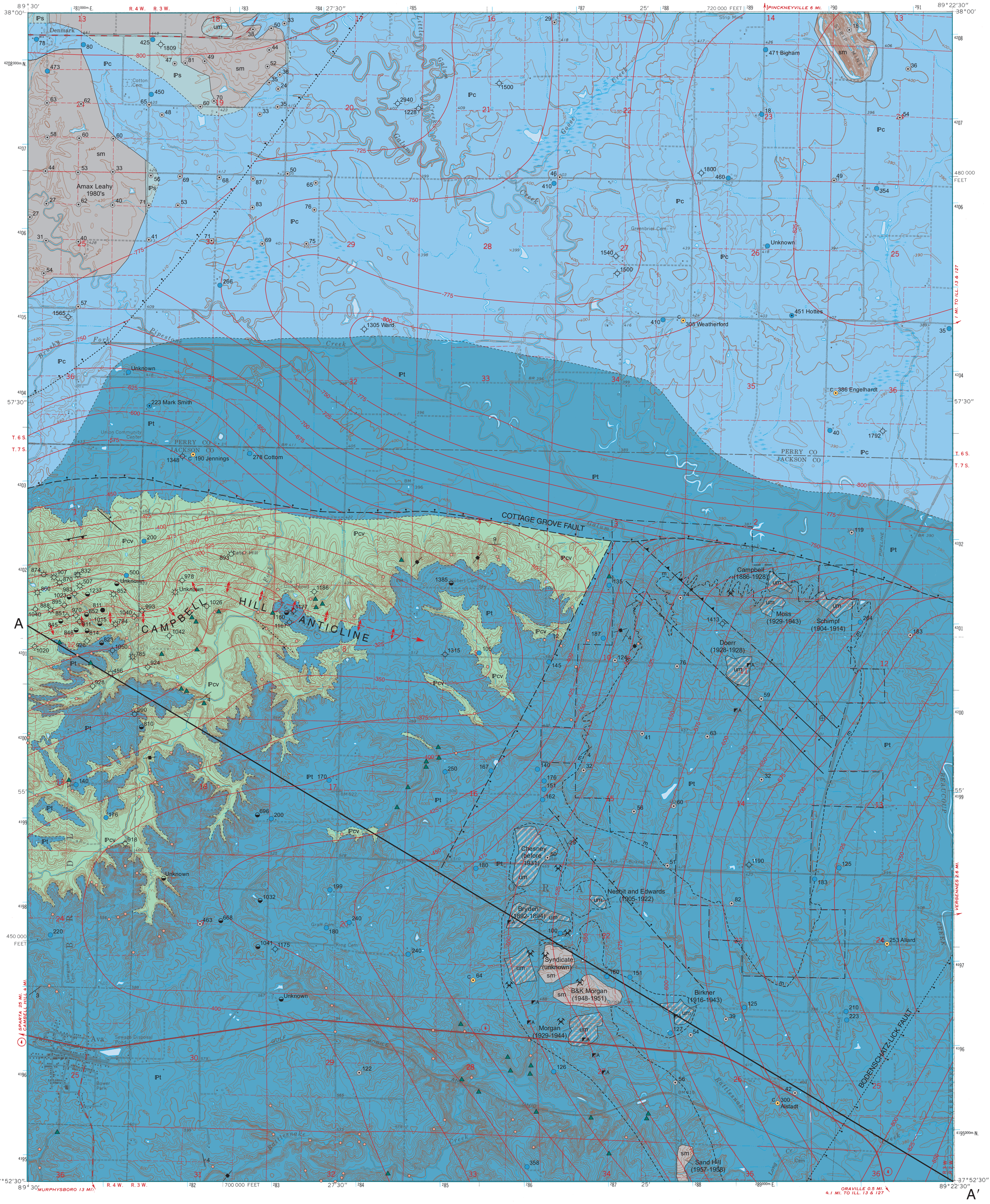


BEDROCK GEOLOGY OF AVA QUADRANGLE
JACKSON AND PERRY COUNTIES, ILLINOIS

Illinois Department of Natural Resources
 ILLINOIS STATE GEOLOGICAL SURVEY
 William W. Shilts, Chief

F. Brett Denny
 2005

Illinois Preliminary Geologic Map
 IPGM Ava-BG



EXPLANATION

- sm Surface mine (coal)
 um Underground mine (coal)
 Ps Shelburn Formation
 Pc Carbondale Formation
 Pt Tradewater Formation
 Unconformity
 Pcv Caseyville Formation
- Desmoinesian
 Atokan
 Morrowan

