

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
 OFFICE OF GEOLOGY
 OPEN-FILE REPORT 231
GEOLOGIC MAP
 of the
CASCILLA QUADRANGLE

Tallahatchie and Grenada
 Counties, Mississippi

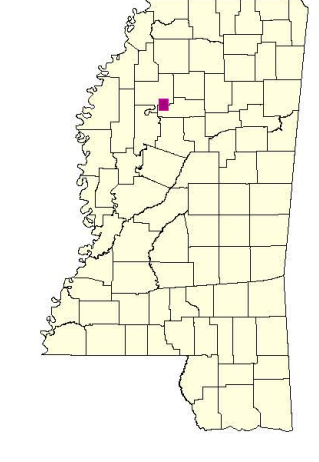


Geology by David E. Thompson, R.P.G.

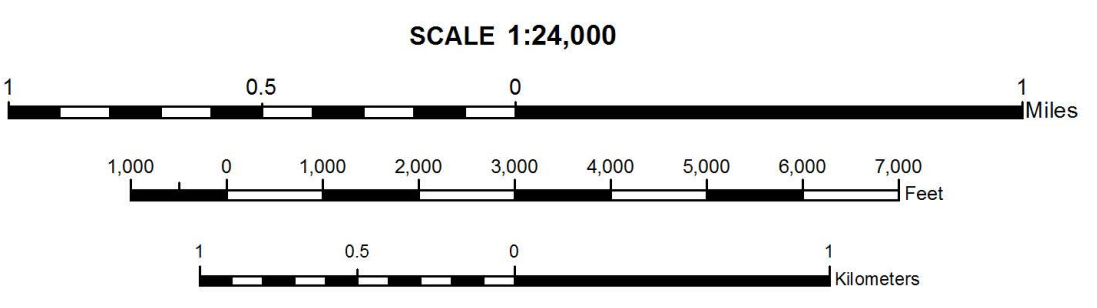
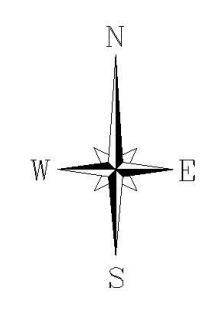
2010

