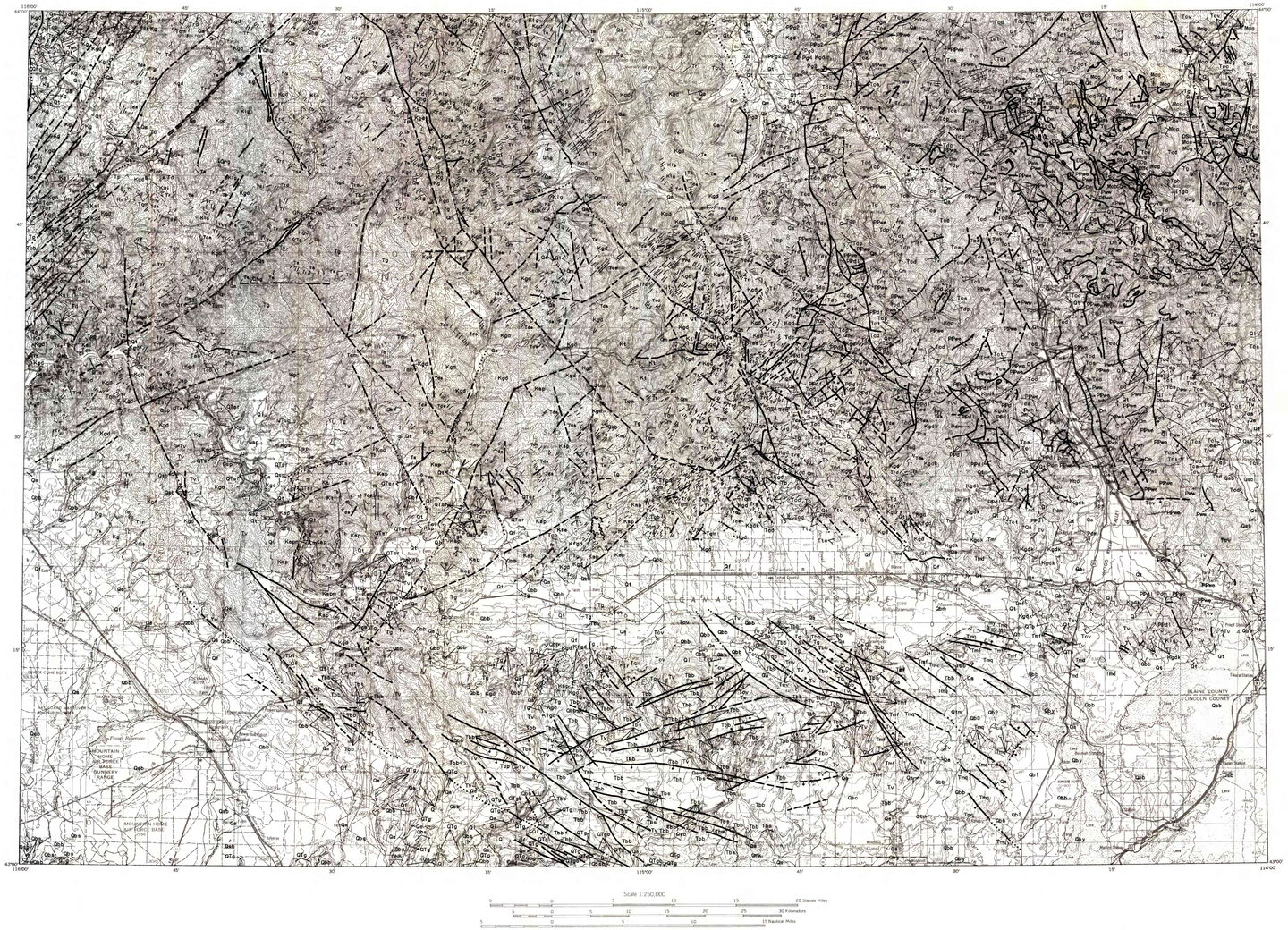
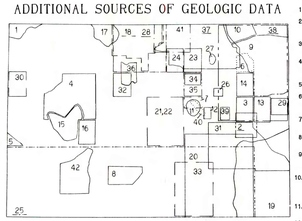


