

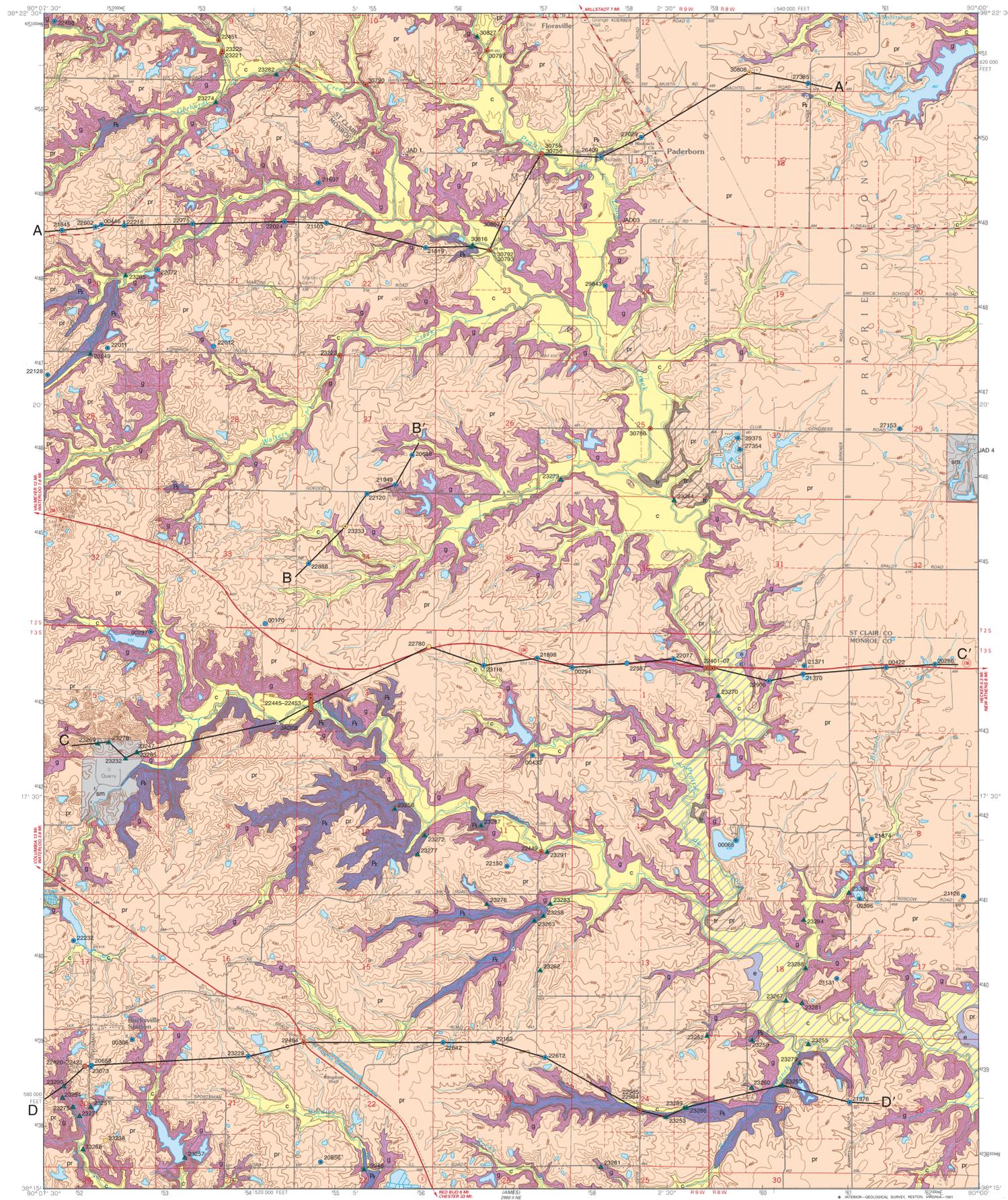
SURFICIAL GEOLOGY OF PADERBORN QUADRANGLE

