Lake Wingra:
a vision for the future

Friends of Lake Wingra 2009

lakewingra.org

"Healthy lakes play a role in many aspects of our lives, providing recreational opportunities, scenic beauty, safe drinking water, fish and wildlife habitat and helping instill a sense of pride in our communities."

– Madison Community Foundation

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Front cover photos: red-wing blackbird, Jeffrey J. Strobel; beach scene and sunset, J. Lorman; aquatic plants, David Marshall

Back Cover: Jeffrey J. Strobel

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Jeffrey J. Strobel

Gathering and fishing near the old Lake Wingra dam.

Facing page: lilypads and fishing bobber at Ho Nee Um Pond. Jeffrey J. Strobel

J. Lorman

Friends of Lake Wingra annual "paddle."

Red osier dogwood, Jeffrey J. Strobel

Lake Wingra: a case for action

Our goals for a healthy Lake Wingra:

- ✓ *Clean, clear water*
- ✓ *Abundant native plants and animals*
- ✓ *Restored spring flow*
- ✓ *Stewardship and enjoyment*

These goals refer to the natural attributes of the lake and its watershed, along with the types of activities we hope the lake will be able to support for generations to come.

LAKE WINGRA is a precious and valued community resource. It is a peaceful and calming oasis nestled in our busy urban landscape. We value its beauty, its fish and wildlife, its proximity to a world-class arboretum, and all its recreational opportunities that contribute to our quality of life here in Madison.

However, Lake Wingra is in trouble. Urbanization, polluted runoff, invasive lake weeds, carp, and natural springs that are drying up continue to take a toll. Each algal bloom, fish advisory, and beach closing is a reminder that our lake is in trouble. This situation threatens local property values, the health of our community, and the many lake experiences we now enjoy.

J. Lorman

Vilas Park beach closed by pollution.

Lake Wingra needs your help!

Reversing these disturbing trends and improving Lake Wingra's health require a community-wide effort that will require changes in both private and public behavior and policies. The Friends of Lake Wingra was founded on this belief. Working with the community, we have charted a new path. It is a path based on a bold but practical vision for the future of Lake Wingra – a vision rooted in good science and ambitious yet achievable goals. Now more than ever, those who treasure this resource are longing to protect and enhance it for generations to come. Join us in making Lake Wingra as healthy as it can be.

Measuring Our Progress

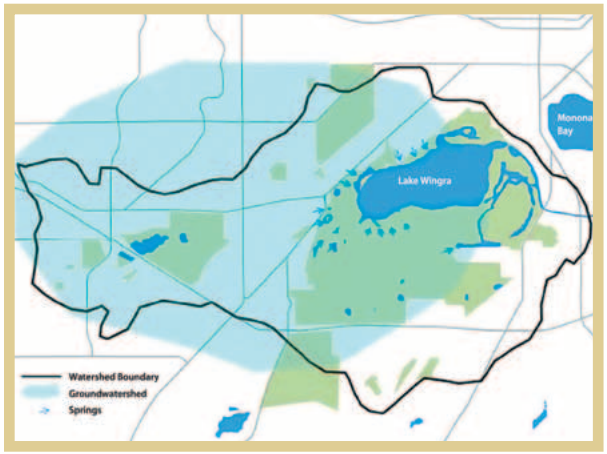
Restoring Lake Wingra to a healthy condition is a long-term effort. As the years go by, we will need to keep track of our progress, and adjust our approach to gain the most benefit from our efforts. Just as your doctor uses indicators such as blood pressure to check your health, we can use indicators to check the health of Lake Wingra. While there are many possible indicators, we selected ones that:

- Are easily understood and reflect people's values
- Have been measured in the past to provide a basis for comparison
- Are most likely to be monitored in the future
- As a combined set, serve to represent the total health of the lake and watershed

largemouth bass, Virgil Beck illustration

THE 3,500-ACRE Lake Wingra watershed is home to more than 33,000 people in 14 different Madison neighborhoods. The UW Arboretum, Vilas Zoo, Edgewood College, six parks, four golf courses, numerous public schools, churches, businesses and community centers also call the Lake Wingra watershed home.

The health of Lake Wingra reflects the condition of the watershed draining into it. When we consider that soil from a construction site on Odana Road, leaves from a street in Arbor Hills, or seeds of invasive plants along the Southwest Bike Path can wash into the lake, we begin to understand how the watershed affects the lake.



Friends of Lake Wingra map

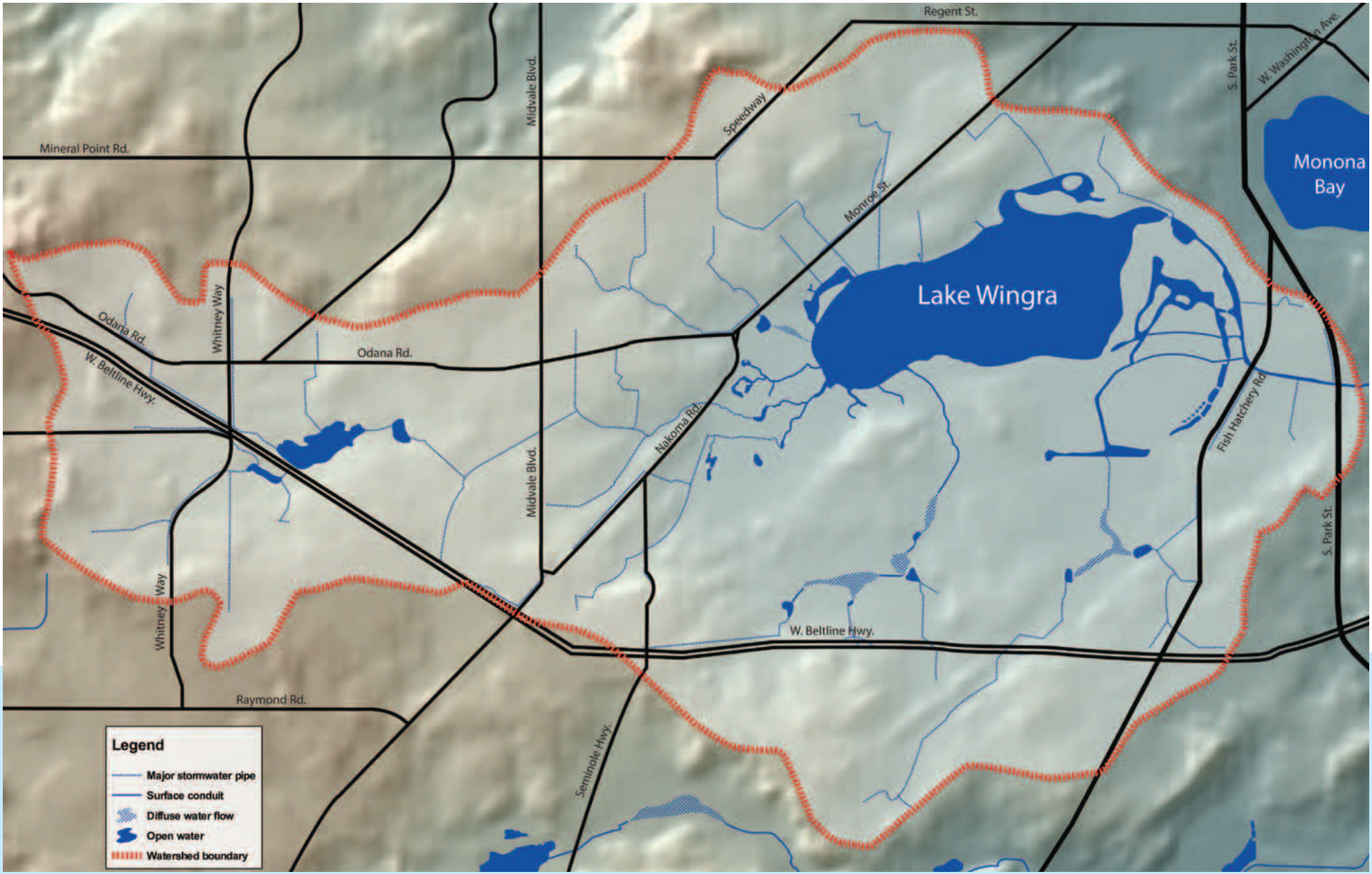
The "groundwatershed" boundary (light blue shading) includes large areas beyond the boundary of the surface watershed (black line).

