

SYSTEM	SERIES	FORMATION OR GROUP	THICKNESS (IN FEET)	SECTION	LITHOLOGY	TOPOGRAPHY	WATER-BEARING CHARACTER		
QUATERNARY	Pleistocene and Recent	Alluvium	0-120		Silt, clay, gravel, and sand in major stream valleys. Silt, clay, and some sand in tributary valleys.	Forms terraces and flood plains along Green River and tributaries.	Most wells furnish less than 100 gpd (gallons per day), not enough for a bucket or bailer. Coarse sand and gravel may occur in the alluvium where rocks of Pennsylvanian age are close to streams. Wells penetrating these deposits will produce as much as about 50 gpm (gallons per minute).		
		Caseyville sandstone	0-100		Sandstone, brownish-yellow, fine- to medium-grained; contains sandy shale and coal. Massive basal conglomerate locally present.	Forms dissected uplands and ridgetops near Green River. Occupies channels in Pennsylvanian rocks.	Yields enough water (more than 500 gpd) to wells in lowland areas bordering streams for a domestic supply with a power pump. Wells in upland generally are inadequate (yield less than 100 gpd).		
PENNSYLVANIAN	Chester	Leitchfield <sup>1</sup> Buffalo Wallow	0-125		Shale, gray or bluish-gray, red and green in places, finely laminated. Includes some thin limestone and sandstone beds. Thickness differs due to pre-Pennsylvanian erosion.	Underlies gently rolling uplands. Forms fairly steep slopes adjacent to stream valleys. Sandstone lenses form small benches in Edmonson and Hart Counties.	Yields almost no water to wells.		
		Tar Springs sandstone			Sandstone, brown, massive, shaly in places.	Forms small benches on hillsides.			
		Glen Dean limestone	50-70		Limestone, light- to medium-gray, finely to coarsely crystalline; chert in lower part of the formation; crinoidal to coarsely oolitic in places. Contains medium-gray beds toward the base.	Underlies gently rolling uplands. Forms steep slopes above benches of the underlying sandstone.			
		Hardinsburg sandstone	40±		Sandstone, yellowish-brown, medium-grained, thin-bedded, generally massive; shale near the top of the formation.	Underlies level uplands. Forms small discontinuous benches on hillsides.	Sandstone formations yield enough water for a domestic supply with bucket or bailer (more than 100 gpd) in lowland areas bordering streams and in broad upland areas where there is a substantial saturated thickness in perched water bodies. Deep wells that penetrate the sandstone formations near perennial stream level may produce enough for a domestic supply with a power pump (more than 500 gpd). Close to outcrop areas, particularly near major escarpments, yields from perched water bodies generally are low and not dependable. Minor spring horizons occur on discontinuous layers of shale near the base of the sandstones. The most conspicuous springs are those that discharge from the base of the Big Clifty sandstone. These are the "dripping springs" of the Dripping Springs escarpment. Many of these springs go dry during the late fall and summer, and very few are adequate for a domestic supply with a power pump. Limestone formations yield small to adequate supplies from solution openings. In lowland areas bordering streams, some wells produce enough for a domestic supply with a power pump (more than 500 gpd). Most wells in upland areas are inadequate for a domestic supply with bailer or bucket (less than 100 gpd). Deep wells that penetrate large solution openings in limestone produce more than 5 (less than 100 gpd). Close to outcrop areas, particularly near major escarpments, yields from perched water bodies generally are inadequate during dry periods. Many springs occur at the base of the limestones where they crop out on escarpments and hillsides. Adjacent to large upland areas flows are as much as 1,000 gpm and low flows more than 5 gpm from some springs.		
		Haney limestone <sup>2</sup>	40±		Limestone, light-gray, fine to coarsely crystalline; contains a basal shale unit and, in places, shale at the top of the formation.	Underlies gently rolling to flat uplands. Forms bluffs near heads of valleys.			
		Big Clifty sandstone <sup>2</sup>	60-75		Sandstone, yellowish-brown, medium-grained, massive, crossbedded.	Forms a major escarpment, (Dripping Springs escarpment) several hundred feet high. Underlies gently rolling upland.			
		Girken <sup>3</sup>	100-140		Limestone, white to light-gray, subliothographic to coarsely crystalline and oolitic, massive; contains thin shale beds. Where oolite is present, the limestone may be crossbedded.	Forms the lower part of the Dripping Springs escarpment. Contains numerous large sinks into which the overlying sandstone has collapsed. Lower part of formation underlies rolling karst areas near base of escarpment.			
		CARBONIFEROUS	Meramec	St. Genevieve limestone	150-200		Limestone, white to bluish-gray, fine to coarsely crystalline, oolitic near the base; contains dark bluish-gray to black chert.	Underlies rolling karst areas. Forms steep bluffs near Green River. Most of the caverns of Mammoth Cave are developed in this formation.	Yields more than 50 gpm to wells from large solution openings in karst areas. Most wells penetrate solution openings, but in areas high above perennial streams, these solution openings are dry in late summer and fall and many wells are inadequate. Contains major caverns of Mammoth Cave area which have large connected subsurface streams. Springs having low flows ranging from less than 10 to about 1,500 gpm occur at or near stream level. Smaller springs discharge from perched water bodies in upland area, but many go dry during late summer and fall.
