

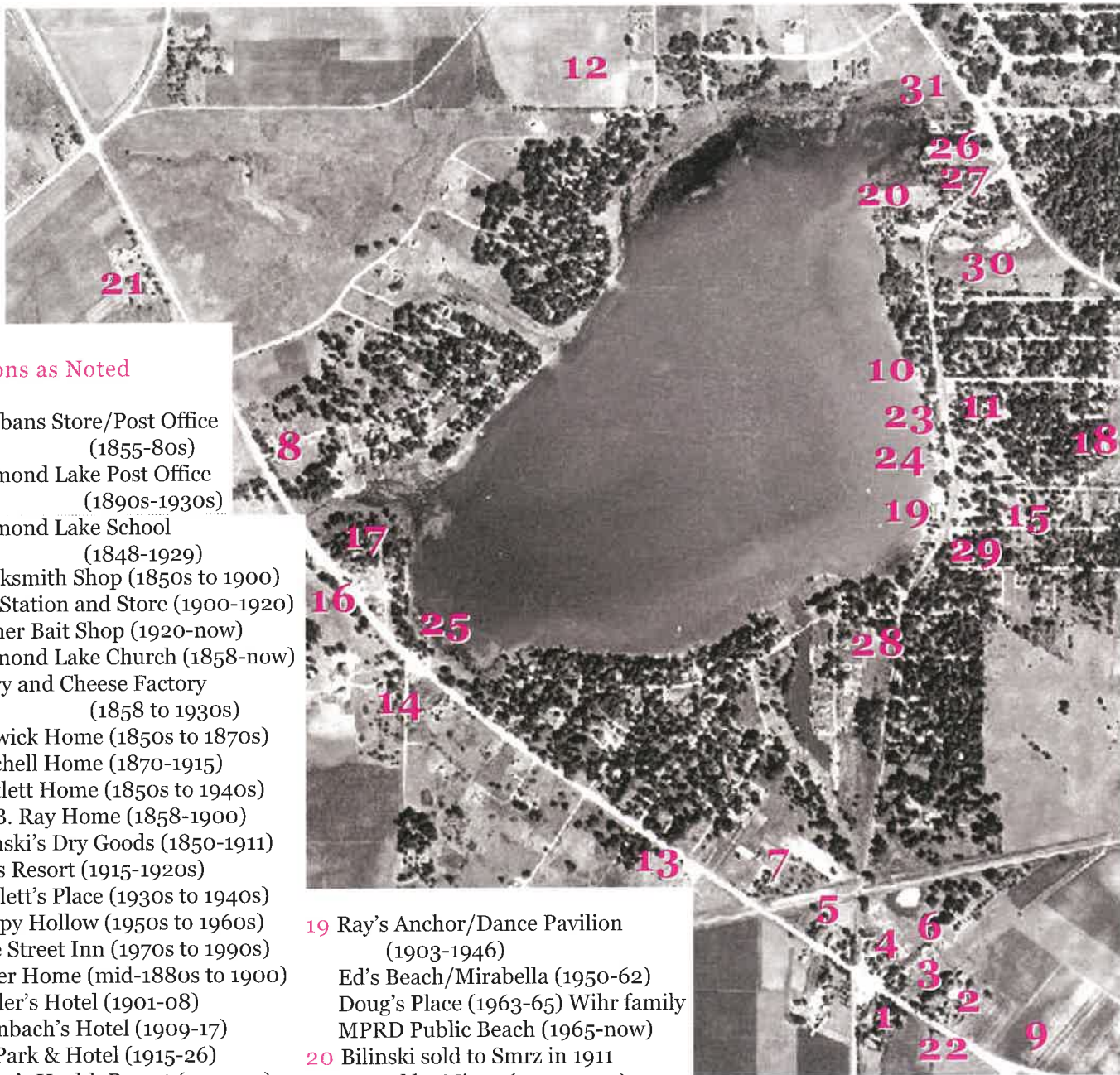
A dramatic sunset over a lake. The sun is low on the horizon, partially obscured by a thick layer of dark, heavy clouds. Bright rays of light break through the clouds, creating a shimmering effect on the water's surface. In the distance, a dark silhouette of a treeline and a few houses is visible against the bright sky. The overall mood is serene and majestic.

**Our Gem:  
A History and Stewardship Guide for Diamond Lake**

*“And for the lake itself, the diamonds still sparkle...”  
Gordon Keith Ray, 1979*

# Diamond Lake Historical Map

Diamond Lake is an exciting place, whether the 1890s, 1920s or to present day. Here are some landmarks and where we believe they were. Sources: Base map from 1939 aerial map - Lake County Maps Online, locations estimated from historical records and title searches done by Liz Werning, Tori Trauscht, memories of Honey Glas, John Maguire, others.



## Locations as Noted

- 1 Wenbans Store/Post Office (1855-80s)
- 2 Diamond Lake Post Office (1890s-1930s)
- 3 Diamond Lake School (1848-1929)
- 4 Blacksmith Shop (1850s to 1900)  
Gas Station and Store (1900-1920)  
Corner Bait Shop (1920-now)
- 5 Diamond Lake Church (1858-now)
- 6 Dairy and Cheese Factory (1858 to 1930s)
- 7 Fenwick Home (1850s to 1870s)  
Mitchell Home (1870-1915)
- 8 Bartlett Home (1850s to 1940s)
- 9 Ira B. Ray Home (1858-1900)
- 10 Bilinski's Dry Goods (1850-1911)  
Bill's Resort (1915-1920s)  
Bartlett's Place (1930s to 1940s)  
Happy Hollow (1950s to 1960s)  
Gale Street Inn (1970s to 1990s)
- 11 Singer Home (mid-1880s to 1900)  
Tattler's Hotel (1901-08)  
Allenbach's Hotel (1909-17)  
DL Park & Hotel (1915-26)  
Crane's Health Resort (1927-50)  
Crane's Resort (Manley 1951)
- 12 Old Cow Path (mid 1860 to 1980s)
- 13 Rouse Home (1840-1890s)
- 14 Whitney Home (1857 to 1900s)
- 15 Lakeside Cottage (1890s to 1916)
- 16 Bartlett's rented to Hackett's (1896-1932)  
Hackett's Dutch Mill (1933-49)  
Dutch Mill Tavern (1950-72)  
Irish Mill (1973-now)
- 17 Noonan's Camp (1909 to 1920s)
- 18 Gordon K. Ray Home (built 1929)
- 19 Ray's Anchor/Dance Pavilion (1903-1946)  
Ed's Beach/Mirabella (1950-62)  
Doug's Place (1963-65) Wihr family  
MPRD Public Beach (1965-now)
- 20 Bilinski sold to Smrz in 1911  
Owned by Mings (1924-1930)  
Hinderyckx Old Flanders Pub (1930-60)
- 21 Blow's Hotel (1920s) now Aldi area
- 22 Diamond Lake School (1929 to 1950s)
- 23 Crane's slide and amusements (1930-1945)  
Roller rink (1950s and 1960s)  
MPRD boat launch (1965-now)
- 24 Merry-Go-Round (1940-1950s)  
Lakeshore apartments (1960-now)
- 25 Niko's Cove, boats/bait (1960-78)
- 26 Schuler's Channel resort (1942-1950)  
Burinski's Channel resort (1950s-1960)  
Bill's Pizza main location (1960s-now)
- 27 Hasty Tasty Ice Cream (prior to 1957)  
Bill's Pizza carry out (1957-now)
- 28 Hackett's owned (1936-1960s)  
El Barrio (1971)
- 29 Popcorn stand (1960s)
- 30 Strip mall 1960s - grocery, pharmacy  
Sandy and Gwen's The Point bar(1970+)
- 31 Schuler's Hardware/Plumbing (1950-86)  
Other Businesses ~New Mundelein park



***Our Gem:  
A History and Stewardship Guide for Diamond Lake***



*Postcard 1942. Fort Hill Heritage Museum.*

**Funding for this project was provided in part by the Lake County Stormwater Management Commission through a Watershed Management Board Grant.**

**2019**

*Cover photo of Diamond Lake by Jay Randolph.*

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## Diamond Lake Region Historic Timeline

12,000 years BC – Ice age glaciers recede, leaving the Great Lakes and pristine prairie potholes such as Diamond Lake.

1682 – Illinois region is in possession of the French Crown as part of the Northwest Territory.

1763 – Treaty of Paris surrenders French-held lands east of the Mississippi to the British.

1776 – U.S. Declaration of Independence from Britain begins.

1783 – Treaty of Paris opens Northwest Territory around Great Lakes (including Illinois) to settlement.

1795 – Northwest Indian War between US and a confederation of tribes aligned with Britain is lost. U.S. treaty requires British exit.

1803 – Fort Dearborn is built at Lake Michigan/Chicago River.

1809 – Reaching the required 5,000 free male inhabitants, Illinois becomes a territory per Congress.

1818 – Illinois becomes a state with a population of 45,000.

1830 – The Indian Removal Act forces removal of native peoples in the east to lands west of the Mississippi River.

1833 – The Treaty of Chicago removes local tribes from what is now Lake County.

1835 – William Fenwick builds first house on the south bank of Diamond Lake, near present day Oak Terrace.

1836 – A massive 50-year settler migration begins after Native Americans are required to leave Illinois.

1840 – Alexander Bilinski purchases north side land and builds first store and taverns. John and Matilda Rouse purchase 500 acres in Mundelein, including 125-acre lake.

1847 – John Holcomb becomes large landowner north of the lake.

1848 – Diamond Lake School is built on the east side of Diamond Lake Road near Route 60/83.

1851-1859 – Mundelein settlers arrive. They include the Aynsley, Davis, Butterfield and Ray families. Mechanics Grove name is changed to Holcomb.

1855 – A post office is established in Diamond Lake.

1861-1864 – Civil War takes place. Abolitionists provide refuge for slaves on Underground Railroad in Lake County.



*Photo from cover of Diamond Lake School History of 1918. Collections of the Dunn Museum.*

1871 – The Great Chicago Fire burns for three days.

1885 – Train lines are installed by the Chicago, Northwestern and Minnesota railroad, and a station is established in Holcomb.

1886 – Holcomb is renamed to Rockefeller.

1888 – Rockefeller prospers. Two grain elevators are built to serve the many farmers in the region, and dairies are established.

1890- The Ray family opens Lakeside Cottage.

1900 – Hunting and fishing resorts open around Diamond Lake.

1909 – The Village of Rockefeller is incorporated in February, by including the Diamond Lakers. Then Rockefeller is renamed Area in July. Lake County population nears 55,000.

1914-1918 – World War I takes place.

1915-1917 – Archbishop Mundelein purchases property for Saint Mary of the Lake Seminary in Area, Illinois.

1920 - 1933 – Prohibition is enacted.

1923 – A real estate boom occurs in Diamond Lake with many subdivisions platted around the lake.

1924 – The Village of Area is renamed to Mundelein in honor of Cardinal Mundelein after the seminary opens.

1925 – Chicago Northshore and Milwaukee interurban electric rail service comes to Mundelein.

1926 – The 28th International Eucharistic Congress brings more than 500,000 pilgrims to Mundelein. Roaring 20s brings truck parties and big bands to Diamond Lake.

1929 – Bill's Resort and other tourist locations evolve around the lake. Great Depression begins and lasts for 10 years. Building of private lake homes begins.

1930 – Cottagers win lawsuit to keep Diamond Lake private.

1933 – Prohibition ends. Dutch Mill, Bartlett's Place and Ray Brothers resorts acquire liquor licenses.

1934 – Severe drought affects farming and Diamond Lake water levels.

1937-1938 – Back-to-back flooding damages Mundelein and lake resort areas.

1939 - 1945 – World War II takes place. U.S. involvement is from 1941 to 1945.

1946 – Soldiers return and buy homes. Automobile and motorboat sales soar.

1949 – The Ray family resort closes.

1950-1953 – The Korean War takes place.

**Timeline (continued)**

1950s – Diamond Lake is impounded with a spillway installed on the south shore in Oak Terrace.

1954 - Mundelein Park District is organized.

1960s through 1990s – Water ski clubs thrive. Slalom course is built around 1960.

1964 – Mundelein Park and Recreation District has 13 acres of parks to maintain.

1965-1975 - U.S. get involved in Vietnam War.

1969 – The Mundelein Park and Recreation District purchases Diamond Lake for \$23,000.

1973 – The Mundelein Park and Recreation District opens the public beach on Diamond Lake.

1978 – The Mundelein Fire Department burns down beach buildings to pave way for new recreation center.

1980 – The Diamond Lake Recreation Center is built. Water ski clubs are popular all over Lake County.

2000 – The Indian Creek Watershed Project is founded, and \$4 million is spent on water-quality projects between 2000 and 2015.

2014 – The Diamond Lake Preservation Alliance is formed to improve lake conditions.

2015-- The Diamond Lake Preservation Alliance and the Mundelein Park and Recreation District implement an aquatic weed-management strategy for Diamond Lake.

2017-2019 – Watershed Management Board grant funded by the Lake County Stormwater Management Commission. Grant requires Wilderness Pond South stabilization, production of a Diamond Lake stewardship guide and lake signs placed.



*Diamond Lake landscape (edited & enlarged) photo c.1910. Probably taken around Lakeview Park in Oak Terrace. It shows the east shore buildings (from left to right), possibly Bilinski's Dry Goods, Allenbach dance pavilion/resort and Ray Brothers dance pavilion. Collections of the Bess Bower Dunn Museum of Lake County, [www.lcfdp.org/museum](http://www.lcfdp.org/museum).*

## A History of Diamond Lake



Source: [igs.indiana.edu/Fossils And Time](http://igs.indiana.edu/Fossils And Time)

During most of the past 1.6 million years nearly all of the northern hemisphere was covered with glacial ice. As the ice periodically melted, it deposited buried soils. The Illinois Episode of deposition was from 300,000 to 150,000 years ago. Roughly 14,000 years ago, the glacier retreated and carved various lakes into the landscape. One of these was Diamond Lake, which is why it's called a glacial lake.

About 10,000 years ago, mastodon, mammoth and bison roamed what is now Lake County. The Native peoples, the first human inhabitants here, used the resources of the Great Lakes region for thousands of years. Abundant game, fertile soils and plentiful clean water enabled them to survive by hunting, fishing and farming. Lakes and tributaries provided convenient transportation by canoe, and trade among groups flourished. Historic tribes traversing and living in Lake County through the 1700s included the Illinois, Blackhawk, Kickapoo, Ottawa, Chippewa, Miami, Sac, Fox, Potawatomi, Winnebago, Sioux, Iroquois and Huron, according to historical accounts. These Native Americans lived a semi-mobile lifestyle growing corn, hunting small game, fishing,

making maple syrup and gathering wild rice and other plant foods. They also engaged in fur trade with the French around the Great Lakes region.

## Exploration and settlement

Early explorers who roamed northeastern Illinois along the Des Plaines River and the Diamond Lake region, around 1650, saw “primeval forest, abounding in game” east of the river, “while to the westward .... illimitable prairies (on) which roamed vast herds of bison,” according to an historical account of Lake County.

Pere Marquette, one of the first missionaries traversing the area in 1674, observed the wildlife abundance, lovely lands and pure, health-giving waters that were revered by Native Americans. LaSalle passed through the Illinois Territory in 1679 to establish trading posts and build alliances with the Native Americans. He claimed this part of the continent for Louis XIV. His assistant Friar Louis Hennepin in his travel journal about this area wrote about fields which grow naturally to a height of 6 or 7 feet, the soil is capable of producing fruits, herbs and grain in greater abundance than the best lands in Europe. He mentioned the healthy climate, and the country watered by countless navigable lakes, rivers and streams.



*Pere Marquette and the Indians. Painted by Wilhelm Lamprecht (German, 1838-1922).*

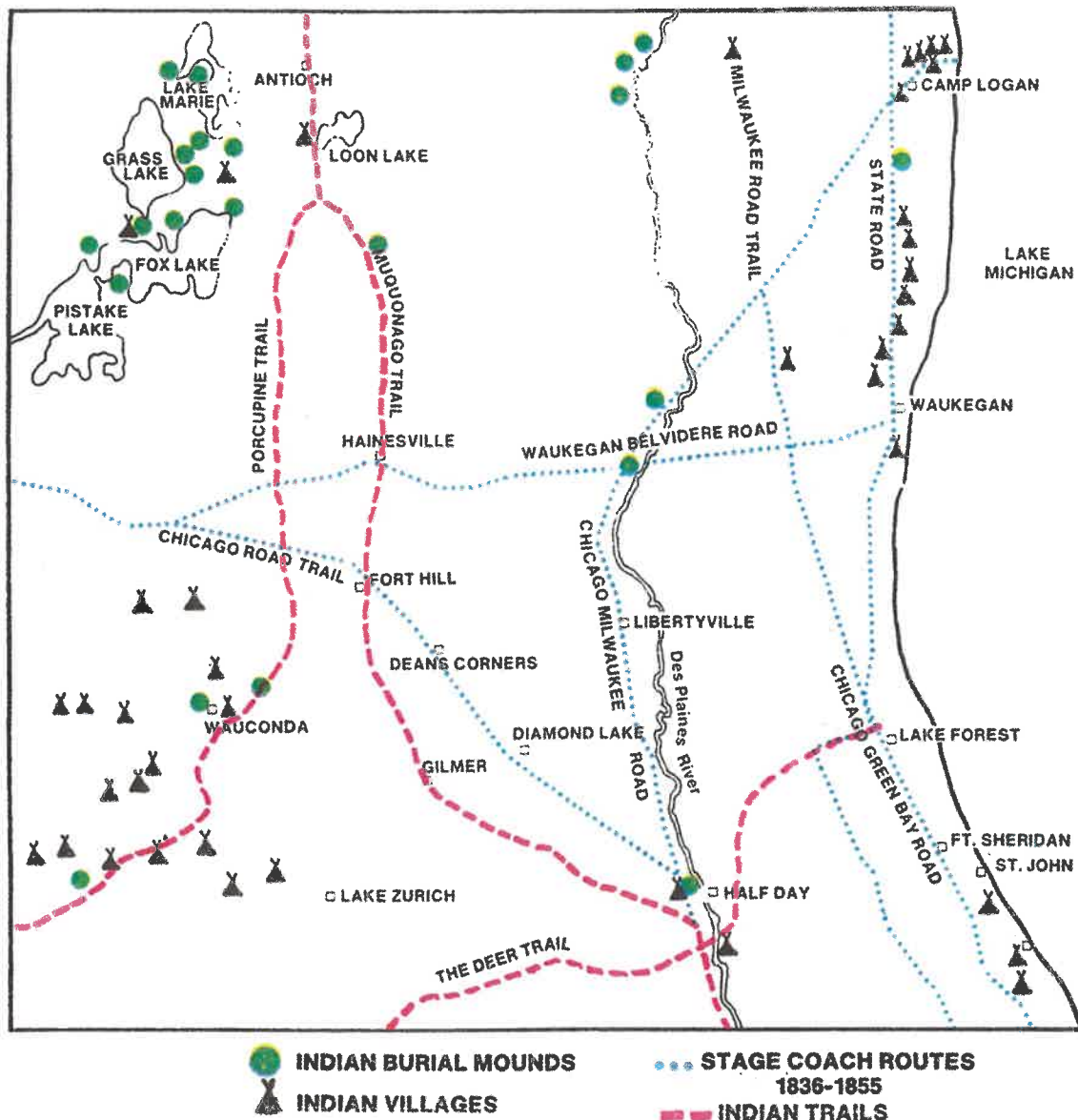


In the early 1800s, word spread about the rich, fertile soils and plentiful game resulting in a huge migration called the midwest expansion. When Illinois became a state in 1818 it had 13 counties. In 1839, Lake County was established from a portion of McHenry County which had been formed in 1837 from LaSalle and Cook Counties. Lake County was so named because of the fifty plus lakes that were located here. Many eastern pioneers abandoned the “mud-hole” of Chicago for the rich lands of Lake County. A stage line was established in 1836 between Chicago and Milwaukee, which became known as The Milwaukee Road.

At that time, a sophisticated network of Native

American trails met with an historic trail that traversed what is now Route 176 to Fort Hill, near Peterson and Allegheny Roads. Travelers in covered wagons often encountered Native Americans who did not feel they had any “title” to the land, but rather were caretakers for future generations. After the Black Hawk War, the 1833 Treaty of Chicago stated that for 5 million acres of land, the remaining local tribes of Chippewa, Ottawa and Potawatomi received some cash and various goods and then were forced to resettle in lands west of the Mississippi River no later than September of 1836. In 1834, settlers began to make their unofficial claims, marking homesteads with plow lines, rocks and fences.

Map c. 1836 Source: The News Sun Archives, 8/12/87.



Daniel Wright is recognized as the first non-native permanent settler in Lake County. In fact, the Potawatomi helped him to build his cabin in 1833. He was known for his comradery with the Native Americans and his humor. Land claims were made until around 1840, meaning settlers could live on unsurveyed land for a year and then claim it. Costs started at \$1.25 per acre. Early settlers were plagued by malaria, typhoid fever and other diseases. Many family members, especially children, succumbed to illnesses. Wright lost his first wife and son to disease, but he himself lived and farmed along the Des Plaines River (around Lincolnshire) until 1873.



*Drawing of the Bartlett Home.  
Libertyville-Mundelein Historical Society.*

### **Historic pioneers of the area**

The first settler of the historic Mundelein area was Peter Shaddle in 1835. He built a log cabin on what was then called Mud Lake near where University of St. Mary of the Lake and Mundelein Seminary are located today. English immigrants also settled the area to escape the industrial depression. These tradesmen established the new community of Mechanics Grove. Also in 1835, William Fenwick built the first lake home on the south bank of Diamond Lake near present day Oak Terrace. He was said to have planted an evergreen tree there that grew to an enormous size, and planting evergreens around the lake soon became a tradition. At that time a plot of 80-acres of land could be purchased for \$1.25 an acre.

In the late 1830s, the Weyman, Covolt and Whitney families built homesteads on the south and west banks among the historic fishing grounds and villages of the Potawatomi. David Whitney built his home on the west bank of Diamond Lake just west of where Oak Terrace is now. In 1840, Alexander Bilinski, arrived as an immigrant from Poland. He had mined in California and dined in Utah with Brigham Young, before purchasing 40 acres on the north side of the lake for \$500. His son, Charles, opened the first general store, tavern and rooming house on the northeastern side of the lake. Later, in the 1860s his property may have become Hackett's Place, a store and hotel.

The west side of the lake saw homesteads established by Lake County politician Charles H. Bartlett who purchased a 200-acre parcel, as well as Libertyville schools director William Davis and J. S. Singer of the Singer sewing machine family. In the 1890s, Singer bought a home that he converted to a resort on the east bank of Diamond Lake just north of where the public beach is today. His home renovation cost \$11,000 which was a king's ransom in those days. The Singer Summer Home and Resort tragically burned down in 1901. The Tattler hotel and eventually Crane's Hotel and Health Resorts were later located on this same property.



*The Singer estate on the east side of Diamond Lake.  
Illustrated Atlas of Lake County, Illinois 1885.*

John and Matilda Rouse arrived from England and purchased acreage northeast of Diamond Lake around 1840, including the 125-acre Diamond Lake.





*Ira B. Ray home (above) c. 1900, and land (below) 1910.  
Collections of the Bess Bower Dunn Museum of Lake County.*

By the late 1800s Rouse owned a 387-acre farm to the north of the lake valued at \$50 per acre. In 1845, Curtis Wenban, who migrated from Ohio, settled at Diamond Lake. He opened a general store and served as Diamond Lake's postmaster from 1855-85.

The Ira B. Ray family came from New York in 1853 and settled on the east side of the lake. As carpenters of Irish descent, they were hard workers and provided key construction support around Diamond Lake. Ira Ray's son George married Harriet Rouse. The Rouse and Ray families grew to have many generations in Lake County. In fact, a Rouse or Ray has been firmly entrenched in public, civic, religious, farm or commercial life since 1844.

Ira Ray's grandson, Gordon Ray, kept journals and took historic photos of Diamond Lake and the region from 1900-1946. Gordon's son, Gordon Keith Ray, compiled them into an autobiography, which provided a wealth of history and culture about Diamond Lake.

Wild deer, coyotes, turkeys and other game roamed the colorful prairies and woodlands. Some settlers disliked the scarceness of wood and water on the grassy prairies, and they were very fearful of the prairie fires that would take everything in their path. But they also found the prairies provided rich deep soils for farmland.



*Wenban store and post office, 1880s.  
Libertyville-Mundelein Historical Society.*



The Diamond Lake area had it all, rich prairie soils, fresh water with natural springs, forests for building homes in addition to wildlife for hunting and fishing.

As settlement and farming expanded in the lake area, settlers soon built churches, schools, businesses and a valuable community. The map (next page) of the four corners of Diamond Lake shows the business district including the Fenwick home, Church, Wenban store/Post Office, and School (noted as S.H).



John Holcomb arrived from England in 1845 and acquired 356 acres in the nearby community of Mechanics Grove. An educated, religious man, he held prayer services in his home, a common practice those days. Ivanhoe Congregational Church was built in 1856 followed by the Diamond Lake Methodist Church in 1858 at Diamond Lake Corners or the intersection of current Route 60/83 and Diamond Lake Road. Holcomb became a leading figure in the intellectual and social life of the town and by the 1860s Mechanics Grove was renamed Holcomb.



*An early class of the Diamond Lake School from Diamond Lake School History of 1918. Collections of the Dunn Museum.*

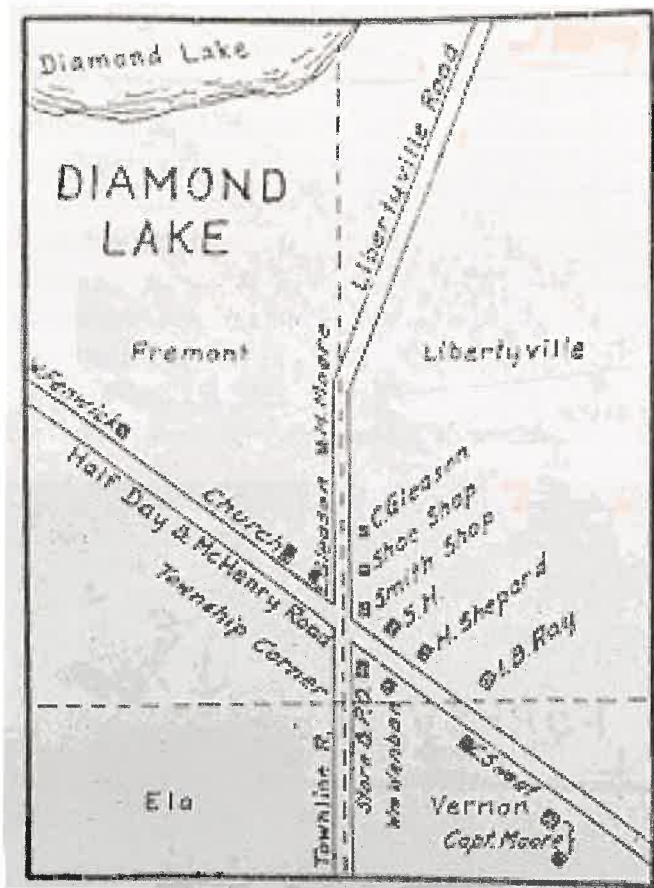
The Diamond Lake School district was organized in 1847 with donations from the Rouse family. They helped build the first Diamond Lake church too. The school was to be built 22 feet in length, 18 feet in breadth with 9-foot posts. In 1856, Eliza Bennet was appointed teacher of Diamond Lake School and paid \$3 a week. At that time there were 105 scholars enrolled in the district. In the 1860s, the school moved to the blacksmith shop near the four corners.

