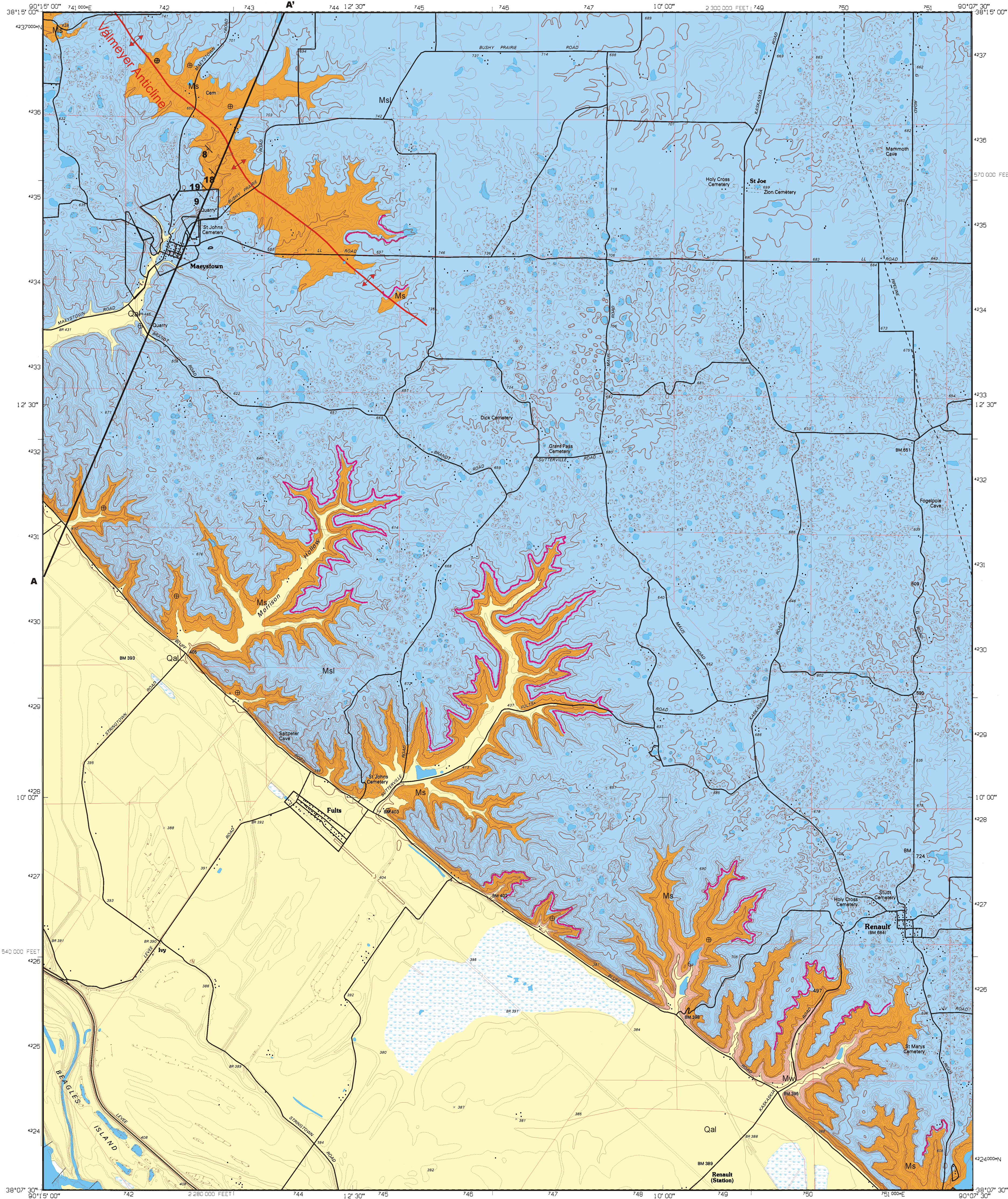


BEDROCK GEOLOGIC MAP

Renault Quadrangle, Monroe County, Illinois

J.A. Devera (2000)