ADDITIONAL SOURCES OF GEOLOGIC DATA



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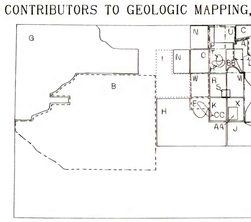
CONTRIBUTORS TO GEOLOGIC MAPPING, 1984-1990



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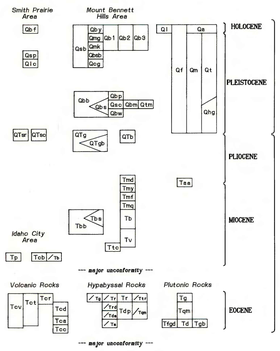
CORRELATION OF MAP UNITS



MAP SYMBOLS

- Contact, approximately located
- Sheared unconformity; no movement direction inferred, arrows on younger side
- Mylonitic contact
- Gradational contact representing facies change
- High-angle normal fault, dashed where approximately located, dotted where concealed; ball and bar on downthrown side
- Low-angle normal fault, dashed where approximately located, dotted where concealed; hachure on upper plate
- Thrust fault, dashed where approximately located, dotted where concealed; sawteeth on upper plate
- Younger-over-older fault, dashed where approximately located, dotted where concealed; open tooth on upper plate. Fault is probably a Mesozoic thrust later reactivated as a low-angle normal fault
- Strike-slip fault, showing relative motion, dashed where approximately located, dotted where concealed
- Dikes
- Area of mylonitized rock

DESCRIPTION OF MAP UNITS

QUATERNARY SURFICIAL DEPOSITS

Qa ALLUVIUM (HOLOCENE)—Gravel, sand, silt, and clay deposited in active stream channels. Locally includes alluvial fans and colluvium.

Ql LANDSLIDE DEPOSITS (HOLOCENE)—Angular blocks and fragments of locally derived bedrock in a matrix of sand and silt, commonly characterized by hummocky topography

Qf ALLUVIAL FANS (HOLOCENE AND PLEISTOCENE)—Sand and gravelly sand deposited on alluvial fans and terraces by streams and debris flows

Qt TERRACE GRAVELS (PLEISTOCENE)—Fluvial sand and coarse to medium gravel of current drainage system

Qm GLACIAL DEPOSITS (PLEISTOCENE)—Includes till and morainal deposits with minor alluvium, colluvium, and landslide debris

Qhg HIGH GRAVELS (PLEISTOCENE)—Sand, cobble gravel, and boulders on ridges in and above present streams. May be pre-Pleistocene

SNAKE RIVER GROUP AND COEVAL ROCKS

Qsb SNAKE RIVER GROUP, UNDIVIDED (HOLOCENE AND PLEISTOCENE)—Basaltic lava flows and associated sedimentary deposits

Qbf BASALT OF FALLS CREEK (HOLOCENE)—Basalt flow filling valleys and overlying terraces in the Big Wood River valley

Qby YOUNG BASALT FLOW (HOLOCENE)—Basalt lava flow with irregular rocky surface and no cover of surficial deposits

Qb1 Qb2 Qb3 UNNAMED BASALT FLOWS (HOLOCENE OR PLEISTOCENE)—Basalt lava flows largely unmodified by surficial deposits. Consists of three separate flows in the Smith Prairie area

Qmg MELON GRAVEL (PLEISTOCENE)—Boulders, cobbles, and pebbles of basalt in matrix of basaltic sand arranged in giant crossbeds. Deposited during the catastrophic Lake Bonneville Flood

Qmk MCKINNEY BASALT (PLEISTOCENE)—Porphyritic plagioclase-olivine basalt

Qbsb BASALT OF SPRINGS (PLEISTOCENE)—Porphyritic plagioclase-olivine basalt partly mantled with eolian material

Qsp SMITH PRAIRIE BASALT (PLEISTOCENE)—Numerous flow units of olivine basalt with interspersed wedges of pillow basalt; minor hyaloclastic material between pillows. Commonly dktytaxitic

Qcg CROWINSHIELD GRAVEL (PLEISTOCENE)—Pebbles and cobbles of silicic volcanic rocks in a sandy matrix

