

Description of Map Units

<p>Quaternary</p> <ul style="list-style-type: none"> Qal Alluvium Brownish red, poorly sorted, rounded pebbles to boulders with sand, silt, and clay matrix. Layers of moderately sorted, rounded cobbles or sandstone pebbles are also present locally. Thickness is less than 15 feet (5 m). Qc Colluvium Unsorted, light gray to reddish gray, angular to subangular boulders and cobbles of quartzite with a silty matrix. Present as thick aprons at the base of the eastern flank of Catoctin Mountain. Originated by the streams flowing from the Blue Ridge and by downslope movement of weathered material from the Weverton Formation. Thickness ranges from a thin veneer to more than 100 feet (30 m). Qr Terrace deposits Reddish brown, sandy and clayey mixture of unconsolidated pebbles to cobbles of sandstone, vein quartz, and quartzite. Present above the current Monocacy River. Thickness ranges from a thin veneer to more than 10 feet (3 m). <p>Triassic</p> <ul style="list-style-type: none"> Tg Gettysburg Formation Medium red to reddish gray, silty, mudstone to claystone with thin interbeds of medium- to coarse-grained sandstone. Sandstone exhibit sharp bases, shale pebble lag conglomerates, and fine up-section. Claystone intervals are thoroughly root-mottled and contain light gray, calcite carbonated nodules. Along the base of Catoctin Mountain a mappable limestone conglomerate (TgC) marks the western edge of the Gettysburg Basin in Maryland and is similar in appearance and position to the Leesburg Formation in the Culpeper Basin. Thickness is in question, but may be as much as 8,000 feet (2,438 m). Tn New Oxford Formation Brownish red to reddish brown, medium- to coarse-grained sandstone interbedded with red, variegated claystone and micaceous siltstone. Conglomerate at the base of formation (TnC) is light reddish gray, subangular to subrounded, quartz and limestone conglomerate. Clasts are predominantly gray limestone, tan dolomite, or quartz pebbles with a matrix is a reddish brown, calcareous mudstone. Sandstones (TnS) exhibit sharp bases with shale pebble lag conglomerates, and fine up-section. Claystone intervals are thoroughly root-mottled and contain light gray, calcite carbonate nodules. Poorly exposed, and thickness is in question. Thickness is in excess of 10,000 feet (3,048 m) (Brezinski, 2004). <p>Cambrian</p> <ul style="list-style-type: none"> Ca Frederick Formation Dark gray, very thin to medium-bedded limestone, dolomitic limestone with thin intervals of shale, sandy limestone and breccia. Because of the numerous lithologies present in this unit, it is herein recommended that the term formation be used when discussing the Frederick. Four members are recognized within the Frederick Formation by Reinhardt (1974) and Brezinski (2004), but only the Adamstown Member and the Rocky Springs Station Member occur in the Catoctin Furnace Quadrangle. CaA Adamstown Member Thinly interbedded, medium dark gray to dark gray, argillaceous, fine-grained limestone and dusky yellow to medium dark gray, silty dolomite. Limestone beds range from 0.1 to 2.0 inches (0.3 to 5.1 cm) in thickness. Several thin (6.0 to 30 feet or 1.8 to 9.1 m), dark greenish gray to greenish black, light olive brown weathering, silty, calcareous shale intervals are present throughout the member. The top of the member is mapped at the base of the lowest medium to thick bed of sandy or algal limestone. Thickness is approximated at 1,000 feet (305 m). CaR Rocky Springs Station Member Interbedded, dark gray, thin-bedded, lime mudstone, dark gray shale, medium gray, tan weathering dolomite, and medium gray, polymictic breccias (CaRS). The Rocky Springs Station outcrop belt in the Catoctin Furnace Quadrangle is largely restricted to the Lewinstown Inlier, along the base of Catoctin Mountain. Thickness is approximated at 1,200 feet (366 m). 	<p>Cambrian</p> <ul style="list-style-type: none"> 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 (275 m). Cwe Weverton Formation Predominantly light gray to gray quartzite, conglomerate, and graywacke. Three members make up the Weverton Formation on Catoctin Mountain. These are, in ascending order, the Buzzard Knob, Maryland Heights, and Owens Creek members (Brezinski, 1992). Cow Owens Creek Member Predominantly light gray to gray medium quartzite, conglomeratic graywacke. Thickness is 200 feet (61 m). Cm Maryland Heights Member Interbedded, dark greenish gray, phyllitic, highly cleaved, metaquartzite and metaconglomerate. A massive, light gray quartzite near top of member (CmT) is the main ridge former on Catoctin Mountain and forms Bobs Hill and Cat Rock in the Catoctin Furnace Quadrangle. This subunit rarely exceeds 50 feet (15 m). Thickness of the member is estimated at 200 to 300 feet (61 to 91 m). Ckb Buzzard Knob Member Light to medium gray, medium-bedded, cross-bedded quartzite with dark gray, argillaceous layers and granular conglomerate layers up to 1.5 inch (3.8 cm) thick. The Buzzard Knob Member has an estimated thickness of 150 to 200 feet (46 to 61 m). CZ Loudon Formation Medium to dark gray, medium-bedded, sandy, quartz phyllite, conglomeratic phyllite, and medium to dark gray, granular, phyllitic conglomerate. The Loudon Formation ranges in thickness from 75 to 200 feet (23 to 61 m). Zm Catoctin Formation Metabasalt Medium to dark greenish-gray, chloritic, locally amygdaloidal, epidote-rich metabasalt. Some areas are composed of highly sheared chlorite schist. Epidote occurs as light-green veins and nodules. Thickness is estimated at greater than 1000 feet (305 m).
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References

