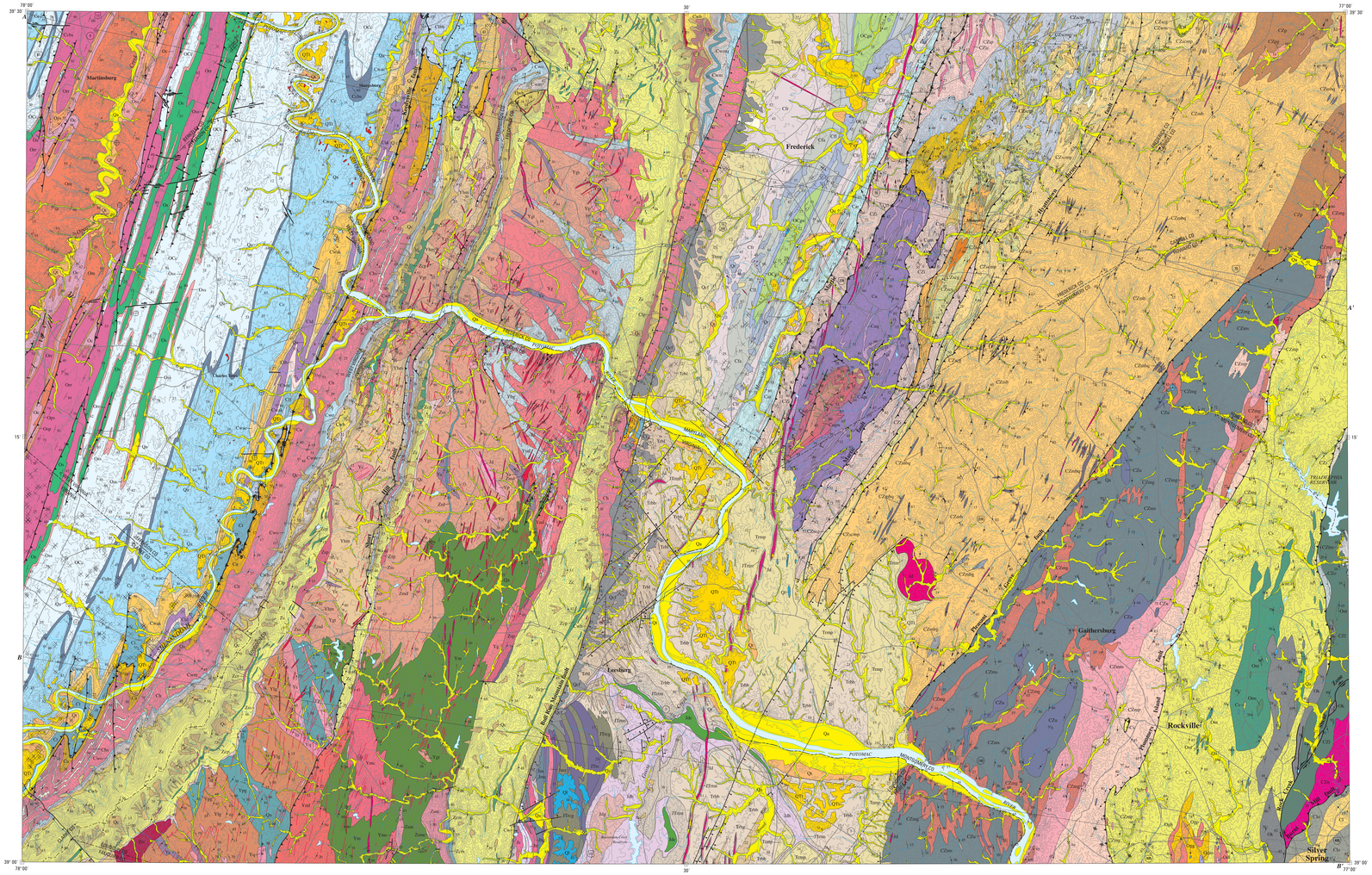


Base from U.S. Geological Survey 1:100,000-scale Digital Line Graph data
Projection Universal Transverse Mercator, zone 18
North American Datum 1983

