# BEDROCK GEOLOGY OF WALSH QUADRANGLE
## RANDOLPH COUNTY, ILLINOIS


Prairie Research Institute
**ILLINOIS STATE GEOLOGICAL SURVEY**

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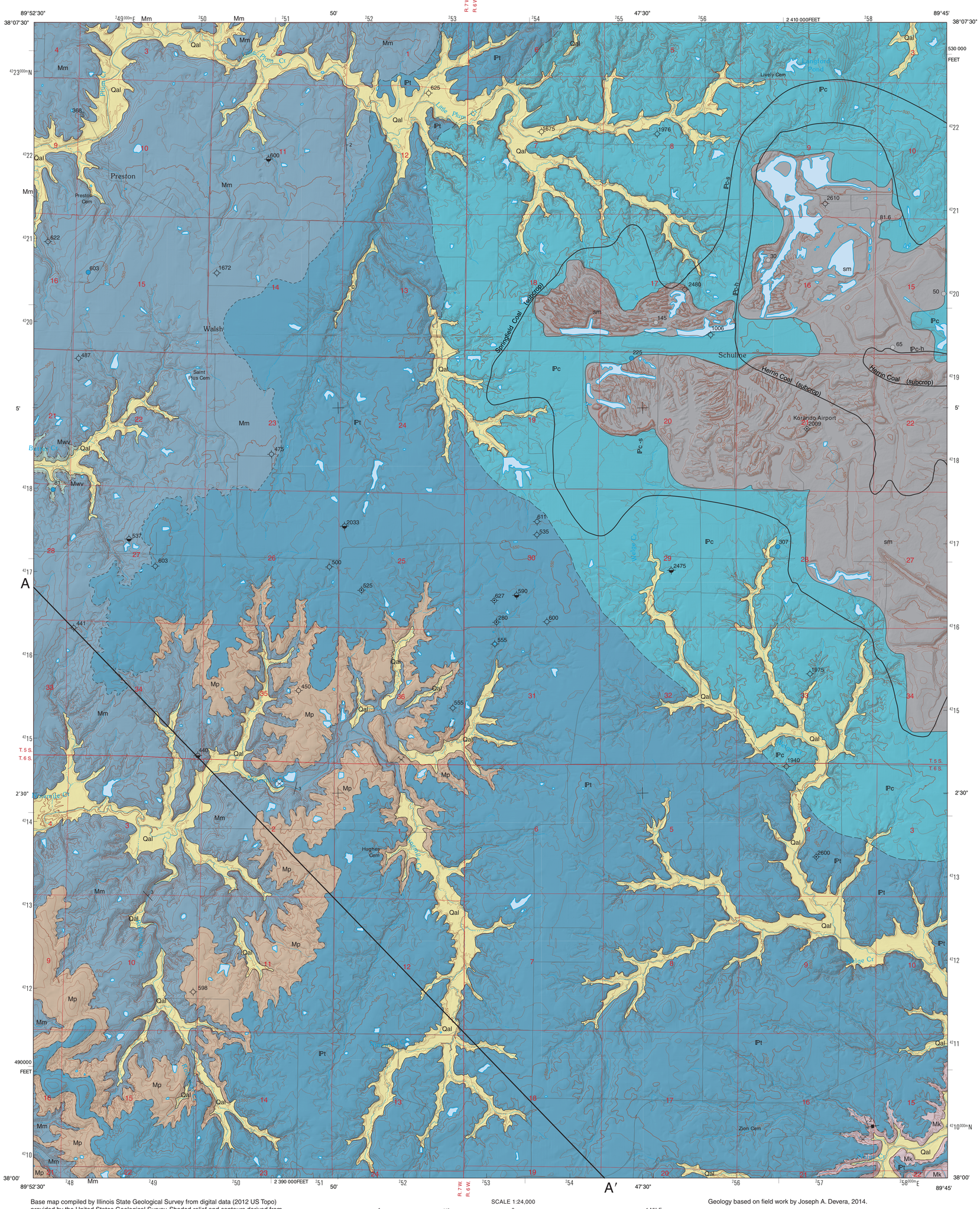
2014


