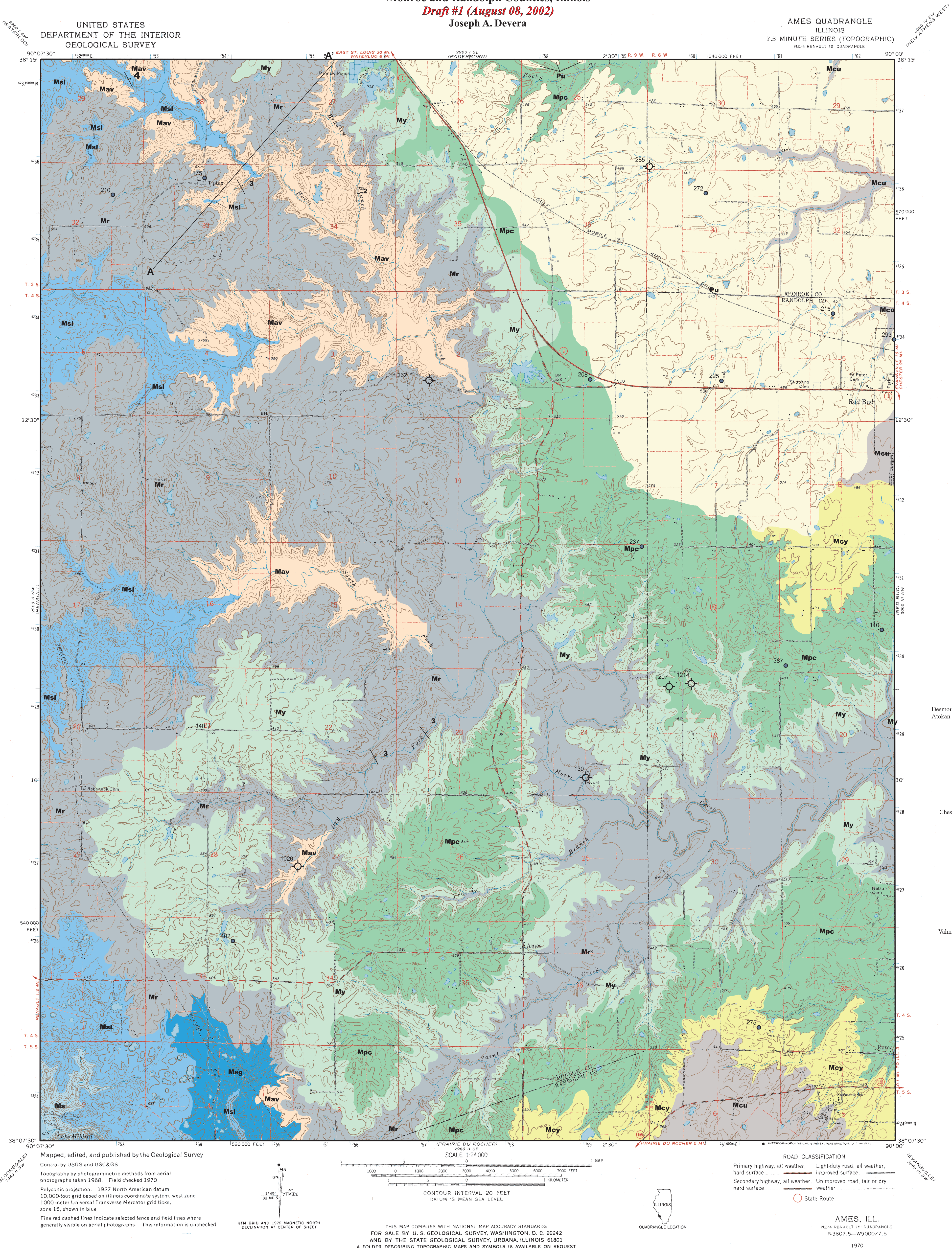


BEDROCK GEOLOGIC MAP

Ames Quadrangle
Monroe and Randolph Counties, Illinois
Draft #1 (August 08, 2002)
Joseph A. Devera

AMES QUADRANGLE
ILLINOIS
7.5 MINUTE SERIES (TOPOGRAPHIC)
RE-4 SERIAL 10 QUADRANGLE

Ames Quadrangle
Bedrock Geologic Map
Monroe and Randolph Counties, Illinois
Illinois Geological Quadrangle Map
IGQ Ames-48G, 1:24,000



