Gifts of the Ice: The Geology of Pope Farm

A Self-Guided Tour of Pope Farm Conservancy

FRIENDS OF POPE FARM CONSERVANCY
... preserving the land and its stories

Tour Length: *One and a half hours*

Please note—tour trail covers moderate to steep terrain.

Text and photo credits: Stephanie Williams and Miguela Fry

Welcome!

What's so great about Wisconsin? Just about everything! We have lakes and rivers, farmlands and forests, and some of the oldest and youngest rocks in the world. Wisconsin has changed a lot over the billions of years of its geologic history. This self-guided tour will take you on a journey through Wisconsin's geologic story as told by Pope Farm Conservancy.

Station 1: Glacial Geology Amphitheater

Pretend you are back in time 18,000 years ago. You're sitting near the edge of a huge ice sheet, called the Green Bay Lobe of the Laurentide Ice Sheet. The land that will become Pope Farm Conservancy is near the edge of this glacier. Ice covers much of North America and reaches its maximum extent in this area at the Johnstown End Moraine, just east of Timber Lane, about 1.5 miles to the west of the park. The land further west of that was never glaciated and is called the Driftless Area.

The continental ice sheet is made of many glaciers that act like slow, frozen streams. When the climate is cold, they flow far to the south. When the climate warms, they melt northward faster than they flow south. When the ice flows and melts at the same rate, rocks in the ice melt out and pile up, forming a ridge called a moraine. You are standing on such a ridge, where the ice paused, called a recessional moraine.

Station 2: Stone Fence and Rhyolite

The stone fence was almost entirely built of rocks carried by the glacier. You may spot cobbles of local light gray dolomite and brown sandstone. Each spring rocks appear at the surface as a result of frost action. Farmers removed these rocks from the fields and built this stone fence.

Do you see the red boulder? This particular stone is called *rhyolite*. It is unique because we know where it came from. Although we can guess where most of the other rocks here came from, we're unable to determine their exact locations. Rhyolite can only have come from Lake Superior. As the ice moved over the rhyolite bedrock, pieces were torn loose, were trapped in the ice, tumbled and transported to Pope Farm Conservancy.

Look at the big dark boulder on the ground close to the rhyolite facing the gap in the fence. It is polished and covered with glacial striations, which are the scratches caused when rocks slide against other rocks in the glacier, like a rasp on wood.

Station 3: A View from a Moraine

Walk a few feet west to the top of the ridge. You are standing on one of two adjacent recessional moraines, where the glacier's front paused before continuing to melt northward. You can see the front edge of the moraines slope where the tall oaks are. The second is downhill to the north.

To the southwest, you can see the wooded Johnstown Terminal Moraine in the distance through the trees. The terminal Moraine marks the southernmost advance of the last set of glaciers.

The ridge you are standing on is also a high point where three watersheds meet. Look to the east towards Madison to see the Rock River Watershed. Lake Mendota formed in an ancient river valley that was filled in with glacial sediments forming our four lakes. To the south is the Sugar River Watershed. To the north is the Black Earth Creek watershed. 18,000 years ago, the Black Earth Creek cut a deep valley into sandstone and

Looking downhill at second recessional moraine and CCC culvert on the left side of the photo.

limestone bedrock. Silt, sand, and stones melting out of the glacier choked the creek and turned it into a “braided stream” with many shallow channels. The original valley floor was buried under hundreds of feet of debris. Today Black Earth Creek is a meandering stream with vegetated banks, flowing over the glacial debris.

Station 4: Second Recessional Moraine.

Now you are standing on the second, smaller and younger moraine in the Conservancy. Glacial soil is very rich in minerals and is good for growing crops in an agricultural state like Wisconsin, but it can be full of rocks like those in the wall.

Hillside saved from erosion by conservation measures.

Station 5: CCC Culvert

The CCC (Civilian Conservation Corps) Spillway is a soil conservation structure built in the late 1930s to control erosion and slow the creation of the gully you see beyond you which was growing at a rate of six feet per year to the south. This spillway has been effective, as it has dramatically slowed the rate of erosion beyond the structure. The structure has worked, along with conservation strategies up slope, as an effective tool to conserve soil.

Station 6: Log Cabin Site

This little valley was carved into the first recessional moraine by glacial meltwater. The valley provided a protected place to build a cabin – one of many ways that the ice shaped the human history of Wisconsin. The cabin was on a steep slope and subject to erosion. Later farmers filled the cabin’s foundation with glacial stones from the surrounding fields.