Qic BASALT OF LAVA CREEK (PLEISTOCENE)—Microporphyritic to weakly porphyritic olivine basalt with very fine-grained (<0.1mm) matrix; contains small granitic xenolithe near vent

BRUNEAU FORMATION AND COEVAL ROCKS

Qbb BASALT FLOWS, UNDIVIDED (PLEISTOCENE)—Multiple flows of basalt that form plateaus and till canyons; locally stained brown and yellow

Qbs LAVA SEDIMENTS (PLEISTOCENE)—Silt, clay, and dolomite with minor amounts of alluvial silt and sand

Qbp PREST BASALT (PLEISTOCENE)—Porphyritic olivine basalt with diktytaxitic texture

Qsc SCHOONER BASALT (PLEISTOCENE)—Vesicular, diktytaxitic, porphyritic olivine basalt

Qbm MACCOI BASALT (PLEISTOCENE)—Vesicular, diktytaxitic, porphyritic olivine basalt

Qtm TIMBER GULCH BASALT (PLEISTOCENE)—Olivine basalt with diktytaxitic texture. Consists of multiple flow units with terrain-steam-colored surfaces. Contains pillow basalt

Qbw WIND RIDGE BASALT (PLEISTOCENE)—Porphyritic olivine basalt in two distinct flows

QTg LAKE AND STREAM DEPOSITS (PLEISTOCENE AND PLIOCENE)—Detrital deposits characterized by abrupt lateral facies changes. Facies include: (1) silt in massive beds marked with fern fossils, (2) sand in evenly layered thick beds cemented locally to floggy sandstone; (3) thinly bedded clay, silt, and carbonaceous sand, and (4) of Hall and others marked sand and silt; (5) granitic sand and fine pebble gravel; and (6) fine-grained limestone

QTgb BASALT FLOWS, UNDIVIDED (PLEISTOCENE AND PLIOCENE)—Mostly subaerial flows of olivine basalt that form sheetlike bodies within the lake and stream deposits. Generally altered to basaltic saponite and with residual spheroids of undecomposed rock

QTsc BASALT OF SCHOONER CREEK (PLEISTOCENE AND PLIOCENE)—Nearly aphyric olivine basalt that contains 1% rounded olivine. Contains abundant xenocrysts and xenolithe of granitic rock

QTs STEAMBOAT ROCK BASALT (PLEISTOCENE OR PLIOCENE)—Upper flow units of plagioclase-phyric basalt and diabase and lower flow units of microporphyritic basalt

QTb CLAY BANK BASALT (PLEISTOCENE OR PLIOCENE)—Porphyritic olivine basalt with diktytaxitic texture

MAGIC MOUNTAIN ERUPTIVE CENTER

Tmd YOUNG DOMES (PLIOCENE)—Porphyritic high-silica rhyolite domes with phenocrysts of sanidine, quartz, plagioclase, hornblende, and biotite

Tmy YOUNG TUFF (PLIOCENE)—Rhyolitic ash-flow tuff, pink to light-gray to orange in moderate tuff. Phenocrysts consist of quartz, sanidine, andesine, hypersthene, and clinopyroxene. The pyroxenes are largely altered to antigorite-like material. Includes Poison Creek tuff of Schmidt (1982)

Tmf FERROLATITE OF SQUARE MOUNTAIN (MIOCENE)—Intermediate composition ferrolatite containing phenocrysts of plagioclase, augite, and hypersthene in a groundmass of abundant brown glass. Includes Square Mountain basalt of Schmidt (1982)

Tmq QUARTZ LATITE OF MAGIC RESERVOIR (MIOCENE)—Coarsely porphyritic quartz latite lava with a highly devitrified matrix. Includes Rockstone Rhyolite of Schmidt (1982)

Tb BASALT OF BOULDER CREEK (MIOCENE)—Basalt of porphyritic basalt with plagioclase, olivine, and rare clinopyroxene phenocrysts

Tss ARKOSE AND ASH (PLIOCENE OR MIOCENE)—Poorly consolidated arkose, siltstone, conglomerate, and water-laid ash of uncertain age. Preserved in down-dropped blocks within the Idaho batholith

