

## The Short-lived Story of Osage Iron Works

Have you ever wondered about the history of the stone stack at Bollinger Creek Cove? It is actually the remains of a short-lived iron smelting furnace dating back to the 1870s.

Sixty years before the creation of Lake of the Ozarks, James Isaminger discovered a rich iron ore deposit in western Camden County.

An experienced veteran of the iron industry, James partnered with two capitalists, Alex J. Campbell and Dr. Condee, to establish the Osage Iron Works Company along Bollinger Creek. With an initial investment of \$60,000 (about \$1.2 million today), they built

a smelting furnace and associated infrastructure, and purchased approximately 2,000 acres of land that contained the ore deposits and enough timber to fuel the furnace.

The construction of the state-of-the-art furnace began in January 1872. The dolomite blocks used to construct the furnace, known as a “quarter stack,” were quarried nearby, then shaped and placed without the use of mortar. Although some of the top stones are now missing, the stack was originally 38’ high.

*continued on page 2*



*Osage Iron Works Furnace Stack Circa 1930,  
just prior to filling the Lake.  
(Photo courtesy of Camden County Historical Society)*





*Osage Iron Works furnace stack today.*

*continued from page 1*

## **The Smelting Process**

The ore found in the area, called brown hematite or limonite, was relatively high grade with approximately 50%-58% iron. It was mined from three ore banks located a couple miles from the furnace. The furnace also sat on a fourth ore deposit.

In order to extract the iron from the ore, the furnace had to be heated to 3,000 degrees Fahrenheit using charcoal. Workers stacked 35 to 40 cords of locally-cut lumber in a pit, then burned it slowly to produce approximately 3,000 bushels of charcoal each day.

Ore, limestone flux and charcoal were loaded into the furnace through an opening on the top of the stack. Pre-heated air was forced into the furnace through its two side arches using a steam engine, heating the burning charcoal to the required temperature. As the molten iron separated from the ore, it was removed through the single large arch, then poured into molds to solidify.

The furnace was operated 24/7 and could produce about 15 tons of pig iron a day. It required 40-50 teams of oxen to transport the ore, wood, and charcoal to the furnace, then haul the finished iron to the Osage River, where it traveled down the Osage and Missouri Rivers to markets in St. Louis. The first shipment of iron, produced in May 1873, was used in the production of car wheels.

It was common for small towns to spring up around smelters like these. In addition to the stone furnace, Osage Iron Works built about 20 homes, a company store, sawmill, blacksmith and wagon shops, a large stable, and numerous other structures associated with the smelting process. The approximately 200 employees needed to operate the furnace established the settlement of Iron Town, which persisted up until the creation of Lake of the Ozarks.

## **Flash in the Pan**

Although the facility produced quality iron, Osage Iron Works filed for bankruptcy in December 1873, a mere six months after producing its first load of iron. There were a number of reasons for its failure. The company misjudged its initial start up costs, and was well over budget before they ever delivered their first shipment of iron. They also faced stiff competition from coke and coal furnaces in St. Louis, which could produce iron more economically. In addition, the severe summer drought of 1873 resulted in low water levels on the Osage River, which prevented them from delivering the iron they produced to market.

Workers at the furnace were paid in credits at the company store instead of cash, but without any income, the company store could not maintain its stock of supplies. The workers began leaving the iron works to seek employment elsewhere.

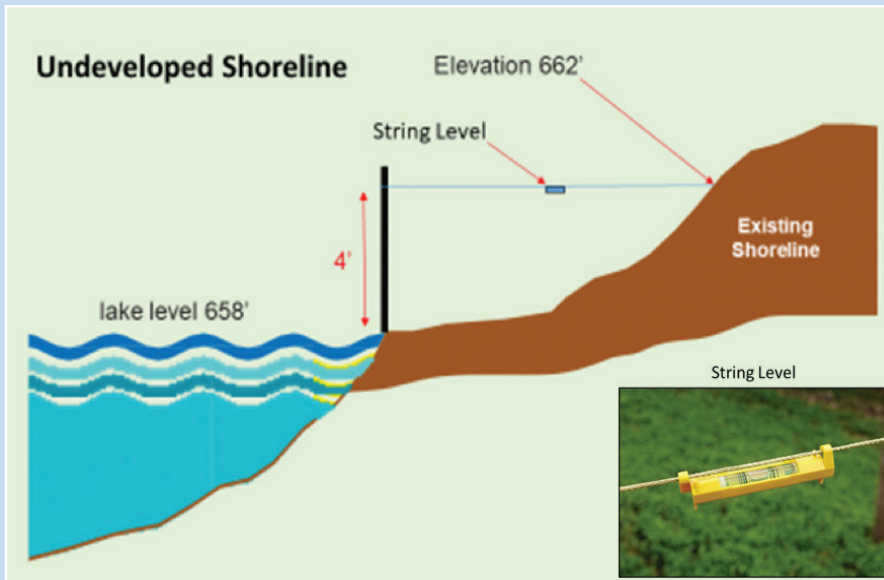
At the time the furnace closed, Iron Town had a population of approximately 250 residents. With their jobs at the furnace gone, many turned to trades in the other locally abundant natural resource – timber. Growing demands for railroad ties kept the community going for a while, but as the timber supply dwindled, the population of the town fell to just 40 by 1884.

