

# Waters run deep in LAKE WAZEE



WHAT BEGAN AS AN IRON MINE IS NOW  
A POPULAR COUNTY PARK.

When iron ore mining operations at the spot known as Red Mound ended for good in the 1980s, subterranean waters were allowed to rise into the pit (inset), creating a 150-acre lake more than 350 feet deep.

BLACK RIVER AREA CHAMBER OF COMMERCE

ROBERT HESS

*Julie A.M. Hess and Anna N. Hess*

Nestled in the jack pine barrens east of Black River Falls lies the deepest inland lake in Wisconsin. Lake Wazee — which means “tall pines” in the native Ho-Chunk language — is of artificial origin, but the isolated mound of schist rock at the lake’s edge has been around for millions of years.

Known locally as Red Mound and sacred to the Ho-Chunk, it has endured eons of geologic events and centuries of human endeavors. The remnants of this mound stand at the north end of Lake Wazee, a monument to the iron ore deposits that bolstered the local economy for more than a century.

## **Geology and early mining interests**

The Jackson County Lake Wazee site was a strange geological formation, far removed from the principal Mesabi and Keweenaw ranges of Minnesota and Wisconsin. Here, a volcanic island formed 2.5 billion years ago,

spouting ash and lava. The sea floor oozed traces of iron and silica minerals, layered upon each other. Eventually, due to the earth’s natural tectonic movements, this island tilted, setting the iron and silica mineral deposits on edge and forcing the minerals into an iron ore formation of banded rock.

Once covered by sandstone and limestone, ancient geologic action eroded away most of the sedimentary rocks. Millions of years later glaciers melted and spewed their sand outwash, seen today as predominant undulations on the landscape. Only Red Mound and a few other minor mounds (such as Tilden Mound) remained protruding from the surrounding sands.

Not only did Red Mound hold iron ore, it also contained other mineral deposits including almandine garnet and sillimanite crystals — both sought after by mineral collectors — quartz, biotite and chlorite.

Discovered in 1839 by Jacob Spaulding at nearby Tilden Mound, the low-grade iron deposit inspired a group of German settlers to begin a mining operation around 1856 near the Black River. In

1860, carrying capital he had raised for expansion, the superintendent in charge of developing the smelter business traveled to Milwaukee to invest the money.

Fatefully, he took a pleasure cruise on Lake Michigan aboard the Lady Elgin, a wooden-hulled steamship. But the Lady Elgin sank after colliding with the schooner Augusta off the shores of Illinois, losing 286 passengers, including the superintendent and all of his Black River mine capital.

### A new era of mining

The next 80 years saw continued iron exploration in the Jackson County area. Eventually, Inland Steel Co., headquartered in Chicago, purchased the mining interests in 1940, including parcels just east of Black River Falls at Red Mound. Inland Steel expanded exploration and testing in 1961 at the future Lake Wazee site and shareholder approval was given in 1967 to build a \$25 million taconite facility.

This open-pit mining operation was called Jackson County Iron Co., a subsidiary that sourced iron ore for Inland Steel. The ore was used to form flat-rolled steel for use in appliances and cars, bars for use in making machinery and steel for use in building construction.

The mine was Inland Steel's only year-round source of ore, shipping taconite pellets by rail when Great Lakes shipping was closed for winter. An average of 850,000 tons of taconite pellets were loaded annually onto train cars and sent 285 miles south for production at the Indiana Harbor Works in East Chicago, Indiana.

Mining began at the site by opening the pit directly above the schist rock formation. As operations dug deeper, the pit expanded and deepened, eventually reaching nearly half a mile long. In the process of excavating to the southeast, miners ran out of schist rock and hit more porous rock formations filled with subterranean water that began flowing into the pit.

To keep the pit from flooding, the company installed huge pumps, removing millions of gallons of water per day from the pit during the mine's operation. The company projected that when the mine finally closed, the open pit would fill, creating a deep reservoir of crystal-clear water — a prediction that would prove correct some 40 years later.

Approximately 9 tons of material had to be removed to generate 1 ton of

viable iron ore. As mining operations continued, several dump areas of waste rock and overburden were built near the open-pit mine. These waste sites were formed into steep-sided hills with successive stair-like steps. A tailings basin — a circular dike a mile across — was designed to accept a watery slurry of pulverized, nonferrous residue pumped from the taconite processing plant to settle and dry.

Mindful of reclamation during the mine operation, and with the help of the University of Wisconsin and plenty of fertilizer, Inland Steel began seeding these areas with non-native plant mixes. Their intent was to stabilize the area and make it useful for other purposes after the close of mining operations.

Because of the erodibility of the waste materials, the company attempted to establish vegetative cover to stabilize the slopes, using legumes, grasses and trees, plus a mix of wet-water plants around the tailings basin. This set the stage for native legumes including wild blue lupine to move onto the slopes from the surrounding landscape.

