

SYSTEM	SERIES	FORMATION	LITHOLOGY	THICKNESS, IN FEET	DESCRIPTION
QUATERNARY		Alluvium		0-50	Silt, clayey, reddish-brown to yellowish-brown; contains scattered poorly rounded pebbles of chert ranging in diameter from 1/2 inch to 1 1/2 inches.
CARBONIFEROUS MISSISSIPPIAN	Upper Mississippian	St. Louis Limestone		120+	Limestone, greenish-gray to olive-gray, mostly lithographic to sublithographic but locally fine- to medium-grained in lenticular zones as much as 20 feet thick, and very coarse grained where clear to milky calcite crystals or aggregates of crystals fill small vugs; locally argillaceous and silty in basal 10 to 30 feet; isolated quartz sand grains in thin to thick, poorly defined limestone beds throughout formation. Dark-gray, white, and brown, chalky-white-weathering chert is rare to abundant in spheroidal, ellipsoidal, spindle-shaped, or irregular bodies as much as several inches long and in irregularly surfaced lenticular beds as much as one foot thick and many tens of feet long. Basal part of formation mostly laminated, weathers to fissile and platy fragments; upper part mostly poorly laminated or structureless, weathers to blocky or massive ledges and isolated irregular remnants. Surfaces of remnants smooth, fluted, pinnacled, or covered with irregular ridges many inches high. Soil is bright brownish red, nearly gritless, plastic clay. Fossils locally common, almost without exception sili-cified; prominent are two lithostrotonoid coral species, one dendroid, the other cerioid in growth form.
		Warsaw Limestone		60-100	Limestone, sandy, yellowish-gray and light-olive-gray to medium-dark-gray, medium-grained to very coarse grained; consists largely of interlocked, in part zoned, calcite crystals, small fragments of cystoid, blastoid, and crinoid stems, detrital quartz grains, and broken bivalve shell fragments; locally includes lenses of light-olive-gray to medium-light-gray fine-grained clayey and silty limestone and calcareous siltstone which may be indistinguishable from the underlying Fort Payne Formation; upper 10 to 30 feet at some places consists of thinly laminated ripple-marked yellow-weathering calcareous clayey siltstone which is difficult to distinguish from similar beds in basal part of St. Louis Limestone. Contains a little glauconite throughout; geodes are uncommon and smaller than those in Fort Payne Formation. Formation is faintly to prominently laminated, generally weathering to rounded massive ledges; strongly laminated rock is marked by low-angle crossbedding and weathers to platy and slabby surfaces. Weathered surfaces are light olive gray and very rough; some have narrow streaks of light-brown iron oxides along joints and bedding planes. Soil is reddish-brown plastic sandy clay except in northern part of quadrangle where unit contains as much as 80 percent sand grains and weathers to porous sandstone.
	Lower Mississippian	Fort Payne Formation		240-310 (Reefs 0-150)	Shale and limestone: Shale, in alternating clayey and sapropelic layers, mostly silty but calcareous and sandy in part, mostly light-olive-gray to medium-light-gray; hard brown-weathering calcareous siltstone lenses are common in lower part of formation, and grayish-orange calcareous sandstone lenses as much as 30 feet thick occur locally an eastern part of quadrangle. Geodes ranging from less than an inch to more than 2 feet in diameter are common, mostly in layers; most have quartz outer shells; commonly filled wholly or partly with coarse clear quartz or milky-white or pink calcite, less commonly with white barite, and may contain rare small amber and purple fluorite and dark-brown sphalerite crystals; some geodes initially grew around organic remains such as crinoid calyxes and gastropods. Sparse lenses of bedded chert. Shale is thinly laminated, in planar to undulatory beds, weathers to light-olive-gray through olive-gray to black fissile platy fragments, and ultimately forms grayish-yellow finely gritty soil. Limestone, yellowish-gray and light-olive-gray to medium-dark-gray, medium-grained to very coarse grained; similar to limestone of the Warsaw Limestone but contains less detrital quartz grains; characterized principally by abundance of large crinoid stem fragments; chert common in nodules and lenticular beds; discontinuous, and in places thickens markedly in short lateral distance. Limestone formed as extensive reefs within the shale.
		Chattanooga Shale		28-45	Shale, brownish-black to grayish-black. Upper few feet of formation contains grayish-brown to black phosphatic nodules, some of which have septarian veinlets or concentric shells of marcasite; some nodules were deposited in, or reworked into, basal few feet of overlying Fort Payne Formation; some nodules grew around plant stems, linguloid shells, or other organic trash. Formation also includes discoid concretions of pyrite as much as 1/2 inch thick and 3 inches in diameter and very thin seams of pyrite along bedding planes. Shale is very thinly laminated, fissile, and weathers to form light-olive-gray flaky slopes. Rock surfaces may be coated with iron oxides and bright-colored alums, and may ooze or give off odor of petroliferous fluids.
	ORDOVICIAN	Upper Ordovician	Cumberland Formation		14-32
Upper Ordovician		Leipers Limestone		70+	Limestone, clayey, silty, slightly sandy, yellowish-gray; grain sizes vary in proportion to laminae and bedded to bed; thin to thickly laminated, irregularly formed; weathers to yellowish-gray blocks and slabs with bumpy surfaces; bryozoa abundant in upper 20 feet; heavily costate brachiopods, such as <i>Platystrophia ponderosa</i> Foerste are characteristic of formation.