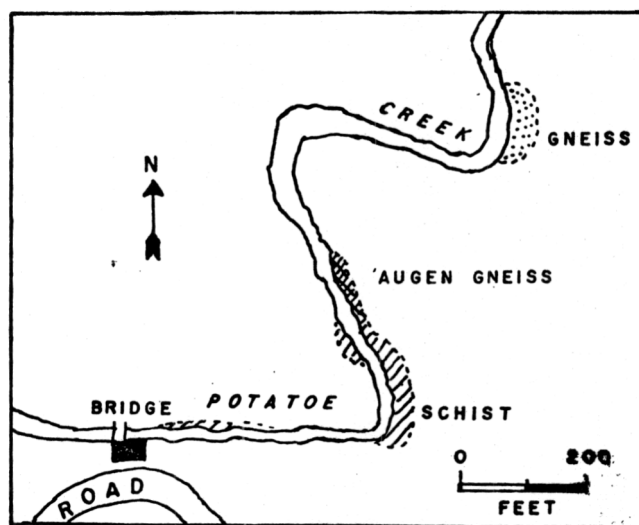
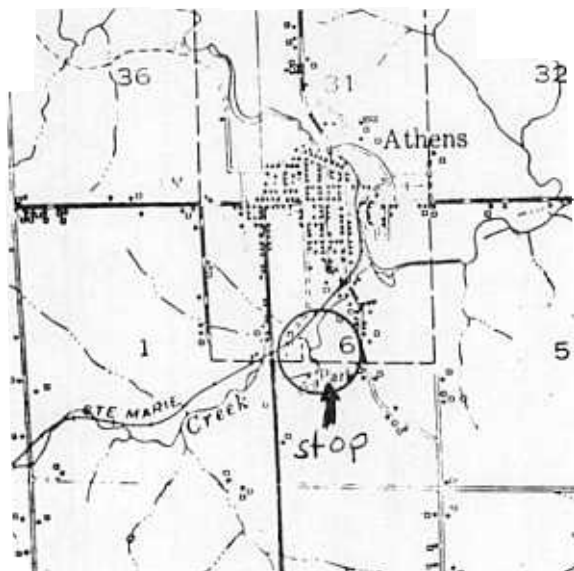


Title: Sheared Gneisses, Athens County Park

Location: NE $\frac{1}{4}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 6, T.29N., R.4E.
(Athens 15 Minute Quad.) Marathon Co.



Author: Gene L. LaBerge

Description: Several major fault zones cross Marathon County. This is a continuation of the same zone we visited at the previous stop but here the older gneisses have been caught up in the shearing.

At the south end of the exposure (refer to sketch map), the rock is very schistose, consisting of quartz, plagioclase, hornblende, biotite, epidote, chlorite and minor magnetite. The hornblende is moderately to well foliated and lineated. The rock was interpreted by Weidman (1907) as a meta graywacke, and part of the Hamburg Slates that occur northeast of here. The mineralogy and texture of the rock suggests that it may be a meta graywacke.

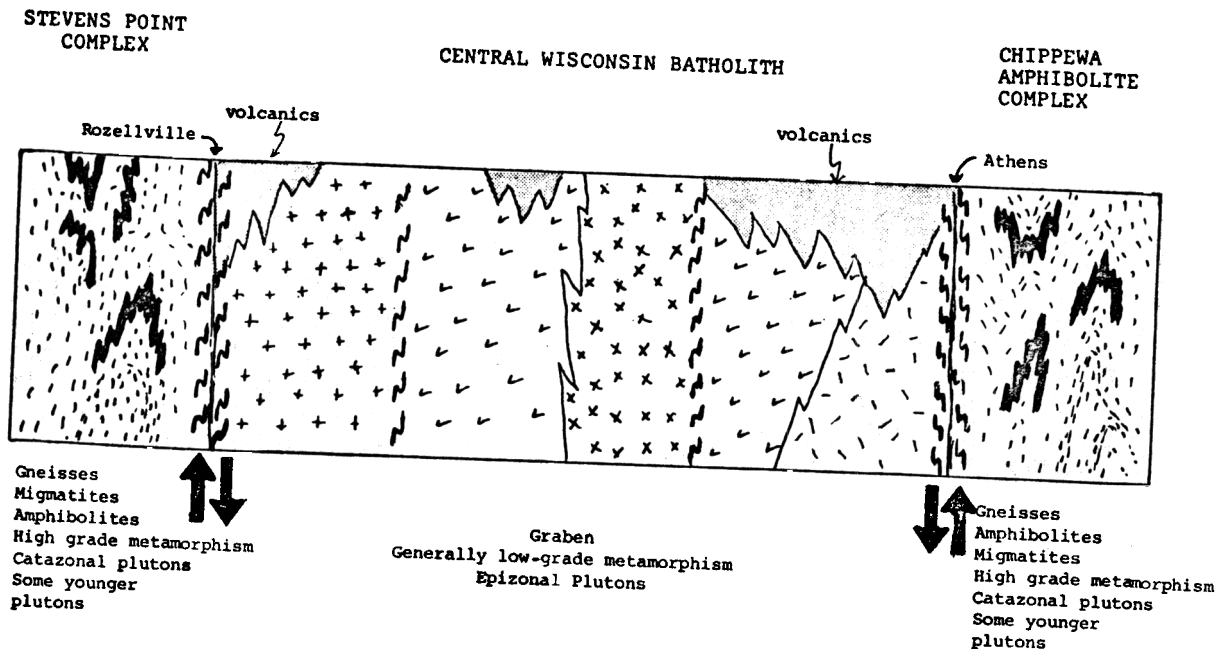
North (downstream) from the schist are several outcrops of biotite-rich, well-foliated augen gneiss. The biotite encloses lens-shaped pods of quartz and feldspar. This rock appears to be a highly sheared intrusion, or perhaps a sheared gneiss. The larger grains are somewhat cataclastic, but the finer matrix has been thoroughly recrystallized.

