

Base map compiled by Illinois State Geological Survey from digital data (Digital Line Graphs) provided by the United States Geological Survey. Compiled by photogrammetric methods from imagery dated 1952. Revised from imagery dated 1990. DLGs created 1998.

North American Datum of 1983 (NAD 83) Projection: Transverse Mercator 10,000-foot ticks: Illinois State Plane Coordinate system, west zone (Transverse Mercator) 1,000-meter ticks: Universal Transverse Mercator grid system, zone 15

SCALE 1:24,000										
1	1/2	0				1 MILE				
	1000 0 1000 2	000 3000 4000	5000	6000	7000 FEET					
				1 KI	LOMETER					
BASE MAP CONTOUR INTERVAL 10 FEET										
	NATIONAL G	EODETIC VERTICAL DATU	M OF 1929							

Released by the authority of the State of Illinois: 2008

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SYSTEM	SERIES	STAGE	FORMATION	MEMBER, BED, INFORMAL UNIT	GRAPHIC COLUMN	THICKNESS (feet)	UNIT	A Alluvial deposits Alluvium. Clay and silt, including detrital deposits made by streams on river beds and floodplains. All sediment is confined to tributaries, creeks and major river systems.	K Warsaw Shale Dolomite and shale. Composed of silty shale in the lower part and dolostone beds in the upper part. The shale is light gray to greenish gray and interbedded with soft clay layers. The shale can be	
AN DESMOINESIAN DESMOINESIAN PLEISTOCENE HOLOCENE	OLOCENE			Alluvial deposits		0–170	A	B Fan deposits Broad sub-conical geomorphic landforms that occur at the mouth of large creeks onto the river flood plain. They are composed of alluvium, colluvium, angular bedrock clasts, sand, silt and clay sized particles that are derived from local bedrock and Pleistocene surficial deposits.	slightly calcareous and slity. Fossils are rare in the shale but occasional gastropods and conularids occur in the upper part. The upper beds are yellowish gray dolostone that contain small to medium sized geodes filled with quartz and calcite. Some of the dolomitic beds are argillaceous. The lower contact is sharp and conformable with the underlying unit.	
	Ĭ			Fan deposits	ра "Ра	0–40	В	C Peoria and Roxana Silt Silt. Yellow-brown, reddish, with variable amounts of clay. Windblown material that thickly mantles the bodrock close	L Keokuk, Burlington, and Meppen Limestones Limestone and chert.	
	TOCENE	ONSINAN	Peoria and Roxana Silt	Loess	· _ , , • _ , , • _ ,	20–70	С	D Terrace deposits Composed of gravels, sand, silt and clay in the Illi-	and sometimes as cross bedded bioclastic facies. In the lower part calcite nodules are common and the limestone can be light gray, tan to brown and somewhat argillaceous. White, fossiliferous, medium bedded chert occurs	
	PLEIS	WISCO		Terrace deposits		0–50	D	nois River bottoms. Geomorphic remnants of the terrace occur from about 430 to about 450 feet in elevation. The terrace deposits mainly lie along	in the middle part of the unit. Yellow dolomitic beds also occur within this unit. Brachiopods and bryozoans are also present but are not as abundant	
	PLIOCENE		Grover Gravel			0–10	Е	The material fines upward with gravel at base to sand, silt, and then clay in the upper part.	the beds. The upper portion contains less chert and can be more coarsely	
			Shelburn			0–28	F		crystalline. The basal contact is unconformable with the unit below.	
	IOINESIAN		Carbondale	Mecca Quarry Shale Colchester Coal		65–90	G	E Grover Gravel Gravel. Poorly sorted, contains particles that range from sand and granule to pebble size. Clasts are composed of polished and rounded quartzite, chert, quartz, and rare red and black banded iron. The clasts can be red, white, pink, orange, yellow and black. This deposit	M Chouteau Limestone Limestone. Thin bedded, light to medium gray lime mudstone to pale greenish gray wackestone on a fresh surface, but weathers pale yellowish gray. It is argillaceous and has an hourglass weathering profile. Crinoid and brachiopod fragments are small and dis-	
	DESN		Upper Tradewater	sub-Absaroka unconformity		0–80	н	is poorly exposed and is mainly found in the alluvium in the southern part of the quadrangle. It occurs directly above the bedrock but is covered by loess.	articulated. Beds are commonly thin, undulatory to wavy. Dark gray chert with white rims occurs as wavy beds at regular intervals throughout the unit. Knobby calcite nodules that are rimmed in quartz are distinct on a weathered surface. The lower contact is conformable but sharp.	
			St. Louis Limestone			0–250	1	F Shelburn Clay and limestone. Basal limestone overlain by claystone, with a limestone at the top of the section. The basal limestone is a dense, dark gray fossiliferous packstone and locally contains gray nodules of chert. The middle clay is silty, plastic, and calcareous. Above the clay occurs a limestone where fresh is gray, where weathered is brown. It is a dense, hard, fossiliferous wackestone.	N Hannibal Shale Shale. Generally greenish gray to gray, silty and weathers to sticky or gummy clay. It is poorly exposed in this quadrangle but can be massive, non-calcareous, and fissile. The basal contact is unconformable with the limestone below.	
	NAF		Salem Limestone	Breccia bed		70	J	G Carbondale Limestones, claystones and coal. The lower part of this unit is composed of a white underclay (rooted zone) below a coal. The coal ranges from a smut zone to three feet thick dull to bright banded	O Cedar Valley Limestone Limestone and dolostone. Brown to orange- brown fossil wackestone dominated by spiriferid brachiopods. Other diag- nostic brachiopods include: atrypids, <i>Mucrospirifer</i> sp., <i>Paraspirifer</i> sp., <i>Or-</i> <i>thospirifer iowaensis, Ilita johnsonensis</i> and strophominids. Large rugose	



