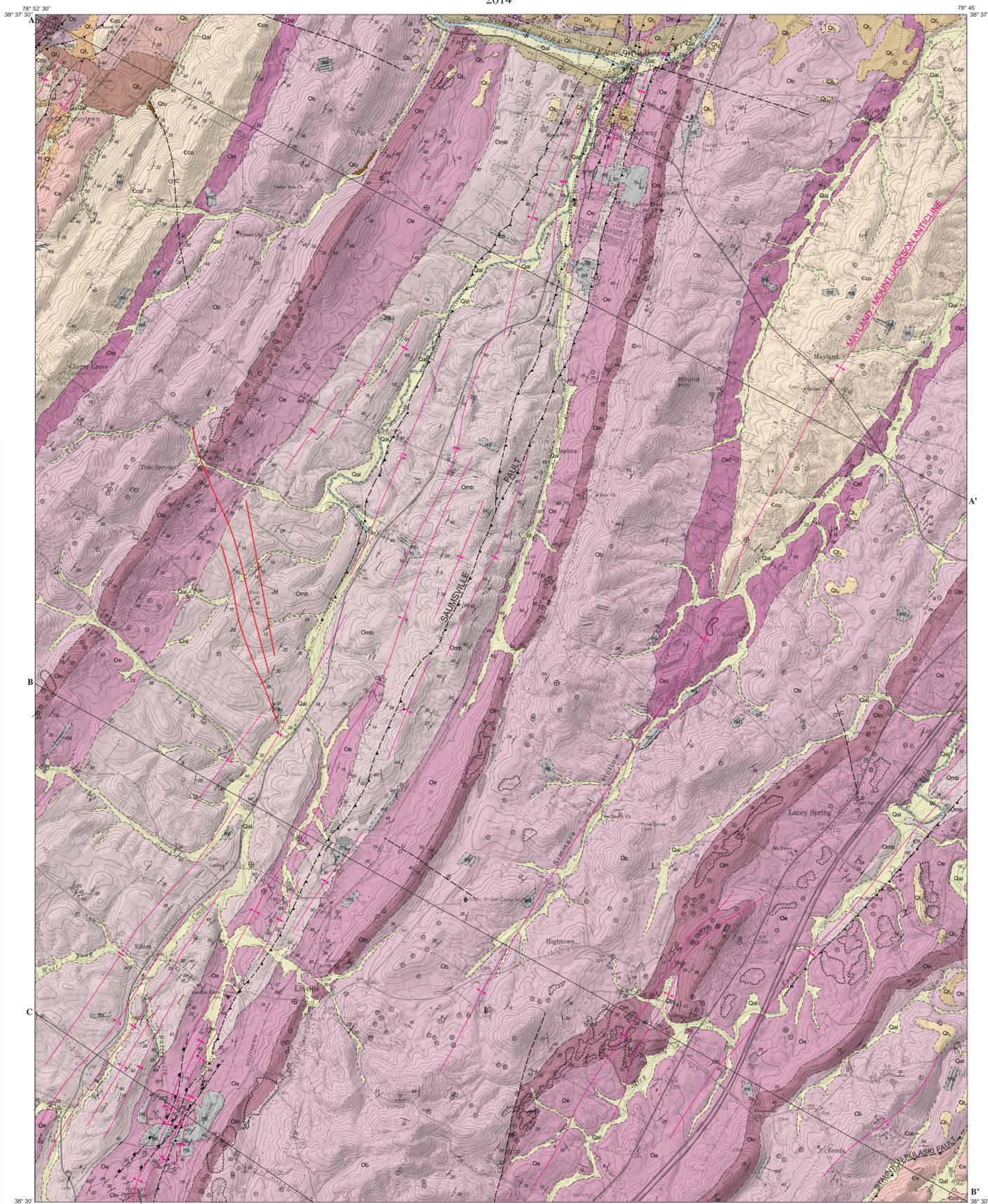


# GEOLOGIC MAP OF THE BROADWAY QUADRANGLE, VIRGINIA

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## DESCRIPTION OF MAP UNITS

### SURFICIAL DEPOSITS

- ml** Modified land - Area of extensive cut and/or fill related to site development.
- Qal** Alluvial channel and flood-plain deposits - Alluvial channel: unconsolidated clay, silt, sand, granules, pebbles, cobbles, and boulders. Composition, color, grain size, rounding, and sorting are variable. Streams that drain terrace and fan deposits contain material that is reworked from older deposits. Alluvial flood-plain deposits: overbank deposits of clay, silt, sand, and minor cobbles within active flood plains. Areas underlain by these deposits are subject to frequent flooding. Up to 20 feet (6 meters) thick.
- Qtu** Tufa deposits - Tan to gray deposits of calcium carbonate and incorporated stream sediment. Deposits occur along streams, typically near faults and/or springs. Up to 20 feet (6 meters) thick.
- Qt1** Younger terrace deposits - Unconsolidated clay, silt, sand, granules, pebbles, and cobbles. Cobbles are mostly orthoquartzite and quartz sandstone with lesser amounts of other sedimentary rock. Deposits are clast-supported in a brown to tan, loam to loamy sand matrix. Terrace deposits occur at elevations from 10 to 30 feet (3 to 9 meters) above the flood plain, and are typically not dissected by streams and not modified by karst or colluvial processes. Probably deposited by both alluvial and colluvial processes, including hyperconcentrated and debris flows. Up to approximately 20 feet (6 meters) thick.
- Qt2** Older terrace deposits - Unconsolidated clay, silt, sand, granules, pebbles, and cobbles. Cobbles are mostly orthoquartzite and quartz sandstone with lesser amounts of other sedimentary rock. Deposits are clast-supported in a brown to red-brown, clay loam to loam matrix, clay content and red color increase with elevation above river level. Due to the partial weathering of some deposits, cobbles commonly form a cap at land surface, and are interlayered with fines at depth. These deposits occur at elevations from 30 to 75 feet (9 to 23 meters) above the current flood plain, are moderately dissected by streams, and may be modified by karst or colluvial processes. Up to approximately 20 feet (6 meters) thick.
