

SYSTEM	SERIES	GROUP	THICKNESS (IN FEET)	SECTION	LITHOLOGY	LOCATION	HYDROLOGY
QUATERNARY	Pleistocene and Recent	McLeansboro	Union formation <sup>1</sup>	0-70	Loess and loam, leached and oxidized.	Forms a mantle covering alluvial deposits and bedrock in most of the area. Thins to southeast.	Yields practically no water to wells.
			Alluvium	0-145	Gravel, sand, silt, and clay. Alluvium in the Ohio Valley consists largely of glacial outwash gravel from northern sources and includes fragments of sandstone, limestone, chert, shale, and coal from nearby sources; locally cemented with iron compounds. Alluvium along tributaries is generally fine grained, although gravel is present locally.	Underlies most flatland along streams.	Yields large quantities of water along the Ohio River. Vertical wells produce more than 1,000 gpm and collector-type wells produce as much as 5,000 gpm. Yields enough water for a modern domestic supply (more than 500 gpd) to wells in larger tributary valleys. Yields little or practically no water to wells in small valleys. Water is hard to very hard and may contain objectionable amounts of iron, although the dissolved-solids content may be low.
TERTIARY(?) QUATERNARY	Pliocene (?) and Pleistocene	McLeansboro	Gravel	0-11(?)	Chert and quartz gravel and some sand and clay.	Caps hills 8 miles east and 10 miles south of Henderson at elevation of 550 feet or lower.	Yields practically no water to wells.
Mount Gilead shale <sup>2</sup>	Henshaw formation		Vanderburg sandstone <sup>1</sup>	10-65	Crossbedded locally shaly quartz sandstone.	Crops out in Moorman syncline south of the Shawneetown-Rough Creek fault zone. Absent north of the fault. Is about 200 feet below land surface at Henshaw.	Yields enough water for a modern domestic supply to wells penetrating sandstone that is not shaly.
			Bald Hill shale <sup>1</sup>	0-500+	Shale, sandy shale, and some thin coal and limestone beds.	Crops out in Moorman syncline south of the Shawneetown-Rough Creek fault zone around Henshaw and eastward to the county line. Absent north of the fault.	Yields practically no water to wells.
Dixon sandstone <sup>1</sup>	10-60		Medium- to fine-grained crossbedded locally shaly quartz sandstone.	Yields enough water for a modern domestic supply to wells penetrating sand. Water may be hard and may contain objectionable amounts of iron.			
Carthage limestone <sup>3</sup>	Lisman formation		Madisonville limestone member	900-1000	Coarse- to fine-grained crossbedded friable to well-cemented locally feldspathic quartz sandstone; grades into shale laterally. Unconformity at base locally extends to the sandstone beneath the Kentucky No. 11 coal. The Anvil Rock is shaly or well cemented in the north and east parts of Henderson County, west of Uniontown toward Grundy Knob, southward to the Shawneetown-Rough Creek fault zone, and beneath much of the Camp Breckinridge military reservation in Union County.	Crops the bluffs along the Green River in Henderson County; crops out in flanks of the Moorman syncline, near The Rocks, and along the Camp Breckinridge military reservation boundary south of Morganfield. Its depth beneath the surface is about 200 feet at Corydon, 450 feet at Uniontown, and 1,200 feet between Grove Center and Henshaw in the Moorman syncline.	Yields practically no water to most wells. However, some wells intersecting joints in sandstone produce enough water for a modern domestic supply. Water is hard and may contain objectionable amounts of sulfur and iron.
			Anvil Rock sandstone member	0-125	Thin-bedded to massive fossiliferous gray locally shaly limestone.	Crops out beneath the No. 12 coal above and the No. 11 coal below.	Generally yields little or no water to wells. A few wells produce an adequate supply where the limestone has been subjected to solution.
No. 11 coal	Carbondale formation		Upper sandstone member		Fine- to medium-grained well-cemented quartz sandstone; grades laterally into shale. Cementing material of upper beds is calcium carbonate.	Crops out in the bluffs along the Green River in Henderson County and from Dekoven to the county line near Sullivan in Union County. Crops out in small areas along the Shawneetown-Rough Creek fault zone.	Yields enough water for a modern domestic supply to most wells. Locally yields as much as 30 gpm. This is the deepest fresh-water aquifer north of the Shawneetown-Rough Creek fault zone in these two counties. Water is soft and contains sodium bicarbonate except near the outcrop, where the water is hard. Iron may be present in objectionable amounts.
			No. 9 coal	300-450	Shale, sandy shale, and thin coal beds.	Crops out in Henderson County along the Green River. Underlies entire area except in the southwestern part of Union County and small areas along the Shawneetown-Rough Creek fault zone.	Yields practically no water to wells.