STATEMAP Walsh-BG




### EXPLANATION

| | | | |
|---|---|---|---|
| | sm | Surface coal mine | |
| Quaternary | Qal | Cahokia Formation alluvium undifferentiated | Holocene |
| Unconformity | | | |
| Pennsylvanian | IPc — h / s | Carbondale formation h, Herrin Coal s, Springfield Coal | Desmoinesian |
| | IPt | Tradewater Formation | |
| Unconformity | | | |
| | Mk | Kinkaid Limestone | |
| Note: Degonia and Clore concealed | | | |
| Mississippian | Mp | Palestine Sandstone | Chesterian |
| | Mm | Menard Limestone | |
| | Mwv | Waltersburg and Vienna undifferentiated | |

### Symbols

- 40 — Strike and dip of bedding; number indicates degree of dip
- Vertical joint
- Abandoned pit or quarry

### Drill Holes
from which subsurface data were obtained

- Water well
- Coal test
- Oil test dry
- Show of oil
- Structure test
- 125 — Numeric label indicates total depth of boring in feet. Dot indicates location accurate within 100 feet.

### Line Symbols
dashed where inferred, dotted where approximate

- Contact
- A—A′ — Line of cross section

Note: Well and boring records are on file at the ISGS Geological Records Unit and are available online from the ISGS Web site.

Base map compiled by Illinois State Geological Survey from digital data (2012 US Topo) provided by the United States Geological Survey. Shaded relief and contours derived from 2012 LiDAR elevation data.

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

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SCALE 1:24,000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

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



Geology based on field work by Joseph A. Devera, 2014.

Digital cartography by Jennifer E. Carrell, John W. Zearing and Brittany M. Walbright, Illinois State Geological Survey.


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This map has not undergone the formal Illinois Geologic Quadrangle map review process. Whether or when this map will be formally reviewed and published depends on the resources and priorities of the ISGS.



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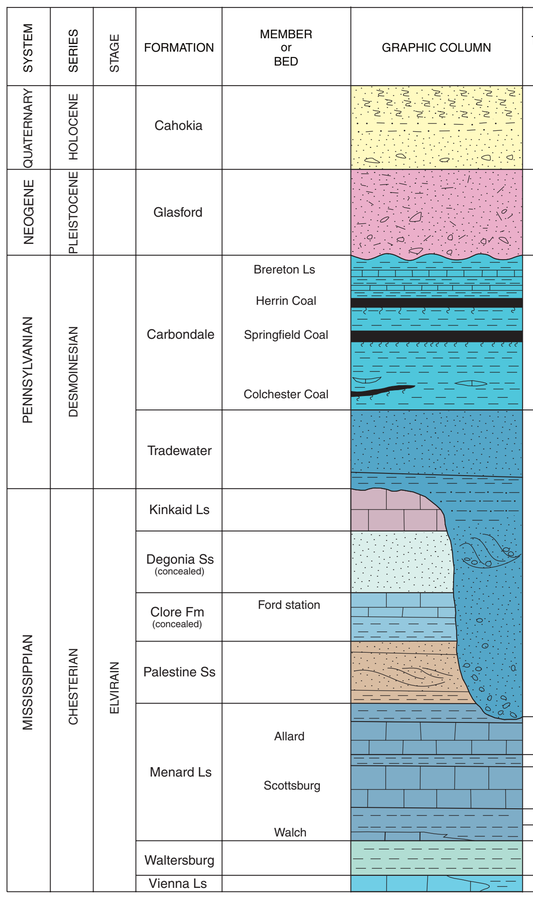
| | | |
|---|---|---|
| 1 | 2 | 3 |
| 4 | | 5 |
| 6 | 7 | 8 |

ADJOINING QUADRANGLES
1 Red Bud
2 Baldwin
3 Tilden
4 Evansville
5 Steeleville
6 Kaskaskia
7 Chester
8 Welge

1½° TRUE NORTH MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 2014

ROAD CLASSIFICATION
Local road




**A Cahokia Formation** Clay, Silt and Sand local bedrock clasts: shale, limestone and sandstone all unconsolidated in streams. Glacial erratic's common in the central to east side of the quadrangle. Commonly tan to dark gray diamicton, quartz sand has a salt and pepper appearance. Clasts also include chert: granules, pebbles and angular fragments. The dominant sediment is clay and silt.

**B Glasford Formation** (not mapped) Bluish gray clay with igneous, sedimentary and metamorphic rock clasts. A diamicton non-lithified dominated by clay, silt and sand. This unit was thin and striped off along with the loess in order to show the bedrock geology. Base of the unit is unconformable.

