

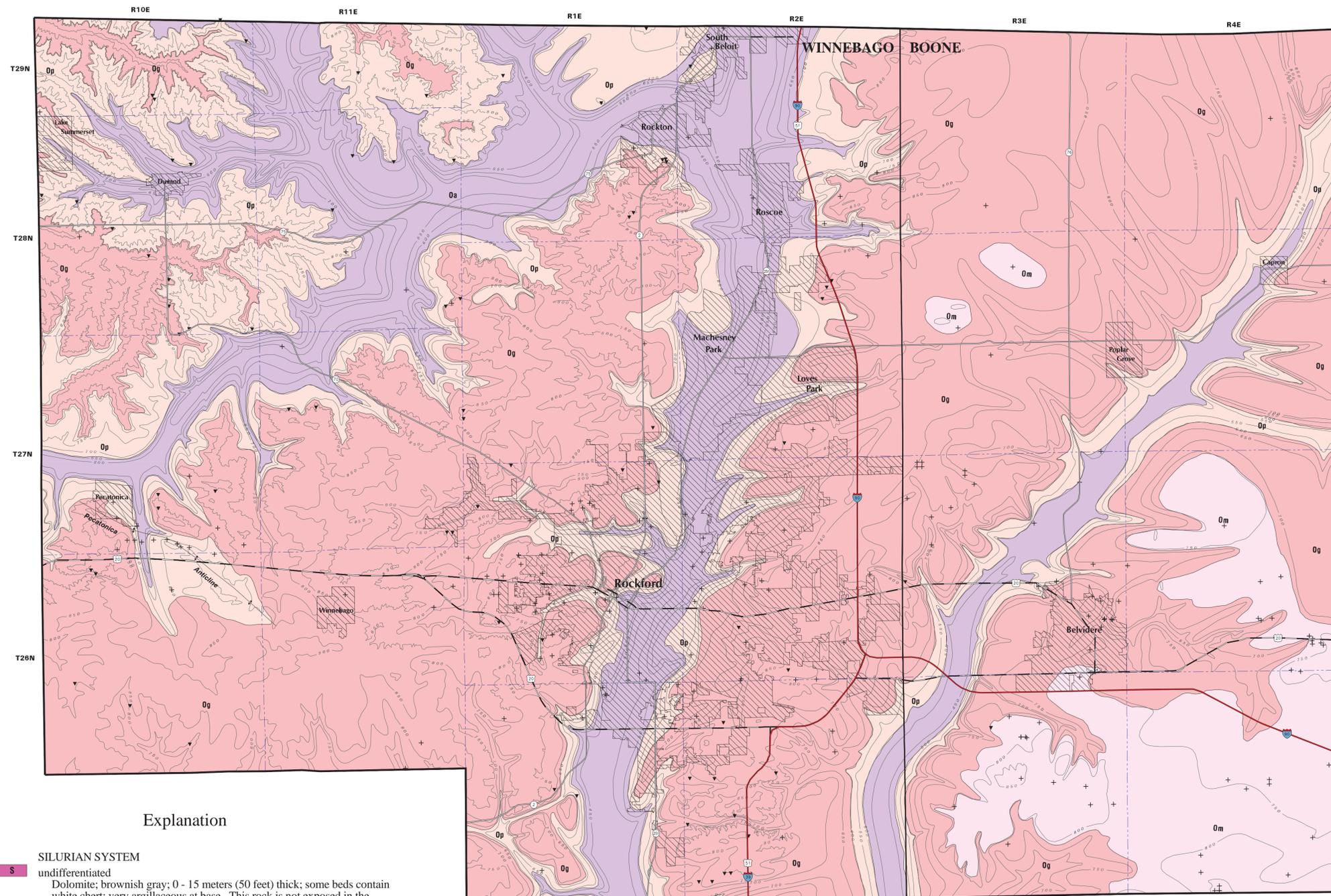


State of Illinois
Department of Natural Resources

Bedrock Geology of Boone and Winnebago Counties, Illinois

Christopher S. McGarry
2000

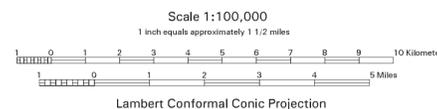
Illinois State Geological Survey
William W. Shilts, Chief
Champaign



