

# GREEN ENERGY: SOLAR

Solar panels are an advanced technology that we use to harness the power of the sun (sunlight) and turn it into energy that we can use to power our lives (electricity). Solar energy is an easy way to efficiently use a (nearly) infinite resource: the Sun.

The Sun produces a lot of energy, so much so that a mere hour and a half of sunlight hitting the Earth is enough to power the entire world for a full year.

## Is the Sun Actually a Star?

Yes! Our sun is a star at the center of our solar system. Stars are enormous masses of plasma powered by nuclear fusion in their cores, and they are responsible for elements like carbon, nitrogen, and oxygen: three of the most important elements for life in the universe.

Much like the planets, stars have different layers with different qualities, with the densest being at the center. Check out the Sun's layers below.

Corona & Chromosphere

Photosphere

Convective Zone

Radiative Zone

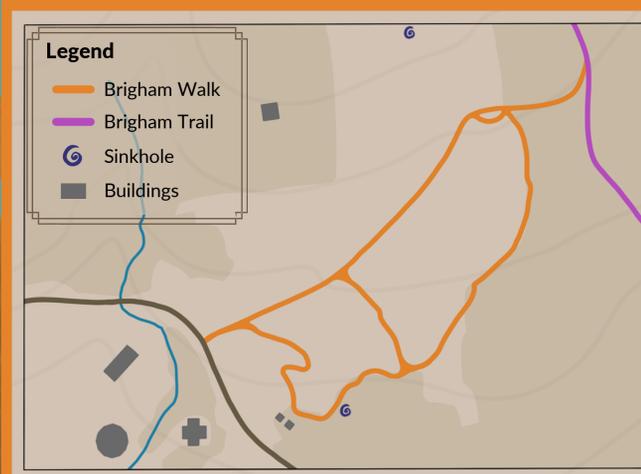
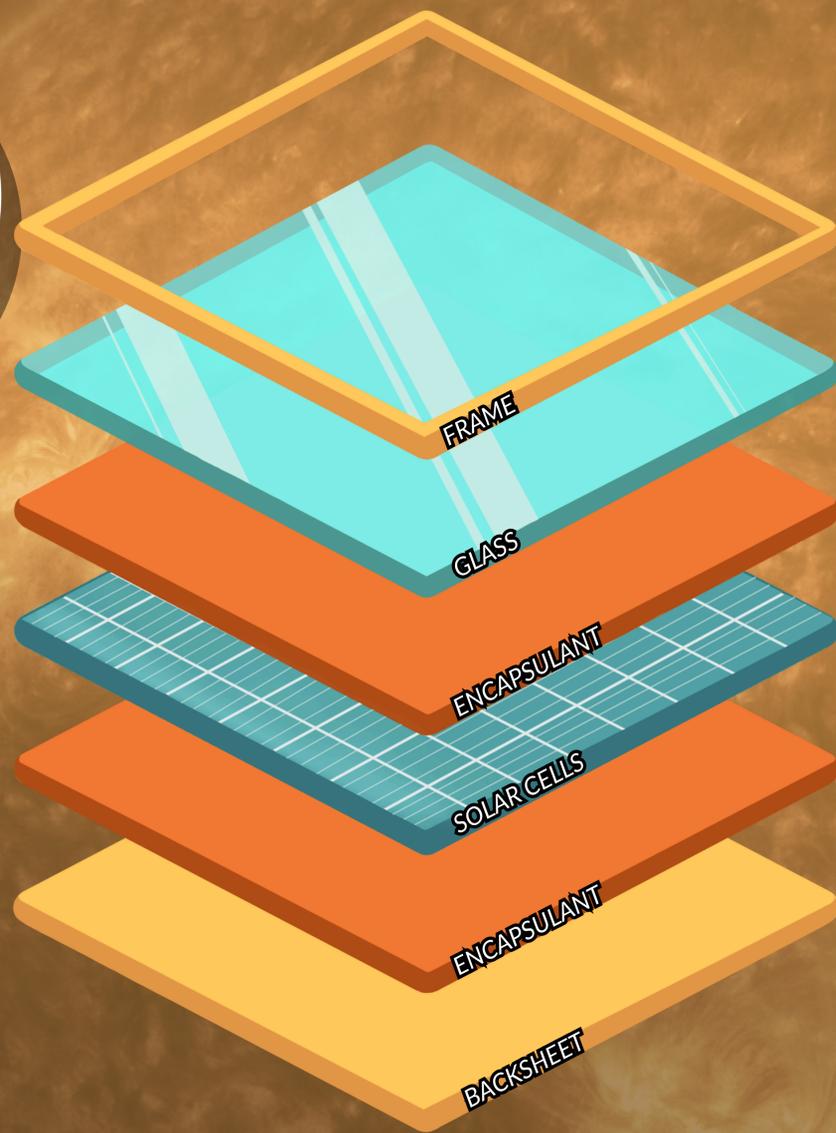
Core

**Light** is a type of electromagnetic radiation that is made out of tiny particles called Photons. To harness their power, we use **Solar Cells**.

