

MAP UNITS

CENOZOIC

QUATERNARY

Quaternary units were mapped where estimated thicknesses exceed 3 m (10 feet). Most Quaternary unit descriptions follow Stewart and others (2022).

Alluvium

- Qa - Alluvium. Well-sorted Holocene and Pleistocene sand, silt, and mud deposited as overbank deposits in modern stream and river valleys. In many stream valleys, particularly where colluvial deposits flank the valley sides, alluvium in the river valleys is intercalated with up to 1 meter-thick beds of poorly sorted cobbles, gravel, sand, and silt. On upland plateaus, most alluvium is composed of reworked loess deposits. Qal - Well-sorted Holocene silt, clay, and very fine sand. Largely composed of finally reworked loess deposits found on gently inclined stream channels on upland plateaus. Qbu - Well-sorted sand, silt, and mud slackwater deposits located 1 to 4.25 meters (3 to 14 feet) above modern alluvial deposits. Qcu along streams that empty into the Mississippi River correlate to deposits that are part of the Savanna Terrace. Sediment making up the Savanna Terrace was deposited along the Mississippi River and its tributaries from sediment-laden glacial meltwater during the late Pleistocene.

Colluvium

- Cl - Colluvium. Angular, poorly sorted boulders, cobbles, sand, and silt deposited at the base of valley slopes from gravity driven mass wasting, soil creep, and non-channelized overland flow processes. The unit fines towards the valley bottom. The unit is unsorted. Thicknesses generally in excess of 3 meters (10 ft).

Windblown deposits

- Qwa - Alluvial gravel, sand, and silt reworked by wind processes into dunes in the Holocene. Sites 1-10.5 meters (3-35 ft) above surrounding flood plain. Sediment was originally part of the Bagley Terrace, a terrace complex that formed below the older Savanna Terrace along the Mississippi River. Undivided loess. Windblown very fine sand, silt, and clay. May include parts of the Roxana and Poria Members of the Keeler Formation, a windblown loess formation. Loess is thickest on upland surfaces. Ql - Undivided loess over residuum of the Rountree Formation. Mapped where the underlying bedrock unit is carbonate. Qlb - Undivided loess over bedrock. Mapped where loess overlies sandstone. Qlc - Undivided loess over mixed residuum and bedrock. Qld - Undivided loess over glacial till. Contact derived from Carson (2012).

Mass wasting deposits

- Qm - Unsorted deposits of boulders, sand, silt, and clay located beneath an erosional scarp.

PALEOZOIC

Paleozoic bedrock units were mapped where bedrock is interpreted to be within 3 m (10 ft) of land surface. Bedrock outcrops generally appear discontinuously at the surface. Bedrock units use the classification scheme of Agnew and others (1956), which has different divisions for the Sturgeon and Prairie du Chen Groups than Wisconsin Geological and Natural History Survey (2011). Unit descriptions generally follow Stewart and others (2022). Carbonate classification follows Durham (1962).

ORDOVICIAN

Galena Formation

Ql - Tan, medium-bedded vuggy dolomite. The upper Galena Formation is composed of sandy dolomite, and the lower approximately 36.5 meters (120 ft) of the Galena Formation contains abundant interbedded gray chert beds in a porous, sandy dolomite with honeycomb weathering. Honeycomb weathering is probably related to solution-enhanced weathering of beds containing Thalassinoides burrows (Dockal, 2021). Dockal (2021) report coarser grain size and higher porosity in burrows compared to matrix. Recrystallites is common. The full thickness of the Galena Formation is not present, but elsewhere it ranges from approximately 70-76 meters (230-250 ft).

Decorah Formation

Qd - The Decorah Formation contains the upper Ion Member, the middle Guttenberg Member, and the basal Specht's Ferry Member. The Ion Member is composed of thin- to medium-bedded gray and gray-blue dolomitic mudstone to wackestone. Shale partings demarcate tabular bed sets. The Guttenberg Member is composed of 0.3-6 cm (0.2-2.4 inches) thick wavy, brown to gray mudstone to wackestone with interbedded shaly mudstone approximately 1 cm (0.4 inches) thick. The Specht's Ferry Member is composed of laminated to thin-bedded gray to green shale with subordinate gray limestone and dolomite. The Specht's Ferry Member thickens to the west (Carson, 1961), reaching 2.1 m (7 ft) thick at Pikes Peak State Park in Iowa, immediately west of the Brodsville quadrangle (McLaughlin and others, 2011). The Decorah Formation contains abundant brachiopod fossils. The total thickness of the Decorah Formation is 9-12 m (30-40 ft).

