

SURFICIAL GEOLOGY OF STOLLETOWN QUADRANGLE  
BOND AND CLINTON COUNTIES, ILLINOIS

Prairie Research Institute  
ILLINOIS STATE GEOLOGICAL SURVEY

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2015

Illinois Geologic Quadrangle Map  
IGQ Stolletown-SG

QUATERNARY DEPOSITS

Description	Unit	Interpretation
<b>HUDSON EPISODE (~12,000 years before present [B.P.] to today)<sup>1</sup></b> <b>Fill or removed earth;</b> includes overburden material from sand and gravel mining	Disturbed ground dg	<b>Anthropogenic fill or excavations;</b> includes spoil and excavated areas in sand and gravel pits (in northeastern part of quadrangle) and other disturbed areas
<b>Silt loam to sandy loam;</b> may contain thin sandy or loamy zones; brown to dark grayish brown; massive to weakly stratified; noncalcareous; soft consistency; weak and thin modern soil profile is typical (<1 foot); sandy loam areas are readily eroded and slump along river banks; localized beds with organics, including deciduous wood fragments; up to 25 feet thick	Cahokia Formation c	<b>Alluvium (river deposits), overbank or channel deposits;</b> in floodplains of Beaver Creek, Shoal Creek, Flat Branch Creek, and tributaries; derived mainly from erosion of loess, till, and outwash sediments in adjacent uplands and slopes; includes some historical deposition
<b>Fine sand to sandy loam;</b> dark yellowish brown to grayish brown; overlain by up to 4 feet of silty deposits; may interfinger with beds of silty alluvium; stratified; noncalcareous; soft; upper few feet contains modern soil profile; up to 10 feet thick	Cahokia Formation (sandy facies) c(s)	<b>Point bar and channel deposits;</b> mapped locally in Shoal Creek valley; based in part on USDA soil parent material maps; sand likely derived from re-entrained Pearl Formation
<b>Silt loam to silty clay loam to loam to sandy loam;</b> dark yellowish brown to grayish brown; mottled; noncalcareous; includes well-developed modern soil profile in upper 5 feet; soft; up to 10 feet thick	Cahokia Formation (tan facies) c(t)	<b>Alluvium, in fan deposits or terraces;</b> in areas between floodplains and valley walls; some areas may be erosional benches or high terraces with a silty alluvial cover; may include lacustrine beds; underlain by older Cahokia Formation alluvium or Pearl Formation

WISCONSIN EPISODE (~60,000–12,000 years B.P.)

<b>Silt loam to silty clay loam to loam;</b> upper 50 to 80% of thickness (Peoria Silt) is brown to yellowish brown to grayish brown; lower 20 to 50% (Roxana Silt) is dark yellowish brown to brown with slight pinkish hue; lower part of Roxana can be loamy with rare pebbles; includes silty clay loam; contains weak soil structure throughout but strong structure in modern soil column (upper few feet); soft to moderately stiff; massive to faintly laminated; typically 5 to 8 feet thick but up to 11 feet thick in areas where Roxana Silt includes basal sandy loam	Peoria and Roxana Silts pr	<b>Mainly loess (windblown silt) and redeposited loess,</b> with some minor colluvial and lacustrine deposits; redeposited loess and colluvium common in sloping areas; Peoria Silt (upper unit) contains modern soil; basal Roxana Silt (lower unit) may have some waterlain or fluvial components and is pedogenically mixed with unit below; underlain by Pearl or Glasford Formation; various Illinois Episode facies and members in subsurface are indicated on the map by unique patterns (see below) and labels (e.g., pr-pl-h(m))
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SANGAMON AND ILLINOIS EPISODES (~150,000–60,000 years B.P.)

<b>Clay loam to sandy clay loam;</b> gray to light grayish brown to dark yellowish brown; mottled; rare pebbles; noncalcareous; strong soil structure and cutans; manganese and iron oxide stains; medium consistency; up to 10 feet thick	Berry Clay Member Pearl Formation (cross sections only) pl-bc	<b>Accretionary deposits, pedogenically mixed loess, lacustrine, ice-contact, and alluvial deposits;</b> upper portions pedogenically altered; attributed to the interglacial Sangamon Gecol; may include highly weathered Pearl Formation (Illinois Episode); occurs below Peoria and Roxana Silts (loess) and above older Pearl Formation, or locally the Glasford Formation; included exposures of Pearl Formation (undifferentiated) on map
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ILLINOIS EPISODE (~200,000–130,000 years B.P.)