When **sunlight** hits the solar panels, the photons excite particles and move them from the Solar Cell's Negative layer to the Positive layer.

This movement creates **electricity** to power homes, businesses, signage, and so much more!

**Solar cells** have two layers: a Positive (P) layer for positively charged particles and a Negative (N) layer for negatively charged particles.



# NATIVE PRAIRIE GARDEN

Since prairies are a unique biome, it makes sense that they would have unique plants. From special flower shapes to excessively long roots, plants have adapted in many ways to thrive in the prairie environment. Prairies are host to an astounding variety of flora and fauna that are specially adapted to survive in these unique places.

**Bright flowers**  
attract bees, butterflies, and birds which are necessary for pollination.

**Long and Narrow**  
leaves allow plants to hold their water and evaporate less. Good for dry, sunny spots.

The **grow point**  
(where new plant cells grow) is underground, so plants can recover easily after fires.

**Deep roots** keep plants in place in windy areas & provide water in dry seasons. These roots can grow to depths of up to 15 feet!

Wisconsin's prairies are host to over 400 species of native plants across 35,000 acres of grassland. The most common prairies in Wisconsin are tallgrass prairies, which have plants that can grow up to 8 feet in height!

Which plants are visible depends on the season.

**SPRING**  
Golden Alexander, Prairie Smoke, Spiderwort, Baptisia, Penstemon, Nodding Onion, Prairie Phlox, Jacob's Ladder

**SUMMER**  
Milkweed, Yellow & Purple Coneflower, various Sunflowers, Rattlesnake Master, Compass Plant, Bergamot, Glade Mallow

**FALL**  
Stiff Goldenrod, New England Aster, Canadian Wild Rye, Big Bluestem, Indian Grass, Prairie Dropseed, Switch grass, Prairie Cord grass

**WINTER**  
Dormant plants cover the ground, helping it retain moisture & insulating it from extreme temperature changes. Seed heads poke up from the snow, providing food for birds and seedlings for the future.



## See for yourself!

Different plants appear in different seasons, but you'll almost always find some recognizable flowers blossoming around you.

Look at their different features like flowers, color, leaves, and height. How many different plants can you find?



# WISCONSIN'S OLDEST OPERATING FARM

Founded in 1828 with the arrival of Ebenezer Brigham, the Brigham Farm is the oldest farm in Wisconsin still in operation today. While much of the property has been dedicated to the cave or for public enjoyment, several acres are still sown and harvested every year by local farmers.

Anna Brigham and Charles Brigham, Sr., the proprietors of the farm when the cave was discovered.



The photos here show the Brigham farm under the operation of Charles Brigham, Sr.. The large barn in the photos is the same one on our park grounds today.



## Crops and Animals Abound

Brigham Farm has gone through many phases of animals and crops. Corn, soybeans, and wheat are commonly grown in this area, and sheep, cows, and pigs were raised in the barn. Many of the animals were named after famous Shakespeare characters.

While the cave was discovered in 1939, animals were still kept by the Brighams for many years until they decided to dedicate themselves fully to the cave.



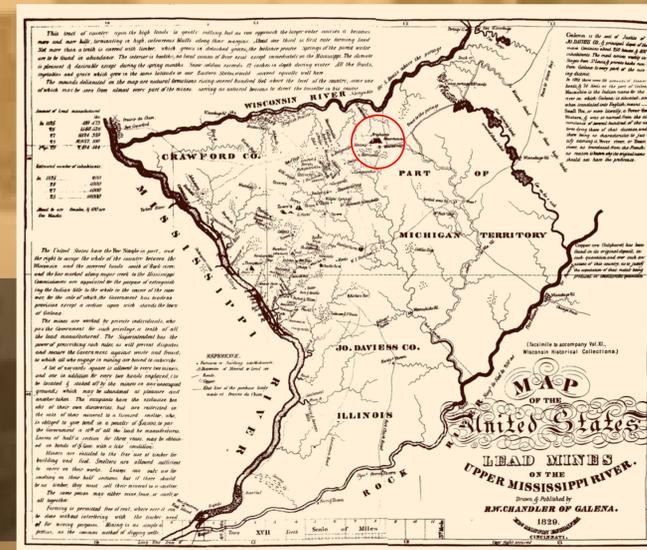
Charles Brigham, Jr. and Elizabeth Brigham along with their family dog, 1920s



The old farm at the top of the hill started operating in the 1800s and continued well after the cave's discovery.

Check out this map showing the local lead mines in 1829, one year after Ebenezer Brigham founded Blue Mounds.

Cave of the Mounds is found in the red circle. What other modern-day towns do you see?



