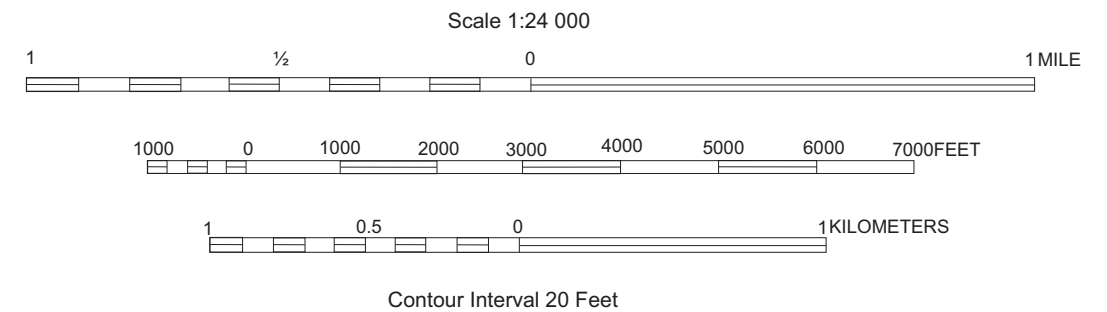


- Quaternary**
  - Qal** **Fluvial Deposits**  
Medium to dark grayish brown, locally reddish brown, poorly sorted, unconsolidated cobbles, pebbles, sand, and silt. Locally thicker layers of moderately sorted, rounded cobbles or pebbles reflecting previous locations of stream channel. Thickness is typically less than 3 feet, but locally may be as thick as 10 feet.
  - Qt** **Terrace Deposits**  
Reddish brown, clayey to sandy matrix containing rounded pebbles to cobbles of sandstone, vein quartz, and quartzite. These deposits are locally present along of Toms Creek and the Monocacy River, but at a higher level than the present stream level. Thickness ranges from a thin veneer to more than 10 feet thick.
  - Qc** **Colluvial Deposits**  
Unsorted diamictum containing light gray to reddish gray, angular to subrounded boulders and cobbles of quartzite with a silty matrix. Present as a thin veneer covering outcrops of the Weverton Formation on the sides of College Mountain and as wedge-shaped deposits of boulders distributed at the toe of Catoctin Mountain. These deposits originate by mechanical fragmentation of the quartzite units within the Weverton Formation and by downslope movement of that material. Thickness ranges from a thin veneer to more than 100 feet.
- Jurassic**
  - Jd** **Diabase**  
Medium to dark gray, medium- to fine-grained, massive diabase. Occurs in dikes that can exhibit equigranular salt and pepper texture or aphanitic texture, especially at dike margins and where it is thin. Mappable dikes vary from 5 to 30 feet in width. Weathers to rusty, reddish or orange brown, spheroidal boulders and cobbles. Distributed as linear dikes that cut across stratification and massive sills that are subparallel to it. At the Pennsylvania boundary, sills of massive, coarsely crystalline and gabbroic diabase represent the southern end of the Gettysburg sill complex. In this area the diabase is highly fractured. Thickness of sills in Maryland was not determined, but is as much as 2,500 feet in the center of the basin in Pennsylvania.
- Triassic**
  - JTm** **Thermally metamorphosed rocks**  
Medium to olive gray, hard, brittle and fractured hornfels and meta-arkose, adjacent to diabase intrusions. Includes dark gray to olive black hornfels in contact metamorphic zones that are a few feet wide adjacent to narrow dikes but may be hundreds of feet thick adjacent to thick sills.
  - Tg** **Gettysburg Formation**  
Cyclically interbedded reddish gray, laminated, very fine-grained sandstone, sandy siltstone and red to reddish brown shale to rooted mudstone. Sandstone and siltstone intervals are commonly laminated to cross-laminated and siltstone intervals are mudcracked. Mudstone intervals are pervasively rooted and show signs of incipient soil development. Along the base of Catoctin Mountain a narrow belt of limestone conglomerate marks the western edge of the Gettysburg Basin in Maryland. The thickness of the Gettysburg Formation is estimated at 8,000 feet Emmitsburg Quadrangle.
  - Tgh** **Heidersburg Member**  
Interbedded gray, calcareous siltstone and shale, laminated mudcracked and brecciated limestone, and dark grayish brown to reddish brown siltstone and shale that forms the top of the Gettysburg Formation in Maryland. Bedding is defined by cycles of gray siltstone and shale grading upward into gray laminated limestone and then reddish siltstone. The Heidersburg Member is 400 to 500 feet thick in the Maryland part of Emmitsburg Quadrangle.
  - Tn** **New Oxford Formation**  
