



MISSISSIPPI DEPARTMENT OF
ENVIRONMENTAL QUALITY
OFFICE OF GEOLOGY
OPEN-FILE REPORT 164

GEOLOGIC MAP
of the
TYRO QUADRANGLE
Tate, Lafayette, Marshall, and
Panola Counties, Mississippi

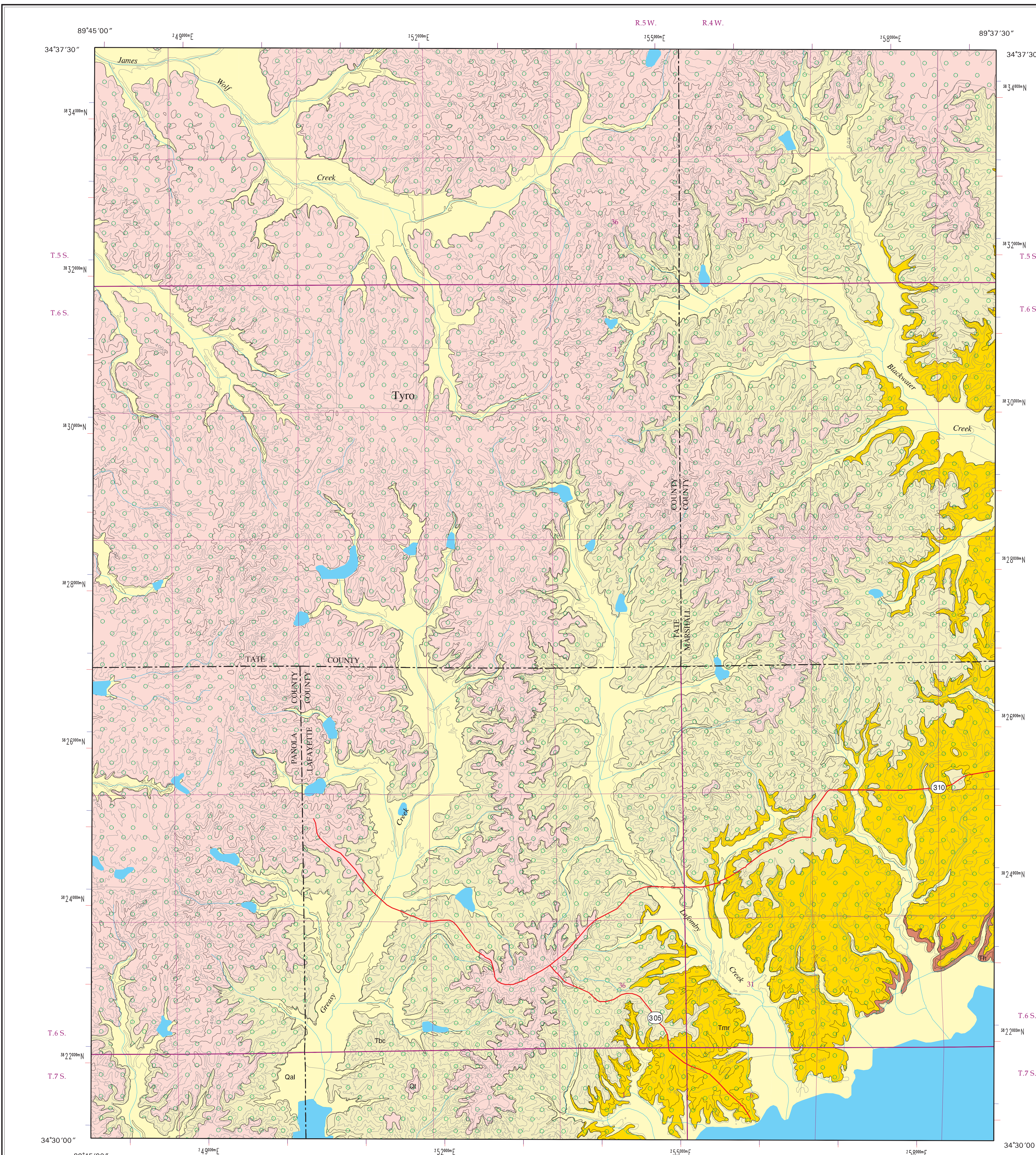


Geology by David E. Thompson

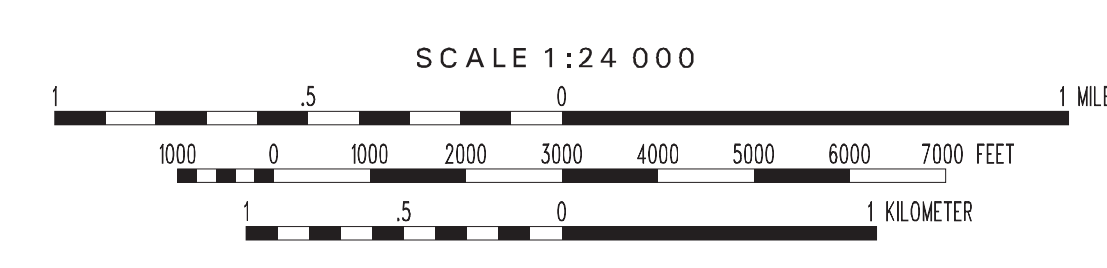
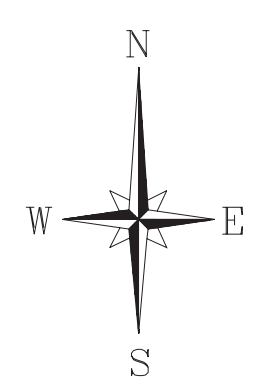
2003