Today, all that remains of the Osage Iron Works Company is the dolomite stack visible on the southern shore of Bollinger Creek Cove. At full pool, Lake of the Ozarks covers approximately 12 feet of the structure's base. Concerns about erosion at the base of the stack prompted Ameren to place a protective layer of rip-rap around the structure in 2003. This site may be eligible for entry into the National Register of Historic Places.

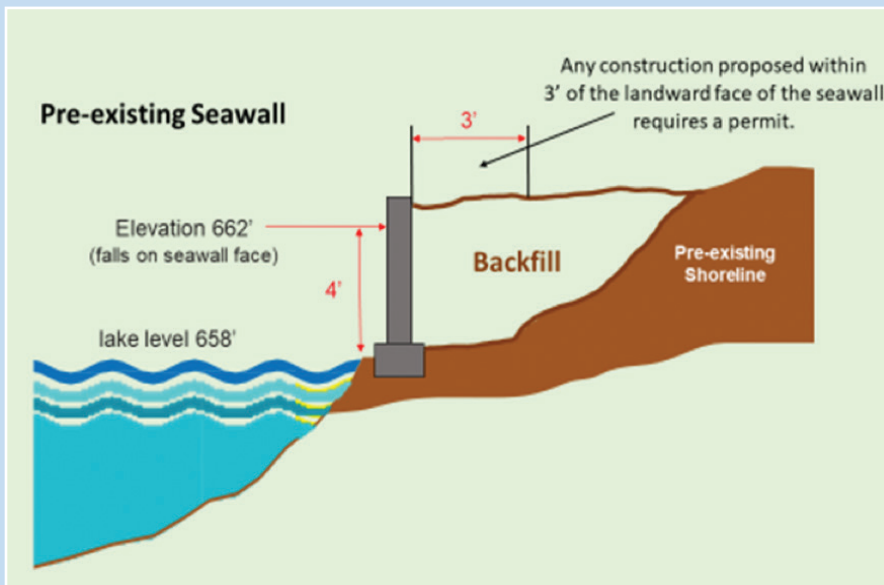


# Permitting and the 662' Elevation

In 2012, with the exception of specific wetlands and other sensitive areas, Ameren removed the majority of properties above the 662' elevation from the project boundary, retaining only that property essential for the operation of Bagnell Dam. So what does this mean to property owners surrounding the lake?



To estimate the location of the 662' elevation, first determine the current lake level. Subtract that figure from 662' (4 feet in the above example) and mark that length onto a pole. Attach a string to the pole on the mark and hold the pole vertically at the water's edge. Place a string level on the string and stretch it out horizontally to shore, raising and lowering it until you have the string level. The point at which the string contacts the ground is the 662' elevation.



Any construction plans at or below 662' elevation above sea level requires a permit from Ameren Missouri before beginning construction. In areas with steep topography, the 662' elevation is generally within a few feet of the shoreline. In areas with flatter terrain, it may lie many yards inland. You can estimate the location of 662' elevation by calling (573) 365-9205 to find out the current lake level. Once you have that, you can take a few simple measurements that will determine where the 662' elevation is located.

## Adopt-the-Shoreline 30th Anniversary

It is safe to say there are always changes occurring at Lake of the Ozarks. Thirty years ago, you would not have seen many tri-toons, four-stroke outboards, boats with more than one motor, or fish finders with screens the size of a small television. Two things you would have observed were thousands of docks afloat on white, blue or orange flotation and mountains of trash in every nook and cranny of the lake's shoreline.

