The Nine Lakes Watershed Partnership Presents

Lakes and Pond Management for Homeowners

Thanks to Our Friends

Illinois Lake Management Association

Village of Lake Barrington
An Oasis of Gracious Countryside Living

Barrington Area Conservation Trust

Flint Creek/Spring Creek Watershed Partnership

Village of South Barrington

BAGG
Barrington Area Council Of Governments

Go Green Barrington

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LakeCounty

Flint Creek/Spring Creek Watershed Partnership

Keith Gray

Mike Adam

Faye Sinnott

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Residential Pond Maintenance

Keith Gray

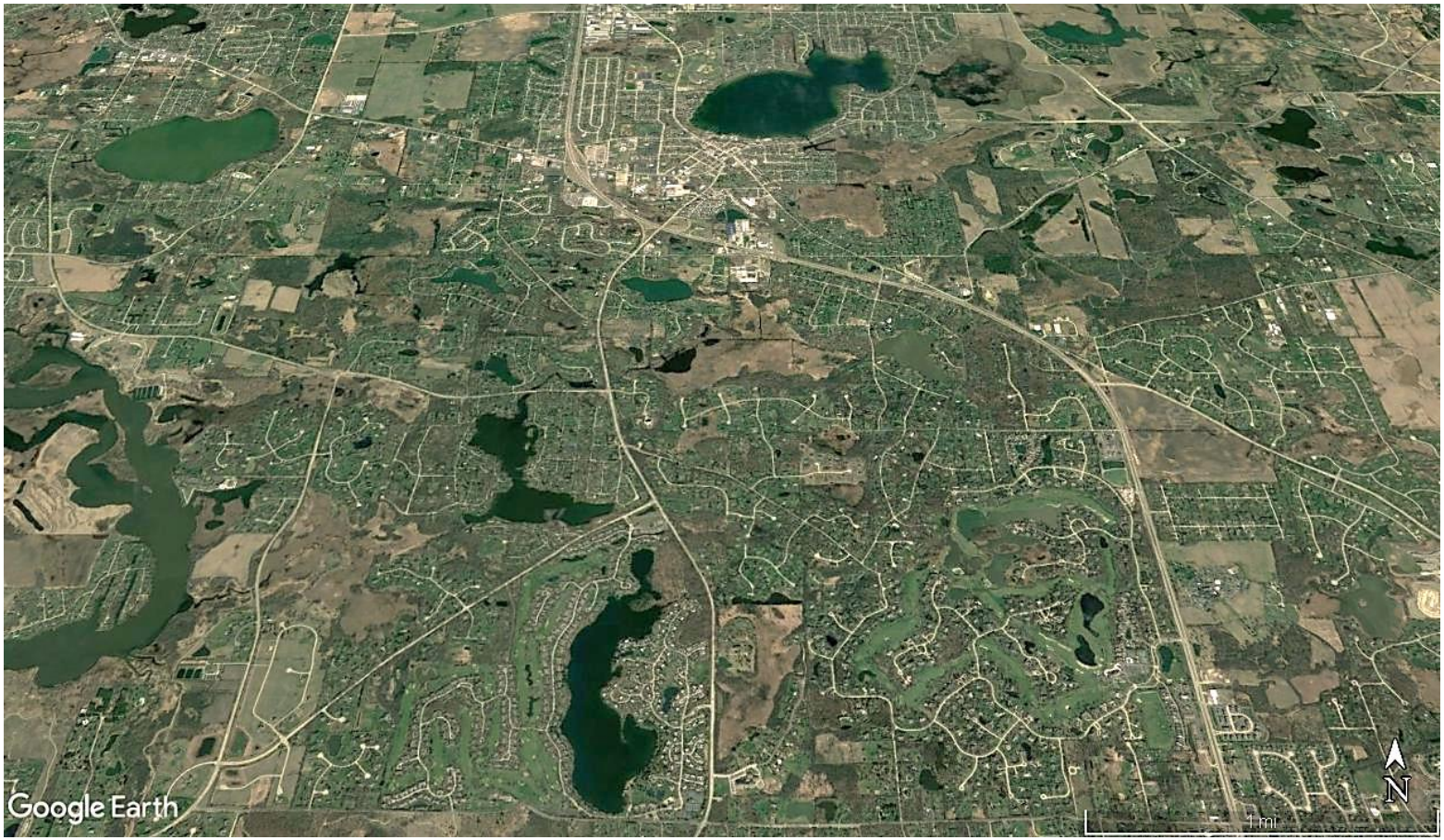
Integrated Lakes Management

Detention Ponds

Small, shallow, nutrient rich, intended for storm water control.
"Flashy"

A pond may serve one or multiple functions

Up and Downstream Influences



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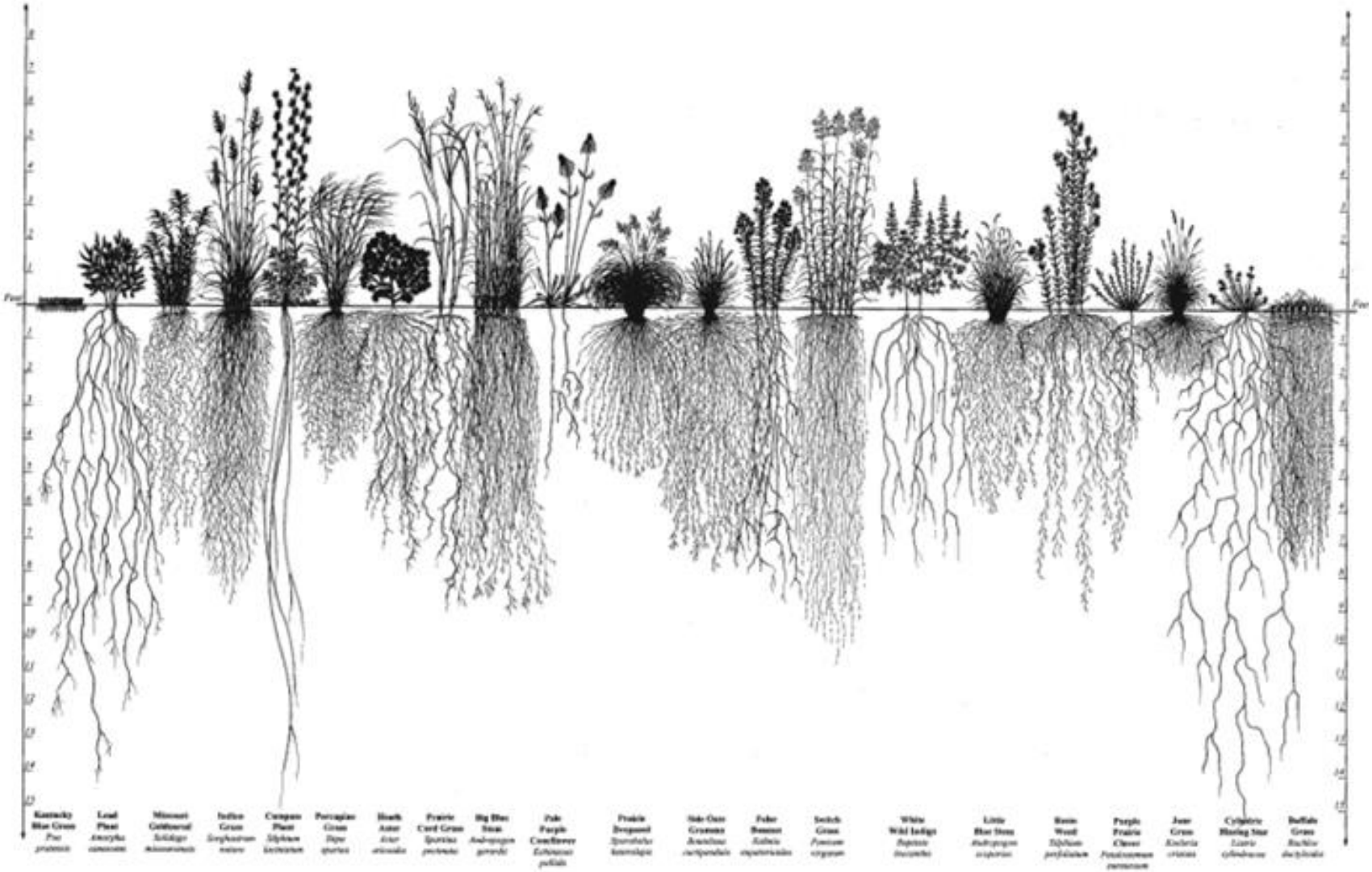
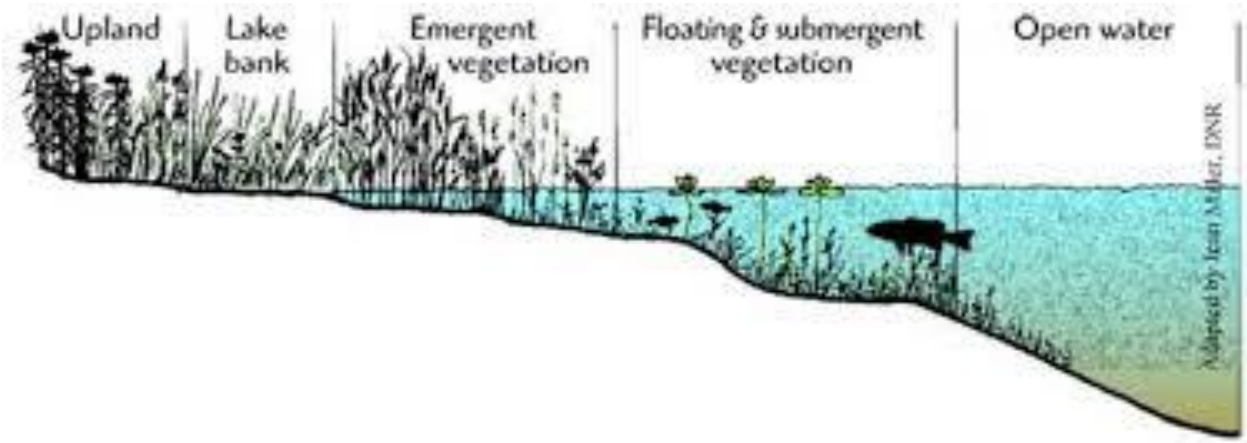


