

Base map from the United States Geological Survey. Topography compiled from imagery dated 1974. Field checked 1977. Map edited 1981. SCALE 1:24,000 1 MILE 2000 3000 4000 5000 6000 7000 FEET 1000 North American Datum of 1927 (NAD 27) 1 KILOMETER 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 15 BASE MAP CONTOUR INTERVAL 10 FEET SUPPLEMENTARY CONTOUR INTERVAL 5 FEET **Recommended citation:** Jacobson, R.J. and Z. Lasemi, 2008, Bedrock Geology of Kellerville Quadrangle, Adams and Brown Counties, Illinois: Illinois State Geological Survey, Illinois Preliminary Geo-logic Map, IPGM Kellerville-BG, 2 sheets, 1:24,000, report, 3 p. NATIONAL GEODETIC VERTICAL DATUM OF 1929 Released by the authority of the State of Illinois: 2008

Geology based on field work by R. Jacobson and Z. Lasemi, 1997–1998.

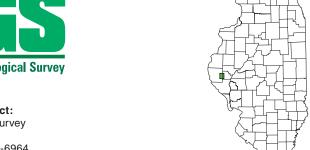
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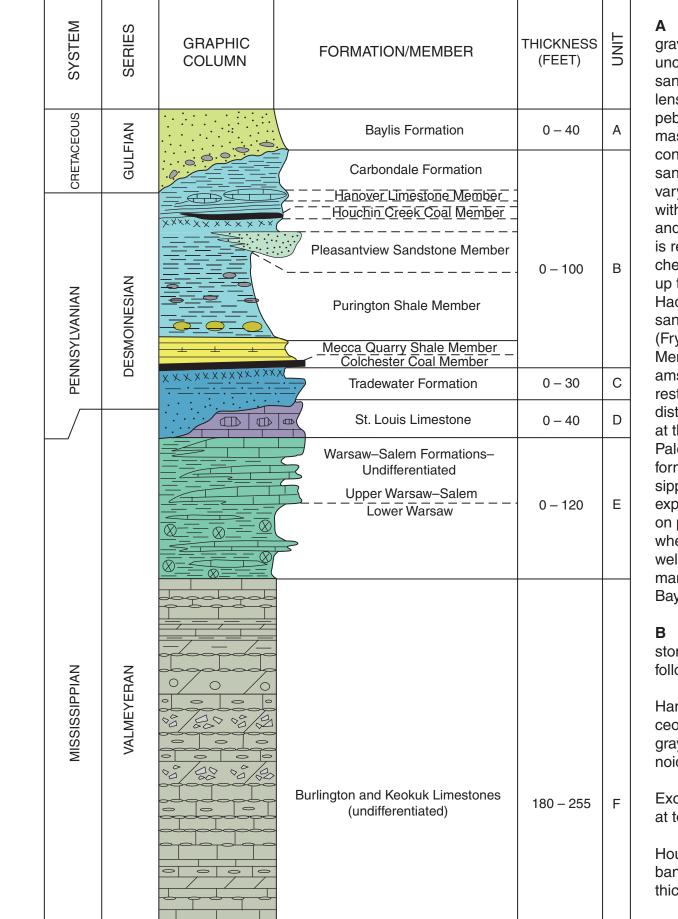
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A Baylis Formation (0 to 5 feet) Sand, clayey sand, and gravel. The Baylis Formation (Frye et al. 1964) consists of uncemented fine to medium-grained quartz sand and clayey sand with zones of dispersed granules of angular white chert, lenses of silty clay, and locally, moderately well-rounded pebbles of chert, quartz, and quartzite. The unit typically is massive to thick bedded with indistinct bedding. Some beds consist of relatively clean, well-sorted, medium to fine-grained sands that have planar laminations and cross bedding. Colors vary from white to light gray, tan, brown, and orange-brown, with the tan and brown commonly occurring as color bands and mottling. A few beds contain abundant fine mica, which is readily seen in outcrop. Sand mixed with rounded brownish chert and some quartz and quartzite pebbles forms lenses up to 15 feet thick at the base. This lower unit is known as the Hadley Gravel Member, whereas the upper predominantly sandy and clayey unit is known as the Kiser Creek Member (Frye et al. 1964). The basal portion of the Hadley Gravel Member has an iron-stained zone and in some parts of Adams County it is highly cemented by iron oxide. The Baylis rests unconformably on Paleozoic bedrock in the area. A distinct weathered zone (a paleosol of reddish shale) occurs at the contact between the Baylis Formation and underlying Paleozoic bedrock. The Baylis occurs on the prominent ridge forming the divide between the Illinois River and the Mississippi River drainage. Mapping in this quadrangle has shown exposures of this formation to be more patchy than indicated on previous maps (Frye et al. 1964) in part because slopes where the Baylis is expected to be present commonly are well-rounded, slumped and vegetated and many slopes are mantled by loess, soil and glacial tills that completely hide the Baylis.