Luckily in 1991, a dedicated group of lake residents decided to tackle the trash problem by organizing the first shoreline cleanup. Thanks to the work of those early volunteers, including their input on eliminating highly erodible non-encapsulated flotation, the lake is a much cleaner place today.

If you would like to organize your own lake cleanup, please visit [AmerenMissouri.com/ats](http://AmerenMissouri.com/ats) for additional information. If you are one of the volunteers that have participated in the program over the past 30 years, THANK YOU! The Lake of the Ozarks Adopt-the-Shoreline volunteers are the best!

Due to shoreline development, it is sometimes difficult to determine exactly where this elevation falls. In a situation where 662' strikes the lakeward face of a pre-existing seawall, that area within 3 feet of the landward face of the wall is considered to be within the project boundary. Any construction proposed within that 3-foot area requires consultation with the Ameren Shoreline Management Office and may also require a permit. It is important to note that the use of the top of a seawall as a support for additional construction is not permitted under any circumstances.

Questions? Contact the Shoreline Management Office at 1.573.365.9212 or [lake@ameren.com](mailto:lake@ameren.com).





*Common Snapping Turtle*



*Eastern Spiny Softshell*



*Red-eared Slider*



*Northern Map Turtle*

## Common Snapping Turtle

The common snapper is our largest lake-area turtle, often weighing more than 30 pounds. Despite the fearsome appearance, they are more of a scavenger than a predator, feeding primarily on dead animals and aquatic plants. In Missouri, they are considered a game animal and make fine table fare. And no, they don't taste like chicken, they taste like turtle.

Despite rumors, there are no Alligator snappers in the Lake of the Ozarks area. Alligator snappers are endangered and only found along the southern and eastern borders of Missouri. The Alligator snapper is the largest freshwater turtle in the world with a record weight of 316 pounds.

## Eastern Spiny Softshell

The most distinguishing characteristic of the softshell turtle is their smooth, skin-covered shell. All other Missouri turtles have shells covered with plates made of keratin, the same material as our

fingernails. In addition, this turtle's nose has evolved into the shape of a snorkel so it can breathe without exposing itself to potential predators or prey. Softshell turtles are the most carnivorous of our native turtles, feeding on small fish, crayfish, tadpoles, and aquatic invertebrates. Softshells will bite when handled, so the safest way for you to handle a softshell is to let your fishing buddy do it.

## Red-eared Slider

This turtle has a wide red stripe on each side of its head behind the eyes. The stripe is brightest when they are young and fades to nearly black as the animal ages. This species was commonly sold in pet shops in the United States prior to 1970. More recently, this species has been shipped to Europe for the pet trade. Released red-eared sliders have become an "invasive species" in Europe, which is causing declines in the populations of some native turtles.



# TURTLES

## of Lake of the Ozarks





False Map Turtle



Ouachita Map Turtle



Eastern River Cooter



Three-toed Box Turtle

## Northern Map, False Map and Ouachita Map Turtles



Map turtles can be difficult to tell apart unless you can see the markings on the head. Since these turtles are prone to dropping off their log at the smallest sign of danger, grab a pair of binoculars to view them from a distance.

**Northern Map Turtle** – Look for numerous thin yellow lines on the head and neck and a small yellow spot behind each eye.

**False Map Turtle** – A thick yellow line behind each eye curves back toward the neck forming an “L” shape.

**Ouachita Map Turtle** – A large yellow oval or rectangular spot is present behind each eye.

## Eastern River Cooter



With a shell length of up to 13 inches, the eastern river cooter is the largest turtle you are likely to see basking on a log at the lake. Only softshell and snapping turtles are larger. This turtle has bold yellow stripes behind the eye and below the jaw.