**Civil War era**

As early as 1843, abolition was being discussed in Lake County. Many residents were strongly against slavery and determined to help fleeing slaves. It was said that several churches in the area provided refuge for slaves as they made their way north on the Underground Railroad to Canada. The attic of the Diamond Lake Methodist Church was said to have been one of the refuges.

As the Civil War broke out, many from the area enlisted. In Lake County, out of a population of 19,000 residents, approximately 2,000 soldiers enlisted to fight. An estimated 400 died from disease and battle wounds. Rules and regulations began to define life after the Civil War. In Waukegan there were ordinances against fast driving, leaving horses unhitched and throwing ashes in the street.

Farming was very profitable in Lake County from the 1860s until after WWII when the home building boom began. Key commodities were cows and hogs, which were slaughtered for local food and also sent to the Chicago stockyards. Diamond Lake and Mechanics Grove residents had several dairies, with chicken, sheep and goats on their farms. They produced milk, eggs, cheese, butter and cream. Main crops were corn, oats, wheat, rye, clover, potatoes, yams and other vegetables. Fruit trees, grapes and berries were also important. In 1868, farmers drove out coyotes, or prairie wolves, blamed for killing their livestock.



*1861 landowners index, edited by Julie Weber and Aileen Potterton Hapke. Lake County Genealogy Society.*





People came to Lakeside Cottage Resort from all over, by horse and carriage, and even by bicycle to enjoy Harriet Rouse Ray's fine Sunday chicken dinners. Some later famous guests included Lt. George Patton, a young Benjamin Kubelsky (before he became performer Jack Benny) and Mrs. William Wrigley.

In 1900, Charles Tattler established a hotel and dance parlor in the prior Singer Hotel, one of the largest in southern Lake County. It tragically burned to the ground in 1901. Tattler rebuilt in 1905 and renamed it the Diamond Lake Hotel and the grounds Diamond Lake Park. It was also known as Tattler's Grove.

Tattler had many misfortunes and in 1908 moved west after one of his children died in a tree-cutting accident. A. Allenbach & Company later managed the hotel, which then became Crane's Diamond Lake Health Resort and Cottages.

A key winter industry was ice cutting on Diamond Lake in the early 1900s. Once lake ice measured 12" thick, it was sold to locals and industry in Chicago. Ice was scored, cut, wrapped in straw, covered with sawdust, and stored in barns or ice houses until summer or shipped to Chicago as needed. The lake could only provide limited ice because rushes bordering the lake made getting clean ice difficult. This ice industry waned once refrigeration began after WWII.



*Tattler Hotel, 1907. Collections of the Dunn Museum.*



*Postcard notated as Allenbach's Hotel, 1911, shows dance pavilion. Collections of the Dunn Museum.*



*Scoring ice on Diamond Lake. Collections of the Dunn Museum.*

Holcomb was renamed Rockefeller in 1885 in hopes that the Rockefellers would invest in the town. In 1909, Rockefeller officials wanted to incorporate into a Village, but residents were concerned that the local population was not enough: 400 people were required to form a village. George Ray agreed to persuade those who lived on Diamond Lake to expand the Rockefeller population within village limits to both sides of Lake Street all the way to Diamond Lake Road. In return, the Diamond Lakers gained running water and indoor bathrooms for their resort and other businesses. In 1911, they received electric service and in the 1920s sewer, and gas lines. Five months later the town was renamed Area.





*Rockefeller Train Depot in 1909.  
Libertyville-Mundelein Historical Society.*

Around that time the community began thriving with two grain elevators, several stores and hotels, but saloons and bars were prohibited by a provision of the deed from John Holcomb. Many laws are still on the books from the earlier days, such as no filth allowed on public streets, no driving animals on sidewalks, no dog fights or cock fights, and no loud talking or obscene behavior on streets and public places.

In 1903, George Ray built a boat house for his two eldest sons, Will and Lloyd, so they could turn it into an enterprise. They began a refreshment stand with boat rentals right on the lake. In 1908, they upgraded to an ice cream parlor and called it The Anchor. The hotel business tapered off by 1913 and Lakeside Cottage closed in 1916 but The Anchor was a mainstay of the lake.



*Gordon Ray at The Anchor, which included an ice cream parlor, 1915. Collections of the Dunn Museum.*

After that, the family built a dance pavilion next to the boat house, which was later referred to as The Ray Brothers Pavilion. During the 1920s, the Ray family hauled 50-80 people in open trucks from the train station to have picnics. They sold soda, ice cream and candy, but no liquor. People danced and boated for entertainment. On summer Saturdays, a three-piece band entertained 100 or more people.

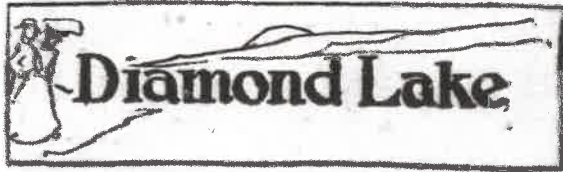
The Whitney home was originally built in 1857, and as shown below offered “Meals at All Hours” in 1912 and most likely boarding as well.



*Whitney House, 1912. Collections of the Dunn Museum.*

In 1916, the Charles Bartlett family sold a portion of their land on the lake’s west side to a non-profit hunting and fishing lodge. Scouts camps were popular on the south lake shore from about 1920 to 1929. One camp called Camp Ken-Jockety, a Native American name meaning “far from the crowd” was popular during the 20s, and was likely located on the southwest lake shore between West Shore Park and Oak Terrace. It cost each scout \$12 for two weeks.

The Bilinski family owned a store and lakefront property but sold it all in 1911. It later became a hunting camp with lodges until 1930 when the Hinderyckx family bought it. Belgian bricks were said to have been acquired from a 1933 World’s Fair building and the family used the bricks to build Old Flanders tavern.



Diamond Lake has had many visitors this season, the number of guests at the cottages reaching more than 400. Catches of black bass and smaller fish have been good. Dancing shares popularity with fishing, the attendance generally being 100 couples.

Soldiers from Fort Sheridan camped on Tattler's grounds here last week. They will return on Sept. 4. A lawn fête was given Thursday evening. Soldiers and officers attended. The visitors numbered 300.

Dated August 9, 1903

Source: [www.newspapers.com/image/350221077](http://www.newspapers.com/image/350221077)



Troops from Fort Sheridan used to camp and perform practice maneuvers around Diamond Lake before America entered WWI. Gordon Ray took photos of those events as they camped at Lakeside Cottage and Tattler's resort in 1908.

*Collections of the Dunn Museum.*



*Hinderyckx Old Flanders Tavern, circa 1930s. Collections of the Dunn Museum.*

The Hinderyckx family also provided beach front cottages until the 1960s. In the 1970s a small business district was built on their land just across Diamond Lake Road including a grocery store, a dime store, a pharmacy, bowling alley and beauty parlor. After the matriarch, Dorothy Hinderyckx, died in 2003, a trust company bought the land and re-developed it into an updated shopping area at Route 45.

Arthur T. Sheldon opened Sheldon School in 1910 on land that is now University of St. Mary of the Lake and Mundelein Seminary. Sheldon established a local university for building students – men and women– mentally, morally and physically. Its slogan was “Ability, Reliability, Energy and Action,” or AREA. With the school’s success he proposed Rockefeller be renamed Area. Since he owned 600 acres and the school brought several thousand people, the Village agreed and the name was changed in 1909. The school fell on hard times and closed in 1921.

Sylvester Tripp was the first mayor of Rockefeller. Bob Rouse became the fourth Mayor, 1917-1945.

**Roaring Twenties and popular lake resorts**

The 1920s were huge years for the Diamond Lake resort industry. A news headline from 1923 called the Ray Brothers Pavilion one of the hot spots of the Chicago region. On July 4, 1925, Gordon Ray remembered selling 1,600 tickets, and thousands of sandwiches. He called it a record day for the Rays.

In 1927, Dr. M.A. Crane opened the Crane’s Health Resort and Cottages on the north side of where the Gale Street Inn parking lot would be built.

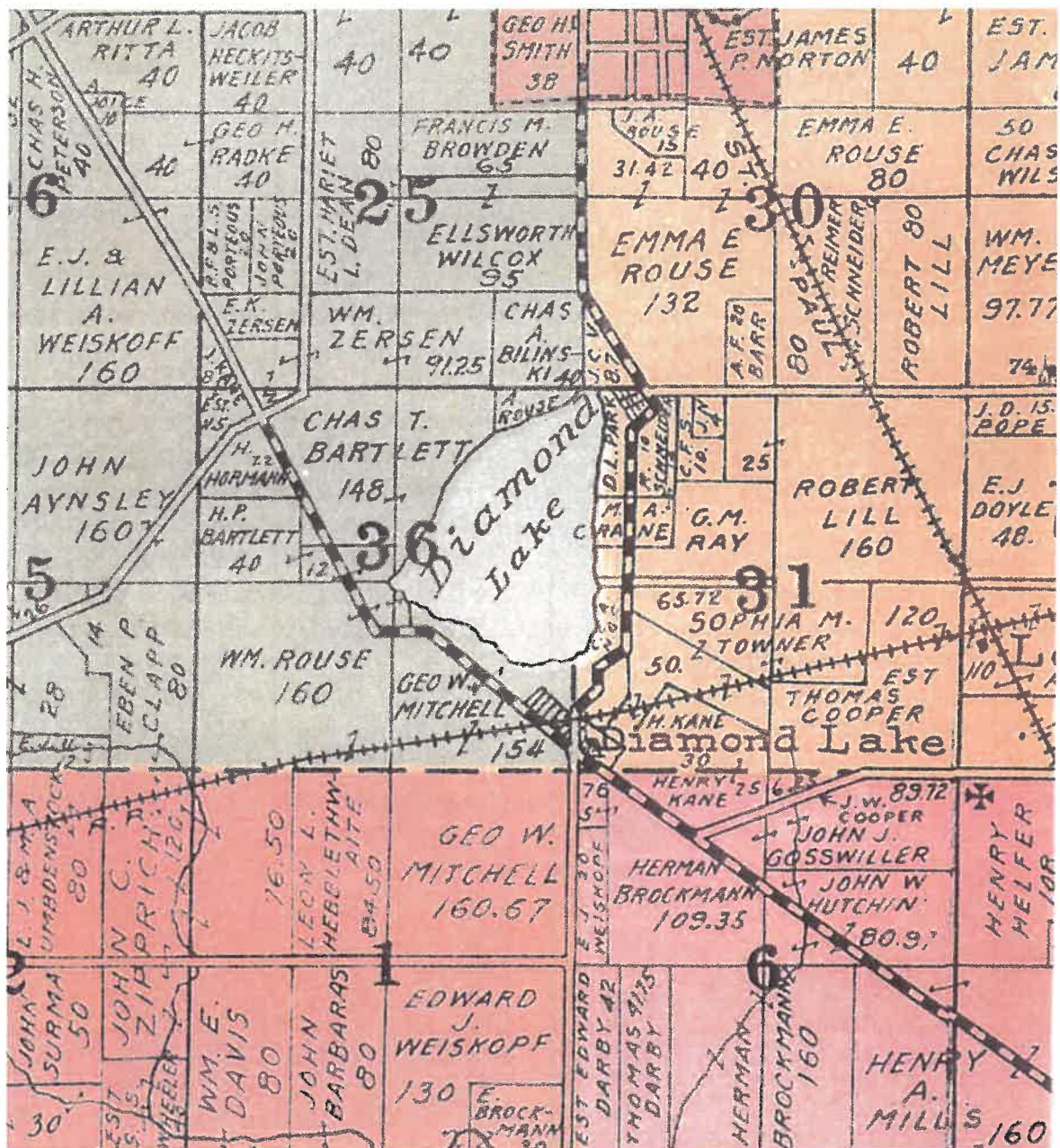




Vintage Postcard, Rockefeller.



Area Postcard pre-1923. Collections of the Dunn Museum.



1915 Map of Area and Diamond Lake (Edited), Produced by John G. Brink Commercial Artist and Draftsman. Collections of the Dunn Museum.



An advertisement for Crane's Health Resort stated: "Here you can have the benefit of real out-door life, long walks and hikes, hydropathic treatments, massage, sunbaths, out-door sports and games, air baths, boating, swimming, milk diet, etc. Here you can cultivate a playful spirit, be happy and radiate youth, fun, and the wholesome joy of living. All diseases remedied by natural methods. Wonderful results."



*Local newspaper advertisement 1920s.*

By the mid-1920s, the tiny lake community of 50 people mushroomed to 2,000 resort visitors in summer. Proprietors trucked travelers from the train station to deliver them to their respective resorts. Many resorts opened and thrived around Diamond Lake from the early 1900s until World War II. These included Tattler's Hotel, Allenbach Hotel, Crane's Resort, Ray Brothers Pavilion, Blow's Hotel, Bill's Diamond Lake Resort and then Bartlett's Place, a resort, tavern, grocery store and picnic grove, became Gale Street Inn. Hunting and fishing camps were also established around the lake in the 1900s.

The Diamond Lake central community extended

from present day Route 60 north to what is now Bill's Pizza at Route 45. In 1922, the first concrete road was built from Area to Libertyville which helped local transit. The community of Diamond Lake also had a store, its own church, post office, cemetery, a cheese factory, several farms, creameries and dairies. Established in 1900, Country Corner (at one time a gas station) still operates as a bait shop today.

Benny Goodman, Lawrence Welk, Jack Benny and other famous musicians performed at the Ray Brothers Pavilion during its heyday in the late 1920s and 1930s when crowds often swelled to over 1,000.



*Bill's Resort - 1927 Postcard "33 Miles from Chicago". Collections of the Dunn Museum.*

In 1933, prohibition ended, so Gordon Ray resigned his third term as Mundelein Village Trustee to get a beer license and add liquor for purchase at Ray's resort. The pavilion and dance hall was successful until 1949. The Ray family had owned over 200 boats in the 1920s but that dwindled to 10-15 in the 1940s.



*Aerial view of 1926 Eucharistic Congress at St. Mary of the Lake Seminary. Collections of the Dunn Museum.*

### **Becoming Mundelein**

The village of Area was renamed Mundelein in 1924. The Sheldon School properties were purchased between 1915 and 1917 by the Roman Catholic Archbishop of Chicago, George Cardinal Mundelein. His dream, to build a facility to celebrate the Catholic Church in America, had come of age. The buildings and grounds hosted the 28th International Eucharistic Congress in June 1926, the first time it had been held in the United States. It was considered an international Catholic world's fair with parades and pageantry. Throngs of people attended the Congress starting at Soldier Field and then took the train to the new Saint Mary of the Lake Theological Seminary in Mundelein. The event made transportation history as the largest movement of people by rail in the country. It truly put Mundelein on the map.

Samuel Insull, who came to the U.S. from England in 1881 and became Thomas Edison's private secretary, was a business magnate and large landowner in the area.

The Chicago & Milwaukee Electric Railroad had extended north in 1905. Later Insull bought the rail line and built the the Skokie Valley bypass route from Skokie to Libertyville, which was double tracked to Mundelein just in time for the Eucharistic Congress in 1926. Congress attendees were delivered by train every two minutes. Insull purchased many acres of local land and began developing neighborhoods, roads, and a model farm, now the Tullamore subdivision. He helped pave Hawley Street and even supported building a new Mundelein Village Hall.

When the stock market crashed in 1929, the boom ended. Many commuters lost their jobs during the Great Depression so there was no one to travel to his unsold subdivisions, which lay empty, and his offices closed. Insull was accused of financial mismanagement and acquitted at a trial around 1932. The train line ultimately closed in 1963 due to less ridership which saddened its loyal supporters. As the worst economic downturn in history, the decade of the 1930s was defined by widespread unemployment and steep declines in the economy. During the Depression, unpaid taxes reached record levels, street lights were turned off and the local economy languished. To add insult to injury, a terrible drought in 1934 caused Diamond Lake to reach its lowest level on record and farm crops in the area dried up.

Then in 1937 and 1938, record floods made row boats the only way to get around the vicinity.



*Drought of 1934 showing Crane's waterslide in the background. Edited - Collections of the Dunn Museum.*



The Ray Brothers resort was repaired three times, twice due to flooding, and once from a fire that burned the entire old ice cream parlor section.

### **Diamond Lake housing boom**

During and following the Great Depression in the 1930s and 1940s, Diamond Lake had the reputation of being a local pleasure spot and recreational es-



*Pearl Ray, Gordon Ray, Marie Schanck, and cow, 1917. Collections of the Dunn Museum.*

cape. It was a haven for summer people, and the home of some interesting native residents. There were a variety of amusements situated around the lake at various resorts, including areas for truck parties and motorcycle picnics, taverns, a water slide, a roller rink, merry-go-round and other amusement attractions.

Prior to the 1920s, there were mainly farms around Diamond Lake and cow paths leading to the lake, but by the mid-20s cottage development began in earnest. Dr. M.A. Crane established Diamond Lake Park subdivision in 1917 from Longwood Terrace to Oakdale Avenue, and in 1921, another subdivision along Diamond Lake Road from Hickory to Shady Lane.

The George Ray farm was divided and the land platted and subdivided from Oakdale to Shady Lane. In 1929, the Ray family broke ground on houses in their new Indian Heights subdivision, and Gordon with new wife, Marie Schanck Ray, built their first house there in 1926 after moving from the family farm.

In the summer of 1923, West Shore Park was surveyed and subdivided by Benjamin H. Miller. Summer homes were built, with the first completed in 1925. Grants and easements were established around that time for various resident privileges such as swimming, fishing, boating, and the use of parks, as well as restrictions on building and property use. In 1929, the non-profit West Shore Park and a water system were established. By 1938, there were 63 homes and the park became incorporated. Parks, roads, beaches, sewers and a new water system were added after 1940.

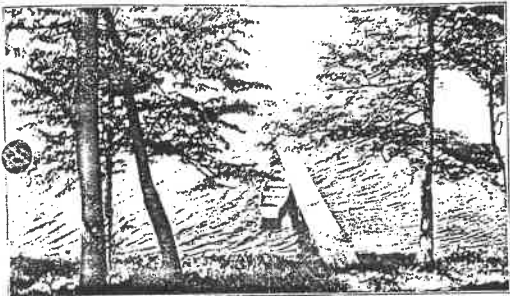
Oak Terrace was platted in 1923 and developed by Dr. Howard Hoag of Waukegan. Betty Gossell, in a 1998 Oak Terrace newsletter (*The Acorn*, June 1998), remembered that she was just 5 when she moved to Oak Terrace around 1929. Her father became a real estate agent and he sold the lots in Oak Terrace. She recalls that Lakeview Park had its own swim area and pier. In winter, they went sledding along the wide undeveloped wooded hillside expanse right onto the icy lake. She said in the early days there were only about 10 permanent resident families in Oak Terrace, with mostly summer cottages along the channel and dotted around the area. She also remembers skating at the roller rink along Diamond Lake Road near the later location of Gale Street Inn. She said the old wooden bridge, built in the 1920s, was replaced over the channel in the 1960s. The old wooden bridge had many historic initials carved in it.



*Ray subdivision, 1929. Collections of the Dunn Museum.*

Oak Terrace newsletters confirmed that Marlon Brando was a student at Libertyville Township High School. He hung around with friends in Oak Terrace and dated area ladies. His family's Pennypoke farm was located west of the Grand Dominion complex.

In a lovely promotional piece from the early 1930s, Lakes Realty encouraged people to buy summer homes in Oak Terrace citing it takes one hour by train to get from Chicago to Oak Terrace. This made it possible to spend the entire summer with family, leaving in the morning to attend business (in Chicago), and returning the same day to the lake and heart of the woods. It also stated Diamond Lake is so named because it is the "gem of lakes in Lake County, which has over 50 lakes in its borders."



For Your Summer Home

# Oak Terrace

on

## Beautiful Diamond Lake

30 Miles From Chicago



Oak Terrace Archives

The advertisement also pointed out that the shores were beautifully wooded, with high-sloping banks, and the lake ideal for fishing, boating, and bathing. "A more charming spot would be hard to find away from the din of the city where you can enjoy the pleasure of life in the country!" the brochure stated, also pointing out the virgin trees including elm, oak, walnut and hickory.

It referred to the "splendid natural drainage, the invigorating atmosphere and healthy climate, encouraging rest and quiet to the tired body and mind, and recreation ... with delightful neighbors and ideal surroundings!"

John Wiech added an Oak Terrace addition in 1926, which included the neighborhood across from Route 60/83 just south of the current West Oak Middle School extending to the railroad tracks.

A key lawsuit was settled circa 1930 about Diamond Lake remaining private. Grantees of the original bed of the lake began demanding payment from cottagers for lake use and one owner actually put a barbed wire fence into portions of the lake. Representing angry lake users, attorney Benjamin Miller of West Shore Park fought in partnership with the Ray family for two years to keep Diamond Lake private. They claimed that Diamond Lake was not

### INDIVIDUALS TAKE LAKES FROM PUBLIC

Fifty Small Lakes in Northern Illinois May Be Closed to the Public as the Result of a Ruling Announced on Tuesday by State Department.

Fifty small lakes in northern Illinois may be closed to the public as the result of a ruling by the state department of purchases, which Tuesday announced that Diamond lake, Lake county, was private property.

The opinion, reached on August 29 and sent to Attorney Benjamin H. Miller, of Libertyville, by Henry H. Kohn, director of state department was not announced until Tuesday. Mr. Miller, who claims ownership of 160 acres on Diamond lake, revealed the finding. He and Ray Brotheran, members of a resort firm, have been seeking to have the problem of private and public right settled for two years.

According to the ruling, Diamond lake is not now navigable for purposes of commerce, and never has been. The decision dismisses the legal proceedings, brought by John Wick, owner of a strip of shore land.

Mr. Miller pointed out that 51 of the 52 lakes in Lake county are not navigable, the one exception being Fox lake.

Article from *The True Republican*, Sycamore, Illinois, 10/18/1930.

navigable for commerce, unlike the Fox River, and thus should remain a private lake, which entirely should be available for use at no charge. The Ray family, Miller and then ultimately the cottagers won the lawsuit, and the ruling by the State of Illinois set a precedent for the 50+ other lakes in Lake County. This ruling prohibited lake bed owners from charging for use of the lake bed and gave rights to the shoreline communities around the lake.





Bell Telephone Book advertisement. 1950s.

A landmark still in the Diamond Lake Area is the Irish Mill tavern, which was likely built in 1923 as a convenience store with gas pumps and later renovated to a pub. The original Hackett's Tavern may have even been a speakeasy in the 1920s during prohibition when it is said that Al Capone and other gangsters were regular visitors to Diamond Lake. Records show that Hiram Bartlett leased the property to William Hackett in 1930, and by 1933 it had a liquor license. Hackett's Tavern also apparently had cottages for rent. A 1947 news clipping stated Mrs. Hackett was robbed of \$104 by a patron and barricaded with beer cases into the washroom. A phone listing from 1950 shows Bob and Ethel's Dutch Mill. It was finally named the Irish Mill in 1973 when it was purchased by John and Angie Burns.

The Ray family nurtured a comradery that wove the entire Diamond Lake community into these letters. As Gordon Ray wrote, during WWII "the boys gave and gas was rationed." In one of the issues Lloyd Ray spoke of a skeleton crew at the pavilion during the war. Despite the war, he said people still seemed to enjoy spending their leisure time at Diamond Lake, eating hamburgers and drinking orange pop.

In another issue, Lloyd described the Rays as "a freedom loving people whose ancestors came to America to get elbow room, who have been willing to undergo hardships and, if necessary, to fight for freedom... I mean freedom in all things as long as the use of that freedom does not interfere with the rights of others to the same exercise of freedom."



The Rays Newsletter, published locally from 1943 to 1945. Collections of the Dunn Museum.

In the 1940s, WWII sent many Diamond Lakers into service including Gordon Keith Ray. One of the residents of Oak Terrace remembers that kids and especially young ladies would sit on rafts at the beach and wave to biplane pilots in training as they flew over the lake. During the war, Lloyd Ray edited a collaborative set of newsletters for the Ray family and friends. *The Rays* newsletter was a way to keep area soldiers in touch with events at home and hear about their experiences. These newsletters documented a wealth of information about Diamond Lake history, lore and wisdom while helping recognize hometown heroes.



Gordon Keith Ray with friends while on furlough from WWII. Collections of the Dunn Museum.

The romance of Diamond Lake is conveyed in one of *The Rays* newsletters as follows:

*“Remember old Diamond Lake? Yes, fishing is just the same. We jump in a boat at Ray’s pier at sunset. The old Merry-Go-Round is playing I’ve got Nerves that Jingle, Jangle, Jingle and the usual crowds are slamming screen doors at the pavilion... Then we row off along the south shore. It grows quieter as we glide along. We find a peaceful cove and cast anchor and bait our hook. The sun sinks slowly, leaving rosy strata clouds draped along the horizon like a great flag, with the evening star showing thru the blue. We pray it’s a prophecy of early peace! Our line catches on a weed, we shift a bit. Bass are leaping for flies all around us, wary of our hooks.... Twilight deepens... We drift into the revery (sic) as the rosy sky fades, and the stars come out, and the shoreline grows indistinct. What a jewel of a lake this must have been when the Rays first came to its*



MOONLIGHT ON DIAMOND LAKE, ILL.

Diamond Lake postcard.  
Libertyville-Mundelein Historical Society.

*shores!...It grows dark. We follow the fireflies along the shore, back to the pavilion. Well, anyway the lake still makes a lot of humans happy.”*

\*\*\*

Lloyd Ray wrote the Ray ideals included *“the love of home, of family, of schools and churches, of simple living, of lakes and streams and trees and of all living growing things... and the love of neighbors and friends.”*



Lloyd and Gordon Ray building a cottage.  
Collections of the Dunn Museum.

After WWII, land sold around the lake for new home communities and highways enabled travelers to seek destinations farther away, so the resorts eventually closed. Motorboat use became the preferred recreational vehicle for the lake.

In the late 1940s, Mundelein began to boom again as the country recovered and troops returned from the war. Summer cottages were converted to permanent residences and more neighborhoods were platted. The Depression had caused people who had summer cottages to opt for the simplicity and lower prices in the country, so many left Chicago and moved permanently to homes around Diamond Lake and other areas of Lake County. The Ray family’s iconic venue finally closed in 1949 after 40 years of operation. Parts of West Shoreland, an undeveloped part of West Shore Park where an old cow path was located, were purchased by Lester Rumpf in 1943. He subdivided the land into 68 individual parcels with six new roads as recorded on the plat of survey in 1946. He dedicated a parcel of land for water, dug a well distribution system, and began selling individual lots of approximately one-half acre for \$500. In 1953, the homeowner’s association was named The Rumpf Addition Improvement Association but later gained official not-for-profit status as West Shoreland Corporation. Later developments included the Taylor Shores community, established in 1970; Beechwood Townhomes, 1990; Harbor Pointe, 1993; and Diamond Cove, 2015.