Heidi Natura, Living Habitats


Upland
Lake bank
Emergent vegetation
Floating & submergent vegetation
Open water
Adapted by Jean Miller, DNR

Chicago Botanical Garden

www.cbgshoreline.org

Main | Shoreline Erosion Control | Native Plants for Shorelines | Resources

Species
Click here for a cross-reference alphabetical listing of the plants' common names.

- Acorus calamus
- Alisma subcordatum
- Amorpha canescens
- Amorpha fruticosa
- Anemone canadensis
- Angelica atropurpurea
- Aquilegia canadensis
- Asclepias incarnata
- Asclepias tuberosa
- Aster (Symphyotrichum) azureus
- Aster (Symphyotrichum) novae-angliae

Native Plants for Shorelines

Native plantings along a restored lakeshore act like "glue" to keep the shoreline soils from washing away and they play a critical structural role in the battle against shoreline erosion. Almost without exception, plants native to your region will provide the best assurance of plant survival -- and the consequent success of the shoreline enhancement project. When choosing which plants to include, you will want to consider:

- Water depth preference (for plantings below the normal water line).
- Water inundation tolerance during floods or high water (for plantings at increasing elevations above the water line).
- Relative resistance to overgrazing by waterfowl, muskrats, and other wildlife.
- Soil structure and fertility preferences for the plants.

Some tips for improving the success of your shoreline planting project include:

- Choose quality plants from a reputable vendor that specializes in native plants; the root system should be vigorous and the plant should be free of visible diseases or pests.

- Avoid using root bound plants -- their growth rates may disappoint you. Consider plant plugs grown in square pots or circular "tubes" with ribs along the side that encourage roots to grow downward.

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Management Options

- Reactive
- Restoration
- Proactive

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Kill what you don’t want

✓Aquatic herbicides

Take away the sunlight

Dyes

Lilies

Harvesting

- Loading
- Transport
- Disposal

Dredging: Removing the Nutrient Bank

- Loading
- Transport
- Disposal

Nutrient Deactivation

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Aeration

Biological / Bio-Islands

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Enzymes and Bacteria

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Case Studies

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Image: Kasco

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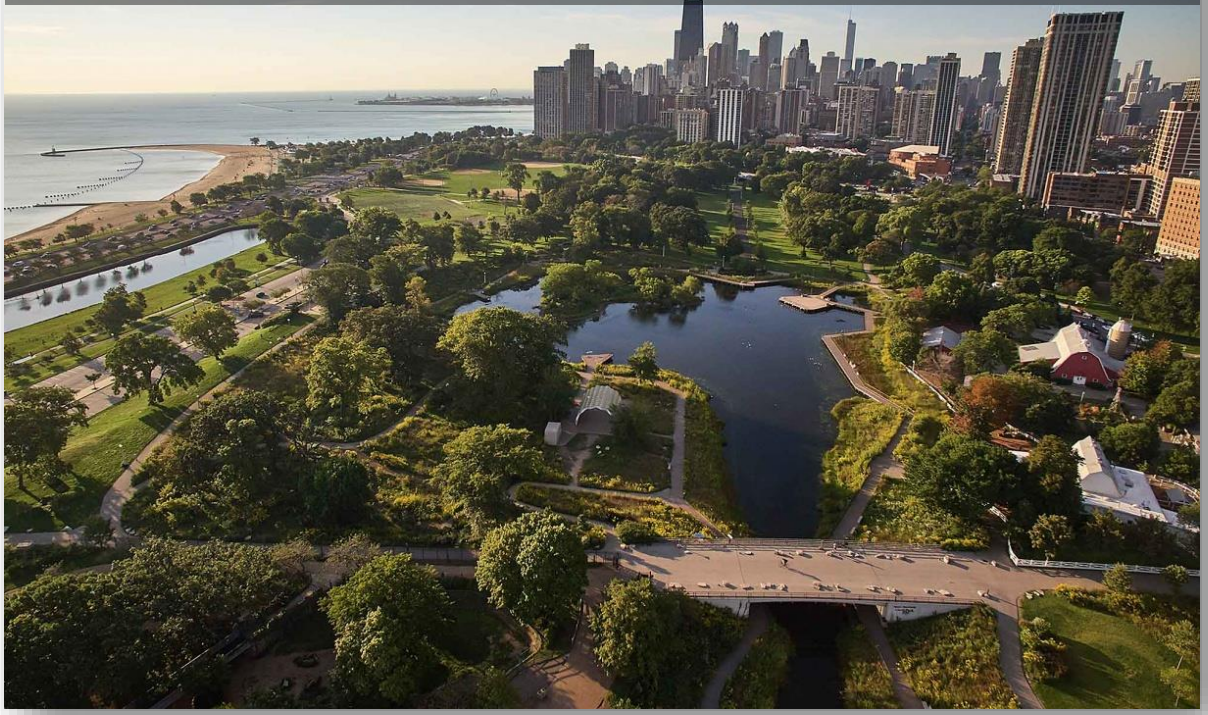
Lincoln Park Lagoon



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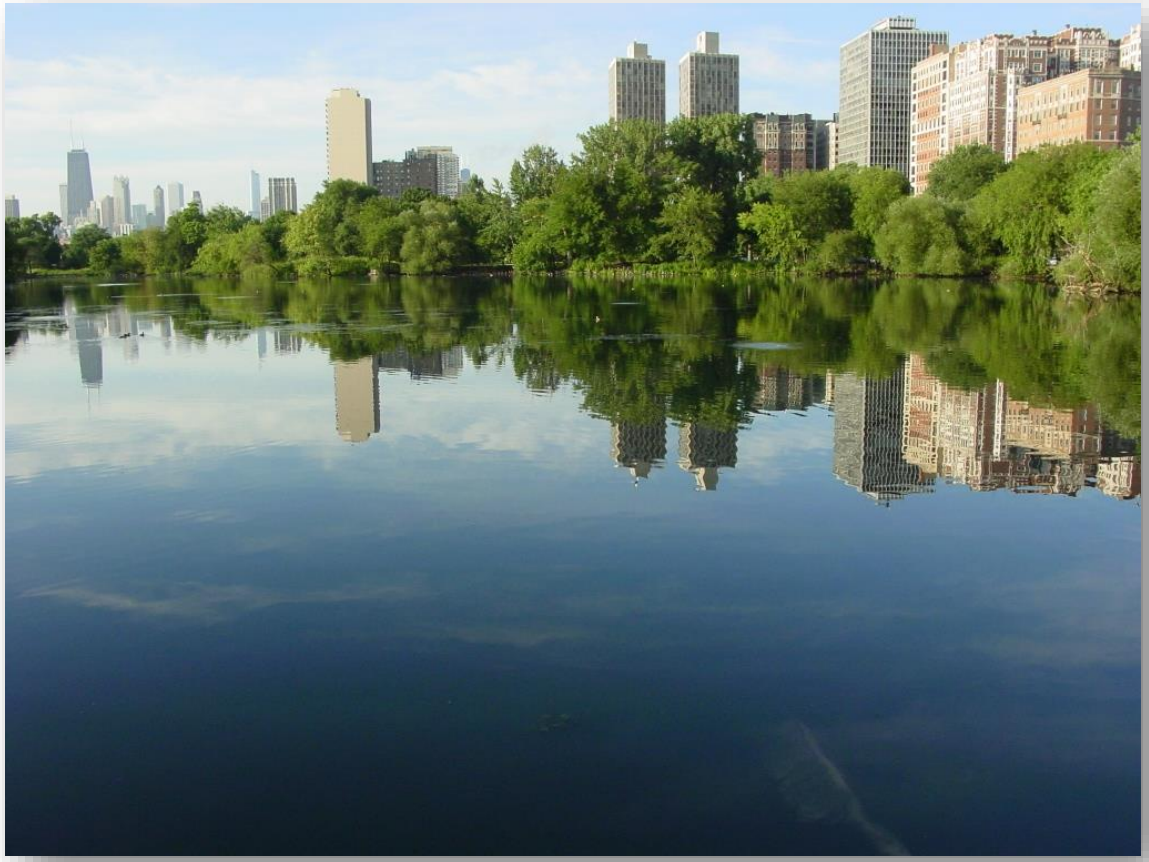