Symbols

- Strike and dip of bedding; number indicates degree of dip
 Horizontal bedding
 Vertical joints
 Outcrop
 Open pit mine (abandoned)
 Shaft mine (abandoned)
 Slope mine (abandoned)
 Note
 Drill Holes
 from which subsurface data was obtained.
 Numbers indicate total depth of boring in feet.
 Stratigraphic boring (ISGS)
 Water well
 Coal boring
 Oil well
 Dry hole
 Gas well
 Show of gas
 Show of oil
 Boring with core (-); dot indicates location accurate within 100 feet

Line Symbols

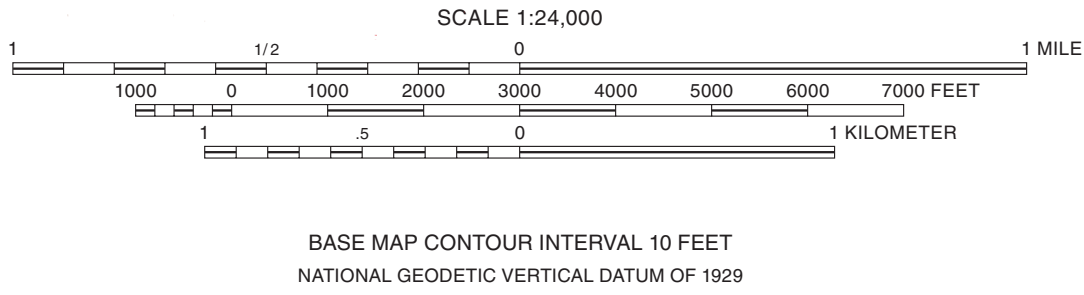
- dashed where inferred, dotted where concealed
 Contact
 Normal fault: bar and ball on downthrown side
 High angle reverse fault: triangles on upthrown side
 Creek Paum mine boundary; this area is currently being strip mined
 Barlow base elevation
 Anticline crest
 A—A' Line of cross section

Note: This is a subcrop map, showing bedrock surface with all Quaternary deposits removed. Geology shown as it was prior to surface mining.

Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey. Topography by photogrammetric methods from aerial photographs taken 1965. Field checked 1968.

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: Universal Transverse Mercator grid system, zone 16

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Released by the authority of the State of Illinois: 2005

Geology based on field work by F. B. Denny, 2004–2005.

Digital cartography by F. B. Denny and T. Goepfinger, Illinois State Geological Survey.

This Illinois Preliminary Geologic Map (IPGM) is a lightly edited product, subject to less scientific and cartographic review than our Illinois Geological Quadrangle (IGQ) series. It will not necessarily correspond to the format of IGQ series maps, or to those of other IPGM series maps. Whether or when this map will be upgraded depends on the resources and priorities of the ISGS.

The Illinois State Geological Survey, the Illinois Department of Natural Resources, and the State of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this document and accept no liability for the consequences of decisions made by others on the basis of the information presented here. The geologic interpretations are based on data that may vary with respect to accuracy of geographic location, the type and quantity of data available at each location, and the scientific and technical qualifications of the data sources. Maps or cross sections in this document are not meant to be enlarged.