APPROXIMATE MEAN DECLINATION, 1998

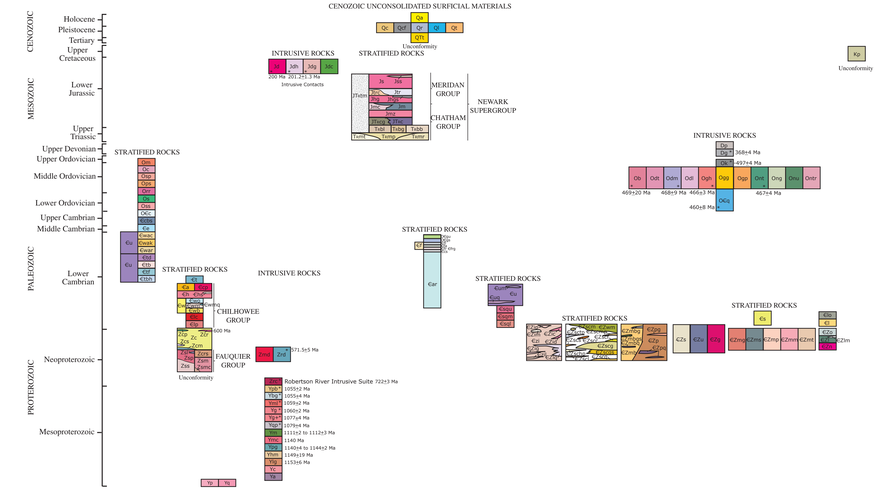
SCALE 1:100 000
8 MILES
9 KILOMETRES
CONTOUR INTERVAL 10 METERS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Digital compilation by James E. Reddy and Danielle Denenny

CORRELATION OF MAP UNITS

PROVINCES

VALLEY AND RIDGE — GREAT VALLEY | BLUE RIDGE | PIEDMONT — WESTERN PIEDMONT (GETTYSBURG & CULPEPER BASINS; FREDERICK VALLEY) — CENTRAL PIEDMONT (SUGARLOAF MOUNTAIN ANTICLINORIUM; WESTMINSTER TERRANE) — EASTERN PIEDMONT (POTOMAC TERRANE) | COASTAL PLAIN



Ijamsville Phyllite (Lower Cambrian? and Neoproterozoic?)–

- **Phyllite**–Blue, purple, and green hematite-rich phyllite, slate, and phyllonite containing pods and folded stringers of white vein quartz
- **Metabasalt**–Dark green, schistose and rare pillows
- **Quartzite**–Gray, medium-grained, massive quartzite
- **Marble**–Gray and dusky-red, massive, podiform sandy marble
- **Metalimestone**–Light-gray thin-layered limestone with black shale and phyllite
- **Phyllite Conglomerate**–Light-gray phyllite chips in a dark gray matrix of mostly heavy minerals
- **Conglomeratic metagraywacke**–Light-gray metagraywacke with white quartz pebbles, variegated phyllite, and green chloritic matrix
- **Chlorite phyllite**–Light-gray and green chlorite phyllite and metasiltstone

Marburg Formation (Lower Cambrian? and Neoproterozoic?)–

- **Metasiltstone**–Greenish-gray, variably phyllitic chlorite-albite metasiltstone containing light gray quartz laminae and abundant pods and folded stringers of white vein quartz
- **Metagraywacke**–Grayish-green to black, massive metagraywacke interbedded with dark phyllite
- **Metabasalt**–Dark-green, schistose greenstone
- **Quartzite**–Grayish-green, massive, medium- to coarse-grained quartzite

Pretty Boy Schist (Lower Cambrian? and Neoproterozoic?)–Dark green-gray quartz-muscovite-chlorite-albite schist with white euhedral albite crystals

- **Metabasalt**–Dark-green, massive, porphyritic, metabasalt and schistose greenstone
- **Quartzite**–Brown, medium-grained quartzite interbedded with quartz-muscovite-chlorite schist