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Questions?

LakeCounty
Health Department and
Community Health Center

Lake/Pond Management Plans

Mike Adam, Senior Biologist

Lake Management Plans

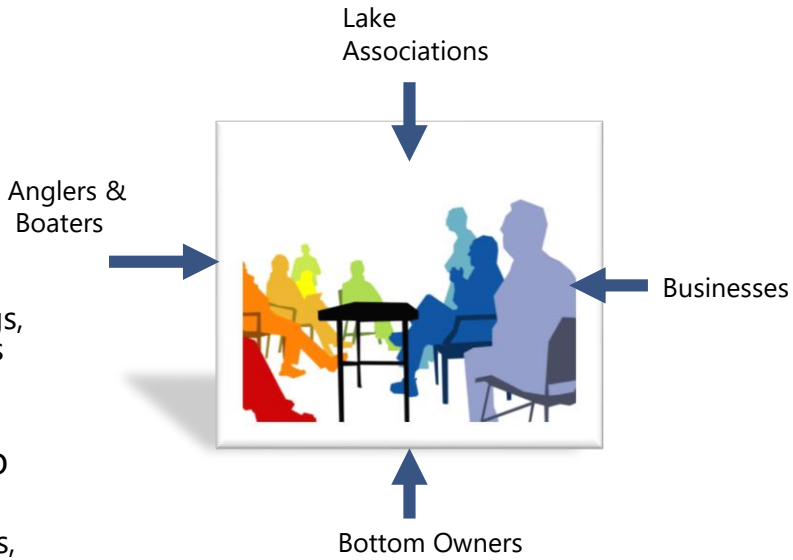
- A document that guides your lake management decisions.
- Encourages partnerships between concerned citizens, special interest groups, and resource management agencies.
- Identifies the concerns regarding the lake.
- Sets realistic goals, objectives and actions.
- Identifies needed funds and personnel.
- Fluid – can be changed over time as lake issues or management techniques change.

7 Steps for Adaptive Lake Management Planning

1. Identify Stakeholders
2. Gather Information & Identify Concerns
3. Develop Goals, Actions, Objectives
4. Evaluate Solutions & Alternatives
5. Take Action
6. Monitor & Evaluate
7. Re-assess & Modify

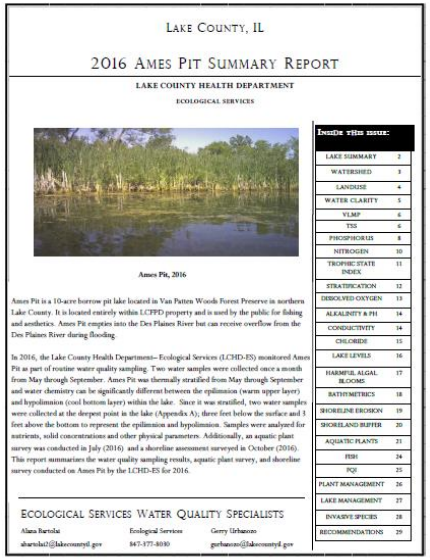
1. Identify Stakeholders

- Identify all stakeholders
  - Broad community support
- Identify Communication Pathways
  - Examples: Open Public Meetings, Workshops, Social Media, News Releases, Questionnaires, Newsletter, Website, Emails
- Identify groups/individuals who can provide support
  - Volunteers, Government Entities, Consultants, etc.
- Establish a Lake Planning Committee



2. Gather Information & Identify Concerns

- Purpose of this step is to learn as much as possible about the lake.
- Identify gaps or missing data.
- Use all information available to identify problems and concerns regarding your lake.
- Nominal Group Technique



LAKE COUNTY, IL

2016 AMES PIT SUMMARY REPORT

LAKE COUNTY HEALTH DEPARTMENT

ECOLOGICAL SERVICES

Ames Pit, 2016

Ames Pit is a 10-acre borrow pit lake located in Van Patten Woods Forest Preserve in northern Lake County. It is located entirely within LCFPD property and is used by the public for fishing and aesthetics. Ames Pit empties into the Des Plaines River but can receive overflow from the Des Plaines River during flooding.

In 2016, the Lake County Health Department– Ecological Services (LCHD-ES) monitored Ames Pit as part of routine water quality sampling. Two water samples were collected once a month from May through September. Ames Pit was thermally stratified from May through September and water chemistry can be significantly different between the epilimnion (warm upper layer) and hypolimnion (cool bottom layer) within the lake. Since it was stratified, two water samples were collected at the deepest point in the lake (Appendix A); three feet below the surface and 3 feet above the bottom to represent the epilimnion and hypolimnion. Samples were analyzed for nutrients, solid concentrations and other physical parameters. Additionally, an aquatic plant survey was conducted in July (2016) and a shoreline assessment surveyed in October (2016). This report summarizes the water quality sampling results, aquatic plant survey, and shoreline survey conducted on Ames Pit by the LCHD-ES for 2016.

ECOLOGICAL SERVICES WATER QUALITY SPECIALISTS

Alana Bartolai, Ecological Services, 847-377-8030, abartolai@lakecountyil.gov

Gerry Urbanozo, gurbanozo@lakecountyil.gov

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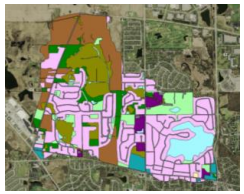
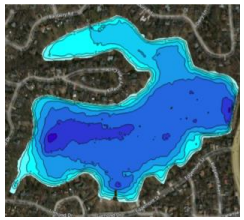
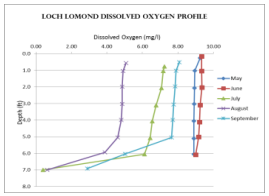






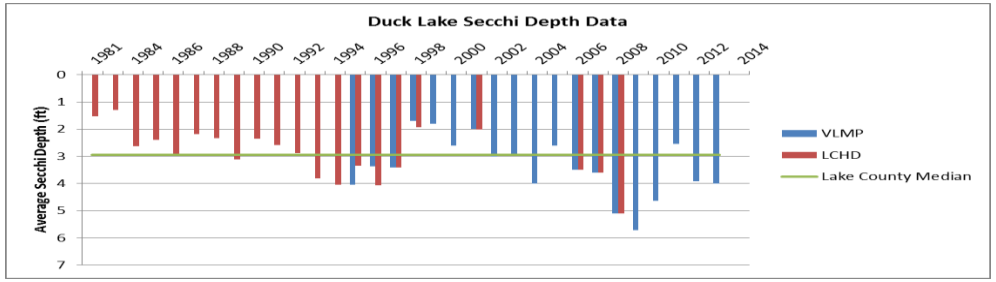
Gathering Information & Data

The Lake Planning Committee needs to collect the following:

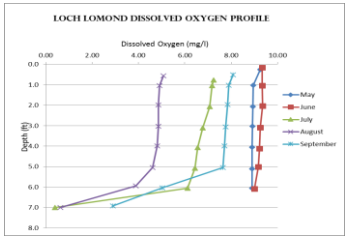
- Maps and historical documents about the lake and traditional uses
- Aerial photos
- Bathymetric maps
- State and local regulations and ordinances
- Technical information/research on topics of concern
  - WQ, aquatic plants, fish, wildlife
- Watershed map and land use characteristics
- Social and demographic trends

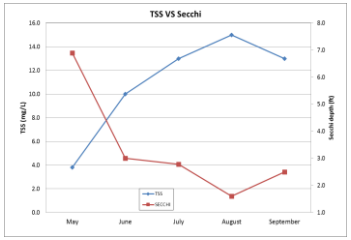
Volunteer Lake Monitoring Program - VLMP

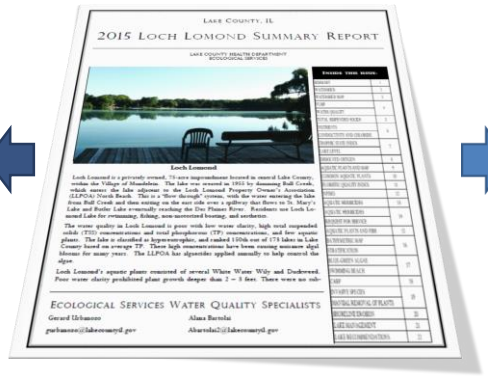
- Water Clarity (Secchi Disk transparency)
- Water Chemistry
- Dissolved Oxygen / Temperature Profiles
- Online Database

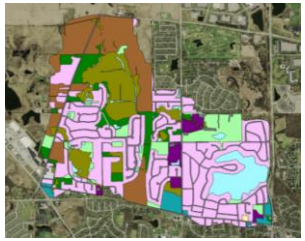


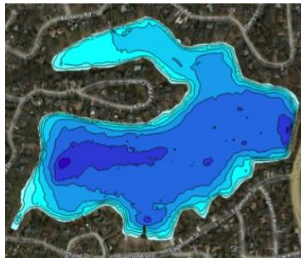
Technical Reports











2015	Epilimnion															
DATE	DEPTH	ALK	TKN	NH_3-N	NO_3-N	TP	SRP	Cl^-	TDS	TSS	TS	TVS	SECCHI	COND	pH	DO
13-May	3	174	0.94	<0.1	0.071	0.081	0.011	154	477	3.8	510	76	3.80	0.8550	8.13	8.92
17-Jun	3	181	1.40	<0.1	<0.05	0.114	0.022	152	475	10.0	538	133	3.00	0.8500	8.54	9.25
15-Jul	3	172	1.45	<0.1	<0.05	0.200	0.075	131	434	13.0	474	98	2.78	0.7680	8.49	6.78
12-Aug	3	169	1.86	<0.1	<0.05	0.305	0.168	111	398	15.0	446	97	1.60	0.6970	8.45	4.86
16-Sep	3	172	2.05	<0.1	<0.05	0.278	0.131	120	398	13.0	463	111	2.50	0.6980	8.51	7.76
	Average	174	1.54	<0.1	0.071[k]	0.196	0.081	134	436	11.0	486	103	2.74	0.7736	8.42	7.51

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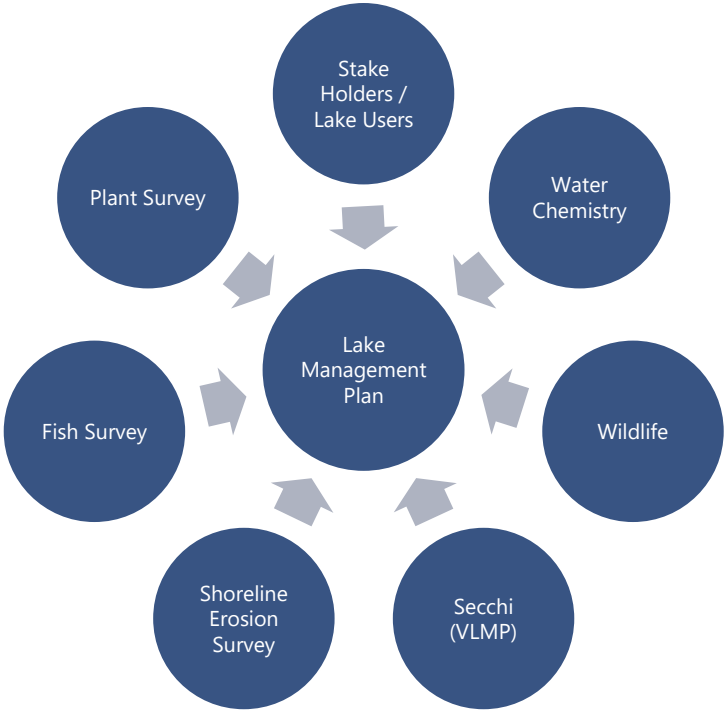
Health Department and
Community Health Center

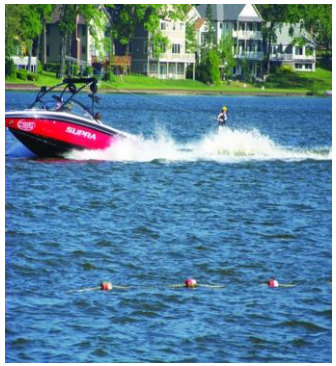
Valuable Data



3. Develop Vision, Goals, Objectives & Actions

- **Vision:** Your vision communicates what your group believes are the ideal conditions for your community "the dream".
- **Goals:** General statement about what the group hopes to accomplish over the long term.
- **Objectives** identify specific measurable results to aim for towards each goal.
- **Actions** describe specific ways the group will reach it's objectives.
- Successful plans have clearly defined goals and objectives that are ATTAINABLE.

3. Vision, Goals, Objectives, & Actions



Overall Vision: *"Our vision for the Fox River watershed in Illinois is to balance all the uses and demands on our natural resources while preserving and enhancing a healthy environment." [Fox River Ecosystem Partnership]*

Separate goals by lake issues with objectives and specific actions.

Goal 8: Preserve the quiet nature and safety of Adams, Bear, and Thomas Lake users while allowing for recreational opportunities.

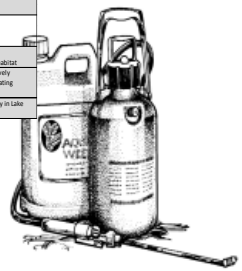
Objectives 8.1: Provide recreational opportunities to enjoy Adams, Bear, and Thomas Lakes while minimizing conflicts between users and protecting lake water quality and habitat.

Action	Lead person/group	Start/end dates	Resources
Post slow-no-wake signs at the boat landings on each lake that also list the state statute			Town of Stockton

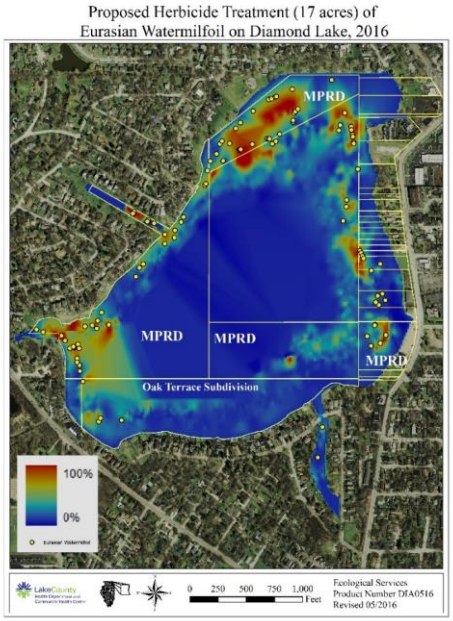
4. Evaluate Solutions & Alternatives

- Many management options available.
- Assess based on feasibility for your lake (money, time, lake user needs, technical feasibility).
- Use Management Option Tables to help guide you!