### A park is formed

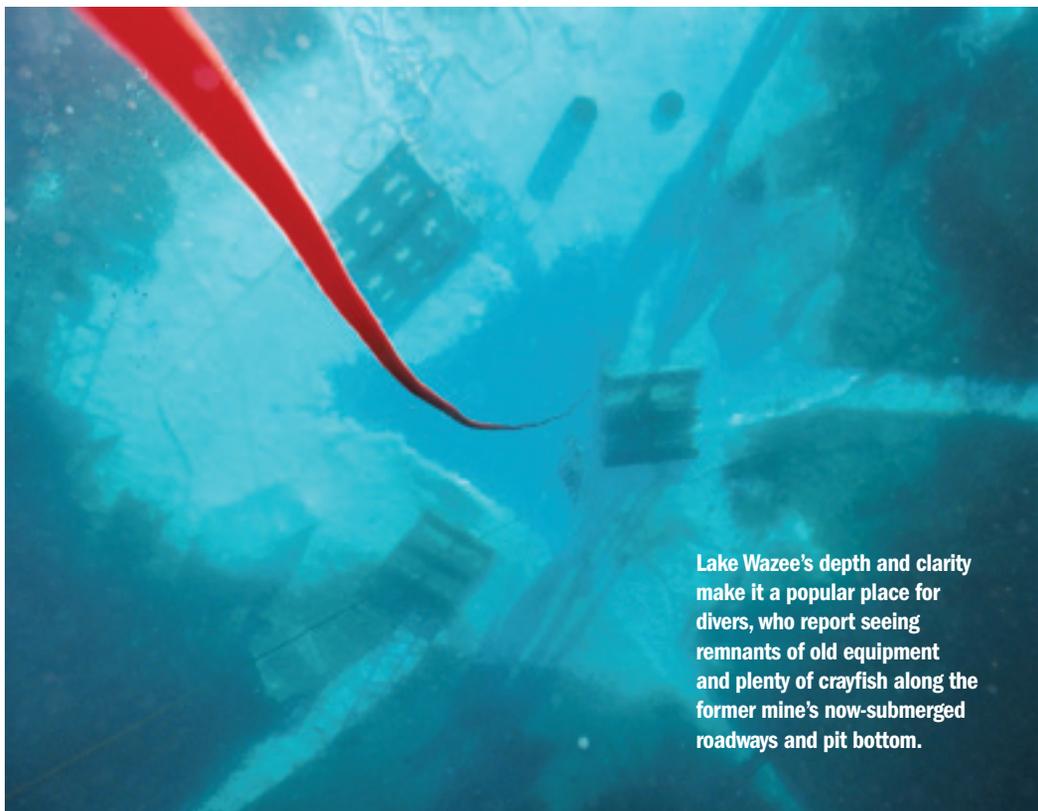
During 1982-1983, economic pressure from foreign steel imports and a decline in the U.S. economy forced Inland Steel to cease mining operations at the Jack-

son County mine site, 10 years earlier than originally planned. That year they turned off the pumps and let the waters rise, taking over two years to fill the lake with crystal clear water. Unable to find buyers, Inland Steel ceased operations, removed all equipment and dismantled the plant site.

On a summer morning in Black River Falls, Robert Hess, the Jackson County Forest and Parks Administrator with a mind for geology, and Keith Ferris, then the county board chair, made a trip to the top of the waste-rock pile farthest from the new and yet-unnamed lake to talk about the future of the site. Discussions began with the county board in short order to acquire and turn the now-full reservoir into a county park. The lake, at 355 feet deep and about 150 acres, would be unlike any other county recreation area in the state.

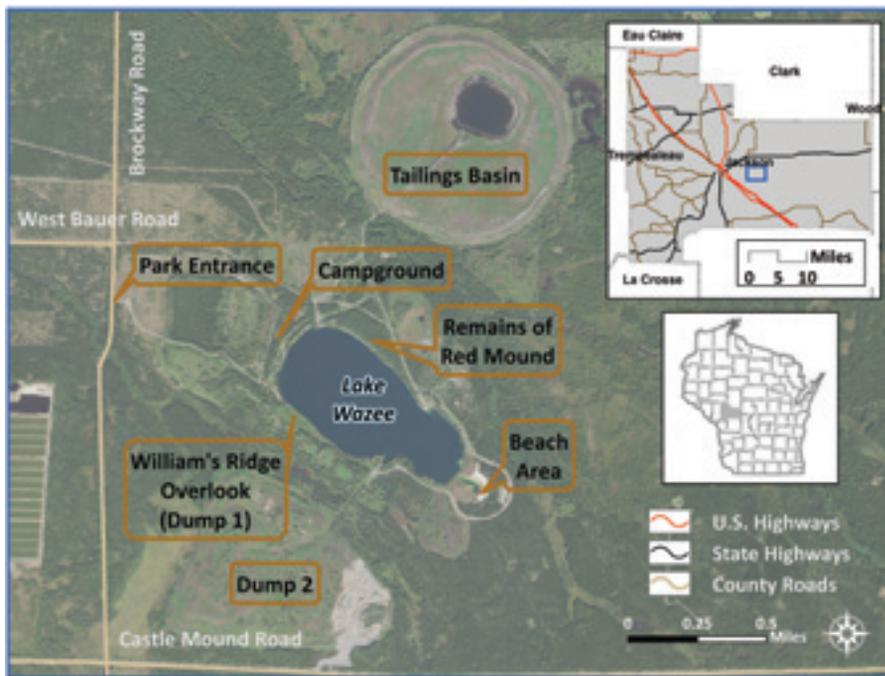
Discussions were successful and approximately 1,300 acres were acquired and turned into Wazee Lake Recreation Area.

