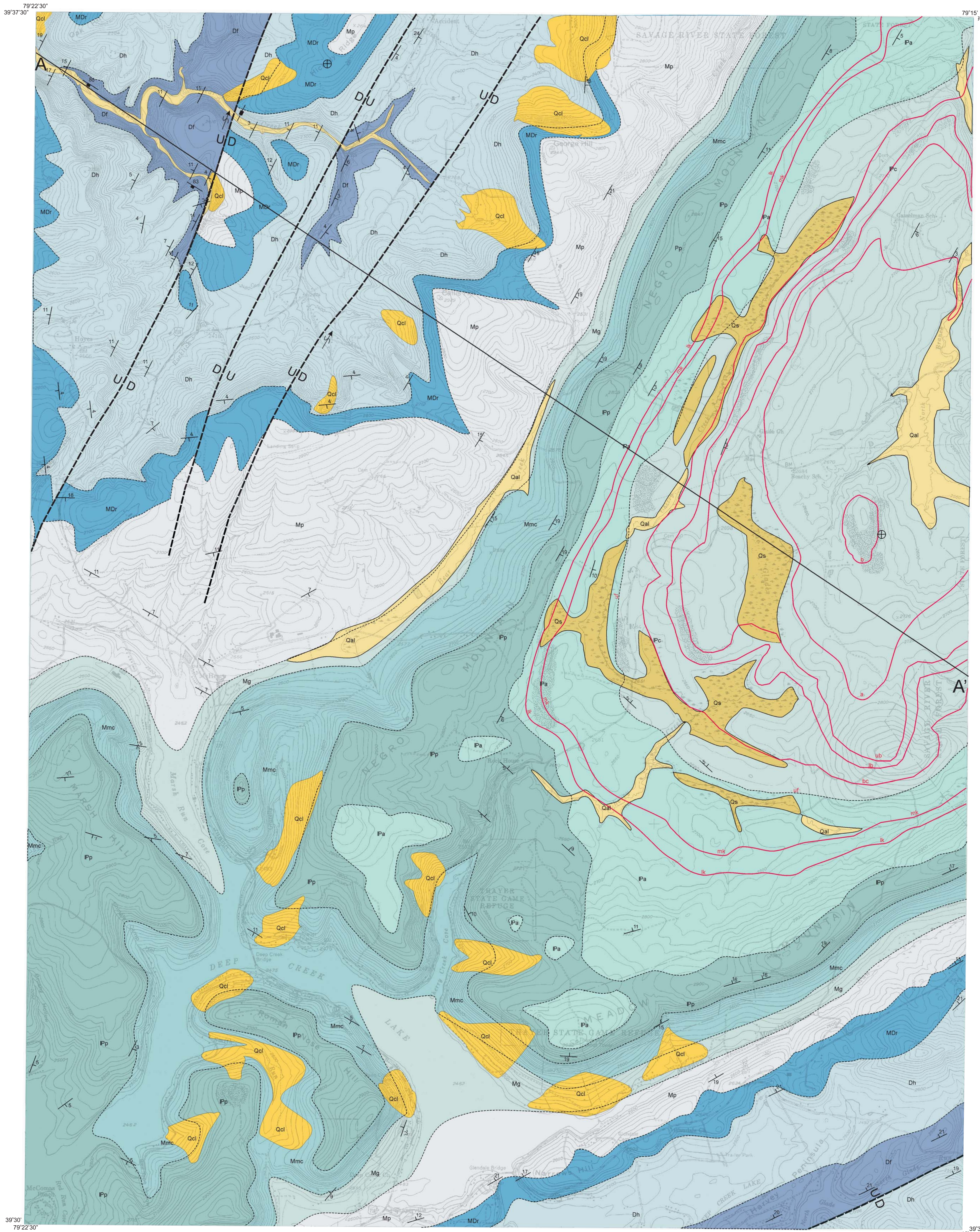


DESCRIPTION OF MAP UNITS

Qal	Alluvium Unconsolidated reddish brown to tan accumulations of sand, silt, pebbles, cobbles and boulders that weathers yellow, orange, and orange-brown. Although much of Bear Creek flows on exposed bedrock, adjacent mapped alluvium deposits include those formed both along modern and ancient streams. The thickness of alluvium varies from a thin veneer to more than 30 feet. These thicker accumulations tend to be concentrated where colluvium at the edge of valleys overlaps the alluvium.
Qs	Swamp Unconsolidated gray to dark gray, organic material and peat that are the remains of bogs. These deposits have accumulated in poorly drained glades and lakes that formed during the late Pleistocene. Thickness ranges from less than three feet to nearly 10 feet.
Qcl	Colluvium/Landslide Unconsolidated and unsorted deposits of cobbles, and boulders that accumulate on steep slopes below outcrops of sandstone units such as those in the Hampshire, Purslane, and Pottsville formations. This unit also includes landslide masses along Bear Creek that are perched on scarp slopes uplope from the deposit. Colluvium accumulations range in thickness from a thin veneer of less than three feet on steep slopes to more than 50 feet (15 m) at the toe of slopes.
Pc	Conemaugh Group (Undivided) Interbedded, light gray to tan, micaceous, medium-grained, cross-bedded sandstone and gray, silty shale, siltstone, and thin, dark gray, carbonaceous shale. Several calcareous marine to marginal marine shales are present in the lower half of the group (Glenclaw Formation). These marine intervals are underlain by the Brush Creek (bc), lower Bakerstown (b), and Ames (a) coals. Thick-bedded, tan, medium-grained, cross-bedded sandstone, greenish gray and reddish brown to variegated mudstone, shale, claystone, and nodular nonmarine limestone present in its upper part (Casselman Formation). The Barton (b) coal bed is the only upper Conemaugh coal bed mined in the Youghiogheny basin. The Conemaugh Group is 800 to 900 feet thick (245 to 275 m).
Pa	Allegheny Formation Interbedded, medium to dark gray shale and siltstone, and tan to light gray, cross-bedded sandstone, with thin claystone near the base, and several mineable coal beds. The top of the formation is at the top of the Upper Freeport (uf) coal bed and the base of the formation is the top of the Homewood Sandstone member of the underlying Pottsville Formation. The upper Kittanning (uk) and lower Kittanning (lk) coal beds are locally mined. The Allegheny Formation is between 200 to 250 feet thick (61 to 76 m).
Pp	Pottsville Formation Dominantly tan to light gray, medium- to coarse-grained, cross-bedded sandstone and conglomeratic sandstone with abundant coaly plant fragments and subordinate intervals of dark gray, coaly shale, siltstone, and thin coal beds. The light gray, highly cross-bedded Homewood Sandstone Member constitutes a resistant, mappable sandstone layer at the top of the formation. Total thickness for the unit is 180 to 200 feet (55 to 61 m).