unit. Above the coal is a thin, black, laminated marine shale. Forty feet of a variegated maroon and olive to gray silty shale containing a thin lime wackestone overlies the black shale. Near the top, two limestone benches occur. Both limestones are dark gray, argillaceous fossil wackestones. The fusulinid, *Beedeina girtyi* (Douglass 1987; called *Fusulina girtyi* by Rubey 1952), occurs in a light gray packstone in the Winfield Quadrangle at 610 feet elevation, 2300'EL, 1000'WL, Sec. 33, T12S, R2W. The sponge, *Chaetetes milleporaceous*, may occur in this interval.

H Upper Tradewater Sandstone and clay. This unit is poorly exposed and thickened only where erosion has provided space up to eighty feet into the St. Louis Limestone. It has fine grained micaceous quartz arenites. Clay forms a residuum on top of the underlying limestone and some chert clasts have been associated with the basal part of the unit. The base of this formation has a large unconformity with variable stratigraphic relief.

I St. Louis Limestone Limestone. Dense, gray to gray brown, micrite or lime mudstone that yields conchoidal fracture. Beds within this unit vary from thin to thick and massive. There are a few breccia zones within the unit, and they have a hummocky or knobby weathered texture. Most of the accessible outcrops are concentrated along the Mississippi River bank and in larger sinkholes. Fossils include: brachiopods, gastropods, crinoids, echinoids, bryozoans and rugose corals. A colonial coral *Acrocyathus* sp. occurs in the basal portion of the limestone. This unit is dominated by lime mudstones, but packstone and grainstone facies occur locally; oolitic beds were observed near the top of the unit just west of the quadrangle. The base is unconformable.

J Salem Limestone Limestone. Composed of alternating grainstone and laminated facies that are light gray to white. Coated grains and oolites are common to the grainstone facies, which can also be cross bedded. The laminated facies are rhythmically bedded and contain lime mudstone. White and gray, round, "egg-like" chert nodules are common. The grainstone facies also weather by spawling off thin layers perpendicular to the face of the outcrop. In areas near faults, this unit appears to be dolomitized, as seen by its yellow appearance. The diagnostic microfossil or index fossil found in this unit is the foraminiferid *Globoendothyra baileyi*. The basal contact is conformable with the underlying unit. corals and articulated and disarticulated crinoid stems are common in places. Laterally, this unit can grade into fossil packstone facies. The packstone is thin bedded, dolomitic, and sandy in places and contains 1 to 2 inch in diameter calcite crystals. Some calcite crystals are oil stained and have a petroliferous odor. The base can be sandy and is unconformable.

P Joliet, Kankakee, and Bowling Green Formations Dolostone. Yellow with a sugary appearance. This unit is thin to thick bedded, hard and massive. Pale green shale is interbedded in the lower and middle formations and tints the yellow rock with a faint green-gray color. Glauconite and occasional pinkish stains occur in the lower beds. All three formations have moldic porosity. Fossils observed include: brachiopods, crinoid columnals, rugose corals, bryozoans, and trilobites. The trilobite *Gravicalymene celebra* is common in the middle to upper part of the dolomite beds. Throughout this unit, thin bedded dolostone contains nodules or wavy beds of white to carmel chert. Multiple unconformities occur at the base, within and on top of these dolomitic beds.

Q Maquoketa Formation Shale. Bluish gray and calcareous in the lower part and siltier in the upper part. The upper facies is tan-brown siltstone and contains fossil algae. The shale weathers to gummy bluish-green clay. A dark shale layer in the upper part contains phosphatic nodules and pyrite with a dwarfed fauna. The contact is sharp and unconformable with the underlying formation.

R Kimmswick Limestone Limestone. White crinoidal grainstone to packstone in the lower part. The upper part of the formation yields thin bedded, fine grained beds and fossil wackestone facies. Crinoidal bioclasts can be cross bedded. Beds are thin to thick bedded and can have a petroliferous odor. The weathered surface can be extremely pitted, resembling a beehive. Fossils include: the trilobites *Isotelus gigas, Calyptaulax* sp., *Bumastus* sp., *Calliops* sp.; an important index fossil *Receptaculites* sp. (dasycladasian algae); and the brachiopod *Rafinesquina* sp. The lower contact is not exposed in the quadrangle but is sharp and continuous with the underlying unit.

Note: See accompanying report for references.





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