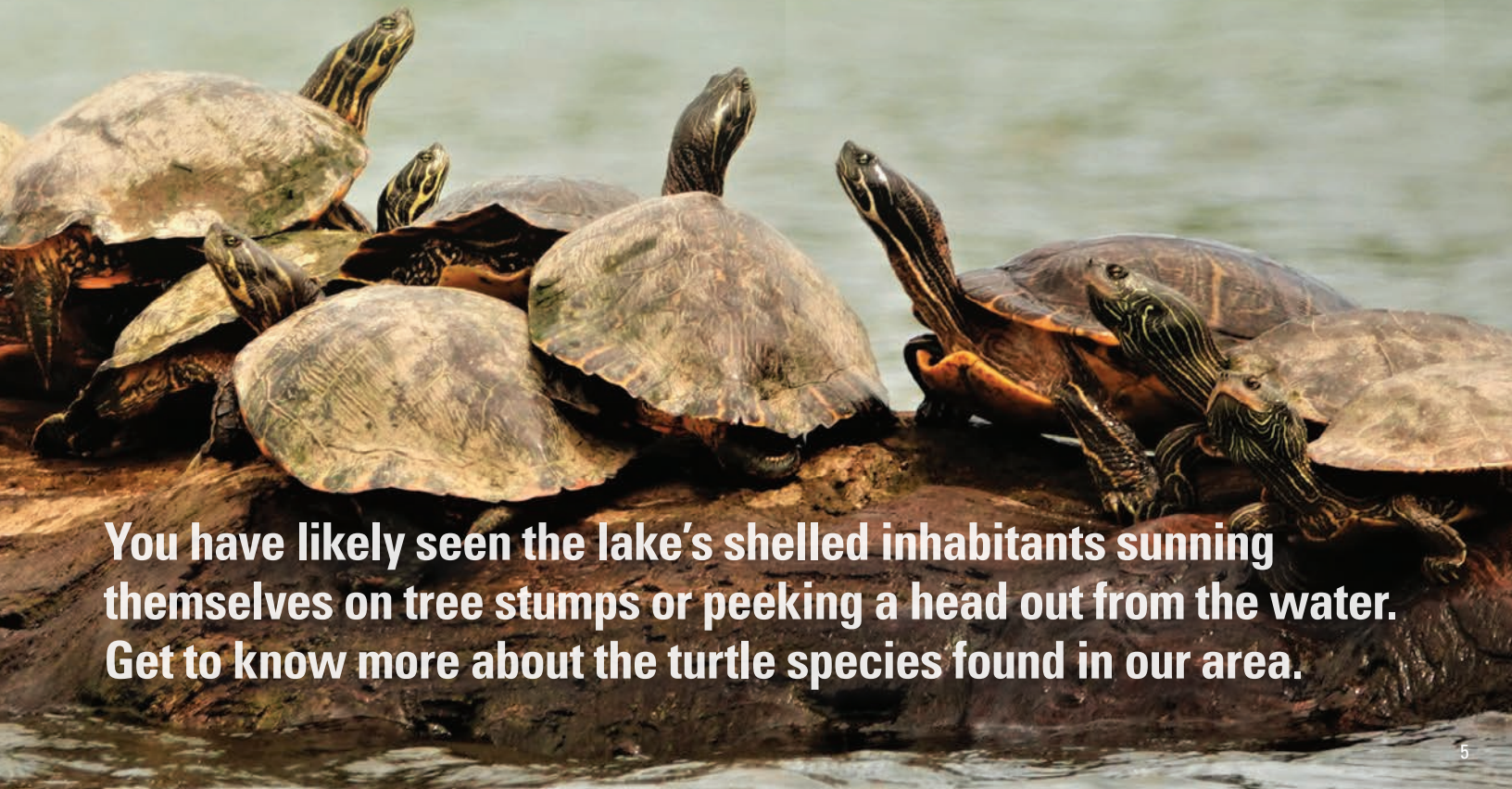
## Three-toed Box Turtle



This is the one lake-area turtle that is primarily found on land. Box turtles are unique in that the lower shell has a hinge which allows them to completely close the shell to protect their head, limbs, and tail from potential predators.

## Did You Know?

- Turtles are the oldest living group of reptiles on earth, dating back 200 million years ago to the Triassic Period. Their appearance has changed very little since that time.
- Like most other reptiles, all turtles lay eggs on land.
- Missouri is home to 18 species of turtles, and approximately 12 different species live in the lake area.
- During the warmer months, when aquatic turtles are basking in the sun, you may see four or five different species sharing a single log.



**You have likely seen the lake’s shelled inhabitants sunning themselves on tree stumps or peeking a head out from the water. Get to know more about the turtle species found in our area.**



## Aquatic Ecosystems

# The Ecosystem of Lake of the Ozarks

We've all heard of the food chain in the natural world. It's defined as a hierarchy of organisms, each dependent on the next link in the chain as a source of food. In the lake, this chain starts with nutrients and progresses to algae, zooplankton, zooplanktivores, and finally to piscivores.

