BEDROCK GEOLOGY OF VERGENNES QUADRANGLE
PERRY AND JACKSON COUNTIES, ILLINOIS

Illinois Department of Natural Resources
ILLINOIS STATE GEOLOGICAL SURVEY
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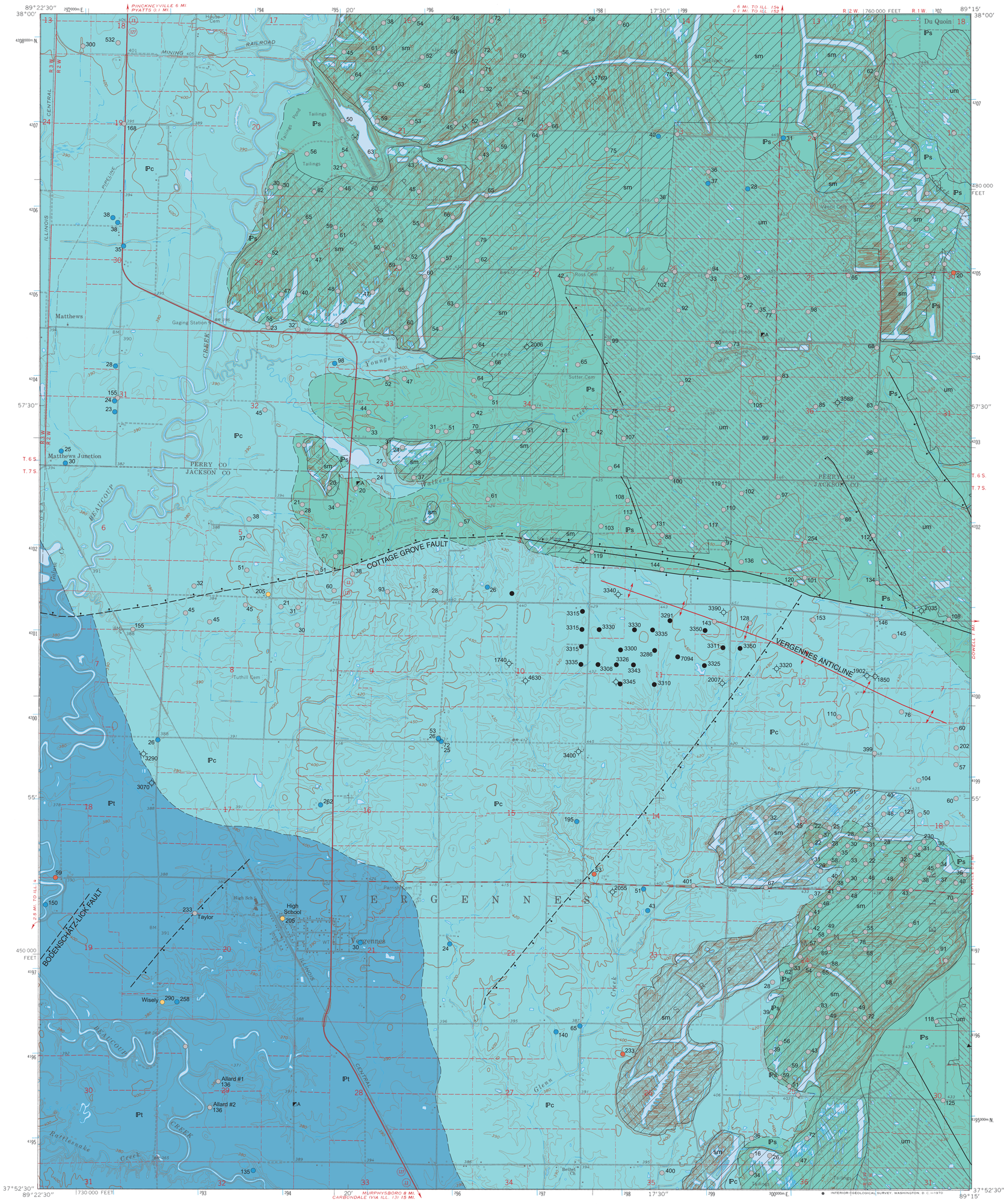
2007