<b>Fine to coarse sand to sandy loam to clay loam, gravelly in places;</b> may contain some localized silt or diamiction beds; upper part of unit may be clay loam to sandy clay loam (Berry Clay Member); whereas lower part may contain looser and cleaner sands	Pearl Formation (undifferentiated) pl	<b>Outwash (glacial meltwater deposits) or accretionary deposits;</b> upper part pedogenically modified by Sangamon Gecol alteration; undifferentiated Pearl is mapped in small areas of exposure along valley slopes; may include Berry Clay Member, Mascoutah facies, or unnamed tongues
<b>Fine to coarse sand to sandy loam;</b> in places with gravel generally less than 1 centimeter; yellowish brown to brown below zone of alteration; typically weathered or more clayey in upper portions; moderately to well sorted; leached to calcareous; up to 90 feet thick	Pearl Formation (Mascoutah facies) pl(m) (beneath >5 feet loess)	<b>Outwash</b> deposited during ice-margin retreat; diagonal line pattern shown on loess-covered Illinois Episode terraces and outwash plains; occurs in subsurface primarily between Shoal and Beaver Creek valleys; pedogenic alteration attributed to Sangamon Gecol in upper part; generally overlain by Berry Clay Member
<b>Sand to loamy gravelly sand to gravelly sand;</b> may contain some loamy, silty, or diamiction beds; yellowish brown to light olive brown to brown; may contain up to 30% gravel; upper 10 to 15 feet is more weathered; altered to sticky clay loam in upper 5 to 6 feet; otherwise loose to weakly cohesive; noncalcareous to calcareous; up to 50 feet thick	Hagarstown Member, sandy facies Pearl Formation pl-h(s) (beneath >5 feet loess)	<b>Ice-contact sediment</b> in glacial hills and ridges; upper portion contains Sangamon Gecol solum; includes eskering or ice-walled channel deposits; also may include debris flows and melt-out deposits; interfingering with the Mascoutah facies and the Glasford Formation; may be overlain by Berry Clay Member
<b>Intermixed sand, sandy loam, clay loam, silt loam, and diamiction;</b> yellowish brown to light olive brown; massive to faintly or well stratified; typically more weathered or clayey in upper portions; leached to calcareous; up to 35 feet thick	Hagarstown Member, mixed facies Pearl Formation pl-h(m) (beneath >5 feet loess)	<b>Ice-contact and supraglacial sediment;</b> in glacial hills and ridges; includes debris flows and melt-out deposits; deposited during Kaskaskia Sublobe stagnation; contains Sangamon Gecol solum in upper part; interfingering with the Mascoutah facies, Pearl Formation and the Glasford Formation; may be overlain by Berry Clay Member
<b>Pebbly loam to clay loam diamiction;</b> some sand lenses; dark grayish brown to light olive brown; contains pebbles mainly less than 2 inches in diameter; pebbles of sandstone, shale, dolomite, limestone, chert, and granite; oxidized and stained along fracture faces, especially in upper 20 to 30 feet; leached to calcareous; rare Pennsylvanian limestone boulders encountered within unit; some conifer wood fragments, particularly in lower part of unit; dense; stiff to very stiff; up to 80 feet thick	Glasford Formation g (beneath >5 feet loess in ice-pressed hills)	<b>Till and ice-marginal sediment;</b> upper few feet of diamiction may contain Sangamon Gecol solum; consists mainly of subglacial till with some supraglacial and glacioluvial sediments; may include Vandalia (dominant) and Smithboro till facies; includes of gray and greenish weathered shale common in interpreted ice-pressed hills (pr(g)); intertongues with Pearl Formation; has <5 feet of loess cover in mapped areas; no pattern shown where found below >5 feet of loess in till plain areas
<b>Fine sand to gravelly sand;</b> may include beds of loamy sand or silt; light yellowish or olive brown to grayish brown; stratified; loose; well sorted; calcareous; up to 30 feet thick	Grigg tongue, Pearl Formation (cross sections only) pl-g	<b>Outwash (glacial meltwater deposits);</b> proglacial deposits from overall advancing Illinois Episode glaciers; may be hydraulically connected to the Mascoutah facies or other tongues of the Pearl Formation; occurs below the Glasford Formation

YARMOUTH EPISODE (~420,000–200,000 years B.P.)