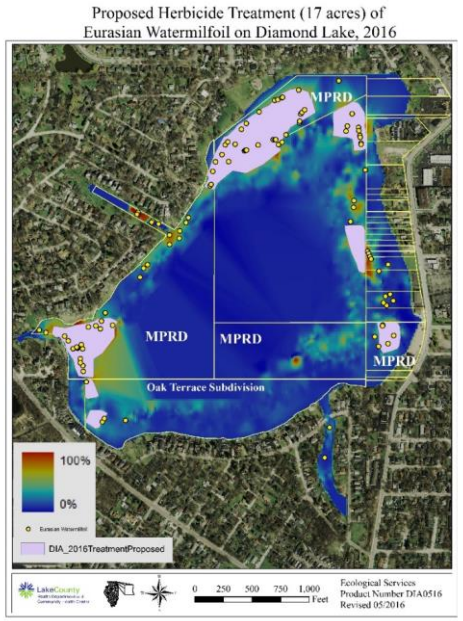
Lake Management Issue - Aquatic Plants			
Option	**Pros**	**Cons**	**Notes/Costs**
No Action	•No change in current strategy	•Plants may continue to expand cause water quality issue, fish kills or recreational issues.	
Aquatic Herbicides	•Relatively inexpensive	•Possibility for overtreatment	
	•Selectivity is possible	•Chemical resistence over time	
	•Seasonal control can be accomplished	•Increased algae	
	•Improved recreation	•Depending on the chemical, use restrictions may be needed for a short time	
Mechanical Harvesting	•No recreation restrictions	•Disposal of plants	•New harvesters can cost > $100,000
	•No chemicals	•Costs for maintaining equipment	
		•Off season storage	
		•Labor costs	
		•Non-selective	
Hand Removal	•Inexpensive	•Limited areas can be harvested	
	•Selectivity is possible	•Labor intensive	
		•Disposal of plants	
Water Milfoil Weevil	•Biological control	•Expensive	•Weevils need overwintering habitat
	•No chemicals	•Results are sporatic and often cyclical	•May be negatively impacted by boating activities
		Weevil population can be affected by panfish predation	•Found naturally in Lake County lakes



Management Options: Aquatic Plants



- Identify Bottom Ownership
- Work with different HOA or bottom owners to create a joint treatment plan it saves money and prevents over treatment



Management Options: Fish

Fish and Aquatic Plants

- Healthy plants = Healthy fish
- Cover and Protection (Too much aquatic plants can create a stunted population of pan-fish)
- Set aside areas for aquatic plants
- Properly designed and installed Aerators - if needed

5. Take Action

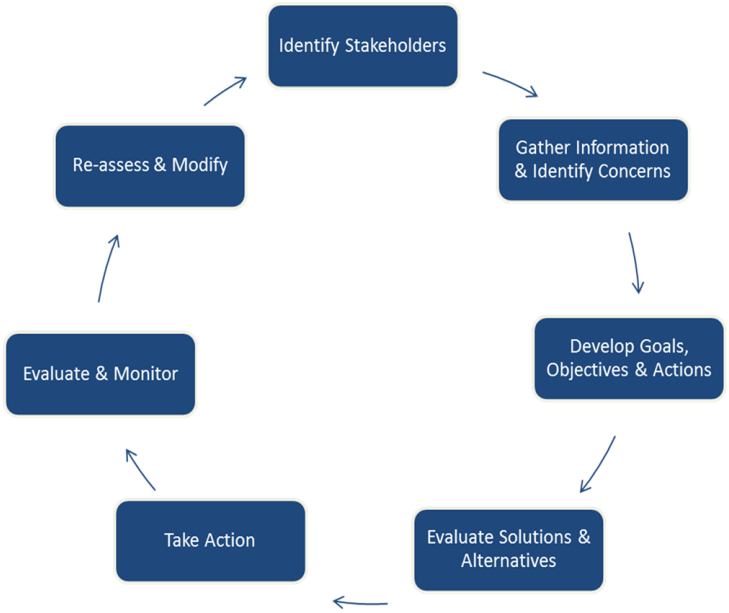
- Write your plan.
- Create a timeline.
- Begin on your action steps.

6. Monitor & Evaluate

- Develop a mechanism for tracking activities and monitoring successes and obstacles.
- Monitoring process may require collecting data
  - Water Quality
  - Plant Surveys
  - Community Surveys
- Project documentation critical!
  - Detailed records of activities, expenses, time and labor.

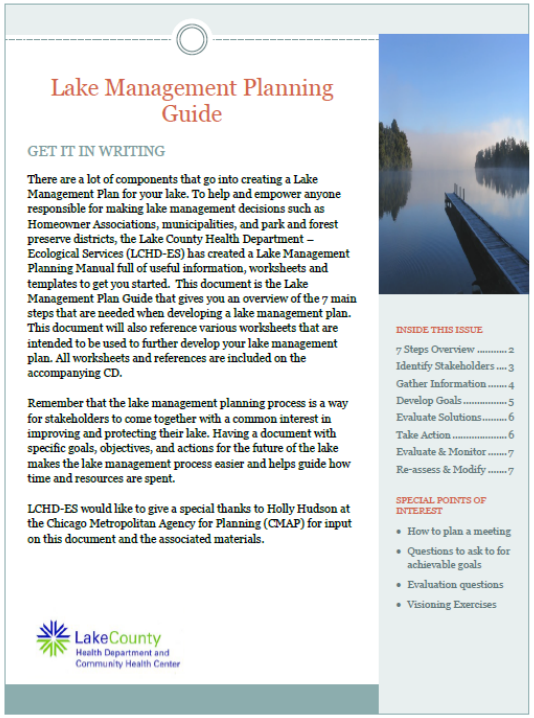
7. Re-assess & Modify

- Lake Management Plans are fluid and can change.
- Lakes change over time
- Needs may change over time.
- New management options may be needed or become available



Resources - Documents

- Lake Management Plan Guide Overview
  - 7 Steps
- Lake Management Plan Template
- Lake Management Option Tables
- Goal Worksheet & Goal Examples



Lake Management Planning Guide

GET IT IN WRITING

There are a lot of components that go into creating a Lake Management Plan for your lake. To help and empower anyone responsible for making lake management decisions such as Homeowner Associations, municipalities, and park and forest preserve districts, the Lake County Health Department – Ecological Services (LCHD-ES) has created a Lake Management Planning Manual full of useful information, worksheets and templates to get you started. This document is the Lake Management Plan Guide that gives you an overview of the 7 main steps that are needed when developing a lake management plan. This document will also reference various worksheets that are intended to be used to further develop your lake management plan. All worksheets and references are included on the accompanying CD.

Remember that the lake management planning process is a way for stakeholders to come together with a common interest in improving and protecting their lake. Having a document with specific goals, objectives, and actions for the future of the lake makes the lake management process easier and helps guide how time and resources are spent.

LCHD-ES would like to give a special thanks to Holly Hudson at the Chicago Metropolitan Agency for Planning (CMAP) for input on this document and the associated materials.

LakeCounty
Health Department and Community Health Center

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Evaluate Solutions 6
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Evaluate & Monitor 7
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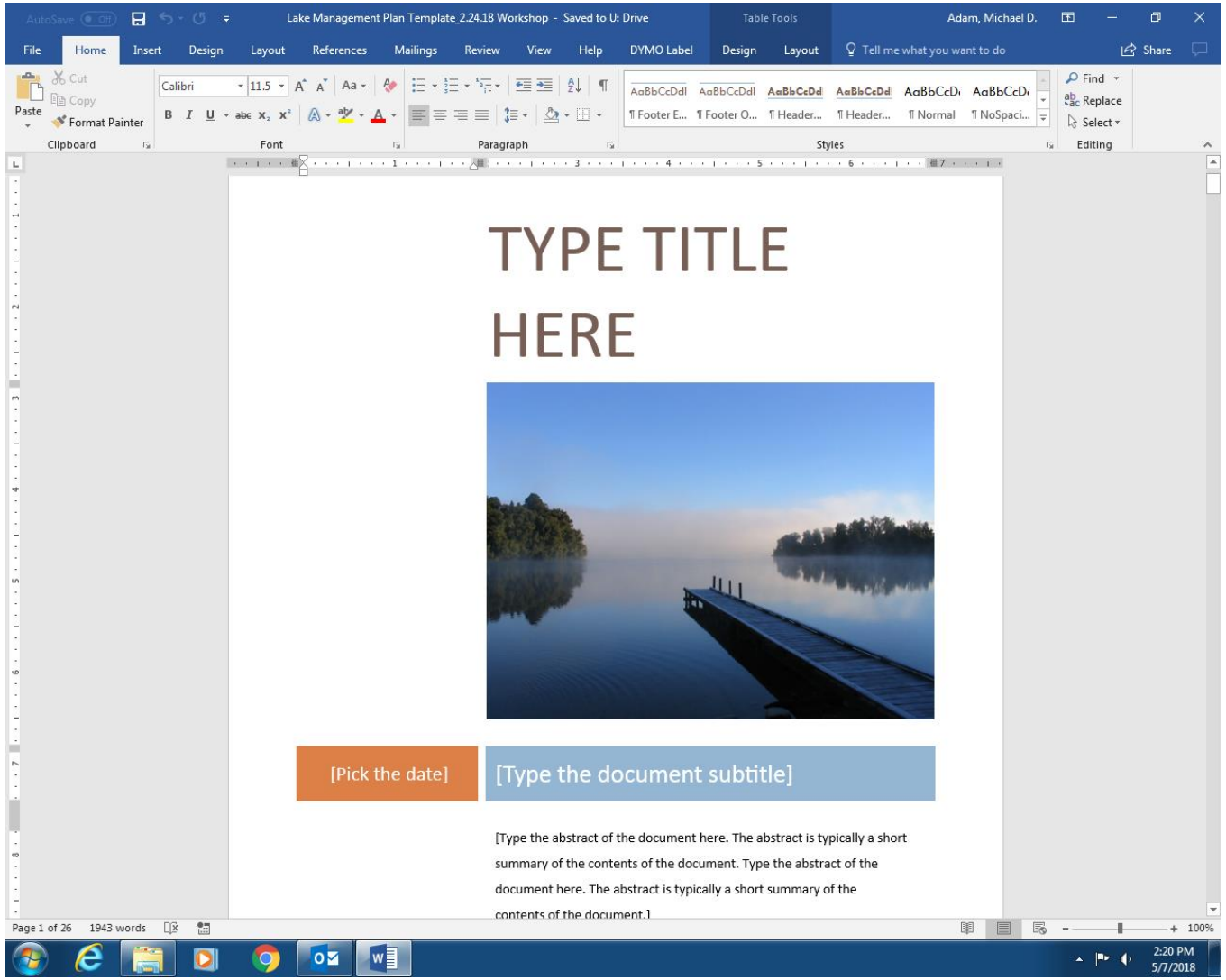
SPECIAL POINTS OF INTEREST