In 1888, Charles Ilsley Brigham inherited 800 acres of farmland from his father, who inherited it from his uncle, Ebenezer Brigham. In 1903, the Brigham farmhouse was designed and built by Charles' friends: Prairie School architects Claude & Starck from Madison, and that same year, the Brigham Quarry opened for small operations and rock harvesting. It was in this quarry that the Cave of the Mounds was discovered in 1939.



# ANIMALS AROUND US

The state of Wisconsin is known for its diversity in landscape, plants, and animals, and the Driftless Region is no exception. Even in more populated areas, a wide variety of animals can be seen and heard. Stand still for a moment and see what you can find.

Just under 700 different animals call Wisconsin their home, with a distinct variety of mammals, birds, fish, insects, amphibians, and reptiles spread across the state. Some of the more famous of these include White-Tailed Deer, Bald Eagles, and Timber Wolves while chipmunks, raccoons, squirrels, and a variety of songbirds are more common sights.

Check out some common prints that can be found in Wisconsin. What differences do you notice? What similarities?



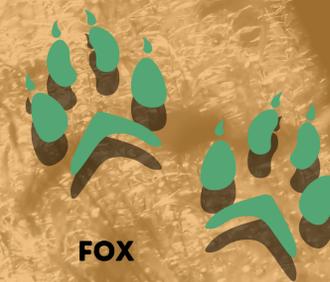
DEER



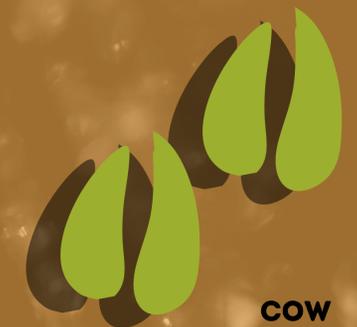
RACCOON



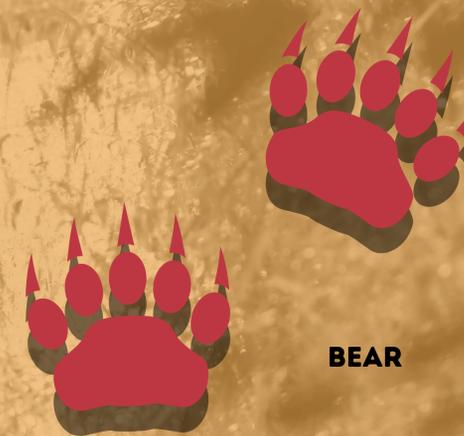
WOLF



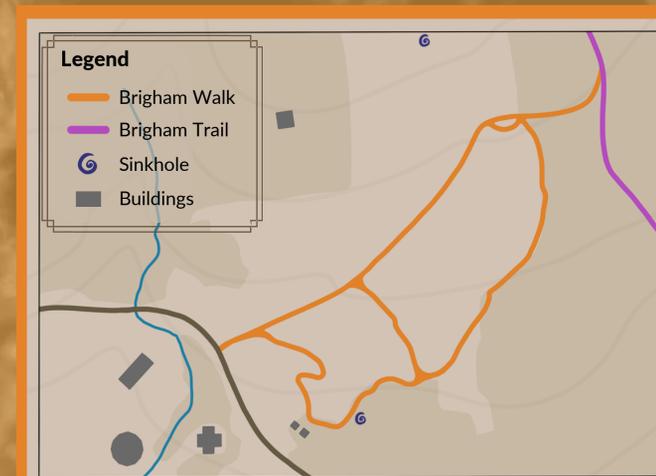
FOX



COW



BEAR



## Identifying Animal Tracks

Tracking animals is a skill used by humans for thousands of years. When trying to identify what animal left what print, there are several easily-spotted things to look for.

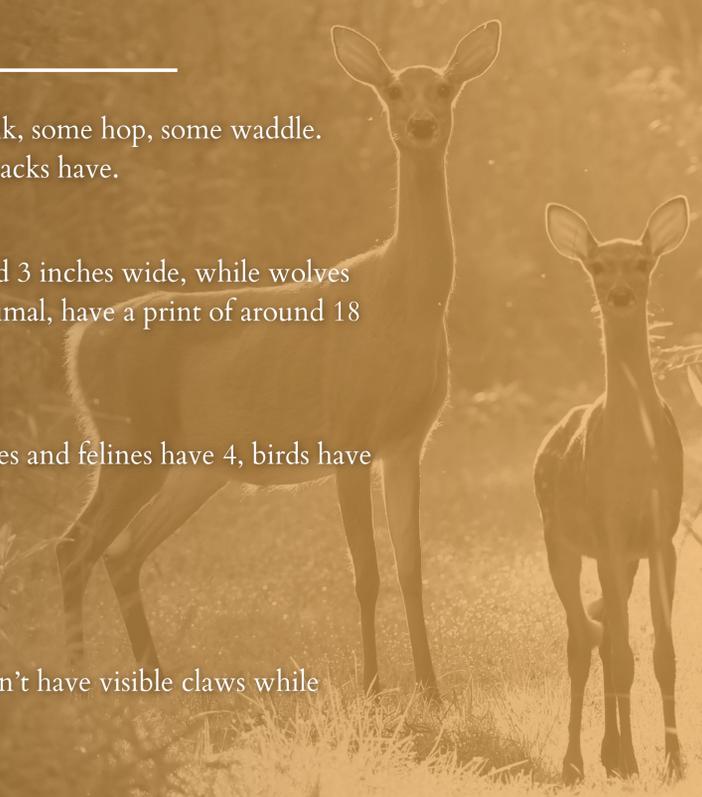
**TRACK PATTERN** — Track Pattern is how an animal walks. Some animals walk, some hop, some waddle. You can tell which by the spacing and pattern that the tracks have.

