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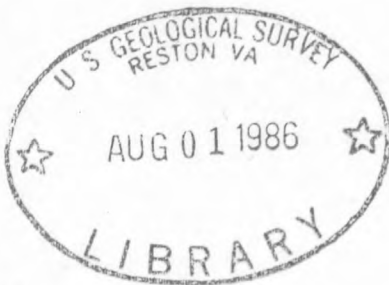
R290

no. 83-446

Description of Map Units



- f ARTIFICIAL FILL - Compacted riprap and soil in railroad and highway embankments
- Qal ALLUVIUM - Gravel, sand, silt, and clay in floodplain and sinkhole deposits
- Qc COLLUVIUM - Boulders, gravel, sand, and clay in unsorted slope deposits and along upland stream beds
- Pk KANAWHA FORMATION (MIDDLE PENNSYLVANIAN) - Sandstone, siltstone, shale, coal, and underclay. Sandstone, light-gray to medium-light-gray, fine- to medium-grained, thick-bedded to massive, crossbedded; contains 50 to 65 percent quartz grains and minor amounts of white-weathering feldspar, mica, and dark mineral grains. Sandstone is principally in three mapped units (descending): unnamed sandstone member (Pks), Bearwallow Sandstone Member (Pkb), which contains scattered well-rounded quartz pebbles, and Chicken Ridge Sandstone Member (Pkc). Siltstone, medium light-gray, thin-bedded. Shale, medium- to dark-gray, evenly bedded, locally silty. Coal mostly bright attritus, with minor amounts of vitrain and dull attritus, finely cleated, brittle, occurs principally in nine recognized beds, three of which have been mapped--Lower Banner (lb), Bigfork (bf), and Kennedy (k). Underclay, medium-gray, clayey to silty, fossil rootlets
- Pnr NEW RIVER FORMATION (LOWER PENNSYLVANIAN) - Sandstone, siltstone, shale, coal, underclay, and limestone. Sandstone, light- to medium-light-gray, very fine- to coarse-grained, locally conglomeratic, thick-bedded to massive, cross-bedded, ripple-bedded, convoluted; contains 50 to 65 percent quartz grains, with white-weathering feldspar, mica, and dark mineral grains; some beds contain rounded quartz pebbles as much as 3 inches in diameter. Sandstone is in six members, five of which are mapped (descending): McClure Sandstone Member (Pnrmc), Dismal Sandstone Member (Pnrđ), Council Sandstone Member (Pnrđ), Upper tongue of Middlesboro Sandstone Member (Pnrđ), Raleigh Sandstone Member (Pnrđ); and Lower tongue of Middlesboro Sandstone Member (not mapped)



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Siltstone, medium-light- to medium-gray, evenly-bedded, contorted beds in some localities, ripple-bedded. Shale, medium-gray to black, evenly to poorly bedded, with few very fissile carbonaceous beds, well-preserved plant fossils in some beds, few ironstone bands and concretions. Coal, mostly bright attritus, with thin to thick vitrain bands, fusain bands, finely cleated; shale and underclay or impure coal partings in several beds. Occurs in 41 beds of which 12 have been mapped, including: Jewell (j), Jawbone (jb), Tiller (t), Lee (?) (l), Upper Seaboard (us), Middle Seaboard (ms), Dirty-Six (d6), Lower Seaboard (ls), Sewell(?) (s), Welch(?) (w), Upper Horsepen (uh), and War Creek (wc). Underclay, medium-gray, clayey to silty, fossil roots and Stigmaria impressions. Limestone, medium-gray, argillaceous; in thin discontinuous beds and ellipsoidal concretions. Marine invertebrate fossils occur locally in basal bed

Pp

POCAHONTAS FORMATION (LOWER PENNSYLVANIAN) -
Sandstone, siltstone, shale, coal, and underclay. Sandstone, light- to medium-gray, very fine to coarse-grained, thin- to thick-bedded to massive, crossbedded, contains 45 to 90 percent quartz grains, minor amounts of feldspar, abundant mica, dark and light mineral grains; occasional rounded ironstone pebble lag deposits, shale chips, coal fragments, and well-rounded quartz pebbles as large as one inch in diameter are in channel-fill deposits and basal beds. Siltstone, medium-light to dark-gray, thin to irregular, and contorted beds, micro-faulting. Sandstone is principally in two members, which are mapped (descending), Middle Sandstone Member (Pps), and Lower Sandstone Member (Ppl). Shale, medium- to dark-gray, evenly bedded, ironstone bands and concretions, well-preserved plant fossils in some beds. Coal, mostly bright attritus and vitrain, few fusain laminations, finely cleated, fragile; in 19 beds, four of which are mapped, including Pocahontas No. 4 rider, (P4r), Pocahontas No. 4 (P4), Pocahontas No.3 (P3), and Squire Jim (Simmons)(sj). The Squire Jim coal zone includes up to 5 coal beds (the middle bed generally is the thicker), and is very persistent throughout the study area. Underclay, medium-gray, clayey to silty, fossil root impressions