Loch Raven Schist (Lower Cambrian and/or) Neoproterozoic)–Medium-gray, quartz-muscovite-biotite-plagioclase schist interbedded with meta-arenite

Meta-arenite interbedded with schist

Northwest Branch Formation (Lower Cambrian and Neoproterozoic)–Light-gray, quartz-plagioclase-biotite meta-arenite schist, quartzite, and calc-silicate rock

Mather Gorge Formation (Lower Cambrian and/or) Neoproterozoic)–

- **Quartz-rich schist**–Dark-gray quartz-rich schist containing interlayers of mica gneiss, metagraywacke, and calc-silicate rock
- **Metagraywacke**–Light-gray well-bedded metagraywacke having schist layers
- **Migmatite**–Light-gray stromatic migmatite consisting of a quartz-plagioclase leucosome and dark-gray quartz-rich schist paleosome
- **Phyllonite**–Greenish-gray chlorite-sericite phyllonite containing white vein quartz and highly folded
- **Metatuff**–Gray, hornblende-plagioclase-quartz-muscovite felsic metatuffaceous schist

Soldiers Delight Ultramafite (Lower Cambrian and/or) Neoproterozoic)–Green serpentinite, talc schist, and soapstone

Ultramafic rocks (Lower Cambrian and Neoproterozoic)–Greenish-gray blocks of serpentinite, soapstone, and talc schist

Metagabbro and metagreenstone (Lower Cambrian and Neoproterozoic)–Dark green and black metagabbro and metaprasinite

EASTERN PIEDMONT

Potomac Terrane

- **Pegmatite (Late Devonian)**–Light-gray muscovite-microcline-albite-quartz pegmatite
- **Guilford Granite (Late Devonian)**–Medium-gray, homogenous muscovite-biotite monzogranite
- **Kensington Tonalite (Middle Ordovician)**–Gray, coarse-grained, foliated, locally garnetiferous, muscovite-biotite tonalite

Georgetown Intrusive Suite (Middle Ordovician)–

- **Biotite-hornblende tonalite**–Light-gray, medium- to coarse-grained tonalite; contains xenoliths of mafic, ultramafic rocks
- **Quartz gabbro**–Dark-gray, medium- to coarse-grained quartz-augite-hornblende gabbro containing thin cumulate layers of pyroxenite
- **Metapyroxenite**–Dark-green and black pods and xenoliths, within metagabbro; commonly altered to serpentinite

Norbeck Intrusive Suite (Middle Ordovician)–

- **Biotite-hornblende tonalite**–Moderate-gray, medium- to coarse-grained, massive to foliated tonalite; contains xenoliths of quartz gabbro and ultramafic rocks
- **Quartz gabbro**–Dark-gray quartz-augite-hornblende metagabbro
- **Ultramafic rocks**–Dark-green/black serpentinite and soapstone
- **Troodhjemite**–Light-gray, medium-grained, muscovite troodhjemite

Dalecarlia Intrusive Suite (Middle Ordovician)–

- **Biotite monzogranite and granodiorite**–Gray, medium-grained and massive with plagioclase-phenocrysts
- **Leucocratic muscovite-biotite monzogranite**–Light-gray, medium-grained and foliated
- **Muscovite trondhjemite**–Light-gray, fine-grained, with sugary-texture
- **Bear Island Granodiorite (Early Ordovician?)**–Light-gray, muscovite-biotite granodiorite
- **Quartz bodies (Ordovician and Cambrian)**–White, massive, and fractured vein quartz
- **Sykesville Formation (Lower Cambrian)**–Gray, variegated, sedimentary melange consisting of a quartzofeldspathic matrix containing quartz grains, and fragments and bodies of metamorphosed sedimentary, volcanic, and intrusive rocks
- **Laurel Formation (Lower Cambrian)**–Gray sedimentary melange consisting of a quartzofeldspathic matrix containing fragments and bodies of meta-arenite, and muscovite-biotite schist
- **Upper part**–Sedimentary melange containing more than 50 percent of rock fragment bodies
- **Oella Formation (Lower Cambrian and/or) Neoproterozoic)**–Brownish-gray, quartz-plagioclase-biotite-muscovite-meta-arenite interbedded with lesser schist

