



MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF GEOLOGY

OPEN-FILE REPORT 234

GEOLOGIC MAP

of the

JEFFERSON QUADRANGLE

Grenada and Carroll Counties, Mississippi

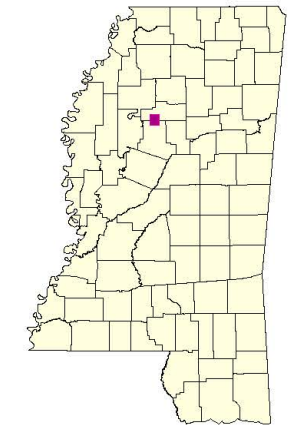
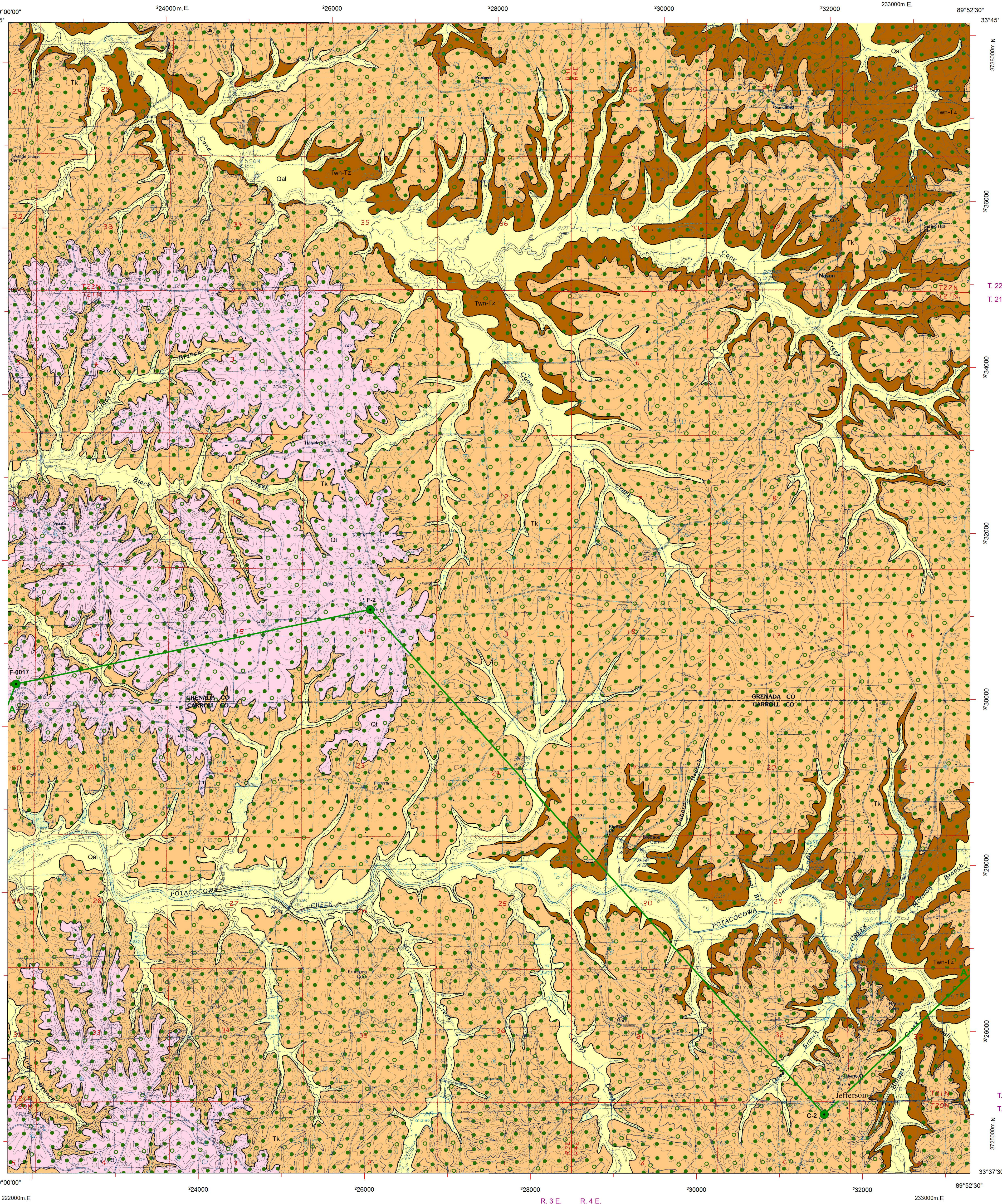


