

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
 OFFICE OF GEOLOGY
 OPEN-FILE REPORT 294
GEOLOGIC MAP
 of the
CHURCH HILL QUADRANGLE
 Jefferson and Adams Counties,
 Mississippi

2019

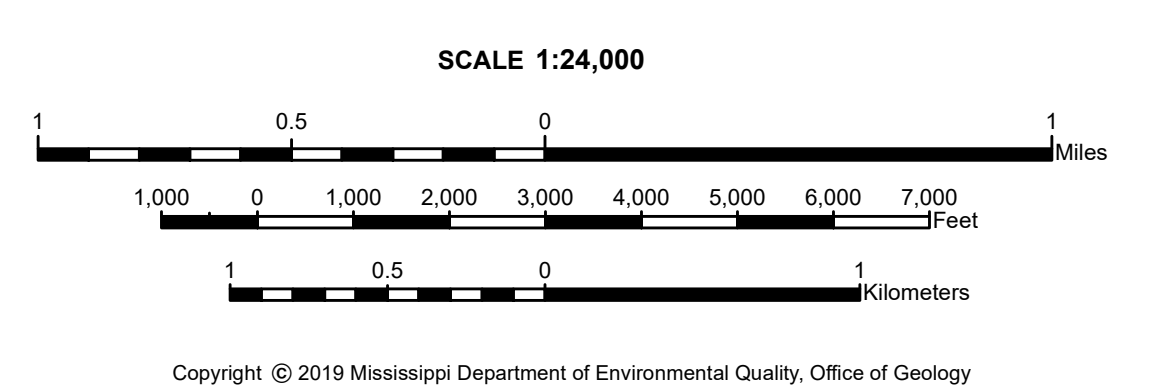
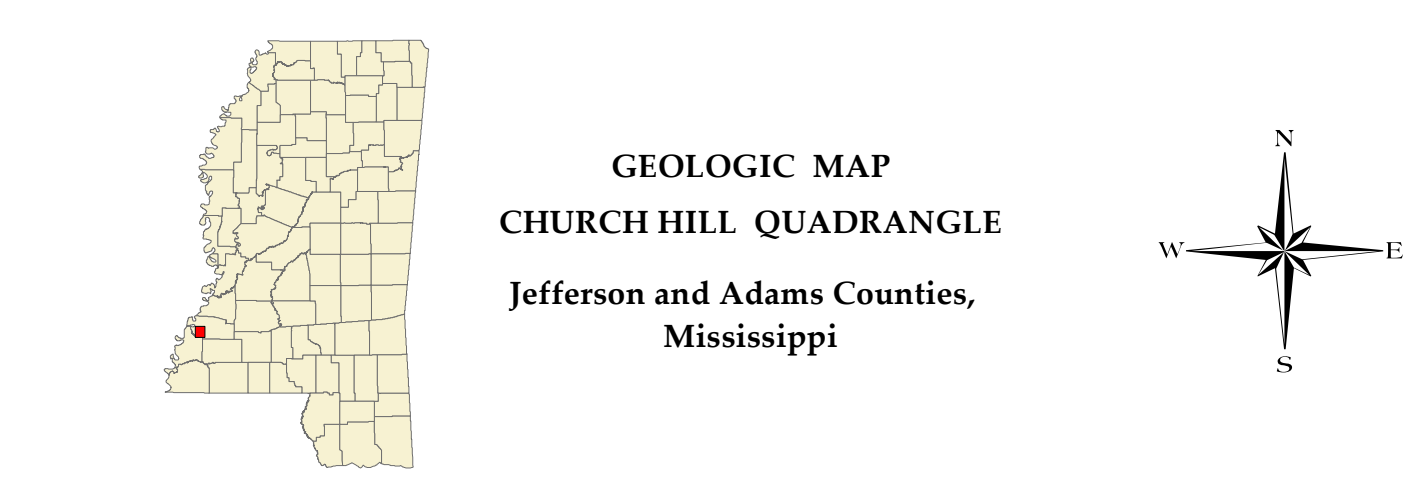
Geology by James E. Starnes, RPG
 and Jonathan R. Leard, GIT