- How to plan a meeting
- Questions to ask to for achievable goals
- Evaluation questions
- Visioning Exercises



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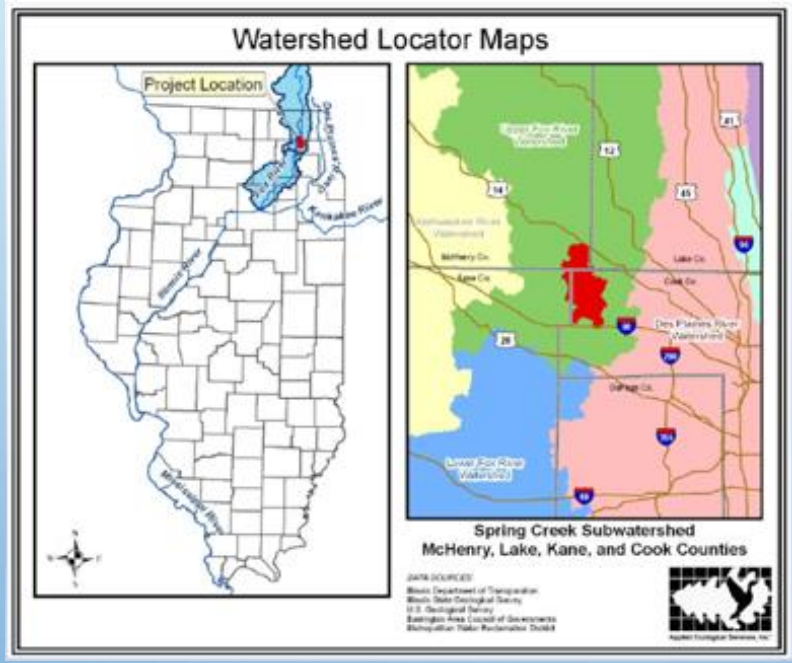
SAVING OUR WATERS

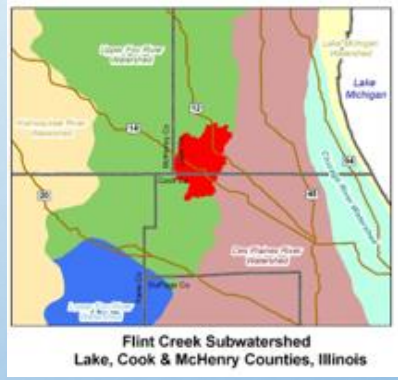
KEEPING WATER CLEAN AND ABUNDANT

CHALLENGES AND OPPORTUNITIES

FLINT CREEK/SPRING CREEK WATERSHEDS PARTNERSHIP

WE ALL LIVE IN A WATERSHED – AN AREA DRAINED BY A RIVER OR STREAM SYSTEM OR LAKE NETWORK

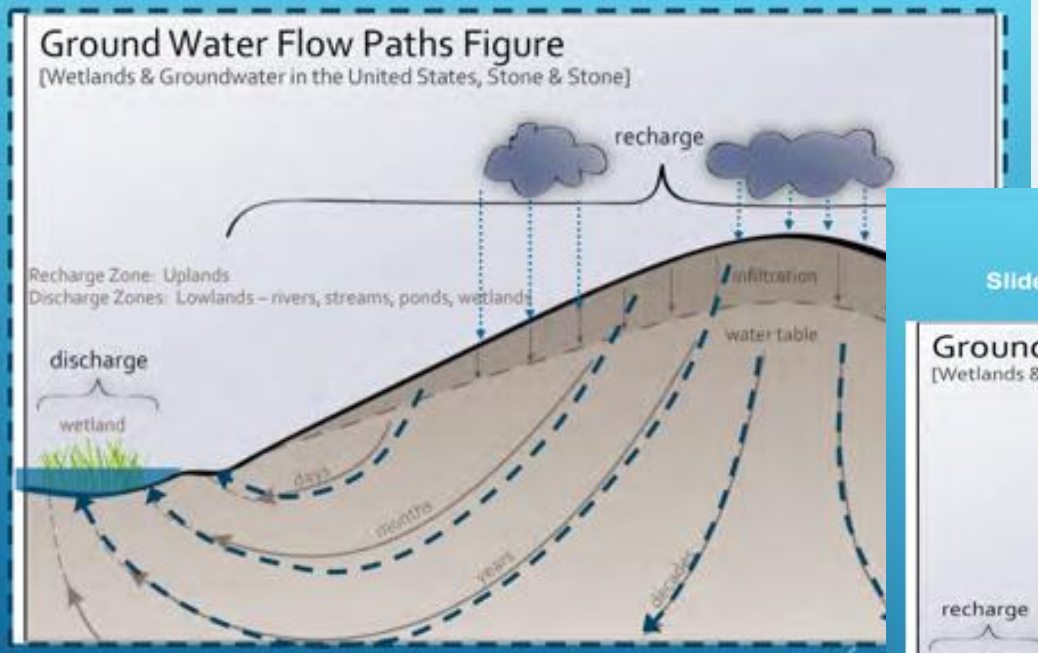




OUR WATERSHEDS ARE CHALLENGED: ACCORDING TO THE EPA: TOO MUCH PHOSPHORUS AND TOO MUCH TOTAL SUSPENDED SEDIMENTS (TSS)

Natural Hydrology

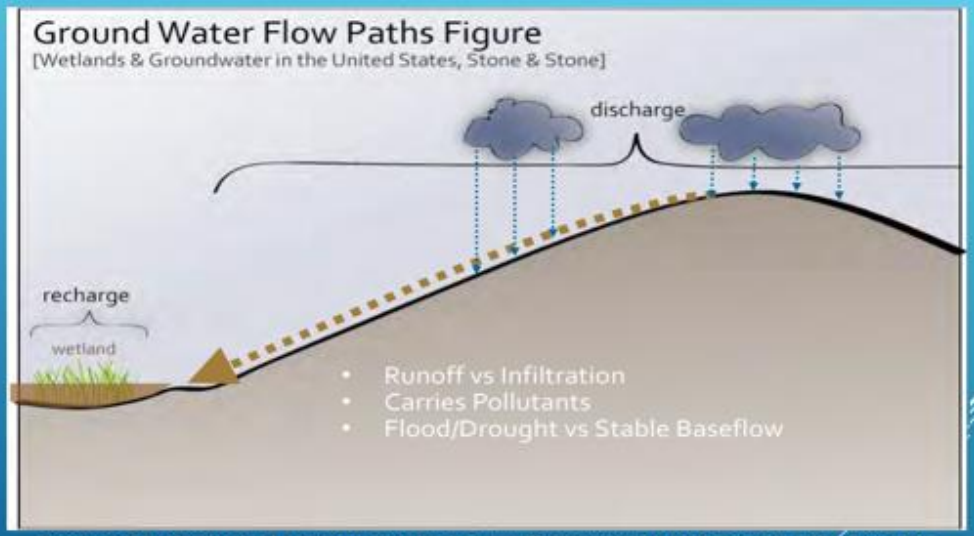
Slide courtesy of James Patchett and Conservation Design Forum



