

SYSTEM	SERIES	FORMATION OR GROUP	THICKNESS (IN FEET)	SECTION	LITHOLOGY	TOPOGRAPHY	WATER-BEARING CHARACTER		
QUATERNARY	Pleistocene and Recent	Alluvium	0-50		Silt, clay, and some gravel and sand in major stream valleys. Silt, clay, and some sand in tributary valleys.	Terraces and flood plains of Green River, Cumberland River, and tributaries.	Yields less than 100 gpd (gallons per day) to most wells, inadequate for a domestic supply with bucket or bailer. A few wells in Cumberland and Green River valleys yield enough for a domestic supply with a bucket or bailer (more than 100 gpd).		
PENNSYLVANIAN	Chester	Lee	0-500±		Sandstone, yellowish-brown, medium-grained, massive. Yellowish-brown medium-grained conglomerate and sandstone contain quartzite pebbles; conglomerate is lenticular. Shale and coal found in places.	Forms dissected ridges and caps mountains in Clinton, Wayne, and Pulaski Counties; forms major escarpment of marginal area of eastern mountains. Underlies dissected upland in Pulaski County. Channel-fills mantle rocks of Meramec age in Taylor and Adair Counties.	Yields enough water for a domestic supply with a power pump (more than 500 gpd) to wells in lowland areas bordering streams. In broad upland areas, deep wells that penetrate fractures produce enough for a domestic supply with a power pump and some may yield as much as 5 gpm (gallons per minute). Wells in small upland areas generally are inadequate (produce less than 100 gpd).		
		Pennington shale	0-250±		Shale, red and green, clayey, and minor amounts of limestone and sandstone. In places removed by pre-Pennsylvanian erosion. Thickness varies greatly owing to the pre-Pennsylvanian erosion.	Forms moderate to steep slopes in mountain margin area where capped by massive sandstone of Lee formation.	Yields little or no water to wells.		
		Glen Dean limestone	15-25		Limestone, dark- to bluish-gray, fine- to medium-grained; shaly beds near top; very fossiliferous in places.	Forms steep hillsides or underlies dissected uplands in marginal area of mountains of Pulaski, Wayne, and Clinton Counties.	Yields enough water for bucket or bailer (more than 100 gpd) to wells in lowland areas bordering streams. Where the overlying Pennington shale has been removed by erosion from extensive areas of the Glen Dean, large solution openings are present which yield more than 5 gpm to wells in lowland areas bordering streams. Minor spring horizon at base yields as much as 5 gpm.		
		Hardinsburg sandstone	10		Clay shale, green to dark-gray, soft. Conspicuous marker. Known by drillers as the "Pencil Cave".	Forms moderate to steep slopes and discontinuous benches.	Yields little or no water to wells.		
		Haney limestone <sup>1</sup>	15		Limestone, gray, fine- to medium-grained, medium crystalline, oolitic in places; beds ½ to 2 feet in thickness, contrasting to massive limestone below.	Forms steep hillsides or underlies dissected upland in marginal area of mountains of Pulaski, Wayne, and Clinton Counties.	Yields little or no water to wells.		
		Beech Creek and Reelsville limestones <sup>1</sup>	35		Limestone, light-gray to white, fine- to medium-grained, oolitic to coarsely crinoidal, massive. Cobble or conglomeratic limestone at base.	Form foot of mountains along base of escarpment of eastern mountains. Underlie broad rolling karst areas and dissected uplands of Pulaski and Wayne Counties.	Yield enough water for a domestic supply with a power pump (more than 500 gpd) from solution openings. Some wells produce more than 5 gpm from large solution openings. Near outcrop areas, particularly near major escarpments, yields generally are inadequate during dry periods.		
		Beaver Bend and Paoli limestones <sup>1</sup>	60		Limestone, light-gray, fine-grained, dense. Oolitic in places.				
		St. Genevieve limestone	80		Limestone, breccia present usually at top of formation. Limestone, light-gray to white, oolitic, fine-grained in places, crossbedded; minor amount of chert.	Forms steep bluffs along Lake Cumberland. Underlies dissected karst areas in uplands. Forms steep slopes on hills in Casey County.	Yields more than 50 gpm to wells from large solution openings in karst area of Clinton, Wayne, and Pulaski Counties. Most wells yield enough water for a domestic supply with a bailer or bucket. Springs having low flows ranging from less than 10 gpm to more than 200 gpm occur at or near stream level or near the contact with the underlying St. Louis limestone.		
		St. Louis limestone	100		Limestone, dark-gray to black, fine-grained, dense, medium- to thick-bedded, cherty. Top 10 feet marked by black chert nodules and stringers containing coral. <i>Lithostrotion</i> . Argillaceous and oolitic in places. Medium- to dark-gray massive geodiferous siltstone. In places only siltstone is present.	Forms steep bluffs along Lake Cumberland. Underlies rolling karst areas in uplands; dissected close to Lake Cumberland and tributaries. Siltstone and shale layers form discontinuous minor benches on hillsides.	Yields more than 50 gpm to wells from large solution openings in karst areas. Most wells penetrate some solution openings but where openings are small, yields are inadequate for domestic use with a power pump. A major spring horizon occurs near the top of the formation in the karst areas. Many seepage springs occur throughout the formation; low flows range from less than 10 gpm to more than 500 gpm. The lower part of the formation is composed of siltstone and argillaceous limestone. Yields from these sedimentary rocks are low and generally are not adequate for a domestic supply with bailer or bucket.		