Pleasant-view(?) sandstone <sup>4</sup>	Tradewater formation		Schultztown coal		Crossbedded coarse- to medium-grained friable to well-cemented and locally shaly quartz sandstone. Shaly northeast of Sullivan.	Crops out in southwestern Union County from Dekoven to near Sullivan and along the Shawneetown-Rough Creek fault zone southeast of The Rocks.	Yields enough water for a modern domestic supply to wells penetrating sandstone. Locally yields as much as 20 gpm. Water north of the Shawneetown-Rough Creek fault zone and in the deepest part of the Moorman syncline is salty.
			Sebree sandstone <sup>1</sup>		Coarse- to fine-grained crossbedded friable to well-cemented locally shaly quartz sandstone.	Crops out in southwestern Union County and in two small areas along the Shawneetown-Rough Creek fault zone. Underlies the rest of Union County and all of Henderson County.	Yields enough water for a modern domestic supply to wells penetrating sandstone. Locally yields as much as 30 gpm. Water north of the Shawneetown-Rough Creek fault zone and in the deepest part of the Moorman syncline is salty.
No. 7 coal	Tradewater formation	No. 6 coal		Shale, sandy shale, and thin limestone and coal beds.	Crops out in southwestern Union County and in two small areas along the Shawneetown-Rough Creek fault zone. Underlies the rest of Union County and all of Henderson County.	Yields practically no water to wells.	
		No. 5 coal		Coarse- to fine-grained crossbedded friable to well-cemented locally shaly quartz sandstone.	Crops out in the southwestern tip of Union County and in two small areas along the Shawneetown-Rough Creek fault zone. Underlies the rest of Union County and all of Henderson County.	Yields enough water for a modern domestic supply to wells penetrating sandstone. Locally yields as much as 30 gpm. Water north of the Shawneetown-Rough Creek fault zone and in the deeper part of the Moorman syncline is salty.	
Curlew sandstone <sup>5</sup>	Tradewater formation	Curlew limestone <sup>5</sup>	400-600	Shale, sandy shale, sandstones and thin coal and limestone beds. The Aberdeen <sup>6</sup> and Finnie <sup>1</sup> sandstones locally are undeveloped.	The Aberdeen sandstone <sup>6</sup> apparently does not crop out. The Finnie sandstone <sup>1</sup> crops out in the southwestern tip of Union County and in two small areas along the Shawneetown-Rough Creek fault zone. Underlies rest of Union County and all of Henderson County.	The sandstones in this interval generally yield only small quantities of water to wells. Water north of the Shawneetown-Rough Creek fault zone and in the deeper part of the Moorman syncline is salty.	
		Aberdeen sandstone <sup>6</sup>					
Finnie sandstone <sup>1</sup>	Tradewater formation	Bell coal					
		Grindstaff sandstone member	0-80	Fine-grained quartz sandstone grading laterally into shale.	Crops out in the southwestern tip of Union County and in two small areas along the Shawneetown-Rough Creek fault zone. Underlies rest of Union County and all of Henderson County.	Yields enough water for a modern domestic supply to wells penetrating sandstone. Locally yields as much as 10 gpm. Water north of the Shawneetown-Rough Creek fault zone and in the deeper parts of the Moorman syncline contains salt in objectionable amounts. Water near outcrop area is fresh.	
No. 1a coal	Caseyville sandstone	Bee Springs sandstone <sup>7</sup>	300-600	Crossbedded conglomeratic medium- to coarse-grained quartz sandstone grading laterally into shale.	Crops out at Caseyville in Union County and along the Shawneetown-Rough Creek fault zone. Underlies rest of area.	Yields enough water for a modern domestic supply to wells penetrating sandstone. Locally yields as much as 50 gpm. Water north of the Shawneetown-Rough Creek fault zone is salty. South of the fault potable supplies have been obtained at depths of over 900 feet and electrical logs indicate fresh water at greater depths in some places.	
		Battery Rock(?) coal		Shale, sandy shale, sandstone, and limestone, and some thin coal beds.		Yields practically no water to wells.	
Lower conglomerate member	Caseyville sandstone			Crossbedded conglomeratic coarse-grained sandstone grading laterally into shale. Unconformity at base.	Crops out along the Shawneetown-Rough Creek fault zone southeast of Morganfield. Underlies rest of area.	Yields enough water for a modern domestic supply to wells penetrating sandstone or conglomerate. Locally yields as much as 23 gpm. Water north of the Shawneetown-Rough Creek fault zone is salty. Electric logs indicate that fresh water may occur at depths as great as 2,000 feet in the Moorman syncline.	
MISSISSIPPIAN	Upper Mississippian	Formations of late Chester age		Shale, sandy shale, and limestone.	Crops out in small area along the Shawneetown-Rough Creek fault zone southeast of Morganfield. Underlies rest of area.	Yields fresh water to small springs and dug wells in outcrop area. Water elsewhere is salty.	

<sup>1</sup> of Glenn (1912) <sup>2</sup> of Glenn (1922) <sup>3</sup> of Owen (1856) <sup>4</sup> of Wanless (1929) <sup>5</sup> as used by Wanless (1939) <sup>6</sup> of Crider (1915) <sup>7</sup> of Norwood (1876)

GENERALIZED COLUMNAR SECTION IN UNION AND HENDERSON COUNTIES, KENTUCKY (COUNTY GROUP 28)

By

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