Layered granitic gneiss (Mesoproterozoic)–Light-variegated, migmatitic layers with 1 cm almandine garnets

Charnockitic granite (Mesoproterozoic)–Dark-green and brown, massive, foliated with orthopyroxene

Amphibolite (Mesoproterozoic)–Dark- green and brown hornblende-orthopyroxene-plagioclase gneiss, metasomic and metadiorite

Garnet granulite paragneiss (Mesoproterozoic)–Reddish-brown garnet-specular granite gneiss and schist

Quartzite and quartz tectonite (Mesoproterozoic)–White, massive, foliated, and locally graphitic

PIEDMONT PROVINCE

WESTERN PIEDMONT

Frederick Valley

Grove Formation (Lower Ordovician and Upper Cambrian)–

- **Upper member**–Light-gray sandy limestone and dolomite
- **Lower member**–Light-gray arenaceous limestone and sandy dolomite

Frederick Formation (Upper Cambrian)–

- **Lime Kiln Member**–Dark-gray limestone and calcareous shale
- **Adamstown Member**–Dark-gray argillaceous limestone and silty dolomite
- **Rocky Springs Station Member**–Dark-gray dolomitic limestone, polymictic breccia, and sandstone, and grayish-black shale (Cfrs)
- **Undivided**–Light-gray limestone
- **Cash Smith Formation (Middle and Upper Cambrian)**–Grayish-black shale
- **Araby Formation (Middle and Lower Cambrian)**–Light-brownish gray sandy mottled metasiltstone

Sugarloaf Mountain Anticlinorium

Urbana Formation (Lower Cambrian?)–

- **Undivided**–Brown and gray quartzite, calcareous metasandstone, metagraywacke, conglomeratic quartzite, and metasiltstone
- **Marble**–Greenish light gray schistose to massive chloritic sandy limestone

Quartzite–Light gray quartzite and vuggy calcareous metasandstone

Sugarloaf Mountain Quartzite (Lower Cambrian)–

- **Upper member**–Pink and white massive, granular, cross-stratified quartzite
- **Middle member**–White, purple to light gray, fine-grained, massive quartzite
- **Lower member**–Light gray quartzite, poorly exposed
- **Undivided**–Shown in cross section only

CENTRAL PIEDMONT

Westminster Terrane

Wakefield Marble (Lower Cambrian? and Neoproterozoic?)–Reddish-white, massive dolomite-calcite marble

Sams Creek Formation (Lower Cambrian? and Neoproterozoic?)–

- **Metabasalt**–Dark green, vesicular metabasalt with local pillows and hyaloclastites
- **Felsic schist**–Light-gray, tuffaceous, fragmental metavolcanic quartz-muscovite-feldspar schist
- **Marble**–Gray and dusky red massive to thin-bedded calcite marble
- **Tuffaceous phyllite**–Variegated vesicular phyllite with streaks and blebs
- **Muscovite phyllite**–Light gray quartz-muscovite phyllite
- **Hematite phyllite**–Bluish-purple hematite-rich phyllite; resembles Ijamsville Phyllite
- **Metalimestone**–Light-gray, thin-layered argillaceous metalimestone

Quartzite interbedded with phyllite–Light-gray quartzite interbedded with purple phyllite and slate, variegated conglomeratic phyllite, and bluish-gray tuffaceous phyllite

Quartzite–Light gray, medium- and coarse-grained quartzite, locally calcareous and cross bedded

Metasiltstone–Light-brown metasiltstone and phyllite interbedded with quartzite, metagraywacke and calcareous metasandstone

Calcareous metasandstone–Light-brown and gray cross-stratified calcareous metasandstone and quartzite