the *Lake Wingra* watershed

What is a Watershed?

The land area that drains or "sheds" its surface water to the lake is known as its watershed. Rain and melting snow find their way to the lake as runoff, along with any pollutants picked up along the way. Like rainfall but less obvious, groundwater moves "downhill," following features in the soil and bedrock. Some groundwater from the land area (or "groundwatershed") around Lake Wingra eventually discharges to the lake as springs or seeps.

Lake Wingra surface watershed boundary and major storm drains



Friends of Lake Wingra map


Lake Wingra
Wingra Park
1
2
Ho Nee Um Pond restoration
3
Odana Rd.
Nakoma Rd.
Manitou Way
Stevens Pond
Secret Pond reconstruction (2009)
4
5
Big Spring
South Shore fen
Wingra fen
Arboretum Dr.
Arbor Dr.
Monroe St.
Terry Pl.
Woodrow St.
Edgewood Ave.
Edgewood Dr.
Vilas Ave.
Vilas shoreline restoration
Vilas Park
Vilas Park Dr.
S. Mills St.
S. Orchard St.
S. Park St.
Dam
7
8
Haywood Dr.
Arboretum Dr.
N. Wingra Dr.
Wingra Creek
9
6
Redwing Marsh
Gardner Marsh
Arboretum Dr.
Covall St.
Balden St.
Marshall Pkwy.
Fish Hatchery Rd.
S. Park St.
Carver St.
Martin St.
Pond 3 rehabilitation (2009/2010)
Pond 4 reconstruction (2009)
Pond 2 rehabilitation (2009)
W. Beltline Hwy.
Active spring
Historical fen location
Stormwater management/ research facility
Wetland Cover Types:
Cattail
Meadow
Shrub
Forest

Lake Wingra Features

1 ***Wingra Park*** was once the site of the Knickerbocker Ice Company. The park now offers a convenient boat landing, along with a concession stand and restrooms. Exterior lights on the Wingra boathouse have shields to reduce nighttime glare and light pollution.

2 ***The storm sewer outfall*** drains acres of upland development, bringing sediment and nutrients into the lake. Observe the delta that is forming at the outfall. The Lake Wingra watershed community is involved in numerous stormwater management initiatives.

3 ***Ho-Nee-Um Pond*** was dredged from a marshy area along Monroe Street in 1940. The pond is fed by springs supplied by an upland groundwater recharge zone. In summer, carbonates precipitate from this groundwater creating a milky color in the water. The east end of the pond is filling in with sediment from the storm sewer. Look closely and you may see snapping turtles, tiger muskies, wild turkeys, nesting geese and migrating warblers.

4 ***The Wingra Marsh Slough*** was a pre-settlement marsh once extending westward across the Nakoma Golf Course. Subsequent draining, channeling of stormwater runoff, and pumping of groundwater for irrigating the golf course have dramatically changed the character of the marsh. Recently, Sandhill cranes have been nesting in this area.

5 ***Big Spring*** (natural area, no landing allowed) was a source of spring water for the Ho-Chunk, but the flow of the spring is now greatly reduced. Municipal and private wells have lowered the water table around Lake Wingra by as much as 6 meters. More than 30 springs once surrounded the lake, but only eight remain. Uphill from this location is a collection of effigy mounds.

6 ***The Levee*** is the result of a failed development scheme. Prior to European settlement, Lake Wingra gradually drained through Gardner Marsh. Subsequent dredging in the early 1900s by the Lake Forest Land Company isolated the marsh from the rest of the lake. Now, turtles nest along the shore, and red-winged blackbirds are abundant.

Lake Wingra Information

Characteristic	Pre-Settlement (estimates)	Present
Lake surface area	650 acres (2.6 sq km)	325 acres (1.3 sq km)
Watershed area	5,140 acres (20.8 sq km)	4,525 acres (18.3 sq km)
Wetland area	1,500 acres (6 sq km)	210 acres (0.8 sq km)
% Permeable surface	100%	54%
Runoff volume	very low	110 million cu ft/year
Contribution of runoff to lake (% of total input)	8%	16%
Sediment loading	100 tons/year	500 tons/year
Phosphorus loading	300 lbs/year	3,300 lbs/year
Phosphorus concentration (Lake)	(not known)	40 µg/liter
Chloride concentration (Lake)	<5 mg/liter	~75 mg/liter
Lake Trophic Status	(not known)	~65 (eutrophic)

From: FOLW *Wingra Watershed Stormwater Plan* – 2003

7 ***Wingra Creek Dam & Portage*** lie along Wingra Drive. Wingra Creek is a drainage ditch running to Lake Monona, with flow controlled by the Wingra Dam. During periods of high water, Lake Monona and Lake Wingra share the same elevation and the spillway is submerged. See the Yahara Headwaters Trail marker for information on paddling through the Yahara chain of lakes.