Diamond Lake left a lasting impression on Senator George McGovern. After serving in the U.S. Air Force as a bombardier in WWII, on his return from the war and emotionally struggling, he decided to work out of the conflict zone. As a seminary student from Garrett Theological Seminary he served as a student pastor at the Diamond Lake Church from 1948-1949 and rented a house on Shady Lane east of the lake. The Gossell, Whitney and Umbdenstock families remember the pastor who officiated their weddings or baptisms as a man who did not want compensation for the services. He wanted to see them at church. McGovern was quoted in a local paper saying the people of Diamond Lake fit perfectly the description of the entire people of America -- that of the melting pot of the world. He eventually decided politics was where he could help the most and that led him on another journey.

### **Diamond Lake landmarks and the Mundelein Park District**

Into the 1950s, Mundelein began to experience more development due to the baby boomer generation. Gone were the sleepy farm villages and summer cottages around the lake as Libertyville and Mundelein grew in size and population. Automobiles and highways were constructed. With a growing population of 3,186 in 1950, Mundelein had a newfound sense of optimism and new neighborhoods were platted and developed. At the time, Chicagoans and suburbanites found Lake County generally cheaper and simpler than the densely populated downtown areas so the Lake County population mushroomed.

Bill's Pizza was opened on the northeast corner of the lake in 1957. The owner Bill Kwiatkowski started the pizza business in a garage. Bill's is now owned by his daughters Mary Rouse and Pat Kwiatkowski.



*Bill's Pizza original location in Mundelein, 1957. Source: Bill's Pizza website.*

El Barrio Mexican Restaurant was opened in 1971 just east of Oak Terrace by the Arebalo family. They serve traditional food using original recipes from their great-great grandmother of Monterey, Mexico.

As the village of Mundelein developed, the Mundelein Park District was established in 1954. In 1965, the district purchased Lakefront Park for \$22,000. This is the land where the historic Ray Brothers pavilion once stood. The land included 185 feet of lake frontage and a boat ramp. At that time, people were charged a \$10 fee to launch a boat and piers were installed in 1967.

By 1969, the park district had purchased 80 percent of Diamond Lake for \$23,000. In 1978, the district closed on five additional parcels near the beach and proceeded with plans to renovate the area, expand the beach, and build a recreation center on the site. The former Ray pavilion was demolished, and a new building was completed and named the Diamond Lake Recreation Center in 1980. The district continues to host many community events on the lake, beach and within its facilities.



*Kids enjoying Diamond Lake beach. Mundelein Park and Recreation District photo archives.*

The park district purchased 18 individual lots and a 2.5-acre parcel in 1969 to establish North Shore Park, now known as Bob Lewandowski Park. In December 1985, the district acquired Weich Park as a donation. The park district also owns the Diamond Lake Sports Complex, along Route 60/83, which is a popular place for snowmobilers, golf Frisbee enthusiasts and hikers around historic Diamond Lake slough and wetland.

Today the district has 32 park sites offering more than 735 acres of open space, playgrounds, ball-fields, lakes and trails. The Diamond Lake Beach complex is a recreational destination for swimming, boating, shelter rentals, special events and more.

In 1975, George J. Chioles and his son transformed the two-story portion of the old Happy Hollow (formerly Hackett's Place Hotel and before that, Bilinski's dry goods store) into Diamond Lake's Gale Street Inn. Success for the site was short-lived due to an electrical fire that took the historic building and the life of their cook and eventually their son, James George, after health complications from the fire. The newly rebuilt Gale Street Inn at Diamond Lake reopened in 1977. Eventually the family expanded it into a beautiful lakefront steakhouse with bar and

formal dining room, adding a pier for inviting boating patrons. Gale Street Inn closed at that location in the 1990s when the business was moved across the street to its current location. Now, the former site of Bill's Resort, Bartlett's Place, Okon Happy Hollow and then the original Diamond Lake Gale Street Inn is vacant land next to the park district's boat launch area.

More history could be written about the lake, but the purpose of this summary is to build a sense of place about the land, the history, the people and the work ethic of generations of people who took care of Diamond Lake before us. Like the settlers and lake owners of the past, we all must become good stewards so we can help the lake's waters to thrive for many more generations of lake lovers.



*Aerial view of Diamond Lake used by permission Village of Mundelein. Mundelein.org.*



## **Diamond Lake Culture: Recreation, boating and other pursuits**

From the time centuries ago that early people first slipped their hand-hewn canoes into Diamond Lake's clear waters, the use of watercraft has been one of the most common forms of work, recreation and relaxation on the lake. Diamond Lake also has been an important fishing location since Native Americans spear fished here from the 1600s to the 1800s.

Many types of recreation have occurred around Diamond Lake in every season from settlement through the 1900s to now. From the 1890s through the resort years of the roaring 1920s and until the war years in the late 1940s, tourists came to the lake in droves on summer weekends. With the many resorts on the eastern shore, summer populations at the lake could soar from 1,000 to even 2,000 visitors.



*Exploring Diamond Lake in a rented row boat, 1913.  
Collections of the Dunn Museum.*

Gordon Ray, the grandson of one of the first settlers in Diamond Lake, wrote in his journals that lake life was great fun for the children who lived in the area. Here's a look through photos, many taken by Gordon Ray, of the recreation culture of the people who lived on and near Diamond Lake.

Diamond Lake life included hunting, fishing, boating, dancing and other recreation. In winter, the children, when not getting wood, cutting ice or doing other chores, went sledding, tobogganing, hunted

for rabbits or other food for the winter, and sometimes fished with spears on the lake ice.



*Gordon Ray and classmates tobogganing, 1908.  
Collections of the Dunn Museum.*

## **Winter sports**

Historically, in winter, snowshoeing was the way for those on foot to get around. Otherwise, horses were attached to sleds for winter transportation and to score ice in the early 1900s before refrigeration.

In one of the Ray family newsletters, Grandmother Harriet Ray recalled that sometimes, when there



*Gordon Ray, horse Dolly, and sleigh.  
Collections of the Dunn Museum.*

were blizzards, the sleigh was impractical and during family gatherings everyone just bunked together at their house for several days. She recalled that during the Great Chicago Fire in 1871, many relatives escaped and stayed with them in their small home for quite some time.



Above - Bob Rouse and Gordon K. Ray with wild geese, 1929. Below - Lloyd Ray with rabbits, 1914. Collections of the Dunn Museum (edited).

In the early 1920s, Gordon Ray wrote about cars driving on the lake during ice fishing or towing young people by attaching sleds to autos, which was discouraged after too many cars fell in the lake. Today's children still enjoy sledding and ice skating. Now ice fishing, ice hockey, ice boating, cross country skiing, snowmobiling and snowshoeing are popular on Diamond Lake if winter conditions are right.



Photos by Denise Lawreys (above) and Dan Griffin (below).





## Connecting with nature

The Diamond Lake region offers a wonderful chance to connect with nature. Nature lovers including bird watchers and photographers flock to the lake and its watershed during all seasons to view the region's wildlife visitors.



In early spring, organized birding groups take special trips to Diamond Lake to view migratory birds before they head farther north to breed. Many years ago, loons nested in the region – and though you can no longer hear their haunting cries in summer, you can still hear them during migration. One Cook County resident says he makes it a point to visit Diamond Lake every spring to watch the waterfowl and other bird migrations.

Bald eagles have made a comeback to the area, and bird watchers see them flying over the lake, even in summer.



Nature lovers also hike or boat around the lake, wetlands and creeks to search for great blue herons and other shorebirds as well as native plants including pickerel weed, water lilies and reptiles such as painted turtles. A fall hike through the region can produce views of maples, oaks and other trees turning red, yellow and orange.

Studies show being in nature reduces anxiety and stress as well as blood pressure and glucose levels. The Diamond Lake region continues to offer the opportunity to relax outdoors to experience wildlife and to feel more connected with the wonders of the lake and its inhabitants.

*Clockwise: Birdwatcher photo by Sheryl DeVore, bald eagle by Steven D. Bailey, American white pelican migration by Judy Petersen and red foxes on lake by Dan Griffin.*

### Recreation at historic resorts

From the 1890s, Diamond Lake was known as an escape for many. Resorts advertised about enjoyable fishing, boating, swimming and picnic areas. There have been camps and other recreational activities around the lake since the early 1900s.

The Ray Brothers entertainment venue was a well-known destination for summer excursions. The Anchor Ice Cream Parlor allowed visitors to enjoy ice cream, candies and drinks, and it later expanded to pavilion dancing from 1916 through the 1940s.



*Ray Brothers' Pavilion and Beach, Diamond Lake, Mundelein, Ill. 16595-8-1*

#### ***Do You Want a Picnic?***

We know of no better place for a group picnic, be it Sunday school, Club, Class or otherwise – than at Diamond Lake, Illinois. A beautiful spot in nature, away from the crowds, shady groves provided with benches and tables, cozy ice cream parlors and refreshment stands, and a large open air dancing pavilion. Plenty of good boats for rowing and fishing, a new bathing beach and new bath houses.

Everything that is necessary for a quiet, enjoyable time is here at your service.



*(From Ray Brothers booklet c.1920– re-write in The Rays newsletter, September 1943. Collections of the Dunn Museum.*



*Photos from top - Noonan's Camp postcard 1920, Ray Brothers Pavilion with Crane's waterslide in background, 1930s, and a group of people from Highland Park having an outing 1914. Collections of the Dunn Museum.*





*Black bass caught in Diamond Lake, 1914. Collections of the Dunn Museum.*

## Fishing

Diamond Lake has been a quality fishery for hundreds of years. The Native Americans who often camped near its shores depended on fish to supplement their food reserves. Early settlers quickly recognized that this natural spring-fed lake contained a thriving population of a variety of fish that would provide food for their tables.

During the early 1900s, fishing became a valuable pastime offered by the many resorts and concessions that sprang up around the lake. Cottager anglers were drawn from all over to fish Diamond Lake.



*A Ray's cottager with her catch (above), 1922. George Ray and George Bailey with Bass (right), 1914, Collections of the Dunn Museum.*



*The Ray Children, Gordon, Pearl, Paul and Will (above), 1909. Gordon Ray with pickerel (below), 1916. Collections of the Dunn Museum.*





Diamond Lake continues to support a healthy game fishery, but this is a fragile environment. The Illinois Department of Natural Resources has had to regularly supplement the fish populations. The sustainability of this population is challenged by invasive species including carp, gizzard shad, zebra mussels and invasive aquatic plants. All of the fish displayed in the current pictures were healthy releases and continue to populate the lake. By practicing catch and release we can help sustain larger game fish species.

*Clockwise, anglers with musky, channel catfish, largemouth bass, and northern pike. Photos by Glenn Schindelar except below by Greg Denny.*

Many factors can negatively affect the fishery. These include pollution, siltation, declining populations of good native aquatic plants, invasive species, and over harvesting of fish. All of these factors influence water quality, the key factor in determining the health of a lake. All users, even those who do not fish, impact the water quality of the lake. Finding a balance will help to maintain its status as a fishery.





## Swimming

By the mid-20s Diamond Lake was a swimming magnet. Beach life became the best way for weekend visitors and residents to escape the summer heat.

At Ray Brothers resort, 5-year-old Dorothy Wihr became a regional sensation in 1924 due to her amazing diving skills. She eventually won seven national medals and became a champion breaststroker. An all-around athlete and newly married she participated in the 1948 Olympics as a member of the women's track and field team, as Dorothy Wihr Dodson.



**SPECIAL ATTRACTIONS**

Fancy Diving Star

Five Years Old



**DOROTHY WIHR**  
WILL EXHIBIT AT  
**FARMERS PICNIC**  
**DIAMOND LAKE, ON**  
**Wednesday, Aug. 19**

Benjamin Wihr and 11-Year-Old Brother  
WILL ALSO DO FANCY DIVING FROM A 15-FOOT PLATFORM, AND GIVE  
DEMONSTRATIONS OF CHARACTERISTIC SWIMMING. WILL YOUTH BEING.

Low Rose and Francis Browne  
DANCER COMEDY PAIR, IN A COMIC SKETCH OF DIALOGUES & DANCING.

Don't Miss These Big Free Attractions  
At **RAY BROS. GROVE**

Photos clockwise from left: Dorothy Wihr diving poster, 1924; Emmah and Benjamin Wihr on Diamond Lake Beach, 1900s, both courtesy of Shawn Killackey. Ray Brothers beach 1927, (below) and Crane's/Rays 1930 (bottom). Collections of the Dunn Museum. West Shore of Diamond Lake 1940s postcard (bottom left) courtesy Libertyville-Mundelein Historical Society.



## Boating



*Bella Rasmussen among Ray's row boats (above), 1914. Lloyd and Ella Ray (right), 1912. Collections of the Dunn Museum.*

During pioneer settlement, canoes and row boats were the most common navigable craft on the lake. Small rowboats and sailboats were the norm from the mid-1800s into the early 1900s and are still popular today.



Throughout the history of boating, several evolutions have occurred in types of recreation and watercraft. The first motorboat was developed in the late 1890s, and new versions of boats, hulls and outboard engines evolved for increased speed and easier handling into the 1930s.



After WWII, outboard motors became lighter, less expensive, much more powerful and more reliable. In 1940, the average horsepower (hp) of an outboard motor was 3 hp.

After the war ended in 1945, the popularity of boating grew rapidly. In the U.S. and Canada during the 1950s, the number of pleasure motor boats grew from 1.5 million to 5 million, and by the early 1990s more than 18 million pleasure boats were being used by more than 80 million people. At that time the average motor was 65 hp. Now many boats have 200+ horsepower motors. For hulls, aluminum and fiberglass have replaced wood, and boat trailers now allow anyone with a hitch to haul a boat.

Today all types of motorboats, pontoons, jet skis, and other powered motorcraft are used.



*Photos by Dan Griffin (left) and Denise Lawreys (above).*



### Water skiing

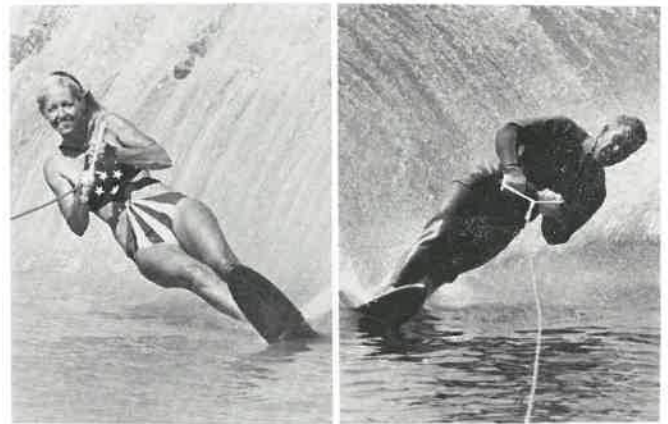
When the population increased in the 1960s and as more powerful motor boats dominated the scene Diamond Lake became home to a number of water ski clubs. The locations for recreation were Ray's Beach, Ed's Beach, and later the Mundelein Park District beach.



Photo above and team patch provided by Honey Glas.

Honey recalled that practice would begin daily during the season at 7 a.m. Members took turns taking six passes at the slalom course, four passes at the jump, then once the water got rough, trick skiing was performed until late afternoon. Once a month, the club performed for the residents of Mundelein. Honey said a sailboat club and ice stock car racing were also popular in the past.

Ardis and Harry Price, founders of the Diamond Lake Water Ski Club, competed to become National Water Skiing Champions more than 15 times. They still ski today in their 80s.



Water ski clubs were popular from the 1960s through the 1990s. Other water ski events are still held on Diamond Lake today.

Ardis and Harry Price shown above. Photos (above and below) are from a 1980s water ski program. Program courtesy of Oak Terrace archives and Dan Griffin.

Honey Stefan Glas has lived in Diamond Lake since she was 2 years old. In fact, her father helped to build the slalom course near Oak Terrace in the 1960s.



She was a member of the Diamond Lake Water Ski Club. The club held Illinois State Champion status from 1963-1968. Clubs competed in tournaments sponsored by the American Water Ski Association, and produced a number of nationally and regionally recognized ski and diving performers.



### Wakeboarding and other powerboat sports

Wakeboarding has been popular on Diamond Lake since the late 1990s. Wakeboarding involves riding a small, rectangular board with mounted shoe-like bindings over the surface of the water. High flying spins and tricks make this water sport very exciting to watch.

Pierce Homsey's family has lived in the community for more than 30 years. He began training at a young age on Diamond Lake and competing at age 10. He has competed on the global professional wakeboard circuit since 2011 worldwide. He was ranked in the top 20 professional wakeboarders for seven consecutive years, and also participated in one of the most prestigious national watersports competition.



Pierce Homsey photo and event program provided by Dan Griffin.



Dan Hohs trick skiing. Photo by Elaine Hohs. Rest in peace Dan.

Diamond Lake has been known for its motorboat activity including a variety of powerboats and pontoon boats pulling skiers, wakeboarders and tubes. Since the 1990s, the height of recreational boating and skiing on Diamond Lake has featured a new type of powered watercraft in the form of jet skis and wave-runners.



Jet skiers. Photo provided by Mike Davenport.



## Low-impact boating

Those who use Diamond Lake can attest to the most recent water recreation gaining popularity. It's called paddle sports. These watercraft have shown up on Diamond Lake in the form of traditional canoes, modern kayaks and paddleboards, where boaters forego motor power in favor of manpower. Kayaks offer an excellent form of recreation and exercise and, from a fishing perspective, they are becoming more and more popular.



Paddleboards are the fastest growing type of paddlecraft recreation. This type of watercraft are best enjoyed when the lake is calm and serene. Other boaters must be more aware of their presence and be sure to respect the designated no-wake and low-wake areas to ensure safety on the lake.

Although motor boat and personal watercraft use has seen some decline in recent years, Diamond Lake still hosts quite a few motor boaters who use the lake at the same time as paddleboards and kayaks. As a result, potential safety issues and traffic clashes can occur.

The changes of lake recreation and pleasure boating over the years have led to challenges on how to share the lake so all can enjoy their sports safely. Once the Mundelein Park District gained ownership and authority over Diamond Lake, the Board passed safety rules in the 1980s that included counter-clockwise flow of boat traffic which continues to this day. Additionally, shallow areas of the lake are designated as low-wake zones to help preserve shorelines from excessive wave action and erosion. The public boat launch closes from sunset to 7a.m., but those who live on the lake can boat at no-wake speeds with navigation lights per IDNR rules.



*Cardboard boat race photo (left) and paddle boarders (below) by Katie Eaman. Kayak angler photo (above) by Dan Griffin.*



The Illinois Department of Natural Resources now requires boating safety classes for young operators to drive powerboats. In Illinois, those born on or after January 1, 1998, who will be operating a watercraft motored by more than 10 hp must take an online test to achieve an Illinois Boating Safety Certificate. Persons supervising young boaters in Illinois must also have a valid Illinois Boating Safety Certificate. See [https://www.boat-ed.com/illinois/boating\\_law.html](https://www.boat-ed.com/illinois/boating_law.html).

Area resident and U.S. Coast Guard Auxiliary Boating Safety Instructor Ron Aidikonis echoes the idea of being flexible and cognizant of others. A long-time boater on Diamond Lake, Ron has witnessed the changes in boating recreation firsthand. He agrees everyone has to show more courtesy to fellow users on the lake, but also feels some conflicts may often be a result of a lack of knowledge about common safety rules and boating laws as new forms of boating recreation become popular and basic safety rules try to catch up. With paddle sports as an example, he stated “all users of watercraft have to understand the most appropriate areas to safely use their non-powered and motorized watercraft.”



*Grandfather Rudolph Komin moved to Oak Terrace in 1926. Son, Rudy, got his pilot's license in 1984 and started flying his 1939 Piper J4 Cub Coupe plane on Diamond Lake in 1985. Not many lakes can say they have a plane for watercraft. Photo provided by Dan Griffin, background provided by Steve Komin.*

He noted that the Coast Guard Auxiliary has been working diligently on courses and curriculums designed specifically for paddle sport users to increase their understanding of safety principals and the limitations of their craft.

The Mundelein Park District continues a long tradition of addressing safety issues on the lake and trying to resolve conflicts between the varied interests of these diverse watercraft users. Because the lake is owned by multiple property owners, however, the district can only do so much unless major changes are implemented to incorporate the entire lake for policing and regulation. According to Mundelein Park District Executive Director Margaret Resnick, many of these conflicts could be solved by people using common courtesy toward one another and respecting each other's right to use the lake. “Self education of all watercraft users about safety rules and boating laws is necessary, and more courtesy between users of the lake would make everyone's life easier,” she said. “If everyone would just give a little, no one will have to give a lot and Diamond Lake will be a wonderful experience for everyone.”

*Photo left by Glenn Schindelar.*





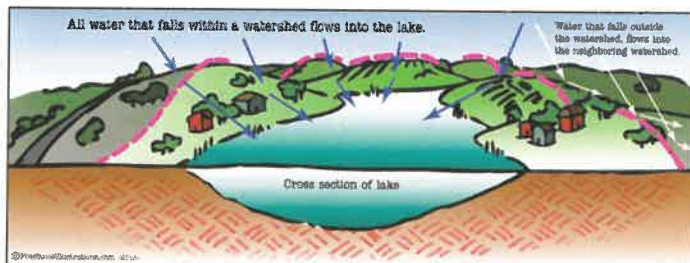
## Diamond Lake as a Resource

Diamond Lake is a significant natural resource for residents and the community. This once pristine 153+ acre glacial lake, created after the last Ice Age, has been known for its clean water, natural springs and sandy beaches making it a destination for settlement and recreation. As Diamond Lake transformed from an unspoiled natural resource into a developed, recreational hotspot, the flora and fauna that lived in and around it changed as well. Over time increasing population, land development, and other impacts on the lake have led to its degradation. Loss of wetlands and the building of impervious surfaces like roads, parking lots and rooftops have led to excessive levels of polluted stormwater runoff, also known as nonpoint source pollution (NPS), entering the lake. **This guide was produced to educate local residents about Diamond Lake's value as an important natural resource and about the perils facing it. It is also a call to action for stakeholders—everyone living, using or working near the lake—to collectively help protect, monitor and properly manage it. We all have an impact on this ancient natural resource, and it is up to us to care for and protect it so that the generations who come after us may enjoy it as well.**

### The lake and its watersheds

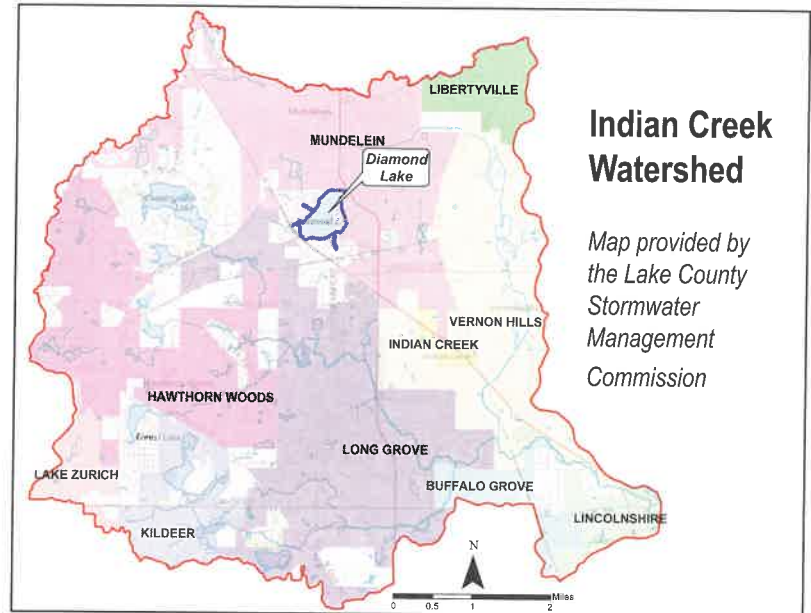
A watershed is an area of land that drains rain and snowmelt into a particular body of water. Diamond Lake's immediate watershed, or extended lakeshed,

The area within the pink dotted line is a **WATERSHED**



Used by permission, Lynda Wallis, [www.freelanceillustrations.com](http://www.freelanceillustrations.com).

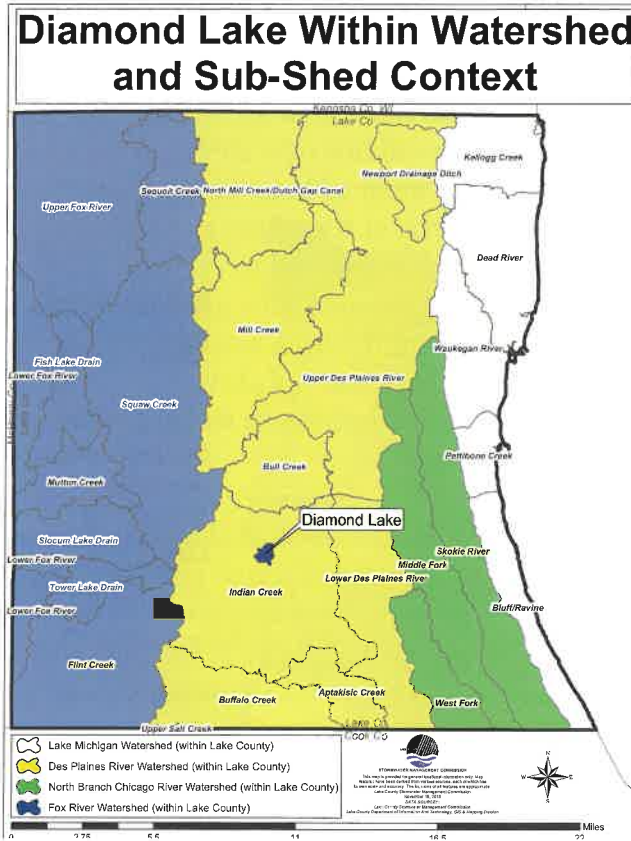
is 1,729 acres (2.7 square miles). The primary land uses within the lakeshed are single- and multi-family homes, commercial development, open space and some agricultural land.



The Village of Mundelein borders the eastern and northern shorelines of the lakeshed, the Village of Long Grove borders the southwest, and the remaining areas are unincorporated areas of Lake County. The lakeshed waters drain from northwest upstream areas of the lakeshed such as Steeple Chase and Countryside Golf Course and parts of Mundelein down into Diamond Lake. (See Diamond Lake lakeshed map on middle inside seam of this guide Pages 40-41).

The lakeshed is part of the larger Indian Creek watershed, whose 4,116 acres (38 square miles) flow through portions of ten municipalities and unincorporated areas of Hawthorn Woods, Long Grove, Mundelein, Vernon Hills and Lincolnshire. Diamond Lake is the only natural lake in the entire Indian Creek watershed; all other 650 lakes in the watershed are man-made.

The Indian Creek watershed, part of an even larger watershed, the Des Plaines River watershed, which is part of the Illinois River watershed, which in turn is part of the massive Mississippi River watershed. That means that waters from Diamond Lake may eventually flow into the Gulf of Mexico.



Upper Des Plaines watershed (yellow) in Lake County, IL.  
Source: Lake County Stormwater Management Commission.

