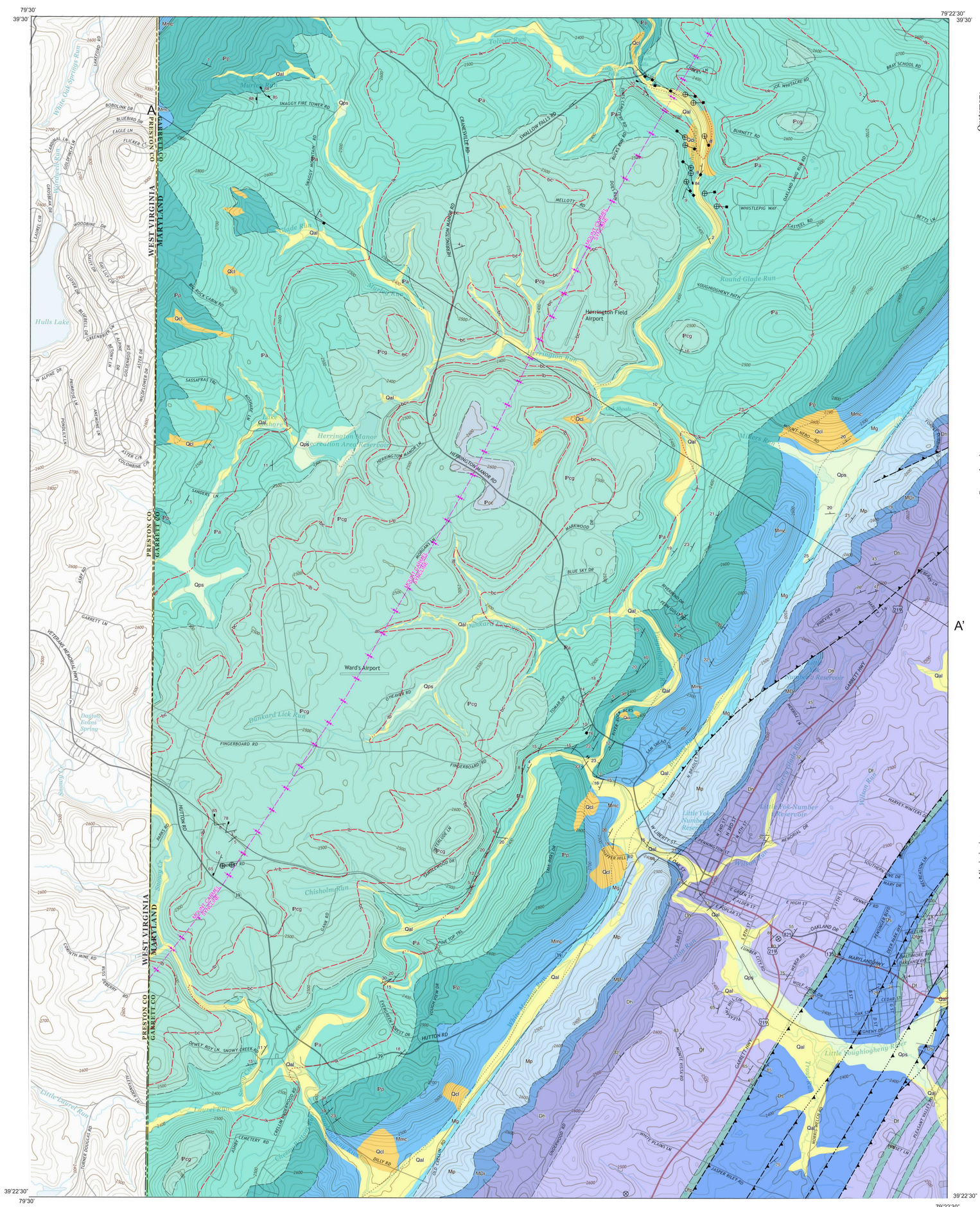
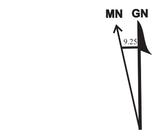


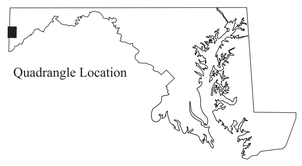
Geologic Map of the Maryland Portion of the Oakland Quadrangle, Garrett County, Maryland

By
David K. Brezinski and Rebecca Kavage Adams
2025

U.S. Geological Survey (USGS) US Topo 7.5-minute Series
Oakland, MD/WV quadrangle, 2014
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection: Universal Transverse Mercator, Zone 17S
Geographic coordinates (latitude-longitude), shown near corners.
Reported 2014 magnetic north declination (center of Oakland quadrangle): 9.25°W.
To determine current magnetic declination see: (http://www.ngdc.noaa.gov/geomag/declination.shtml).