<b>Silty clay to silty clay loam, with localized sand zones;</b> dark gray to olive; can contain strong soil structure such as clay skins; faintly laminated in places; noncalcareous; stiff to very stiff; up to 10 feet thick	Lierle Clay Member, Banner Formation (cross sections only) b-l	<b>Accretionary deposits, alluvium, and lake sediment;</b> deposited and strongly weathered pedogenically during the Yarmouth interglacial episode; some of this unit has been sheared during Illinois Episode glacial advances or eroded by fluvial processes; not deposited in many areas
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PRE-ILLINOIS EPISODE (~700,000–420,000 years B.P.)

<b>Silty clay loam to clay loam diamiction, beds or lenses of silt, fine sand, and silty clay;</b> dark grayish brown to dark gray to olive gray; may include some sand and gravel lenses; small pebbles of local (Pennsylvanian) bluish gray mudstone and weathered orange-brown shale fragments are distinctive within diamiction; massive (in diamiction) to stratified; noncalcareous to calcareous; stiff to very stiff; up to 20 feet thick	Banner Formation, undifferentiated (cross sections only) b	<b>Till, ice-marginal sediment, lake deposits, outwash, alluvium, and colluvium;</b> may contain Yarmouth Gecol weathering (oxidation, leaching, and pedogenic features) in upper portions; lower part of unit has a greater proportion of subglacial till; upper unit is more variable with supraglacial lacustrine, glacioluvial, and debris flow sediments; a few feet of colluvial deposits may occur above bedrock
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PENNSYLVANIAN BEDROCK

Description	Unit	Interpretation
<b>Shale, limestone, siltstone, and sandstone;</b> greenish gray to light gray; bedded; fractures are common where exposed; limestone (mainly Carthage limestone) is dense and contains marine fossils (e.g., crinoids and bryozoans); sandstone is fine grained; noncalcareous to weakly calcareous (in shale) to strongly calcareous (in limestone)	Pennsylvanian bedrock p	<b>Bedrock or near-surface bedrock (within 5 feet of land surface);</b> shallow marine, deltaic, or terrestrial; bedrock outcrops (typically <10 feet in thickness) occur where stream erosion has exposed the sedimentary rock; limestone tends to crop out more than shale because of competence; includes Bond and Shebourne-Patoka Formations

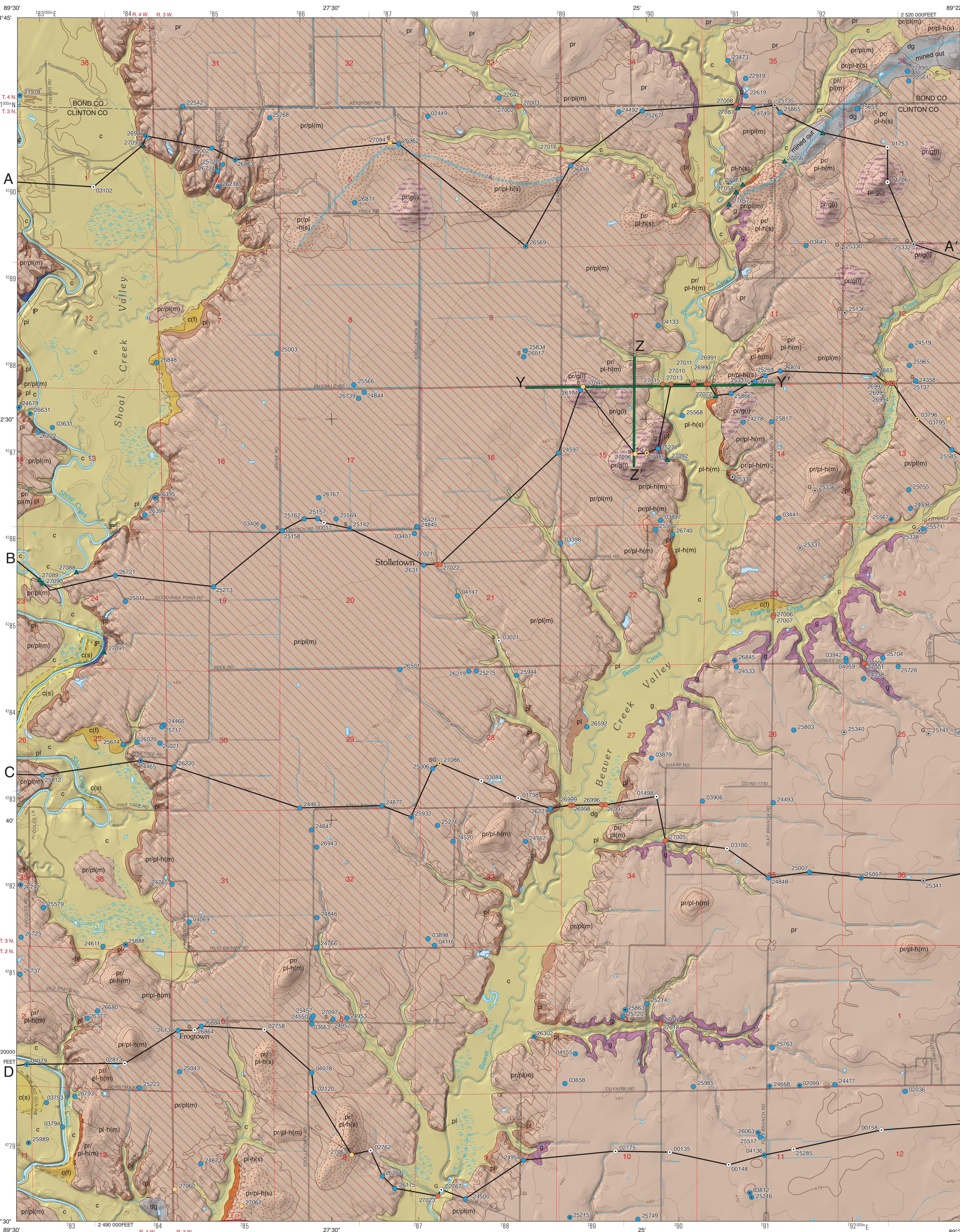
<sup>1</sup>The time periods for the Wisconsin Episode and the Hudson Episode are reported as calibrated radiocarbon years and can be directly compared with calendar years before 1950 (Stuiver et al. 2005).