The New Oxford Formation consists of interbedded, gray, pinkish gray, and reddish brown, fine- to coarse-grained sandstone, brownish red to reddish gray siltstone, red mudstone, shale, and calcareous claystone. Sandstone or sandstone-dominated intervals (Tns) are mapped where they can be identified. Sandstone intervals in the lower part of the formation are gray, coarse to very coarse grained, cross-bedded, exhibit sharp bases, and are interbedded with rooted calcareous mudstone containing calciche palaeosols. Higher in the formation, sandstones are more lenticular, and are red-brown in color, and are increasingly finer grained, and interbedded with red, silty shale. These lenticular red sandstone intervals contain sharp, erosional bases and distinctive large-scale epsilon cross-bedding and a upsection fining. Mudstone and claystone intervals in this part of the formation are thoroughly root-mottled and contain light gray, calciche carbonated nodules. Thickness is estimated at 6000 feet in the Emmitsburg Quadrangle.
  - Tri** **Ishkown Member**  
Thin and discontinuous lenses and wedges of reddish brown, moderately well sorted, poorly cemented quartz-pebble conglomerate interbedded with red brown coarse-grained sandstone and red mudstone that is the basal New Oxford member in Maryland. Pebbles are equidimensional and typically moderate to well-sorted. Locally, pebbles exhibit indication of cross-bedding and grading from pebbles and cobbles to granules. Present at the base of the New Oxford Formation, but not mapped separately. Thickness is 0 to 350 feet.
  - Cf** **Frederick Formation (undifferentiated)**  
Medium to dark gray, thin- to medium-bedded, pyritic, argillaceous limestone and shaly limestone. Contains intervals of tan-weathering dolomitic shale and sandy brecciated limestone. In the Emmitsburg Quadrangle the Frederick Formation is highly sheared and highly deformed and is not divisible into members like areas of the Frederick Valley. Thickness in the Emmitsburg Quadrangle is estimated at 500 to 1000 feet.
  - Ch** **Harpers Formation**  
Brownish gray to dark greenish gray, silty, phyllitic shale to highly sheared, phyllitic siltstone with intervals of brownish gray, medium-grained, silty sandstone. Thickness is estimated at greater than 900 feet in the Emmitsburg Quadrangle.
- Cambrian**
  - Cwo** **Weverton Formation**  
Light gray to gray quartzite and light to medium gray metagraywacke with intervening intervals of dark greenish gray tuffaceous phyllite. Three members are mapped within the Weverton Formation on Catoctin Mountain in Maryland. In ascending order these are the Buzzard Knob, Maryland Heights, and Owens Creek members (Brezinski, 1992).
  - Owm** **Owens Creek Member** - Medium to medium dark gray, medium- to thick-bedded, pebbly, ferruginous metagraywacke with thin layers of dark gray metasilstone and shale. Some layers are poorly bedded and conglomeratic while others exhibit coarse-grained cross-beds. This member is poorly exposed along the eastern flank of College Mountain. Thickness is 150 to 200 feet.
  - Cwm** **Maryland Heights Member** - Interbedded, dark gray to dark greenish gray, intensely sheared, tuffaceous metasilstone, metagraywacke, and quartzite. Near the top of the member is a thick-bedded to massive, light gray quartzite approximately 30 feet (10 m) thick, represents the main ridge-forming unit in the northern parts of Catoctin Mountain. Thickness of the member is estimated at 200 to 300 feet.
  - Cwb** **Buzzard Knob Member** - Light- to medium-gray, thin- to medium-bedded, metagraywacke with thin partings and interbeds of thin, dark gray, fine-grained chloritic layers up to 1.5 inch thick. Tabular and trough cross-bedding is prominent in the upper part of this member. The Buzzard Knob Member has an estimated thickness of 150 to 200 feet.
  - Czi** **Loudoun Formation**  
Medium to dark gray, medium-bedded, phyllitic metagraywacke, medium gray, granule conglomerate with gray phyllite pebbles, and black, tuffaceous phyllite. The Loudoun Formation is estimated at approximately 1,500 feet in the Emmitsburg Quadrangle.
  - Zom** **Catoctin Formation**  
Massive to sheared and foliated, medium to dark greenish-gray, chloritic, epidote-rich metabasalt. Flow banded locally. Thickness in the Emmitsburg Quadrangle is estimated at greater than 1000 feet.