Because the original mine reclamation plan would not allow preserving foundations or any other reminders of the ore-processing facility, all remnants of the former mine buildings were demolished. However, the road infrastructure and equipment staging areas remained, leaving a platform for the development



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Lake Wazee's depth and clarity make it a popular place for divers, who report seeing remnants of old equipment and plenty of crayfish along the former mine's now-submerged roadways and pit bottom.



ANNA N. HESS

of a rustic county park.

Mining roads were converted into park roads and a small contact station was established at the base of a waste dump pile on the edge of the lake. A dry campground was built on the northwest side of the lake, while boat launches were established at locations around the lake where the mining roads had descended into the vast pit.



BLACK RIVER AREA CHAMBER OF COMMERCE

A variety of fish can be found at Lake Wazee, but no boat motors per park rules.

### Building a better beach

As the mine owners had predicted, the lake was clear, cold and deep, allowing up to 40 feet of visibility during the summer months and more in the winter. In the mid-1990s, a beach was excavated away from the deep pit at a shallow inlet on the south end of the lake. The project required clearing of trees and brush.

The first summer after brushing, the newly endangered Karner blue butterfly was discovered at the site, delaying development for a full season. Negotiations with the U.S. Fish and Wildlife Service created a mitigation site at another location. Karner blues still inhabit the area.

With mitigation approved, bulldozers began removing stumps, but within days the vibration of the heavy equipment triggered a slow collapse of the sand banks into the mine pit, making equipment operation highly dangerous along the shoreline. A blaster dynamited several hundred yards of shoreline to accelerate the sloughing process.

Eventually, the shoreline stabilized

and earth-movers excavated the inlet to form a shallow beach area safely removed from the deep waters of the pit. Natural bone-white, clean silica sand at the beach site created a local “swimming hole” popular to this day. Efforts to remove the invasives introduced during the Inland Steel reclamation activities — including crown vetch, alfalfa and phragmites — allowed native vegetation to establish in the park area.

As time went on, other park buildings were commissioned, including a shower-house and shelter at the beach area and bathroom facilities throughout the park. Fish cribs were installed at boat launches, resting on the old mining roads. Two overlooks were established, one atop the waste-rock dump directly adjacent to the lake (Williams Ridge), and one atop the remains of Red Mound, now a scarred cliff face overlooking the lake. The park also hosts many miles of trails, both graveled and paved, that

wind around the lake and tailings basin and through the surrounding jack pine and oak savanna habitat.

### Lake Wazee today

Without an outlet, the lake is slowly eutrophying and building sediment. Anglers can find rainbow, brown and brook trout, catfish, bluegills and bass. Huge carp also can be seen swimming in the shallows around the edges of the lake. Boat motors are not allowed on the lake, and ATVs and motorcycles are prohibited in park areas, all adding to the surrounding quiet.

Diving is very popular at Lake Wazee. The mix of slowly descending underwater roadways, steep cliff faces and deep waters provides opportunities for divers of different experience levels, who report finding remnants of old equipment, flooded stands of trees and a profusion of crayfish along the roadways and bottom of the old pit.

The success of the reclamation at Wazee was due to the type of iron ore and mining techniques conducted at the site. Mining of iron sulfide ores can result in the formation of acid runoff. The Jackson County operation was an iron oxide magnetite deposit, a strongly magnetic oxide generating no acid runoff, and also allowing magnetic extraction to remove the iron from the pulverized ore. When the pumps were turned off and the water filled the mine pit, there were no water-quality issues in the area, allowing the resulting lake to be stocked with fish.

Today, remnants of what excited the early German settlers are still visible in the park. Taconite pellets line the trails and strange mineral deposits are scattered among the red- and black-striped rocks. Red banks bleed color along the cliff faces and edges of the lake.

Large expanses of native oak savanna surround the park, home to birds, pollinators, turkeys and wolves. From swimming to fishing to hiking through nature, Lake Wazee is a great place to enjoy the history and wilds of west-central Wisconsin. 

*Julie Hess is a senior paper process engineer, moonlighting as a naturalist during her spare time. Anna Hess is a natural resource manager for the Minnesota DNR. They'd like to thank Robert Hess for letting them bother him with questions about how the park was formed. Bob has more than 45 years of experience in resource management and worked at the Jackson County Forest and Parks Administration for more than 10 years. Thanks also to the Jackson County Forestry and Parks office for access to their archives.*