Illinois Preliminary Geologic Map
IPGM Vergennes-BG



EXPLANATION

- sm — Surface mine (coal)
- um — Underground mine (coal)

Pennsylvanian
- Desmoinesian
  - IPs — Shelburn Formation
  - IPc — Carbondale Formation
- Atokan
  - IPt — Tradewater Formation

Symbols
- Open pit mine (abandoned)
- Slope mine (abandoned)

Drill Holes
from which subsurface data was obtained. Numbers indicate total depth of boring in feet.
- Stratigraphic boring (ISGS)
- Water well
- Engineering boring
- Coal boring
- Oil well
- Dry hole

Line Symbols
dashed where inferred
- Contact
- Normal fault
- Normal fault: bar and ball on downthrown side
- High angle reverse fault: triangles on upthrown side
- Anticline

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

Recommended citation:
Jacobson, R.J. and F.B. Denny, 2007, Bedrock Geology of Vergennes Quadrangle, Perry and Jackson Counties, Illinois: Illinois State Geological Survey, Illinois Preliminary Geologic Map, IPGM Vergennes-BG, 1:24,000.

SCALE 1:24,000

1 MILE
1/2
0
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

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

Released by the authority of the State of Illinois: 2007

Geology based on field work by R. Jacobson, 2005–2006.

Digital cartography by J. Domier, T. Goeppinger, M. Widener and S. Geegan, Illinois State Geological Survey., 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.

This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program. The views and conclusions contained in this document are those of the author and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.

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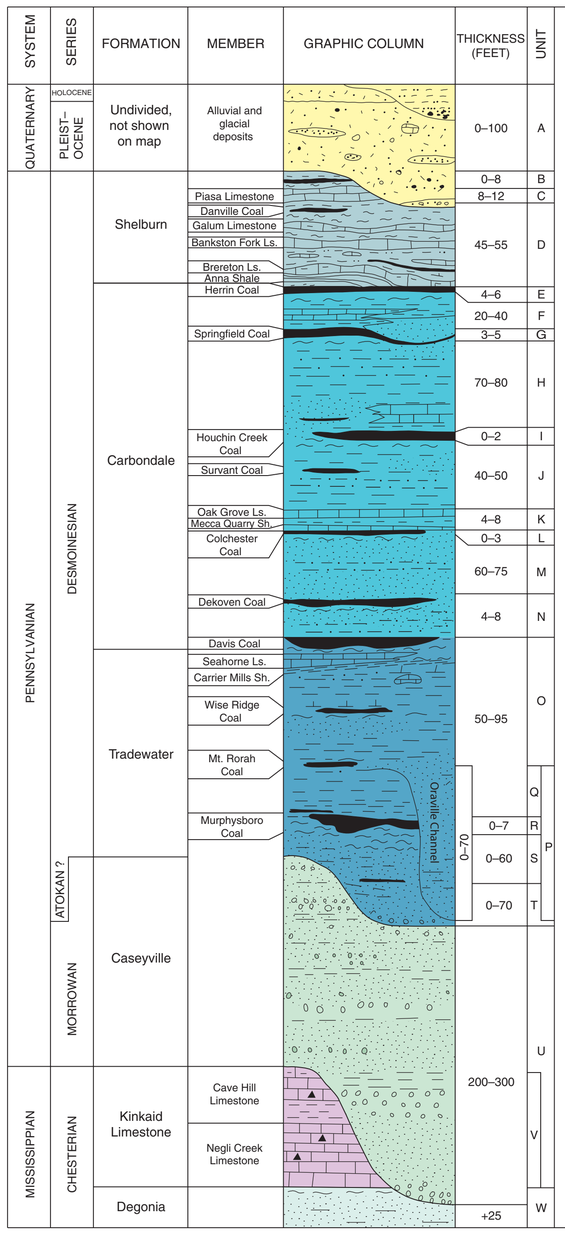
4		5
6	7	8