8 ***The Mills Lot Landing*** across from Wingra Drive and just upstream from the bridge is a primitive landing that provides access to the Gardner Marsh overlook (across from the parking lot). The UW Arboretum provides many additional educational resources about Lake Wingra and the surrounding natural areas.

What is a Fen?

A fen is a type of wetland that is fed by groundwater and/or surface water, and is neutral or basic, not acidic like many wetlands that are fed mainly by surface water.

9 ***Gardner Marsh*** (natural area – no canoeing) is home to nesting waterfowl and other birds. The area was once a continuous marsh, but dredging in the early 1900s caused the open water seen today.

Mark Wegener map

15,000 YEARS AGO, the receding glacier left Lake Wingra perched atop a 100-foot layer of glacial silt, sand, and gravel. A few miles to the west, the glacial deposits blocked earlier drainage-ways, causing groundwater to spring to the surface around the edge of the lake. As a result, Lake Wingra was surrounded by diverse wetlands, rich with aquatic plants. The uplands were an extensive oak savanna with a ground layer of prairie plants and abundant wildlife. Flocks of waterfowl used the lake for a stopover during migration, feeding in beds of wild rice and wild celery. The name Wingra ("Duck") comes from the Ho-Chunk people who came early to this area to forage around the 1,000-acre lake and wetlands.

Lake Wingra over time: a story of change

"The name Wingra ("Duck") comes from the Ho-Chunk people..."

The Knickerbocker Icehouse, once located at the present-day Wingra Park, was served by a railroad spur heading north from the lake, along what is now Commonwealth Avenue.

Ancient stump by the Edgewood College shoreline.

Jeffrey J. Strobel

In the 1800s European settlement brought dramatic change to Lake Wingra and its watershed. Much of the upland became farms, and eventually a city. The great sand and gravel "dividing ridge" between Lakes Monona and Wingra, once covered with ceremonial mounds constructed by ancestral Ho-Chunk people, was leveled for construction material. The wetlands, now at the edge of the growing city, were drained and filled for suburban development. Wingra Creek was dredged to create an outlet to Lake Monona and provide boating access between the lakes.

During the early 1900s a levee was built (now McCaffery Drive in the UW Arboretum) isolating Gardner Marsh from the Lake. Wingra Dam and lock were built to control the water level, and dredged sand from the lake bottom provided fill for Vilas Park and the Lake Forest Development. Cut off from its wetland outlet, the now 340-acre lake began to receive storm water runoff from the new neighborhoods along Monroe Street, and later from all the neighborhoods in the watershed.

Effects on the lake

Over time, the lake became a changing mix of plants and animals, as some native species were lost and other, often invasive species were introduced. The natural wetland shoreline became dominated by shrubs, hybrid cattails, and trees, all indicators of human disturbance. The invasive Eurasian water-milfoil flourished in the degraded conditions and came to dominate the aquatic vegetation, choking out the diverse native plants.

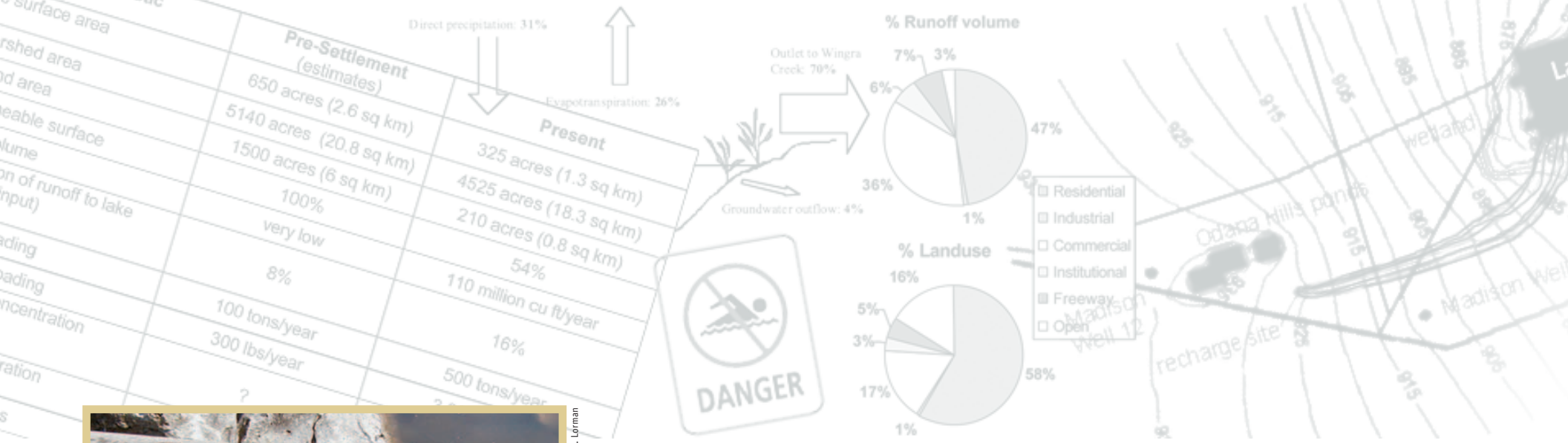
Jeffrey J. Strobel

Lake Wingra's fishery also suffered. Dredging and isolating the marshes meant that the native pike lost its natural spawning area and could no longer reproduce. Common carp, introduced to the Yahara Lakes as a food source in the late 1800s, soon became the dominant species. Stocking the lake with muskie and other game fishes further altered the fish community.

Today, though much of the Lake Wingra watershed is urban, its shoreline remains largely undeveloped. This makes Wingra a valued resource – a natural refuge for us in an urban environment. But its vegetated shores only thinly conceal a profoundly altered watershed that exerts continual stress on the lake ecosystem.

Did you know?

The University of Wisconsin Arboretum, a 1,260-acre natural area along the southern shore of Lake Wingra, includes the oldest and most varied collection of restored ecological communities in the world, including tallgrass prairies, savannas, several forest types and wetlands. It was dedicated in 1934 to restoration, research, and teaching, and is widely recognized as the site of pioneering research in ecological restoration.



J. Lorman

Polluted stormwater from neighborhood streets and other storm drain sources enters Lake Wingra.

Four goals for *Lake Wingra*

Did you know?

In Lake Wingra, algae growth depends on phosphorus. One pound of phosphorus entering the lake can produce up to 500 pounds of algae!* Common sources of phosphorus include fertilizers, eroded topsoil, decaying leaves, and goose and pet feces. Excessive phosphorus encourages blue-green algae that can be toxic to fish, pets and people.

*Source: Minnesota DNR

Goal 1 – Clean, clear water

Why Do We Care?