CORRELATION OF MAP UNITS

DESCRIPTION OF MAP UNITS

- HOLOCENE**
- Qal**
Alluvium
Flood plain sands, silts, gravels, and clays.
 - L**
Loess
Silt, buff to tan, pale yellow, red, gray to gray-green wherein anoxic conditions, quartzose to feldspathic. Loess is an eolian deposit derived from glacial outwash. Loess is typically calcareous with dolomite and calcite; however, the upper portion of the loess is highly weathered, leached / noncalcareous, very clayey, and has been referred to as "brown loam". Loess deposits unconformably blanket the Pre-loess topography with substantial local variations in thickness. In places, weathered loess contains secondary deposits of small calcareous concretions (caliche, loess dolls). Loess can be locally and sparingly fossiliferous, commonly containing tests or stemarkers of pulmonate gastropods and less commonly containing fossils of Pleistocene vertebrates.
- QUATERNARY / PLEISTOCENE**
- Qt**
Pre-loess Terrace Deposits
Sand, yellow, orange, purple, red, pink, fine- to coarse-grained, predominantly quartzose, cross-bedded to massive; graveliferous, pea to large cobble size clasts, clasts of sandstone up to boulder size not uncommon. Gravels are predominantly chert with lesser amounts of vein quartz, metaquartzite, agate, sandstone, and rare rhyolite clasts; clay, pink to white, generally occurring as discontinuous lenses and as rip-up clasts up to boulder-size. Conglomeratic ironstone ledges are common in the graveliferous sands at the base of the deposits, which overlies the Hattiesburg Formation unconformably. Two distinct terraces are identified: one heavily eroded terrace perched approximately 300 feet above MSL in elevation and younger, completely preserved terrace beneath the loess adjacent to the Mississippi River alluvium with a base perched between 20-40 feet above MSL with relic alluvial plain surface at approximately 135 feet above MSL. The escarpment between the lower Pre-loess terrace and the adjacent uplands is approximated due to it being masked by a thick mantle of loess. "Head-of-hollow", terrace-derived valley fill deposits are common at lower elevations and are isolated to valley walls adjacent to the erosional remnants of the higher of the two terrace deposits. These small deposits are of such limited extent as not to warrant representation on this map.
- QUATERNARY / PLEISTOCENE**
- Tha**
Hattiesburg Formation
Clay, green, gray, brown, weathers white to brown, silty to sandy, locally lignitic; sand, gray, pale yellow to white, fine- to coarse-grained, cross-bedded to massive with rare thinly-bedded pea gravels (gravels consist of black chert and milky quartz, are highly polished, sub-angular to well rounded), often indurated to sandstones and siltstones at surface, predominantly quartzose with lesser amounts of chert, elongate mica, and heavy minerals, slightly glauconitic in places, silicified and coalified wood common. The base of the Hattiesburg Formation is designated at the base of a sand unit of regional extent that occurs at the approximate horizon of the base of the Fleming Formation in Louisiana and the middle -Miocene Amos Sand in Alabama.
- G-0043**
Drill-hole locality and identification number
 - Indeterminate Boundary