MONROE AND ST. CLAIR COUNTIES, ILLINOIS

Institute of Natural Resource Sustainability
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ILLINOIS STATE GEOLOGICAL SURVEY
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 2010

Illinois Geologic Quadrangle Map
 IGQ Paderborn-SG



Description	Unit	Interpretation
QUATERNARY DEPOSITS		
HUDSON EPISODE (~12,000 years before present (B.P.) to today)		
Removed earth; surface mining has removed surficial sediments and exposed bedrock	Surface Mines (sm)	Excavations; active bedrock mining occurs along the Waterloo-Dupo Anticline in the southeast quadrant; the Hacker mine in the east is inactive
Added earth; silty to loamy sediments and crushed stone	Disturbed Ground (cross sections only) (dg)	Fill; roadbeds raised across floodplains
Silty clay to silt loam to sandy loam; local sand and gravel lenses, 2 to 7 feet thick, in lower part; massive to well-stratified, brown to gray, non-calcareous, modern soil developed in upper few feet; silt to moderately stiff; moist to very moist; up to 25 feet thick	Cahokia Formation (c)	Stream sediment deposited in floodplains; mainly redeposited loess but including reworked local bedrock and till in lower portions; 10 to 25 feet thick in Prairie du Long valley generally less than 10 feet thick in its tributaries
WISCONSIN EPISODE (~75,000 years–12,000 B.P.)		
Silt loam to silty clay loam, sandier with few pebbles in lower portion; yellow brown to light olive brown to yellow brown with pink cast; massive to weak blocky or platy structure; friable; matrix typically non-calcareous, but calcite concretions occur locally; contains modern soil solum in upper 2 to 5 feet (commonly weathered to silty clay loam); typically up to 9 feet thick, thinning eastward, but thickens in depressions	Peoria and Roxana Silts (pr)	Loess, but including some slope deposits; upper and thicker portion is Peoria Silt (yellow brown to gray); lower portion is Roxana Silt (brown with pink hue to gray); thins from west to east; lies directly on bedrock on local bedrock highs in west
Silt clay loam to silty clay; massive to laminated; gray, may have pink hue; soft, moist, calcareous, may contain wood and shell fragments; up to 10 feet thick	Equality Formation (e)	Backwater lake sediment deposited when mouth of Kaskaskia River was blocked by aggradation in Mississippi valley; forming lakes in the Kaskaskia and its tributaries, including Prairie du Long valley; patchy distribution; occurs in terraces below 410 to 415 feet and buried by 2 to 5 feet of loess and is buried and discontinuous below Cahokia Formation downstream of State Route 156
Silt loam to silty clay loam, may contain thin fine sand beds; massive to well stratified; brown to pale brown locally along redox features in upper portions; non-calcareous; up to 30 feet thick	Teneriffe Silt (tr)	Loess and fine-grained glacial stream sediment; contains cummic Sangamon Geosol; lies above Glasford Formation; underlies terraces below 440 to 480 feet elevation along lower Prairie du Long Creek
Silt loam to silty clay loam diamiction; massive to weakly bedded; few lenses of silt loam or sand up to 5 feet thick; spruce wood fragments common; upper few feet is weathered, yellow brown with strong brown mottles, relatively softer and moist, with blocky structure; iron-manganese masses in matrix or on ped faces, and clay skins; lower portion is less weathered, olive brown to gray, more uniform, stiff to very hard, low to moderate moisture, and calcareous; typically 15 to 40 feet thick but up to 70 feet thick	Glasford Formation (g)	Till; weaker and moister upper portion is supraglacial till, lower, denser portion is basal till; deeply incised, eroded out or not deposited locally on bedrock highs; crops out along most steep stream valley slopes; Sangamon Geosol well developed in upper few feet, usually with well-drained profile
Silt loam to silt; massive to laminated, jointed; olive brown to gray; no pebbles; wood fragments, few fossils; non-calcareous to calcareous; stiff; low moisture content; up to 15 feet thick	Petersburg Silt (cross sections only) (pb)	Slackwater lake sediment and loess; patchy distribution; lake sediment occurs in depressions and paleovalleys; loess occurs on bedrock highs in the west
PRE-ILLINOIS EPISODE (~700,000–400,000 years B.P.)		
Silt loam, silty clay loam, and clay loam diamiction; massive; sand lenses up to 10 feet thick; very stiff; low to moderate moisture; upper part is olive to yellow brown, lower part is olive brown to gray; non-calcareous to calcareous; upper few feet may show moderate to strong B horizon characteristics; sharp lower contact; typically 15 to 40 feet thick, but up to 80 feet thick	Banner Formation, Omphigh member (cross sections only) (b-o)	Till and ice-marginal sediment; mainly basal till, includes thin, minor, clay-rich colluvium as uppermost unit and gravelly stream sediment in basal portions; truncated Yarmouth Geosol developed in upper few feet; found in bedrock valleys in eastern half of map; not conclusively identified in west where it was eroded or not deposited
Silt loam, silty clay loam, and silt; pebbly zones; laminated to bedded, may be distorted; low to moderate moisture; olive brown to gray brown; dolomitic; wood fragments; sharp lower contact; up to 20 feet thick	Banner Formation, Harkness Silt Member (cross sections only) (b-h)	Proglacial lake sediment, deposited in dammed bedrock valleys; includes debris flow deposits; buried beneath till of Banner Formation
Silt loam, clay, sandy clay, and gravel; bedded; dry; dark gray to yellow brown; dolomitic to non-calcareous; weak to moderate soil structure, may include A horizon; sharp lower contact; up to 15 feet thick	Banner Formation, Canteen member (cross sections only) (b-c)	Non-glacial stream sediment and lag deposits; beneath all other Quaternary units in buried bedrock valleys and depressions; mainly in eastern area, but also as veneer in depressions on high bedrock to the west