**SIZE** — How wide and long is the print? Coyotes average around 3 inches wide, while wolves are around 4 inches. Elephants, the largest living land animal, have a print of around 18 inches.

**TOES** — How many toes does the print have? Bears have 5, canines and felines have 4, birds have 3 in front and 1 in back.

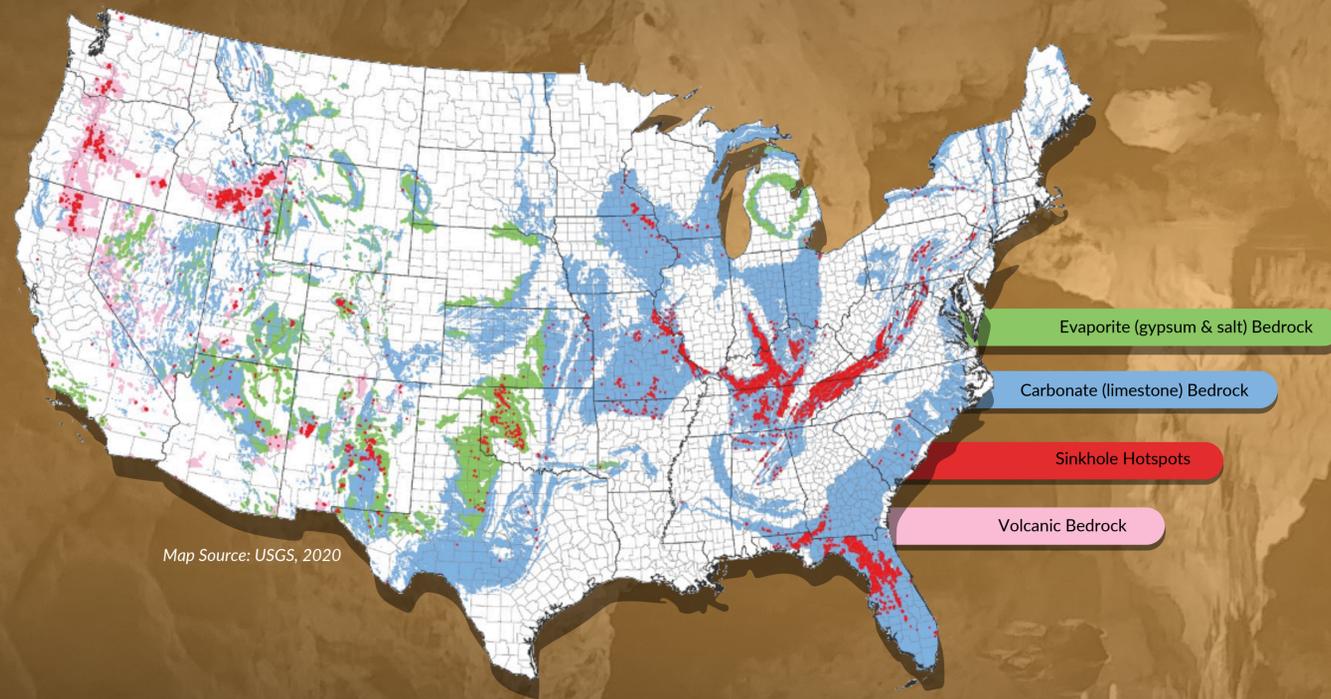
**NAILS** — While it can vary a bit, feline prints, such as cougars, won't have visible claws while canines, such as wolves, will.

**DEPTH** — Depth is how deep the prints go into the ground. In dry conditions, how deep the prints are can give you an idea of the animal's weight and size.



# CAVES HIDING IN PLAIN SIGHT

Sinkholes are usually indicators that there is a cave beneath the surface, as the dirt and rocks have to have something to fall into. Along with the two sinkholes that sit above our main cave, Cave of the Mounds has at least 15 more sinkholes that can be found in the woodlands and prairies that surround the area that we dedicated for the enjoyment of our visitors. Check out the map below to see where caves are commonly found in the United States.



When it comes to caves, they can be found everywhere, on every continent, and even on other planets. In the United States, they are found in all states except Rhode Island and Louisiana. There are also many different types of cave around the world, and each type is defined by how or where it forms. The formation of a cave is known as *speleogenesis*.