Pmb

BLUESTONE FORMATION (LOWER PENNSYLVANIAN AND UPPER MISSISSIPPIAN) - Shale, sandstone, siltstone, and limestone. Shale, mostly grayish-red mottled light-greenish-gray at top, partly calcareous, contains interbeds of light-greenish-gray very fine grained sandstone and siltstone, with thin discontinuous beds of medium-gray, argillaceous, fossiliferous limestone, thin evenly bedded. Locally includes lenticular beds of sub-angular limestone pebble conglomerate. Pride Shale Member (Mbp), dark-gray, silty and sandy, contains plant fossils, pyritic, thin evenly bedded; basal contact is unconformable with underlying formation

Mh

HINTON FORMATION (UPPER MISSISSIPPIAN) - Shale, sandstone, siltstone, and limestone. Shale, grayish-red to light-greenish-gray, silty, poorly bedded; Pratter Shale Member (Mhp), grayish-red, silty, poorly bedded, includes thin beds of light-greenish-gray siltstone and medium-gray, argillaceous, fossiliferous limestone, and medium-light gray, very fine grained sandstone. Underlain by Tallery Sandstone Member (Mht), light- to medium-light-gray and light-greenish-gray, fine- to medium-grained arkosic; includes conglomerate with rounded quartz pebbles, tree trunk impressions and coal fragments; thin-bedded to massive with shale interbeds; resistant, ridge-former, underlain by shale. Little Stone Gap Member (Mhl), limestone, light-grayish-brown to medium-gray thin-bedded, argillaceous, very fossiliferous. Sandstone member (Mhss) white to light-gray, very fine grained, thin to thick-bedded, quartzose, resistant. Basal member, Stony Gap Sandstone (Mhs), white to light-gray sandstone, very fine to fine-grained, sacchroidal, quartzose, massive, resistant, ridge-former

Mbf

BLUEFIELD FORMATION (UPPER MISSISSIPPIAN) - Shale, sandstone, siltstone, limestone, coal, and underclay. Unnamed shale member (Mbfu), grayish-red to light-greenish-gray, silty with thin sandstone interbeds, calcareous, thin-bedded, contains lycopod plant fossils and

fossiliferous light-greenish gray shale interbeds. Coal, (c) bright and dull attritus, impure. Underclay, medium-gray, clayey to silty, fossil root impressions. Indian Mills Sandstone Member (Mbf1), light-gray to light-greenish-gray, very fine to fine-grained, quartzose to arkosic, thin- to thick-bedded, ripple-bedded, fossil root penetration impressions in upper part of unit, pyrite nodules, includes shale and siltstone interbeds. "Little Lime" Member (Drillers term) (Mbfl), limestone, light-bluish-gray to medium-light-gray, very finely crystalline, argillaceous, dolomitic, calcilutite, contains black chert nodules and abundant fossil corals; thin- to thick-bedded with light-greenish-gray shale interbeds. Thicker units to the southeast are moved against thinner units to the northwest. This is due to crustal shortening by extensive thrust faulting

Mg

GREENBRIER LIMESTONE (UPPER MISSISSIPPIAN) - Limestone, medium-light-gray, olive-gray, light-bluish-gray to light-yellow-brown, dolomitic, oolitic to coarsely crystalline with fossil hash, thin- to thick-bedded to massive. Upper beds contain abundant crinoid stems, blastoids, bryozoans, and thin light-greenish-gray shale partings; includes light-grayish-red-shale beds (Taggard Marker), in middle portion; lower part contains black nodular and banded chert; basal member is dolomitic, light-yellowish-gray, finely crystalline calcilutite

Mm

MACCRADY SHALE (LOWER MISSISSIPPIAN) - Shale and limestone; shale, light-grayish-red, few light-greenish-gray beds, silty, thin to poorly bedded. Abundant collapse breccia in middle of formation, with anhydrite(?), includes limestone at base, light-yellowish-brown to bluish-gray, dolomitic