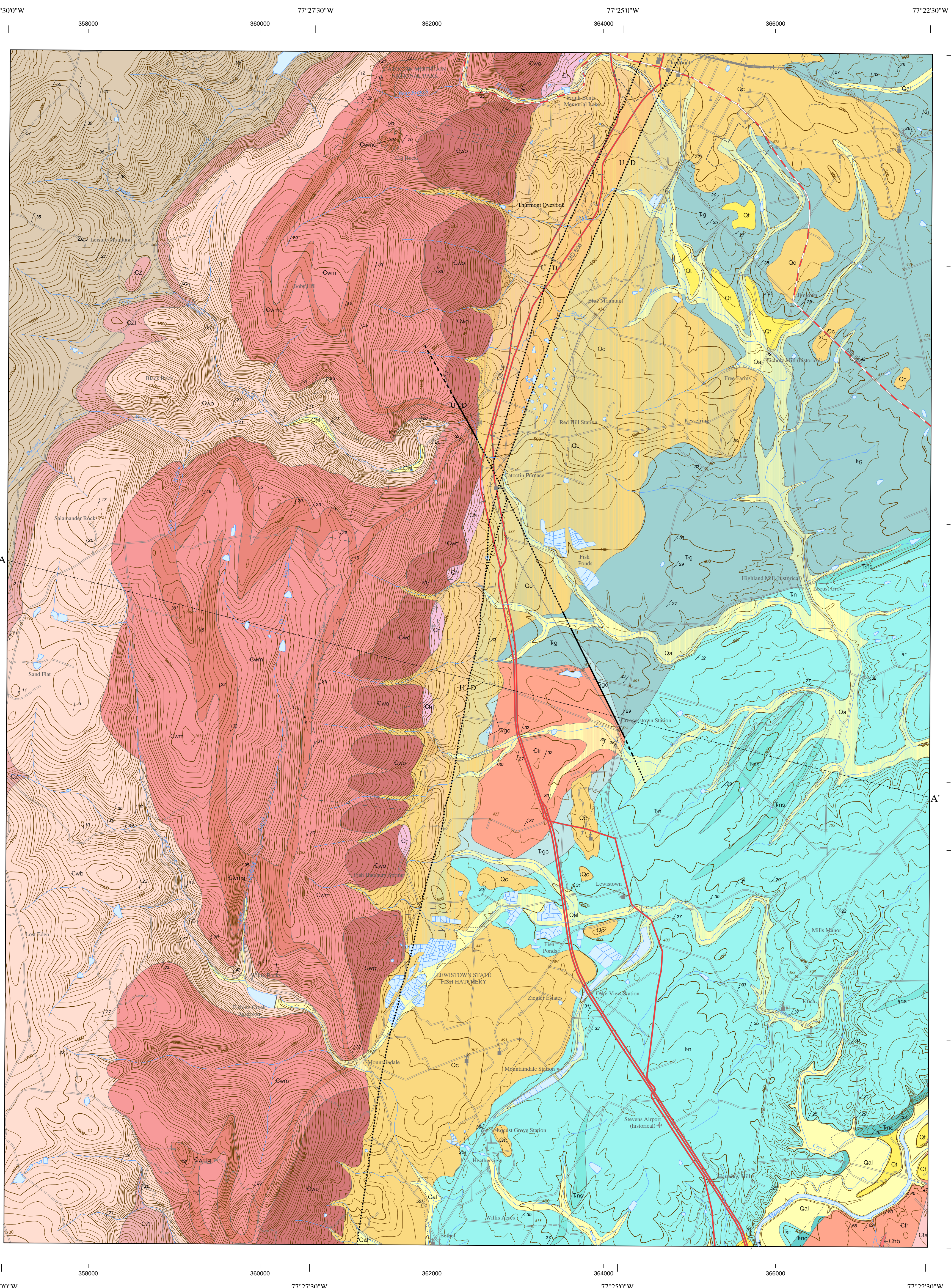
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- Brezinski, D. K., 2004, Stratigraphy of the Frederick Valley and its relationship to karst development: Maryland Geological Survey, Report of Investigations 75, 101 p.
- Reinhardt, J., 1974, Stratigraphy, Sedimentology and Cambro-Ordovician Paleogeography of the Frederick Valley, Maryland: Maryland Geological Survey, Report of Investigations 23, 73 p.