Mmc	Mauch Chunk Formation Interbedded, reddish brown shale; variegated, blocky, root-mottled mudstone and siltstone; and reddish brown to greenish gray, medium-grained sandstone. Sandstone intervals are cross-bedded, exhibit sharp bases, and fine upsection. Several thin greenish gray, marine calcareous shale to argillaceous limestone units are present near the base of the formation. The Mauch Chunk Formation is approximately 600 feet thick in Allegheny County and thins westward to 300 feet in thickness in western Garrett County (90 -180 m).
Mg	Greenbrier Formation Light gray, cross-bedded, sandy limestone to calcareous sandstone at the base (Loyalhanna Member). The Loyalhanna Member is overlain by interbedded, reddish, fossiliferous mudstone, and tan to reddish brown, fine-grained sandstone, and reddish brown siltstone and variegated shale (Savage Dam Member). The Savage Dam Member is succeeded upward by thin- to medium-bedded, light to medium gray, argillaceous, fossiliferous limestone at the top of the formation (Wymps Gap Member). The Greenbrier Formation is 150 to 200 feet thick (45-60 m).
Mp	Purslane Formation Light gray, tan, and locally reddish brown, coarse-grained to conglomeratic, thick-bedded to cross-bedded sandstone, thin beds of gray shale, and coaly shale. In the Accident Quadrangle the base of the Purslane Formation is mapped at the base of a resistant, massive, buff weathering, pebbly, conglomeratic sandstone above the bioturbated marine sandstone and variegated shales of the Riddlesburg Member of the Rockwell Formation. The Purslane Formation is 250 to 300 feet thick in western Garrett County (75-90 m).
MDr	Rockwell Formation Interbedded, greenish gray, argillaceous, burrowed sandstone, and reddish gray to gray, coaly siltstone and shale and tan lenticular sandstone. The base of the formation is marked by an interval of greenish gray, argillaceous, burrowed sandstone that sharply overlies the Hampshire Formation. This interval is equivalent to the Oswayo marine interval in western Pennsylvania. A thick interval of cross-bedded, medium-grained fluvial sandstone is present above the Oswayo marine strata. Near the top of the formation interval of light gray to tan, thin-bedded to cross-bedded, burrowed sandstone is interpreted to be correlative with the Riddlesburg Shale of Washington County, Maryland. The Rockwell Formation is between 150 and 200 feet thick in Garrett County (45-65 m).
Dh	Hampshire Formation Interbedded, reddish brown to brownish red, locally greenish gray, cross-bedded, fining upward, lenticular sandstone; reddish brown micaceous siltstone, shale, and red-brown rooted claystone. The thickness of the Hampshire ranges from approximately 1,600 to 2,000 feet (500-600 m) in Garrett County.
Df	Foreknobs Formation Interbedded, olive-gray, medium- to coarse-grained, cross-bedded sandstone; greenish gray to dusky red, fossiliferous shale and siltstone. Top of the formation consists of thick (5-30 feet, 10 m) conglomeratic sandstone intervals considered equivalent to the Pound Sandstone Member of the Valley and Ridge Province. The Foreknobs Formation is approximately 1,500 feet (450 m) thick in Garrett County, but thickens to more than 2,000 feet (460 m) in Allegheny County, Maryland.