Mpr

PRICE FORMATION (LOWER MISSISSIPPIAN) - Sandstone, siltstone, and shale. Sandstone member (Mprs), medium-light-gray to light-greenish-gray, fine- to medium-grained, arkosic, few rounded quartz pebbles, locally contains fossil root zones, and carbonaceous shale with plant impressions, pyritic, few light-greenish-gray siltstone interbeds; contains glauconite beds up to 6 in. thick,

micaceous and includes abundant large marine fossil shell casts. Sandstone predominates upper half of formation. Shale member (Mpr), light-olive-gray to dark-gray, carbonaceous, marine fossils. Few siltstone and sandstone interbeds, few ironstone bands

- Mc BIG STONE GAP MEMBER OF CHATTANOOGA SHALE (LOWER MISSISSIPPIAN) - Shale, black, carbonaceous, pyritic, thin-bedded, very fissile, tectonically deformed where exposed
- Mcb BEREA SANDSTONE MEMBER (LOWER MISSISSIPPIAN) - Sandstone, medium-light-gray to light-greenish-gray, fine-to coarse grained, very conglomeratic with rounded quartz pebbles, mica, pyrite, calcareous, silty, thick-bedded to massive, shale interbeds, few marine invertebrate fossil casts at base
- Db BRALLIER SHALE (UPPER DEVONIAN) - Shale, medium-to dark-gray, olive-gray to black; thin evenly bedded with sandstone and siltstone interbeds. Sandstone, medium-light-gray, very fine to medium-grained with few quartz pebbles, mica, thin- to thick-bedded, fossil root penetration impressions, few thin black carbonaceous very fissile shale interbeds with fossil plants. Calcareous in places, few thin glauconite beds
- Dm MILLSBORO SHALE (UPPER DEVONIAN) - Shale, greenish-gray, dark-gray to black, very silty, very fissile, carbonaceous, includes thin limestone beds and nodules. Bottom half of unit not exposed in map area due to faulting
- Do ONONDAGA LIMESTONE (MIDDLE DEVONIAN) - Limestone, light-gray and brown to black, very finely coarsely crystalline, silty, sandy, thin-bedded, cherty, glauconitic, fossiliferous, with light-greenish-gray siliceous shale. Unit not exposed in map area due to faulting
- Dor ORISKANY SANDSTONE (LOWER DEVONIAN) - Sandstone, white to light-gray, quartzose, saccharoidal, coarse-grained, with black shale interbeds, calcareous, massive, ridge-former. Unit not exposed in map area due to faulting

- Dh HELDERBERG LIMESTONE (LOWER DEVONIAN) - Limestone, medium to light-bluish-gray, finely to coarsely crystalline, oolitic, clastic, conglomeratic, thick-bedded to cross-laminated sandy, chert nodules, few sandstone and siltstone interbeds. Unit not exposed in map area due to faulting
- Dcf CLIFTON FORGE SANDSTONE (LOWER DEVONIAN) - Sandstone, white to medium-light-gray, fine-grained, quartzose, thin-bedded to cross-laminated, argillaceous, with dark-gray shale and limestone interbeds. Unit not exposed in map area due to faulting
- Ss SALINA (?) FORMATION (UPPER SILURIAN) - Dolomite, light-brownish-gray, argillaceous, silty, very finely crystalline, contains anhydrite, thin interbeds of siltstone, limestone, and greenish-gray shale. Unit not exposed in map area due to faulting
- St TONOLOWAY LIMESTONE (UPPER SILURIAN) - Limestone, light-gray, bluish-gray to dark-red, yellow, and black, thin-bedded, ribbon-banded, finely crystalline, argillaceous, with interbeds of saccharoidal sandstone and calcareous shale. Unit not exposed in map area due to faulting
- Sw WILLS CREEK FORMATION (UPPER SILURIAN) - Sandstone, medium-light-gray, fine- to medium-grained, salt-crystal casts, calcareous, with interbeds of calcareous shale, and limestone. Unit not exposed in map area due to faulting
- Srh ROSE HILL FORMATION (MIDDLE SILURIAN) - Sandstone, siltstone, and shale. Sandstone, dark-grayish-red to reddish-black, with thin interbeds of white sandstone. Siltstone, olive-green to brown. Shale, grayish-red to greenish-gray, contains beds of fossiliferous oolitic hematite. Unit not exposed in map area due to faulting
- Sc CLINCH SANDSTONE (LOWER SILURIAN) - Sandstone, white to light-gray, coarse-grained, saccharoidal, quartzose, with rounded quartz pebbles, Unit not exposed in map area due to faulting