**C Carbondale Formation** Shale, limestone and Coal. This unit contains mineable coals the Springfield Coal s, and the Herrin Coal h, both coals have been mined out of the northeast corner of the Walsh Quadrangle. The subcrop limits of the coals were based on mine data and bore holes. The dominant rock type is shale mainly medium to dark gray weakly fissile but black shales are fissile, containing marine invertebrate fossils commonly. Limestones can be discontinuous lenticular to continuous across the quadrangle. They are dark gray, argillaceous, ferruginous, and contain marine fossils. A hard, medium gray, limestone occurs in the black shale above the Herrin Coal contains pyritized brachiopods. Minor amounts of sandstone probably confined to channels was not observed. The lower part of the Carbondale can be sharp to gradational.

**D Tradewater Formation** Sandstone and Shale. Tan to brown, medium to coarsely grained moderately to poorly sorted quartz-rich sublitharenite. Some beds contained fine grained, quartz arenite however, the thicker bedded sandstones contain chert pebbles rounded to angular containing fossils. Cross bedded units observed in thinner beds. Limestone and yellow dolostone clasts occur at the base of some beds. A conglomeratic unit was observed in the mid-portion of a sandstone exposure in the basal unit. Mica and clay was found in the lower channel facies. This formation is iron-rich with Liesagang banding and rusty red staining. Shale is gray, flaggy and occurs with ripple laminated silt and sandstone. This unit forms a large paleo-valley that trends north-northeast across the quadrangle.

**E Kinkaid Limestone** Limestone and Shale. Gray to dark gray lime-mudstone, dense medium bedded and well exposed. Shale is gray soft non-fissile occurs within the limestones and above. No fossils observed in the shale. The basal contact was not observed in out crop.

**F Degonia Sandstone** (not observed), The unit is not exposed at the surface. It is covered by the Tradewater Formation or was eroded by the Tradewater. No wells encountered the formation.

**G Clore Formation** (not observed), The formation was not observed at the surface because the Tradewater Formation blankets or eroded the unit.

**H Palestine Sandstone** Sandstone and shale. Tan, well sorted, fine grained, quartz anenite. Thin ripple laminated sheets at the base that grades into thin to medium bedded sandstone facies. Fossil lycopod impressions were found in the sandstone. Shale is medium gray soft, platy, non-fossiliferous. Thin to medium bedding occurs in the sandstone. The basal contact is gradational figure 2 is a photo of the contact between the Menard Ls and overlying Palestine Sandstone.

**I Menard Limestone** Limestone and Shale. There are three resistive limestone members with intervening gray shales. From base to top: Walche, Scottsburg and Allard members. The smallest limestone (0-8 ft.) is the Walche member; it is a dark gray, argillaceous lime-mudstone that is silty in part. A shale ranging from 5 to 10 feet thick occurs above the Walche. The Scottsburg is the thickest member, between 30 and 40 feet thick. It is composed of dark gray lime-mudstones, laminated facies and mottled lime mudstones with polygonal desiccation cracks, dark gray chert nodules and yellow dolostone facies. A dark gray shale about 5 feet thick occurs above the Scottsburg Member. The top member called Allard is about 25 feet thick and is composed of dense argillaceous lime-mudstone. The bedding is hummocky, the top of which contains the large coiled nautiloid *Endolobus spectabilis* (Meek and Worthen). Typical fossils from the Menard are the brachiopods *Anthracospirifer increbscens* (Weller), *Composita subqudrata var. lateralis* (Girty), *Cleiothyridina sublamellosa* (Hall) *Diaphragmus nivosus* (Gordon), the razor clam *Sulcatopinna missouriensis*, the crinoids *Agassiocrinus sp.*, *Pterotocrinus menardensis* (Weller), the bivalve, *Allorisma* sp. These fossils are common fossils in all of the Elvirian Stage limestones except *P. menardensis*. The basal contact with the lower unit is sharp.

**J The Waltersburg Formation** Shale. There was only shale encountered in outcrop below the Menard Limestone. This was also true in all the wells used in the quadrangle. The sandstone that can occur probably pinched-out. The sandstone typically restricted to form channels. The Waltersburg was mapped together with the Vienna Limestone below.

**K Vienna Limestone** Shale and limestone. This unit is dominated by shale and was combined with the overlying unit on the map. However, a thin limestone was recognized in a few drill holes on the east side of the study area. The limestone pinches out toward the west in the outcrop belt.