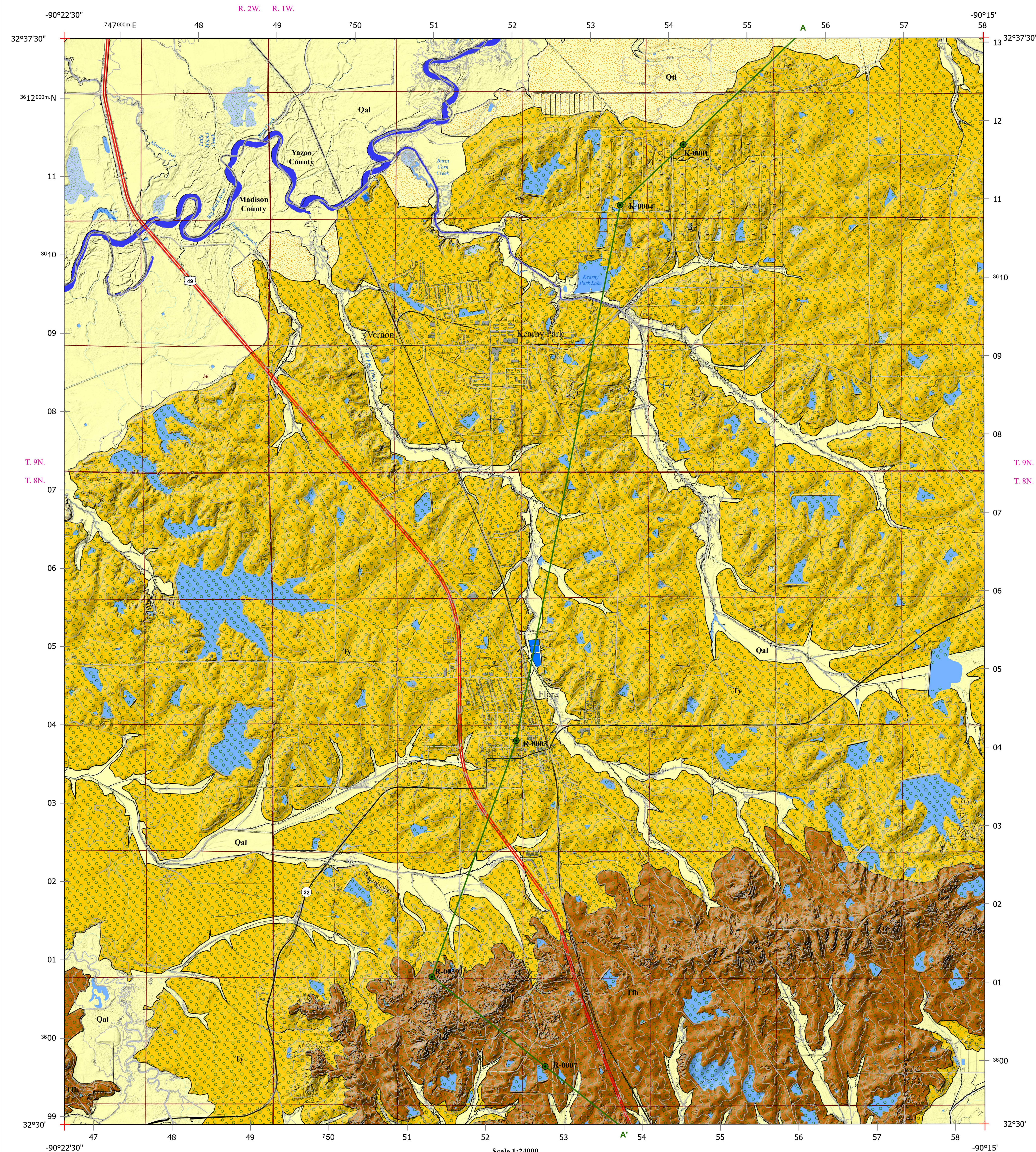
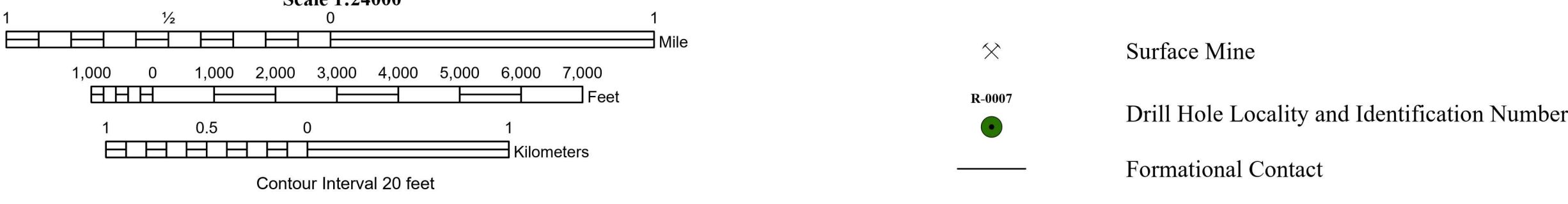