Before European settlement, interconnected communities of prairies, woodlands, riparian meadows, wetlands and the lake itself helped to retain and filter stormwater, preserve soil, and provide high-quality habitats and a balanced ecosystem. Pioneers altered the landscape and flow of the water when they plowed prairies, cleared forests, drained wetlands and channelized streams in their determination to develop farms, towns and cities.

**Today, more than half of the original wetlands in the Diamond Lake lakeshed have been drained or filled and 62 percent of the land has been developed, with only 38 percent remaining as open space. As development impacted the land, runoff and pollutants entering the lake have had major impacts on it and have degraded its water quality.** Future development and highway expansions will require diligent planning and cooperation to avert further negative impacts on our lake.

The following sections of this guide address the specific elements that impact water quality in the lake. Some factors are natural occurrences; but most are the result of human influence, interference or abuse.

### Assessing Diamond Lake’s health

Diamond Lake is an intricately connected community and the lake’s health has been studied extensively by experts. Results of these studies have led to an abundance of biologic, habitat, water quality, demographic and geographic data. These findings help to reveal the evolving health of the lake and its eco-community.

The Illinois Environmental Protection Agency (IEPA) formally listed Indian Creek and Diamond Lake on its Section 303(d) impaired waters listing starting at least in 1998. Like many lakes in Lake County, Diamond Lake is still listed as impaired due to declining water quality from pollutants such as phosphorus and sedimentation. The Indian Creek watershed and Diamond Lake are able to receive water quality grant funding because of this IEPA impaired waters listing and due to the fact that the Indian Creek watershed has an IEPA approved watershed-based plan.



Weich Park, roadside runoff and sediment flowing into Diamond Lake. Photo by Tori Trauscht.

The Lake County Health Department Lakes Management Unit, Ecological Services (LCHD-ES) completed extensive water quality reports on Diamond Lake monitoring in 2002 and 2012 which can be found online at [http://www.lakecountyil.gov/2400/Lake-Reports Section D](http://www.lakecountyil.gov/2400/Lake-Reports%20Section%20D).





Photo of Diamond Lake provided by Mundelein Park and Recreation District.

The next full comparative report will not be produced roughly 2022. In 2017, LCHD-ES helped, along with professional mapping contractors, generate a more current bathymetric map for Diamond Lake for this guide (See Recreational Map on the back page of this guide, inside cover).

LCHD-ES reports have documented **land use** around the lake (buildings vs. open land) and **precipitation** (rain or snow) have contributed to stormwater **runoff pollution** and excess **nutrients** entering the lake. They monitor the lake water quality for a variety of parameters (**phosphorus, water clarity, salt, sediments**) as well as check for lakeshore **erosion** and nutrient sources (**chemical, soils and other particles**). They also assess the **aquatic and shoreline plant and animal populations** while looking for nuisance or **invasive species**. Aggressive plants and animals that were not originally found in Illinois are called non-native nuisance or invasive species. These invaders can negatively impact the lake and its water quality.

Beneficial native plants and animals that live around the lake are important indicators of the lake's health but often they can not compete with invaders. To keep Diamond Lake's ecosystem in balance, factors of lake health data are measured by LCHD-ES. Based on the results, certain community actions may be required.

The Volunteer Lake Monitoring Program (VLMP) was founded by the IEPA in 1981 to educate citizens about lake ecology and train them to collect lake data. These collection efforts share lake information between the state and local levels and the data collected provides a record for guiding protection and restoration plans for the lake. Since 1996, long-time VLMP volunteer Greg Denny has collected and logged data on water quality conditions in Diamond Lake reporting to the IEPA. Monthly, each summer, he has checked parameters such as **water clarity, dissolved oxygen, native plants and invasive species**.



Greg Denny monitoring water clarity with a secchi disk in 2007. Photo by Tori Trauscht.

The Lake County Stormwater Management Commission (LCSMC), in partnership with other local entities, received an IEPA grant in 2002 to develop a watershed-based plan (WBP) for the Indian Creek Watershed.

This plan was funded by the IEPA through Section 319 of the Clean Water Act, and the LCSMC. **The IEPA Section 319 fund is for the prevention of nonpoint source pollution.** The WBP was completed in 2006 and adopted by the County in 2009. It required a full scientific assessment of many conditions in the watershed.

Having the Indian Creek watershed-based plan has allowed many stakeholders (townships, villages, park districts and non-profits) to apply for grants that implement best management practice (BMP) projects within the Indian Creek watershed. ***From 2000 to 2017, nearly \$4 million in water quality improvement grants and projects have been funded and completed within the Indian Creek Watershed, including projects for Diamond Lake.*** The most significant grant funding came from the IEPA Section 319 fund and LCSMC's Watershed Management Board fund.

The vision of the Indian Creek WBP is: To preserve, protect, restore and enhance the resources, function and values of the Indian Creek Watershed through stewardship, education and partnerships. ***Indian Creek watershed's plan produced an action plan with many recommendations, some involving public education to help improve water quality, reduce flooding and prevent nonpoint source pollution.***

A driving force behind production of this guide was the LCSMC action plan and recommendations from the LCHD-ES. The Indian Creek WBP can be found online at: <http://www.lakecountyil.gov/2437/Watershed-Management-Plans>.

Diamond Lake water quality is greatly impacted by local and upstream development. **Data collected for the WBP by the LCHD-ES cite road salt, phosphorus, stormwater runoff and nonpoint source pollution as contributors to declining water quality.** They also suggest promoting BMPs such as installing native vegetative filter zones, preserving and maintaining buffers along lakes and streams, preventing nonpoint source pollution, improving water quality, reducing flood damage and sedimentation, enriching biodiversity and cultural education, promoting sustainable land use, lowering recreational impacts, and encouraging collective stewardship practices.

### **Impacts on the lake community**

Lakes possess a unique set of physical and chemical characteristics that will change over time. These in-lake water quality characteristics, or parameters, are



*Contractors used BMPs such as rock, erosion control fabric and native seed to restore this section of West Shore Park in 2005. Photo by Tori Trauscht.*

used to describe and measure the quality of lakes. They relate to one another in very distinct ways. It's nearly impossible to change any one component in or around a lake without affecting several other components.

### **Morphometric data (Various lake measurements)**

While Diamond Lake is a glacial lake, it is also a drainage lake, draining mostly from the 1,700 plus acres of the Diamond Lake watershed, or ***lakeshed***. (See Diamond Lake lakeshed map on inside middle seam of this guide.) As the map shows, the lake has four inlets: two on the southwest side by Illinois Route 60/83 (one at Diamond Lake Slough and the other just south at John Weich Park), one channel in the West Shore Park subdivision to the northwest, and another channel in the Oak Terrace subdivision to the southeast. Diamond Lake drain on the east side of the lake is the only outlet.

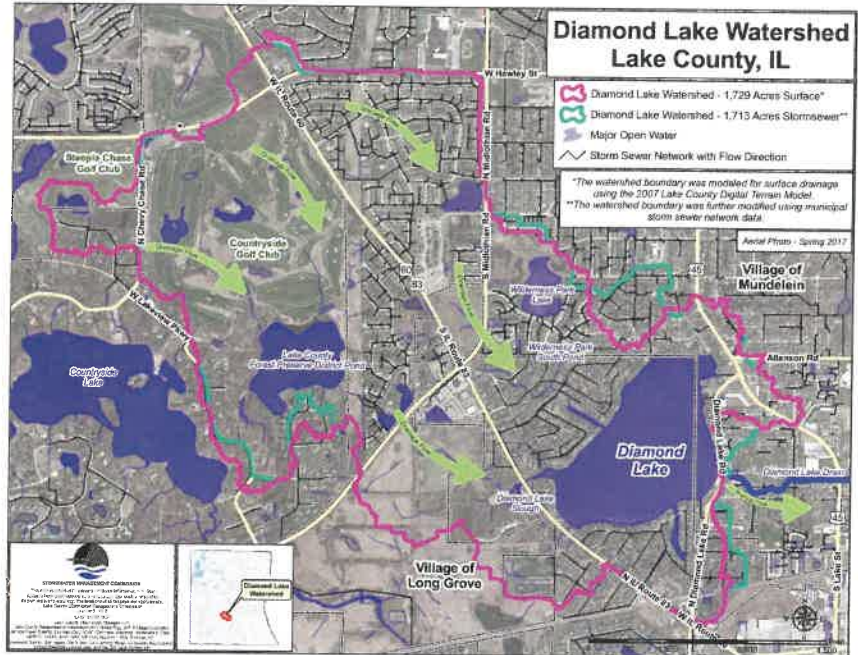


The immediate lakeshore community is made up of the lake and the neighborhoods around it: West Shore Park and West Shoreland to the northwest, the Village of Mundelein to the north and east, Oak Terrace to the south, and assorted townhomes on the southwest shoreline. (See Diamond Lake Community Map back cover of this guide.)

**Diamond Lake has a surface area of 153.17 acres, a maximum depth of 23.6 feet, and an average depth of 9.60 feet.** (See Diamond Lake Recreation Map on the last page of this guide, inside back cover.) The lake was impounded in the 1950s with a spillway installed just southwest of Oak Terrace beach. Retention, or holding time, of waters in the lake is estimated at 2.38 years. The shoreline is 3.09 miles long and 97 percent developed. About 70 percent of the shoreline is armored with seawalls or rip rap. Based on LCHD-ES, 41 percent of the shoreline is eroded, typically where manicured lawns continue to the water's edge.

**Precipitation and Nutrients**

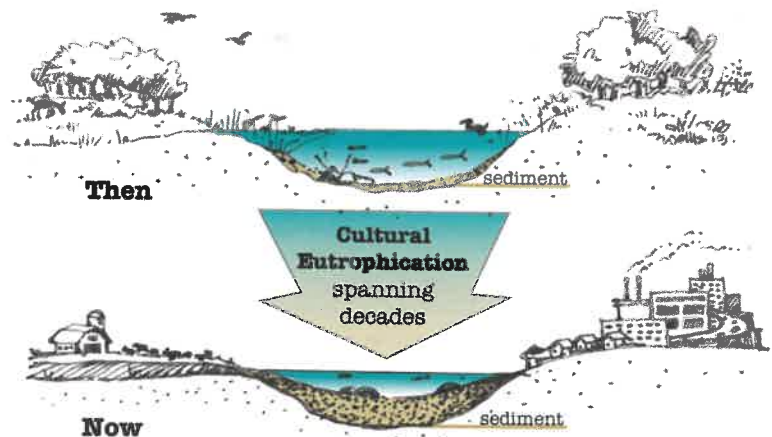
Precipitation, or rainfall/snowfall, has a direct effect on the volume of the lake. Since Diamond Lake captures the drainage from upstream, stormwater runoff from the lakedshed makes its way into storm drains, which are directly connected to our local wetlands and streams, and flow into the lake. This increased volume can have a positive effect of flushing the lake, but it can also negatively impact the lake by causing flooding and carrying high sediment and nutrient loads with volumes of sediment and NPS pollution that gradually fill it in. Some nutrients are important for development of lake algae, which support plant and animal life, but too many nutrients can also degrade water quality, deplete lake oxygen and harm fish and plant populations.



Diamond Lake lakedshed within pink outline. Provided by Jeff Laramy of the Lake County Stormwater Management Commission. (See next pages for larger size.)

The process of too much nutrient enrichment and shallowing of lakes due to nutrient and sediment loading is known as “**eutrophication**,” a Greek word meaning “well nourished.” Eutrophication is a natural process that happens to lakes over time as they slowly fill in with decaying and eroded materials from the surrounding watershed.

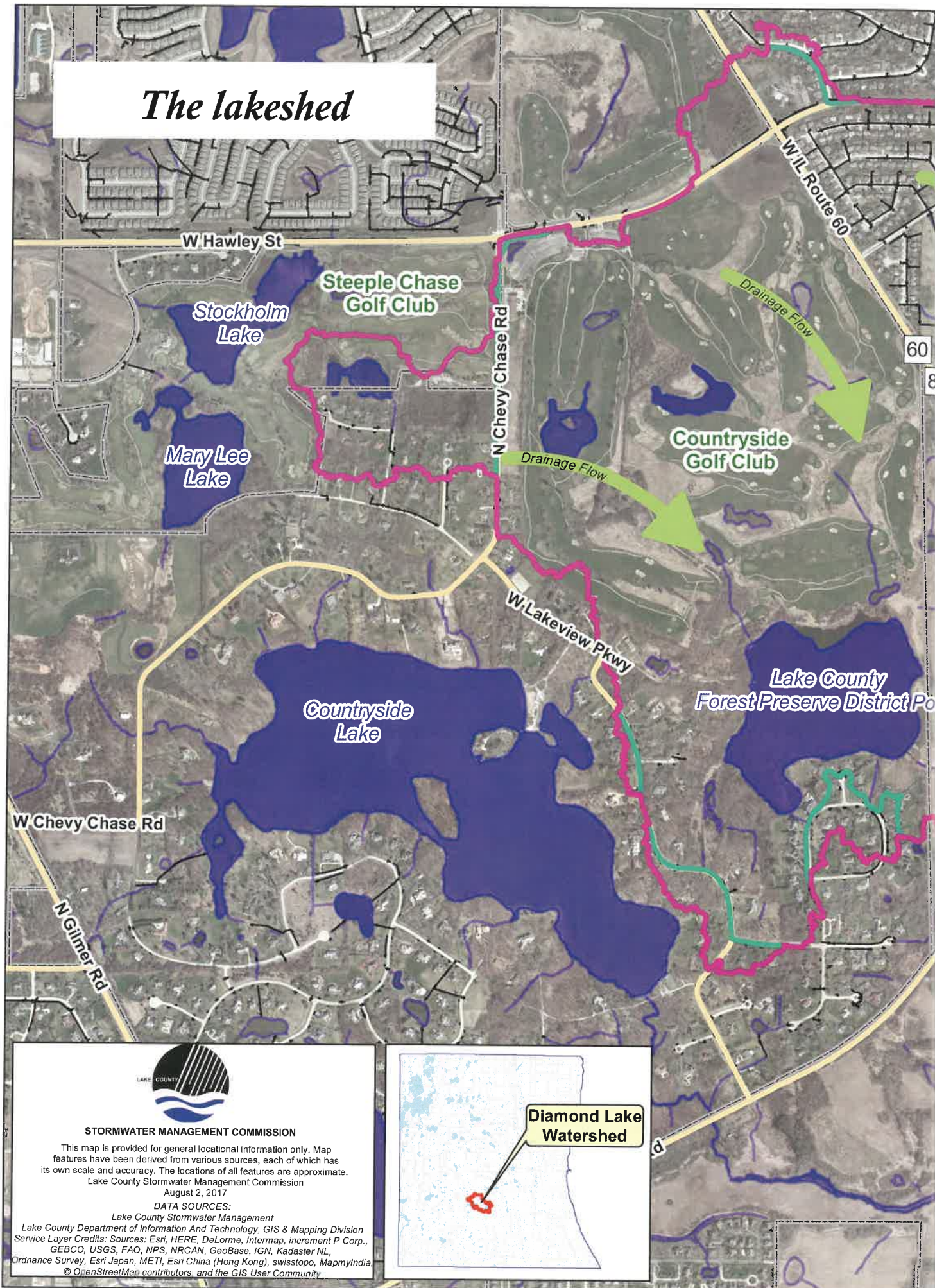
**In Diamond Lake this lake aging has been accelerated by human impacts, a term known as “cultural eutrophication.”** The problem is that nutrients continue to accumulate with rapid soil erosion and heavy phosphorus loading into the lake.



Used by permission, Lynda Wallis, freelanceillustrations.com.



# The lakeshed



## STORMWATER MANAGEMENT COMMISSION

This map is provided for general locational information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate.  
Lake County Stormwater Management Commission  
August 2, 2017





### DATA SOURCES:

Lake County Stormwater Management  
Lake County Department of Information And Technology, GIS & Mapping Division  
Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp.,  
GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL,  
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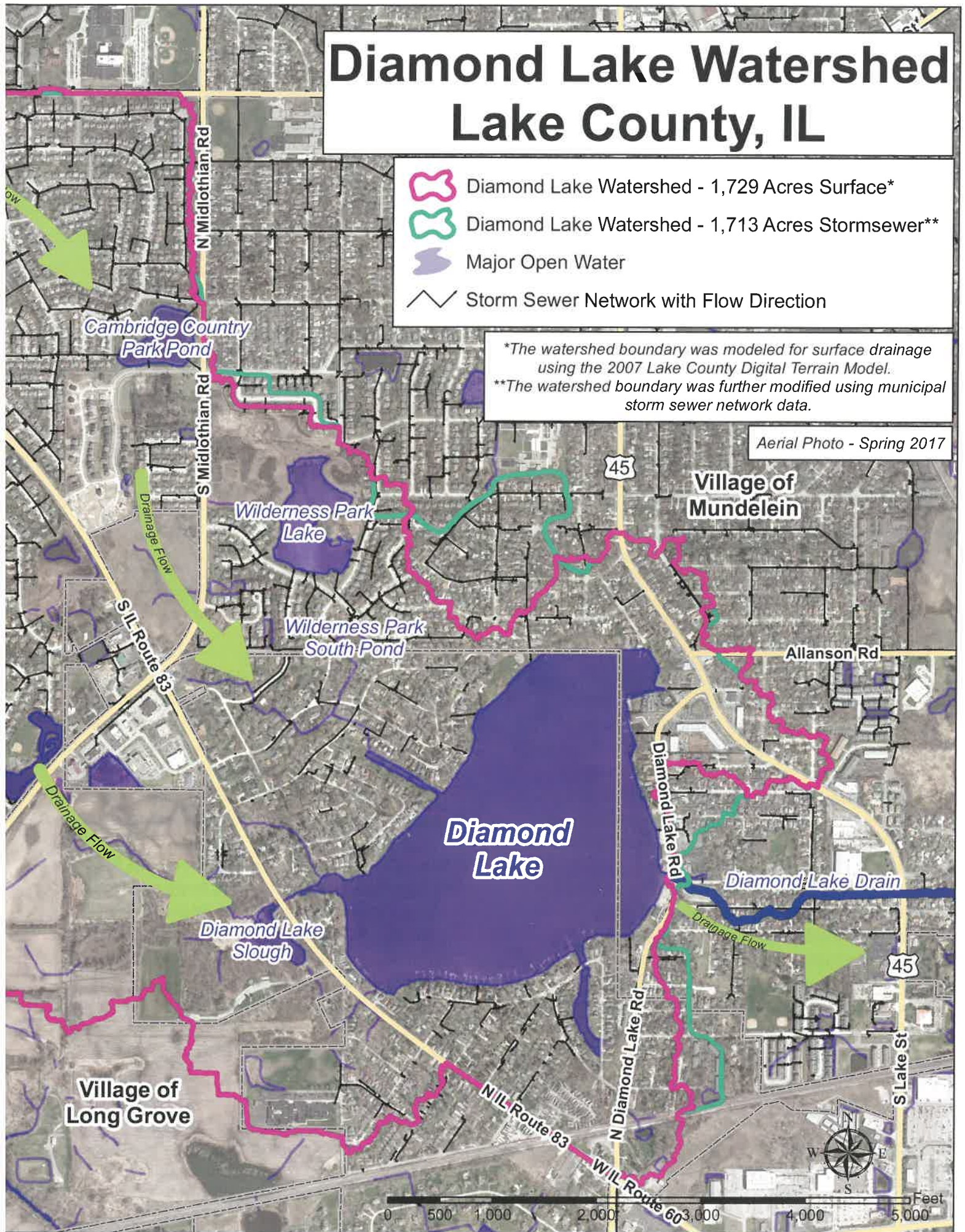


# Diamond Lake Watershed Lake County, IL

-  Diamond Lake Watershed - 1,729 Acres Surface\*
-  Diamond Lake Watershed - 1,713 Acres Stormsewer\*\*
-  Major Open Water
-  Storm Sewer Network with Flow Direction

\*The watershed boundary was modeled for surface drainage using the 2007 Lake County Digital Terrain Model.  
\*\*The watershed boundary was further modified using municipal storm sewer network data.

Aerial Photo - Spring 2017





Some signs of excessive eutrophication include visible mats of algae in the water; scum and foam; water odor; and fish and plant kills. Land use practices that limit nutrient runoff, sedimentation and nonpoint source pollution into the lake are essential to preserving water quality and ultimately property values around the lake.

### Stormwater runoff and nonpoint source pollution

Stormwater runoff comes from many different land sources and is impacted by the activities of individuals, households and the public. NPS pollution from runoff has increased as development has expanded in Lake County and the region. Being able to identify and manage NPS pollution and runoff sources is possible in our lakeshed, but education and supportive actions taken by all stakeholders, even upstream, are very important in helping Diamond Lake's overall health.

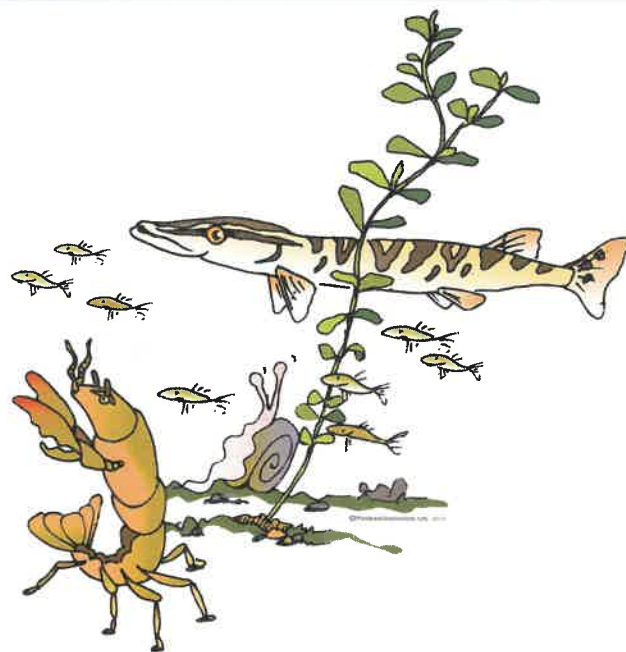


*Garbage collected along Diamond Lake Road could have flowed into the lake. Photo by Tori Trauscht.*

**With an action plan and lake support, nutrients, soils, chemicals and NPS can be reduced. Common individual behaviors can help prevent nonpoint source pollution:**

- 1) properly disposing of NPS pollution (i.e. trash, pet waste, recyclables, and chemicals);**
- 2) limiting lawn chemicals and fertilizer applications and timing them after rains;**
- 3) not washing cars on driveways but instead where water is filtered, like a car wash;**
- 4) preventing pollutants and landscape debris from entering storm drains;**

- 5) changing motor oil responsibly; and**
- 6) adding fuel and oil to boats and cars away from the lake as much as possible.**



*Used by permission, Lynda Wallis, freelanceillustrations.com.*

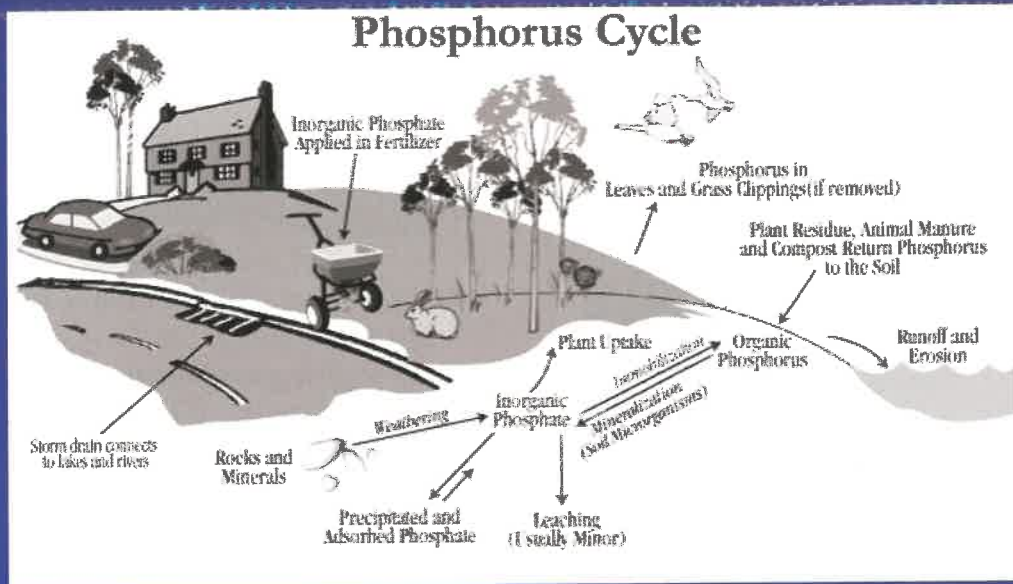
### Water quality parameters

The IEPA requires regular water quality assessments of Illinois lakes to determine their capacity to support aquatic life, as well as allow swimming and other recreational uses. Along with an analysis of native and invasive species and algae in the lake, phosphorus, nitrogen, water clarity, salt and sedimentation are also assessed.

**Diamond Lake is eutrophic, which means it has high nutrients and can support large warm water fish populations. The primary nutrients needed for aquatic plant growth in a lake are phosphorus and nitrogen.** A certain amount of algae and a good population of native aquatic plants are vital to a lake ecosystem. Plants and good algae provide cover, food and habitat for fish and wildlife, but too many aquatic plants or algae can limit recreation access, affect aesthetics, and prevent oxygen mixing in lake waters. Too much phosphorus can contribute to excessive lake algae, which can cause toxic conditions that inhibit native plant growth and kill fish and aquatic organisms, which can result in an



## What is the role of phosphorus in lawns, landscapes and lakes?



Source: Minnesota Department of Agriculture.

unhealthy lake balance. Phosphorus comes from fertilizers used on lawns, gardens and farms, from sewage and animal waste, and other runoff that flows into downstream waters. **Phosphorus does not dissipate in the lake but instead attaches to sediment and settles to the lake bottom, building up more and more over time.**

The total phosphorus concentrations in 2002 and 2012 did not exceed the IEPA's impairment level of 0.050 mg/L. Total phosphorus concentrations in Diamond Lake in 2012 showed only a 5 percent increase from the 2002 data. However, monthly monitoring by the VLMP since then, from 2015 to 2017, shows phosphorus concentrations are increasing and accumulating.

In 2010, the State of Illinois passed laws limiting the amount of phosphorus in laundry and dishwashing detergents and restricted the use of lawn fertilizers containing phosphorus by commercial applicators.