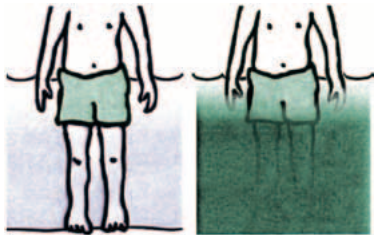
Dirty lake water, frequent algae blooms, and beach closings are signs of pollution. People are less likely to want to fish and swim in a lake that is not seen as being clean and safe.

Clean, clear water enhances the lake's natural beauty, and allows us to see fish and wildlife below the surface.

Clean, clear water is essential to the survival of many different types of fish, plants and animals that are the foundation of a healthy ecosystem. Lakes affected by polluted runoff often favor undesirable species like carp and invasive aquatic weeds.

Our Goal

Lake Wingra will be free of excessive pollutants and clear enough that you can see your toes when standing waist deep. There will be no beach closings caused by bacteria. Salt in runoff will be reduced to levels that are not toxic to sensitive aquatic life.



Desired Actual

What Indicators Can Help Guide Us?

We chose three basic indicators to measure water quality in Lake Wingra: Water clarity, E. coli *bacterial levels and chloride concentrations.*

WATER CLARITY – The clarity of the lake is affected by the amount of silt, algae, soil particles, and other materials present in the water. A loss of water clarity is a sign that dirty runoff and other pollutants are washing into the lake. Carp and motorized boat traffic also affect clarity by stirring up the lake bottom.

Our target: *You can see your toes when standing in waist-deep water.*

BACTERIA – Water-borne illnesses and beach closings are generally caused by elevated bacterial levels. *E. coli* is found in the intestines of warm-blooded animals, but can appear where untreated sewage, pet waste, manure, and goose droppings enter waterways. A high *E. coli* bacterial count may indicate the presence of other dangerous pathogens. Over the last 10 years, Lake Wingra has averaged seven beach closings per year due to high *E. coli* bacteria readings.

Our target: *The lake is safe for swimming and there are no beach closings from* E. coli *counts above US-EPA standards.*

SALTY WATER – Winter road and sidewalk salting can cause high chloride levels that are toxic to sensitive aquatic life. From 1995 to 2005, the amount of road salt used for winter road maintenance in the City of Madison averaged 8,800 tons/year. Today, Lake Wingra has peak chloride concentrations ranging from about 100 milligrams/liter (lake surface) to 400 milligrams/liter (lake bottom).

Our target: *Total chloride concentrations are reduced to less than 40 mg/liter.*


J. Lorman

Did you know?

The Madison Common Council adopted a salt-reduction policy calling for a 50% reduction from the amount of salt used in the winter of 1972-73. Despite this policy, more than twice as much road salt was applied in the winter of 2004-05 compared to 1972-73, and lake chloride concentrations have continued to rise.

A Giant Goose Connection

While native to our continent, the many geese we see around Lake Wingra are invasive newcomers. Most are the "giant Canada goose" (*Branta canadensis maxima*), a subspecies thought to be extinct in the first half of the 20th century that has made a dramatic comeback and has successfully adapted as nearly-permanent urban residents. Many people do not particularly welcome these newcomer residents because of the problems they can cause:

- Large quantities of feces on lawns, playgrounds, and beach areas
- Increased beach closings as a result of bacteria from these feces getting into lakes
- Damage to turf and increased erosion
- Increased nutrient runoff and resulting lake weed and algae growth
- Transmission of diseases to other animals (potentially including humans)
- Aggressive attacks on people, especially during the nesting season


J. Lorman

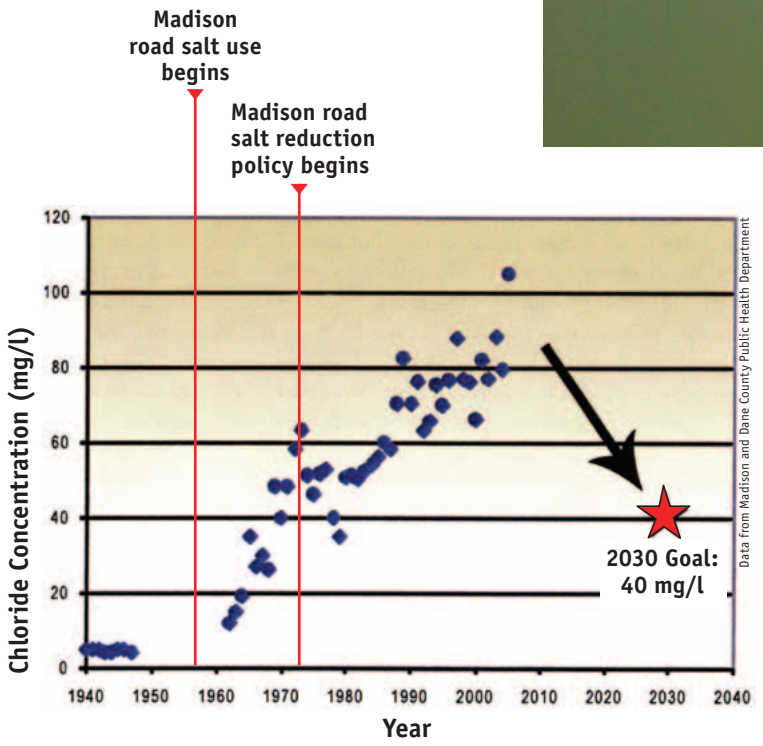
While people often do not consider groups of less than 20-25 geese to be a nuisance, Vilas Park now has over 100 "summer residents" each year, with 200-700 geese regularly present in Vilas Park during the migrating season. Fortunately, management techniques, approved by the Humane Society of the United States, can successfully reduce urban goose populations to an acceptable level. These techniques include the creation of shoreline vegetation buffers, the use of trained herding dogs, informational campaigns to prevent waterfowl feeding by the public, and egg "addling" or oiling to prevent reproduction.

Our target: *Resident goose populations at any one site (e.g., park, golf course) reduced to no more than 20 birds. No new resident goose populations established at new sites (e.g., Wingra Park).*

A carp exclosure was set up in 2007 along the Lake Wingra wetlands at Edgewood College. The absence of carp inside the exclosure greatly improved water clarity, compared to the greenish murkiness of the rest of the lake.

Mike DeVries, The Capital Times, 5 July 2007

Lake Wingra Chloride Levels Over Time



Data from Madison and Dane County Public Health Department

We Do Have Feet

WDNR

Secchi disk

By lowering a Secchi disk down into the water and recording the depth to which the disk remains visible we can measure water clarity. Ranges for Secchi depth are: low clarity (less than 3 feet), medium clarity (3–10 feet), and high clarity (greater than 10 feet). From 1970 to 2006, Lake Wingra has had an average summer Secchi depth of 2.5 feet. (While very few of us own a secchi disk, we do have feet. That's why we've chosen "seeing your toes when standing waist deep" as our water clarity goal).