EXPLANATION OF MAP SYMBOLS

- Contact
- Lake bed

FAULTS

- Normal–Ball and bar on down-thrown side
- Thrust–Sawteeth on upper plate
- Normal reactivated as thrust–Ball and bar on down-thrown side of early normal fault reactivated by thrust with sawteeth on upper plate
- Overturned thrust–Barb on upper plate and sawteeth showing direction of dip
- Strike-slip–Showing strike and direction of relative motion
- Unclassified–Showing strike, motion unknown

PLANAR FEATURES

Strike and dip of bed
- Inclined
- Overturned
- Vertical
- Horizontal

Strike and dip of Middle Proterozoic foliation including compositional layering
- Inclined
- Vertical

Strike and dip of first-generation Paleozoic cleavage and (or) schistosity
- Inclined
- Vertical

Strike and dip of second-generation Paleozoic cleavage and (or) schistosity
- Inclined
- Vertical

Strike and dip of mylonitic and phyllonitic foliation
- Inclined
- Vertical

Strike and dip of joint
- Inclined
- Vertical

MINOR FOLDS
- Bearing and plunge of axis

OTHER FEATURES

Sample site for U-Pb isotopic technique for age date

Quarry or mine, active and inactive: Ag-silver, Au-gold, C-chromite, Cu-copper, D-diabase, F-fematite, limonite, and iron ore, L-limestone, M-marble, Mg-magnetite, Mn-manganese, Pb-lead, S-building stone, Sl-slate, Zn-zinc

Greater than 200 pCi/L of soil gas radon (Gunderson and others, 1988)

Sinkhole (area,< 1,200 square meters)

Sinkhole (area > 1,200 square meters)

MAP LOCATION

LIST OF MAP UNITS

QUATERNARY AND TERTIARY SURFICIAL MATERIALS

- Qa — **Alluvium (Holocene)**–Unconsolidated clay, silt, sand, gravel, and cobbles underlying flood plains
- Qt — **Terrace deposit, low level (Holocene and Pleistocene)**–Sand, gravel, and boulders on flat benches
- **Colluvium (Holocene and Pleistocene)**–
- Qcf — **Fine colluvium**–Gravel on lower slope of Catoctin Mountain.
- Qc — **Coarse colluvium**–Cobbles and boulders on mountain slopes
- Qr — **Residuum (Holocene and Pleistocene)**–Unconsolidated material from weathered bedrock
- Qg — **Lag gravel (Holocene and Pleistocene)**–Gravel residuum from underlying conglomerate
- QTt — **Terrace deposit, high level (Pleistocene and Tertiary)**–Gravel and boulders on isolated hillocks

ATLANTIC COASTAL PLAIN

- Kp — **Potomac Formation (Lower Cretaceous)**–Unconsolidated gravel, sand, silt, and clay

EARLY MESOZOIC ROCKS OF THE CULPEPPER AND GETTYSBURG BASINS

- Dia — **Diabase dikes and sills (Early Jurassic)**–Gray, medium grained, massive, crystalline diabase (Jd). Types include hi-Ti qtz normative (Jdh), early cumulates (Jdc), and late cumulates (Jdg)
- Jdh
- Jdc
- Jdg
- JTrim — **Thermally metamorphosed rocks (Lower Jurassic and Upper Triassic)**–Variegated fine-grained porphyroblastic hornfels

Meriden Group

- Js — **Sander Basalt (Lower Jurassic)**–Gray basalt flows (Js) separated by brown sandstone and siltstone (Jss)
- Jss
- Jtr — **Turkey Run Formation (Lower Jurassic)**–Brown and gray sandstone, siltstone, conglomerate, and shale cyclically interbedded (Jtr), and conglomerate (Jtrc)
- Jtrc
- Jhg — **Hickory Grove Basalt (Lower Jurassic)**–Gray basalt flows (Jhg) separated by brown sandstone and shale (Jhgs)
- Jhgs
- Jmc — **Midland Formation (Lower Jurassic)**–Brown and gray siltstone, sandstone, and shale (Jm), and conglomerate (Jmc)
- Jm

Chatham Group

- Jmz — **Mount Zion Church Basalt (Lower Jurassic)**–Gray to black amygdaloidal basalt flows
- JTrc — **Cartharpin Creek Formation (Lower Jurassic and Upper Triassic)**–Red sandstone, siltstone, and conglomerate
- JTrcg — **Goose Creek Member**–Variegated polymictic conglomerate and pebbly sandstone