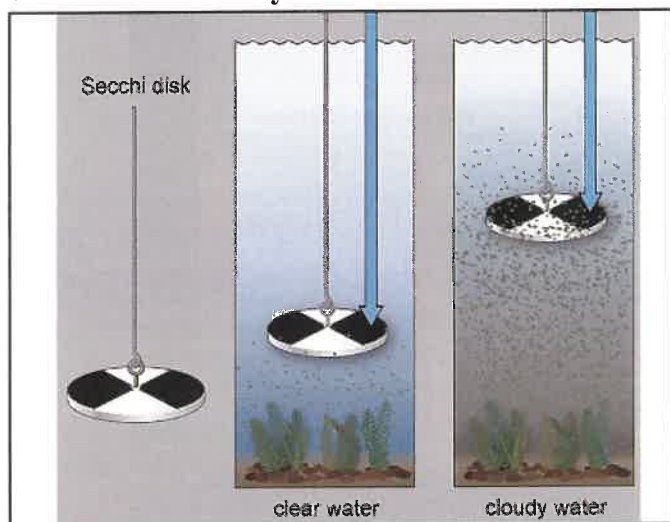
**Collective efforts are needed to prevent further phosphorus loading into Diamond Lake.**

**Stakeholders are encouraged to:**

- 1) buy phosphorus-free fertilizers;
- 2) not fertilize within 15 feet of the lake;
- 3) not fertilize before expected heavy rains, and if possible, fertilize no more than twice a year (once in late spring when the grass is no longer dormant and once in mid- summer).
- 4) For lakefront homeowners, grow native buffer strips along the shoreline, even with a seawall to trap pollutants before they enter the lake.
- 5) Homeowners that do not border the lake can install rain gardens along key drainage collection areas.
- 6) Buffers of native plants in many upstream drainage ways would greatly help to minimize phosphorus and filter other pollutants as they drain downstream before entering the lake.

## Water Clarity

Water clarity is an overall indicator for water quality. A key water clarity measurement is total suspended solids (TSS). **Excess sediment in the water from boat traffic, shoreline erosion and large rain events contribute to the suspended particles that contribute to TSS and lead to turbidity and a decline in water clarity.**



Measuring clarity and turbidity. Source: open.edu.

Algae and organic material also contribute to TSS. Fish and macroinvertebrates typically have specific TSS thresholds, meaning they can be impacted adversely if concentrations get too high. High TSS concentrations that cause declining water clarity and increased turbidity can also reduce the ability for good aquatic plants to grow. However, invasive plants thrive under conditions of low-water clarity and high TSS, giving them a competitive advantage over native plants.

A secchi disk, an 8-inch-diameter weighted plate painted black and white and attached to a line, is lowered into a lake to measure water clarity. The 2012 average TSS concentration for Diamond Lake was less than the 2012 Lake County median and slightly less than the 2002 measurement. This data means that the water was clearer in 2012 than 2002, probably due to the introduction of invasive zebra mussels. The Lake County median secchi disk measurement for water clarity was 3.0 feet in 2017.

**Based on VLMP data, lake clarity for Diamond Lake in summers of 2017 and 2018 has been declining. At times, water clarity was only 0.5 feet and TSS values have recently increased. This contrasts with 2012 when the average clarity was 3.0 feet.** From 2000 to 2017, Diamond Lake was rated 80 out of 160 lakes for clarity, not very high for a glacial lake with natural water quality benefits.

Many factors may have influenced reduced water clarity such as:

- 1) increased nutrient loads from severe runoff as a result of recent 200-year storm events;
- 2) the cyclical rise and decline in populations of invasive zebra mussels;
- 3) the significant reduction of native plants and over-treatment of invasive plants in the lake;
- 4) increased turbidity in the lake caused by storm runoff and power boats operating at high speeds in shallow waters; and
- 5) increased algae blooms.

*One teaspoon of SALT can CONTAMINATE  
5 gallons of WATER...FOREVER!*

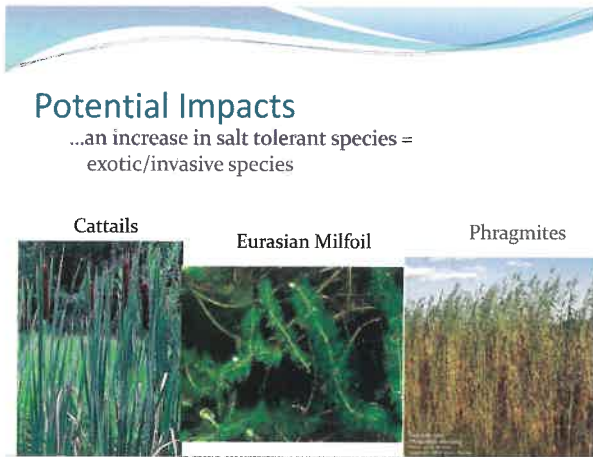
*Graphic from LCHD-ES newsletter.*

## Chlorides/Salt

Chloride or salt concentration is another measurement of water quality. While some chloride occurs naturally in our lake water, and sources such as water softeners can add chlorides to our river systems, road salt is the main source of elevated chloride in Diamond Lake. Most chloride comes from treating the roadways, parking lots and driveways with salt in winter. Chloride levels are significantly higher in spring when early rains cause runoff and salts to settle in the lake bottom along with phosphorus. **The 2012 chloride concentration in Diamond Lake was 21 percent above the county median.**

Some native aquatic plants and animals cannot tolerate high chloride levels, but invasive species such as Eurasian watermilfoil, cattails and phragmites can. Recently, Lake County has been using beet juice mixed with salt to make de-icing more effective and to reduce its chloride use by 20 percent.





Source: presentation by Mike Adam, LCHD-ES.

**Excess sediment is a serious threat to the water quality of inland lakes;** it can result in shallower lakes, reduced recreational surface area, decreased oxygen and clarity, less lake storage capacity, smothered fish-spawning areas, increased water temperatures and decreased property values.

In 1997, Diamond Lake at its deepest point was 25 feet. When LCHD-ES did bathymetric mapping of the lake in 2017 the deepest point was 23.6 feet. **The lake is gradually filling in.** Proper land use practices that prevent sedimentation are essential to Diamond Lake’s preservation.

Just one teaspoon of salt can contaminate five gallons of water forever. Once salt is in the water, removing it is incredibly expensive, if possible at all, so avoiding or minimizing salt use is important. Please support Lake County’s goal to reduce salt.

**Stakeholders can help reduce chlorides by:**

- 1) removing as much snow as possible by **shoveling instead of using salt;**
- 2) checking the weather to see if sleet/ice are likely, and if so, **minimizing salt use as much as possible to keep main traffic areas safe and free of ice;**
- 3) **sweeping up undissolved or over-applied salt from paths and pavements to save for use later;**
- 4) **using alternatives, like clean sand or animal-friendly products which have lower chloride levels;**
- 5) **remembering that excess salt can also kill grass, yard plants and trees; and**
- 6) **installing a high-efficiency water softener unit if needed for home or business.**

**Sedimentation**

Sedimentation is the build-up of plant and animal remains and soil erosion onto the lake bottom. Proper land use practices that prevent sedimentation are essential to lake preservation. Wind and wave-generated shoreline erosion can contribute to large quantities of inorganic sediments being redistributed and cause turbidity elsewhere in the lake.

**The following actions can go a long way in curtailing lake sedimentation:**

- 1) **establishing a green belt of native plants—not lawns—around the lake,**
- 2) **installing best management practices for stormwater treatment such as rain gardens or bioswales and other native filters to prevent pollutants from upstream runoff sources,**
- 3) **reducing the speed of boats in shallow areas around the lake,**
- 4) **planting emergent vegetation with deep-rooted native plants to trap sediment, and**
- 5) **cleaning accumulations of leaves and debris from around storm drains.**



Used by permission, Lynda Wallis, [www.freelanceillustrations.com](http://www.freelanceillustrations.com).

### Shoreline options

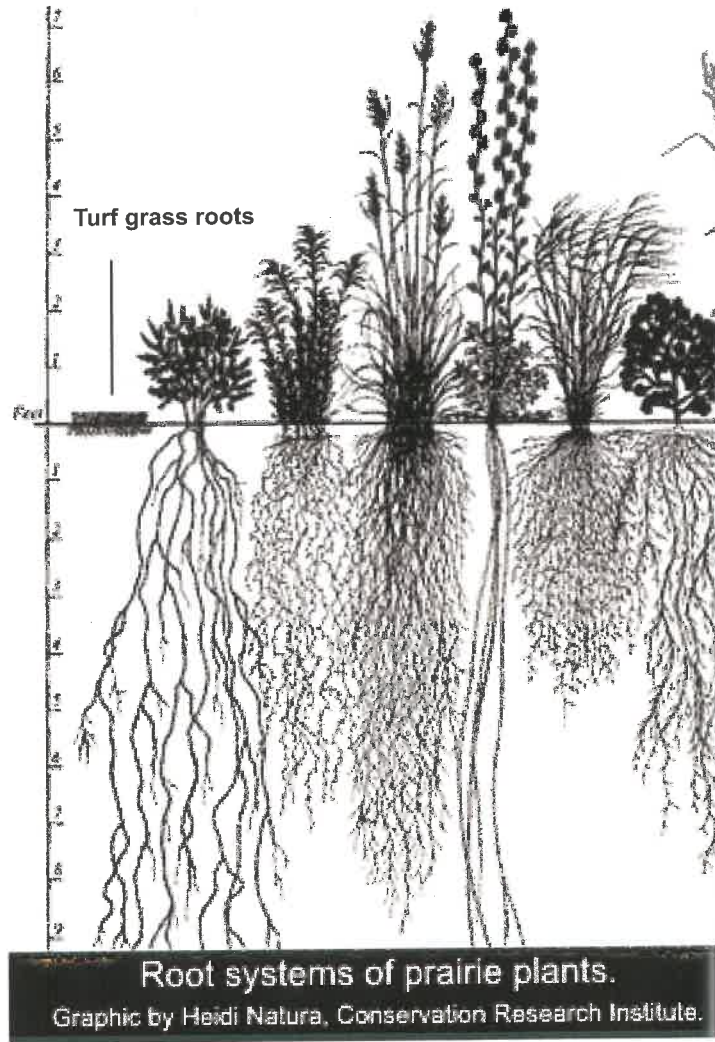
Shorelines are subject to wave action, ice heave, temperature swings and fluctuating water levels. Inadequate shorelines also contribute to sedimentation in the lake. **Different shorelines can hurt or help a lake depending on how much they buffer the waves, preserve soils and can stand up to ice and flooding. Five different types of shorelines are common to Diamond Lake. These shoreline options are discussed below, according to wave action impacts, shoreline stability, turbidity and sediment control.** Each can be adapted to differing lot depths and topography. Creative mixing of shoreline types can help the lake by lessening sedimentation and turbidity impacts.



*No erosion along a native shoreline. Photo by Dan Griffin.*

### *Native Vegetation – Preferred, where appropriate*

**Native vegetation shorelines are the most highly recommended shoreline. Unlike turf grass or non-native plants, which have short root systems, native plants have root systems that can grow from 4 to even 12 feet, deeply anchored in the soils.** The deep roots will tie the shoreline together, minimizing or preventing erosion even during ice flows, and will also absorb and filter nutrients like a sponge as surface and ground water runoff drain into the lake. A diverse array of grasses and wildflowers can be planted with unique colors and textures that change with the seasons, and provide a shoreline habitat for fish, amphibians, birds and other wildlife. **Most importantly, native vegetation connects homeowners to the historic past of plants that have evolved with Diamond Lake.** (See Appendix 1 for Some Suppliers of Native Plants.)



Shorelines planted with native plants act as a transitional zone, or a buffer zone between lawns and the lake. Buffer zones should be as wide as possible to effectively protect the shoreline, LCHD-ES recommends 25 feet or more in the case of Diamond Lake. This buffer zone can also include large rocks, or rip rap, in addition to native vegetation, depending on the desired aesthetic. Both the native vegetation and rocks will provide habitat for animals and absorb-wave energy. Overall, a native buffer zone will be more cost effective than riprap or seawalls, and it will provide better long-term stabilization of the shoreline. Long-term maintenance associated with native vegetation shorelines may include invasive species removal or burning/periodic mowing of the vegetation and inter-planting to add more diversity and stability.



**Rock retaining walls – Also preferred**



Rock shoreline options above and below. Photos by Dan Griffin.

**Rock shorelines and rock walls are best suited for shorelines with moderate erosion or significant wave action.** Similar to a native vegetated shoreline, a rocky shoreline will protect the shoreline from erosion, absorb wave energy and provide wildlife habitat. In addition, a rocky shoreline requires little maintenance and can have an indefinite lifespan. Rock for shorelines should be somewhat large in size, 16” or larger, as smaller rocks and rip rap may wash away over time unless mixed with larger stones.

Disadvantages include expense, permit requirements and installation issues. Adding native plants around installed rock will help tie in the shoreline while preventing sedimentation. Permitting with engineering plans is required to install a rock shoreline.



**Beach**

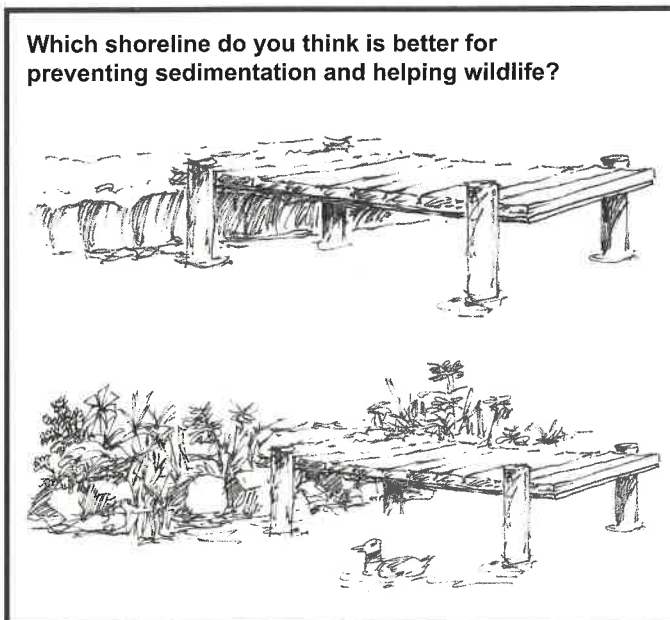
Sand beaches are shorelines mainly desired for recreational use.

**Beaches absorb wave energy; however, they erode over time from the turbulence of the lake and need to be supplemented with additional sand almost every year.**

Beaches with a shallow slope are more stable, versus a steeper sloped beach, as the sand will not be swept away in the lake as quickly due to wave action. A beach with a shallow slope will require less maintenance over time, but any beach will require considerable long-term maintenance. For enjoying the lake, beaches offer communities a good option for access. Permitting is required to install beach shorelines.



West Shore Park beach in winter. Photo by Tori Trauscht.



Used by permission, Genevieve Connor artist.

### ***Turf Grass***

While turf grass is a common shoreline, it is not very beneficial. **Turf grass is shallow rooted. With 2 inch roots or so, it offers little protection to stabilize a shoreline and allows runoff to degrade water quality. Because of its short root system, turf grass shoreline erosion happens readily, creating undercut banks and the opportunity for further erosion and sediment to feed into the lake.** Turf is not able to absorb runoff like a deep-rooted native vegetated shoreline so water flows rapidly over the grass into the lake, which can erode the shoreline from the top and cause collapsed banks. Permits are not required for installing grass on shorelines, but in the event of exposed soil, planting grass is better than nothing at all. Please do not throw mowings into the lake. Bag mowed grass whenever possible especially near storm drains.



*This photo shows Wilderness Pond South shoreline being lined with rip rap by Fremont Township Highway staff. Observe the significant erosion and sediment suspended in the water. This shoreline was repaired in 2018 during this SMC WMB grant by Fremont Township and MPRD to help prevent sediment flowing into Diamond Lake. Photo by Tori Trauscht.*

### ***Hardscapes/Seawalls***



**Seawalls and other hardscapes provide quick and complete erosion control, and generally have a long lifespan; however, they are expensive to both install and repair, and they require a permit from state and local agencies. Seawalls do not provide any habitat for animals, nor do they filter runoff that enters into the lake.** Unlike native vegetated shorelines, rocks or beaches, which can absorb wave energy, seawalls and other hardscapes deflect wave energy back into the lake. **This wave energy deflection creates a bathtub effect, increasing turbulence in the lake, stirring up sediment from the bottom, and escalating further erosion of other natural shorelines.** If native plants are planted behind seawalls, however, they can help preserve the functionality of the seawall and prevent collapsed shoreline areas on the inland side of the structure. Permits are not required for planting natives behind a seawall.



*Seawall and rock/concrete hardscapes. Photos by Dan Griffin.*



### Hazards of living downstream



Road flooding in 2011. Photo by Tori Trauscht.

Living on or near a lake, such as Diamond Lake, presents risk factors when it comes to excess precipitation from large rain or snow events... or flooding. In order to minimize flood damage and maximize property protection you can prepare for flood events.

If your home is prone to flooding consider:

- 1) raising the elevation of the furnace, water heater, and/or electrical panel in your home;
- 2) installing “check valves” in your sewer lines to prevent a backup into your home;
- 3) installing backup batteries for your sump pump; and
- 4) waterproofing your basement.

For any homeowner who lives in a location with repetitive flooding, purchasing flood insurance is recommended because most homeowner insurance policies do not typically cover flood damage.

After a flood has occurred, there are various precautions that should be taken to clean up flood damage safely.

- It is important to learn whether your well has flooded or your drinking water has been compromised, so have your well tested for the presence of chemicals and bacteria.

- If flooding occurred inside your home, disconnect your electric panel first, and don't wade through flood water if there is a possibility of electric shock.
- Be aware that, flood water may contain chemicals, sewage, bacteria and other pollutants.
- You must promptly clean everything that got wet, to avoid toxic mold developing. While cleaning, wear proper personal protective equipment (PPE), such as shoe guards/boots, gloves, goggles, and/or a face mask.

If at any point a homeowner is unsure of what steps to take after a flood has occurred, seeking professional service or guidance is recommended.

(See Who to Call list on Appendix Page 1 of this guide.)



Rain garden in West Shore Park traps nutrients before they enter the lake during flooding in 2011. Photo by Tori Trauscht.

### An ecosystem of land and water habitats

The Diamond Lake region, which includes the lake itself, shoreline, creeks, slough and wetland, along with the forested hillsides in park-like neighborhoods, is teeming with native wildlife, such as mammals, a variety of birds, frogs, butterflies, aquatic species and many kinds of plants.

To be sure, more species and numbers of native plants and animals existed in this region before it was settled, but many still can be found today by those who take a walk, look to the sky, wander their backyards or take a boat ride on the lake.



*Children enjoying a sunset. Photo by Katie Eaman.*

**Research has shown that spending time in nature helps us deal with the stresses of every day life and actually is a healthy necessity. Taking a walk in nature can boost your immune system, lower blood pressure and glucose levels, improve mood, increase energy levels and nurture imagination.** Plants and animals in nature can survive only if humans protect and care for their habitats, allow them natural areas, and keep waters from getting polluted. Caring for the lake's land and water can help preserve a diversity of plants and animals that add beauty and wonder to the lives of humans.

What follows is a brief synopsis of the types of flora and fauna that likely spend all or part of their lives in and around Diamond Lake, focusing on mostly natives, but also non-natives, some of which can be invasive, requiring control. The list includes plant and animals, but various fungi and lichens, which can be indicators of water and air quality, also grow in the region.

These lists include general species but not everything you may see or hear. The bird list included is more inclusive. Please keep track of birds you see and notify MPRD of unusual sightings.

### **The importance of native plants versus introduced plants**

Native Illinois plants can benefit habitat while helping our watershed. **Since native plants have adapted to the local climate and conditions over thousands of years they are naturally beneficial to local fauna and need native companion plants to help them thrive.** Because of their deep roots, **native plants are more drought tolerant than other plants so no watering is required except during a severe long-term drought.** Native plants also **do not need regular mowing.** Like a huge sponge, the deep-rooted biomass of native plant soils **absorbs phosphorus, pesticides and herbicides in storm runoff before they reach our lake water.**

Native landscaping buffers and rain gardens do an excellent job of absorbing and filtering pollutants while slowing down flood water. If natives are planted along a swale, stream or the waterfront, they can prevent erosion by keeping the soil in place. These plants provide much-needed habitat and food for desirable wildlife, such as native birds, frogs, bees, butterflies and other insects, thus applying fertilizers and pesticides is not recommended.



*Restored native landscape in Long Grove requires periodic maintenance. Photo by Tori Trauscht.*



Other horticultural species that you buy do not have the same degree of benefits because they are not adapted to our region or habitats. Native trees and plants also take up carbon and provide oxygen for other creatures. Planting natives not only saves you time and money, it also benefits our air and water, as well as our extended watershed and local ecosystems.

Here are some upland plants (those that grow on dry land) found in our Diamond Lake region. Non-native plants are indicated with an asterisk (\*). Some introduced species have become overly aggressive or toxic to native species and soils and should be controlled.

**Trees** ~ Experts agree. If you've got room for only one shade tree in your yard, plant an oak. Once established, oaks can live at least 200 years old and many make it past 400. Oaks are among the best tree species to attract wildlife and provide shade and beauty to the neighborhood.



*White oak. Photo by Tobin Fraley, 36 Acres.*

At least four kinds of oak trees grow in the Diamond Lake region: bur oak, white oak, swamp white oak and red oak. Other native and non-native trees found in the region are black cherry, cottonwood, silver maple, sugar maple, shagbark hickory, box elder, crabapple, black walnut, red cedar, black locust, honey locust, osage orange\*, white pine, elm species and some ash species. Evergreen species like varieties of spruce, fir and cedar also provide refuge areas for birds and wildlife in winter.

European buckthorn,\* Bradford pear\* and Russian olive\* can be problematic, reseeding and out-competing native tree species.

**Shrubs** ~ Shrubs play an important role as understory plants where birds and other fauna can find refuge, food and edge-nesting areas. Native shrubs such as elderberry, hazelnut, hydrangea, spicebush, witch hazel, bladdernut, serviceberry, viburnum species (nannyberry and blackhaw), dogbane, and dogwood species (pagoda and red twig) are important shrub food sources for wildlife. Evergreen shrubs like juniper, yew and boxwood provide winter protection. Multiflora rose,\* burning bush,\* Tartarian\* and Amur\* honeysuckles are introduced shrubs that require management as they are aggressive in native communities.

**Vines** ~ Also providing understory refuge are native vines like Virginia creeper, wild grape and even poison ivy. All provide berries and nesting protection.

**Wildflowers** - These native wildflowers grow in upland prairie edges and woodlands that are drier than shoreline edges: gray-headed coneflower, pale purple coneflower, black-eyed Susan, blue lobelia, little bluestem, prairie dropseed, Indian grass, wild geranium, dogtooth violet, bloodroot, golden Alexander, Solomon's seal, jack-in-the-pulpit, May apple, mountain mint, spiderwort, asters, bee balm, milkweeds, ironweed, spring beauty, sweet Joe Pye and zig-zag goldenrod or elm-leaved goldenrod.

(See Some Suppliers of Native Plants in Appendix Page 1.)



*Native plants, bee balm, sweet Joe Pye, tall sunflower. Photo by Tori Trauscht.*

## Our Gem: A History and Stewardship Guide for D

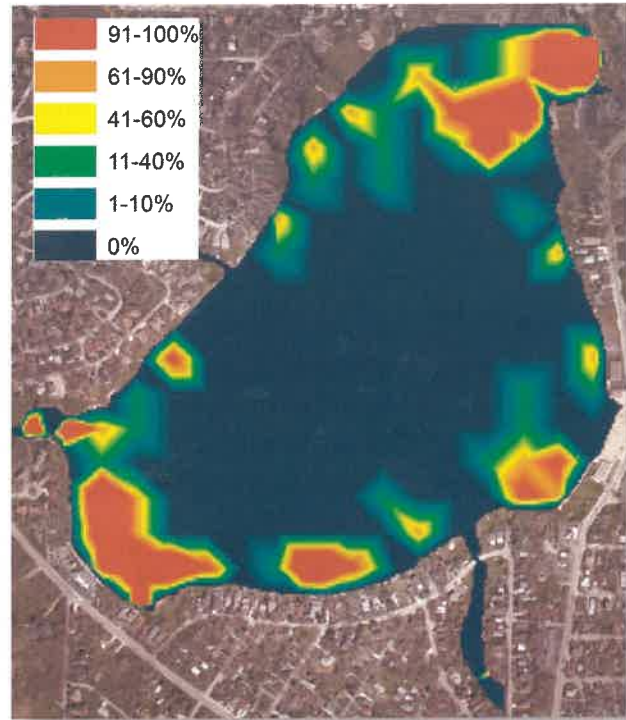
Non-native garlic mustard\* and cut-leaved teasel\* are noxious weeds that should be managed because they take over large areas. Both can live in upland areas as well as wetland areas and swales.

### Native wetland and aquatic plants

In Diamond Lake, native aquatic plants provide habitat, shelter and food for fish, turtles, waterfowl, and other wildlife while stabilizing sediments, which helps to increase water clarity and control algae.

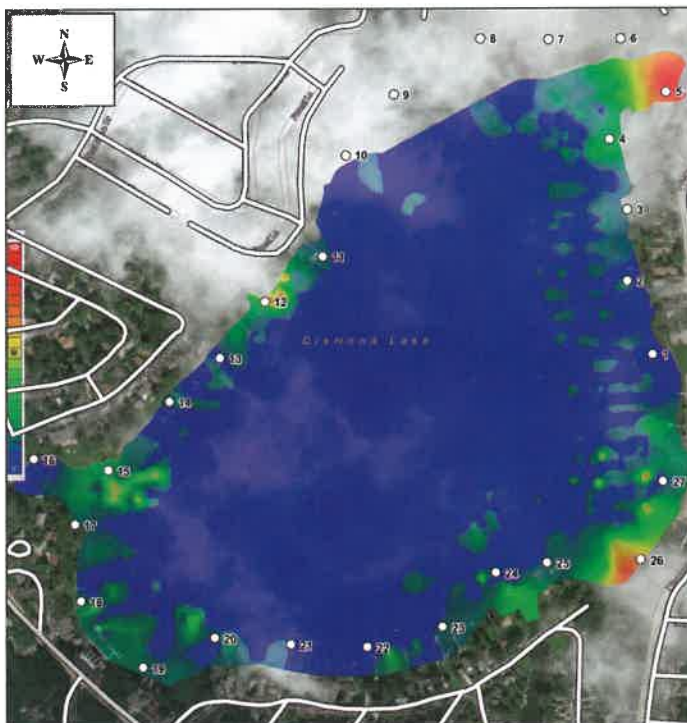
**In recent years, the diversity of native plants in Diamond Lake has decreased because of a decline in water quality, and invasive plants have tried to move into the lake community. A measurement of plant diversity in a lake is known as the Floristic Quality Index (FQI). From 2000 to 2017, Diamond Lake was ranked 160th out of 171 lakes in FQI by LCHD-ES. As our water quality declines so does our plant community.**

The Illinois Department of Conservation Natural Resources (IDNR) and LCHD-ES have indicated that a healthy lake should have from 30 to 35 percent aquatic plant coverage. In April and July of 2012, plant species cataloged in the lake included one



Diamond Lake aquatic plant densities 2012 - Source LCHD-ES

macro-algae and seven species of aquatic plants, covering approximately 35 percent of the lake. Coontail and Eurasian watermilfoil were the two most abundant species, found at 20 percent and 16 percent of the sites, respectively.



**DIAMOND LAKE**

**SURVEY**

Water lilies - Low numbers  
Cattails - Low  
Curly leaf pondweed - Low  
Sago pondweed - Low/Mod  
Eurasian watermilfoil - Low  
Coontail - Low  
Elodea - Low

DATE: June 6, 2018

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**clarke**

2018 map with plant densities added from associated chart. Used by permission, Jennifer Biancalana, Clarke Aquatic.