DESCRIPTION OF MAP UNITS

Geologic Group	Map Unit	Description
HOLOCENE	Qal	ALLUVIUM Sand, flood plain sands and silts.
	(Symbol)	LOESS 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 substantial local variation in thickness. The thickness in the quadrangle is estimated at 4 to 15 feet. In places, weathered loess contains secondary deposits of small calcareous concretions (caliche, loess dolls). The basal few feet of loess grade into the sands and gravels of the underlying Pre-Loess Terrace Deposits.
QUATERNARY PLEISTOCENE	Qt	PRE-LOESS TERRACE DEPOSITS 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; however, not found to contain gravel in this quadrangle. Commonly exhibits clay clast 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, Fridly (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 up to 70 feet. May be considered a recharge area for the Memphis Sand Aquifer where Pre-Loess Terrace sands and gravels overlie Tertiary aquifer sands.
	Tbc	TALLAHATTA FORMATION Basic City Shale Member Clay and silt, olive gray to brownish gray, weathers yellowish gray to very light gray or white, carbonaceous to lignitic, locally indurated, near surface exposures may exhibit siderite nodules and jointing with limonite infilling; interbedded to interlaminated with sand, gray to very light gray, weathers pale yellowish orange to reddish orange, very fine- to medium-grained, quartzose, micaceous, carbonaceous, pyritic, locally slightly glauconitic. The lower approximate half of the member is predominantly quartzose sand with a very coarse-grained texture. The total thickness is approximately 220 feet. Sandy horizons of the member constitute a portion of the Memphis Sand Aquifer.
TERTIARY Eocene	Tmr	MERIDIAN SAND Sand, gray to very light gray, weathers yellowish gray to reddish orange, very fine- to very coarse-grained, typically fining upward, quartzose, micaceous, locally carbonaceous or slightly glauconitic, pyritic, interbedded to interlaminated with silt, siltstone, and clay, dark gray to white, carbonaceous; upper beds are typically silty or argillaceous. The thickness is approximately 100 feet. Unconformity at base. The Meridian Sand constitutes a portion of the Memphis Sand Aquifer.
	Th	HATCHETIGBEE FORMATION Sand, gray to light gray, weathers reddish orange to pale yellowish orange, very fine- to very coarse-grained, quartzose, micaceous, pyritic, clay clast conglomerate, especially sandy and coarse-grained at base; interbedded to interlaminated with clay, gray to brownish gray, weathers very light gray to white, silty, carbonaceous, especially argillaceous in the upper beds of the formation. The basal 50 feet or so represent a non-marine equivalent to the fossiliferous, marine, Bashi Formation of east-central Mississippi, mark the Paleocene/Eocene unconformity, and consist of sand, gray to light gray, weathers reddish orange to pale yellowish orange, very fine- to very coarse-grained, quartzose, micaceous, carbonaceous, slightly pyritic, clay clast conglomerate. The thickness is approximately 220 feet; however, only the upper 20 feet or so are exposed in the southeastern portion of the quadrangle. The Hatchetigbee Formation constitutes the basal portion of the Memphis Sand Aquifer.



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Geology field checked in 2003 using the 1971 U.S. Geological Survey 7.5-minute topographic quadrangle, 1927 North American datum, contour interval 20 feet.
Mississippi Transverse Mercator projection, 1983 North American datum, GR580 spheroid, 1000-meter Universal Transverse Mercator grid ticks, zone 16; 1983 datum shown in red, 1927 datum shown in blue.
Sources: Road and water features, USGS Digital Line Graph data, 1:100,000 scale. Public Land Survey System, Mississippi Automated Resource Information System (MARIS), 1:24,000 scale.
Geographic Information System by Daniel W. Morse.
This map was produced by the Mississippi Office of Geology in cooperation with the U.S. Geological Survey, National Geologic Mapping Program, under STATEMAP grant #02HQAG053.

References Cited
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Fisk, H. N., et al., 1949, Geological investigation of gravel deposits in the lower Mississippi Valley and adjacent uplands, Mississippi River Commission, U.S. Army Corps of Engineers, Waterways Experiment Station, Tech. Memoir 3-273, 58 p.
Fridly, E. R., 1942, Tallahatta County mineral resources, Mississippi State Geological Survey, Bulletin 50, p. 42-43.
Saucier, R. T., 1994, Geomorphology and Quaternary geologic history of the lower Mississippi Valley, U.S. Army Corps of Engineers, Waterways Experiment Station, v. 1, p. 169-170, 214-218.