

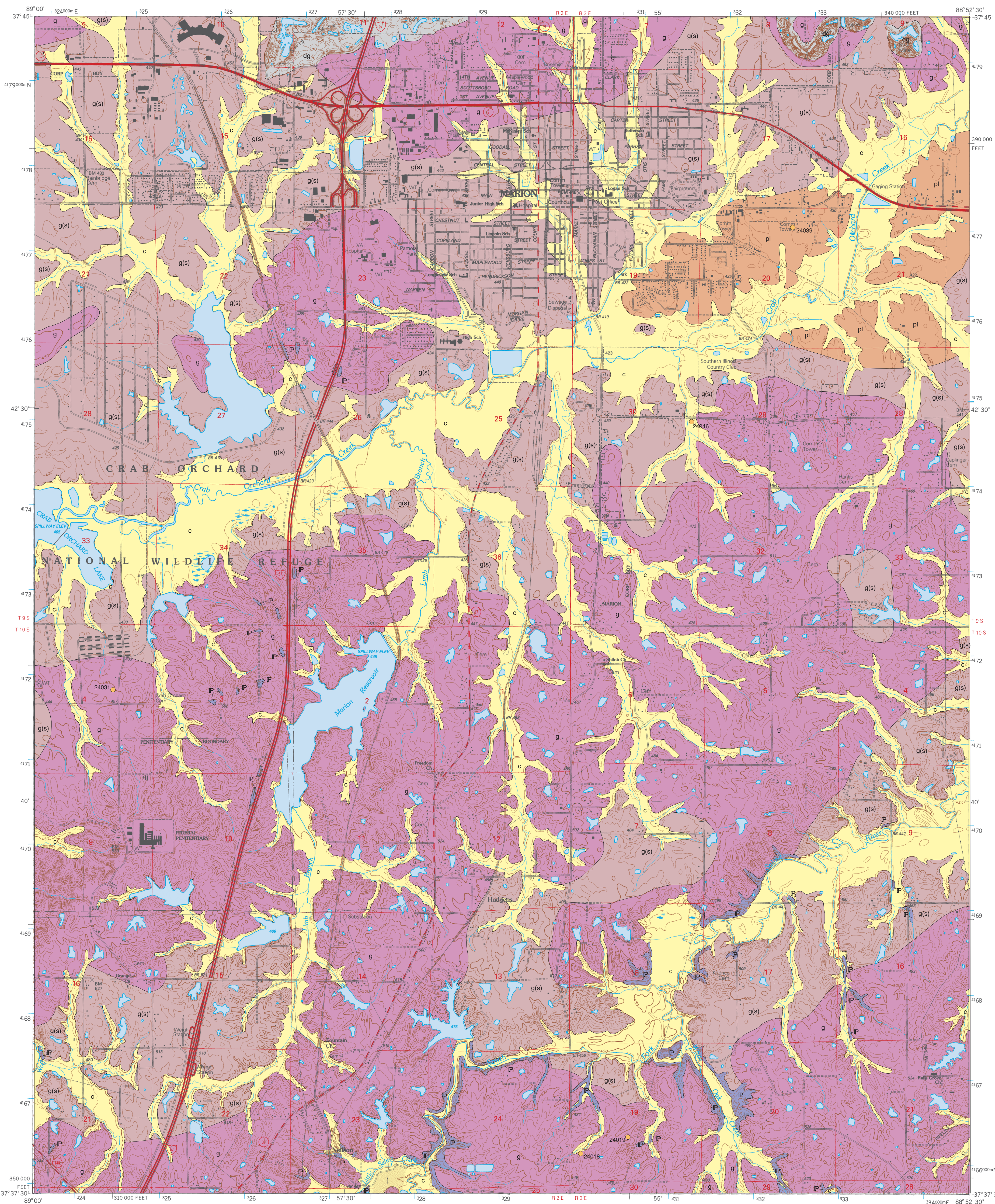
# SURFICIAL GEOLOGY OF MARION QUADRANGLE

## WILLIAMSON COUNTY, ILLINOIS

Institute of Natural Resource Sustainability  
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ILLINOIS STATE GEOLOGICAL SURVEY  
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Illinois Geologic Quadrangle Map  
IGQ Marion-SG