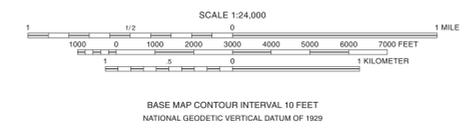
Description	Unit	Interpretation
PRE-QUATERNARY DEPOSITS		
Sandstone, shale, and limestone; upper few feet may be strongly weathered to clay, or loam; some units fossiliferous; up to 100 feet of relief	Near-surface bedrock (fs)	Pennsylvanian and Mississippian bedrock; crops out extensively in tributary valleys west of Prairie du Long Creek, where it forms the east limb of the Waterloo-Dupo anticline; karst occurs in the western tier of the map but is predominantly west of the anticline axis

Data Type
▲ Outcrop
△ Outcrop in field notes (ISGS archives)
● Stratigraphic boring
● Water well boring
● Engineering boring
SG 26211 Labels indicate samples (s) or geophysical log (g). Boring and outcrop labels indicate the county number. Dot indicates boring is to bedrock
— Contact
- - - - - Inferred contact
A — A' Line of cross section

Base map compiled by Illinois State Geological Survey from digital data (Faster Feature Separates) provided by the United States Geological Survey. Topography by photogrammetric methods from aerial photographs taken 1986. Field checked 1989. Map edited 1990.

North American Datum of 1927 (NAD 27)
 Projection: Transverse Mercator
 10,000-foot ticks: Illinois State Plane Coordinate system, west zone (Transverse Mercator)
 1,000-meter ticks: National Transverse Mercator grid system, zone 15

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Geology based on field work by Andrew C. Phillips and Timothy O. Hodson, 2008–2009. Digital cartography by Jennifer E. Carrell and Jane E.J. Domier, Illinois State Geological Survey.