Graphic Column of the Renault Quadrangle



SYSTEM	SERIES	Group or Subgroup	FORMATION	MEMBER and Bed	GRAPHIC COLUMN	THICKNESS (feet)	DESCRIPTION UNIT	Descriptions of Rocks within the Renault Quadrangle by J.A. Devera
Quaternary	Holocene		Alluvium Undifferentiated Till and Terraces			0-175	A	A. Alluvium, Colluvium, Loess and Till. Size fraction ranges from clay to gravel in these deposits. Bottomland alluvial deposits consist of unconsolidated quartzose sands ranging from coarse to fine grained, yellow, gray, and bluish laminated and massive clay also present. Bedforms include large scale trough cross bedding, ripple bedding, and laminated sediments. Colluvial deposits include clay, silt, sand, and gravel. The gravel portion is composed of chert and limestone clasts from the regolith found mainly in stream beds. Loess is tan to reddish down section, primarily composed of quartzose silt and clay. Upland glacial deposits consist of bluish gray to tan diamictum with a mixture of igneous, metamorphic and local bedrock clasts in a sandy, silty clay.
	Pleistocene		St. Louis Limestone	Chert Breccia Zone Colonial Coral Zone		0-250	B	B. Limestone and Chert. Light to medium gray lime-mudstone facies with fossil wackestone facies, occur in medium to thick massive beds, chert nodules present with minor amounts of greenish shale. Occasional dolostone beds and grainstone beds also occur in this formation. The massive lime mudstone beds display conchoidal fracture. Chert gray banded nodular and bedded also fossiliferous in places. This unit contains pelletal packstone facies. In the lower part of this unit a colonial coral, <i>Acrocyathus flouriformis</i> forms an acme horizon through out the study area. Karst development is commonly associated with this formation and is seen as sinkholes, springs dry streams and caves. The basal contact interfingers with the underlying grainstone.
Mississippian	Valmeyeran	Mammoth Cave Megagroup	Salem Limestone			0-150	C	C. Limestone and Chert. White to light gray fossiliferous grainstone cycles with laminated lime-mudstone facies. Grainstones contain oolitic, peloidal, and fossil fragment allochems. Common fossils include: foraminifera, ostracods, calcareous algae fragments of bryozoans, echinoderms, rugose corals, and brachiopods. The index fossil <i>Globoendothyra baileyi</i> is only found in this unit. Chert is seen as thin stringers and egg-like or oblate spheroidal nodules containing fossils and banding. Some of the egg-like chert nodules spill-off in thin layers. Thin dolostone beds occur through out this formation. The contact is gradational with the crinoidal-bryozoan-rich unit below.
			Warsaw Shale			0-90	D	D. Limestone and Shale. Light gray crinoid-bryozoan packstone in the upper portion of the formation. Yellow dolostone beds and thin siltstone beds common in this unit. Large spiriferid brachiopod <i>Syringothyris</i> sp. are abundant in the lower part of the carbonate portion of this formation. These brachiopods are silicified in some of the beds and are well preserved. They are a diagnostic character of an acme horizon this unit in the study area. Large derbyid brachiopods are also common through out the formation. Shale and siltstones occur lower and are dark gray to bluish gray. Limestone lenses with profuse fenestrate bryozoans are common within the shaly portion. Calcite and dolomite crystal filled nodules occur in the silty shales. The lower contact gradually becomes dominated by crinoidal grainstones of the lower unit.
			Burlington-Keokuk Limestone			100-150	E	E. Limestone, cherty limestone, dolomitic limestone. Light gray to white crinoidal grainstones dominate and are interbedded with nodular and bedded light gray to black cherts. The cherts are white when weathered and some show biocasts of crinoids and brachiopods. The unit is very poorly exposed in this quadrangle but from well logs is known to contain dolomites and glauconite along with the crinoidal grainstones. Cherts are dark gray to white and may be bioclastic.
			Fern Glen Formation			80-130	F	Subsurface only (described from drill logs, reports, and from exposures in adjacent quadrangles)
			Brandonbridge Formation			18		F. Argillaceous cherty limestone, calcareous siltstone, and shale. The limestone is greenish gray, thin bedded, argillaceous, and contains small calcite geodes, and crinoid stems. In places the unit is dominantly thin, irregularly bedded, lime mudstone with cherty, crinoidal wackestone and packstone facies. The siltstones and shales are greenish and reddish and usually calcareous. A yellowish dolostone facies may also be present. The lower part of this unit is unconformable with the underlying sediments.
Silurian	Alexandrian		Kankakee Formation			40-70		G. Dolostone and limestone. Light gray to tan, massive beds, light gray chert nodules, and occasionally calcareous siltstones. Lower in this section the units becomes more argillaceous and in part glauconitic.
			Edgewood Formation			32		H. Calcareous siltstone, mudstone, argillaceous dolostone. The lower part of the formation is calcareous and it grades upward into bluish green, thin calcareous siltstones interbedded with bluish gray mudstones. The upper part is shaly buff gray to greenish gray, and has interlaminated silts and shales.
			Maquoketa Formation					I. Limestone, dolomite, minor shales. Yellowish-gray limestone and dolomites with minor red and green shale partings.
Ordovician	Cincinnatian							
	Champlainian		Kimmswick "Trenton"					