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2010



### QUATERNARY DEPOSITS

Material	Unit	Interpretation
<b>Holocene Stage (Present to 10,000 years B.P.)</b>		
<b>Man-made deposits:</b> mixtures of loess, glacial deposits, shale, and coal mine wastes	Disturbed ground dg	<b>Made land:</b> includes surface coal mines in varying states of reclamation, along with mine waste piles (gab and slurry)
<b>Silt-rich deposits ranging from silt loam to silty clay:</b> dark gray to brown, mottled below 5 feet, totally gray below 10 feet; weakly bedded in lower part; gravel lenses in lower parts of thick intervals; noncalcareous matrix but contains secondary calcite nodules below solum of soil in places; ranges up to 30 feet thick	Cahokia Formation c	<b>Alluvium:</b> mostly formed during post-glacial times (Holocene); largely derived from eroded Peoria loess; mildly weathered and leached; weakly developed soil profiles in the upper 5 feet; underlain by Equality clay or fine sand at lower elevations and by bedrock at higher elevations
<b>Illinoian Stage (128,000 to 180,000 years B.P.)</b>		
<b>Fine sand to clay loam covered by weathered silt loam to silty clay loam:</b> yellowish brown to mottled brown to gray; strong pedogenic features and clay-rich in upper 10 feet; leached to a depth of about 20 feet below the ground surface; calcareous and bedded in lower part; commonly thin-bedded very fine sand, well sorted with a few thin lenses of silty clay; secondary calcite common in the upper part of the calcareous zone; thickness uncertain, may range up to 50 feet thick; beds of coarser sand and gravel are expected near base of unit	Pearl Formation pl	<b>Glacial fluvial and lacustrine deposits</b> of Illinoian age covered by 4 to 10 feet of loess (three loess units are distinguishable where thicker than about 5 feet: upper-Peoria Silt, yellowish brown to gray with strong pedologic structure resulting from the formation of the modern soil; middle-Roxana Silt, reddish brown to reddish gray with weak pedologic structure resulting from the formation of the Farmdale Gessos; and lower-Loveland Silt, brown to dark gray with strong pedologic structure resulting from the formation of the Sangamon Gessos; the Peoria and Roxana occur at most locations; the Loveland Silt is often absent; loess units are largely distinguished by their pedogenic features; the upper part contains Sangamon Gessos; forms several undifferentiated terrace levels producing a stepped geomorphic surface; a facies member with Glasford stratified deposits (g(s)); formed during the next to the last glaciation (Illinoian) as the result of meltwater accumulation

**General features:** Silt diamict dominated by silt loam and silty clay loam with variable amounts of clay, sand, and pebbles; covered by 5 to 10 feet of weathered silty clay loam at most locations; brown to gray colors with common yellowish and dark mottles; strong pedogenic features and more sand or clay in upper 5 feet; leached to a depth of about 20 feet below the ground surface; stratified in places; dark gray, compact, and unoxidized in lower part, which commonly contains detrital wood, pyrite, and other oxidizable minerals; average thickness 20 to 30 feet and can exceed 100 feet thick in places; pebble content from <1 to 5%, dominated by Pennsylvanian lithologies, mostly sandstone, quartz, chert, and an assortment of crystalline rocks

**Stratified clay loam, silt loam to silty clay loam** with lenses of sand and loamy diamict; deformed structures and variable fabric and textures; few fine upward trends in places overlying sparse pebble bands

**Silty clay loam diamict** that varies from pebbly silty clay to silt loam diamict; very few pebbles in places; typical till fabric, compact and uniform