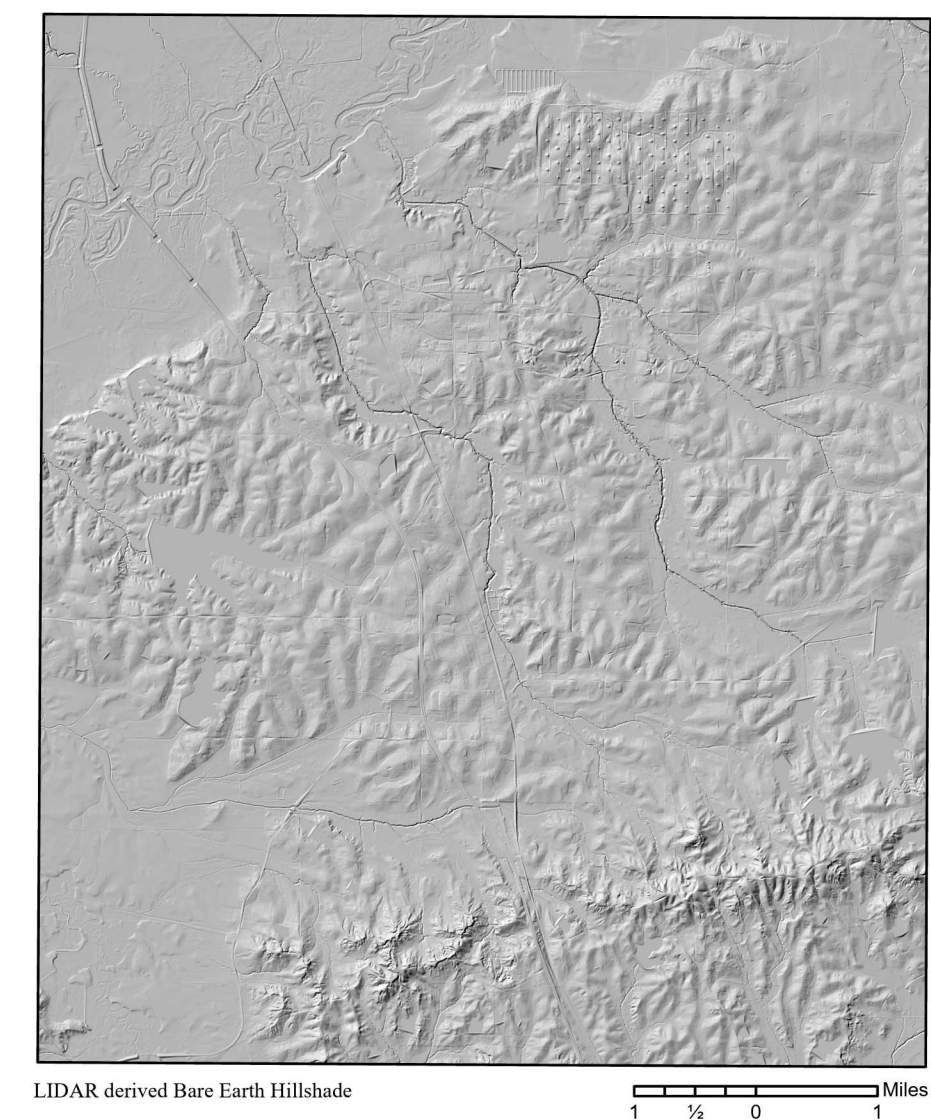
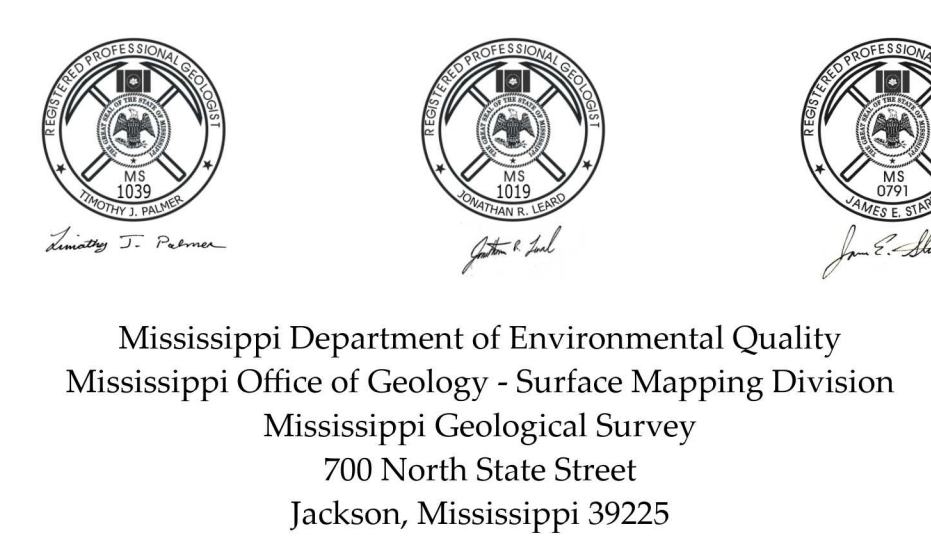
Base map produced by the Mississippi Office of Geology
PCS: NAD 1983 UTM Zone 15N
GCS: GCS North American 1983
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter
Declination: USGS MS Flora 204 Topographic Map
MDEM base map data from MARIS
Borehole data from Mississippi Office of Geology.