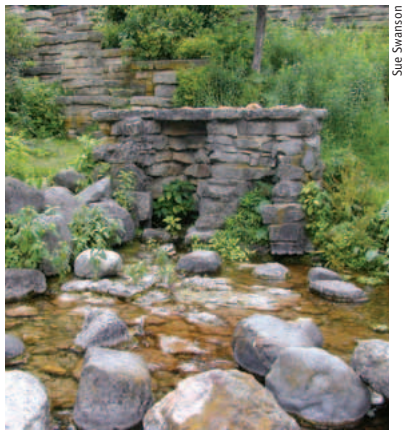
Goal 2 – Restored spring flow

Why Do We Care?

Wingra's springs are a precious natural feature that can be viewed and enjoyed by the entire community. Cool, clear water bubbling up from the ground enchants youngsters and instills a sense of wonder for the natural world. On a hot summer day, a few minutes rest beside a cool spring can calm and rejuvenate us.

Spring water entering the lake year-round improves water quality and provides a unique habitat for many plants and animals. In winter, wildfowl flock to the open water and animals come to drink.

Groundwater makes up about a third of Lake Wingra's source-water, and provides flow to Wingra Creek.



Sue Swanson

Duck Pond Spring

Our Goal

Cool, clean spring water replenishes the lake, and maintains year-round flows into Wingra Creek. Lake Wingra becomes predominantly replenished by groundwater.

What Indicators Can Help Guide Us?

We have chosen the following indicators of restored spring flow: increased flow rates, restored flows of "lost springs," and base flow to Wingra Creek.

INCREASED FLOW RATES – The flow of water from several large springs around Lake Wingra has been measured by UW classes, Arboretum staff and private citizens. An improvement in the groundwater levels in the watershed should lead to an increased flow from these springs.

Our target: *A 25% increase in spring flow.*

RESTORED FLOWS OF "LOST SPRINGS" – Several sites around Lake Wingra (e.g. west "Washburn Spring" along Edgewood Drive) once had flowing springs, but are now only seeping or have gone entirely dry. An improvement in the groundwater levels in the watershed should restore flows from these springs.

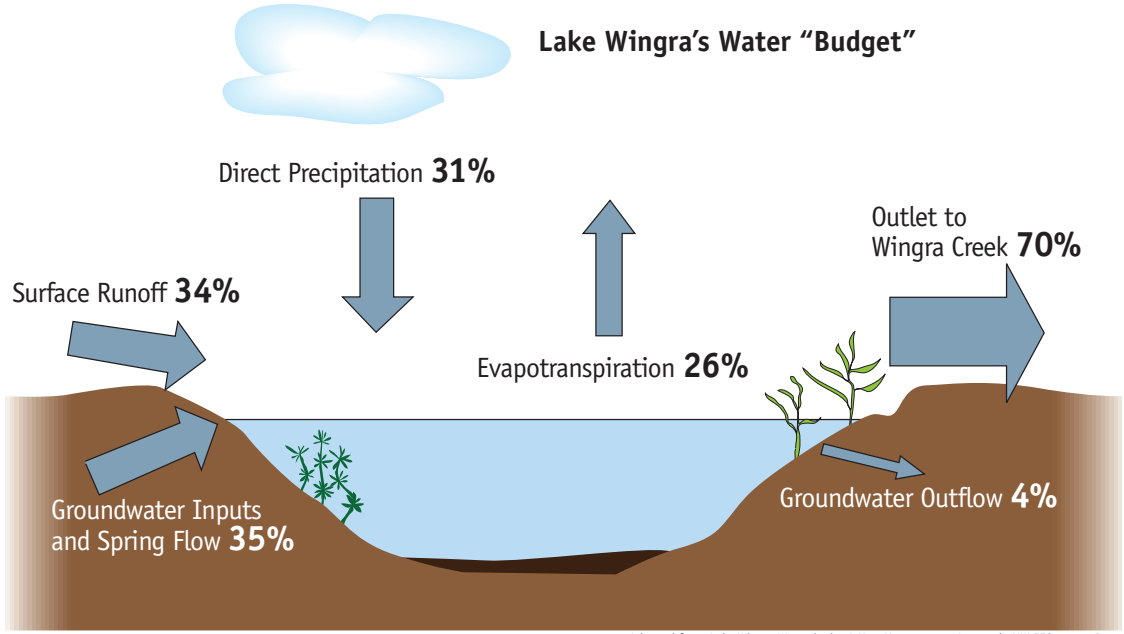
Our target: *"Lost springs" flowing year-round.*

BASE FLOW TO WINGRA CREEK – Groundwater entering Lake Wingra at a constant rate provides flow to Wingra Creek. During dry spells, evaporation from the lake can cause the overflow to cease. An improvement in the groundwater levels in the watershed should lead to an increase of flow into the Lake and thus to Wingra Creek.

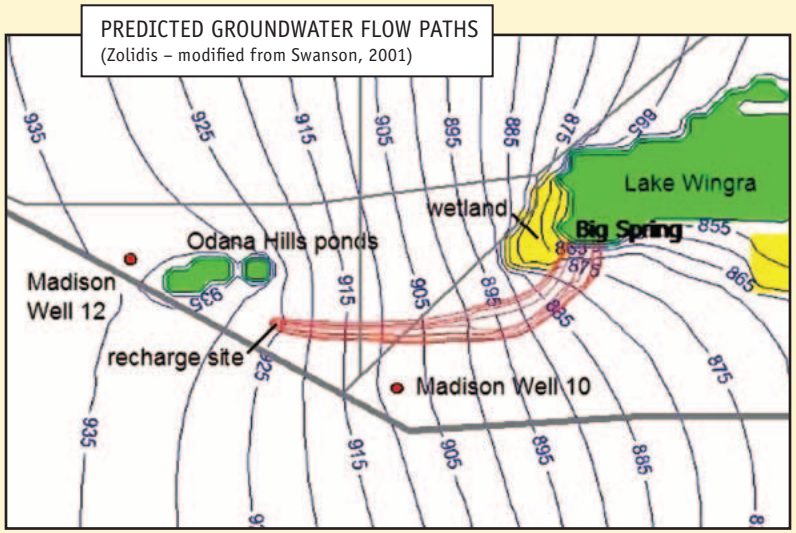
Our target: *Year-round flows from Lake Wingra into Wingra Creek.*

Why are Wingra's Springs Threatened?