Some common types of cave are...

**Solution Cave:** These are caves that are dissolved out of rocks called carbonates like limestone, marble, and gypsum and are decorated with formations. Examples include Carlsbad Caverns, Mammoth Cave, and Cave of the Mounds.



**Sea Cave:** These form along large bodies of water like rivers and lakes as water rubs the rock away, creating holes and arches. Examples include Cave Point in Door County and those at the Apostle Islands.



**Lava Tube:** Forming from lava, these are found in places with volcanoes and fault lines. Tubes and tunnels are left behind as the lava cools and forms a hard shell. They are found all over the Hawaiian Islands and on the Moon.



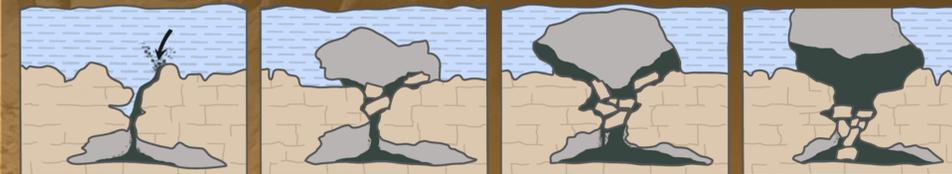
**Aeolian Cave:** These form in deserts when wind picks up sand which carves out rock faces. They are usually fairly shallow and don't go very far into the rock. The most famous Aeolian Caves are seen at Mesa Verde National Park.



## Sinkholes: Doors to the Underground

A sinkhole is an area of the Earth where surface-level dirt and rocks have sunk into the ground and created a hole. They are features that typically herald the existence of Karst landscapes, which are areas with bedrock that has dissolved beneath the surface, leaving behind caves.

The one that you see here is several decades old and has slowed to a stop.

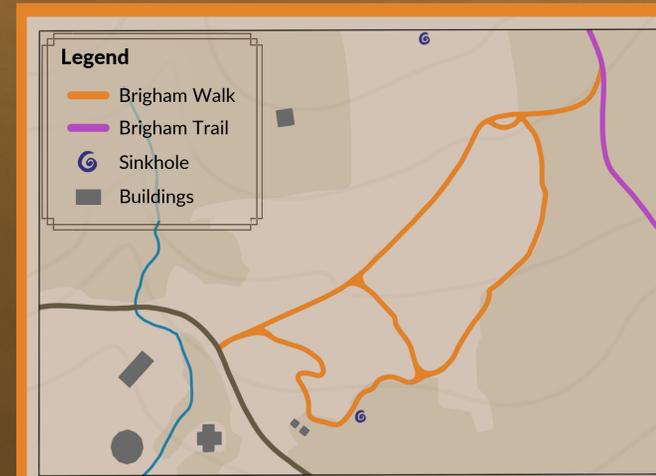


Rock & dirt slowly start to fall into a cave in the rock.

As the cave grows larger, more and more debris fills the hole.

The falling rocks continue to pile up, bringing material from the ceiling to the floor.

Eventually, the cave gets too close to the surface and the structure breaks, creating a hole.



# A GEOLOGIC MYSTERY

75,000 years ago, much of Wisconsin was covered in a vast sheet of ice that was in some places up to 2 miles (3.2km) thick. These ice sheets, or *glaciers*, carved the landscape, leveling hills and valleys and leaving small rises in their wake; however, where you stand is different. This area of Wisconsin is known as the Driftless Region due to its lack of glacial sediments and rocks, known scientifically as *drift*.

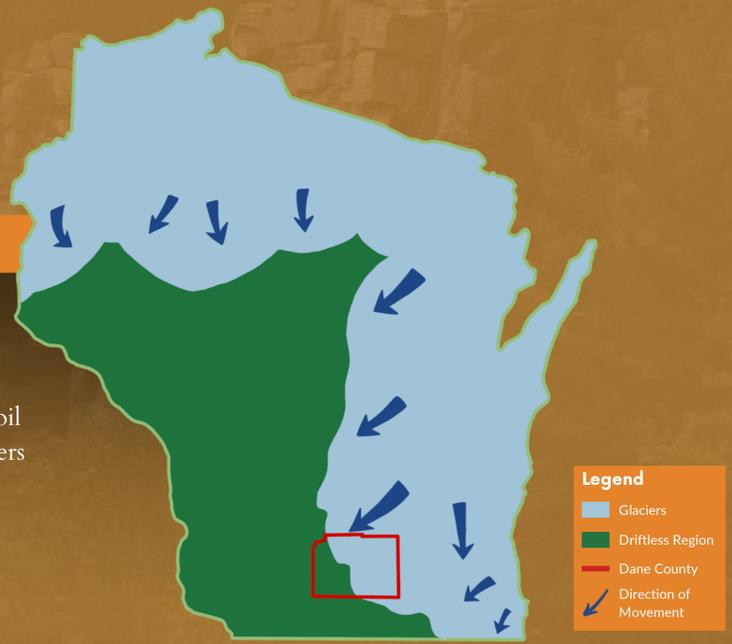


The sheet of ice from the last ice age reached from Illinois all the way to Greenland.