Holocene and Pleistocene	Qal	Quaternary undifferentiated	Quaternary
		Unconformity	
	Msl	St. Louis Limestone	
	Ms	Salem Limestone	
	MsL	Warsaw Shale	Mississippian
	Msk	Keokuk and Burlington Limestones	
		Cross Section Only	
		Unconformity	
	Mlg	Fern Glen Formation	
		Unconformity	
	Su	Unconformity Joliet Kankakee Edgewood	Silurian
		Unconformity	
	Ou	Ordovician Undifferentiated	Ordovician

Introduction

The Renault Quadrangle is located on the western edge of the Salem Karst Plain. This area contains a high density of sinkholes, caves and springs due to limestone dissolution. Regional dip in this area is basinward to the east-northeast and varies between 2 degrees and 3 degrees. The oldest formation exposed in the quadrangle is the Warsaw Shale. It is exposed in the southeastern corner of the quadrangle. Above the Warsaw is the Salem Limestone; it is well exposed along Bluff Road and north of Maestown, Illinois. The most extensive unit exposed is the St. Louis Limestone. It covers most of the quadrangle and is mantled with glacial till and loess. The St. Louis is highly susceptible to karstification. Mainly composed of lime mud matrix and calcareous fossil hash, the St. Louis Limestone is broadly exposed to dissolution where drift is thin. The sinkholes also appear to be partly controlled by the structural attitude of the limestone beds.

Two karst basins are seen in the Renault Quadrangle. The largest observed is south of St. Joe, Illinois and parallels strike of the bedrock which is N 40 degrees W. Fogelpole Cave is a part of this karst basin. The sinkholes occur in the St. Louis and form along a northwest-southeast trend. The other karst basin occurs in the northeastern corner of the quadrangle. It includes Mammoth Cave of Illinois Caverns. Both of these basins are separated by a bedrock high that trends northwest-southeast through St. Joe, Illinois. Nearly all of the karst is confined to the St. Louis Limestone with one exception. One cave found in the southwest corner of Section 31, T.4S., R.9W., occurs in the Salem Limestone and upper Warsaw Shale.

Stratigraphy

Although the stratigraphic relationships are quite simple with rock exposures of only the Valmeyeran Series in this quadrangle an important Acme Zone is present. In the lower part of the St. Louis Limestone the colonial coral *Acrocyathus flouriformis* is profuse along a narrow horizon and mappable over a distance of several miles. This is locally a consistent horizon that occurs from 20 to 40 feet above the base of the St. Louis Limestone.

Structural Geology

In Maestown Creek, northeast of Maestown, Illinois strata of the St. Louis Limestone and underlying Salem Limestone dips to the southwest bringing the middle part of the Salem to the surface. This represents the

southern-most extension of the Valmeyer Anticline in the Renault Quadrangle. In this area, the Valmeyer Anticline strikes N 40 degrees W, and dips vary from 8 degrees to 19 degrees on the southwest limb and 2 degrees to 3 degrees on the northeast limb. This structure is monoclinical as regional dips are 2 degrees to 3 degrees to the northeast. The structural theme is strikingly similar to the Waterloo-Dupo and Cap au Gres folds. No faults were observed in streams that cut across the anticline. The only fault seen in the quadrangle was antithetic to the trend of the Valmeyer structure. The trend of the small normal fault is N 40 degrees E with 2 foot offset down to the southeast within the Salem Limestone. The fault is located along the bluff near St. Johns Cemetery. The fault plane dips 75 degrees SE.