Geology by David E. Thompson, RPG

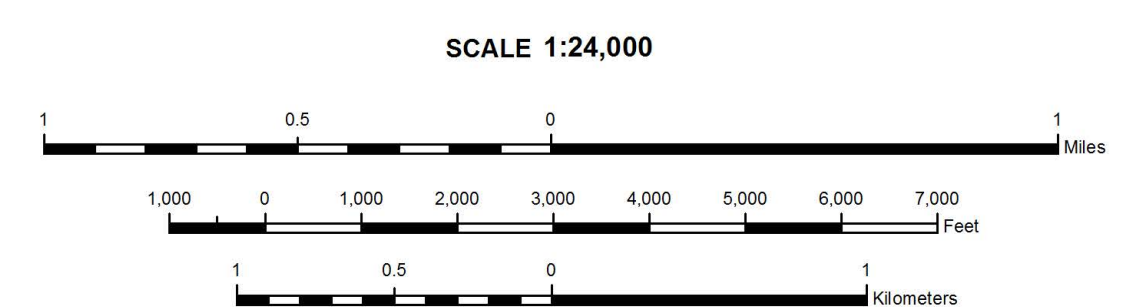
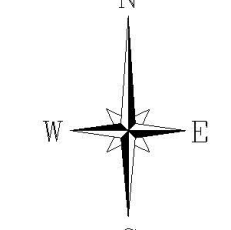
2010

DESCRIPTION OF MAP UNITS

Geologic Unit	Symbol	Description
HOLOCENE		
ALLUVIUM	Qal	Sand, flood plain sands and silts; sparsely graveliferous in western portions of the quadrangle.
LOESS	Lo	Silt, buff to tan, pale yellow, red, or gray, sandy to clayey, quartzose, feldspathic. Unweathered loess is typically calcareous with dolomite and calcite; however, loess in this quadrangle is highly weathered, leached/noncalcareous, very clayey, and has 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 5 to 15 feet. In places, weathered loess contains secondary deposits of small calcareous concretions (catclay, loess dolly).
PLEISTOCENE		
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 eluviated 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 hematite to limonite sandstone. Unconformity at base, with an irregular, undulating surface. Roughly corresponds to the Lafayette Formation, Brown (1907); the Citronelle Formation, Fridly (1942); the Bentley Terrace, Fisk et al. (1949); and the Upland Complex, Sauer (1994). The thickness in the quadrangle is estimated at a few feet up to 60 feet.
QUATERNARY		
PLEISTOCENE		
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 150 feet or so are exposed in the quadrangle. Constitutes the Sparta Aquifer.
CLAIBORNE GROUP		
WINONA and ZILPHA FORMATIONS		
Zilpha	Tzn-Tz	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 selinite or limonite infilling. The thickness is variable from a few feet to 60 feet.
Winona	Tzn-Tz	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 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 western portion of the quadrangle, and along Potacocowa and Cane creeks.		
TERTIARY		
Eocene		
CLAIBORNE GROUP		
Zilpha and Winona Formations	Tzn-Tz	(See descriptions above)
Drill-hole locality and identification number	C-2	(See map)



GEOLOGIC MAP JEFFERSON QUADRANGLE Grenada and Carroll Counties, Mississippi



Geology field checked in 2010 using the Provisional Edition 1983, 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 16, 1983 datum shown in red; January 2010, magnetic north declination in quadrangle center is 0°27' 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 #G09AC00173.

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