For centuries the drainage networks left by the receding glaciers on the western watershed moraine trapped rain water, which then filtered into the water table, eventually resurfacing to enter Lake Wingra through springs located around the lake's shoreline. The eventual urbanization of the watershed replaced the previously permeable landscape with impermeable streets, parking lots, driveways, sidewalks, and roofs. Now, rain and melting snow enter the lake directly, contributing nutrients, sediment, and relatively warm water. While Lake Wingra is still blessed with many flowing springs, approximately 22 or more than 30 springs have been lost due to decreased groundwater flow.



Adapted from *Lake Wingra Watershed – A New Management Approach,* UW-IES, 1999, Pg 9



Restoring Wingra's Groundwater

In 2007, Madison Gas & Electric Co. and the City of Madison began filtering about 60 million gallons a year of pond water from the west Lake Wingra watershed, and returning it to the groundwater under Odana Golf Course. This project is the first to return significant amounts of storm water runoff to the groundwatershed. While this project took advantage of a unique combination of location and opportunity, the prospects for similar large-scale projects elsewhere in the watershed are limited. Fortunately, rain gardens are another excellent way to collect runoff and return it to the ground. The addition of many residential, commercial, and municipal rain gardens throughout the watershed could also make a significant contribution to restoring pre-settlement groundwater flows to Lake Wingra.

The red lines show the predicted underground path of groundwater, after that water was pumped from Odana Ponds, filtered, and recharged to the ground at the Odana Golf Course.

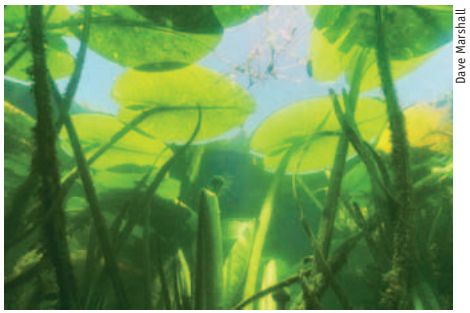
Goal 3 – Abundant native plants and animals

Why Do We Care?

Lake Wingra is teeming with life. Birds nest in its wetlands, insect larvae prowl its bottom, largemouth bass cruise its shoreline, white water lilies grow in its shallows, and wetlands grace its edges. This diversity attracts people to the lake and connects them to the natural world.

Lake Wingra's plants and animals are remarkably diverse and present excellent opportunities for recreation and study close to home.

A diversity of native plants and animals can contribute to good fishing, clear water, intact shorelines, and essential habitat for a rich variety of plants and animals. Loss of diversity can be a sign of trouble, often indicating that excess nutrients, sediment, and invasive species have degraded plant and animal habitats.



Dave Marshall

Water lilies and other aquatic plants provide shade and cover for fish and fish food organisms.

Our Goal

A wide variety of native plants and animals will make their home in and around Lake Wingra. Invasive species that degrade natural habitats will be suppressed or eliminated.

What Indicators Can Help Guide Us?

We have selected three biological communities as indicators of plant and animal diversity: aquatic plants, fish and wetlands.

AQUATIC PLANTS – Diverse aquatic plants serve as the foundation of a healthy lake. They help maintain water quality by absorbing the nutrients that fuel algae blooms, hold sediment on the lake bottom, and provide underwater refuge for wildlife to hide, reproduce, and find food. The diversity of Lake Wingra's "underwater garden" (about 24 kinds of aquatic plants) is in the top third of southern Wisconsin lakes.

However, this has not always been the case. Between 1900 and 1950, the aquatic plant community was severely degraded by urban development and a large carp population. After a brief recovery in the mid-1950s, the invasive non-native Eurasian water-milfoil appeared, crowding out native plant species. It wasn't until the 1990s that a milfoil decline allowed the other aquatic plants to rebound. This history tells us that the current diversity of aquatic plants is not to be taken for granted. Scientists warn that the ecological balance could easily tip back toward an algae or milfoil dominated "pea soup."

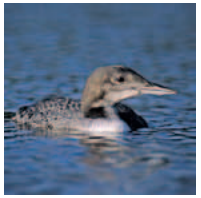
Our target: *No loss of native aquatic plant species. Eurasian water-milfoil comprising less than one-fourth of the aquatic plants collected during routine monitoring.*

FISH – Lake Wingra hosts at least 29 species of fish that display a fascinating array of size, appearance, and lifestyle. While some of these are not well known, they all share a fragile interdependence.


four-spotted skimmer

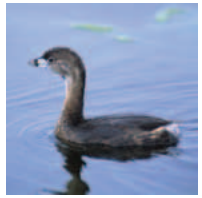

great spangled fritillary


green heron


common loon (juvenile)


wild turkey


jack-in-the-pulpit


pied-billed grebe


northern leopard frog

A healthy Lake Wingra is home to fascinating creatures. Some are familiar, many we don't see often, and others stop by briefly as they migrate in spring or fall. Jeffrey J. Strobel photos

Bluegills are by far the most abundant fish in Lake Wingra today, but their growth is stunted. This wasn't always so. Once, Lake Wingra supported hefty populations of northern pike, largemouth bass, longnose gar, and bowfin. These large predator fish kept the population of bluegill and other panfish in check, allowing the survivors to feed and grow to a larger size.

The number of large predators remains low for a variety of reasons. Carp disrupt the food web by churning up the bottom, creating cloudy water that makes feeding difficult for the large sight-feeding predators. Critical fish spawning habitat for large predators has also been lost through the years. Longnose gar and bowfin were thought of as undesirable fish and sometimes intentionally removed. Only one of the large native predators is still thriving – the largemouth bass. Stocked muskellunge, which are ecologically similar to the native northern pike, are helping to fill this gap and provide outstanding fishing. Longnose gar and bowfin are still present, offering hope for restoring the populations of these fascinating species. Minnows and other small fish species round out Lake Wingra's fish community, filling out its food web and increasing its diversity and resilience.

Our target: *No further loss of native fish species. More than half of bluegills caught by anglers are longer than six inches. A fourfold increase in the number of native predators: largemouth bass, longnose gar, and bowfin. Carp suppressed to a population below 1,000.*

Much Ado About Milfoil


University of Florida

Eurasian water-milfoil.

The opportunistic Eurasian water-milfoil does best in lakes with highly disturbed bottoms and those that receive runoff rich in nitrogen and phosphorus. Extremely dense stands of stems bend at the surface to form a floating canopy of carpet-like mats. Native aquatic plants are crowded or shaded out, while larger fish, swimmers, boaters, and anglers are effectively fenced out. Fortunately, surveys have shown a decline in the relative frequency of Eurasian water-milfoil from 68% in the late 1960s to 33% in 2007.

Goodbye Carp


David Liebl

Winter carp seining on Wingra.