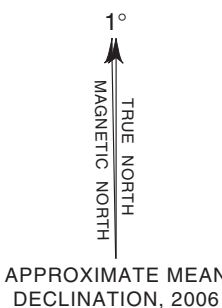


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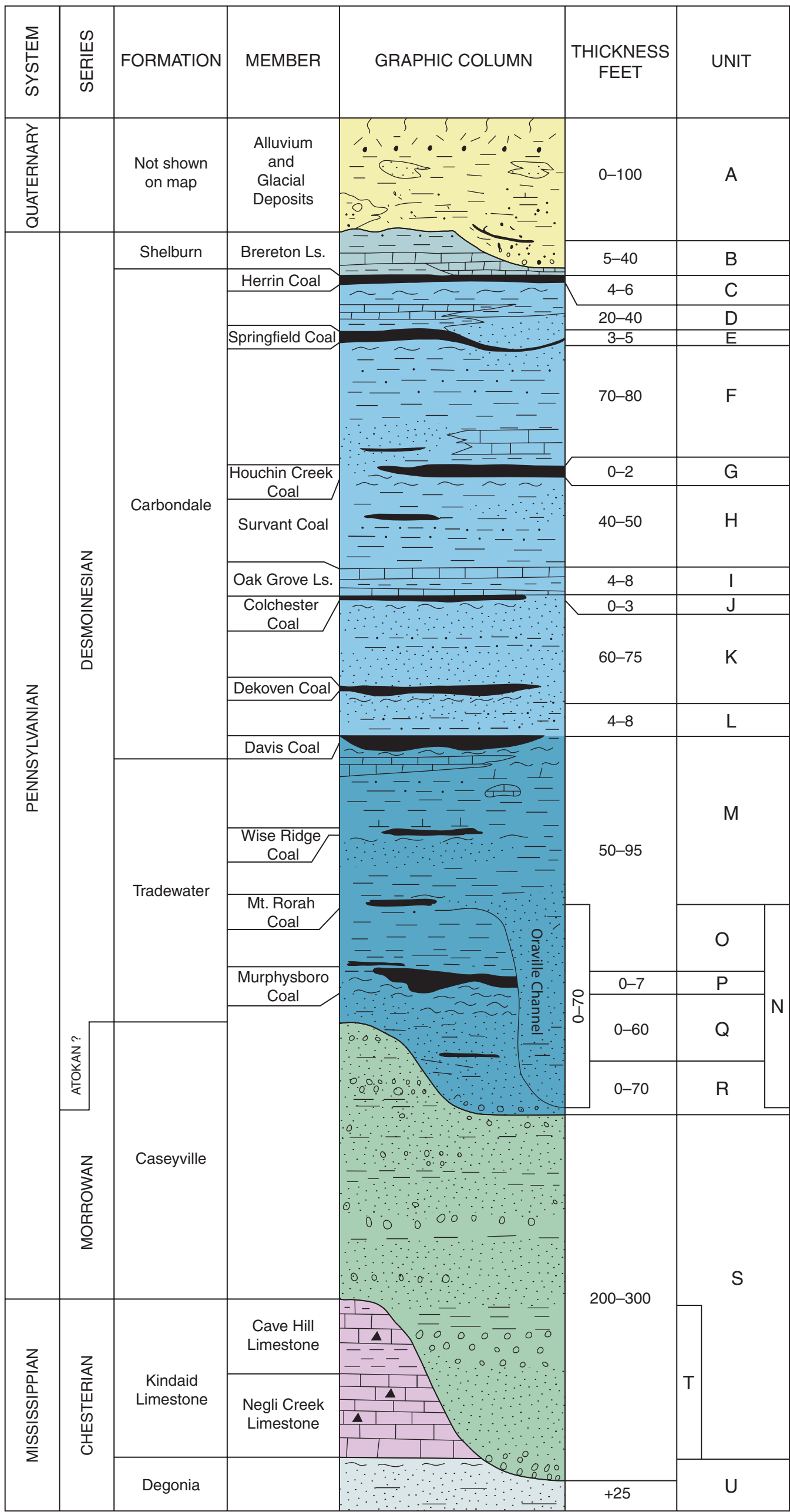


1	2	3
4	5	
6	7	8

ADJOINING QUADRANGLES
 1 Perry
 2 Pinckneyville
 3 Pyatts
 4 Willsville
 5 Vergennes
 6 Radtke
 7 O'Neill
 8 Murphysboro



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



A Sand, clay, silt, and gravel White, tan, brown, fine to coarse quartz sand. Gray to tan clay and silty clay. Gravels are white, gray, and tan-brown. Unit not depicted on the geologic map.

B Limestone and shale Gray micritic limestone, gray silty shale, and black shale. The black shale "Anna" is fissile and usually less than 4 feet thick. It is overlain by a fine-grained limestone "Brereton". The limestone is usually several feet thick with a marine fauna consisting of brachiopods, crinoids, and fusulinids. The limestone is then overlain by a silty gray shale "Energy Shale". The Brereton and Anna thin rapidly and may not be present where the Energy Shale thickens.

C Coal Black shiny bright-banded coal and carbonaceous claystone. The coal "Herrin" is bituminous with well developed cleats, calcite, and pyrite along bedding. The coal is usually less than 5 feet thick in this region. The claystone "blue band" occurs as a thin (less than 3 inches) dark gray carbonaceous and pyritic parting in the lower portion of the coal seam. The blue band is a distinctive marker bed for the Herrin Coal.

D Shale, limestone, and claystone Dark gray shale, limestone, claystone. The shale is silty and may grade into fine grained sandstone. The limestone "St. David" is micritic and contains fusulinids and brachiopods. In places the limestone grades into a calcareous shale. The claystone is rooted and represents an underlay for the overlying coal.

E Coal Black shiny coal. The coal "Springfield" is bituminous with well developed cleats, calcite, and pyrite along bedding. The coal is usually less than 4 feet thick in this region. It is underlain by a gray claystone or underlay.

F Shale, sandstone, and limestone Dark gray shale and tan-brown sandstone. The shale is silty and micaceous and is underlain by a sandstone. The sandstone is fine- to medium-grained and micaceous. Below the sandstone a black shale "Excello" less than 4 feet thick is present. In places a thin marine limestone "Hanover" is present.

G Coal Black shiny coal. The coal "Houchin Creek" is bituminous black and typically less than 2 feet thick. It is underlain by a gray claystone or underlay. This coal was formerly called the Summum (No. 4) in Illinois.

H Shale, siltstone, and coal The shale and siltstone is dark to medium gray. Carbonaceous shale and a thin coal may be present. The coal "Survant" may be present in places but is thin and discontinuous.