BANBURY BASALT AND COEVAL ROCKS

Tbb BASALT FLOWS, UNDIVIDED (MIOCENE)—Mostly thin, vesicular flows of olivine basalt; vesicles commonly filled with zeolites and calcite. Locally includes stream deposits of massive sand and fine gravel as well as basaltic pyroclastic material

Tbs STREAM AND LAKE DEPOSITS (MIOCENE)—Sand and pebble gravel in lenticular channel deposits, and silt, clay, and dolomite in lake deposits

Tbt BASALTIC TUFF (MIOCENE)—Light-brown porous basaltic tuffs and white silicic volcanic ash. Tuffs are generally massive or crudely bedded and contain basaltic scoria and other rock fragments in a palagonite-clay matrix

Tv IDAVADA VOLCANICS (MIOCENE)—Rhyolitic tuffs and lavas, commonly crystal-poor. Characterized by anhydrous mafic phenocryst phases, usually clinopyroxene±orthopyroxene

Tte TUFF OF CANNONBALL MOUNTAIN (MIOCENE)—Light-gray alkali rhyolite (comendite) tuff with phenocrysts of sanidine and quartz in thoroughly devitrified matrix. Contains one alkali amphibole

Tp PAYETTE FORMATION (MIOCENE)—Stratified, tan to gray, loosely consolidated arkosic sandstone and siltstone and interstratified conglomerate and thin-bedded, dark-gray to black shale in which are abundant impressions of upper middle to lower upper Miocene leaves and plant fragments

COLUMBIA RIVER BASALT AND COEVAL ROCKS

Tcb COLUMBIA RIVER BASALT GROUP (MIOCENE)—Fine-grained cpltitic basalt; consists chiefly of plagioclase laths embedded in augite and scattered crystals of magnetite

Tnb BASALTIC DIKES (MIOCENE)—Dark-green microporphyritic basaltic andesite and basalt dikes consisting mostly of labradorite and augite. Most dikes are probably feeders to the Columbia River Basalt Group, but those in the southernmost part of the Idaho batholith may be younger

CHALLIS VOLCANICS (EOCENE)

Tcv CHALLIS VOLCANICS, UNDIVIDED—Principally intermediate to mafic K-rich volcanic rocks with lesser amounts of volcaniclastic materials and tuff

Ter RHYOLITE—Light-colored rhyolite lava and ash-flow tuff characterized by phenocrysts of plagioclase, biotite, quartz, sanidine, and rare hornblende

Tct VOLCANICLASTIC SEDIMENTARY ROCKS—Includes subaerially and subaqueously deposited, mostly nonwelded but locally pyroclastic flows, mudflows, conglomerates, and volcanic sandstone and mudstone lenses. Commonly altered to zeolites and clay minerals. Where mapped as a unit forms discontinuous outcrops and is poorly exposed. The volcanic component includes hornblende, pyroxene, plagioclase, and biotite; quartz may be present in variable amounts. Unit is primarily confined to the lower part of the Challis section and is intercalated with intermediate to mafic volcanic rocks. Unit is also mapped in the Challis quadrangle (Fisher and others, 1983, in press)

Tcd K-RICH DACITE, LATITE, AND TRACHYTE LAVAS—Includes a variety of lavas and flow breccias erupted from numerous scattered vents. K-rich dacite dominates this unit and is strongly porphyritic with up to 30% phenocrysts of plagioclase and hornblende with lesser amounts of biotite and pyroxene; quartz and sanidine are rare. Trachyte lavas are characterized by the presence of high proportion of hornblende and biotite. Proportion and amount of all phenocrysts vary greatly. Equivalent to Td of Challis quadrangle (Fisher and others, 1983, in press)

Tca K-RICH ANDESITE AND SHOSHONITE LAVAS—Dark-gray to black, predominantly porphyritic andesite lavas and flow breccias that were largely erupted from fissure vents scattered over the region. Hornblende, pyroxene, and plagioclase are dominant phenocrysts and occur in variable proportions. Unit is similar to Ti of Challis quadrangle (Fisher and others, 1983, in press)