Curly-leaf pondweed\* and Eurasian watermilfoil\* are exotic invasives that tend to crowd out native species when left unmanaged. In 2012, Eurasian watermilfoil decreased while the presence of the exotic invasive curly-leaf pondweed was concerning. Since 2012, a joint management plan between the communities and the Mundelein Park and Recreation District (MPRD) was established to monitor lake plants and chemically treat invasive plants that are out of balance. History has shown that these attempts have not always achieved the intended results. Sometimes all plants were killed in areas of the lake, including native species



At other times, the treatments have made a significant impact on the target plants. **From 2016 to 2017, a combination of plant treatments, weed harvesting, excessive rain events and other natural influences have resulted in a lake with less than 5 percent plant coverage. In 2018, there were even fewer plants found. This condition is not healthy for Diamond Lake.**

If the trend continues, harmful algae blooms could increase, further degrading Diamond Lake's water quality and even threatening human health. **A lake-wide coordinated approach to preserving 30 percent of the good native plants in Diamond Lake is very important to help preserve the lake's ecosystem. Please learn to identify the desirable natives from the undesirable invasive plants so we can better protect our good native plant populations.** Invasive plants must be controlled, but if done properly and monitored regularly the native community can thrive and fight off most invasions. Protection of our native plants will greatly help with invasive plant management, sediment reduction, water filtration, nutrient absorption and habitat enhancement.



*Emergent wetland plants: blue flag iris, white turtlehead and sedges in rain garden. Photo by Judy Petersen.*



*Algae bloom on Wilderness Park South pond. Photo by Tori Trauscht.*

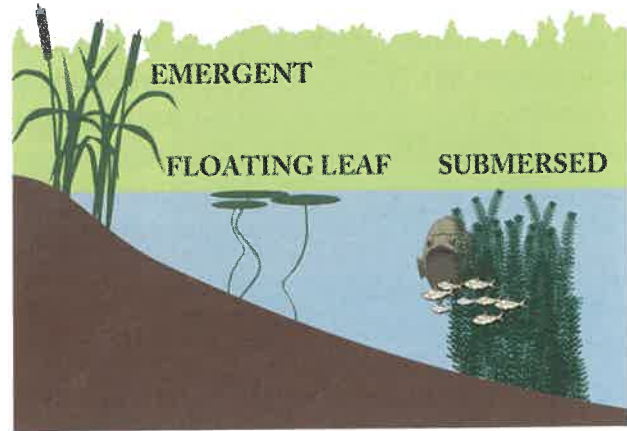
**Wetland Plants** ~ These native plants for the shoreline areas and lake edges help to add beauty while providing a buffer of vital habitat for insects, amphibians, birds and mammals. Beneficial native plants like lake sedge, brown fox sedge, palm sedge, blue flag iris, sweet flag, great blue lobelia, cardinal flower, New England aster, purple coneflower, black-eyed Susan, blue vervain, white turtlehead,

swamp goldenrod and mountain mint are some of the plants that will grow well in a buffer just above the water. Prairie cordgrass is a great taller plant for stabilizing very eroded areas at the water's edge as the plant roots can grow to 16 feet deep or more. Aquatic vegetation is often misunderstood and undervalued. Though many people do not want them in their recreational lake, without these plants our lake would be dominated by algae, which is far worse for lake water quality, health and recreation. Aquatic plants are workhorses that help to keep the lake in balance by absorbing pollutants, cycling chemicals, producing oxygen, trapping sediments, and providing places for small crustaceans and fish fry to hide, which in turn supply food for fish and waterfowl. In recent years, the diversity of aquatic native plants in Diamond Lake has also decreased due to a decline in water quality and excess turbidity or sediments in the water. Please get educated about native plants and work collaboratively with the experts to make sure Diamond Lake can maintain a viable aquatic plant population for the sake of water quality.

**Types of aquatic plants**

Several types of plants grow in water and are considered aquatic. Aquatic plants grow in what is called the littoral zone of the lake, or around the shallower edges. When rooted in the lake bottom with leaves and stems that grow out of the water, they are called emergent plants. When rooted in the bottom but with leaves and flowers on the water surface, they are called floating leaved plants. They also can have leaves and stems that grow entirely underwater though some parts may float on the water’s surface. These are submerged plants. Algae, which is not really a plant, has no true roots, stems or leaves. It can be a one-celled or multi-celled species. The following are some native aquatic plants that you might see in Diamond Lake. (See Appendix Page 4 for Beneficial and Invasive Aquatic Plants.)

**Emergent Plants** ~ Rooted in the shoreline, emergent plants help to prevent erosion at the water's edge and can help to trap sediments. Beneficial emergent plants include bulrushes, pickerel weed, arrowhead, water plantain, blue flag iris, sweet flag, cattails and reeds. Cattails can be very aggressive and out-compete other emergents, but they also help to improve water quality and provide habitat. Muskrats feed on emergent plants and prefer bulrushes and reeds over cattails. Caging spikerush



*Littoral zone graphic. Source: Utah State University.*

and bulrush planted along natural shorelines can help protect the plants from being browsed by animals, prevent erosion and provide valuable fish spawning and waterfowl habitat.

**Floating leaved plants** ~ Rooted deep in the lake bed of quieter, more protected areas, water lilies help to calm and shade the water while the roots trap sediment and provide habitat for aquatic insects. The large lily pads, which grow on top of the water, provide perching areas for birds, insects including dragonflies and other wildlife. Fragrant white water lily is a native lily that grows in the mucky lake bottom in less than 8 feet of water. Spatterdock, valuable in Diamond Lake for calming busier areas, has heart-shaped leaves and yellow flowers that form a ball. Lilies are a good food source for ducks, turtles and muskrats.



*Floating leaved plant, spatterdock. Source: Missouri Department of Conservation.*

**Submerged plants** ~ These aquatic plants grow under the water and may extend to the surface. They help stabilize bottom sediments and also provide habitat for fish and other aquatic life. Native submergents historically found in Diamond Lake include coontail, Sago pondweed, duckweed, slender naiad, water stargrass and eelgrass. The latter three have not been seen since 2002 due to increased turbidity and nutrients in the lake. Since a seed bank in a lake can last for many years, some plants may reappear if water quality improves.

**Coontail** – This native plant is considered one of the most primitive living flowering plants on the planet. The tips of the plants bunch up to look like



a raccoon's tail. It stays green all winter and provides important year-round habitat to many invertebrates and spawning areas for fish. Coontail is a free-floating plant that may drift, and has a preference for areas of sun and relatively clear, nutrient rich water up to 9 feet deep. It can be more tolerant of shade and turbidity in the water than other aquatic plants, and can inhibit the growth of phytoplankton and blue-green algae (cyanobacteria) so has been introduced deliberately into polluted bodies of water to absorb suspended particles of toxic chemicals.



Coontail. Source: illinoiswildflowers.com

*Sago pondweed* – Sago pondweed prefers full sun and areas of shallow water up to 4 feet deep with a mucky bottom. Sago pondweed has round leaves that come to a point like a needle; the long bendable leaves fan out and can survive strong wave action. It adapts to a variety of conditions and can become a dominant aquatic plant, forming extensive colonies. Sago pondweed is submerged, but some stalks peek out of the water. Its seeds are an important food source for waterfowl (a variety of ducks and other



Sago pondweed. Source: lakesingletary.org.

shorebirds), muskrats and turtles. It also provides good cover for fish and other kinds of aquatic wildlife.

*Common duckweed* – Common duckweed adapts to fresh water that is stagnant or slow-moving and relatively high in nutrients. It has a fairly wide pH tolerance and needs full or partial sun. This plant can spread aggressively in areas with full or partial sun and may cover large areas of a body of water. It is also common in disturbed and degraded wetlands, although it also occurs in higher quality wetlands. To some people, duckweed may appear to be some kind of algae. It's not, but it is among the smallest of all flowering plants. Many insects living on the surface of the water are the pollinators of the rarely produced flowers. Some vertebrates feed on duckweed, especially ducks and turtles.



Duckweed. Photo by Tad Cameron.

Rootlets of duckweed are sticky when wet. They cling to feathers, so wetland birds can introduce this plant from one body of water to another.

*Slender naiad* – This slender, flexible plant has a branched stem with yellow-green whorled leaves. An annual, it grows in the substrate near the shore in clear, slow moving water from 3 to 12 feet deep. Fish and waterfowl feed on slender naiad foliage and small seeds under the leaves. Preferring unpolluted water, it has not been seen in Diamond Lake since 2002.

*Water stargrass* – Graceful water stargrass, is a native submergent plant that appears as floating green leaves with yellow stars on the water in later summer and fall. It provides an increased oxygen supply for invertebrates and acts as a nutrient buffer by using dissolved oxygen and nitrogen for growth making those nutrients unavailable for algae. It has not been seen in Diamond Lake since 2002.

*Eelgrass* – Eelgrass is a flowering underwater plant with 1/4-inch wide leaves that can reach lengths of 3 feet. Their roots anchor the plant to sandy or muddy bottoms and filter excess nutrients out of the water. It helps to prevent shoreline flooding and erosion by stabilizing sediment and buffering wave action. Eelgrass grows in distinctive clumps in nearshore waters at depths ranging from 15 feet. It provides habitat for a wide range of fish and wildlife, especially young fish fry who shelter in it during early stages in their life cycle. It requires specific amounts of light and clean water and has not been seen in Diamond Lake since 2002.

Algae, believe it or not, is a crucial part of a healthy lake. Zooplankton – which are microscopic-sized animals – feed on algae and other creatures feed on zooplankton. Algae only poses a problem to lake health when there is too much of it and if the wrong kind increases during algae blooms, also called harmful algal blooms or HABS, mainly in summer. If algae begins to dominate our lake it will be hard to reverse that process.

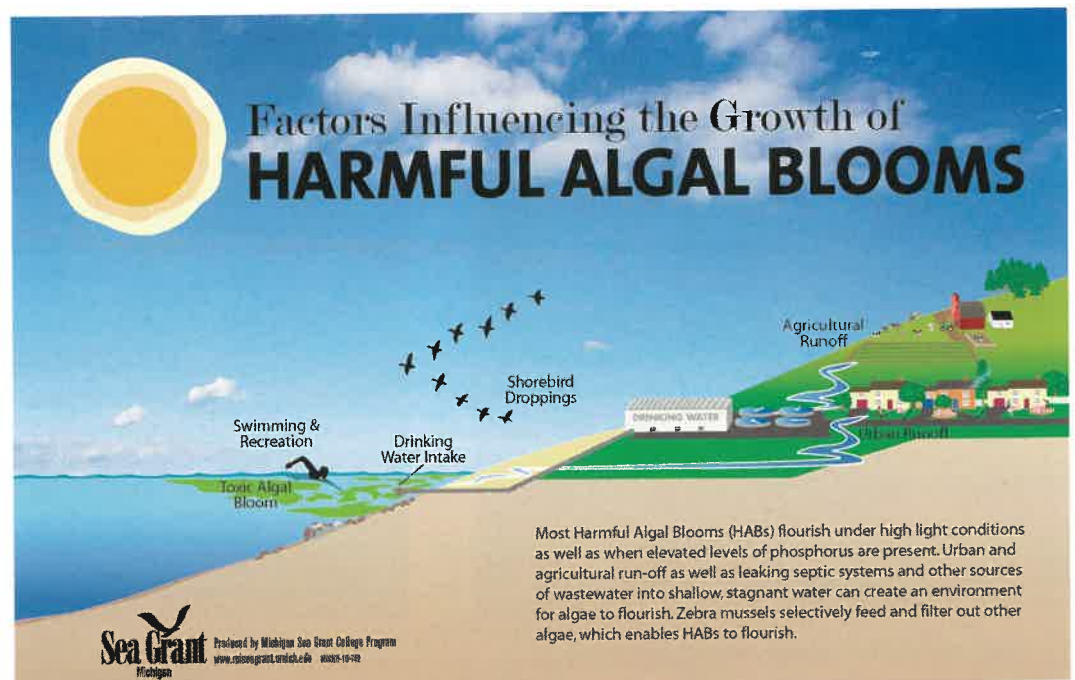
*Chara* – Actually a macro-algae, chara looks like an aquatic plant and is sometimes confused with coontail. However, chara can be identified by its light green, or grey-green color, a musky odor and gritty feel from its calcium component.



*Chara*. Source: Center for Freshwater Biology at the University of New Hampshire.

It may grow several feet long in dense stands entirely underwater along the lake bottom. It is a good type of algae as it helps stabilize the bottom sediment and utilizes the nutrients in the water. Stands of chara are a haven for dragonfly nymphs.

*Blue-green algae* – Also known as cyanobacteria, blue-green algae are microscopic organisms that naturally occur in Illinois lakes and streams. They can reproduce very quickly in warm, shallow, undisturbed-surface water that receives a lot of sunlight. Sometimes blue-green algae can produce toxins that pose a health risk to people and animals. If a blue-green algae bloom is present, residents should notify the LCHD-ES so that it can be tested for toxins.





**LCHS-ES Monitoring Calendar with Growth Periods for Plants and Algae**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lake County Health Department (LCHD) Monitoring				Early season plant survey (weather dependent).								
				Licensed Beaches are monitored every two weeks Memorial Day - Labor Day.								
				LCHD monitors lakes in depth every 5-8 years. In depth monitoring includes water chemistry samples collected once a month.								
Invasive Species (Plants)				Curlyleaf Pondweed peaks early and dies off by end of June.								
				EWM can peak early but can last most of season.								
Native Plant Species				Primary time for native plant growth is June - August.								
Algae Blooms							Harmful Algal Blooms (HABs) that can contain toxins with a potential health risk typically occur in late summer and also early fall after lake turnover.					
				Filamentous algae blooms typically occur earlier in the season than HABs, peaking in June.								
Aquatic Herbicide Treatment				Dependent on plant growth and weather, early season herbicide treatments are recommended to target the invasive species and minimize impact on native plant species.								
Fish Spawning				Bass, Carp, Bluegill, Crappie dependent on water temp.								

This chart was developed by Alana Bartolai of LCHD-ES.

**Invasive aquatic and invasive shoreline plants**

Aquatic invasive species do not provide the benefits of native plants because they tend to grow in denser colonies and/or on the water surface where they interfere with recreational use, put habitats out of balance and overtake native plant populations. Some submerged and floating invasive plants can create thick canopies that block the light for desirable good underwater native plant populations and raise the water temperatures excessively. Invasive emergent plants are very aggressive and if allowed to grow unchecked can turn a diverse wetland plant community into a solid monoculture of prolific weeds. Many can be controlled by hand cutting or pulling in the early stages; in the later stages herbicides must be used consistently for years to eradicate them. (See Appendix Page 4 for Invasive Aquatic Plants.)

**Eurasian Watermilfoil\*** – Eurasian watermilfoil (EWM) is native to Europe, Asia and North Africa. It was brought to the U.S. in the 1940s to decorate aquariums and has since spread to nearly every U.S. state as well as Canada. In lakes with well-established populations of native plants like coontail, Eurasian watermilfoil has difficulty becoming established. But where native plants have been removed, Eurasian watermilfoil finds an ideal habitat to grow. It thrives in shallow, nutrient-rich water and can reduce light levels and shade out native plants.

It also decreases oxygen levels and increases mosquito habitat. Since Eurasian watermilfoil reproduces by stem fragmentation, the mechanical clearing of this plant can create thousands of fragments that can each produce a new colony, causing large mats to form and interfere with boating,



Eurasian watermilfoil. Source: Illinoiswildflowers.com.

swimming and fishing. Those fragments can also cling to boats and trailers and be transported to other lakes.

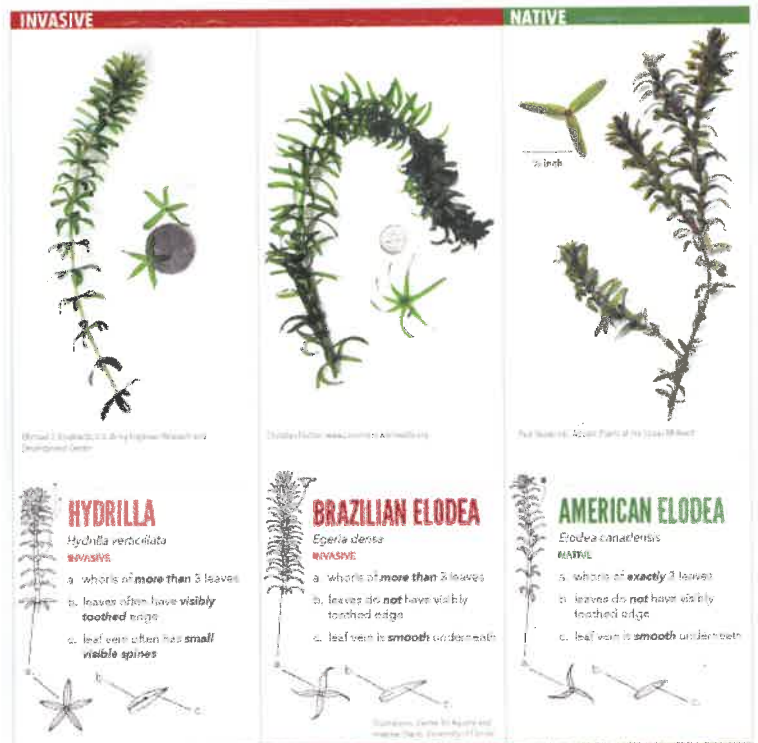


Curly-leaf pondweed. Source: U.S. Geological Survey Nonindigenous Aquatic Species.

**Curly-leaf pondweed\*** – Curly-leaf pondweed is an invasive plant that is native to Eurasia, Africa and Australia. The leaves are reddish-green, oblong, and about 3 inches long, with distinct wavy edges that are finely toothed. The stem of the plant is flat and reddish-brown. It grows from 1 to 3 feet long. It was brought to the U.S. in the mid-1880s for use in aquariums. Unlike the native pondweeds, this plant begins growing in the very early spring, and can even grow under ice. It tolerates low light and low temperatures, too.

Curly-leaf pondweed can also create mats of vegetation that interfere with boating and swimming. This plant is a concern because it reaches maturity in mid-summer (usually in June in Lake County), when native water plants are starting to emerge. So, while native plants are still growing, curly-leaf pondweed is dying off, which can cause a critical loss of dissolved oxygen that native plants and animals need. The die-off also increases phosphorus, which in turn feeds unwanted algae blooms.

**Hydrilla\*** – Hydrilla is an extremely adaptable exotic plant. Although it has not yet been found in Diamond Lake, the potential for introduction of this plant is a concern. Hydrilla is very aggressive. It can grow up to 1 inch a day and produce dense mats of vegetation to 20 feet deep, which can cause severe and costly navigational problems and impairments to the lake. This invasive is mainly a concern in the southeast portion of the United States. Early detection of hydrilla or another potential invader, Brazilian elodea, is vital to eradicate small populations early. Elodea in the third column below is another potential native that is not invasive but used here for comparison to Brazilian elodea.



Hydrilla and Brazilian elodea invasives chart. Source: Niipp.net.



**Invasive shoreline plants must be controlled**

Once allowed to grow unchecked, these invasive shoreline plants can quickly produce monocultures and push out good native plants. Though cattails help to filter pollutants from the water they too can take over diverse wetland communities and become invasive.

*Cut-leaved teasel* is an invasive thistle that can live in upland areas as well as wetlands and swales. Teasel can be very aggressive as it has no natural enemies. Seeds can remain viable for up to two years and can quickly form large monocultures where teasel becomes the dominant, prickly plant. The first year the plant produces a rosette and the second year a flower.



*Phragmites*, also known as common reed, is an emergent wetland grass that can grow more than 15 feet tall. It can easily be identified in summer or fall as the only plant in wet areas with its dark green leaves and large purple-brown flower heads that contain thousands of seeds. *Phragmites* out-compete even cattails because they can thrive in shallow and salty water and have no predators.



*Phragmites*. Source: Greatlakesphrag.org, Maggie Jensen.

*Reed canary grass* is an emergent grass that produces monocultures that push out native plants and is a major threat to natural wetlands. From 2 to 6 feet in height, it takes hold in areas that have been disturbed, like ditches, streams and other areas where soil has been moved. A Eurasian species, it was planted throughout the U.S. from the 1800s for forage and erosion control but has smothered many beautiful native plant communities. It has limited habitat benefits.



*Cut-leaved teasel* (left) and *reed canary grass* (above). Photos by Gary Fewless, Consortium of Wisconsin Herbaria.

*Purple loosestrife* has square-shaped, woody stems, with spikes of beautiful purple flowers that are loved by bees and pollinators. Native to Europe and Asia, it was unintentionally introduced to the U.S., including the Great Lakes region, circa 1870. Sold and planted for decades as a decorative ornamental plant, purple loosestrife is now illegal to sell in most states. Each plant can produce up to 2.7 million tiny seeds that are spread by wind and water and can quickly destroy healthy wetland communities.



*Purple loosestrife*. Source: British Columbia Invasives, R. Mueller.



The best way to control these plants is to cut the tops off during dry periods while the plant is just beginning to flower and then top off the cut stump with a small amount of herbicide. For large infestations, hiring certified sub-contractors for waterways would be advised.

### **Management of invasive plant species and excessive aquatic plants in water**

When invasive plants begin to out-compete native plants in waterways they must be controlled. If there are too many native plants in recreational corridors or fish-spawning areas, they also must be controlled. A reduction or loss of too many aquatic plants in the lake can lead to algae dominance, loss of aquatic life, and invasive species opportunities. When conditions for hand control are too challenging, the selection of appropriate herbicide(s) and the proper timing of applications are extremely important to the health of the lake. If invasive plants are treated in the warm summer months, when oxygen levels are already low, additional oxygen depletion by decaying plants can stress all aquatic life and overkill native plants in the lake, which hurts fish and wildlife.

**Conducting aquatic plant surveys and identifying the target plant species of plants in the lake and the timing of when to perform treatments are very important. Aquatic and emergent plant herbicide treatments should be for invasive plant species only and must be administered by certified applicators. Once the target species of plants is identified, the owner and the acreage of the area needing to be treated must be determined for proper treatment, dosage and so as not to kill good plants. A strategy for alternating chemical use is important so that nuisance species do not develop a resistance to herbicides.**

In short, collaborative weed management planning between all lake owners is vital to the long-term health of the lake. Whole-lake treatments can adversely impact the entire ecosystem, as well as degrade the area for recreational use.

Biological control, using one organism to combat another, has been used by scientists to reduce the number of invasive plants. For example, non-native leaf-eating beetles have been used to control purple loosestrife by land managers in Illinois and other states. These beetles had to be studied and monitored for several years to make sure they didn't harm native plants and animals before introducing them. Research is also being done regarding a native milfoil weevil that might help control Eurasian watermilfoil. Researchers worldwide are studying biological control of invasive plants.

**Observant stakeholders can help with invasive weed control by identifying Eurasian watermilfoil and curly-leaf pondweed. Lakebed property owners and the MPRD should be notified of infestations so coordination for proper types and amounts of treatment can be timed correctly.**



Map of lake areas owned by the MPRD. Source: MPRD.



**Important \***

**As of 2012, a National Pesticide Elimination System (NPDES) permit is required when pesticides/herbicides are applied to, over or near the public waters of the State of Illinois. This permit applies to all public Illinois waters.**

The owner or the contractor of whoever owns the lakebed of water must apply for the permit. First a Notice of Intent (NOI) must be filed electronically with the IEPA, at least 14 days prior to the intended date of use. Once a permit is issued it is good for 5 years from the date of issuance. An Adverse Incident Report must be filed if any incidents occur from the application, like spills or overdose. A Pesticide Discharge Management Plan (PDMP) is required if the treatment acreage is over 85 acres, cumulatively (e.g. 8 treatments of 10 acres is 80 acres). No one shall apply specialized pesticides or other chemicals within waterways, even on their own property, unless they have an NPDES permit for that waterway. Homeowners are allowed to use general-use products, but only on their property only. (General-use means those that can be purchased at common retail stores, but not specialized products that require a NPDES permitted applicator).

**Please coordinate aquatic plant and other herbicide application strategy with Mundelein Park and Recreation District and other community lake owners so that the lake is not over treated or plant populations overly impacted.**

**Native land and water animals**

Diamond Lake is not only an important place to humans but also to all the creatures that live around and within it. Mammals, migratory and nesting birds, insects, amphibians and fish are all part of the ecosystem in our watershed and are interdependent on the Diamond Lake ecosystems for their survival.

**Mammals** -- Most wildlife that bear live young are called mammals. Each species contributes to the ecosystem. For example, eastern cottontail rabbits, shrews, mice and voles provide food for foxes, red-tailed hawks and other birds of prey. Gray squirrels and blue jays help plant oak trees. Bats, which also are mammals, can eat hundreds of mosquitoes each evening. Owls help control populations of skunks and other nuisance species including raccoons and opossums.

Here's a list of mammals that mostly likely can be found in the Diamond Lake region. An asterisk (\*) indicates it's among the most common: \*Virginia opossum, eastern mole, masked shrew, \*northern short-tailed shrew, little brown bat, northern long-eared bat, eastern red bat, hoary bat, silver-haired bat, big brown bat, evening bat, eastern cottontail rabbit, \*eastern chipmunk, woodchuck, thirteen-lined ground squirrel, \*eastern gray squirrel, southern flying squirrel, American beaver, \*white-footed mouse, prairie vole, meadow vole, woodland vole, muskrat, brown rat, house mouse, coyote, red fox, long-tail weasel, American mink, \*striped skunk, \*raccoon and \*white-tailed deer.

Historically, the gray wolf, mountain lion, black bear, bison and elk, were part of the large mammal population that traversed this forested/grassland region, but these species disappeared during the 19th century due to overharvesting, bounty hunting and habitat changes as human populations grew.

**Birds** – Diamond Lake is within the Mississippi and Great Lakes Flyway, a major migration path, and as a result many more bird species can be seen as they migrate in spring and fall than as residents at other times of the year. Birds are excellent indicator species because when they disappear that could mean habitat is becoming lost or degraded. Look skyward and you will be surprised how many types of birds you can see around Diamond Lake. You could say migration is a year-long event. Hardy fliers like ducks, geese and cranes migrate amid snowstorms, while species such as woodcocks and herons often return in early to late February. In contrast, long-distance, neotropical bird species

that may summer here, but mostly fly to Canada, are the flycatchers, vireos, hummingbirds, most warblers and thrushes. They arrive from late April into June and pass through again from late August and until October. Short-distance migrants, including eastern phoebe, brown creeper and some sparrows, spend the winters from Illinois to the Gulf Coast states. Other birds such as rails, terns, sandpipers and swallows can begin fall migration as early as the first of July, though most return in spring during April and May, with fall migration being a much longer event.



*Great blue heron. Photo by Steven D. Bailey.*

Most of the water-loving birds such as ducks, geese, swans, grebes, loons, coots, cormorants, bald eagles, osprey, sandpipers, terns and gulls will only be seen along the lake edges or flying over Diamond Lake and the slough. A few species including rails, herons, bitterns and kingfishers are mostly found in marshes and other wet areas during migration and in spring and summer. Other birds that can be seen flying over the lake and our yards include migratory hawks, turkey vultures, sandhill cranes, common nighthawks, chimney swifts and swallows.