## The Wisconsin Glaciation

Several glacial lobes covered the northern and eastern parts of the state. As they progressed southward, they leveled the landscape and left behind thick layers of soil and rock as well as large stones and boulders known as *erratics*.



The Driftless Region has the oldest topography of the entire state, unchanged by the power of the glaciers. It is because of this lack of glacial influence that Cave of the Mounds exists: any glaciers moving over the area would have either covered the cave under several hundred feet of glacial till or simply crushed it altogether.

There are many possible reasons why the glaciers did not come to this part of the state. Maybe our hills blocked them from moving forward, maybe our rock was too good at draining the water that helped them move, or maybe Lake Michigan filled up with more than its fair share of ice. Whatever the reason, it has left us with an unmatched record of Wisconsin's past.



Map Source: David Woodward, 1969



# THE MOUNDS OF THE CAVE

The Blue Mounds upon which you stand are visible at a distance of over 50 miles. This astonishing visibility was especially important to those residing in or traveling through this area before Madison ever existed, as they would often be the only visible waypoint for miles. This also gave them their name, as they appear blue from longer distances.



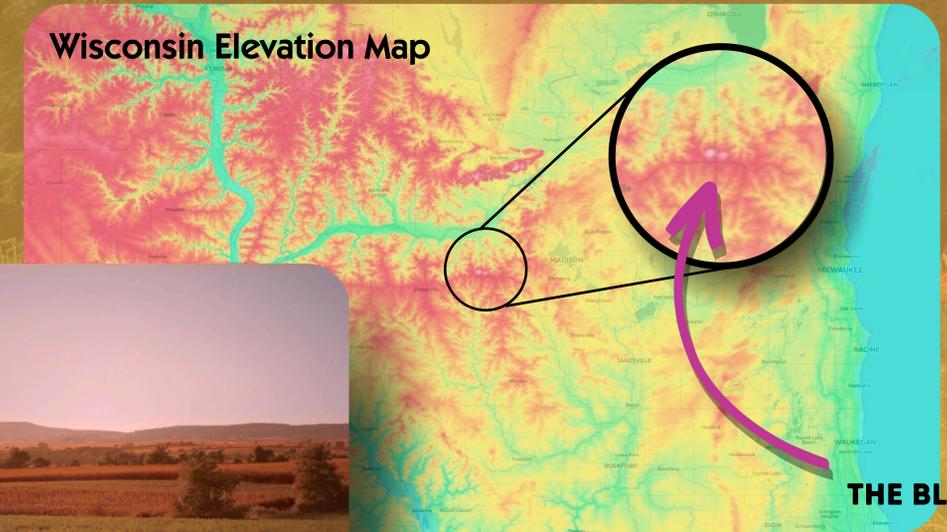
You are actually probably familiar with chert, but you likely know it by its other name: Flint.

Chert is chemically the same thing as quartz. It looks very different because it's actually made out of microscopic crystals. Because of this, you will often see small amounts of quartz on chert.

Chert can be easily identified by striking it against something. When struck, it smells like matches. If hit against steel, it will create a spark.

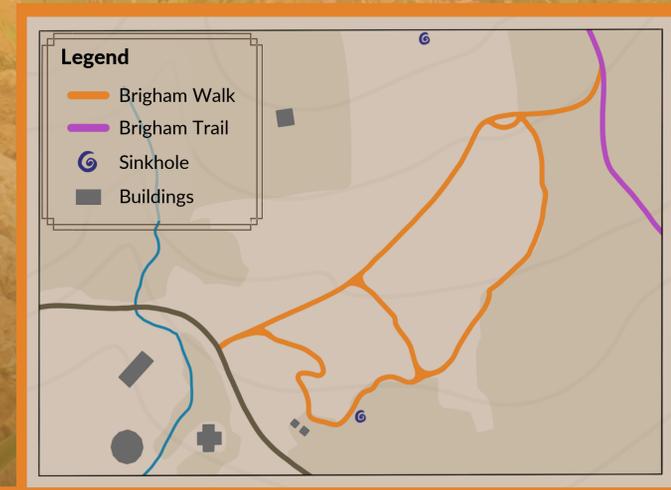
Historically, chert was used by indigenous peoples to make arrowheads, spearpoints, and other tools including knives. It was also used as the ignition for flintlock pistols.

Wisconsin Elevation Map



The Blue Mounds are the highest points in Southern Wisconsin, standing at elevations of 1,716ft (West) and 1,489ft (East). They owe their height to chert: an incredibly hard stone that sits on top of the mounds. This cap rock protected the softer limestone below it from being eroded in these spots, keeping them safe as the rest of the area slowly weathered away over time.