		Spergen limestone <sup>2</sup>	50		Limestone, gray, granular to oolitic, shaly, argillaceous, and siltstone beds in places. Light-brown medium-grained sandstone. Dark-gray to black gritty calcareous shale fossiliferous in places; grades into geodiferous limestone.				
		Warsaw limestone	0-100		Limestone, light- to dark-gray, granular, crinoidal, massive, crossbedded crosslaminated, argillaceous in places. Medium- to dark-gray brittle, geodiferous siltstone. In places only siltstone present. Light-brown medium-grained flaggy sandstone; occurs at top of formation in Wayne County.	Underlie moderately to highly dissected rolling uplands. Form steep bluffs along Lake Cumberland. In some areas numerous small sinkholes occur in the Warsaw.	Yield enough water for a domestic supply with a power pump where the formations are dominantly limestone. Yields are low where siltstone or argillaceous limestone is penetrated. Minor spring horizon occurs at the contact of the limestone with the underlying siltstone or argillaceous limestone. Another spring horizon occurs near the contact of the Warsaw and Fort Payne. Low flows generally are less than 5 gpm.		
		OSAGE	Borden group <sup>3</sup>	Muldrough <sup>3</sup>	60-95		Limestone, gray, siliceous; calcareous siltstone in places. Yellowish-brown argillaceous chert; contains impure limestone, small geodes.	Underlie moderately to highly dissected rolling uplands. Form "knobs". Form major escarpment in Taylor County and in Casey County where it is modified by faults. Form steep bluffs along rivers.	Yield enough water for domestic supply with bailer or bucket (more than 100 gpd). Wells in lowland areas close to streams produce enough water for a domestic supply with a power pump. Most wells obtain water from perched or semiperched water bodies supported by discontinuous shale layers, and many are dry during late summer and fall. Minor spring horizons occur throughout the formations. Flows are as much as 30 gpm, but most go dry in late summer or fall. Where the formation consists predominantly of siltstone, most wells are inadequate for domestic use (less than 100 gpd). Where the Fort Payne chert crops out in lowland areas close to streams, the limestone and chert facies supply enough water for a domestic supply with a power pump.
				Floyds Knob <sup>4</sup>	5		Limestone, siliceous, crinoidal, glauconitic zones. Calcareous siltstone in places.		
				Brodhead <sup>3</sup>	135-140		Siltstone, gray, and impure siliceous limestone grading into siltstone. Gray fossiliferous patches of siltstone and shale; grade into shale. Gray to drab silty shale; abundant worm marks.		
New Providence shale <sup>4</sup>	100-150±				Shale, green- to steel-gray, clayey, crinoidal, stringers of limestone. Thick massive boulders of dense fine-grained bluish-gray limestone in Wayne County. Variable facies occur.	Forms moderate to steep slopes near base of eastern mountain margin escarpment and "knobs".	Yields little or no water to wells.		
DEVONIAN		Chattanooga shale	20-40		Shale, black, fissile.	Forms steep slopes near base of eastern mountain margin escarpment and "knobs". Underlies small round hills near base of escarpment.	Yields little or no water to wells. Small springs are present at numerous horizons, but most go dry during late summer and fall. A few wells in eastern Casey County have produced as much as ½ gpm.		
		Sellersburg limestone	50		Limestone, gray, dolomitic, crinoidal, fossiliferous, and large amounts of light- to bluish-gray chert. Conglomeratic locally.	Forms gentle slopes on hillsides under capping Chattanooga shale in southern Casey County.	Yields enough water for a domestic supply with a power pump to wells in lowland areas close to streams in northern Casey County. Yields enough for a domestic supply with a bucket or bailer from other areas.		
ORDOVICIAN	Maysville group	McMillan	25-90		Limestone, gray, fine-grained, dense, hard, argillaceous. Gray fossiliferous shale.	Form bluffs and dissected valley sides adjacent to Cumberland River area. Exposed in faulted areas in Casey County.	Yield enough water for a domestic supply with a power pump to wells in lowland areas near the Cumberland River. In tributary valleys most wells are dry. Deep wells generally yield sulfurous water or brines.		
		Fairview	100-150		Limestone, thin-bedded, and shale.				

See list of references in Water-Supply Paper 1603.  
<sup>1</sup> As used by McFarlan, Swann, Walker, and Nossow (1955).  
<sup>2</sup> As used by Stockdale (1939); Salem limestone of Cummings (1901); Somerset shale member of Warsaw limestone.  
<sup>3</sup> Of Stockdale (1939).  
<sup>4</sup> As used by Stockdale (1939).

GENERALIZED COLUMNAR SECTION OF ADAIR, CASEY, CLINTON, CUMBERLAND, PULASKI, RUSSELL  
TAYLOR, AND WAYNE COUNTIES, KENTUCKY

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