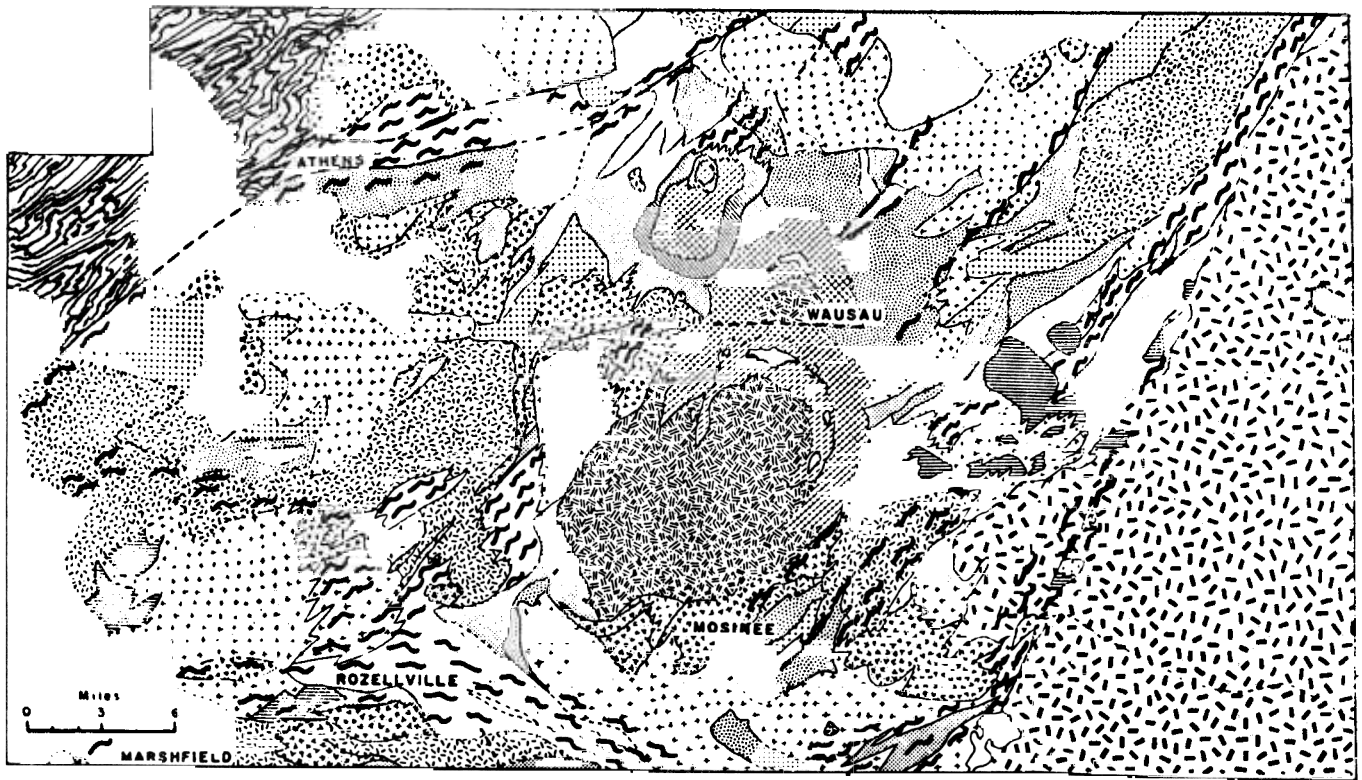
Exposures of fine-grained pink granitic gneiss with several large quartz veins are present about 200 feet northeast of the park boundary, and gneisses and mylonites are exposed in the valley of Black Creek near the bridge on Hwy. 97 at the north edge of Athens.












































































































































































































Significance: A major structural boundary passes through Athens trending about N60°E. South of the lineament are volcanic rocks and granites that have been only slightly metamorphosed. North of the lineament the rocks are high grade gneisses, amphibolites and migmatites (LaBerge, 1977). Along the lineament are mylonites, phyllonites and other intensely sheared rocks along with a number of ultramafic bodies, such as we saw at the last stop. The width of the shear zone ranges up to nearly 2 miles, so that large volumes of rock have been sheared. In places (such as the last stop) the shearing affected mainly the low-grade volcanic and sedimentary rocks. The gneisses as well as sediments have been involved in the shearing here. A similar shear zone along the south side of Marathon County (see County map) brings gneisses into contact with low grade volcanics and intrusions. The gneisses are common to the south.

The presence of low-grade metamorphic rocks bounded on the north and south by gneisses and separated by broad shear zones containing ultramafic bodies indicates large scale block faulting. The low-grade volcanics and granites appear to occupy a graben-like structure with horsts of gneisses uplifted to both the north and south. The diagram illustrates these relationships across this part of Marathon County.

These large scale faults appear to have been active over several hundred million years of time, and represent the major structural features in central Wisconsin.





EXPLANATION		
	Paleozoic sandstone and Quaternary alluvium and glacial till	
LATE PRECAMBRIAN		
	Nepheline Syenite	
	Syenite	
	Quartz Syenite	
	Ninemile Granite	
	Wolf River Batholith	
		
		
		MIDDLE PRECAMBRIAN
		
		
		
		
		
		
		
		EARLY PRECAMBRIAN
		
		
		
		
		
		
		
		
		ULTRAMAFIC ROCKS
		
		
		
		
		
		
		
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