- thick-bedded to massive, cross-laminated, with few grayish-red shale interbeds, worm burrows, glauconite. Unit not exposed in map area due to faulting
- Oj JUNIATA FORMATION (UPPER ORDOVICIAN) - Shale and siltstone. Shale, light-grayish-red, with interbeds of quartzose sandstone, finely laminated. Siltstone, mottled grayish-red to greenish-gray, non-fossiliferous. Unit not exposed in map area due to faulting
- Or REEDSVILLE SHALE (UPPER ORDOVICIAN) - Shale, light-olive-green, very fissile, silty, micaceous, few calcareous beds, includes argillaceous fossiliferous limestone. Unit not exposed in map area due to faulting
- Ot TRENTON LIMESTONE (MIDDLE ORDOVICIAN) - Limestone, light-gray, medium crystalline, thin-bedded, ribbon-banded, argillaceous; includes dark-gray shale interbeds and brown chert bands. Unit not exposed in map area due to faulting
- Oe EGGLESTON FORMATION (MIDDLE ORDOVICIAN) - Limestone, shale, and siltstone. Limestone, light- to dark-gray, argillaceous, contains altered metabentonite. Shale, greenish gray with cuneiform jointing in silicified beds, ripple marks. Siltstone, dark-brown, with chert. Lithologies are interbedded. Unit not exposed in map area due to faulting
- Om MOCCASIN FORMATION (MIDDLE ORDOVICIAN) - Shale, siltstone, and limestone. Shale, light-grayish-red, with interbeds of light-gray, argillaceous limestone. Siltstone, grayish-red to greenish-gray, mottled, mud-cracks. Limestone, calcilutite, bluish-gray with metabentonite, silicified cuneiform joints. Unit not exposed in map area due to faulting
- Ow WITTEN LIMESTONE (MIDDLE ORDOVICIAN) - Limestone, light-grayish-yellow to dark-gray, argillaceous, thin-bedded to ribbon-banded, shaly, finely to coarsely crystalline, interbeds of calcilutite. Unit not exposed in map area due to faulting

- Ob BOWEN FORMATION (MIDDLE ORDOVICIAN) - Shale, limestone, and sandstone. Shale, light-grayish-red, mud cracks, columnar jointing. Limestone, greenish-gray, clayey, argillaceous, calcilutite. Sandstone, greenish-gray. Lithologies are interbedded. Unit not exposed in map area due to faulting
- Owa WARDELL FORMATION (MIDDLE ORDOVICIAN) - Shale and limestone. Shale, bluish-gray. Limestone, light-gray to light-grayish-brown to pink, coarsely crystalline, lenticular, nodular, argillaceous, coquina; contains shale interbeds, and fossil corals. Unit not exposed in map area due to faulting
- Obe BENBOLT LIMESTONE (MIDDLE ORDOVICIAN) - Limestone, light-gray to dark-bluish-gray, coarsely crystalline, saccharoidal, cross laminated, sparse chert, crinoid fossil fragments, contains argillaceous clayey limestone. Unit not exposed in map area due to faulting
- Op PERRY LIMESTONE (MIDDLE ORDOVICIAN) - Limestone, dark-bluish-gray, finely to coarsely crystalline, few clastic conglomeratic lenses, cross-laminations, fossiliferous, contains black chert, gray calcilutite, and bituminous shale. Unit not exposed in map area due to faulting
- Owc WARD COVE LIMESTONE (MIDDLE ORDOVICIAN) - Limestone, light-gray to brownish to dark-bluish-gray, finely to coarsely crystalline, cross-laminated, argillaceous, with shale interbeds, cherty, fossiliferous, pyritic. Unit not exposed in map area due to faulting
- O1 LINCOLNSHIRE LIMESTONE (MIDDLE ORDOVICIAN) - Limestone, dark-bluish-gray, medium to coarsely crystalline black chert nodules, irregular bedding with shale laminations, pyritic; fossiliferous. Unit not exposed in map area due to faulting
- Ofo FIVE OAKS LIMESTONE (MIDDLE ORDOVICIAN) - Limestone, light-gray to gray, finely crystalline thick-bedded, fossiliferous, calcilutite. Unit not exposed in map area due to faulting