- Qt3** Oldest terrace deposits - Unconsolidated clay, silt, sand, granules, pebbles, and cobbles. Cobbles are mostly orthoquartzite and quartz sandstone with minor amounts of other sedimentary rock. Deposits are clast-supported in a red-brown to red, loam to clay loam matrix; clay content and red color increase with elevation above river level. Due to the partial weathering of these deposits, cobbles form a cap at land surface; they may be interlayered with fines at depth. These deposits occur at elevations from 75 to 125 feet (23 to 38 meters) above the current flood plain, are extensively dissected, and may be modified by karst or colluvial processes. Up to approximately 20 feet (6 meters) thick.

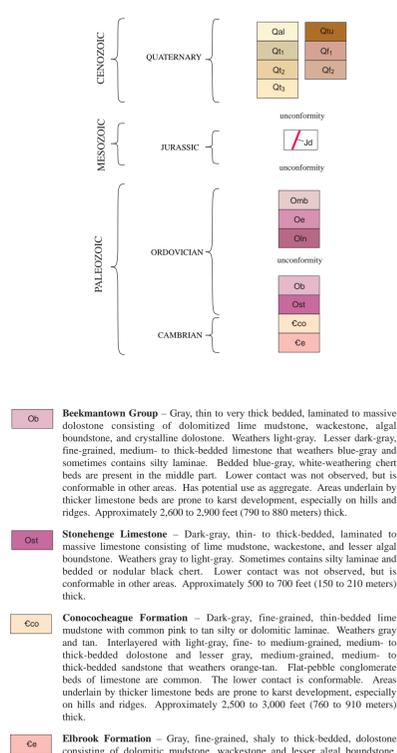
### INTRUSIVE ROCKS

- Jd** Diabase - Black to gray-black, orange- to tan-weathering, fine- to medium-grained, massive basalt containing plagioclase and clinopyroxene with lesser magnetite. Occurs as dikes and sills. Difficult to excavate. Up to 20 feet (6 meters) wide.

### SEDIMENTARY ROCKS OF THE VALLEY AND RIDGE PROVINCE

- Omb** Martinsburg Formation - Dark-gray to black, light-gray- to tan-weathering, well-foliated calcareous shale interbedded with lesser dark-gray to black, thin-bedded lime mudstone in lower part, equivalent to Stickle Run member. Dark-gray to gray, thin- to medium-bedded non-calcareous shale, siltstone, and fine-grained lithic sandstone are locally observed in upper part. Upper contact is not exposed. Where it is not faulted, lower contact is transitional and consists of 20 to 30 feet (6 to 9 meters) of cobbly-weathering interbedded calcareous shale and thin-bedded lime mudstone. Thickness is undetermined due to faulting.
- Oe** Edinburg Formation - Black to dark-gray, light-gray-weathering, thin- to thick-bedded limestone consisting of lime mudstone with lesser wackestone, fossiliferous packstone, and crystalline limestone. Dark-gray to black, light-gray- to tan-weathering, well-foliated calcareous shale occurs near base. Lower contact was not observed, but is conformable in other areas. Areas underlain by limestone are prone to karst development. Approximately 1,300 to 1,600 feet (400 to 480 meters) thick.
- Oln** Lincolnshire and New Market limestones, undivided - Lincolnshire Formation: light-gray to dark-gray, fine- to coarse-grained, thin to very thick bedded, black chert-bearing limestone consisting of grainstone, fossiliferous packstone, and crystalline limestone with lesser lime mudstone. New Market Formation: light-gray to gray, microcrystalline to fine-grained, medium-bedded to massive limestone consisting of crystalline limestone, lime mudstone, and lesser boundstone. The lower contact of this map unit is not exposed, but is an unconformity in other areas. The New Market Formation is a high purity limestone. Prone to karst development. Approximately 250 to 500 feet (75 to 150 meters) thick.