B Carbondale Formation Shale, siltstone, sandstone, limestone, thin coal, and claystone. The Carbondale contains the following members:

Hanover Limestone Member (0 to 2 feet) Light gray argillaceous lime mudstone matrix surrounding gray to dark bluish gray lime mudstone clasts and marine fossils (such as crinoids and brachiopods).

Excello Shale (0 to 2 feet) Black, fissile shale; sharp contact at top.

Houchin Creek Coal Member (0 to 2 feet) Coal, bituminous, banded; grades laterally to a thin shaley coal several inches thick, resting on underclay up to 4 inches thick.

Pleasantview Sandstone Member (0 to 20 feet) Sandstone.

Colchester Coal Member (0 to 1.5 feet) (fig. 1) Coal, banded, bituminous, both lower and upper contacts sharp.

C Tradewater Formation (0 to 30 feet, typically averaging 4 to 5 feet) Sandstone and claystone. The claystone is light gray to whitish, contains carbonaceous root casts, slightly sandy, and grades downward into sandstone. The basal sandstones (fig. 3) are gray to light gray, medium to coarse grained, quart-zose, slightly argillaceous, and vary from thin sheet-like beds less than two feet thick to cross-bedded channel-fill deposits up to 30 feet thick, which cut downward into the underlying formations (paleochannels). The lower portion of these paleochannel deposits in many places contains a conglomeratic lag of limestone and chert clasts. The paleochannel deposits lie on the irregular erosional surface that is the unconformable contact between the Pennsylvanian system and underlying Mississippian units.

D St. Louis Limestone (0 to 40 feet) Limestone, dolomite, and thin shale (fig. 4). The limestone and dolomite are light gray to gray-brown, microcrystalline and weather yellow-gray to tan. Green shale interbeds occur locally. Some carbonate beds are characterized by algal laminations (stromatolites). This unit is missing over much of the quadrangle due to sub-Pennsylvanian erosion: it occurs only as thin irregular outliers in the north-central and northeastern portions of the quadrangle.

E Salem, Sonora and Warsaw Formations undifferenti-

ated (0 to 120 feet) Shale, dolomite, limestone, sandstone. These three formations are mapped as a single unit, but can be differentiated in a few outcrops. At the base, making up the majority of the mapped unit (and all of it in most areas) is the Warsaw Formation which can be divided informally into a "lower" and "upper unit" based on lithologic characteristics. The "lower unit" (fig. 5) consists primarily of light- to mediumgray or blue-gray shale, interbedded siltstone, finely crystalline and argillaceous dolomites, and light-gray to olive-gray (rusty to yellow-orange where weathered) fossiliferous limestones (grainstones) that are dolomitic in part. The "upper unit" (fig. 6) consists of shales and thin grainstones lithologically similar to the "lower unit". However, the grainstones of the "upper unit" commonly develop into one or more massive ledges that dominate the upper unit in many places. The Warsaw contains abundant bryozoan fossils, and brachiopods, gastropods, and echinoderms are common. Geodes ranging in size from fists to basketballs are moderately abundant in the formation, especially in the more shaley intervals of the "lower unit". The unit we have tentatively identified as "Sonora", consists of a fine-grained, greenish grav sandstone similar to that which

limestone (grainstone), in beds ranging from a few inches to more than 2 feet thick. Dolomitic limestone beds occur in places. Some grainstone beds are separated by thin clay or shale partings. Nodular to lenticular masses of chert are abundant in some intervals. Only the upper 10 to 30 feet of the Burlington-Keokuk crops out in the Fishhook quadrangle in the south. It is found along McKee Creek in the eastern part of Sec. 32, T2S, R4W, Brown County, and the northeast corner of Sec. 5, T3S, R4W, Pike County as well as along an unnamed creek in the central and western part of Sec. 4, T4S, R5W, Adams County.

G New Albany Shale (155 to 320 feet) consists of:

McCraney Limestone (0 to 60 feet) Consists of alternating thin layers of light gray to buff lithographic limestone with buff to brown, very fine-grained dolomite. A bed of coursely oolitic limestone forms the top of the McCraney where the formation is thinkest. In the area of mapping, the McCraney is unconformably overlain and, in places, completely truncated by the Burlington Limestone.

Hannibal-Saverton Shale (75 to 150 feet) Shale and siltsone, gray to green to greenish gray. Overlies the Grassy Creek.

Grassy Creek-Sweetland Creek (80 to 170 feet) Grassy Creek, shale, brownish black, pyritic, finely laminated, overlies the Sweetland Creek. Sweetland Creek, shale, greenish-gray, interbedded with olive-black laminated shale.

Sylamore Sandstone (0 to 5 feet) Consists of a single thin bed of pyritic, phosphatic, well rounded quartz grain sand-stone.