				St. Louis limestone	300±		Limestone, light-gray to black, fine to coarsely crystalline, dolomitic or argillaceous in places; contains abundant black chert nodules and stringers. May contain small geodes.	Underlies rolling karst areas, but has less relief than karst in the area underlain by the St. Genevieve limestone. Forms steep bluffs along Barren River.	Yields more than 50 gpm to wells from large solution openings in karst areas. Most wells penetrate solution openings, but in areas high above perennial streams many wells are inadequate. Yields of wells close to major streams are large where solution openings are penetrated, but most wells near major streams are inadequate (less than 100 gpd). Major spring horizon has many springs flowing several hundred to several thousands of gallons a minute.
				Spergen limestone <sup>4</sup>	50±		Limestone, argillaceous, geodiferous; in places contains a basal unit of black, calcareous, fossiliferous shale.	Underlies gently rolling uplands. Form steep bluffs where the limestones overlie rocks of Osage age. Underlie small areas of karst in upper parts.	Yields enough water for a domestic supply with a power pump where solution openings are penetrated close to perennial stream level. Minor spring horizon in upper part.
Warsaw limestone	50±				Limestone, light- to dark-gray, granular, to fine-grained, massive, crossbedded, cross-laminated; argillaceous in places. Basal part of formation consists of medium- to dark-gray, brittle, geodiferous siltstone. In places only siltstone is present.		Yields enough water for a domestic supply with bailer or bucket (more than 100 gpd) to most wells. Wells that penetrate large solution openings may produce more than 5 gpm. Minor spring horizon near base at contact zone of limestone and underlying siltstone.		
Osage	Fort Payne chert			100-150		Limestone, gray, coarsely crystalline; contains abundant chert. Geodes are common locally. Formation may be shaly or argillaceous in places.	Underlies rolling dissected uplands. Forms steep valley sides in maturely dissected topography. Small valleys are steep and V-shaped. Siltstone and chert form discontinuous ledges on hillsides.	Yields enough water for a domestic supply with bailer or bucket (more than 100 gpd). Wells in lowland areas close to streams may produce more than 5 gpm from solution openings. Most wells obtain water from perched water bodies supported by discontinuous shale layers and many are dry during late summer and fall. Minor spring horizons occur throughout the formation. Flows are as much as 30 gpm, but most are seasonal. Where shale layers are conspicuous, most wells are inadequate for domestic use (less than 100 gpd). Where chert layers are thick and extensive in area, yields of more than 5 gpm may be obtained.	
DEVONIAN	Chester	New Providence shale	0-30		Shale, greenish-gray, and thin crinoidal limestone beds. Geodes are very common in places.	Forms lower part of steep valley sides and resistant base of small streams. Conspicuous in southern Allen County.	Yields little or no water to wells.		
		Chattanooga shale	25-50		Shale, black, fissile.	Forms lower part of steep valley sides and steep slopes of tributary streams. Resistant layers form small discontinuous ledges and minor waterfalls in streams. In places caps the Louisville limestone and forms small rounded hills.	Yields little or no water to wells. Seepage springs are present at numerous horizons, but most go dry during late summer and fall.		
		Sellersburg limestone	8-10						
SILURIAN	Chester	Louisville limestone	140-180		Limestone, gray, fine-grained, massive.	Forms steep hillsides and ledges near Cumberland River. Underlies broad flat bottoms; small areas of karst are formed in the upper part of the formation.	Major spring horizon in Allen and Barren Counties. Several springs have low flows of several thousands of gallons a minute. Wells in lowland areas bordering streams that encounter large solution channels yield as much as the flow of some springs. Wells away from streams generally yield sulfurous water or brines.		
		Waldron shale	5-10		Shale, greenish-gray, coarse-grained, highly calcareous and magnesian.	Forms moderate to steep slopes near Cumberland River.	Yields little or no water to wells.		
		Laurel dolomite	25-40		Limestone, light-gray to bluish-gray, fine-grained, dolomitic, thick-bedded.		Yields small quantities of water to wells near Cumberland River.		
		Osgood	20±		Limestone, gray, fine-grained, magnesian. Shale, gray or greenish-gray, calcareous and magnesian in places.		Yields small quantities of water to wells near Cumberland River.		
		Brassfield limestone	25±		Limestone, gray, medium to coarsely crystalline, dolomitic, sandy in appearance.		Yields little or no water to wells.		
ORDOVICIAN	Chester	Richmond group	100±		Limestone, gray, fine-grained, silty or shaly.				
		Maysville group	100-200±		Limestone, gray, fine-grained, fossiliferous, thin-bedded; contains interbedded shale.	Form moderate to steep slopes near Cumberland River. Shale and limestone layers form discontinuous ledges along hillsides in some areas.	In lowland areas bordering streams yields enough water for a domestic supply with a power pump (more than 500 gpd) to wells. Elsewhere yields little water to wells. Yields small quantities of water to springs.		

See list of references in Water Supply Paper 1603.

<sup>1</sup> As used by J. M. Weller (1927).  
<sup>2</sup> As used by McFarlan, Swann, Walker, and Nosow (1955).  
<sup>3</sup> Of Sutton and Weller (1932).  
<sup>4</sup> As used by Stockdale (1939)=Salem limestone of Cummings (1901)=Somerset shale member of Warsaw limestone.

GENERALIZED COLUMNAR SECTION OF ALLEN, BARREN, EDMONSON, GREEN, HART, LOGAN, METCALFE, MONROE  
SIMPSON, AND WARREN COUNTIES, KENTUCKY

By  
R. F. Brown and T. W. Lambert  
1962