The common carp is a messy bottom-feeder that uproots aquatic plants, churns up sediment, clouds the water, and degrades the health of the entire lake. A pilot project demonstrated that if carp are excluded from an area of the lake, water quality improves. Ridding the lake of carp is not feasible because they can swim up from Lake Monona when high water over-tops Wingra Dam. However, we can significantly reduce their numbers by netting. In addition, we can control their reproduction using temporary barriers at Wingra Dam to prevent entry from Wingra Creek and at Vilas Lagoon to cut off access to carp spawning areas.

Goal 3 – Abundant native plants and animals (continued)

These aquatic plants and fish, captured in recent sampling efforts, will help us observe and evaluate the future health of Lake Wingra.
(* Indicates species that were introduced to the lake by humans.)

Relative Abundance	Aquatic Plants		Fish	
Abundant	Eurasian water-milfoil* coontail		bluegill	
Common	Illinois pondweed muskgrass sago pondweed slender naiad	water stargrass wild celery white water lily	brook silverside golden shiner	largemouth bass carp*
Medium/Low	common bladderwort clasping-leaf pondweed flat-stemmed pondweed	northern water-milfoil small duckweed spatterdock	black crappie bluntnose minnow pumpkinseed yellow perch	muskellunge* white crappie* walleye*?
Rare	common waterweed curly-leaf pondweed* floating-leaf pondweed Fries' pondweed great duckweed	long-leaf pondweed small pondweed variable pondweed white-stemmed pondweed	bigmouth buffalo black & yellow bullheads blackchin & common shiners brook stickleback bowfin central mudminnow fathead minnow	green sunfish longnose gar northern pike freshwater drum* yellow* & warmouth* bass white sucker*? spotfin shiner*?


white water lily


bluegill

Today, there are at least 24 different kinds of aquatic plants in Lake Wingra. The non-native invasive Eurasian water-milfoil comprises an estimated one-third of the plants present, and its native competitor coontail adds another one-fifth. Although less abundant, the other twenty-two species present an astounding diversity in kind and form. They include three different kinds of floating-leaf water lilies, rooted by long, flexible stems to the bottom of the lake and two kinds of floating duckweeds that travel at the whimsy of surface winds or via the winged transport of wading or swimming birds. There are about 18 kinds of rooted plants that remain submersed (no floating parts): 11 different kinds of pondweeds, the carnivorous bladderwort, our non-invasive native water-milfoil, the delicate water stargrass, slender naiad, *Elodea,* the nutritious water celery, and the rooted algae *Chara* that grows like moss close to the bottom.

water lily photo, Jeffrey J. Strobel; bluegill, Virgil Beck illustration

WETLANDS – Wetland habitats occur where low-lying, poorly drained soils support water-loving vegetation and uniquely adapted animals. Wetlands host distinctive flora such as grass-of-parnassus and white lady slipper orchid, special plants found only on groundwater-fed soils in Wingra's fens. Wetlands are nurseries for fish, sedge wrens, soras, sandhill cranes, frogs, turtles and many others. Due to urban development, sedimentation from storm water runoff, and insufficient groundwater recharge, only 0.3% of the valuable wetland habitat that historically graced the shoreline is still present. In its place are invasive species such as reed canary grass, hybrid cattail, buckthorn and purple loosestrife, all out-competing the native plants. Three of the most important wetland areas for restoration are South Shore Fen, Gardner Marsh and Wingra Fen (see map on page 8).

Our target: *Marshes, wet meadows, and fens within 100 feet of the shoreline sustained at their current 23 acres. Suppressed purple loosestrife populations. Suppressed invasive plants and no loss of native species in South Shore Fen, Wingra Marsh and Wingra Fen.*

About Habitat

Habitat is more than the place where you might come upon a particular fish, plant, insect, or other wildlife. The ideal habitat serves multiple functions for each species: a refuge from predators; a source of food; a place to nest, spawn or raise young; ample space to live and grow; suitable climate or water temperature; and adequate oxygen – just to name a few. Habitat is considered degraded, or less than optimal, when it fails to serve the needs of multiple life functions and stages.

female red-winged blackbird

Jeffrey J. Strobel photos

Lake Wingra has tremendous habitat potential, because most of the shoreline is in parklands and other natural areas.

Goal 4 – Stewardship and enjoyment

Why Do We Care?

Most residents of the Lake Wingra watershed connect to the lake in some manner. Some have direct experiences with the lake through boating, fishing and swimming. Others enjoy the scenery as they walk, jog, bike or picnic along the shoreline.

Many derive satisfaction in just knowing that the lake is close by. While the uses of the lake vary greatly, all residents share in the responsibilities of its care.

Our Goals

PUBLIC ACCESS – Lake Wingra remains accessible for responsible public use and supports a wide range of complementary, low-impact recreational activities in all seasons.

SWIMMING – The lake will be safe and attractive for swimming. There will be no beach closings due to elevated bacterial levels, noxious algae blooms, or other standard measures of safe swimming conditions.

J. Lorman

Winter sports and play on the ice.

FISHING – The fishery will meet the needs of many types of anglers and fish are safe to eat. Populations of native species will be able to reproduce naturally in the lake and make up the foundation of the fishery. Opportunities will range from sport fishing to subsistence fishing, by boat or from the shoreline.

BOATING – An emphasis on quiet use will provide a refuge for paddling and sailing. Water trails will provide access to paddlers to the lake and its waterways (including Wingra Creek and Gardner Marsh). No-wake rules maintain a calm lake surface (weather permitting).

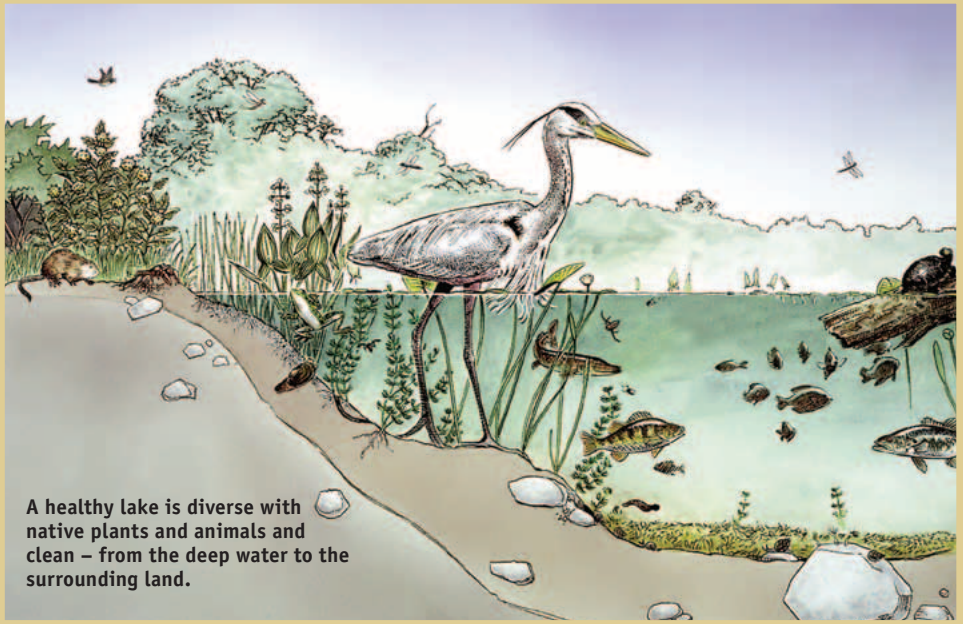
NATURE VIEWING – The lake and its surroundings will abound with opportunities to view a large variety of species (such as coyotes, otters, dragonflies, orchids, turtles) and natural features (such as springs, fens, and sedge meadows). The shoreline will be a recognized "dark sky preserve" without obtrusive lights.