Mapped, edited, and published by the Geological Survey

Control by USGS and USACE

Topography by photogrammetric methods from aerial

photographs taken 1968. Field checked 1970

Polycyclic projection. 1927 North American datum

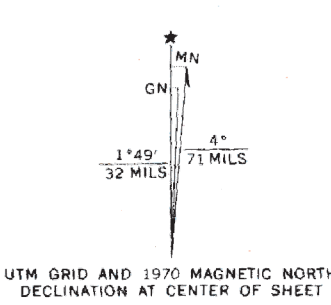
10,000-foot grid based on Illinois coordinate system, west zone

1000-meter Universal Transverse Mercator grid ticks,

zone 15, shown in blue

Fine red dashed lines indicate selected fence and field lines where

generally visible on aerial photographs. This information is uncorrected



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file: ameBG1.cdr
export file: ameBG1.eps

SYSTEM	SERIES	GROUP OR SUBGROUP	FORMATION	GRAPHIC COLUMN	AVERAGE THICKNESS (feet)	DESCRIPTION UNIT	Description
Pennsylvanian	Desmoinesian and Aftonian		Pennsylvanian Undifferentiated		0-60	A	Pennsylvanian Undifferentiated A. Sandstone, shale, siltstone, limestone and coal. Sandstone is composed of medium to coarse grained quartz arenite with quartz cement overgrowths and mica. Shale medium gray are interbedded with the basal sandstone. Siltstones are greenish-gray and can be variegated red and dark gray. Pyrite is common along with carbon streaks and abundant mica. Limestone is argillaceous dark gray containing dark gray shale partings and brachiopod remains. In the upper part of this unit coal become more continuous with gray rooted zone or underlay. The basal sandstone is unconformable with the underlying unit.
			Chesterian Undifferentiated		90	B	Renaute Limestone F. Limestone and shale. The limestone is medium gray shaly in places. It is a crinoidal wackestone to packstone. <i>Onychocrinus</i> sp. preserved as a whole articulated crinoid have been found within the shaly zones of this unit. The limestone is dense in certain beds but can contain numerous blastoids of the genus <i>Pentremites</i> . The base is unconformable with the underlying sandstone but locally contains a rounded carbonate conglomerate. Clasts from the conglomerate are comprised of lime mudstone, chert, and grainstone pebbles. Sand is a common component in the matrix of the conglomerate. In some areas where the limestone conglomerate is preserved the material is cross bedded. On the western side of the quadrangle this unit overlies both the Aux Vases and St. Louis Formations in places.
Mississippian			Cypress		40	C	Chesterian Undifferentiated B. Shale and limestone. Shale is the dominant lithology in this unit. The shales are typically dark gray to medium gray and in part silty. A red shale occurs below the upper limestone bed. The limestone has fossiliferous shale partings but consists of light gray, fossil packstones, and grainstones. The carbonate is dominated by crinoidal debris that are typically cross stratified. The basal contact is sharp but conformable with the underlying sandstone.
			Paint Creek		60	D	Cypress Sandstone C. Sandstone. This unit is composed of a light gray, fine to medium quartz arenite that is partly shaly. The shale is a minor component but occurs as wavy to flaser bedding in the upper portion of the formation. Middle and lower parts of the unit are dominated by well sorted quartz sandstones that yield cross laminations.
Valmeyeran			Renault		45	E	Paint Creek Formation D. Limestone, shale, and sandstone. Limestones and shales are highly variable within this formation. The limestones are light gray fossiliferous grainstones to packstones that locally contain oolitic facies and red stained crinoid fragments. The limestones are interbedded with variegated red and green shales. Sandstone is thin bedded and a minor component. They are light gray, fine grained quartz arenites. The basal limestone is a fossil packstone to a shaly fossil wackestone. The lower contact is sharp but conformable.
			Aux Vases		60	F	Yankeetown Chert E. Sandstone to chert and shales. The sandstone is calcareous to silicified in nature. It is fine to very fine grained, white, light gray, red, yellow to orange. Thin bedded cherts are composed of silicified silt to fine quartz sand that has been altered by weathering. This unit displays numerous types of primary sedimentary structures i.e. current ripples, lingulid ripples, ladder-back ripples, wave ripples, load structures,
			St. Genevieve Limestone		0-80	G	St. Genevieve Limestone H. Limestone. This unit is poorly exposed in this quadrangle, it is a gray to light gray, grainstone that contains the allochems: oolites, peloidal grains and fossil grains. The unit is cross bedded within grainstone facies. Chert is not common but is present. The basal contact is conformable.
			St. Louis Limestone		300	I	St. Louis Limestone I. Limestone, dolomite and chert. Light gray to medium gray lime mudstone to fossil wackestones are the dominant lithologies of this unit. Beds of carbonate breccia are present along with boundstone facies. Yellowish dolomite beds are common. Bioturbated greenish lime mudstones occur in thin beds. Dark gray chert is
			Salem Limestone		130	J	Warsaw Shale K. Dolomitic limestone, siltstone, and mudstone. Medium-gray, crinoidal, bryozoan wackestones and packstones that contain a few brachiopods. Dolomites are gray-brown, thinly bedded, and contain chlorite-rich shale clasts. The upper half of the unit is dominated by shaly limestone and dolomite beds. The lower half contains bluish gray mudstones up to 20 feet thick interbedded with thin lime-mudstones. Conularids and gastropods occur in the shaly portion of this unit and brachiopods, bryozoans, and echinoderms are very common in the limestones and dolomites. Siltstones are calcareous and fossiliferous and thinly bedded in the lower part. The basal contact is poorly exposed but thought to be sharp and conformable with the underlying carbonate beds.
			Warsaw Shale		90-110	K	Burlington and Keokuk Limestone: L. Limestone, chert, siltstone, and shale. Light gray to white crinoidal grainstones dominate and are interbedded with nodular and bedded light gray to black cherts. The cherts, which comprise at least 25 percent of the lowermost beds are white when weathered, and some have bioclasts of crinoids and brachiopods. Sandy limestones weather light brown, are cross-bedded, and contain brachiopod molds. Large spinifers are common along with crinoids, bryozoans, and corals. Siltstones are dark gray with a greenish tint and are calcareous. The unit is conformable with the underlying unit.
			Burlington-Keokuk Limestones		190-200	L	