Platteville Formation

Qp - The Platteville Formation contains the upper Quimby's Mill Member, the middle McGregor Member, and the basal Pectinatina Member. The Quimby's Mill Member was not observed, and if present, is probably less than 0.3 m (1 ft) thick. The McGregor Member is a thin, wavy bedded wackestone with abundant dark gray mudstone partings. Brachiopods and crinoids are present. The Pectinatina Member is a tan to gray, thin- to medium-bedded dolomitic mudstone to wackestone. Mudstone is common at the base, with the amount of fossil hash increasing upwards. Brachiopods are locally abundant. The total thickness of the Platteville Formation is approximately 12-15 meters (40-50 ft).

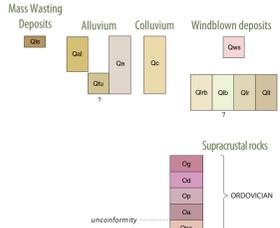
Ancell Group

Qa - The Ancell Group contains the Glenwood Formation and the underlying St. Peter Formation. The Glenwood Formation is a dark green, fissile shale approximately 1 meter thick. The underlying St. Peter Formation contains the upper Tontit Member and the basal Readstown Member. The Tontit is a tan to white, fine- to medium-grained sandstone. In contact with the Glenwood, the Tontit is cemented with iron sulfides. In the SE portion of the Bloomington quadrangle, interbedded carbonate and carbonate-cemented sandstone was observed in the Tontit Member; otherwise carbonate of any kind is rare. The Readstown Member contains interbedded white to tan, fine-grained sandstone and green shale. Soft sediment deformation is common. The base of the Readstown forms an unconformity with the underlying Prairie du Chen Group. The combined Ancell-Prairie du Chen thickness is around 82-98 m (270-320 ft) (Agnew and others, 1956).

Prairie du Chen Group

Qc - The Prairie du Chen Group includes the Shakopee, New Richmond, and Oneta Formations in descending order. The Shakopee Formation is a mixed dolomite and shale, and the New Richmond Formation is a clean to carbonate-cemented sandstone. The Oneta Formation is generally a tan to gray, thin- to thick bedded fine-grained dolomite with subordinate limestone. Fine-grained micrite occurs locally. Grey chert commonly is found as thin beds that have significant secondary porosity. Rarely, chert occurs as isolated elliptical nodules along bedding planes. Locally, mm-thick clay partings define bedsets.