DESCRIPTION OF MAP UNITS

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|--------------|---|---|--|
| QUATERNARY | HOLOCENE | ALLUVIUM Qal | Sand, flood plain sands, silts, and gravels. Also includes unmapped Pleistocene, Late Wisconsin Stage, Valley Train Deposits (Saucier, 1994), along the eastern flank of the Mississippi River Valley. |
| | HOLOCENE | ALLUVIAL FANS Qaf | Silts, sands, and gravels. Fan-shaped deposits of water-transported material, derived largely from bluff sediments (Loess and Pre-Loess Terrace Deposits). Typically develop at the base of topographic features where there is a prominent break in slope. Coarser-grained sediments tend to predominate closer to the bluff-line mouth, while finer-grained silts tend to be more prevalent along fan edges. Maximum fan thickness is near the bluff-line mouth, along the crest, and is estimated at 30 to 50 feet in some instances. Thickness typically decreases away from the bluff-line mouth, toward the outer edges. |
| PLEISTOCENE | WISCONSINIAN | LOESS Ls | Silt, buff to tan, pale yellow, red, or gray, sandy to clayey, quartzose, feldspathic. Unweathered loess is typically calcareous with dolomite and calcite, and is present in thicker accumulations near the bluff-line. Thinner accumulations of loess, eastward of the bluff-line tend to be highly weathered, leached, noncalcareous, very clayey, and have been referred to as a brown or yellow loam. Loess is an eolian deposit derived from glacial outwash. Loess deposits blanket the pre-loess topography of the quadrangle area, with greater quantities developed along ridge crests than in valleys, creating local variation in thickness. The thickness in the quadrangle is estimated at 10 to 60 feet. In places, weathered loess contains secondary deposits of small calcareous concretions (caliche, loess dells). |
| | SANGAMON | PRAIRIE TERRACE DEPOSITS Op | Fluvial sediments deposited during the Sangamon interglacial period via east-west trending tributaries of the ancestral Mississippi River system, when sea level stood higher than at present. Constructional alluviation preserved stratified lithofacies of mixed composition, including sand (predominantly quartz), silt, clay, and gravel. Elevation generally 10 to 30 feet above modern stream level. |
| PRE-SANGAMON | PRE-LOESS TERRACE DEPOSITS Qt | Sand, dark red, reddish orange, pink, bright yellowish brown, brown, and occasionally white, fine- to very coarse-grained, predominantly quartzose, locally micaceous, poorly sorted and massive to well sorted and cross-bedded; typically graveliferous with quartz and chert pebbles, especially at base. Commonly exhibits clay silt conglomerate with purplish red to white, kaolinitic, rip-up clasts. Locally interbedded with clay, light gray to purplish red to white, kaolinitic, plastic. Locally contains irregular layers of hematitic to limonitic sandstone. Unconformity at base, with an irregular, undulating surface. Roughly corresponds to the Lafayette Formation, Brown (1907); the Citronelle Formation, Peck (1942); the Bentley Terrace, Fisk et al. (1949); and the Upland Complex, Saucier (1994). The thickness in the quadrangle is estimated at a few feet to 100 feet. | |
| | KOSCIUSKO FORMATION Tk | Sand, gray to light olive gray, weathers reddish orange to pale yellowish brown, very fine- to very coarse-grained, quartzose, micaceous; interbedded to interlaminated with silt and clay, light olive gray to brownish gray, carbonaceous to lignitic; especially argillaceous in upper third of the formation. Locally, the basal Kosciusko contains layers of quartzitic, siliceous siltstone and sandstone as thick as 5 feet, often occurring as large boulders along hill tops and slopes. Unconformity at base. The thickness is estimated to be 300 feet; however, only the lower 70 feet or so are exposed in the quadrangle. Constitutes the Sparta Aquifer. | |
| TERTIARY | EOCENE | ZILPHA AND WINONA FORMATIONS Zw-Tz | Zilpha - Clay, gray to brownish black, carbonaceous to lignitic, weathers light gray to reddish pink to white, massive and homogeneous or interbedded to interlaminated with silt and sand, gray to light olive gray, quartzose, micaceous, carbonaceous, locally glauconitic; concretionary siderite and limonite; near surface exposures may exhibit jointing with selenite or limonite infilling. The thickness is variable from a few feet to 60 feet. Winona - Sand, gray to green, weathers very light gray to reddish orange or dark red, fine- to coarse-grained, quartzose, micaceous, typically glauconitic to very glauconitic, carbonaceous, silty, locally fossiliferous with thin marine shell beds and prints. Surface exposures commonly weather to distinctive contorted, concretionary, limonitic sandstone and sandy ironstone; concretionary siderite, especially near top. Approximately 60 feet thick. The total thickness of the Zilpha/Winona interval is approximately 120 feet; however, only the uppermost Zilpha beds are exposed in the quadrangle along the Yalobusha River and tributaries in the southeast quadrant. |
| | CLAIBORNE GROUP | | |



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Geology field checked in 2010 using the 1981, U.S. Geological Survey 7.5-minute topographic quadrangle, 1983 North American datum, contour interval 5 and 20 feet, 1000-meter Universal Transverse Mercator grid ticks, zone 15, 1983 datum shown in red, January 2010, magnetic north declination in quadrangle center is 0°22' west of true north.
 Sources: The base map is derived from a Digital Raster Graphic of the USGS topographic quadrangle map. Declination, National Oceanic and Atmospheric Administration (NOAA).
 Geographic Information System by Daniel W. Morse. MDEQ does not warrant the accuracy or completeness of the source data. Geologic maps are only a guide to current understanding and do not eliminate the need for detailed investigations of specific sites for specific purposes.
 This map was produced by the Mississippi Office of Geology in cooperation with the United States Geological Survey, National Geologic Mapping Program, under STATEMAP grant #09GAC00173.

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Structural Cross-Section of the Cascilla 7.5-Minute Geologic Quadrangle