Bull Run Formation (Upper Triassic)–

- Tdrg — **Groveton Member**–Gray and brown siltstone and sandy shale
- Trbb — **Bulls Bluff Member**–Reddish-brown silty sandstone and sandy siltstone
- Trbl — **Leesburg Member**–Variegated limestone pebble and cobble conglomerate and red siltstone

Manassas Sandstone (Upper Triassic)–

- Trmp — **Poolesville Member**–Brownish-red arkosic sandstone, locally pebbly, interbedded with red siltstone
- Trmt — **Tuscarora Creek Member**–Variegated limestone pebble and cobble conglomerate
- Trmr — **Reston Member**–Light-brown and gray quartz-pebble conglomerate and arkose

PALEOZOIC ROCKS OF THE GREAT VALLEY OF THE VALLEY AND RIDGE PROVINCE

- Om — **Martinsburg Formation (Upper and Middle Ordovician)**–Light-brown shale, siltstone, sandstone; gray argillaceous limestone at base
- Oc — **Chambersburg Limestone (Middle Ordovician)**–Light-gray, argillaceous, nodular limestone
- Osp — **St. Paul Group (New Market and Row Park Limestone undivided (Middle Ordovician)**–Gray, thick-bedded limestone

Beekmantown Group

- Opc — **Pinesburg Station Dolomite (Middle Ordovician)**–Light-gray, cherty, fractured dolostone
- Orr — **Rockdale Run Formation (Middle and Lower Ordovician)**–Light-gray limestone and dolostone
- Ok — **Stonehenge Limestone (upper part) (Lower Ordovician)**–Dark-gray, thick-bedded, fossiliferous limestone
- Oss — **Stouffertown Member**–Light-gray, silty, laminated limestone
- OCc — **Conococheague Limestone (Lower Ordovician and Upper Cambrian)**–Interbedded light-gray limestone, dolostone, and sandstone undivided
- Cebc — **Big Spring Station Member (Upper Cambrian)**–Light-gray dolomite and dolomitic sandstone
- Ce — **Elbrook Limestone (Upper and Middle Cambrian)**–Gray limestone and dolostone, interbedded

Waynesboro Formation (Lower Cambrian)–

- Cwsc — **Chewsville Member**–Dusky-red siltstone and shale
- Cwsk — **Cavetown Member**–Light-gray limestone and dolomite, interbedded
- Cwsr — **Red Run Member**–Light-brown sandstone and light-green shale
- Cwsu — **Undifferentiated**–Shown in cross section only

Tomstown Formation (Lower Cambrian)–

- Ctd — **Dargan Member**–Light-gray limestone and dolomite, interbedded
- Ctb — **Benevola Member**–Light-gray dolomite
- Ctf — **Fort Duncan Member**–Dark-gray bioturbated dolomite
- Ctbr — **Bolivar Heights Member**–Dark-gray limestone and white Keedysville marble near the base
- Ctu — **Undifferentiated**–Gray limestone, dolomite, and marble; shown in cross section only

BLUE RIDGE PROVINCE

- Ct — **Tomstown Formation (Lower Cambrian)**–Light-gray dolomite
- Cctr — **Carbonaceous phyllite (Lower Cambrian)**–Dark-gray graphitic phyllite

Chilhowee Group

- Cs — **Antietam Formation (Lower Cambrian)**–Gray ferruginous sandstone
- Ch — **Harpers Formation (Lower Cambrian)**–Greenish-brownish-gray phyllite and metasiltstone
- Chs — **Metasandstone**–Light-gray to brown thin-bedded metasandstone

Weverton Formation (Lower Cambrian)–

- Cwo — **Owens Creek Member**–Dark-gray quartzite and pebble-conglomerate
- Cwm — **Maryland Heights Member**–Gray quartzite and metasiltstone. Thick quartzite bed mapped separately (Cwmq)
- Cwb — **Buzzard Knob Member**–Light-gray metagraywacke, quartzite, meta-arkose, and metasiltstone
- Cw — **Undifferentiated**