Constant, clean discharge flows, year round to sustain stable surface water hydrology with constant water temperature and chemistry

Degraded Hydrology

Slide courtesy of James Patchett and Conservation Design Forum



Reversed hydrological pattern results in runoff containing sediments, oils, greases, salts, fertilizers, pesticides, and higher water temperatures that inundate historical systems adapted to completely different hydrological and water quality conditions

SLOW DOWN THE WATER; SOAK UP THE RAIN

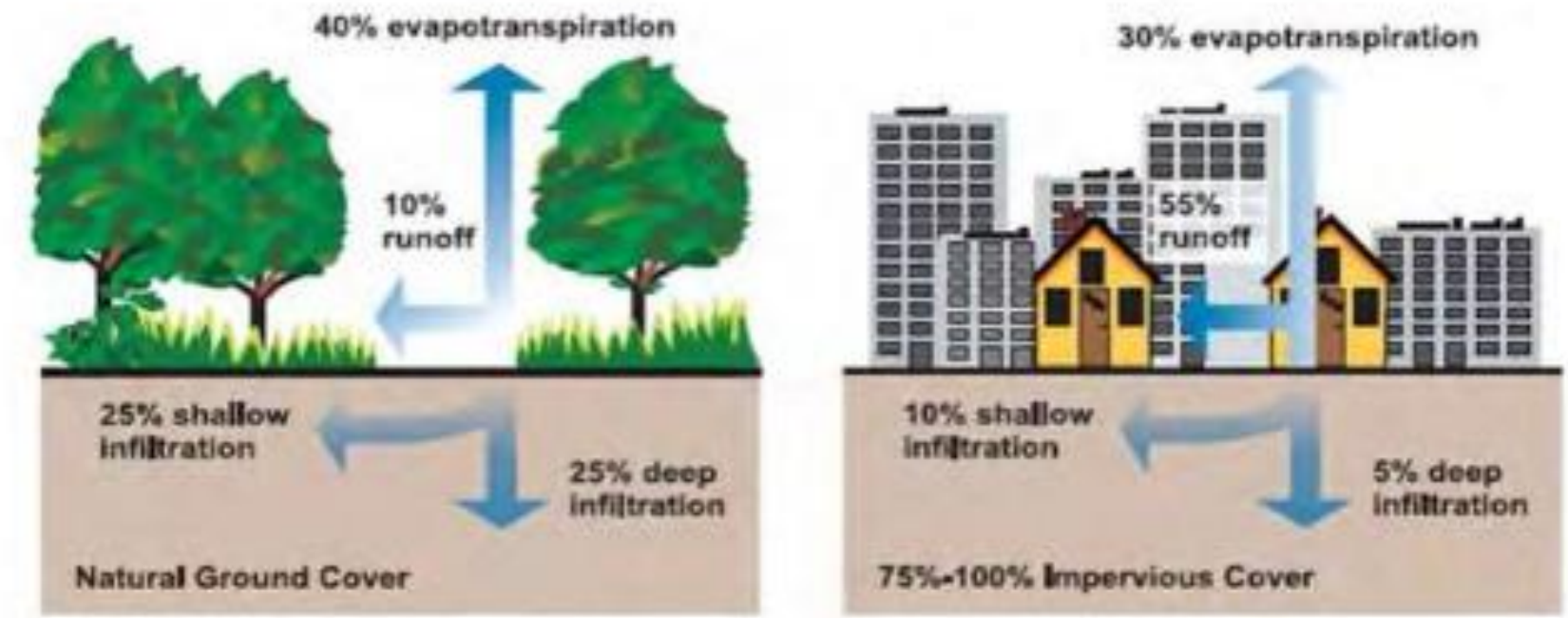


Figure 5-1: Relationship Between Impervious Cover and Surface Runoff. Source: U.S. Environmental Protection Agency.

RAISE THE BLADE; CONSIDER STRATEGIC RAINGARDENS

CUT YOUR GRASS NO SHORTER THAN 3 INCHES

PLANT “WARM” GRASSES SUCH AS ZOYSIA OR BUFFALO GRASS, RATHER THAN “COOL” GRASSES, SUCH AS FESCUE AND ESPECIALLY NOT KY BLUE GRASS!

STORM DRAINS

Best Management Practices for Properties Adjacent to Streams and Lakes

Don't Dump!

Dumping yard waste and other debris in your riparian buffers and streams can cause stream blockages, elevate flood stages, and wash sediment and debris (excessive nutrients) into the water bodies.

- *Never dispose of chemicals in the streams, lakes or riparian buffers.*
- *Never dispose of branches, leaves, or clippings in the riparian buffers.*
- *Remove fallen trees that block flows*

Fertilize Wisely

One of the **largest** problems in Lake County streams and lakes is high amount of nutrients, which produce excessive growth of algae and other undesirable aquatic plants.

- *Test your soil before fertilizing.*
- *Don't apply fertilizer before a rain event*
- *Be P-free with your fertilizers!*
- *Don't apply fertilizers to riparian buffers.*

Minimize Stormwater Runoff

Impervious surfaces (roofs and driveways) convey runoff and pollution to our waterways. By minimizing impervious surfaces you can reduce the transport of sediment, chemicals, and other pollutants to waters.

- *Disconnect flow from downspouts & sump pumps from the stream or lake and direct to a rain garden or bioswale*

RIPARIAN BUFFER

Right Plant—Right Place!

Deep rooted native plants and trees have long root systems to keep soils in place, absorb runoff, and filter out pollutants. When ground and banks are left bare, soil erodes and washes off into nearby lakes and streams.

- *Remove invasive plants from your yard & riparian buffers*
- *Use deep rooted native plants in your landscaping—less water required*

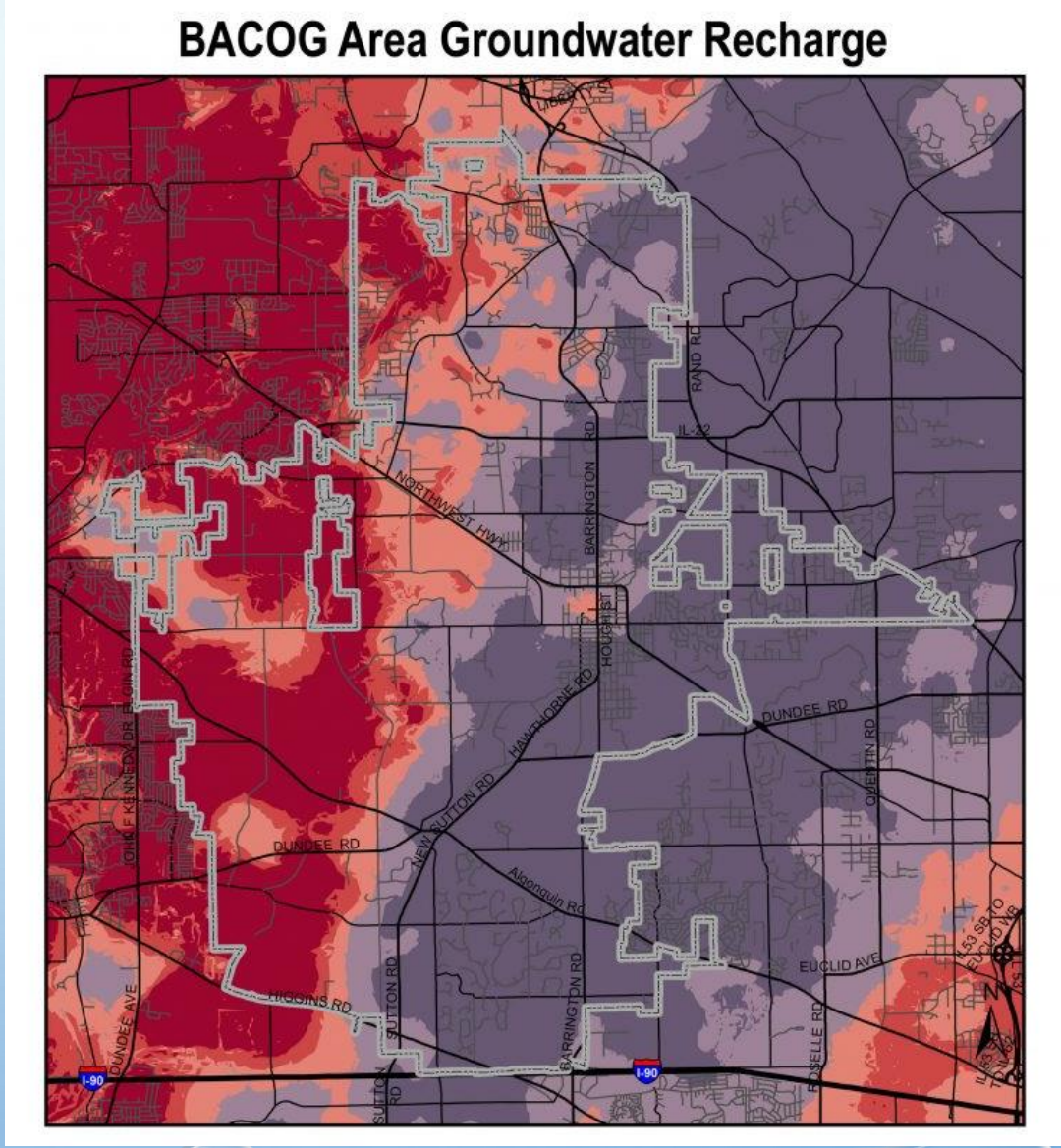
Rain Gardens are shallow depressions planted with native plants and are positioned to capture stormwater runoff.