Data Type

Data Type	Symbol	Interpretation
Outcrop	—	Contact
Stratigraphic boring	— — — —	Inferred contact
Water-well boring	— · — · — ·	Buried contact
Engineering boring	— — — — —	Electrical resistivity profile line
Coal boring	— — — — —	
Other boring, including oil and gas	— — — — —	

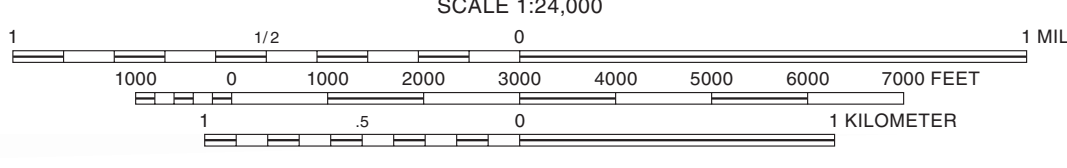
Labels indicate samples (s) or geophysical log (lg). Boring and outcrop labels indicate the county number. Dot indicates the boring or outcrop extends to bedrock.

Note: The county number is a portion of the 12-digit API number on file at the IGS Geologic Records Unit. Most well and boring records are available online from the IGS website.



Base map compiled by Illinois State Geological Survey from digital data (2012 U.S. Topo and 1966 Raster Feature Separates (contours)) provided by the United States Geological Survey. Wetlands are from the 1981 National Wetlands Inventory. Shaded relief derived from 1966 data from the National Elevation Dataset.

North American Datum of 1983 (NAD 83)  
Projection: Transverse Mercator  
10,000-foot ticks: Illinois Coordinate System of 1983, west zone  
1,000-meter ticks: Universal Transverse Mercator grid system, zone 16



BASE MAP CONTOUR INTERVAL 5 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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Geology based on fieldwork by David A. Grimley and Johanna M. Gemperline, 2012–2013.

Digital cartography by Jennifer E. Carrell, Coy E. Potts, and Deette Lund, Illinois State Geological Survey.

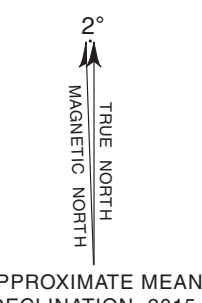
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ADJOINING QUADRANGLES  
1 Pocahontas  
2 Beaver Creek  
3 Pleasant Mound  
4 St. Rose  
5 Keyesport  
6 Breese  
7 Beckemeyer  
8 Carlyle



ROAD CLASSIFICATION  
U.S. Route  
Local road

A—A'