Loudoun Formation (Lower Cambrian)–

- Cch — **Conglomerate**–Dark-variegated polymictic quartz pebble and cobble conglomerate
- Cfp — **Phyllite**–Dark-variegated phyllite; amygdaloidal, vesicular, and tuffaceous

Catoctin Formation (Neoproterozoic)–

- Zc — **Metabasalt**–Green massive to schistose metamorphosed basalt flows
- Zcv — **Metasedimentary phyllite**–Light-variegated, finely-laminated phyllite
- Zcp — **Tuffaceous phyllite**–Dark-variegated, vesicular phyllite with blebs
- Zcr — **Metarhyolite**–Light-gray and tan phyllite and aphanitic quartz-muscovite schist
- Zcm — **Marble**–Pinkish-white and light-green, massive to schistose marble
- Mzdr — **Metarhyolite dikes (Neoproterozoic)**–Light-gray, massive aphanitic with feldspar phenocrysts
- Zmd — **Metadiabase dikes (Neoproterozoic)**–Dark-green massive to schistose metadiabase and schistose greenstone

Swift Run Formation (Neoproterozoic)–

- Zsr — **Marble**–Gray and light brown massive to schistose marble
- Zsp — **Phyllite**–Light-variegated, sandy sericitic phyllite
- Zss — **Metasandstone and schist**–Greenish-gray, coarse- and medium-grained pebbly metasandstone interbedded with light-brown quartz sericite schist

Fauquier Group

- Zcrs — **Carter Run Formation (Neoproterozoic)**–Gray metasiltstone and meta-arkose

Swains Mountain Formation (Neoproterozoic)–

- Zsm — **Mudstone**–Gray and brown metamudstone and meta-arkose
- Zsmc — **Boulder conglomerate**–Gray boulder conglomerate; boulders of metagranite are clast-supported

Robertson River Igneous Suite (Neoproterozoic)–

- Zrc — **Cobbler Mountain Alkali Feldspar Quartz Syenite**–Gray, massive, and medium-grained

- Zyb — **Megacrystic metagranite (Mesoproterozoic)**–Gray, coarse-grained, with large microcline porphyroblasts
- Yby — **Biotite granite gneiss (Mesoproterozoic)**–Gray, foliated, with 10-15% biotite
- Ybcl — **Pink leucocratic metagranite (Mesoproterozoic)**–Fine- to medium-grained with 0-10% biotite
- Yg — **White leucocratic metagranite (Mesoproterozoic)**–Medium-grained with 0-5% biotite
- Ygt — **Garnetiferous metagranite (Mesoproterozoic)**–White, massive with dusky red almandine garnets
- Ygp — **Quartz-plagioclase gneiss (Mesoproterozoic)**–White, massive, and weakly foliated, with 0-5% biotite
- Ymbl — **Marshall Metagranite (Mesoproterozoic)**–Light-gray foliated metagranite with 10-15% biotite
- Ymc — **Coarse-grained metagranite (Mesoproterozoic)**–Gray with 1 to 2 cm long white microcline and blue quartz aggregates
- Ymz — **Porphyroblastic metagranite (Mesoproterozoic)**–Brown, coarse-grained with 1 to 3 cm diameter aggregates of microcline and 1 cm almandine crystals
- Yhm — **Hornblende monzonite gneiss (Mesoproterozoic)**–Gray, foliated with as much as 30% amphibole crystals

- Yfg — **Layered granitic gneiss (Mesoproterozoic)**–Light-variegated, migmatitic layers with 1 cm almandine garnets
- Yc — **Charnockitic granite (Mesoproterozoic)**–Dark-green and brown, massive, foliated with orthopyroxene
- Ya — **Amphibolite (Mesoproterozoic)**–Dark- green and brown hornblende-orthopyroxene-plagioclase gneiss, metasomic and metadiorite
- Yp — **Garnet granulite paragneiss (Mesoproterozoic)**–Reddish-brown garnet-specular granite gneiss and schist
- Yq — **Quartzite and quartz tectonite (Mesoproterozoic)**–White, massive, foliated, and locally graphitic