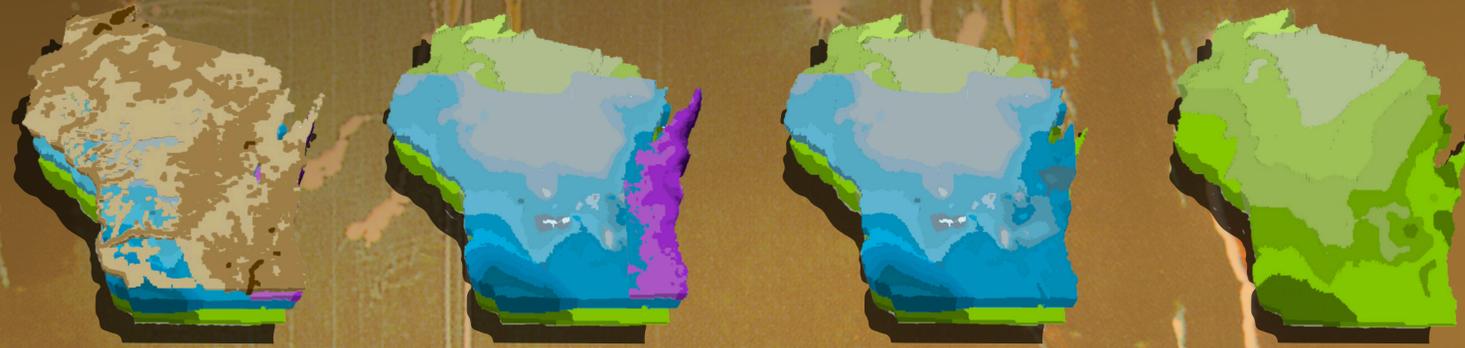
With an elevation of 1,489ft, the East Mound stands higher than all of Florida, Delaware, Mississippi, Louisiana, Rhode Island, Illinois, and Indiana. The West Mound, at 1,716ft, stands above all these plus Iowa and Ohio. Despite this, they are still beneath the highest point in Wisconsin, Timm's Hill, which stands at a prominent 1,951.5ft.



# WATER IN THE UNDERGROUND

Caves are not the only places that water appears underground. Throughout the world, rock layers beneath the surface are filled with water that humans use to drink and water crops. Without these massive water stores, humanity would likely not exist as we know it.

Check out the layers of Wisconsin's bedrock. Each layer is made out of different rocks and has different water storage abilities.



The uppermost aquifer is a soft stone that doesn't hold water very well and leaves it partially unfiltered. Generally, it isn't used.

The dolomite layer is only found in the Eastern part of the state and doesn't hold water well. Instead, Lake Michigan is used.

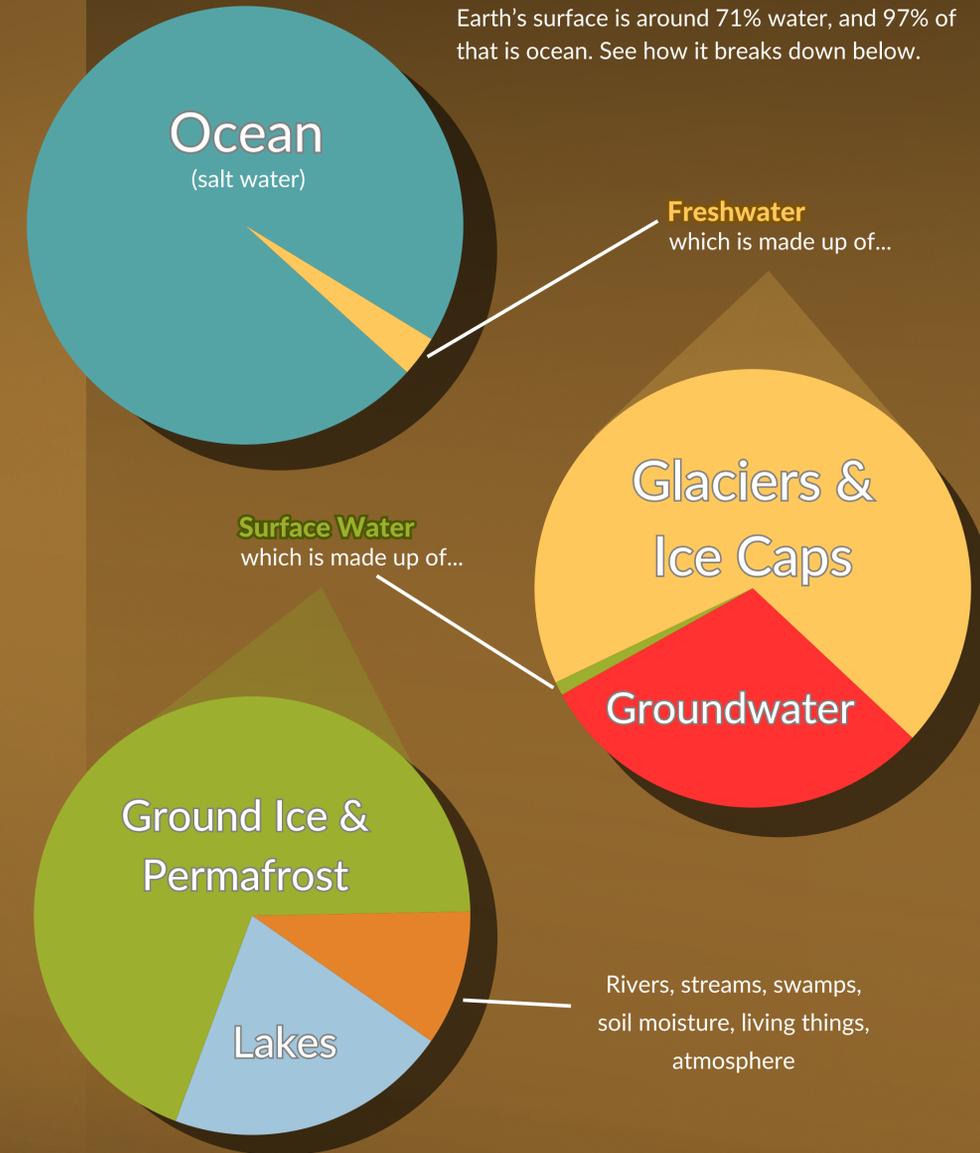
The limestone aquifer is the best in the state and provides highly filtered water. It's found everywhere except in the very North.