# Geologic Map of the Maryland Portions of the Emmitsburg and Taneytown Quadrangles, Frederick and Carroll Counties, Maryland

By David K. Brezinski 2021

DEPARTMENT OF NATURAL RESOURCES  
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Director



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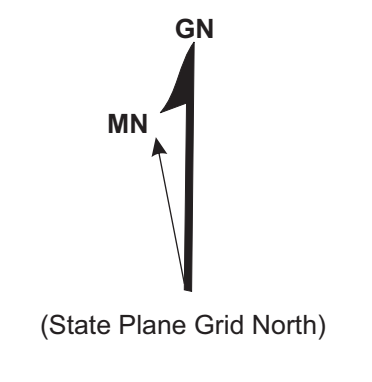
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Geologic field mapping conducted in 2017-2020. The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin or physical and mental disability.

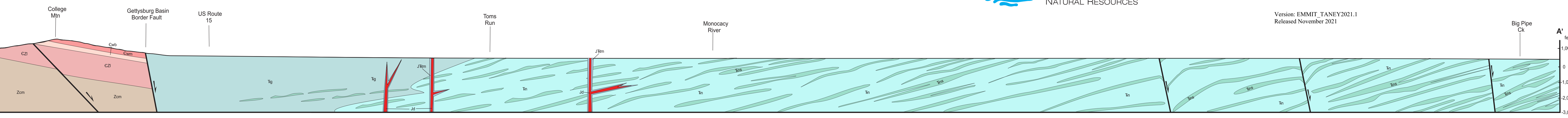
Version: EMMIT\_TANEY2021.1  
Released November 2021

U.S. Geological Survey (USGS) US Topo 7.5-minute Series  
Emmitsburg, MD quadrangle, 2016; Taneytown, MD quadrangle 2019  
Maryland State Plane Coordinate System 1983  
(Projection: Lambert Conformal Conic, 1983 geodetic reference system)  
(Horizontal Datum: North American Datum 1983)  
Geographic coordinates (latitude-longitude). Shows near corners  
Reported magnetic north declination for the Emmitsburg Quadrangle is 10.83° W  
To determine current magnetic declination see: (<http://www.ngdc.noaa.gov/geomag/declination.shtml>)

Adjoining 7.5-minute quadrangles (Emmitsburg and Taneytown quadrangles shaded)			
1	2	3	4
5	6	7	8
9	10		



STATE OF MARYLAND  
Lawrence J. Hogan  
Governor  
Boyd K. Rutherford  
Lieutenant Governor



### Explanation of Map Symbols

<b>Contacts</b>	<b>Faults</b>
Geologic contact, definite and approximate. Dotted where concealed.	Fault: high angle. D refers to down thrown side, U to the up thrown side. Dotted where concealed.
<b>Planar Features</b>	Fault: overthrust. Saw tooth pattern on up thrown block. Dotted where concealed.
Inclined bedding strike and degree of dip shown	Quarry (active or abandoned)
Horizontal bedding	Spring
Vertical bedding	Cross section line
foliation (strike and degree of dip shown)	
Inclined joint strike and degree of dip shown	
Vertical joint strike shown	

### Base Map Symbols

<b>Transportation</b>	<b>Topography</b>
Primary route, class 1 (divided lanes)	Topographic index contour (100-ft interval)
Primary route, class 1 (undivided)	Topographic intermediate contour (20-ft interval)
Secondary route, class 2	<b>Hydrography</b>
Light duty road or street, class 3	Stream
	Water body (eg. lakes, ponds, rivers)