ADJOINING QUADRANGLES
1 Pinckneyville
2 Pyatts
3 Du Quoin
4 Ava
5 Elkville
6 Oraville
7 Murphysboro
8 De Soto

APPROXIMATE MEAN DECLINATION, 2007

ROAD CLASSIFICATION

- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved 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 Shale, coal, and claystone

C Piasa Limestone Member Light gray, buff or cream-colored limestone that weathers yellowish orange. It is dolomitic lime mudstone to wackestone with crinoid stems, brachiopods, fusulinids, and other marine fossils.

D Limestone, shale, mudstone, and thin Danville coal In descending order, gray shale and mudstone 7 to 17 feet thick is at the top. One well log records a 2-foot coal seam, the Danville Coal Member, near the top of this interval. The Galum Limestone Member is about 2 to 5 feet thick; logs lack detail. Bell et al. (1931), who named the Galum, described it as yellow, earthy, nodular limestone, the upper part of which appears weathered and grades into claystone with limestone nodules. Below the Galum Limestone is up to 7 feet of dark greenish gray mudstone to weakly laminated shale. The Bankston Fork Limestone Member is 3 to 6 feet thick and similar in lithology to the Piasa Limestone. Below the Bankston Fork is up to 15 feet of gray to black, silty, calcareous shale that contains thin interbeds, lenses, and concretions of argillaceous limestone. The Jamestown Coal Member, consisting of less than 0.5-foot of shaly coal or carbonaceous shale, occurs within this interval. The Brereton Limestone Member is 2 to 7 feet thick, generally dark gray, argillaceous lime mudstone to wackestone with fusulinids, brachiopods, and other marine fossils. Bedding can be massive to nodular or hummocky. Below the Brereton is the black, fissile, hard, highly organic, phosphatic Anna Shale Member, 0 to 6 feet thick. Large spheroidal limestone concretions are common; fossils include fish scales. The Energy Shale at the base of the interval is gray, weakly laminated, slickensided shale or mudstone that contains mytiloid and pectenoid pelecypods. Less than 6 feet thick, the Energy occurs as small lenses and fills erosional "rolls" in the upper part of the Herrin Coal.

E Herrin coal Black shiny bright-banded coal and carbonaceous claystone. The coal Herrin Member 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.

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

G Springfield coal Black Shiny coal. The Springfield Coal member is bituminous with well developed cleats, calcite, and pyrite along bedding. The coal is usually less than 4-feet thick. It is underlain by a gray claystone or underclay.

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

I Houchin Creek coal Black shiny coal. The Houchin Creek Coal Member is bituminous black and typically less than 2-feet thick. It is underlain by a gray claystone or underclay.

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

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

L Colchester coal The Colchester Coal Member is bituminous black and typically less than 1-foot thick. In places it is represented by a carbonaceous black smut. It is underlain by a gray claystone or underclay.

M 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.

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

O Claystone, sandstone, limestone, shale, and Wise Ridge and Mt. Rorah coals 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 Seahorne Limestone Member 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 bed and the Mt. Rorah coal bed in southern Illinois.

P Sandstone Light gray fine- to medium-grained carbonaceous, micaeous 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)

Q Shale and claystone Gray silty-shale and light to dark gray claystone. The silty-shale is micaeous and contains abundant carbonaceous plant debris. The claystone is dark gray and carbonaceous.

R Murphysboro coal The Murphysboro Coal Member is black bright banded to dull. Where well developed, the Murphysboro 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.

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

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

U 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 arentites. The conglomerate is composed of white quartz pebbles up to ½ inch in diameter set in a medium to coarse quartz sand.

V 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.

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