CORRELATION OF MAP UNITS



SYMBOLS

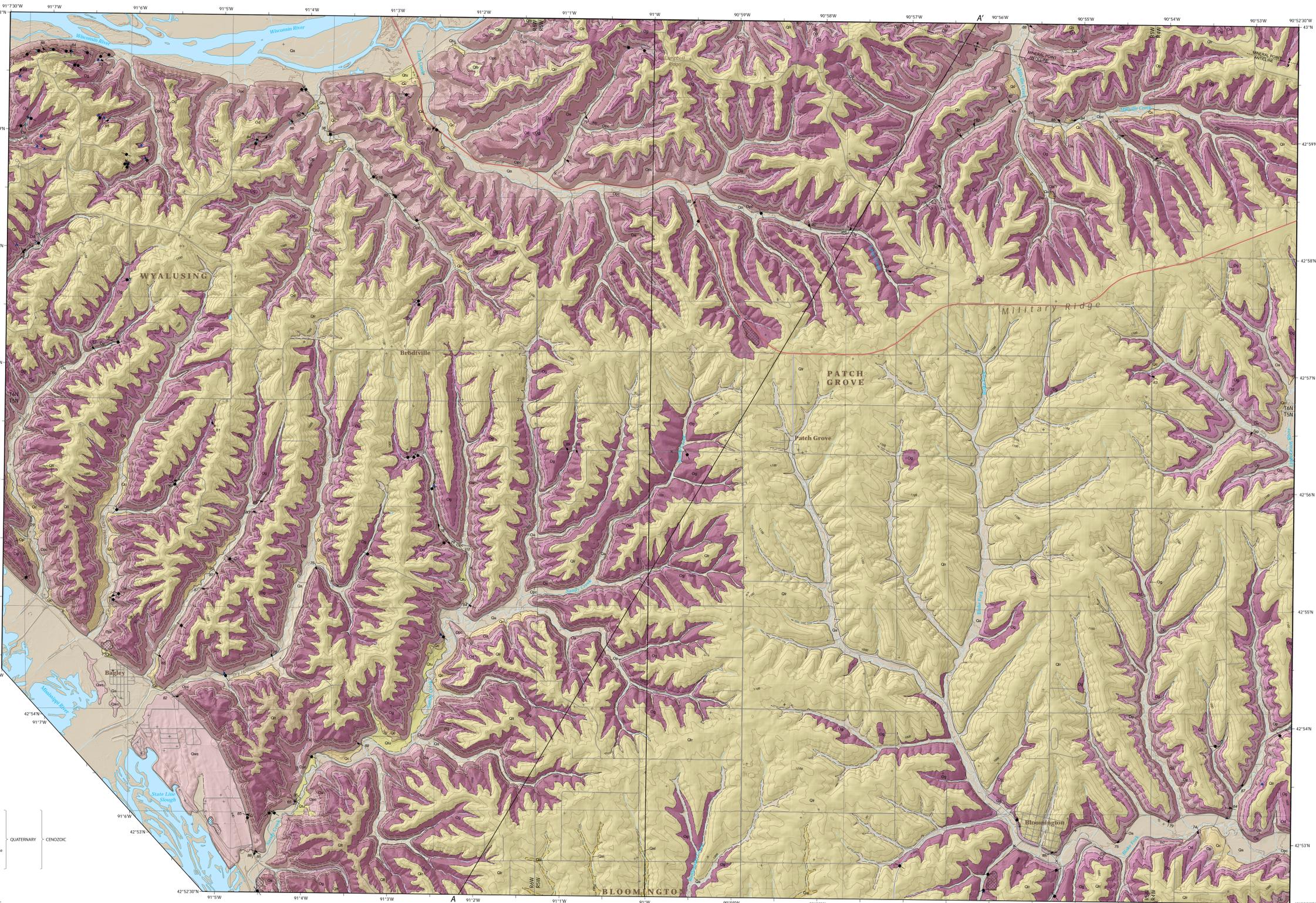
- Contact: dashed where approximate, dotted where concealed.
Anticline: dashed where approximately located, dotted where concealed.
Inclined bedding—Showing strike and dip.
Vertical joint—Showing strike.
Inclined joint—Showing strike and dip.
Well construction report.
Sand or gravel pit.
Bedrock quarry.
Seep (observed in field).
Spring (observed in field, or Swanson and others, 2019).
Outcrop.

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Geologic map of the Bloomington and Brodsville 7.5-minute quadrangles, Grant County, Wisconsin

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Mapped and compiled by Eric D. Stewart, 2020-2021. Geodatabase and cartography by Stephen Mauel and Eric Stewart.

The map and cross sections are interpretations of the data available at the time of preparation. Every reasonable effort has been made to ensure that this interpretation conforms to sound scientific and cartographic principles; however, the map should not be used to guide site-specific decisions without verification. Proper use of the map is the sole responsibility of the user.

For additional information about the geology presented here, please refer to the report that accompanies this map at: https://doi.org/10.54915/mcau3924.



SCALE 1:24,000



NAD 1983 HARN Wisconsin Transverse Mercator Projection (Meters). Contour interval is 20 feet. Map hillshade and topographic contours sourced from the Grant County 5-foot LIDAR DEM, USDA-NRCS 2012. Magnetic north from the National Map digital data, US TOPO map series, 2018.



Table with 4 columns: BROADSVILLE, BLOOMINGTON, BRODVILLE, BLOOMINGTON. Rows: BROADSVILLE, BLOOMINGTON, BRODVILLE, BLOOMINGTON. Brodsville, Bloomington, and adjacent quadrangles.