Pu	Pennsylvanian Undif.	Pennsylvanian
Mc	Unconformity	
My	Chesterian Undif.	
Mp	Cypress Formation	
Mr	Paint Creek Formation	
Mg	Yankeetown Formation	
Ml	Renault Limestone	
Mv	Aux Vases Sandstone	
Ms	Unconformity	
Mw	St. Genevieve Limestone	
Mb	St. Louis Limestone	
Md	Salem Limestone	
Mn	Warsaw Shale	
Mk	Burlington and Keokuk Limestones	

Data Type

Line symbols are solid where observed,
dashed where inferred, dotted where concealed

- Contact
- Line of cross section
- Strike and dip of bedding: number indicates degree of dip
- Horizontal bedding
- Vertical joints
- Water Well with depth of boring in feet
- Oil Well with depth of boring in feet

Geology of the Ames Quadrangle

The Ames Quadrangle is located in the southern part of the St. Louis Metro-East area. This quadrangle comprises the southeastern portion of the Salem Plateau Karst Region. The oldest rocks in the mapped area is the Salem Limestone (Mississippian). The Youngest rocks are Middle Pennsylvanian siliciclastic with thin coals and limestones.

Regional strike is N 40°W with an eastward dip of 2 to 3 degrees. No faults were observed in the quadrangle. However, complex stratigraphic relationships do exist within the Chesterian Series, for example, there is a unconformity that superimposed the Renault Limestone over St. Louis Limestone on the western side of the Ames Quadrangle. Farther east both the St. Genevieve Limestone and the Aux Vases Sandstone are present between the St. Louis and Renault formations.

The Ames Quadrangle is bisected from northwest to southeast by Horse Creek. East of Horse Creek is a broad flat area represented by horizontal Pennsylvanian shales and sandstones in the northeastern corner. The larger area to the southwest yields a rolling topography that is composed of Chesterian strata dipping 2 to 4 degrees to the east and northeast. Chesterian strata is made-up of alternating limestones, sandstones and shales.

The incised valley observed in the Paderborn Quadrangle, to the north, is also well exposed at Tipton Church in Horse Creek. Here over 80 feet of the Aux Vases Sandstone is exposed in a canyon cut by the creek. The Aux Vases is confined within the St. Louis Limestone in this area. Conodonts taken from "windows" of limestones, at the base of the Aux Vases verify the age and the formation as being St. Louis. The incised valley continues south and southeast into the Red Bud Quadrangle.

Areas where the Pennsylvanian sandstones and shales are common in the northeastern corner of the quadrangle show an angular unconformity between the Chesterian rocks and the overlying Desmoinesian rocks. The Chesterian strata dip gently to the east and subcrop below the nearly horizontal Desmoinesian strata. Where the creeks scour below Desmoinesian rocks Chesterian rocks can be seen. In Rocky Branch Creek and other small tributaries south, the creeks erode below the Pennsylvanian and expose Chesterian strata that progressively get younger to the east. A "window" of Paint Creek exposure can be seen in Rocky Branch Creek in Section 25, T. 3 S., R. 8 W. Rocks as young as Golconda Formation have been mapped as Chesterian undifferentiated on the map, in Sections 29 and 32, T. 3 S., R. 8 W., and Sections 5 and 8, T. 4 S., R. 8 W.

Looking Northwest