The Survey expresses its gratitude to the Mississippi Petrified Forest for providing access to the museum, interpretive walking trail, and to their property for auger and test hole coring.

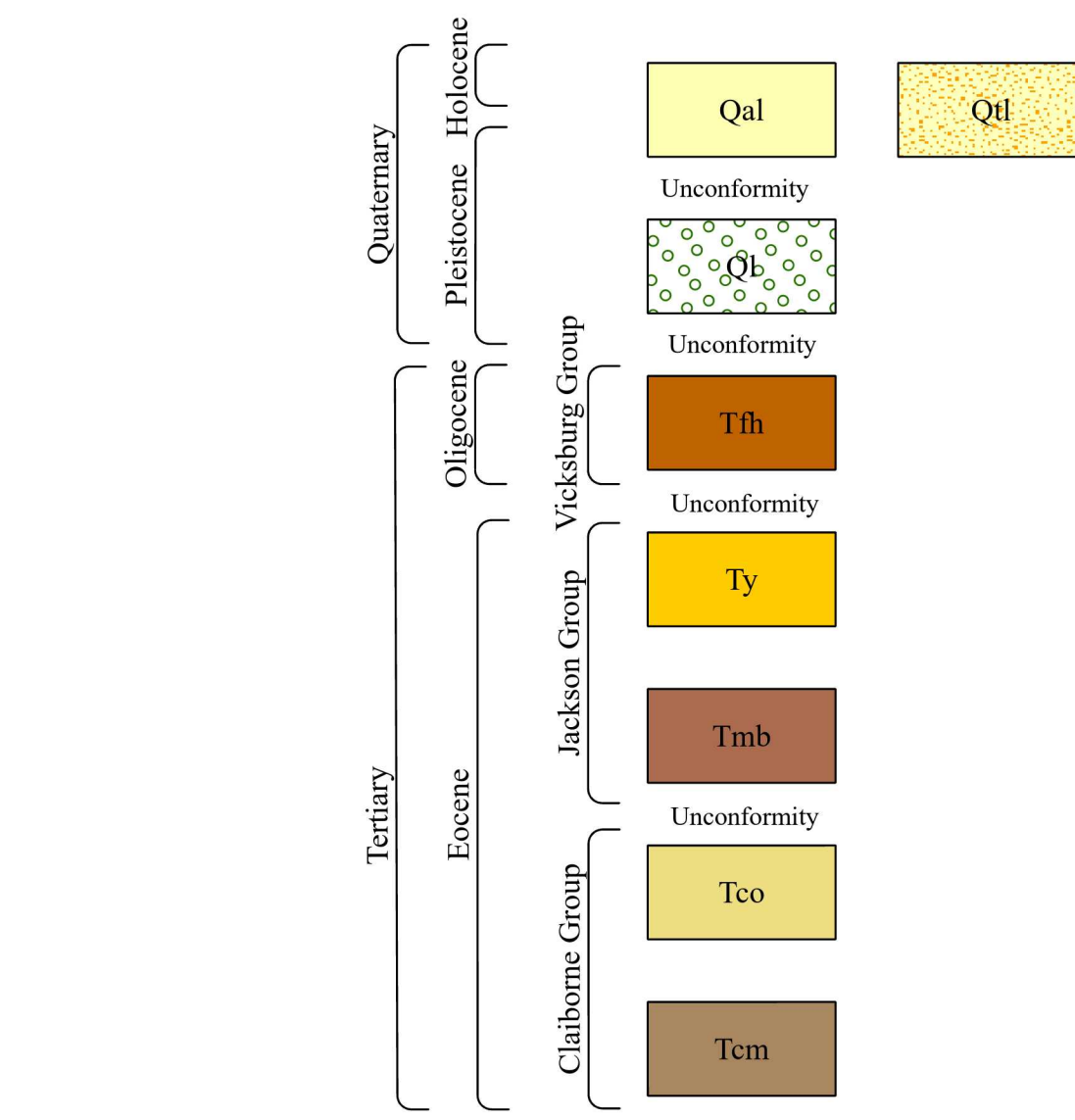
Mississippi Office of Geology
Open-File Report 363
**GEOLOGIC MAP of the FLORA
7.5-MINUTE QUADRANGLE**
Madison and Yazoo Counties, Mississippi
2026

Geology by
Timothy J. Palmer, RPG, Jonathan R. Leard, PhD, RPG,
James E. Starnes, RPG, and Natalya S. Usachenko, GIT



Geologic maps are only a guide to current understanding and do not eliminate the need for detailed investigations of specific sites for specific purposes. The views and conclusions contained in this Open-File Report are those of the geologists and should not be interpreted as representing the official policies, either expressed or implied, of the State of Mississippi or of the United States Government.