(UTM grid north [GN] and 2014 magnetic north [MN])



Scale 1:24,000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0.5 0 1 KILOMETERS

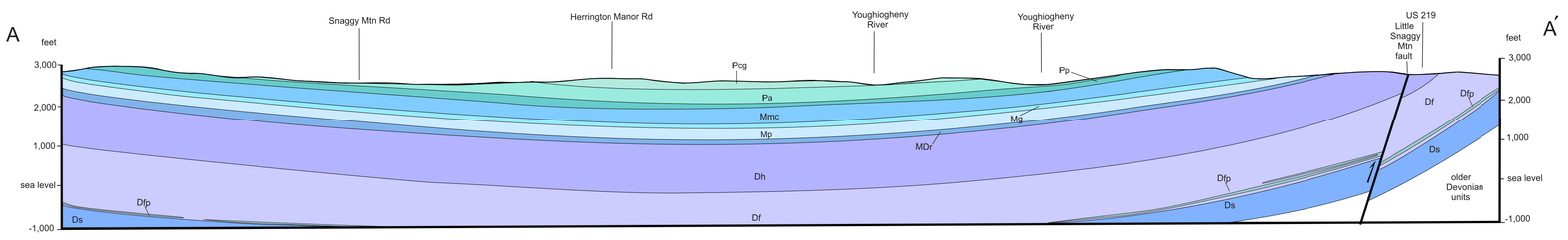
Contour Interval 20 Feet
National Geodetic Vertical Datum of 1988

Adjoining 7.5-minute quadrangles
(Oakland quadrangle shaded)

1	2	3	1 Cuzzart 2 Sang Run 3 McHenry 4 Terra Alta 5 Deer Park 6 Aurora 7 Table Rock 8 Gorman
4		5	
6	7	8	

Source of Geologic Field Data

1. D.K. Brezinski, 2021, 2023-2024.
2. R. Kavage Adams, 2023-2024.



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MARYLAND GEOLOGICAL SURVEY
Stephen Van Ryswick
Director

Publication No. DNR 12-031125-1

Explanation of Map Symbols

Cross section line (A – A')

Contacts
Geologic contact; existence certain, location approximate, dotted where concealed

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

Transportation
Primary route (undivided)
Secondary route
Light duty road or street, class 3

Faults
Thrust fault; sawteeth point toward overriding block, existence certain, location approximate. Dotted where concealed

Folds
Synclinal axis; arrows point in direction of stratification dip

Coal Beds
Projected outcrop trace of coal bed, dotted where concealed

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

Hydrography
Stream
Spring
Water body (e.g., lakes, ponds, rivers)

DESCRIPTION OF MAP UNITS

Quaternary

Alluvium (Qal)
Pebbles, cobbles and boulders in a sandy matrix. Clasts weather yellowish orange and orange-brown. These deposits are present along both modern and ancient streams and may have a thick humic component near the top. Finer alluvium such as sand, silt and gravel underlies the stream channel where it is lower gradient, while steeper stream reaches are frequently floored by bedrock or locally derived cobbles and boulders. 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.

Colluvium/landslide (Qcl)
Unconsolidated and unsorted boulders and cobbles present on steep slopes, or at the base of steep slopes, below outcrops of sandstone units. These deposits are largely the result of frost wedging or mass movement (i.e., landslide). Topographically, these accumulations exhibit an irregular upper surface, thin upslope and rarely have soil cover. Thickness ranges from several feet on steep slopes to more than 50 feet.

Peatland and swamp deposits (Qps)
Unconsolidated, light to dark gray, organic-rich, sandy clay to fibrous peat. These materials accumulated in boggy, low-lying, poorly drained areas, and many are remnants of late Pleistocene glades or lakes. These histic sediments are water-logged during part or most of the year and are poor agricultural lands. Thickness ranges from less than three feet to nearly 10 feet.

Pennsylvanian

Conemaugh Group
Interbedded sandstone, shale, siltstone and nonmarine limestone. The aggregate thickness of the Conemaugh Group is as much as 450 feet in the Oakland quadrangle (Swartz, 1922). The Conemaugh Group is divided into the Glenshaw and Casselman Formations as named by Flint (1965).

Casselman Formation (Pcc)
Interbedded, tan, medium- to coarse-grained, locally conglomeratic, cross-bedded sandstone, gray to reddish gray mudstone, medium gray, silty shale, siltstone, and light-gray to grayish brown, buff-weathering, non-marine limestone. The base of the Casselman Formation is considered the top of the Ames marine horizon. Less than 100 feet of the Casselman Formation are preserved in the Oakland Quadrangle.

Glenshaw Formation (Pcg; a, lb, bc)
Gray, tan-weathering, micaceous, medium- to coarse-grained, cross-bedded sandstone containing abundant coaly plant fragments; interbedded with gray, reddish gray, and locally reddish brown, silty shale, siltstone, light gray, bioturbated, non-marine limestone, and brittle, dark gray, fossiliferous, marine shale. The base of the Glenshaw Formation is placed at the top of the Upper Freeport coal bed. Coal beds locally mined from the Glenshaw Formation include the Brush Creek (bc) and Lower Bakerstown (lb). The Glenshaw Formation is approximately 350 feet thick.