H Cedar Valley-Wapsipinicon Formations (0 to 120 feet) Brown to brownish gray limestones. The Cedar Valley is thicker and more coarsely crystalline, fossiliferous and sandier than the Wapsipinicon. The Hoing Sandstone Member, occurs as a lenticular sandstone at the base of the Cedar Valley.

I Silurian, undifferentiated (0 to 130 feet) Equivalent to the Alexandrian Series, Kankakee and Edgewood Formations. Kankakee, (0 to 124 feet). Limestone, white to light gray, lithographic to coarsely crystalline, with abundant pinkish grains and green stylolitic shale partings. The oil-bearing interval is dolomite, light greenish gray, sucrosic and vuggey. Edgewood, (0 to 6.5 feet?) dolomite, light tan-gray, sucrosic and vuggy. Noix Oolite Member, (0 to 1.5 feet), oolitic limestone, light tan to gray, and dense. Basal Edgewood consists of up to 5 feet, dolomite, green, very fine grained, pyritic and silty resting directly on the Maguoketa.

					upper facies is locally cross-bedded with tabular to irregular channel-filling bed forms; Lower facies is characterized by well-laminated tidal bundles deposited in a broad sheet.	occurs below the Salem in adjacent quadrangles. Its occur- rences were very patchy and it was not observed in the same locations as the "Salem" lithologies. Outcrops of the Salem	J Maquoketa shale (25 to 190 feet) Consists of an upper green shale that grades downward to a middle zone of tan to
-	×	McCraney Limestone	0 - 60		•	occur only as thin, discontinuous lenses on top of the thick	light greenish shaley, silty dolomite, and a lower zone of brown
	⊃	New Albany Shale	155 – 320	G	Purington Shale Member (0 to 70 feet) (figs. 1 and 2) At the base, a dark gray, calcareous shale that contains marine fos-	carbonates of the "upper unit" of the Warsaw Formation. The Salem Limestone consists of thin, discontinuous lenses of	to brownish gray shale.
		Sylamore Sandstone	0 – 5		sils. Remainder of unit consists of medium gray to bluish gray silty shale grading up to sheet facies of lower Pleasantview	dolomitic sandstone or white crinoidal grainstone that contains foraminifera and lithologies similar to those observed in the	K Galena Formation (150 to 200 feet) Dolomite to dolomitic limestone, light brown to greenish gray, medium to finely crys-
	2	Cedar Valley–Wapsipinicon Formations	0 – 120	н	Sandstone.	Salem Limestone identified elsewhere in the state.	talline, with common vesicular porosity.
SIL	A-N	Silurian Carbonates (undifferentiated)	0 – 130	I	Mecca Quarry Shale (0 to 10 feet) (figs. 1 and 2) Black fissile	Subsurface Only	Note: See report accompanying this map for references.
DR	H-CN	Maquoketa Shale	25 – 190	J	shale that contains limestone lenses and concretions, upper contact gradational with overlying Purington.	F Burlington-Keokuk Limestone, undifferentiated (180 to 255 feet) Light gray to buff, fine to coarse grained, crinoidal	
0	0	Galena Formation	150 – 200	К			

Generalized columnar section. A-N = Alexandrian-Niagaran, CH-CN = Chapmlainian Cincinnatian, M = Middle, U = Upper, K = Kinderhookian, Dev = Devonian, Sil = Silurian, Ord = Ordovician. Only the upper most part of the Keokuk and above are exposed in the quadrangle. McCraney-Galena interval is condensed to save space.



Figure 1 Exposure of the Colchester Coal. Carbondale Formation. NE¹/₄ SW¹/₄ NE¹/₄ Sec. 5, T5S, R5W, Adams County, IL.



Figure 2 Exposure of 1–2 feet of gray Purington Shale Member over 6 feet of Mecca Quarry Shale Member containing large septarian limestone concretions. Pennsylvanian. Carbondale Formation. NW¼ NW¼ SE¼ SE¼ Sec. 32, T1S, R5W, Adams County, IL.







Figure 3 Basal Pennsylvanian Sandstone in Tradewater Formation filling scour or erosional contact on blue gray shales of the Warsaw Formation. NE¹/₄ SE¹/₄ SE¹/₄ NW¹/₄ Sec. 21, T2S, R5W, Adams County, IL.

Figure 4 Typical exposure of the St. Louis Limestone. NW1/4 NE1/4 NW1/4 SE1/4 Sec. 5, T5S, R5W, Adams County, IL.



Figure 5 Exposure of the St. Louis Limestone on shales of the "lower" Warsaw where the carbonates of the "upper" Warsaw have been eroded. SE¹/₄ NE¹/₄ NE¹/₄ SW¹/₄ Sec. 5, T5S, R2W, Adams County, IL.



Figure 6 Typical exposure of the dolomitic grainstone found in the "upper" Warsaw Formation. North center of the NE¼ SW¼ SE¼ Sec. 5, T5S, R5W, Adams County, IL.

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