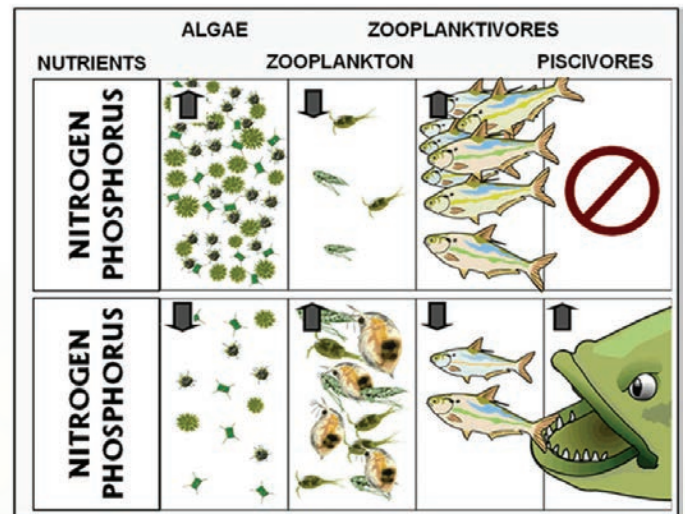
**Nutrients:** For algal growth to occur in lakes, a certain amount of nutrients, primarily nitrogen and phosphorus, must be present. The right balance of nutrients creates the right amount of algae for a quality fishery.

**Algae:** In a lake environment, nutrients and sunlight are utilized by algae, microscopic plants that are the base of the aquatic food web. Algae gives the water a greenish tint due to the chlorophyll that allows it and other green plants to absorb sunlight for photosynthesis.

**Zooplankton:** These small animals feed on algae and provide forage to planktivorous fish. While many planktivorous fish, like gizzard shad, are small, the largest fish in the lake, the paddlefish, feeds exclusively on plankton.

**Zooplanktivores:** This trophic level includes shad, paddlefish, and many other fish species. In addition, all fish, including top predators like largemouth bass and flathead catfish, rely on zooplankton as their primary food source when they are young.

**Piscivores:** With the exception of paddlefish, most of the popular gamefish in the lake are piscivores, or fish eaters. As adults, they are at the top of the freshwater aquatic food chain.



### Interactions between trophic levels

When the number of piscivores is low (aka fishing is lousy), the population of zooplanktivores can explode, preying heavily on zooplankton. With few zooplankton available to graze on algae, the algae population can increase and make the water noticeably greener.

At the Lake of the Ozarks, we have a healthy gamefish community. These piscivores prey on zooplanktivorous fish species, which means zooplankton communities can flourish and keep algae density low, for a beautiful and balanced lake ecosystem.

## Dock Electrical Safety

In order to ensure the electrical safety of your boat dock, there are many items such as proper grounding, bonding and ground fault circuit interrupters (GFCI) that must be properly installed and maintained in good working condition. Proper grounding includes ensuring the grounding system is installed back to the power source at the utility transformer. Many dock owners assume that the ground rod installed near their shoreline disconnect provides for proper grounding. While this ground rod is an important safety feature, it does not provide for grounding to the utility transformer which must be present for your circuit breakers to properly function. In order to establish proper grounding, a low resistance electrical path must be maintained back to the utility transformer. This is completed by ensuring there is a continuous ground wire connecting the dock to the panel box at the house. If there is a break in this connection, at

**In order for your dock's electrical system to function in a safe manner, the grounding system must be connected all the way back to the utility transformer. This is accomplished by testing the grounding system between the dock and the house panel box, not to the ground rod or shoreline disconnect near the seawall. This test should show that there is less than 1 ohms resistance on the grounding system.**

any location, the grounding of your dock is not complete. Ameren Missouri strongly recommends having your grounding system tested by a qualified electrician to ensure you dock does not present a hazard to you, your family or to other lake users.

If you have questions about your dock's electrical system, you are strongly encouraged to have it inspected by a qualified electrician.





# Limited No Wake Areas for Larger Boats

In 2018, Missouri's legislature passed a law which restricts coves and main channel areas under 800 feet in width to no wake for vessels 40 feet or greater. This was done in response to damage done to shoreline properties in narrow sections of the lake when larger boats traveled at greater than idle speed. The new restriction is referred to as a "limited no wake cove" and applies only to vessels 40 feet or greater.