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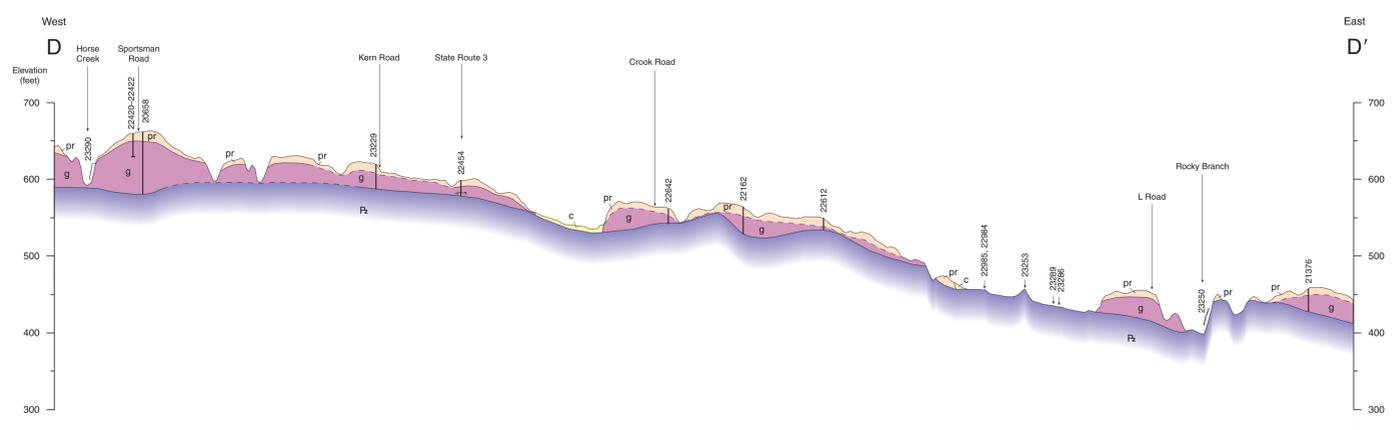
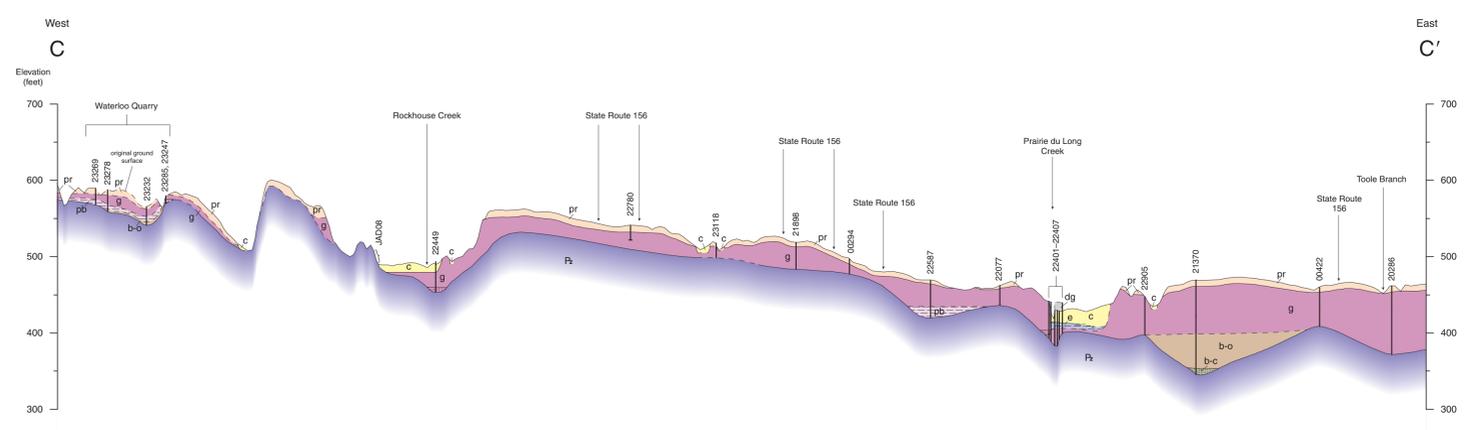
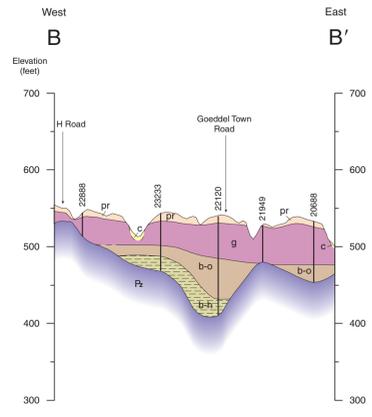
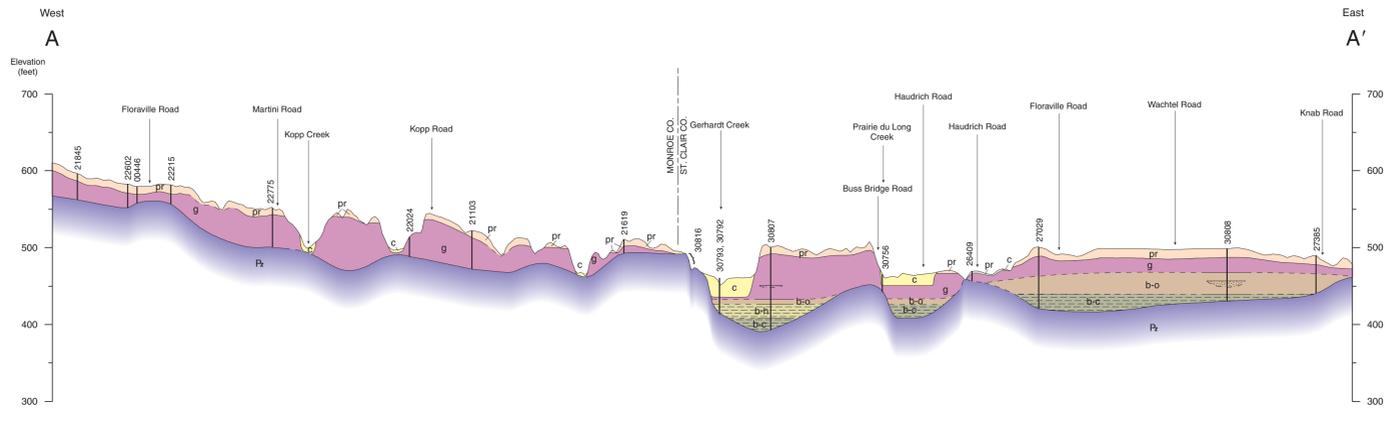


1	2	3
4	5	6
7	8	

ADJOINING QUADRANGLES
 1 Columbia
 2 Millstadt
 3 Freeburg
 4 Waterloo
 5 New Athens West
 6 Renault
 7 Ames
 8 Red Bud



ROAD CLASSIFICATION	
Primary highway, hard surface	Light-duty road, hard or improved surface
Secondary highway, hard surface	Unimproved road
	State Route



Cross Sections

- Sand; may contain some gravel or silt
- Laminated silt and clay
- Diamicton, massive silt, or other fine-grained sediment
- Contact
- Inferred contact

Horizontal scale: 1 inch = 2,000 feet
 Vertical scale: 1 inch = 100 feet
 Vertical exaggeration: 20x

dg Disturbed ground	pr Peoria and Roxana Silts	g Glasford Formation	b-o Banner Formation, Omphghent member	b-c Banner Formation, Canteen member
c Cahokia Formation	e Equality Formation	pb Petersburg Silt Formation	b-h Banner Formation, Harkness Silt Member	Pz Paleozoic bedrock