Tco BASALT-ORIGIN VOLCANIC ROCKS—Unit grades from coarse alluvial fan and volcaniclastic-dominated entirely of Paleocnic sedimentary material to volcanic conglomerates with increasing proportion of volcanic material as clasts and matrix

HYPABYSSAL ROCKS (EOCENE)

Tdg GRANITE DIKES—Light-colored, fine-grained dikes that are similar in composition to the granite plutons (unit Tg)

Tr RHYOLITE DIKES AND PLUGS—Pink, tan, and light-gray, highly to sparsely porphyritic rhyolite with phenocrysts of K-feldspar, quartz, plagioclase, and biotite

Ttr TRACHYTE DIKES—Pink, porphyritic trachyte with phenocrysts of sanidine and lesser amounts of quartz. Age unknown; may be related to Challis or Idaho volcanics

Tdr RHYODACITE DIKES—Pink to gray-green, porphyritic rhyodacite with phenocrysts of plagioclase, hornblende, biotite, and embayed quartz

Tqm QUARTZ MONZODIORITE DIKES—Greenish-gray, highly porphyritic dikes that are similar in composition to the quartz monzodiorite plutons (unit Tqm)

Tdp DACITE PORPHYRY—Stocks and dike swarms of gray porphyritic dacite with plagioclase, biotite, and hornblende phenocrysts in a fine-grained groundmass. Hypabyssal equivalent of quartz monzodiorite suite (unit Tqm)

Td DACITE DIKES—Green to gray porphyritic dacite with phenocrysts of plagioclase, hornblende, and biotite

Tda ANDESITE DIKES—Dark-green, weakly porphyritic to aphyric andesite. Some of these dikes may be Late Cretaceous in age

PLUTONIC ROCKS (EOCENE)

Tg GRANITE—Pink to light-gray, coarse- to medium-grained, equigranular to porphyritic granite in which perthitic potassium feldspar and dark quartz are the principal components

Tqm QUARTZ MONZODIORITE—Granodiorite grading to quartz monzodiorite and tonalite. Gray to dark-gray, medium-grained, equigranular to porphyritic rock in which zoned andesine is the principal component; hornblende and biotite are the mafics

Td DIORITE—Dark-gray, fine- to medium-grained rock containing hornblende and (or) pyroxene. Salt and pepper texture common

Tfgd FOLIATED HORNBLENDE-BIOTITE GRANODIORITE—Strongly foliated to massive, heterogeneous unit which ranges from quartz diorite to granodiorite

Tgb HORNBLENDE GABBRO—Coarse-grained, medium- to fine-grained hornblende-rich rock

IDAHO BATHOLITH (LATE CRETACEOUS)

Tkg GRANITE—Pink, porphyritic, two-mica granite dikes consisting principally of perthitic microcline, quartz, and muscovite

Kap APLITE/PEGMATITE COMPLEX—Aplite and pegmatite dikes cross-cutting subordinate amounts of biotite granodiorite

Kapm APLITE/PEGMATITE COMPLEX WITH METAMORPHIC FRAGMENTS—Similar to aplite/pegmatite complex but containing fragments of schist, quartzite, and calc-silicate rocks

Klg LEUCOCRATIC GRANITE—Pink, fine- to medium-grained granite dikes and small stocks with about equal percentages of quartz, potassium feldspar, and oligoclase; distinctive anhedral texture

Kfap FOLIATED APLITE/PEGMATITE—Similar to aplite/pegmatite complex but foliated

Kg MUSCOVITE-BIOTITE GRANITE—Light-gray, medium- to coarse-grained, equigranular to porphyritic granite that contains primary muscovite in blocks large enough to be identified in hand specimen

Kgd BIOTITE GRANODIORITE—Light-gray, medium- to coarse-grained, equigranular to porphyritic granodiorite in which oligoclase is the chief component. Grades to granite. Hornblende rare to absent; no primary muscovite

Kag ALTERED BIOTITE GRANODIORITE—Biotite granodiorite in which feldspars are strongly altered to sericite and clay minerals; commonly moderately to intensely silicified

Kfgd FOLIATED GRANODIORITE—Rock is similar to biotite granodiorite but is foliated and contains inclusions of metasedimentary rock