Station 7: Front Edge of First Recessional Moraine

This was a favorite grazing spot of Mr. Pope’s sheep! The steep wooded slope is why this section was never farmed. Let’s consider where the front of the glacier would have been. It would have been right here! The ice would have sloped gently up to a thickness of several hundred feet thick. Chunks of ice and boulders bounced down the slope. The glacial ice would melt during the warmer weather. It was a noisy environment, with crashing boulders, creaking ice, and running water.

It was very wet and muddy. To the west of the glacier was a tundra environment, where only a few spruce trees, grasses and sedges grew.

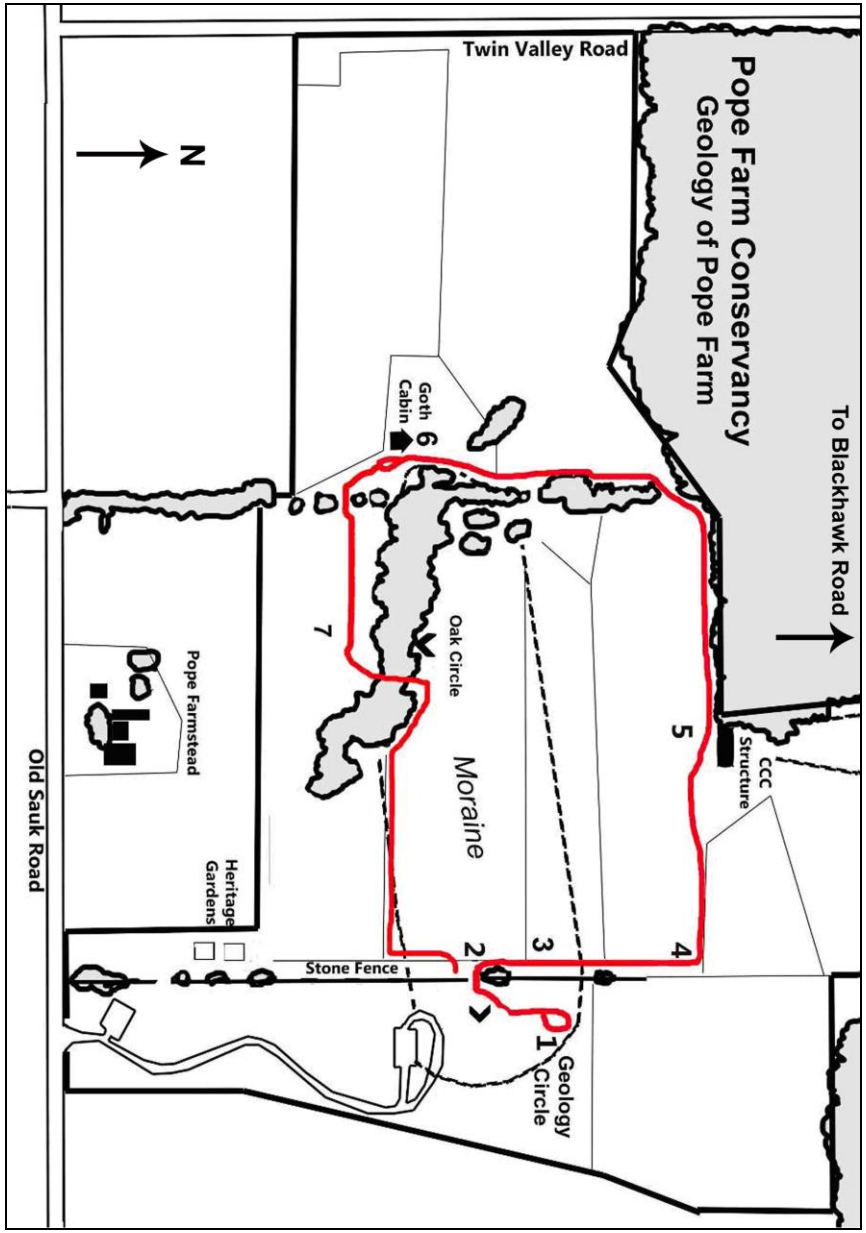
Burr Oaks on First Recessional Moraine

Thank You for Taking This Tour!

The Pope Farm Conservancy exists to help people learn about geology and our land. We are fortunate that it preserves so much of Wisconsin's glacial features. Thank you for visiting and we hope you come again!

We encourage you to check out the *Friends of Pope Farm Conservancy* web page for information about the conservancy and up coming events.

www.popefarmconservancy.org or
www.info@popefarmconservancy.org



For more information, please continue to visit:

www.popefarmconservancy.org