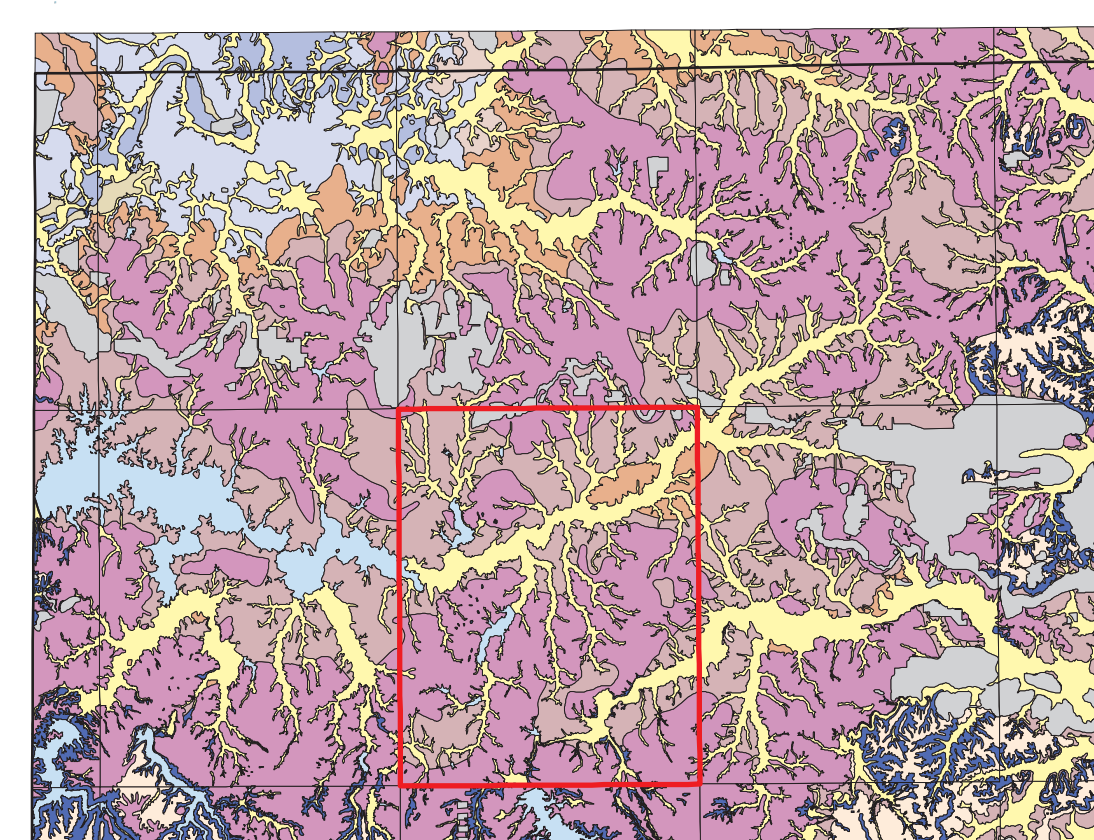
**Abolition deposits; water transported and glacial debris flow deposits** with soft-sediment deformation features; likely contains gravel at the base and overlies dense basal till where glacial deposits are thick; missing in places where loess overlies eroded bedrock (bench); laterally grades into till (g) or Pearl Formation sand (pl); largely restricted to discontinuous terrace levels (localized level areas) across the uplands at elevations from 420 up to 550 feet; formed on the Illinoian glacier after stagnation; temporary ice-walled lakes accumulated sediments that formed terraces now buried by loess; erosional benches common in some areas that form a continuous geomorphic surface with terraces

Material	Unit	Interpretation
<b>PRE-QUATERNARY (PENNSYLVANIAN) DEPOSITS</b>		
<b>Dominantly sandstone with lesser amounts of siltstone, shale, mudstone, limestone, and coal:</b> covered by yellowish brown to gray, weathered, silt loam to silty clay loam up to 4 feet thick	bedrock P	<b>Pennsylvanian sedimentary rock</b> with less than 4 feet of weathered loess cover, mostly Peoria loess containing well-developed modern soil (Allisol); discontinuous patches of glacial deposits are common

**Data Type**

- 35547 Stratigraphic boring with continuous samples of surficial sediments examined by the authors
- Contact

Note: Numeric labels indicate the county number, a portion of the 12-digit API number on file at the ISGS Geological Records Unit. Online well and boring records are available from the ISGS Web site.



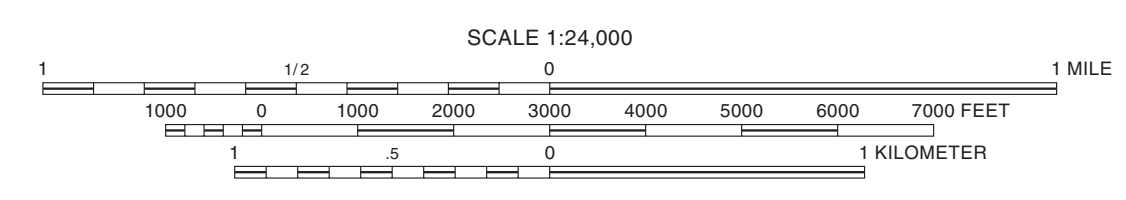
Material	Unit	Interpretation
Disturbed ground	Pearl Fm	
Cahokia Fm	Glasford Fm-stratified	
Equality-fine	Glasford Fm	
Equality-silty	loess	
Equality-sandy	bedrock	
Equality-silt	Teneriffe Silt	
water		

Williamson County surficial geology and 7.5-minute quadrangles.

Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey. Topography compiled in 1963. Planimetry derived from imagery taken in 1993. PLSS and survey control current as of 1996. Partial field check in 1996.

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

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BASE MAP CONTOUR INTERVAL 10 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

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Geology based on field work and data analysis by Leon R. Follmer and W. John Nelson, 2001–2004.

Natural Resource Conservation Service staff, Carbondale office, assisted with field work and the drilling of stratigraphic test borings.

Digital cartography by Jane E. J. Domier, Jennifer E. Carroll, Amanda Tovey, Joseph B. Magnolia, and Daniel R. Stevenson, Illinois State Geological Survey.

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ADJOINING QUADRANGLES
1 Merritt
2 Johnston City
3 Pittsburg
4 Crab Orchard Lake
5 Crab Orchard
6 Lick Creek
7 Goreville
8 Great Springs

APPROXIMATE MEAN DECLINATION, 2010

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