Correlation of Map Units



Descriptions of Map Units

- Qal**
Alluvium (Pleistocene to Holocene)
Stream terrace deposits. Sand, yellow- to brownish-white in color, fine- to coarse-grained, subrounded to rounded, predominately quartzose, silty, clayey; humus lenses common. Streams on clay subcrop will exhibit shallow, wide alluvial plains while streams on sand subcrop tend to incise creating steep valleys with narrow alluvial plains, silicified wood common. Thickness approximately 15 feet along larger streams, thinning up tributaries.
- Qtl**
Stream Terrace (Pleistocene to Holocene)
Stream terrace deposits. Sand, yellow- to brownish-white in color, fine- to coarse-grained, subrounded to rounded, predominately quartzose, locally graveliferous containing aggregate derived from the Pre-loess Terrace deposits, silty to clayey; humus lenses common; floodplain deposits are heavily loess-derived. Silicified wood common. Can contain pre-historic archeological deposits.
- Qtl**
Loess (Pleistocene)
Commonly referred to as "brown loam." Eolian deposit derived from glacial outwash. Silt, buff to tan, pale yellow, red, grey to grey-green where in anoxic conditions, quartzose to feldspathic; typically calcareous with dolomite and calcite; upper portion can be deeply weathered and noncalcareous. In places, weathered loess contains secondary deposits of small calcareous concretions. Locally contains tests or stinkens of pulmonate gastropods and less commonly contains fossils of Pleistocene vertebrates. Loess deposits unconformably blanket underlying formations with substantial local variations in thickness but generally thickens westwardly.
- Tth**
Forest Hill Formation (Oligocene)
Deltaic sands, silts, and clays. Sand is fine-grained, silty, and quartzose; clay is carbonaceous and laminated, with lignite and silicified wood common. Carbonized plant fossils occur along fissile partings in clay intervals. The Forest Hill Formation unconformably overlies and commonly incises into the Yazoo Formation and represents the lowermost unit of the Vicksburg Group, distinguished from overlying units by its terrestrial to deltaic depositional setting. Approximate thickness is 80 ft in the mapping area.
- Ty**
Jackson Group
Yazoo Formation (Oligocene to Eocene)
Outer neritic to bathyal marine clay. Clay is calcareous and montmorillonitic, blue green when in color unweathered, sparingly fossiliferous marine mollusk shell hash common along partings and bentonite seams present. Limestone ledges occur in places. The Yazoo Clay reaches a thickness of approximately 370 ft. The Yazoo Formation is marked by the planktonic foraminifera *Hankenina alabamensis*. The Yazoo Formation conformably overlies the Moody Branch Formation.
- Tmb**
Moody Branch Formation (Eocene)
The Moody Branch Formation represents the basal member of a marine transgression towards the close of the Eocene epoch, situated unconformably above the deltaic to estuarine Cockfield Formation and conformably below the outer neritic to bathyal clays of the Yazoo Formation. It consists of sandy, fossiliferous marl containing abundant marine mollusk shells of the genera *Glycymeris* and *Venericardia*. The unit unconformably overlies the Cockfield Formation, reflecting the delta destruction phase and subsequent marine transgression, and it conformably grades upward into the Yazoo Formation. Total thickness is approximately 15 ft.
- Tco**
Chaliborne Group
Cockfield Formation (Eocene)
Deltaic deposits dominated by clays in the upper portions of the formation and sands in the lower portion. Clay, brown, reddish-brown to grey in color; silty to fine sandy; strongly carbonaceous to lignitic, slightly micaceous, pyritic. Carbonized and silicified plant fossils common. Underlies the Moody Branch Formation unconformably. Total thickness is approximately 350 feet. Overlies the Cook Mountain Formation unconformably.
- Tcm**
Cook Mountain Formation (Eocene)
Marine clays, silts, and sands. Clay, chocolate brown in color. Silt, dark yellowish-brown, carbonaceous, clayey, glauconitic, micaceous, sandy. Sand, light-gray to grayish-brown, fine- to coarse-grained, quartzose, fossiliferous, silty, clayey, micaceous, carbonaceous; shaly in upper portions, cross bedded in lower portions. Unconformably overlies the Kosioko Formation. Thickness is approximately 60 ft.



Looking downstream at the active channel of the Big Black River with quartz sand and clayey silt alluvium exposed along the southern bank of the stream in Section 25, Township 9 North, Range 2 West.



Large silicified fossil logs deposited in a fluvial environment eroding from the lower Oligocene Forest Hill Formation in an outcrop at the Mississippi Petrified Forest in Section 29, Township 8 North, Range 1 West.