Kt TONALITE—Dark-gray, medium-grained, equigranular rock; tonalite in which biotite is the principal component. May contain as much as 20% biotite and hornblende. Locally foliated; grades to granodiorite

Kgdh POTASSIUM-RICH HORNBLENDE-BIOTITE GRANODIORITE—Gray, medium- to coarse-grained, equigranular to porphyritic hornblende-biotite granodiorite and quartz monzonite containing more potassium feldspar than typical Idaho batholith. High-K2O content probably relative to biotite granodiorite and tonalite units; includes Valley granodiorite of Schmidt (1982)

Kqd QUARTZ DIORITE—Brown, medium-grained, equigranular porcelain-biotite quartz diorite. Includes Croesus stock and a small unnamed stock in upper Deer Creek

WOOD RIVER FORMATION (PERMIAN AND PENNSYLVANIAN)

PPw WOOD RIVER FORMATION, UNDIVIDED—Primarily calcareous sandstone of the Eagle Creek Member, but includes other rock types and members

Pww WILSON CREEK MEMBER (LOWER PERMIAN)—Calcareous siltstone, silty limestone, and sandy limestone. Quartz arenite of Hall and others (1978) as defined by Mahoney and others (1982)

PPwe EAGLE CREEK MEMBER (LOWER PERMIAN AND UPPER PENNSYLVANIAN)—Calcareous sandstone, sandy and silty limestone, quartz arenite, siltstone, and argillite. Includes units 3, 4, 5, and 6 of Hall and others (1978) as defined by Mahoney and others (1982)

PPwh HAILEY MEMBER (LOWER PERMIAN)—Limestone to boulder conglomerate and bioclastic limestone. Conglomerate contains clasts of argillite, chert, and fine-grained quartzite. Conglomerate interfingers with and is overlain by bioclastic and bioclastic-oolitic limestone (unit 2 of Hall and others, 1978). Contact with underlying Milligen Formation is gradational. Unit is equivalent to the Hailey Member of the Dollarhide Formation of Hall and others (1978) as defined by Mahoney and others (1982)

GRAND PRIZE FORMATION (LOWER PERMIAN AND UPPER PENNSYLVANIAN)

PPg4 MEMBER 4 (LOWER PERMIAN)—Dark-colored thin-bedded carbonaceous siltstone, silty limestone, and calcareous sandstone

PPg3 MEMBER 3 (LOWER PERMIAN)—Rhythmically bedded, light-colored calcareous sandstone, silty limestone, and calcareous siltstone

PPg2 MEMBER 2 (LOWER PERMIAN AND UPPER PENNSYLVANIAN)—Light-colored calcareous sandstone, siliceous sandstone, sandy limestone, and siltstone

DOLLARHIDE FORMATION (PERMIAN AND PENNSYLVANIAN)

Pdu UPPER MEMBER (LOWER PERMIAN)—Dark-colored and carbonaceous siltstone, silty and sandy limestone, argillite, and minor conglomerate

Pdm MIDDLE MEMBER (LOWER PERMIAN)—Light-colored calcareous sandstone, siliceous sandstone, sandy limestone, silty argillite, and minor conglomerate. Quartz arenite of Hall and others (1978) as defined by the Grand Prize Formation of Mahoney and others (1982)

PPel LOWER MEMBER (LOWER PERMIAN AND MIDDLE AND UPPER PENNSYLVANIAN)—Dark-colored and carbonaceous calcareous sandstone, calcareous siltstone, sandy and silty limestone and marble, argillite, and minor granule to boulder conglomerate

PPsf FOLIATED LOWER AND MIDDLE MEMBER (LOWER PERMIAN AND MIDDLE AND UPPER PENNSYLVANIAN)—Foliated calcareous sandstone, calcareous siltite, phyllite, marble, and subordinate conglomerate. Metamorphosed equivalent of the lower member and is present only near contacts with the Idaho batholith

COPPER BASIN FORMATION (MISSISSIPPIAN)

Mcb COPPER BASIN FORMATION, UNDIVIDED—Predominantly dark, impure quartzite, grit, and argillite with subordinate granule and pebble conglomerate. Generally strongly deformed