Explanation

- SILURIAN SYSTEM**
- S** undifferentiated
Dolomite; brownish gray; 0 - 15 meters (50 feet) thick; some beds contain white chert; very argillaceous at base. This rock is not exposed in the study area and only occurs in the subsurface in a small area on the eastern edge of Boone County.
- ORDOVICIAN SYSTEM**
- Om** Maquoketa Group
Shale and dolomite; greenish- gray; silty; fossiliferous (brachiopods, bryozoans); 0 - 61 meters (200 feet) thick; argillaceous dolomite lenses in the lower half. This rock is exposed in a small road cut south of Belvidere.
 - Og** Galena Group
Dolomite; brown and gray; coarse grained; primarily pure; 0 - 76 meters (250 feet) thick; some cherty beds; some argillaceous beds; clay (K-bentonite) beds. These cliff forming- rocks are exposed in the Kishwaukee River and Grove Creek gorges and many quarries throughout the area.
 - Op** Platteville Group
Dolomite; brown and gray; fine to very fine grained; 0 - 40 meters (130 feet) thick; thinner bedded and more argillaceous than the Galena Group. These rocks are exposed in quarries and road cuts in northern Winnebago County.
 - Oa** Ancell Group
Quartz sandstone; white; fine to medium grained; well sorted; pure; 61 - 122 meters (200 - 400 feet) thick; upper 7.6 meters (25 feet) is composed of interbedded dolomite, fine to medium grained sandstone and shale. These rocks are not exposed in the study area.

- Data Points**
- Well
 - Bedrock Exposure
 - Anticline
 - Interstate Highway
 - US Highway
 - State Highway
 - Municipality
 - Bedrock Topography Contour Interval 50 Feet



Preparation of this map by the Illinois State Geological Survey was supported, in part, by the Illinois Department of Natural Resources Environmental Protection Trust Fund. The map is part of a study to characterize the stratigraphy and structural geology of the Galena- Platteville Aquifer in Boone and Winnebago Counties. Maps produced for this study are intended for regional aquifer protection and land use planning purposes. More detailed mapping is needed for site specific considerations. This map has been reviewed for scientific accuracy and has been edited to meet the quality standards of maps in the ISGS Map Series.

Data used to map the bedrock geology of Boone and Winnebago Counties included United States Geological Survey 7.5- minute topographic quadrangles, ISGS well logs, Illinois Department of Transportation borings, United States Department of Agriculture soil survey maps, previous studies conducted by Willman and Kolata (1978) and Kolata and Graese (1983), and project field observations. Well data used included 122 core and drill- cuttings analyses, 14 geophysical log studies, and 58 water well driller records. Due to the suspect accuracy of well driller records, only carefully selected driller records in areas lacking core/cuttings analyses or geophysical logs were used. Of the 194 well data points, 24 were found to be inconsistent with surrounding well descriptions. These anomalous well records, primarily water well records, either had incorrect descriptions of the strata encountered or incorrect location information and were ignored. Only the remaining 170 well data points were used in the mapping.

The geologic units commonly penetrated by water wells and other shallow boreholes in Boone and Winnebago Counties include un lithified Quaternary sediments, predominantly glacial deposits, underlain by Paleozoic bedrock, deposited as marine sediments. These sediments and rocks, roughly 760 m (2494 ft.) thick in northern Illinois, comprise a thin veneer of rock over the Precambrian crystalline basement.

Bedrock geology is a significant consideration for land use planning in this region. The dolomite and sandstone bedrock formations are important groundwater resources throughout northern Illinois. Land use decisions should be made with consideration for the protection of groundwater resources from potential contamination. In addition to groundwater resources, dolomite formations near the land surface are current or potential rock product resources.

The outcropping (or subcropping in the subsurface) pattern of the bedrock geology is largely controlled by deep bedrock valleys. These valleys incise into the Ancell Group, although these strata are not exposed anywhere in the two- county region. Outcropping of younger strata to the southeast reflects the gentle regional dip, a result of the uplift of the Wisconsin Arch. It is interesting to note the presence of the Pecatonica Anticline, southeast of the town of Pecatonica. This structure is a small anticline about 10 km (6.2 mi.) long and 3 km (1.9 mi.) wide with about 9 m (29.5 ft.) of vertical uplift. An inactive quarry east of Pecatonica reveals very gently northeast- dipping beds, a subtle exposure of this structure.

References

- Kolata, D.R. and A.M. Graese (1983) Lithostratigraphy and Depositional Environments of the Maquoketa Group (Ordovician) in Northern Illinois: Illinois State Geological Survey Circular 528, 49 p.
- Willman, H.B. and D.R. Kolata (1978) The Platteville and Galena Groups in Northern Illinois: Illinois State Geological Survey Circular 502, 75 p.

SEQ.	SYSTEM	GROUP	FORMATION & THICKNESS	GRAPHIC COLUMN	
TEJAS	QUATERNARY		0 - 137 m (0 - 450 ft.)		
	SILUR.		15 m (50 ft.)		
TIPPECANOE	ORDOVICIAN		46 - 61 m (150 - 200 ft.)		
		Maquoketa	76 m (250 ft.)		
		Galena	30 m (100 ft.)		
		Platteville	2-18 m (5-60 ft.)		
		Ancell	61-122 m (200-400 ft.)		
SAUK	CAMBRIAN		15-30 m (50-100 ft.)		
		Potosi	15-30 m (50-100 ft.)		
		Franconia	23-52 m (75-170 ft.)		
		Ironton - Galesville	107-137 m (350-450 ft.)		
		Eau Claire	305-488 m (1000-1600 ft.)		
				PRECAMBRIAN	GRANITE