Large silicified log deposited in the sands and clays of the lower Oligocene Forest Hill Formation exposed in an outcrop at the Mississippi Petrified Forest in Section 29, Township 8 North, Range 1 West.



An interval of core penetrating deeply weathered basal clay sands of the lower Forest Hill Formation from a depth interval of 15-23 feet from the MOG Petrified Forest #2 drilled in Section 29, Township 8 North, Range 1 West.



Close up of localized concentration of well-preserved marine gastropods exposed along a parting in an interval of core penetrating fresh gray-green colored montmorillonitic clays of the Eocene-Oligocene Yazoo Formation at a depth interval of 55 feet from the MOG Petrified Forest #2 drilled in Section 20, Township 8 North, Range 1 West.

Field Photographs



Peorian loess exhibiting a typical vertical erosional face, unconformably overlying weathered clay sands of the lower Oligocene Forest Hill Formation exposed in an outcrop at the Mississippi Petrified Forest in Section 25, Township 9 North, Range 2 West.



Large silicified fossil logs exposed in a lower Oligocene Forest Hill Formation outcrop in the Mississippi Petrified Forest in Section 29, Township 8 North, Range 1 West.



Survey geologist Dr. Jonathan Leard points to a large silicified log deposited in a fluvial environment eroding from the deeply weathered basal clay sands of the lower Oligocene Forest Hill Formation in an outcrop at the Petrified Forest in Section 29, Township 8 North, Range 1 West.



A fragment of silicified wood in close up of an interval of core penetrating deeply weathered sands of the Forest Hill Formation from a depth interval of 15 to 23 feet from the MOG Petrified Forest #2 drilled in Section 20, Township 8 North, Range 1 West.



Close up of off-white colored water-lain ash bentonitic clay in interval of core penetrating fresh gray-green colored montmorillonitic clays of the Eocene-Oligocene Yazoo Formation at a depth interval of 63 to 73 feet from the MOG Petrified Forest #2 drilled in Section 20, Township 8 North, Range 1 West.



Survey geologist Dr. Jonathan Leard points to deeply weathered basal clay sands of the Forest Hill Formation in an outcrop at the Mississippi Petrified Forest in Section 29, Township 8 North, Range 1 West.



Silicified fossil logs deposited in a fluvial environment exposed by erosion from the lower Oligocene Forest Hill Formation in an outcrop at the Mississippi Petrified Forest in Section 29, Township 8 North, Range 1 West.



Registered Natural Landmark monument plaque mounted on a silicified fossil log from the lower Oligocene Forest Hill Formation at the entrance of the museum and gift shop at the Mississippi Petrified Forest in Section 29, Township 8 North, Range 1 West.