LEARNING – The lake and its surroundings will act as a magnet for learning that attracts individuals, youth programs, schools and families. People will learn about the lake from excellent print and internet materials, and also from experiential learning that involves hands-on observation, reflection, monitoring, and action. Edgewood College and UW-Madison will continue to use the lake for teaching and research.

RESTORING AND ENHANCING – People of all ages become engaged in activities that restore and enhance the ecological importance, natural beauty, and recreational value of the lake and its surroundings. Volunteers will assist with restoration of native plantings on public property. Property owners and public agencies will manage storm water runoff, favor healthy lawn and garden practices, and plant rain gardens. Everyone will have fun caring for the lake.

Measuring our Progress – The Whole Lake Connection

Our goals for clear, clean water, restored spring flow, and native plants and animals, are in fact highly connected and interdependent:

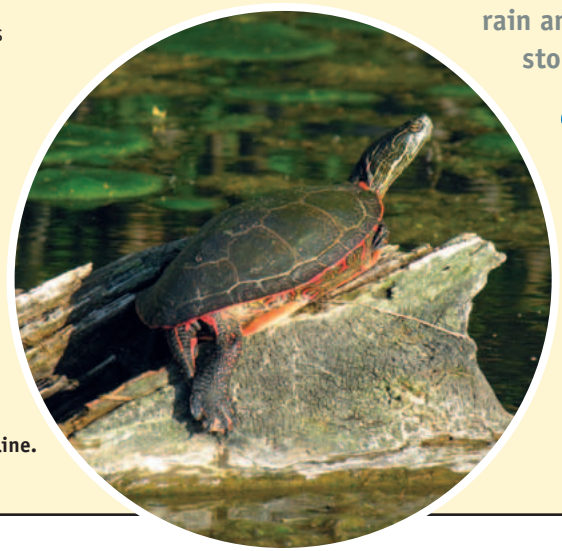


Carol Watkins illustration

A healthy lake is diverse with native plants and animals and clean – from the deep water to the surrounding land.

In the lake – as storm water inputs decrease and the carp population remains suppressed:

- Water clarity improves
- More light reaches the bottom of the lake, increasing the size of the near-shore zone where rooted aquatic plants grow
- The rooted aquatic plants use the available nutrients to become more abundant
- Excess nutrients are not available for dense algae blooms
- More near-shore zone habitat is available for fish and small organisms
- Sight-feeding predators can more readily see their food
- The food web including all organisms thrives
- Recreation on the lake thrives



Painted turtle at the UW Arboretum shoreline.

Jeffrey J. Strobel

On the land throughout the watershed – as runoff from rain and melting snow is captured before entering storm drains:

- Ground water is restored
- Sediments and associated pollutants from parking lots and streets are not delivered directly to the lake
- Ground water flow, including seeps and springs, increases into the lake
- Water clarity improves!!

THE NEGATIVE IMPACTS on Lake Wingra from storm water pollution, loss of springs and degradation of wildlife habitat can be reversed, as long as everyone plays their part. Ongoing education, communication, and stewardship are vital to Lake Wingra's future. Perhaps the most important thing we can do is to learn about, value, and advocate for Lake Wingra's protection. That means all of us acting as stewards of our own homes and yards, businesses, and public areas. It also means telling others, especially elected representatives, how important the health of the lake is to us, so that regulations aimed at protecting the lake are enforced and new policies are developed as needed.

J. Lorman

snapping turtle

S. Hall photos

Restoring ditches using tussocks (constructed mounds) can help to re-establish diverse native plant communities.

Next steps for *Lake Wingra*

What YOU can do to help:

Keep leaves and yard clippings out of streets and storm drains.

Direct roof downspouts toward the lawn or garden, or into a rain barrel.

Build a "rain garden" to absorb runoff from roofs and other surfaces.

Friends of Lake Wingra plays a central role in bringing together people and groups that have a role or interest in the protection and management of Lake Wingra and its watershed. The next step is to work together to develop concrete strategies and policies for achieving our practical vision of a healthy Lake Wingra.

J. Lorman photos

FOLW sponsors environmental education and restoration activities around the watershed.

Many of these strategies have already been developed in our Storm Water, Invasive Species, and Citizen Stewardship management plans, and some are already being implemented. If you have a little time to participate in our workshops or lend a hand with our volunteer activities, or would just like to keep up with what's happening in the watershed, we look forward to your joining us. Contact the Friends at info@lakewingra.org, 608-663-2838, http://lakewingra.org

The mission of the Friends of Lake Wingra is to bring about "A healthy Lake Wingra through an active watershed community."

Who belongs to that community?

- Area residents and homeowners
- Businesses and property owners and managers
- Recreational users from near and far
- Neighborhood associations
- Public and private schools, Edgewood College, and UW-Madison
- Nonprofit recreational, conservation, business, and religious groups
- Elected officials and staff of City of Madison, Dane County and DNR

Water by hand where practical, to minimize use of sprinklers.

Reduce your use of de-icing salt during the winter.

Clean up after your pets, and don't feed the waterfowl.

Photos by Peggy Compton, Roger Bannerman, Suzanne Wade and Jeffrey J. Strobel

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Jeffrey J. Strobel

Skunk cabbage and iris at the UW Arboretum.

Facing page: Big Spring in the UW Arboretum. Jeffrey J. Strobel

Lake Wingra:
a vision for the future

Friends of Lake Wingra 2009

lakewingra.org

What makes Madison a world-class city are our remarkable lakes and the isthmus they create. The smallest among these lakes, Wingra, while vulnerable to urban stresses, enhances our lives every day with its recreational opportunities and enchanting beauty.