## CORRELATION OF MAP UNITS



## ACKNOWLEDGEMENTS

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## SOURCES USED IN MAP COMPILATION

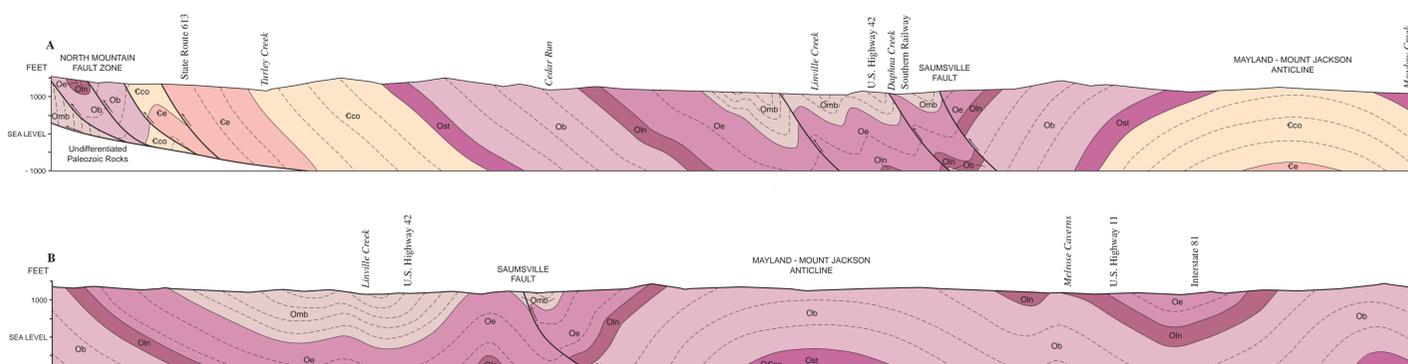
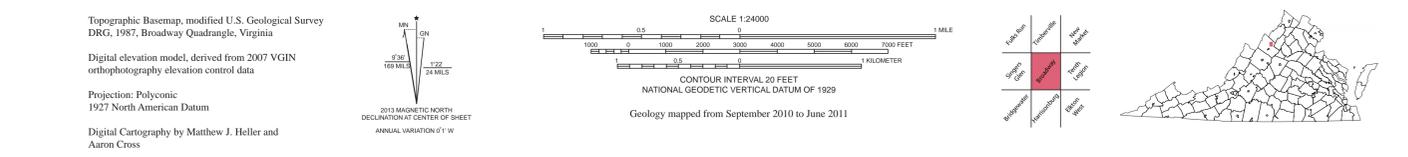
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## MAP SYMBOLS

- For all contact, fault, and fold symbols: lines are solid where the location is exact; long-dashed where the location is approximate; short-dashed where the location is inferred; dotted where the location is concealed. Queries added where identity or existence may be questionable.
- Stratigraphic Contacts
- Fault Contacts
  - Thrust - sawtooth on upthrown block
  - Reverse - rectangles on upthrown block
  - Normal - U = upthrown block, D = downthrown block
  - Strike-slip - arrows show relative motion
- Folds - showing direction of plunge where appropriate
  - Anticline
  - Syncline
  - Overtured Anticline
- Geologic Observations
  - Strike and dip of inclined beds
  - Strike and dip of overturned beds
  - Strike of vertical beds
  - Horizontal beds
  - Strike and dip of inclined cleavage
- Mineral Resources - identification numbers are preceded by "200D-" in Mineral Resources of Virginia database.
  - Quarry (cs = crushed stone)
  - Inactive quarry (cs = crushed stone, ls = limestone)
  - Perimeter of quarry
- Water Resources - observed during mapping or interpreted from digital elevation model
  - Spring observed during mapping - line indicates direction of flow
  - Sinkhole
  - Karst area - large area of subsidence or area with multiple sinkholes



Interpretive cross-sections  
1. Surficial deposits are not shown.  
2. Subsurface structures interpreted from surface measurements