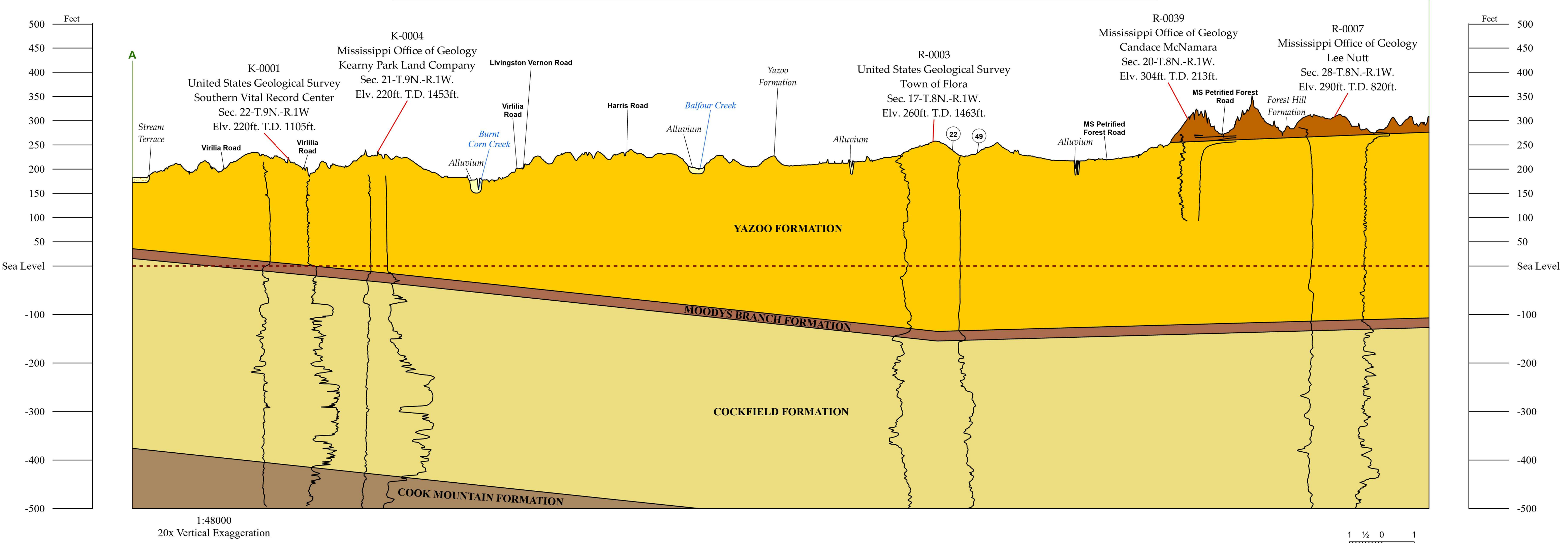


Close up of an interval of core penetrating fresh gray-green colored montmorillonitic bioturbated marine clays of the Yazoo Formation from a depth interval of 43 to 53 feet from the MOG Petrified Forest #2 drilled in Section 20, Township 8 North, Range 1 West.

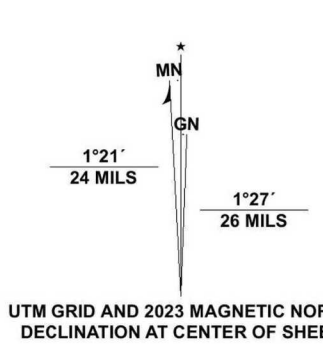
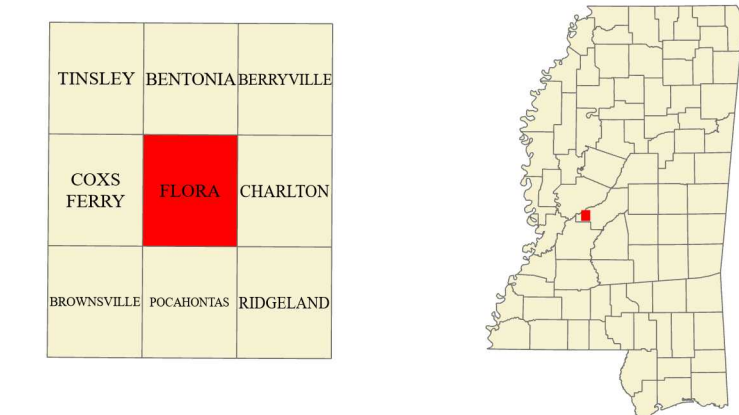


Close up of a localized lamina containing a concentration of well-preserved marine mollusks exposed along a parting in an interval of core penetrating fresh gray-green colored montmorillonitic clays of the Eocene-Oligocene Yazoo Formation at a depth interval of 123 to 133 feet from the MOG Petrified Forest #2 drilled in Section 20, Township 8 North, Range 1 West.

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



Adjoining 7.5' Quadrangles



Mississippi Department of Environmental Quality
Mississippi Office of Geology - Surface Mapping Division
Mississippi Geological Survey
700 North State Street
Jackson, Mississippi 39225

Copyright © 2026 Mississippi Department of Environmental Quality, Office of Geology