The bottommost layer is hard igneous rock. It's harder to get to the water in this layer, so this layer is only used where the limestone (blue) layer is not found.

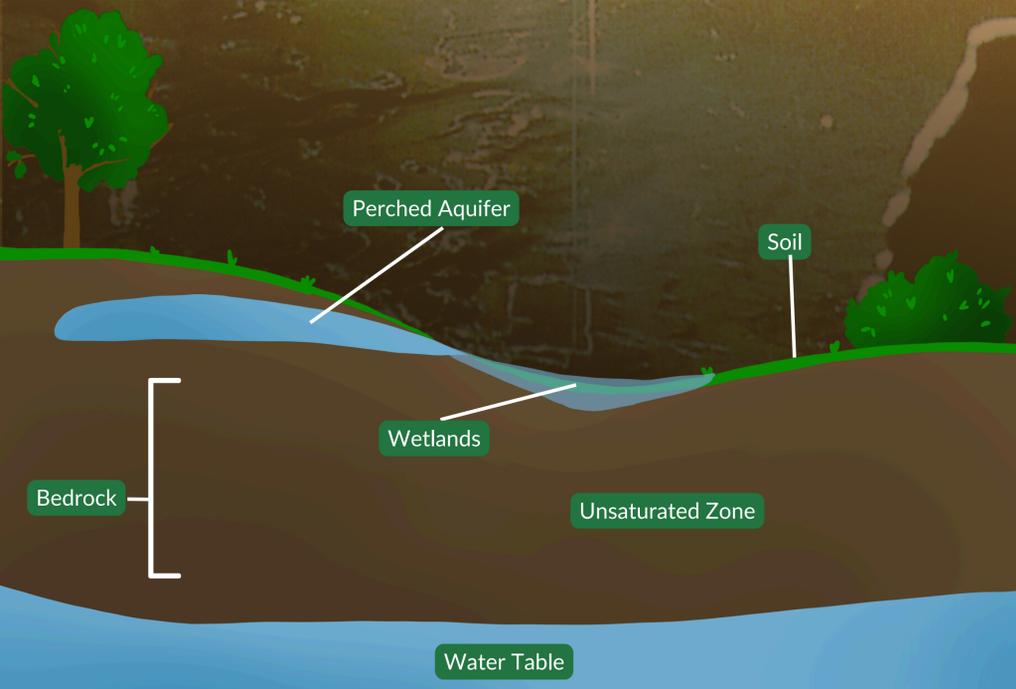
Graphic source: Wisconsin Geological and Natural History Survey

## The Division of Earth's Water

Earth's surface is around 71% water, and 97% of that is ocean. See how it breaks down below.



## The Water Table



This part of the trail encounters a perched aquifer. A perched aquifer is a reservoir of water that sits above the main water table, which is over 350ft below the surface in this area. Perched aquifers typically fill in the gaps between the surface and the water table, often seeping into the ground and creating muddy, swampy areas.

The water table is not an underground lake or river; it is water filling in the spaces and cracks that exist in rock. One of the largest aquifers in the world, the Great Artesian Basin in Australia, encompasses 660,000 square miles (22% of the continent) and has water temperatures that reach 212°F (100°C). The Great Artesian Basin also reaches a depth of 9800ft beneath the surface, but many aquifers are much closer.