- For the purpose of no wake cove restrictions, the Water Patrol Division determines the cove width by measuring either between docks located on each side of the cove, dock to shoreline, or shoreline to shoreline, depending on the situation.
- The new limited no wake coves for vessels 40 feet and longer will generally only apply to coves and main channel areas narrowing to 800 feet in width or less. The traditional full no wake coves are limited to coves 400 feet in width or less. This can vary depending upon the level of boating traffic a cove receives, historical boat crash data, existence of popular commercial establishments, and other considerations.
- Unlike the full no wake cove application, which requires 75% of the owners to be in favor, the limited no wake cove will be based upon an application, the Water Patrol Division's investigation of the application, and testimony provided at the public buoy hearing.
- Limited no wake coves will be marked with a sign on each side of the cove or channel. Enforcement will start at the line created between those two signs.

An interactive map showing the location of the limited no wake coves can be found at [mshp.dps.missouri.gov/MSHPWeb/WaterPatrol](http://mshp.dps.missouri.gov/MSHPWeb/WaterPatrol).

For a copy of the entire regulation, go to [sos.mo.gov/CMSImages/AdRules/csr/current/11csr/11c50-3.pdf](http://sos.mo.gov/CMSImages/AdRules/csr/current/11csr/11c50-3.pdf). You also can contact the Water Patrol Division at 1.573.751.5071 or [Buoy@mshp.dps.mo.gov](mailto:Buoy@mshp.dps.mo.gov) with any questions.



## Do you Need a Permit Transfer?

Permits for shoreline structures and facilities need to be in the name of the current property owner. After purchasing a property with any Ameren-issued shoreline permits (i.e. dock, seawall, rip rap, ramp, pump, etc.), it is the responsibility of the new property owner to apply with Ameren for a permit transfer.

**This can be done by mailing the following items to Ameren Shoreline Management, 3 Willmore Lane, Lake Ozark, MO 65049:**

- **Completed one-page permit application**  
Click Shoreline Management at [AmerenMissouri.com/lake](http://AmerenMissouri.com/lake)
- **\$35 transfer processing fee** (one fee of \$35 will transfer all valid permits), paid via check or money order, payable to "Ameren."
- **Copy of your property deed**
- **Approved electrical inspection report** (dated within the past 12 months) of the dock's electrical system, from the local fire department if the property is located within one of the following fire districts: Lake Ozark, Rocky Mount, Mid-County, Osage Beach, Sunrise Beach or Northwest.

A permit transfer does not transfer the permit to a different property or location. If a dock is moved to a different location on the lake, it should be permitted at that property with either a new permit, or a modification to an existing permit associated with that property. A permit authorizes a structure or facility within Ameren's Project Boundary. No property rights are conveyed by issuance of a permit.





3 Willmore Lane  
Lake Ozark, MO 65049

**Website:**  
[AmerenMissouri.com/lake](http://AmerenMissouri.com/lake)

**Important Phone Numbers:**

Lake Protection Hotline  
1.573.365.9203

Lake Level  
1.573.365.9205

Adopt-the-Shoreline  
1.573.365.9206

Water Patrol Division (Buoy)  
1.573.751.5071

Benton County (Emergency Management)  
1.660.438.8412

Camden County (Planning & Zoning)  
1.573.346.4440

Miller County (County Commission)  
1.573.369.1900

Morgan County (County Commission)  
1.573.378.4643

**Shoreline Management Staff is here to assist you with your next Lakeside project and to help answer your questions about Ameren Missouri's role at the Lake:**

**Osage Arm – Bagnell Dam to 10-mile marker and Gravois Arm**

Josh Friedrich - 1.573.365.9247

**Osage Arm – 10 to 26-mile marker, Glaize Arm, commercial docks, and docks 3,000 square feet or larger**

Heidi Shewmaker - 1.573.365.9216

**Osage Arm – 26 to 32-mile marker and the Niangua Arms**

Chuck Van Bebber - 1.573.365.9215

**Osage Arm – 32-mile marker to Truman Dam**

Joe Daly - 1.573.365.9207

**Dredging, wetlands, shoreline vegetation or other environmental questions**

Greg Stoner - 1.573.365.9206 • Brian Spencer - 1.573.365.9217

**Permit Transfers**

Elizabeth Langelier - 1.573.365.9212 • Shawn Roark - 1.573.365.9208



**EVERY STRUCTURE ALONG THE LAKE SHORELINE MUST BE COVERED BY A VALID PERMIT. DO YOU HAVE COPIES OF YOURS?**

To obtain copies of your permits, you will be asked to submit a permit request form. The permit request form can be downloaded from our website, [AmerenMissouri.com/lake](http://AmerenMissouri.com/lake)