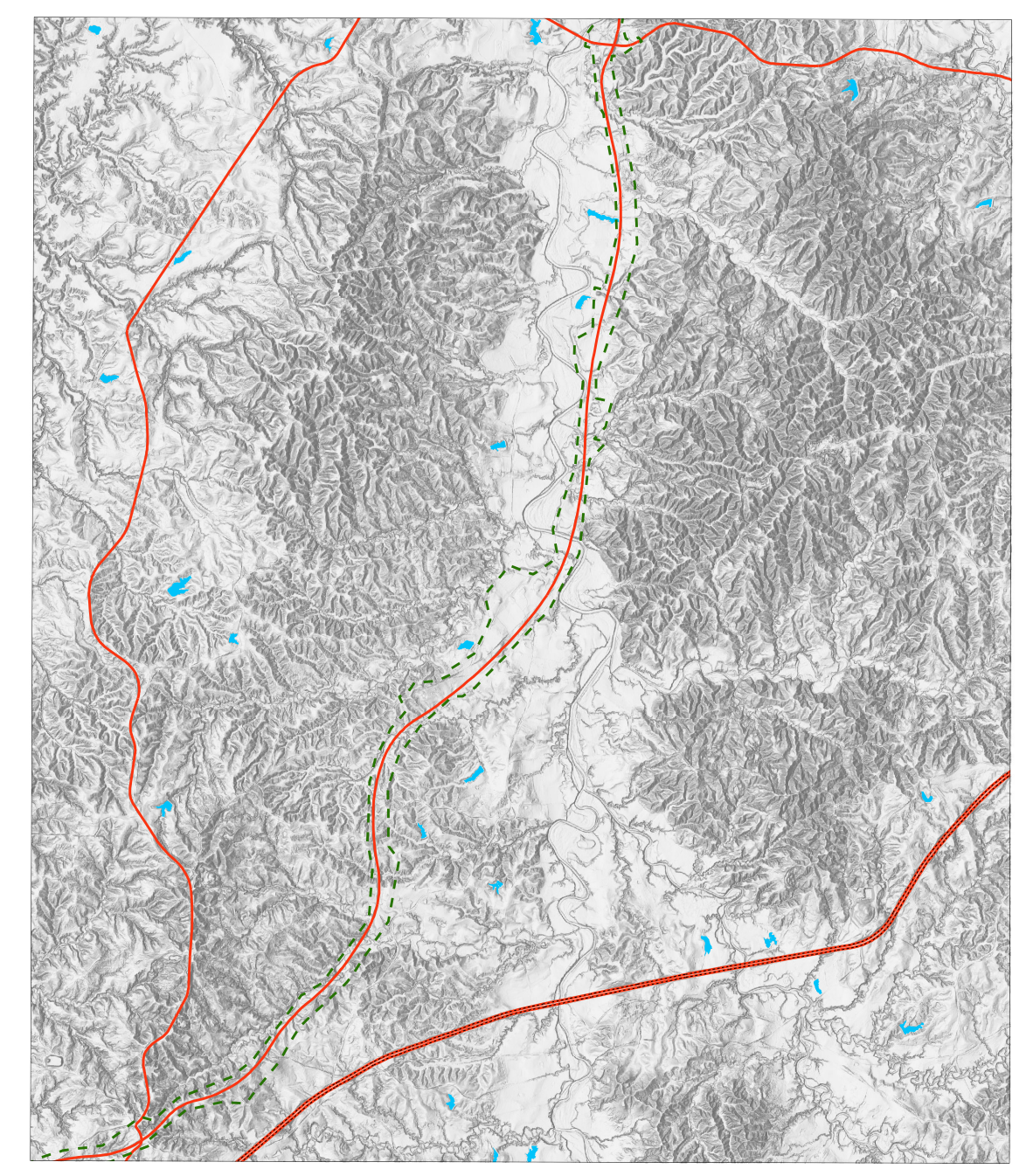


Geology field checked in 2018 and 2019 using the 1986 U.S. Geological Survey 7.5-minute topographic quadrangle, 1983 North American datum, contour interval 20 feet, 1000-meter Universal Transverse Mercator grid ticks, zone 15, 1983 datum shown in red. January 2019, magnetic north declination in quadrangle center is 0°18' west of true north, changing by 0°5' west per year.

Sources: Contours derived from Mississippi Automated Resource Information System (MARIS); Public Land Survey System, 1:24,000 scale, from MARIS; road features derived from the Mississippi Department of Transportation (MDOT) 2015 road centerlines; Light Detection and Ranging (LIDAR) NRCS 3DEP Southwest MS 2016 (collected at 0.7-meter nominal point spacing); 1-meter DEM (Bare Earth), U.S. Army Corps of Engineers (USACE), United States Geological Survey (USGS), and Natural Resources Conservation Service (NRCS); Stream features: USGS National Hydrography Dataset; Lakes derived from 2016 LIDAR. Dedication: National Oceanic and Atmospheric Administration (NOAA). The Office of Geology would like to thank Trisha Geoghegan and Eugene Bates who made this project possible by granting us access to their properties in cooperation with our drilling activities.

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 Cooperative Geologic Mapping Program, under STATEMAP grant #G18AS0006.



Bare Earth Southwest MS 2016 LIDAR Hillshade of the Church Hill Quadrangle

Structural Cross-Section of the Church Hill 7.5-Minute Geologic Quadrangle