I Limestone and shale The limestone "Oak Grove" is medium gray and the shale is black. Limestone is bioclastic. The marine black shale "Mecca Quarry" is usually 1-4 feet thick and may contain limestone concretions and interbedded limestone lens. The entire unit is less than 10 feet thick.

J Coal The coal "Coalchester" is bituminous black and typically less than 1 feet thick. In places it is represented by a carbonaceous black smut. It is underlain by a gray claystone or underclay.

K Sandstone and shale The sandstone is light gray and fine- to very fine-grained with occasional clay rip-up clasts. The sandstone interbeds with

gray carbonaceous shales. Occasionally the shale is greenish-gray and grades into a shale and claystone.

L Coal, siltstone, and claystone The coal is black bright-banded to dull and sometimes split by a gray claystone. The Dekoven coal attains a thickness of 1.5 feet and the claystone is 2 or 3 feet thick. The Davis coal is a black shiny bituminous coal and attains a thickness of 4 feet. The lower coal is underlain by a gray claystone or underclay.

M Claystone, sandstone, limestone, shale, and coal The claystone is dark gray to green gray and in places red. Carbonaceous plant debris is common in the claystone. Sandstone is light gray and fine-grained with quartz sand and mica. The limestone "Seashorn" is gray and argillaceous. The shale is gray to black and silty. The coals are very thin carbonaceous smuts to fairly well-developed coal. The thickest coal observed in this part of the section was less than 2 feet thick. These coals are probably correlated with the Wise Ridge Coal and the Mt. Rorah Coal in southern Illinois.

N Sandstone Light gray fine- to medium-grained carbonaceous sandstone. Abundant clay rip-up clasts and small pieces of carbonaceous debris. Cross bedding is common. This unit is channel form and meanders across the eastern portion of the quadrangle scouring into the underlying units. The channel has been named the Oraville Channel (Jacobson, 1983)

O Shale and claystone Gray silty-shale and light to dark gray claystone. The silty-shale is micaceous and contains carbonaceous plant debris. The claystone is dark gray and carbonaceous.

P Coal The coal "Murphysboro" is black bright banded to dull. Where well developed in adjacent quadrangles the coal reaches 6 to 7 feet in thickness. It averages 4 feet in thickness in this quad where it was observed. The coal is bituminous and moderately low in sulfur and ash.

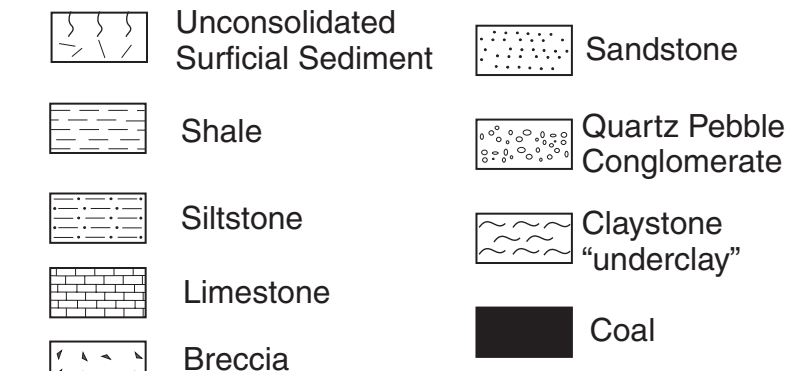
Q Shale, claystone, and sandstone The shale is dark gray carbonaceous. The claystone is dark gray and the sandstone is fine grained tan-brown.

R Sandstone The sandstone is fine- to medium-grained with shale drapes. Cross beds are common along with mica and clay in the matrix.

S Sandstone, shale, and sandstone conglomerate The sandstone is medium- to coarse-grained quartz sand with well-rounded quartz pebbles (conglomerate) separated by gray shale. Shales are medium gray and are usually less than 20 feet thick containing clays and minor amounts of mica (less than 2-3 percent). The sandstone beds are medium- to coarse-grained quartz arenites. The conglomerate is composed of white quartz pebbles up to ½ inch in diameter set in a medium to coarse quartz sand.

T Limestone and shale The limestone is medium gray to brownish-gray, argillaceous, and cherty. Fossils include brachiopods and gastropods. Gray and greenish-gray shale, commonly calcareous, is present between the limestone ledges.

U Sandstone and shale The sandstone is white to tan-brown and fine grained. Shales are gray and a prominent red shale may be present at the top of the formation.



The logs depicted on this sheet were created from ISGS core, oil and gas borings, and water well records. The data from water wells were derived from rock cuttings and therefore may contain discrepancies, especially concerning the thickness of units.

This figure aids in the correlation of coal seams in the region by stringing the logs along a common datum. Datum is the top of the Oak Grove Limestone.