- Oel ELWAY LIMESTONE (MIDDLE ORDOVICIAN) - Limestone, light-gray to dark-bluish-gray, finely crystalline, argillaceous, cherty, fossiliferous. Unit not exposed in map area due to faulting
- Obf BLACKFORD FORMATION (MIDDLE ORDOVICIAN) - Chert, shale, limestone, and dolomite, intraformational conglomerate. Chert, light-gray, mottled red and green; chert fragments mixed with dolomite pebbles. Shale, light-gray. Siltstone, grayish-red, interbedded with light-gray chert. Limestone, medium-gray, thin-bedded, cherty. Dolomite, medium-gray including pink chert, basal contact with underlying beds is sharp and irregular, unconformable. Unit not exposed in map area due to faulting
- Obm BEEKMANTOWN DOLOMITE (LOWER ORDOVICIAN) - Dolomite, light-gray to light-greenish-gray, mottled grayish-red to pink, finely crystalline, saccharoidal, oolitic; with chert, siltstone, and sandstone lenses, thick-bedded, cross-laminated, ripple-marked, includes thin beds of light-bluish-gray limestone, and gray calcilutite, very fossiliferous with doloclastic chert. Unit not exposed in map area due to faulting
- Cc COPPER RIDGE DOLOMITE (UPPER CAMBRIAN) - Dolomite, light-gray, pink, to dark-bluish-gray, finely to coarsely crystalline, contains edgewise conglomerates of clastic dolomite and thin to thick quartzose saccharoidal sandstone interbeds locally; includes black and white banded oolitic chert, quartz sand grains, argillaceous limestone beds, stringers of siliceous shale and siltstone, ripple-marks, mud cracks, and fossil cryptozoon algal structures. Unit not exposed in map area due to faulting
- Cm MAYNARDVILLE LIMESTONE (UPPER CAMBRIAN) - Limestone, dark-gray to bluish-gray, finely crystalline, dolomitic, argillaceous, silty, fossiliferous, ribbon-banded, includes bluish-gray shale partings. Unit not exposed in map area due to faulting

- En NOLICHUCKY SHALE (UPPER CAMBRIAN) - Shale, greenish-gray, olive, to reddish brown, thin-bedded, siliceous, noncalcareous; includes thin beds of bluish-gray, ribbon-banded dolomitic limestone; argillaceous, oolitic, fossiliferous. Unit not exposed in map area due to faulting
- Ch HONAKER DOLOMITE (MIDDLE CAMBRIAN) - Dolomite, white, light- to dark-bluish-gray, finely to coarsely crystalline, saccharoidal, thin- to thick-bedded, contains interbeds of limestone and shale; limestone, dark-bluish-gray, finely to coarsely crystalline, oolitic, argillaceous, thin- to thick-bedded, ribbon-banded; shale, light- to medium-gray, light-greenish-gray, non-calcareous, fossiliferous. Upper part of unit not exposed in map area due to faulting
- Er ROME FORMATION (LOWER CAMBRIAN) - Shale, sandstone, siltstone, limestone, and dolomite. Shale, light-grayish-red to greenish-gray, silty, sandy, micaceous, arkosic, thin-bedded to fissile, mud cracks, ripple marked, glauconitic. Sandstone, grayish-red, very fine grained, thin-bedded. Siltstone, grayish-red to greenish-gray. Lower portion contains interbeds of limestone and dolomite; limestone, light-bluish-gray, oolitic, finely crystalline, with few lime-pebble conglomerates. Dolomite, medium-gray to light-bluish-gray, finely to medium crystalline, argillaceous, thin- to thick-bedded
- Es SHADY(?) DOLOMITE (LOWER CAMBRIAN) - Dolomite, white to medium-light-gray to dark-gray, finely to medium crystalline, saccharoidal, cherty, pyritic, locally contains sunbursts of barite; few silty, reddish-brown shale interbeds at top, includes few light-gray shale partings; basal part of unit is sheared, deformed, and isoclinally folded with slickensides; in fault contact with overturned Devonian Millsboro Shale Member

Description of formations not exposed, is taken from literature and gas well logs in and from adjoining quadrangles; surface and subsurface geology may not necessarily reflect subsurface structure contours on Pocahontas No. 3 coal bed. This is due to regional thinning of interbeds; and complex thrust-and-scissor faulting in the overturned and imbricated zones

References

Butts, Charles, 1940, Geology of the Appalachian Valley in Virginia; Virginia Geological Survey Bulletin 52.

Cooper, B. N., 1945, Industrial Limestones and Dolomite in Virginia: Clinch Valley District, Virginia Geological Survey Bulletin 66.

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