PIEDMONT PROVINCE

WESTERN PIEDMONT

Frederick Valley

Grove Formation (Lower Ordovician and Upper Cambrian)–

- OCgs — **Upper member**–Light-gray sandy limestone and dolomite
- OCgs — **Lower member**–Light-gray arenaceous limestone and sandy dolomite

Frederick Formation (Upper Cambrian)–

- Cfl — **Lime Kiln Member**–Dark-gray limestone and calcareous shale
- Cfa — **Adamstown Member**–Dark-gray argillaceous limestone and silty dolomite
- Cfr — **Rocky Springs Station Member**–Dark-gray dolomitic limestone, polymictic breccia, and sandstone, and grayish-black shale (Cfrs)
- Cfrs
- Cf — **Undivided**–Light-gray limestone
- Ccs — **Cash Smith Formation (Middle and Upper Cambrian)**–Grayish-black shale
- Car — **Araby Formation (Middle and Lower Cambrian)**–Light-brownish gray sandy mottled metasiltstone

Sugarloaf Mountain Anticlinorium

Urbana Formation (Lower Cambrian?)–

- Cu — **Undivided**–Brown and gray quartzite, calcareous metasandstone, metagraywacke, conglomeratic quartzite, and metasiltstone
- Cuam — **Marble**–Greenish light gray schistose to massive chloritic sandy limestone

- Csq — **Quartzite**–Light gray quartzite and vuggy calcareous metasandstone

Sugarloaf Mountain Quartzite (Lower Cambrian)–

- Csqu — **Upper member**–Pink and white massive, granular, cross-stratified quartzite
- Csqm — **Middle member**–White, purple to light gray, fine-grained, massive quartzite
- Csql — **Lower member**–Light gray quartzite, poorly exposed
- Csq — **Undivided**–Shown in cross section only

CENTRAL PIEDMONT

Westminster Terrane

- CZwm — **Wakefield Marble (Lower Cambrian? and Neoproterozoic?)**–Reddish-white, massive dolomite-calcite marble

Sams Creek Formation (Lower Cambrian? and Neoproterozoic?)–

- CZscg — **Metabasalt**–Dark green, vesicular metabasalt with local pillows and hyaloclastites
- CZscf — **Felsic schist**–Light-gray, tuffaceous, fragmental metavolcanic quartz-muscovite-feldspar schist
- CZscm — **Marble**–Gray and dusky red massive to thin-bedded calcite marble
- CZscp — **Tuffaceous phyllite**–Variegated vesicular phyllite with streaks and blebs
- CZscmp — **Muscovite phyllite**–Light gray quartz-muscovite phyllite
- CZsch — **Hematite phyllite**–Bluish-purple hematite-rich phyllite; resembles Ijamsville Phyllite
- CZscl — **Metalimestone**–Light-gray, thin-layered argillaceous metalimestone
- CZscqp — **Quartzite interbedded with phyllite**–Light-gray quartzite interbedded with purple phyllite and slate, variegated conglomeratic phyllite, and bluish-gray tuffaceous phyllite
- CZscq — **Quartzite**–Light gray, medium- and coarse-grained quartzite, locally calcareous and cross bedded
- CZscs — **Metasiltstone**–Light-brown metasiltstone and phyllite interbedded with quartzite, metagraywacke and calcareous metasandstone
- CZscc — **Calcareous metasandstone**–Light-brown and gray cross-stratified calcareous metasandstone and quartzite

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DIGITAL GEOLOGIC MAP AND DATABASE OF THE FREDERICK 30' x 60' QUADRANGLE, MARYLAND, VIRGINIA, AND WEST VIRGINIA

By
Scott Southworth,[1] David K. Brezinski,[1] Avery Ala Drake, Jr.,[1]William C. Burton,[1] Randall C. Orndorff,[1] and Albert J. Froelich[2]

2002

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