Allegheny Formation (Pa; uf, lk, uk)
Interbedded, medium to dark gray shale and siltstone, and tan to light gray, coarse-grained, cross-bedded sandstone, with thin, light-gray claystones. 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 white, massive, conglomeratic Homewood Sandstone of the underlying Pottsville Formation. The Lower (lk)and Upper Kittanning (uk) coal beds are locally mined and mapped in the quadrangle based on previous coal bed investigations (Baker-Wibberley and Associates, Inc., 1977). The Allegheny Formation is approximately 250 to 300 feet thick.

Pottsville Formation (Pp)
Dominantly tan to light grayish brown, medium- to coarse-grained, cross-bedded sandstone and conglomeratic sandstone with abundant coaly plant fragments and thin intervals of dark gray, coaly shale, siltstone, or coal beds. The massive, pebbly to granular, light gray, highly cross-bedded Homewood Sandstone constitutes a resistant, mappable sandstone layer at the top of the formation whose top demarcates the top of the formation. Total thickness for the unit is 200 to 250 feet.

Mississippian

Mauch Chunk Formation (Mmc)
Interbedded, reddish brown shale, variegated mudstone and siltstone, and reddish brown to greenish gray, medium-grained, micaceous sandstone. Sandstone intervals are lenticular, 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 approximated at 400 feet in thickness in the Oakland Quadrangle.

Greenbrier Formation (Mg)
Interbedded, gray to reddish brown sandstone, fossiliferous and variegated shale, and fossiliferous limestone. The light gray, cross-bedded, sandy limestone (Loyalhanna Member) is at the base and is overlain by interbedded, reddish, fossiliferous mudstone, white to tan and reddish brown, fine-grained sandstone, and reddish brown siltstone and variegated shale (Savage Dam Member). The Savage Dam Member is overlain 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.

Purslane Formation (Mp)
Tan to light gray, coarse-grained sandstone to conglomerate. Thick-bedded, pebbly conglomerate occurs near the base and at the top of the formation. Thin beds of gray shale and coaly shale are locally interbedded with the sandstone intervals. The Purslane Formation is 250 to 300 feet thick in southern Garrett County.

Rockwell Formation (MDr)
Interbedded, greenish gray, tan-weathering, argillaceous, bioturbated sandstone, and reddish gray to gray, coaly siltstone and shale. The greenish gray bioturbated sandstones at the base of the formation (Oswayo Member) are locally interbedded with the reddish strata of the upper Hampshire Formation. These basal marine strata are overlain by light gray to tan, thin- to medium-bedded, cross-bedded, lenticular sandstone, and rooted, gray mudstone. The top of the formation consists of well-sorted, burrowed, locally fossiliferous, buff sandstone of the Riddlesburg Member. The Rockwell Formation is between 100 and 200 feet thick in the Oakland Quadrangle.

Devonian

Hampshire Formation (Dh)
Interbedded, reddish brown to reddish gray, and brownish red, locally greenish gray, cross-bedded, upward-fining, lenticular sandstone; reddish brown micaceous siltstone, shale, and red-brown rooted claystone. The Hampshire Formation is approximately 1,500 feet thick in the Oakland Quadrangle.

Foreknobs Formation (Df)
Interbedded, olive gray, tan-weathering, medium- to coarse-grained, cross-bedded, bioturbated sandstone; greenish gray to dusky red, fossiliferous shale and siltstone. Top of the formation is mapped at the top of the medium- to thick-bedded, cross-bedded, light gray to white (>30 feet) sandstone considered equivalent to the Pound Sandstone Member of the Valley and Ridge Province (Dennison, 1970). The middle part of the formation is characterized by intervals of thinly interbedded greenish gray, silty shale and bioturbated sandstone. The lower contact of the formation is mapped approximately 1,600 feet below the top of the formation (Flint, 1965) at the base of a conglomeratic interval correlated with the Park Head Sandstone of eastern Allegany County (Stose and Swartz, 1912; Brezinski, 2019). The Foreknobs Formation is 1,600 feet thick in Garrett County.

Park Head Sandstone Member (Dfp)
Interbedded greenish gray, silty shale and thick-bedded, light gray, coarse-grained sandstone and quartz-pebble conglomerates. At least two separate conglomerate layers are identified and where possible, mapped. Thickness of the member is 50 to 75 feet.

Scherr Formation (Ds)
Interbedded gray to greenish gray, fissile shale, gray, planar-bedded siltstones, and light gray, tan-weathering, thin-bedded, fine-grained, bioturbated sandstone. The Scherr Formation of the Deer Park Anticline is considered correlative with the Brallier Formation of the Valley and Ridge Physiographic Province (Dennison, 1970). Thickness of the exposed part of this formation in the Oakland Quadrangle may be up to 1,000 feet.

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