Economic Geology

There have been oil tests along the Valmeyer Anticline in the Renault Quadrangle. However, no oil production has been obtained as the Kimmswick Limestone (Trenton), which is the principal producing horizon in the Waterloo-Dupo Fields, is exposed at the surface on the Valmeyer Anticline in the Valmeyer Quadrangle (Nelson, 1995). The up-dip direction on this fold is toward the northwest.

The only economic use of earth material in this quadrangle in the past was limestone. Abandoned limestone quarries were found in both the St. Louis and Salem Limestones. Most of the quarries are centered around Maestown, Illinois and were used to cut limestone blocks for the construction of buildings, houses and bridges in Maestown. Quarry sites in the St. Louis Limestone were found in Section 32, T.3S., R.10 W., just north of Maestown and Section 5, T.4 W., R.10 W., just south of the town. Two more remote quarries occur in the Salem Limestone. They were found at the head of Morrison Hollow in Section 9, T.4 S., R.10 W.

References

Nelson, W.J., 1995. Structural Features in Illinois, Illinois State Geological Survey Bulletin 100, 144 p. 2 p.

Line Symbols: Solid where identified, dashed where inferred, dotted where concealed.

Contact

Line of cross section

Anticline, asymmetrical: gentle slope on the longer side of the arrows.

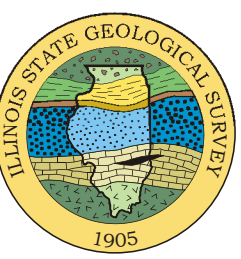
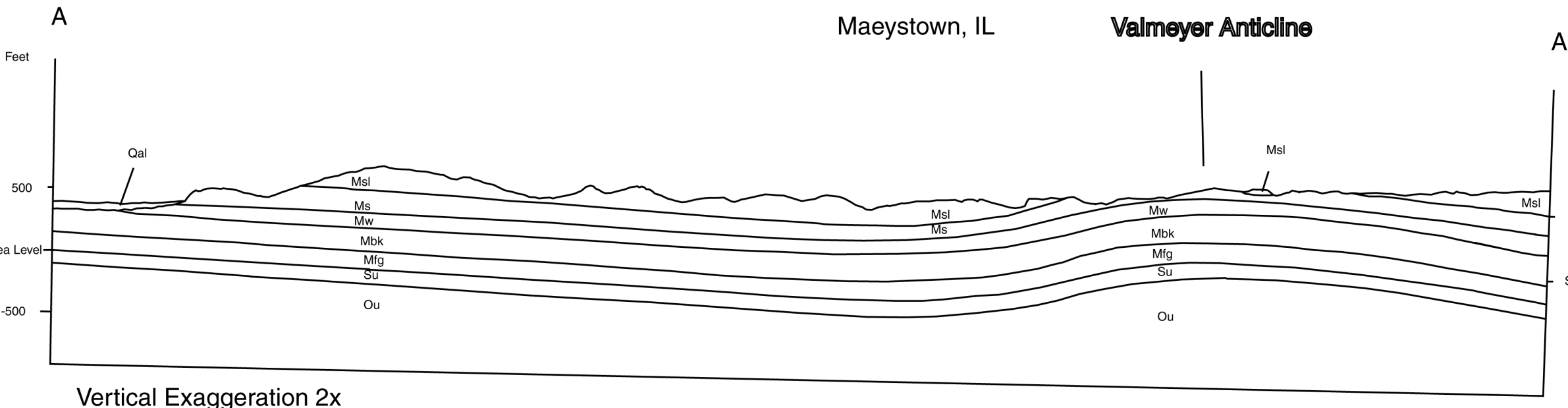
Acrocyathus flouriformis Zone

Symbols

Strike and dip of bedding: number indicates the degree of dip

Horizontal bedding

Abandoned quarry



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Acknowledgments

This map is one of a series prepared for the USGS 7.5-minute Renault, IL Quadrangle by a multidisciplinary team of geologists from the Illinois State Geological Survey (IGS). This series will characterize surface landscapes; surface, bedrock, and engineering geology; and delineate coal, and sand and gravel resources. This map was significantly improved through review, suggestions, and comments by the following individuals: F. Brett Denny (IGS), Shay Bealrand