Supplemental Information

Use Constraints: These data represent the results of data collection/processing for a specific Department of Natural Resources, Maryland Geological Survey activity and indicate general existing conditions. As such, they are only valid for the intended use, content, time, and accuracy specifications. The user is responsible for the results of any application of the data for other than their intended purpose. The Maryland Geological Survey makes no warranty, expressed or implied, as to the use or appropriateness of the data, and there are no warranties of merchantability or fitness for a particular purpose of use. The Maryland Geological Survey makes no representation to the accuracy or completeness of the data and may not be held liable for human error or defect. Data are only valid at 1:24,000 scale. Data should not be used at a scale greater than that.

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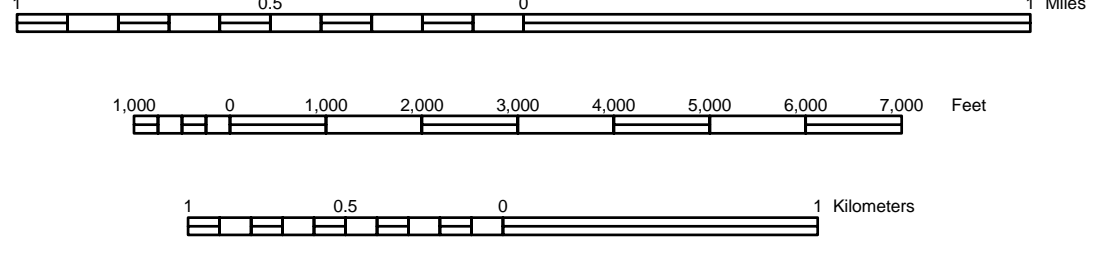
Base layers derived from U.S. Geological Survey (USGS) 7.5-minute Series (Topographic) Catoctin Furnace Quadrangle 1953 (photorevised 1985).
 Digital line graphs for hydrography, topography, transportation and boundaries (1:24,000).
 Topography by photogrammetric methods from aerial photographs taken 1943. Field checked 1944.
 Culture revised by USGS 1953. Map edited in 1985 by USGS based on aerial photographs taken 1981 and other sources; this information not field checked.
 Cultural features shown from USGS Geographic Names Information System database.
 (To determine current magnetic declination see: <http://www.ngdc.noaa.gov/cgi-bin/weg/bmag1b.html>)

Current map projection: Maryland State Plane Coordinate System 1987 (Projection: Lambert Conformal Conic, 1980 geoidetic reference system) (Horizontal Datum: North American Datum 1983)
 MD State Plane 2000-meter grid ties and coordinates shown in black
 Geographic coordinates (latitude-longitude) shown near corners and 2.5' intervals (in black)

Geologic Map of the Catoctin Furnace Quadrangle, Frederick County, Maryland

By
David K. Brezinski
2004

Scale 1:24,000



Contour Interval 20 Feet
 National Geodetic Vertical Datum of 1929
 (To convert elevations to the North American Vertical Datum of 1988, subtract 1 foot)
 (To convert from feet to meters, multiply by 0.3048)

GN
(State Plane Grid North)

Adjoining 7.5 Quadrangle Names
 Catoctin Furnace Quadrangle, shaded

1	2	3
4	5	6
7	8	

1. Smithburg
 2. Blue Ridge Summit
 3. Emmitsburg
 4. Myersville
 5. Woodstock
 6. Middletown
 7. Frederick
 8. Walkersville

Explanation of Map Symbols

Geologic Symbols

Contacts
 Geologic contact, approximately located
 dotted where concealed

Faults
 U Upright side
 D Downthrown side
 Fault, concealed
 Fault, inferred
Folds
 Minor syncline bearing and degree of plunge shown
 Minor anticline bearing and degree of plunge shown

Planar Features
 For a single measurement, the point of observation is at the midpoint of the symbol. For multiple measurements (combined symbols), point of observation is at the tail end junction point common to all symbols.
 / / Inclined bedding strike and degree of dip shown
 / / Inclined cleavage strike and degree of dip shown
 / / Vertical cleavage strike shown

Base Map Symbols

Transportation
 Primary route, class 1 (divided, lanes separated)
 Primary route, class 1 (undivided)
 Secondary route, class 2
 Light duty road or street, class 3
 Unimproved road or street, class 4
 Trail
 Railroad, railroad siding or spur
 Power transmission line
 Substation

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

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

Culture
 Boundary, Incorporated, Village, Town, or Borough
 Miscellaneous Park, Reservation, or Monument
 Small Park
 State Park
 Airport
 Cemetery
 Church
 School

STATE OF MARYLAND
 Robert L. Ehrlich, Jr.
 Governor

Michael S. Steele
 Lieutenant Governor

DEPARTMENT OF NATURAL RESOURCES
 C. Ronald Franks
 Secretary

W. P. Jensen
 Deputy Secretary

MARYLAND GEOLOGICAL SURVEY
 Emery T. Cleaves
 Director

Copies of this map are available in hard copy (paper) and digital form from:
 MARYLAND GEOLOGICAL SURVEY
 2300 Saint Paul Street
 Baltimore, MD 21218
 Ph: 410-554-5500
 Fax: 410-554-5502
<http://www.mgs.md.gov/>