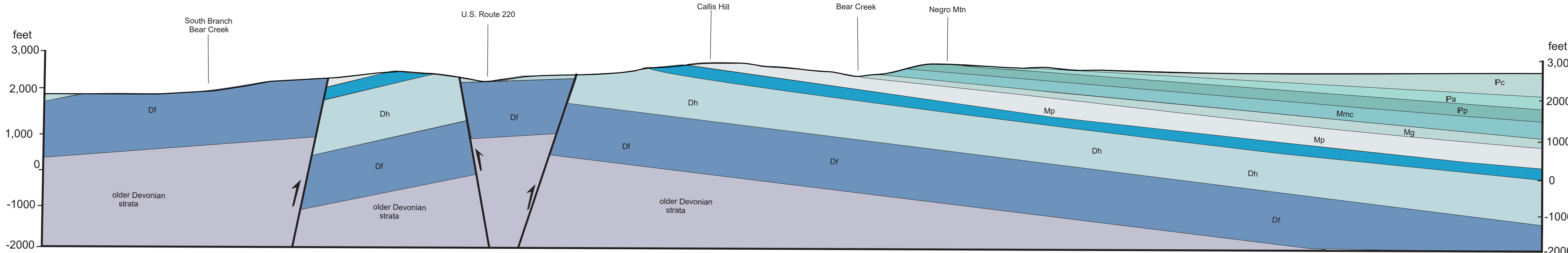
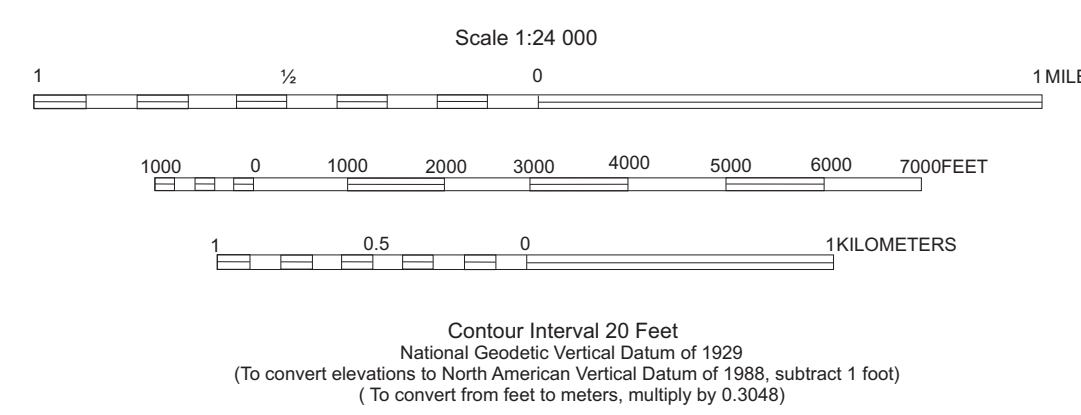
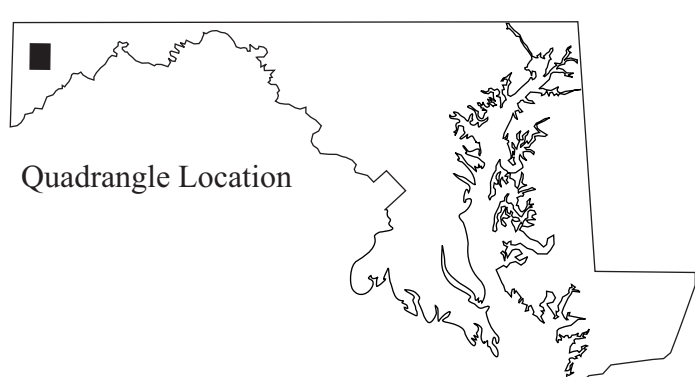
Geologic Map of the McHenry Quadrangle, Garrett County, Maryland