*Scarlet tanager. Photo by Sheryl DeVore.*

Yard birds around Diamond Lake can include red-breasted nuthatches, American tree sparrows, pine siskins, and juncos in the winter; woodpeckers, cardinals, blue jays, chickadees and American goldfinches year-round; and catbirds, orioles, wrens and grosbeaks in summer; as well as various sparrows, buntings, warblers, tanagers and other birds during migration.

Those preferring more shrub habitat with mature oak and hickory species are woodpecker, flycatcher, tanager, vireo and warbler species. Thrushes, catbirds, thrashers, wrens and sparrows will be found in yards with native shrubs. Yards with more flower gardens or native vegetation and less mowed grass will attract thrushes, towhees and native sparrow species.

Enhancing a yard with some type of water feature like a pond or rain garden will attract even more birds, including drawing many of the smaller, more colorful or uncommon species out of the treetops.

**Insects and spiders** - Insects comprise over 90 percent of all animal species and represent the greatest diversity within an ecosystem. An estimated one of every three bites of food we eat is the result of insect pollinators. Though you can't see them all, ants, spiders, beetles, wasps, bees, crickets, katydids, grasshoppers, fireflies, butterflies, moths and other insects play various roles in the food chain, serving as pollinators as well as food for wildlife.





*Monarch on New England aster. Photo by Sheryl DeVore.*

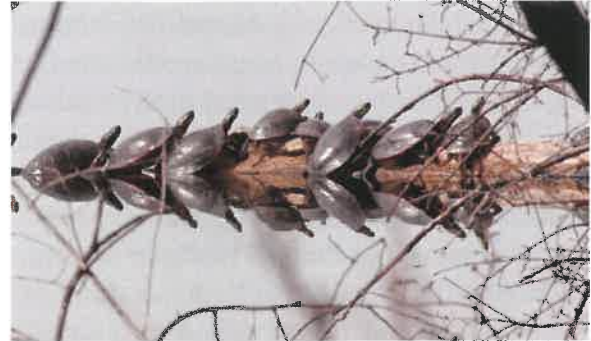
Some native butterflies seen in the Diamond Lake area include monarch, black swallowtail, tiger swallowtail, great spangled fritillary, red-spotted purple, mourning cloak, American painted lady, red admiral, question mark, comma, buckeye and silver-spotted skipper. Many moth species also are important pollinators. Planting native trees, shrubs and wildflowers and not using chemicals on plants and flowers is important to help these important insects survive.



*Dragonfly. Photo by Tobin Fraley, 36 Acres.*

Dragonfly and damselfly species take wing at different times from spring through fall. Most spend more time in water after hatching from eggs than flying. Dragonflies, damselflies and other aquatic invertebrates spend their nymph stages in the water.

Common dragonflies of the region include eastern forktail, widow skimmer, common whitetail, common pondhawk, twelve-spotted skimmer, blue dasher, eastern amberwing, black saddlebags and green darner. Common damselflies include blue-fronted dancer, familiar bluet and eastern forktail.



*Turtles on log. Photo by Tobin Fraley, 36 Acres.*

**Amphibians and reptiles** - Collectively called herps, amphibians and reptiles live within the Diamond Lake watershed. Many amphibians and reptiles are dependent on wetlands and the lake itself for part of their life cycle. These include American toad, grey treefrog, chorus frog, bullfrog, green frog, northern leopard frog, blue-spotted salamander, tiger salamander, spiny softshell turtle, snapping turtle, painted turtle, slider and common musk turtle. Snake numbers have declined in the suburban Chicago area as habitat has disappeared. Some to look for include fox snake, brown snake, plains garter snake, common garter snake and milk snake. None of these are poisonous.

### **Native fish**

Aboriginal anglers enjoyed fishing Diamond Lake for thousands of years, and settlers of the past 200 years documented all types of fish catches. Today, Diamond Lake continues to attract anglers from all over to fish here. Fishing clubs like the Chicagoland Musky Hunters, and other groups have had fishing competitions on the lake for many years.

Healthy fish species are excellent indicators of the biological health of the lake. The growth, distribution and abundance of certain fish species can tell us about water pollution, critical habitat degradation, eutrophication, excess nutrients and other lake problems.

Based on lake surveys done by the Illinois Natural History Survey, the following fish have been found in Diamond Lake. Most of these are native to Illinois. They include largemouth bass, northern pike, muskellunge, black crappie, bluegill, yellow bass, white bass, walleye, channel catfish, yellow perch, green sunfish, emerald shiner, golden shiner, pumpkinseed sunfish and yellow bullhead. The non-native gizzard shad\* and common carp\* are also found. According to a fish survey conducted in September, 2009 by the IDNR, the Diamond Lake fish population was mainly dominated by bluegill (54 percent) and golden shiners (21 percent). Common carp made up 9 percent and channel catfish 5 percent.

Since 2002, the population of yellow bass was found to have greatly increased. These fish can significantly impact the ecology of the lake by foraging on eggs and fry of more desirable fish. At the same time, numbers of bluegill, crappie and perch as well as largemouth bass declined. In 2006, strategic stocking was planned and conducted over subsequent years to revive the fish populations while helping to control common carp. This strategy has resulted in the gradual recovery of desired species.

Overall, the lake's population consists of more mature fish, which should support natural reproduction, an important finding. This means that the existing population and mix can sustain itself without stocking or population controls. Over the years, the IDNR has supplemented native populations with stocking of northern pike, musky and channel catfish. Landowners would help fish populations if they would install and maintain emergent and other native plants along their shorelines. (See Native Illinois Fish Species Identification sheet Appendix Page 2.)

### **Problem fish**

**Gizzard Shad** – Public enemy No. 1 for bluegill fishing is the gizzard shad. Native to Illinois, the gizzard shad has increased its range and abundance within the state due to construction of reservoirs. Intentionally stocked in other waterways, in 2008, gizzard shad appeared in Diamond Lake, indicating a fish movement between drainageways and the lake.

There are gizzard shad in the Des Plaines River, so it's highly possible these fish came from that system upstream. Gizzard shad grow faster than bluegill and largemouth bass, so they can quickly out-compete them and cause an imbalance resulting in decreased growth and size of largemouth bass, bluegill and crappie. Gizzard shad show tremendous invasion potential; their prevalence can increase turbidity and impact visual predatory fish. Anglers should never dump their bait bucket in the water. Leftover bait needs to go only in the trash well away from the lake.



*A carp haul. Please help us remove carp from Diamond Lake. Photo courtesy of MPRD.*

**Common Carp** – Carp are prevalent in Diamond Lake and need to be controlled. These bottom feeders were brought to the U.S. in the 1870s from Germany as a food source and are now found throughout Illinois. They tend to thrive in poorer water quality. They can quickly take over native fish populations because they reproduce in large numbers (50,000 eggs per season), grow quickly and may live for 15 years, with sizes ranging from 2 to up to 80 pounds. They eat plant and animal matter and uproot

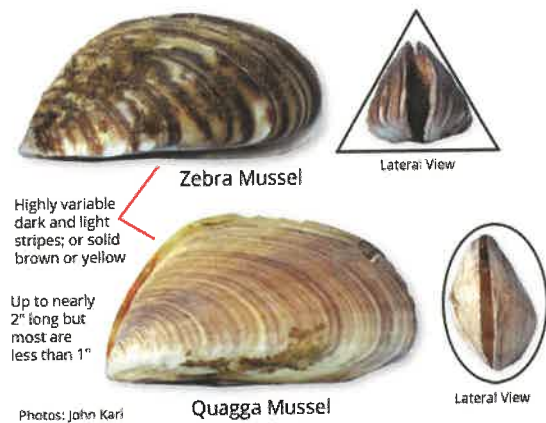


native aquatic plants while feeding, stirring up sediment, reducing water clarity, and releasing phosphorus from muck which results in algae blooms. MPRD has an annual carp derby where carp are caught and then disposed in a dumpster and used for fertilizer at other locations. IDNR checks carp numbers by shocking them periodically. In 2017, the IDNR collected 105 carp and removed 871 pounds of the problem fish on Diamond Lake.



Carp removed from Diamond Lake by IDNR staff.  
Source: Frank Jakubicek IDNR Fisheries.

**Zebra and Quagga Mussels** – The United States is experiencing an infestation from small invasive mollusks called zebra and quagga mussels. In the mid to late 1980s, zebra mussels and quagga mussels were carried in freshwater ballast from Eastern Europe to the Great Lakes. They have since spread through waterways connected to the Great Lakes and have been transported by boats to local lakes, including Diamond Lake. They have damaged natural ecosystems, industrial infrastructure and recreational equipment like boats and docks. Populations of native Illinois mussels have declined alarmingly in recent decades because of siltation, pollution and competition from these exotic mollusks. Of the 80 mussel species native to Illinois, more than half are currently threatened, endangered, extirpated or extinct because of these new invaders.



Graphic courtesy of John Karl, Wisconsin Sea Grant.

**Invasive mussels and crustaceans**

**Crayfish** – Sometimes called crawfish, crayfish are crustaceans. They mostly live near water, especially streams. Non-native crayfish, released by anglers, are now invading Illinois waters. Species like invasive rusty crayfish can grow up to 6 inches. They significantly reduce the size of native fish and amphibian populations by direct predation on their eggs and by consuming the aquatic shelter plants.



Rusty crayfish.  
Source: Minnesota Sea Grant.

**In their five-year lifetime, a single zebra or quagga mussel can produce a staggering 5 million eggs**, resulting in an estimated 10 trillion invasive mussels. Both are 1 to 2 inches long with colored stripes. They usually grow in clusters containing numerous individuals located in shallow algae-rich water, 6 to 30 feet deep. The mollusks are filter feeders, feeding on small organisms called plankton that drift in the water. This helps promote water clarity but strips the food web of plankton for native fish, native mussels and other invertebrates. The added sunlight increases the area where aquatic plants can grow, which can lead to excess aquatic plants, excessive invasive aquatic plants and recreational nuisances. Zebra and quagga mussels devastate native mussel populations, which has a cascading effect

throughout the ecosystem. Scientists have yet to find a solution for controlling these invaders without also harming other wildlife. (See the Appendix Pages 3 and 4 for more other Invasive Species.)

### **Boating and fishing guidelines**

Many recreational activities involve the use of motorized watercraft, including personal watercraft, and inboard and outboard motor boats for fishing or water skiing as well as lower impact craft like kayaks, canoes and paddleboards.

**The following Best Management Practices from the U.S. Coast Guard will help minimize potential damage to Diamond Lake by boaters.**

1. **Learn common safety rules and boating laws about your lake and watercraft.**
2. **Avoid spilling gas, oil and other chemicals into the water during fueling or boating maintenance.**
3. **Do not "top-off" fuel tanks; fuel the boat on the trailer whenever possible.**
4. **Adjust your speed to reduce the wake and consequent wave action that can damage the shoreline, including no-wake and shallow water/low speed zones.**
5. **Be considerate when using your watercraft. Boating and excessive wave action very early in the morning or late at night can disturb the entire lake community.**
6. **Fish responsibly. It is illegal to deposit bait fish, fish entrails or parts into the lake or on shores.**
7. **Inspect boats and trailers to avoid moving non-native plants or animals between water bodies.**
8. **Store and then properly dispose of wastewater when ice fishing. Human waste from several ice houses can have a significant impact on lake water quality.**

All users of watercraft should understand the most appropriate areas to use their craft and ways to properly interact with other watercraft—both non-powered and motorized. Understanding the safety principals and limitations of each watercraft and how to interact is important. Showing courtesy and

respect to fellow users on the lake encourages a safe and fun recreational experience for all.

**The Mundelein Park and Recreation District gained ownership and authority over Diamond Lake in 1969. At that time, MPRD adopted safety rules that included counter-clockwise flow of boat traffic, caution zones and no-wake, low-wake areas to help preserve shorelines from excessive wave action and erosion.**

Over the past several years there has been a dramatic increase in the numbers and use of paddlecraft. These include kayaks, canoes and most recently, paddleboards. Coincidentally, the U.S. Coast Guard has reported that these craft have been involved in increasing number of boating accidents, injuries and drownings. According to U.S. Coast Guard statistics, personal watercraft are the only powered watercraft that are experiencing an increase in accidents and fatalities, and the biggest factor contributing to these incidents is operator inexperience. Make sure that those operating your personal watercraft are familiar with all controls, hazards and the rules of Diamond Lake. (See IDNR/MPRD Boating Safety Rules on Appendix Page 5.)



**FIGHT THE SPREAD OF  
AQUATIC INVADERS**

**REMOVE** PLANTS, ANIMALS AND MUD FROM ALL EQUIPMENT.

**DRAIN** ALL WATER FROM YOUR BOAT AND GEAR.

**DRY** EVERYTHING THOROUGHLY WITH A TOWEL.

**TRANSPORTZERO.ORG**

Source: Illinois-Indiana Sea Grant.





**How can you help prevent aquatic invasions? The following list is extracted from the Illinois-Indiana Sea Grant website.**

**Specifically, at a boat landing, always do the following before leaving:**

- **Remove plants, mussels, animals and mud from all equipment (boats, trailers, anchors) and control invasive and exotic species on your land;**
- **Drain all water from your boat and gear. Keep drain plugs out while transporting watercraft;**
- **Dry everything thoroughly with a towel;**
- **Take all unwanted bait, worms and fish parts home to dispose in the trash;**
- **Do not release aquatic plants or animals into the environment. Learn about prevention.**

\*Diamond Lake does not currently have a boat washing station, but it may in the future. Please be sure to inspect, drain and wash your boat thoroughly before moving between lakes.

### Swimming and beach monitoring

There are four state-licensed swimming beaches on Diamond Lake: Mundelein Park District beach, Oak Terrace beach, and Beach One and Beach Two in West Shore Park. These beaches are enjoyed by all ages, and beach and water health are important to the recreational users of Diamond Lake. (See Diamond Lake Community Map on the back cover of this guide.)

Area beaches are sampled for bacteria *Escherichia coli* (E. coli) levels by the LCHD-ES every two weeks from Memorial Day to Labor Day. Resulting water samples are tested for E. coli bacteria, which are found in the intestines of warm-blooded animals.

Certain strains of E. coli can make humans sick if ingested in high enough concentrations. E. coli might also indicate the presence of other harmful pathogens such as *Salmonella* and *Giardia*.

If water samples come back high for E. coli (>235 E. coli/100 ml), the management body for the bathing beach is notified and a sign is posted to close the beach, indicating a swim ban. The beach is then re-tested daily until the levels drop

below the acceptable level when the beach can be re-opened for swimming. From 2003 to 2012, the Mundelein Park District Beach on Diamond Lake has had the most closures (with a total of 28 swim bans), while Oak Terrace beach has had the least (with 10 swim bans). More recently from 2008 to 2017, there have been 97 closings on various beaches in Diamond Lake.

There are many ways E. coli can end up in a swimming area. Heavy rainfall and strong wind associated with storms can cause the water to become cloudy with sediment from the lake bottom. Stormwater from rain can also wash in other waste sources from lawns, streets and buildings. Another source of E. coli contamination is from the feces of wildlife (geese, gulls, etc.) and pets.

Beach advisories are posted on the Lake County Health Department's website. Historical and current data on beach monitoring can be found on the Illinois Department of Health's website at [www.idph.state.il.us/envhealth/ilbeaches/public/](http://www.idph.state.il.us/envhealth/ilbeaches/public/).



Borrowed from Corwallsportpartnerships UK.



*Photo by Katie Eaman.*

### **Preventing illness and beach closures**

**Here are 11 active measures you can take to reduce the potential for illness and beach closures:**

- 1. When you are sick, do not swim. Germs are spread this way.**
- 2. Don't swim when you have diarrhea.**
- 3. Swimmers should leave the water to use the bathroom.**
- 4. Take a shower prior to entering the beach area.**
- 5. Children who are not toilet trained should wear tight-fitting rubber or plastic pants. Diapers should not be left on the beach.**
- 6. Avoid swimming during E. coli outbreaks or during algae blooms.**
- 7. Do not swim after heavy rainfalls, as after rains higher E. coli levels may be present in the lake.**
- 8. Do not ingest the water while swimming.**
- 9. Keep pets out of the beach area. Discourage ducks and geese from swimming zones.**
- 10. Pick up garbage around the beach area.**
- 11. Identify sources of pollution near the beach seasonally, failing septic systems and standing stormwater, and contact authorities.**

### **Recreational considerations: Let's work as a community**

Recreational opportunities are the primary reason people choose to live by lakes and rivers, but this also increases the potential for damage to water quality and shorelines. Being sensitive to the needs of all those who enjoy and inhabit the lake system will help minimize adversity, preserve water quality, help habitat and also enhance recreation. Poor water quality can affect recreation in and on the water, degrade fish and wildlife habitat, pose a health risk for water-contact recreation, and affect property values.

Since 1997, Diamond Lake has seen a decline in water quality and clarity along with an increase in total phosphorus, excessive nonpoint source pollution and shallowing lake conditions. The poor clarity is due to the turbidity in the water caused by suspended sediment rather than algae. Sediment and pollutants are swept into the water column from runoff and by wind action, heavy rainfall, powerboats and carp activities. Aquatic plants all but disappeared in the summers of 2017 and 2018. This could be attributed to large flood events and sediment loading, water clarity issues from invasive mussels, or because good native plants may have been over-controlled in prior years. Over time, the waterfront environment has developed a natural balance based on linkages between water, land, vegetation and wildlife. This delicate equilibrium can be easily disrupted when watershed stakeholders disregard their impacts on the lake and forget that sustainability and mutual cooperation are vital for its health.

**Diamond Lakers need to work together to clean up the lake and to coordinate a system for invasive aquatic plant control that leaves 30% of the beneficial aquatic plant populations, which are so vital to lake health.**

Recently, MPRD officials stated they will do one annual chemical treatment at the optimal time in early summer, but only if there are weeds that need treating. **In 2018, MPRD's contractor did no treatments because fewer than 5 percent of native aquatic plants were found in the lake.**



**Homeowners organizations can collaborate with MPRD and other lakebed owners on plant treatment strategies and use communicative contractors to work together to prevent any future harmful impacts on aquatic plant health.** Good aquatic plant populations should not be treated at all, but large populations that clog the lake right-of-ways can be hand controlled around beaches and main boat arteries if coordinated with MPRD, homeowners associations (HOA's) or other lakebed property owners.

Support of lake-wide planning and maintenance of a healthy Diamond Lake is far less costly than trying to fix a disturbed system. Developing and practicing a stewardship attitude as you enjoy the lake with other recreational users will go a long way to help.

### **Recommendations from Lake County Health Department for protecting Diamond Lake**

Protecting the quality of our lakes is an increasing concern of Lake County residents. Each lake is a valuable resource that must be properly managed if it is to be enjoyed by future generations.

The LCHD-ES is dedicated to monitoring the quality of the county's surface water in order to:

- Maintain or improve water quality and alleviate nuisance conditions,
- Promote healthy and safe lake conditions, and
- Protect and improve ecological diversity.

To help achieve this goal, LCHD-ES provides technical and/or educational services by a professional staff of scientists to government agencies (e.g., county, township and municipal), lake property owners' associations and private individuals on all bodies of water within Lake County.

LCHD-ES also recommended the following: (Note: Those with a check are being addressed while those with a dash are still pending.)

- ✓  Create a Diamond Lake Improvement organization that represents the multiple lake users and management entities on the lake.
- ✓  Decrease the Eurasian watermilfoil population.
- ✓  Target curly-leaf pondweed early in the season when populations are low.

- ✓  Continue participation in the Volunteer Lake Monitoring Program.
- Participate in the Clean Waters Clean Boats Program.
- ✓  Encourage homeowners to incorporate native plants in their landscaping through rain gardens or shoreline filter strips.
- ✓  Continue fish stocking and monitoring work with Illinois Department of Natural Resources.
- Install a permanent staff gauge.
- ✓  Use salt alternatives and proper application procedures.
- ✓  Observe wake restrictions in near-shore or shallow areas.

The next LCHD-ES report is scheduled in approximately 2022. A lot can change by then, especially with the projected expansion of Route 60/83 by the Illinois Department of Transportation (IDOT) to four lanes within the next several years. Resulting sedimentation and construction debris can greatly affect the depth and water quality of Diamond Lake.



*Rain garden planting in Oak Terrace. Photo by Jay Randolph.*

### **How we can all conserve water use in general**

Whether supplied well water or city water, stakeholders should all consider ways to conserve water during times of drought. Groundwater levels typically begin to decline through the summer and early fall, when plants absorb more water and rainfalls are

Change daily water consumption habits by taking shorter showers; turning sink water off when it is not being used during cooking, washing dishes, or brushing teeth; limiting sprinkler use for lawns and other landscaping; and only washing full loads of dishes and laundry. In addition, homeowners can install water-saving devices and appliances, such as gravity-flush toilets, low-volume showerheads, low-volume faucets, front-loading washing machines, and water-efficient dishwashers.

Landowners can reduce water use for landscaping and gardening by installing a drip irrigation system or using collected rainwater instead of a conventional sprinkler. If conventional sprinklers are used, turn on sprinklers by hand only when watering is necessary rather than having a timed system that runs on a constant interval no matter the weather conditions. To reduce water from evaporation, watering should take place early in the morning or late in the evening (preferably before sunrise or after sunset). Other approaches include incorporating native, drought-tolerant plants into your landscape, and mulching to help trap water in the ground.

### **Thank you Diamond Lake superheroes**

Many scientists and volunteers have worked together to produce this guide from existing studies and research to educate and inspire those in the entire Diamond Lake watershed to help our lake. We extend our gratitude to them for helping us understand how important this lake and its water quality have been historically and how important it is for the lake and its watershed to function and improve in the future. Humans, for better or worse, can have a huge impact on these ecosystems, and this guide gives us all a chance to learn how to fight against its degradation. Think of the entire lake system and your impacts upon it when you manage your home, roads, property or business. Water flows downhill, and unfortunately to most of us that means more pollution goes into Diamond Lake every day. Diamond Lake is still a gorgeous lake, but we can help make it cleaner and more sustainable by all pitching in to help. Working together and doing what each of us can to help improve conditions in the lake will ensure this 12,000-year old gem, Diamond Lake, remains healthy for centuries to come.





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Websites

The following websites were accessed between 2017 and 2019 to obtain information for this book:

*Aquatic/Native Plants and Invasive species:*

[www.eregulations.com/indiana/fishing/gizzard-shad](http://www.eregulations.com/indiana/fishing/gizzard-shad)  
[http://illinoiswildflowers.info/wetland/wetland\\_index.htm](http://illinoiswildflowers.info/wetland/wetland_index.htm)  
[https://www.ifishillinois.org/programs/aquaculture/aquatic\\_approved\\_species.pdf](https://www.ifishillinois.org/programs/aquaculture/aquatic_approved_species.pdf)  
[https://www.ifishillinois.org/profiles/display\\_lake.php?watnum=00273](https://www.ifishillinois.org/profiles/display_lake.php?watnum=00273)  
[http://www.iiseagrant.org/products\\_ais.php](http://www.iiseagrant.org/products_ais.php)  
<https://www.dnr.illinois.gov/education/Pages/ExoticFishes.aspx>  
<https://www.dnr.illinois.gov/education/Pages/WildAboutMussels.aspx>

*Conservation and Flooding:*

<https://extension.psu.edu/managing-your-well-during-drought>  
<https://extension.psu.edu/household-water-conservation>  
[https://www.fema.gov/media-library-data/1409002852888\\_3c5d1f64f12df02aa801901cc7c311ca/how\\_to\\_prepare\\_flood\\_033014\\_508.pdf](https://www.fema.gov/media-library-data/1409002852888_3c5d1f64f12df02aa801901cc7c311ca/how_to_prepare_flood_033014_508.pdf)

*History:*

<http://www.cooklib.org/local-history/>  
<https://highlandparkhistory.com/place-names-lake-county-illinois/>  
<http://www.idaillinois.org/cdm/ref/collection/lakecoun001/id/628> among many others  
<http://www.idaillinois.org/digital/collection/cookmemo11/id/7419/rec/1>  
<http://www.idaillinois.org/digital/collection/cookmemo11/id/886/rec/1> among many others  
<https://igs.indiana.edu/FossilsAndTime/LakeMichigan>  
<http://geo.msu.edu/extra/geogmich/paleo-indian.html>  
<http://historicmillburn.org/>  
<https://ivanhoechurch.org/iucc/origins-history/a-narrative-history/>  
<http://www.todayifoundout.com/index.php/2013/07/how-chicago-got-its-name>  
<http://lakecountyhistory.blogspot.com/>  
<https://coast.noaa.gov/data/digitalcoast/pdf/living-shoreline.pdf>  
<https://www.loc.gov/resource/g41031.la000122/>  
<https://www.loc.gov/resource/g41031.la000123/>  
<https://www.fremontlibrary.org/?q=research-training/genealogy-local-history>  
<https://www.isgs.illinois.edu/outreach/geology-resources/quaternary-glaciations-illinois>  
<http://lakecountyhistory.blogspot.com/2010/10/treaty-of-chicago-september-26-1833.html>  
<http://www.idaillinois.org/cdm/singleitem/collection/nstmary01/id/313/>

*Lake and Watershed reports:*

Indian Creek Watershed Based-Plan [www.lakecountyil.gov/DocumentCenter/View/11363/Indian-Creek-Watershed-Based-Plan-PDF-?bidId=](http://www.lakecountyil.gov/DocumentCenter/View/11363/Indian-Creek-Watershed-Based-Plan-PDF-?bidId=) Lake County Health Department – Environmental Services (Lakes Management Division) <http://www.lakecountyil.gov/DocumentCenter/View/5848/2002-Diamond-Lake-Report-PDF>  
<http://www.lakecountyil.gov/DocumentCenter/View/6009/2012-Diamond-Lake-Report-PDF>

*Maps:*

<https://maps.lakecountyil.gov/maponline/>

*Motor boats:*

<http://www.boatbuilders.us/motorboats.htm>  
<https://en.wikipedia.org/wiki/Motorboat>

*Regulations:*

[https://www.boat-ed.com/illinois/boating\\_law.htm](https://www.boat-ed.com/illinois/boating_law.htm)  
<https://www.dnr.illinois.gov/fishing/documents/illinoisfishinginformation.pdf>  
[www.boat-ed.com/illinois/boating\\_law.html](http://www.boat-ed.com/illinois/boating_law.html)  
<https://mundeleinparks.org/wp-content/uploads/2018/02/MPRD-Ordinance-Code-Book.pdf>



Websites (continued)

The following websites were accessed between 2017 and 2019 to obtain information for this book:

*Shorelines, aquatic plants, run off and lake conditions*

<http://www.dph.illinois.gov/topics-services/environmental-health-protection/toxicology/habs>

<https://www.dnr.state.mn.us/>

<https://coast.noaa.gov/data/digitalcoast/pdf/living-shoreline.pdf>

<https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement>

[http://www.mundelein.org/pdfs/our\\_community/2012\\_Diamond\\_Lake\\_Report.pdf](http://www.mundelein.org/pdfs/our_community/2012_Diamond_Lake_Report.pdf)

<http://www.waterencyclopedia.com/Mi-Oc/Nutrients-in-Lakes-and-Streams.html>

<https://www.dnr.state.mn.us/invasives/aquaticplants/purpleloosestrife/biocontrol.html>.

