MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF GEOLOGY

OPEN-FILE REPORT 148

GEOLOGIC MAP

of the

MADISON QUADRANGLE

Madison, Rankin, and Hinds Counties, Mississippi

2019

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Dedicated to
William H. Moore, State Geologist

CORRELATION OF MAP UNITS

DESCRIPTION OF MAP UNITS

HOLOCENE

Fill

Artificial Fill

A significant amount of recent fill, not all represented on this map, is found in and around the Ross Barnett Reservoir area.

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ALLUVIUM

Flood plain sands, silts, clays, and quartz gravels. Thickness is variable and is dependent upon the size of the associated stream; thickest, up to 45 feet, along the Pearl River flood plain. Minor quartz gravel is present along the active channel of the Pearl River in Section 3, 4, and 9, Township 6 North, Range 2 East. Silicified wood common.

QUATERNARY — PLEISTOCENE

Ql

LOESS

Silt, buff to tan, pale yellow, red, or gray. Loess represented in this quadrangle is highly weathered, leached, noncalcareous and clayey; also referred to as brown loam. Loess deposits unconformably blanket the underlying units, but in this quadrangle area, loess cover is discontinuous and is not of a significant thickness to be mapped.

Qt

TERRACE DEPOSITS

Sand, yellowish brown to reddish brown, fine- to medium-grained, silty to clayey, locally contains silicified wood and logs, commonly exhibits a coarsening downward fluvial sequence, with rip-up clay clast conglomerate near unconformable basal contact with the Yazoo Clay. Predominantly associated with the Pearl River drainage system and confluences of its tributaries. Terrace thickness is variable from approximately 1 foot up to 30 feet.

TERTIARY — EOCENE — JACKSON GROUP

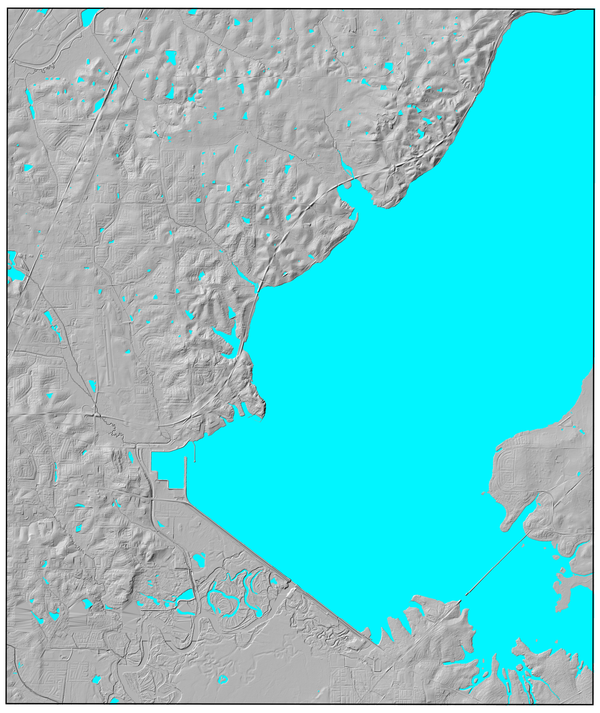
Ty

YAZOO CLAY

Clay, bluish-green to bluish gray, weathers yellowish brown to tan, montmorillonitic, calcareous, silty, locally fossiliferous, locally contains framboidal pyrite. Weathered sections commonly exhibit selenite gypsum, jarosite, and weathered pyrite in the form of limonite. Due to its high shrink -swell potential, the Yazoo Clay poses a high-risk for engineering and construction projects. A typical marine shell bed is visible along the east bank of Pearl River in (SE 1/4, SE 1/4, Section 3, Township 6 North, Range 2 East. Total thickness is approximately 450 feet, however, the maximum thickness in the quadrangle is approximately 380 feet in the southeast portion of the quadrangle.

H-0025 — Drill-hole locality and identification number

Abandoned surface mine pit



Composite Bare Earth: Madison & Yazoo; Rankin & Simpson; and the Hinds County MS LIDAR Hillshade of the Madison Quadrangle.

GEOLOGIC MAP
MADISON QUADRANGLE
Madison, Rankin, and Hinds Counties, Mississippi

SCALE 1:24,000

1 0.5 0 1 Miles

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

Geology field checked in 2019 using the 1980, U.S. Geological Survey 7.5-minute topographic quadrangle, 1983 North American datum, contour interval 10 feet. 1000-meter Universal Transverse Mercator grid ticks, zone 15; 1983 datum shown in red. January 2019, magnetic north declination in quadrangle center is 1°7' west of true north, changing by 0°5' west per year.

Sources: Public Land Survey System, 1:24,000 scale, from Mississippi Automated Resource Information System (MARIS); road features derived from the Mississippi Department of Transportation (MDOT) 2015 and 2018 road centerlines; water bodies, streams, and contours derived from Light Detection and Ranging (LIDAR), project areas: Hinds County by (Natural Resources Conservation Service (NRCS)\Mississippi Department of Environmental Quality (MDEQ)\United States Geological Survey (USGS)-3D Elevation Program (3DEP), area-Ne/Sw/MS, year 2017); Madison County by (MDEQ\ Federal Emergency Management Agency (FEMA), area-Madison-Yazoo, year 2012); and Rankin County by (MDEQ\FEMA, area-Rankin-Simpson, year 2013). Building Footprints derived from satellite and aerial imagery via Bing composite and artificial intelligence (AI) by Microsoft; and Declination, National Oceanic and Atmospheric Administration (NOAA). Surface mine locations from MDEQ – Office of Geology Mining and Reclamation Division and USGS 7.5 minute topographic quadrangle.

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.

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