U.S. Geological Survey (USGS) US Topo 7.5-minute Series
McHenry, MD quadrangle, 1987. Map revised 1974
Maryland State Plane Coordinate System FIPS 1900
(Projection: Lambert Conformal Conic, 1980 geodetic reference system)
(Horizontal Datum: North American Datum 1983)
Geographic coordinates (latitude-longitude). Shown near corners
Reported magnetic north declination (center of McHenry quadrangle): 7.0° W
To determine current magnetic declination see: (<http://www.ngdc.noaa.gov/geomag/declination.shtml>)

By
David K. Brezinski
2016

Adjoining 7.5-minute quadrangles (McHenry quadrangle shaded)

1	2	3	1 Friendsville
4	5	2 Accident	2 Grantsville
6	7	3 Sang Run	3 Bittinger
		4 Oakland	4 Deer Park
		5 Kitzmiller	



Explanation of Map Symbols

Contacts
Geologic contacts; definite, approximate, and concealed location

Planar Features
Inclined bedding: strike and degree of dip shown
Horizontal bedding
Inclined joint: strike and degree of dip shown
Vertical joint: strike shown

Faults
Fault; approximately located. D refers to down-thrown side, U to the up-thrown side.

Folds
Minor anticline: bearing and degree of plunge shown

Coal Beds
Projected outcrop trace of coal bed

Base Map Symbols

Transportation
Primary route, class 1 (divided lanes)
Primary route, class 1 (undivided)
Secondary route, class 2
Light duty road or street, class 3

Topography
Topographic index contour (100-ft interval)
Topographic intermediate contour (20-ft interval)

Hydrography
Stream
Water body (eg. lakes, ponds, rivers)

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



DEPARTMENT OF NATURAL RESOURCES
Mark J. Belton
Secretary
Frank W. Dawson
Deputy Secretary
MARYLAND GEOLOGICAL SURVEY
Richard Ott
Director



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Acknowledgements: This map partially funded by the U. S. Geological Survey, National Cooperative Geologic Mapping Program, under USGS award number G15AC00258. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U. S. Government.

Geologic field mapping conducted in 2014-2016.

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Version: McHEN2016.0F
Released June 2016