*Telephone Books*

[www.idaillinois.org/cdm/search/collection/cookmemo11/searchterm/telephone%20directory/field/all/mode/all/connand/order/title/ad/asc](http://www.idaillinois.org/cdm/search/collection/cookmemo11/searchterm/telephone%20directory/field/all/mode/all/connand/order/title/ad/asc)

*Newspaper articles*

Scouts <http://www.newspapers.com/image/324832314>

Scouts <http://www.newspapers.com/image/5902598>

Tattlers <http://www.newspapers.com/image/350221077>

Rockefeller

<http://vitacollections.ca/hpplnewspapers/3322781/page/3?q=%28rockefeller%29&docid=OOI.3322781>

<http://vitacollections.ca/cmpldnewsindex/3169494/page/8?q=%28rockefeller%20AND%20extension%29&docid=OOI.3169494>

<http://vitacollections.ca/cmpldnewsindex/3169801/page/1>

Miscellaneous articles from the Lake County Independent, the Daily Herald, Chicago Tribune and the Barrington Review



*Diamond Lake water trail and cloud. Photo by Katie Eaman.*

## **Acknowledgments**

Many professionals contributed to this book by providing interviews, research and books, historical materials, photos, writing various sections of text, fact-checking, researching historic plats, maps, deeds and land titles, providing natural resources information, creating maps, creating a bird list, editing, formatting and proofreading text, interviewing sources and performing other essential tasks. In alphabetical order, the following are truly thanked for their contributions:

The Gordon K. Ray Family, whose historical accounts and photo archives show the importance of Diamond Lake  
Ron Aidikonis, U.S. Coast Guard Auxiliary  
Armando Arebalo of El Barrio  
Steven D. Bailey, Illinois Natural History Survey  
Sheryl DeVore Bailey, Co-Editor extraordinaire  
Jennifer Biancalana, Clarke Aquatic Mosquito & Aquatic Control  
The Board of Directors of Oak Terrace, West Shore Park and West Shoreland  
Georgene Chioles of Gale Street Inn  
Cook Memorial Public Library District and Joe Murrow  
Gen Connor  
Linda Curtis  
Laura and Mike Davenport  
Greg Denny, co-founder Diamond Lake Preservation Alliance  
Katie Eaman  
Tobin Fraley  
Jeff Laramy, Juli Crane, Angela Panateri, and Sharon Osterby, staff of the Lake County  
Stormwater Management Commission  
Diana Dretske, Bess Bower Dunn Museum, Lake County Forest Preserve District  
Mike Flynn, retired Assistant Village Administrator, Village of Mundelein  
Fremont Public Library  
Fremont Township Highway Department staff and Supervisor Diana O'Kelly  
Honey Stefan Glas  
Gary Glowacki, Lake County Forest Preserve District  
Dan Griffin and Robin Johnson  
Historical Society of the Fort Hill  
Ken and Elaine Hohns  
Frank Jakubicek, Illinois Department of Natural Resources, Fisheries Biologist  
Shawn Killackey, author of Mundelein - Images of America  
Tracy Kleinschmidt, co-founder Diamond Lake Preservation Alliance  
Kaitlyn Krejsa  
Alana Bartolai and Mike Adam, Lake County Health Department – Ecological Services  
Jenny Barry, Libertyville-Mundelein Historical Society  
Denise Lawreys  
Roger Loomis  
John Maguire and Donna Schuler  
Mundelein/Vernon Hills Rotary Club  
Tom Pilewski  
Jay Randolph  
Richard Rieck  
Margaret Resnick, Executive Director/Grant Administrator\* and staff of the Mundelein Park and Recreation District  
Mary Ann Rouse of Bill's Pizza  
Glenn and Neil Schindelar  
Rich Stein and Steve Jansen, GIS Cartography, Geographic Society of Chicago  
Tori Trauscht, Editor/Grant Manager for Diamond Lake Preservation Alliance  
Barbara Reed Turner of Reed-Turner Woodland in Long Grove  
Lynda Wallis, [www.freelanceillustrations.com](http://www.freelanceillustrations.com)  
Elizabeth Werning  
Village of Mundelein  
Vogue Printers in Waukegan (especially Vito and Jeff)

If you helped and were not acknowledged we sincerely apologize. \*A special thanks to Margaret Resnick for all her support.



Appendix Page 1

WHO TO CALL - - - AGENCY RESOURCES AND CONTACT INFO		
AGENCY	SUBJECT / ISSUE	CONTACT INFO
Mundelein Park and Recreation District (MPRD)	Lake/plant management. Beach status. Watercraft regulations.	847-566-0650 mundeleinparks.org
Lake County Health Department Ecological Services (LCHD-ES)	Water quality of public beaches, wells and septic systems and suspected contamination.	847-377-8000 www.lakecountyil.gov
Lake County Stormwater Management Commission (SMC)	Drainage, runoff, watershed issues and planning.	847-377-7700 www.co.lake.il.us/smc
Illinois Environmental Protection Agency (IEPA)	Pollution, invasives, water quality, environmental hazards.	<a href="https://www2.illinois.gov/epa">https://www2.illinois.gov/epa</a> 217-782-3397
McHenry-Lake County Soil and Water Conservation District	Urban soils, erosion and natural resource protection.	815-338-0099
Lake County Division of Transportation (LCDOT)	Bridges, culverts, and ditches within right-of-way (ROW) of county roads.	847-377-7400
Lake County Township Highway Departments	Issues along ROW of township roads.	Fremont 847-223-2858 Libertyville 847-362-3550
Illinois Department of Transportation (IDOT)	Road and ROW issues for state controlled roads.	217-782-7820 www.idot.illinois.gov
U.S. Coast Guard Auxiliary	Boating safety and training.	<a href="http://www.cgaux9wr.com">www.cgaux9wr.com</a>
Illinois Department of Natural Resources (IDNR)	General Customer Service	217-782-6302 www.dnr.illinois.gov
	Aquatic Nuisance Species	<a href="mailto:DNR.ANS@illinois.gov">DNR.ANS@illinois.gov</a>
	Boating and Watercraft	<a href="mailto:DNR.watercraft@illinois.gov">DNR.watercraft@illinois.gov</a>
	Fisheries	<a href="mailto:DNR.Fisheries@illinois.gov">DNR.Fisheries@illinois.gov</a>
	Water Resource Management	<a href="mailto:DNR.DWRM@illinois.gov">DNR.DWRM@illinois.gov</a>
	Northeast Regional Office	847-608-3100

Some Suppliers of Native Plants for our Area

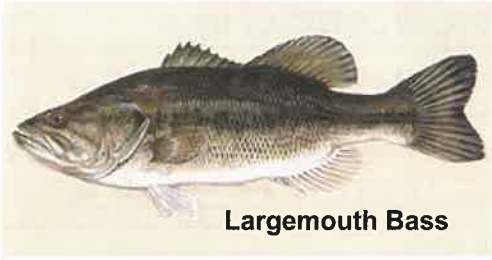
- Art and Linda's Wildflowers - Cicero, IL [www.artandlindaswildflowers.com](http://www.artandlindaswildflowers.com)
- Blazing Star Nursery - Woodstock, IL [www.blazing-star.com](http://www.blazing-star.com)
- Cardno Native Plant Nursery, Walkerton, IN - [www.cardnonativeplantnursery.com](http://www.cardnonativeplantnursery.com)
- Country Roads Greenhouse, Rochelle, IL - [prairieplugs.com](http://prairieplugs.com)
- Genesis Nursery, Tampico, IL - [www.genesisnurseryinc.com](http://www.genesisnurseryinc.com)
- Glacier Oaks Nursery, Harvard, IL - [www.glacieroaksnursery.com](http://www.glacieroaksnursery.com)
- Natural Communities, Batavia, IL - [naturalcommunities.net](http://naturalcommunities.net)
- Pizzo Native Plant Nursery, LLC, Leland, IL - [www.pizzonursery.com](http://www.pizzonursery.com)
- Possibility Place Nursery, Monee, IL - [www.possibilityplace.com](http://www.possibilityplace.com)
- Prairie Nursery, Westfield, WI - [www.prairienursery.com](http://www.prairienursery.com)
- Prairie Moon Nursery, Winona, MN- [www.prairiemoon.com](http://www.prairiemoon.com)
- Red Buffalo Nursery, Hebron, IL - [www.redbuffalonursery.com](http://www.redbuffalonursery.com)



Blue flag iris.  
Photo by Judy Petersen.

**Appendix Page 2 - Native Illinois Fish Species Found in Diamond Lake**

All illustrated fish taken from the U.S. Fish and Wildlife's website.



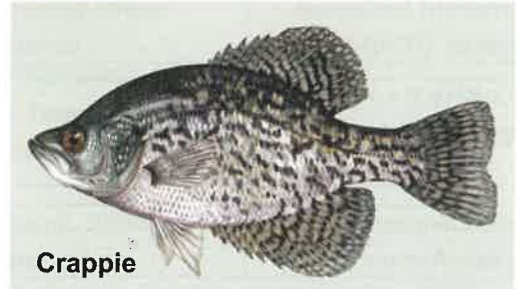
**Largemouth Bass**



**Northern Pike**



**Muskellunge**



**Crappie**

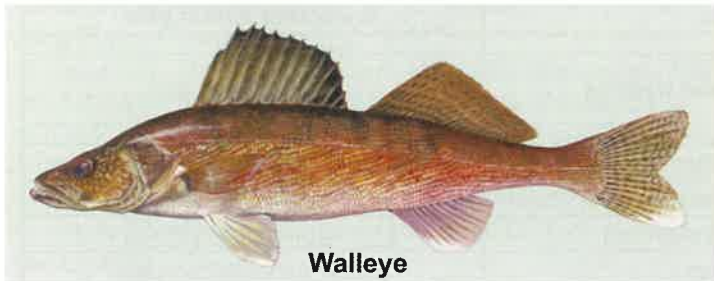


**Bluegill**



**White Bass**

**White Bass**



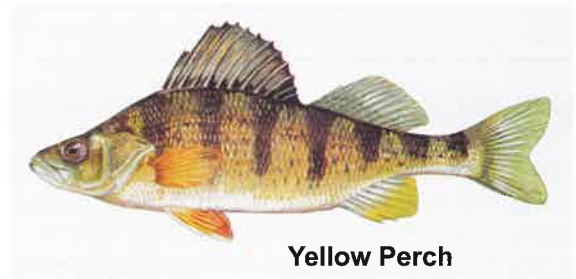
**Walleye**



**Yellow Bass**



**Channel Catfish**



**Yellow Perch**



**Golden Shiner**



**Pumpkinseed**



**Appendix Page 3 - Invasive Fish Species Found in Diamond Lake**

Shad photo from Michigan Seagrant and carp illustration from the U.S. Fish and Wildlife's website



Gizzard Shad



Common Carp



Motor boaters should avoid driving fast in shallow water and should follow no-wake/low-wake/no-sediment zone advisories. Keep boats properly trimmed in shallow zones to avoid mixing up bottom sediments which can cause turbidity throughout the water column, reducing water clarity, hurting fish populations and feeding more algae. Observing shallow no-wake and low-wake zones will have a big impact on helping the long-term health of Diamond Lake.



Graphic from Illinois-Indiana Sea Grant.

Used by permission, Lynda Wallis. [www.freelanceillustrations.com](http://www.freelanceillustrations.com).

<b>2017 Illinois Sportfishing Regulations for Diamond Lake</b> <i>Source: IDNR</i>			
	<b>No closed season</b>		
"*"	<b>Anglers must not use more that two poles and each pole must not have more than two hooks or lures. This same regulation applies to ice fishing poles AND tipups.</b>		
	<b>Species</b>	<b>Possession Limit</b>	<b>Size Limit</b>
"*"	Largemouth or Smallmouth Bass	3 in aggregate (total) daily	15 inch Minimum
	Northern Pike	3 per day	24 inch Minimum
	Muskellunge (Musky)	1 per day	36 inch Minimum
	Crappie	no harvest limit	no size limit
	Bluegill, Redear Sunfish	no harvest limit	no size limit
	White Bass, Yellow Bass	no harvest limit	no size limit
	Walleye	6 per day	14 inch Minimum
"*"	Catfish	6 per day	no size limit
	Perch	no harvest limit	no size limit
	Carp	no harvest limit	no size limit
	<b>Practicing Catch and Release for all gamefish is encouraged</b>		
	<b>The IDNR encourages the removal of all carp caught.</b>		
"*"	<b>Indicates 'Site Specific Regulations' for Diamond Lake by the IDNR</b>		
	<b>Always check the current Illinois Fishing Regulations as these may change year to year.</b>		



Appendix Page 4 - Native Beneficial Aquatic Plants Found in Diamond Lake



Sago pondweed. Source: lakesingletary.org.



Coontail. Source: illinoiswildflowers.com.



Duckweed. Photo by Tad Cameron.



Chara. Source: Center for Freshwater Biology, University of New Hampshire.



Water shield. Photo by Tori Trauscht.



Spatterdock. Source: wikipedia.

Invasive Aquatic Plants Found in Diamond Lake - Contact MPRD if found

**CLEAN BOATS  
CLEAN WATERS**



Graphic from Michigan Sea Grant.

**Eurasian watermilfoil**

Red to olive-green, branching stems.

Feathery, dark green leaves, 1"-2" long.

Forms dense mats at water surface.

**Curly Leaf Pondweed**  
*Potamogeton crispus*

Illustrative view of Curly Leaf Pondweed  
Note: Wavy leaves resemble lasagna noodles

Curly Leaf Pondweed  
Single Leaf

2x

Note: Margins of leaf are serrated (finely-toothed)

Winter buds ("hurlers") resemble small brown pine cones  
Actual size 4-5 cm



Appendix Page 5



Photo by Denise Lawreys.

## IDNR/MPRD Boating Safety Rules

The following IDNR Boating Safety Rules for Diamond Lake were provided by the Mundelein Park and Recreation District and the Illinois Department of Natural Resources.

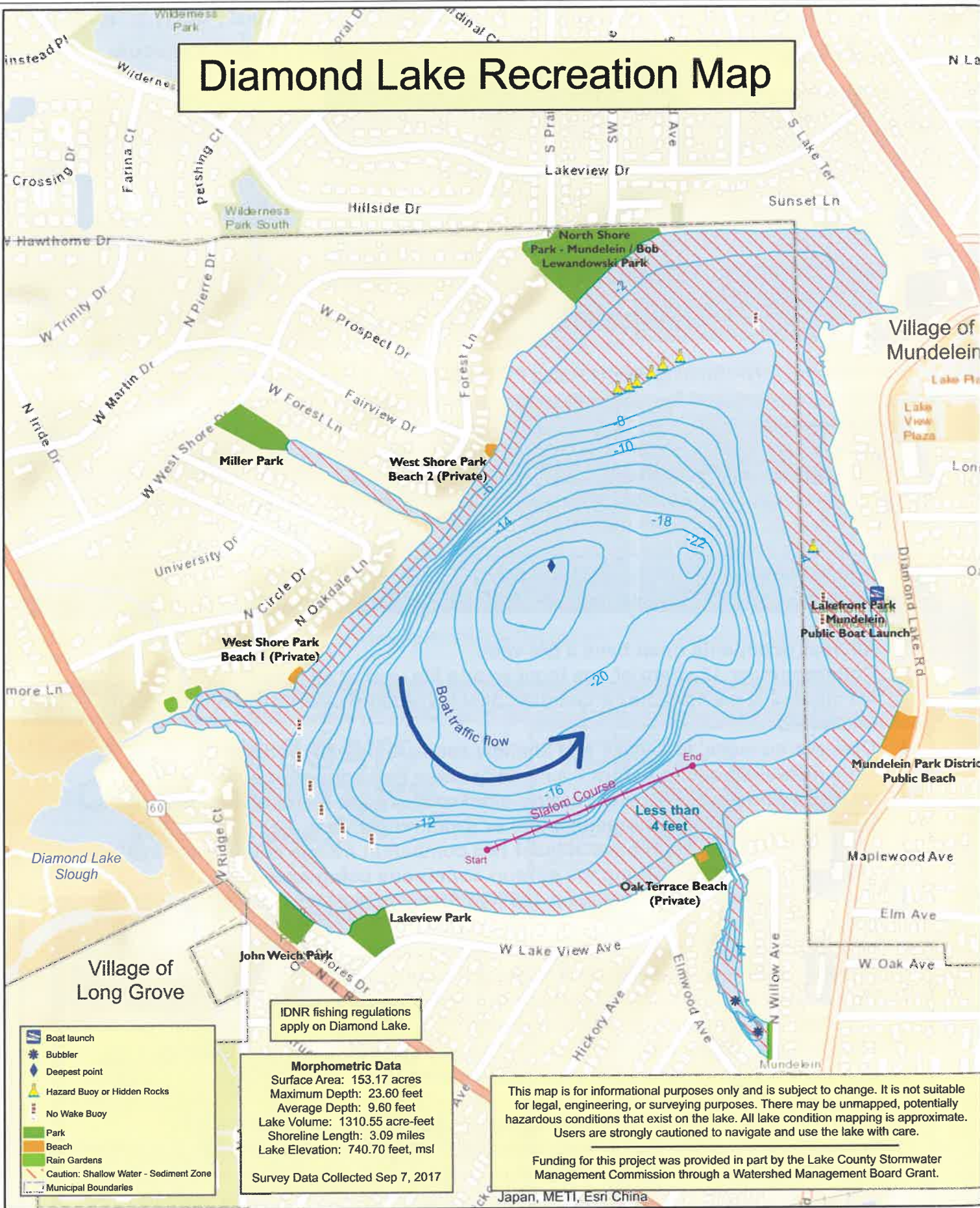
- \* **Orange flag must be flown when towing tubers, skiers, or wakeboarders. This is an Illinois state law.**
- \* **No person born on or after January 1, 1998, shall operate a motorcraft in Illinois with over 10 horsepower unless that person has a valid Illinois Boating Safety Certificate issued by the Illinois Department of Natural Resources or an entity or organization recognized and approved by the IDNR.**

Please check the IDNR website [www.dnr.illinois.gov](http://www.dnr.illinois.gov) annually for more details.

1. **All boat occupants must have a life vest.**
2. **Children under 12 years of age must wear a life vest at all times.**
3. **No alcohol is permitted on Diamond Lake. No alcohol or drug-impaired boating is allowed.**
4. **Observe no-wake, low-wake and shallow zones to prevent sediment mixing.**
5. **Only no-wake boating before 7 a.m. daily and a half hour after sunset daily.**
6. **Motorized boats must travel *counter-clockwise* around the circumference of the lake and not near the shoreline, piers or swimming areas.**
7. **While towing, you must have at least *two* competent people in the boat, one operator and one observing the person or persons being towed.**
8. **Your boat/vessel must be at least 100 feet from the nearest watercraft at all times.**
9. **Non-motorized boats always have the right-of-way.**
10. **Respect your fellow boater. Provide help if needed.**
11. **Do not litter or pollute the lake. Keep roadsides clean of garbage and debris that can flow into the lake or storm drains.**
12. **Help keep your lake clean by picking up any trash you find while boating.**
13. **Use common sense and follow all IDNR boating laws.**

More detailed boating safety rules and regulations can be procured from the Ordinance Code Providing for the Regulations and Restrictions Governing the Use of the Park System of the Mundelein Park and Recreation District, at <https://mundeleinparks.org/wp-content/uploads/2018/02/MPRD-Ordinance-Code-Book.pdf>

# Diamond Lake Recreation Map





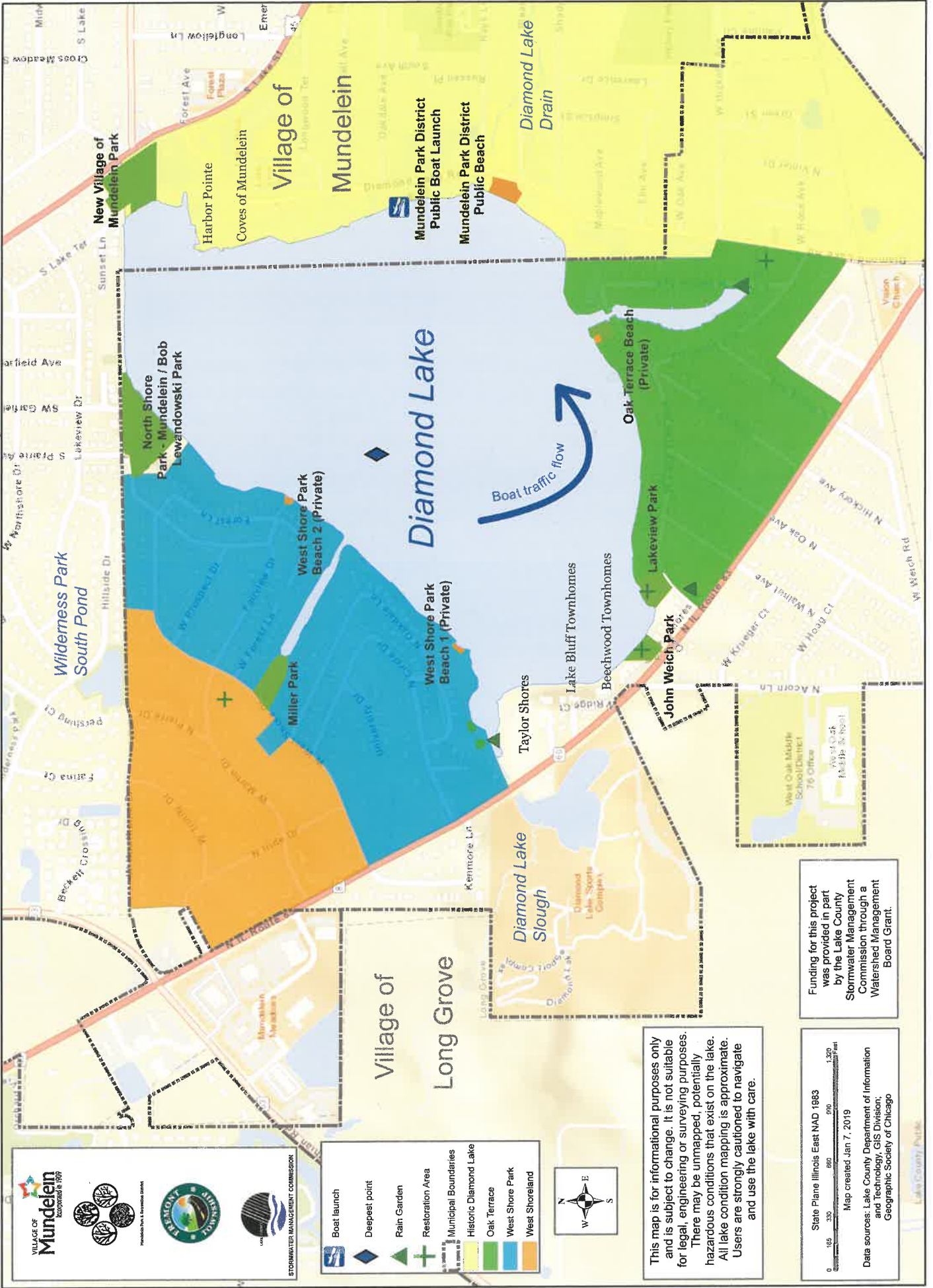
## Best Practices for Diamond Lake: How to Help

		Activity	Benefit
<b>Your Land</b>			
<b>Minimize nonpoint source pollution or runoff (including phosphorus)</b>	Utilize native plants at the water's edge.	Filters pollutants and prevents soil erosion and lake siltation.	
	Intall rain gardens or other natural barriers to runoff.		
	Prevent feces from pets and animals from entering the lake. Don't feed waterfowl.	Minimizes sources of E.coli.	
	Limit sources of phosphorus (excess lawn fertilizer, soap on pavements, feeding wildlife).	Phosphorus accumulates in the lake bottom and promotes unhealthy algae blooms and excessive plant growth.	
	Keep leaves, garbage and lawn waste out of storm drains, streets and gutters.	Prevents storm sewers from carrying debris and garbage into the lake, which causes lake shallowing,	
<b>Control chemical use</b>	In winter, minimize use of ice melting salts and chemicals.	Salts and chemicals kill essential native plant life and harm water quality.	
	Do not spray lawn weed killers around or into the water.		
	Control gas, oil and antifreeze spills.		
	Do not apply aquatic weed chemicals to water. Use certified		
<b>Your Recreation</b>			
<b>Operate watercraft responsibly</b>	Powered craft must travel in a counterclockwise direction.	Prevents accidents and encourages safety.	
	Stay 100 feet from anchored or moving craft.		
	Stay clear of all swimmers, beaches and non-powered craft.		
	Obey all no-wake/low-wake zones, and avoid shallow waters.	Prevents turbidity.	
	Everyone who operates your watercraft must be properly trained and Illinois State Certified if born after 1998.	Follows state and local laws.	
	Boats towing skiers/tubers must have a second adult spotter.		
	Tow boats must display an orange flag when towing.		
<b>Your Waterway</b>			
<b>Preserve native aquatic plant populations</b>	Learn to identify native versus invasive plants.	Plants produce oxygen, reduce turbidity, provide fish habitat and improve water quality.	
	Contact lakebed property owner regarding excessive native plant zones.		
	Do not use chemical controls on native plants. Let the property owner of that portion of the lakebed coordinate management.	A healthy lake needs 30% plant coverage to protect water quality.	
<b>Lakebed property owners shall be responsible for aquatic invasive control</b>	Leave weed control coordination to professional certified contractors hired by property owners that own the lakebed (including MPRD and HOA's). Lake plant populations should not be managed by non-property owners.	Avoids misapplication.	
	Contact lakebed property owner if invasive plants or animals are found.	Treats at appropriate time.	
		Prevents creating a toxic chemical soup.	
<b>Observe boating and fishing etiquette</b>	Clean all boats and trailers before entering and after leaving the lake.	Prevents invasives from spreading.	
	Do not deposit unused bait into the lake. Discard appropriately.	Prevents gizzard shad and other invasive fish overpopulation.	
	Remove carp caught from the lake.	Carp disturbs the lake bottom and competes with native fish.	



*White water lillies. Photo by Sheryl DeVore.*

# Diamond Lake Community Map



**VILLAGE OF Mundelein**  
 Incorporated 1897

**STORMWATER MANAGEMENT COMMISSION**

Restoration Area

Municipal Boundaries

Historic Diamond Lake

Oak Terrace

West Shore Park

West Shoreland

Boat launch

Deepest point

Rain Garden

Restoration Area

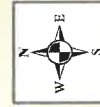
Municipal Boundaries

Historic Diamond Lake

Oak Terrace

West Shore Park

West Shoreland



This map is for informational purposes only and is subject to change. It is not suitable for legal, engineering or surveying purposes. There may be unmapped, potentially hazardous conditions that exist on the lake. All lake condition mapping is approximate. Users are strongly cautioned to navigate and use the lake with care.

State Plane Illinois East NAD 1983  
 0 150 300 450 600 750 900 1,050 1,200 Feet

Map created Jan 7, 2019

Data sources: Lake County Department of Information and Technology, GIS Division; Geographic Society of Chicago

Funding for this project was provided in part by the Lake County Stormwater Management Commission through a Watershed Management Board Grant.