Mcg GLIDE MOUNTAIN PLATE—Dark-colored and carbonate-poor facies including quartzite, chert- and argillite-pebble conglomerate, grit, argillite, and minor silty limestone. Generally tightly folded

Mco COPPER BASIN PLATE—Light-colored and carbonate-rich facies including quartzite, argillite, silty micritic limestone, and quartzite- and chert-pebble conglomerate. Characterized by broad folding

DJ JEFFERSON FORMATION (DEVONIAN)—Cliff-forming, medium- to blue-gray, medium-bedded to massive, finely crystalline dolomitic limestone, dolomite, and calcareous limestone; locally contains intraformational conglomerate

Dm MILLIGEN FORMATION (DEVONIAN)—Black, well-cleaved argillite and phyllite; black, thinly-bedded chert; gray, massive quartzite; black dolomitic and conglomeratic brown to maroon calcareous sandstone and siltstone; black, carbonaceous limestone; gray, sandy limestone; brown, finely laminated dolomite; and green to buttercotch-colored shale. Less competent lithologies are generally well-cleaved and tightly folded, while competent units are typically boudinaged

Dlu UNNAMED DEVONIAN AND SILURIAN ROCKS (DEVONIAN AND SILURIAN)—Dark-colored carbonaceous argillite, orange-weathering, biotitated siltstone, dark-colored fine- to coarse-grained quartz wacke, pebble to boulder conglomerate, and sedimentary breccia

DSu DEVONIAN, SILURIAN, AND ORDOVICIAN ROCKS, UNDIVIDED (DEVONIAN, SILURIAN, AND ORDOVICIAN)—Includes interbedded sequences of Phi Kappa Formation, Trail Creek Formation, and unnamed Devonian and Silurian rocks juxtaposed by numerous faults in the headwaters of the east fork of Trail Creek, Boulder Mountains. Structural detail mapped by Dover (1983) too complex to show at this scale

Bbp PHI KAPPA FORMATION (SILURIAN AND ORDOVICIAN)—Black, carbonaceous graptolite-bearing shale and slabby argillite, subordinate pebbly quartzite, and micritic limestone. Complexly folded and imbricated

Ok KINNIKINIC QUARTZITE (ORDOVICIAN)—White, pink, yellow-brown, or mottled-gray vitreous pure quartzite. Locally faintly laminated, and rarely contains thin limestone partings. Where preserved, original texture is fine-grained and well sorted, with subrounded quartz grains

Oe ELLA MARBLE (ORDOVICIAN)—Buff-weathering calc-silicate marble. Upper part contains thin- to medium-bedded marble that varies in content of calcite, quartz, and calc-silicate minerals from bed to bed. Intrasiliceous parting and quartzite interbeds occur rarely. Lower part is massive, more uniform and more coarsely crystalline and appears to be a coarse calcite-dolomite sand

Oc CLAYTON MINE QUARTZITE (ORDOVICIAN)—White, vitreous, poorly sorted, thick-bedded to massive, micaceous, and feldspathic gneissose quartzite characterized by well developed thick tabular crossbedding. Contains some discontinuous layers and lenses of granule and pebble conglomerate with pink- to purplish-gray quartz clasts

m ROOF PENDANTS (PROTEROZOIC OR PALEOZOIC)—Garnet-diopside gneiss, quartzite, and biotite-sillimanite schist of uncertain age

Yu METASEDIMENTARY ROCKS, UNDIVIDED (MIDDLE PROTEROZOIC)—Calc-silicate, gneissoce quartzite, peletic schist, and marble

Xeg WILDHORSE GNEISS COMPLEX (MIDDLE PROTEROZOIC)—Layered quartzo-feldspathic, quartzitic, and mafic gneiss, as well as calc-silicate marble

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This map is preliminary and has not been reviewed for conformity with U. S. Geological Survey editorial standards nor with the North American stratigraphic code.

GEOLOGIC MAP OF THE HAILEY 1°x2° QUADRANGLE, IDAHO

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Cartography by Lori D. Snyder on a Computer-aided Cartographics System at the Idaho Geological Survey, Moscow, Idaho