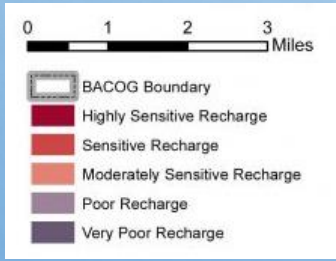
References

- *Riparian Area Management A Citizen's Guide. Lake County Stormwater Management Commission, (LCSMC) Libertyville, Illinois, 2014.*
- *Managing the Water's Edge, Making Natural Connections: Southeastern Wisconsin Regional Planning Commission, Waukesha, Wisconsin, 2010.*

BARRINGTON AREA COUNCIL OF GOVERNMENTS HAS MAPPED RECHARGE AREAS

MOST OF THE BACOG AREA'S SHALLOW AQUIFERS ARE RESUPPLIED BY RECHARGE AREAS EITHER IN THE SPRING CREEK WATERSHED OR FARTHER WEST. DEEP SANDSTONE AQUIFERS' RECHARGE IS IN WI.





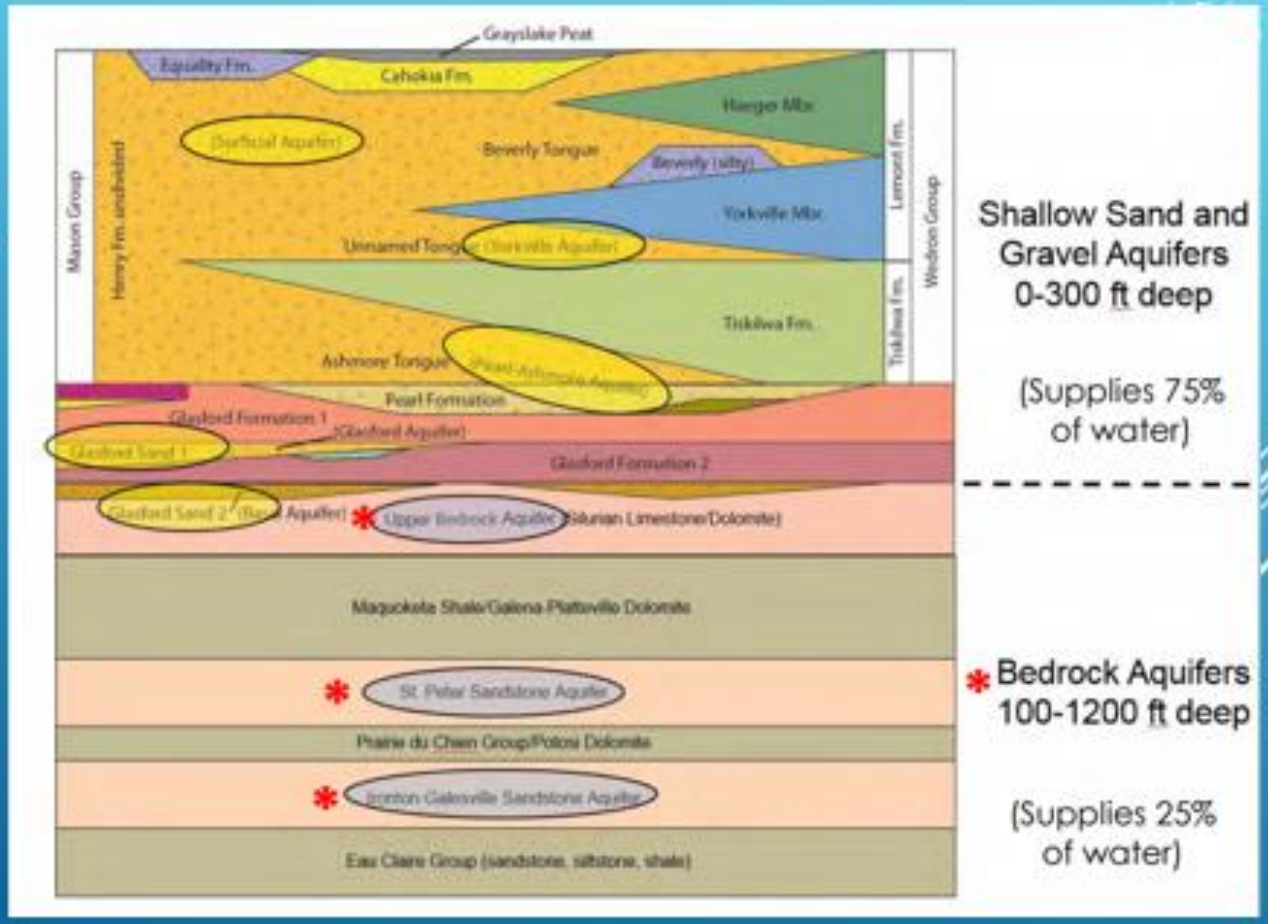
A LOOK UNDERGROUND AT GEOLOGIC STRUCTURES

Sand & Gravel Aquifers

Limestone Aquifer

Sandstone Aquifer

Sandstone Aquifer



Groundwater Aquifer Distribution in Illinois

Sand & Gravel

Limestone

Sandstone

WE CAN'T TAKE DRINKING WATER SUPPLIES FOR GRANTED

WATER IN OUR STREAMS AND STORM DRAINS IS LEAVING OUR AREA!

WE MUST SLOW DOWN THE WATER

AND SOAK UP THE RAIN! SO MORE OF IT STAYS IN OUR AREA…IN OUR SOILS AND WETLANDS OR IN OUR AQUIFERS!

Joliet sets timeline to deal with future water shortage

Joliet is seeking a new water supply with forecasts that city wells could begin to dry up in 15 to 20 years. The city plans to hire a consulting engineer to review options by this summer, Utilities Director James Eggen said Tuesday.

Waukesha Common Council approves 40-year agreement to buy Lake Michigan water from Milwaukee

Even so, residential water rates will rise from an average of $400 a year to an estimated $1,200 a year by 2027, as Waukesha pays for the project. The water utility's goal is to hold residential water rates to $1,000 per year or less, Duchniak said.

"Water is our most valuable resource," Knigge said. "If you don't have ... good, clean water, your opportunities as a village are severely limited."

DEEP AQUIFERS EXPERIENCE OVER-CONSUMPTION

- OVER-CONSUMPTION (FINITE SUPPLY)
- LOSS/MODIFICATION OF RECHARGE AREAS
- DROUGHT (SUPPLY DECREASES/DEMAND INCREASES
- CONTAMINATION (INCLUDING SALT)

Sustainable Yield vs. Current Demands
Deep Bedrock Aquifers NE Illinois

County	Sustainable Yield*	Current Demands	Percent Sustainable
Cook and DuPage	8	11	72%
Grundy	7	8	88%
Kane	17	27	63%
Kendall	2	9	22%
Lake	5	5	100%
McHenry	8	8	100%
Will	12	30	40%

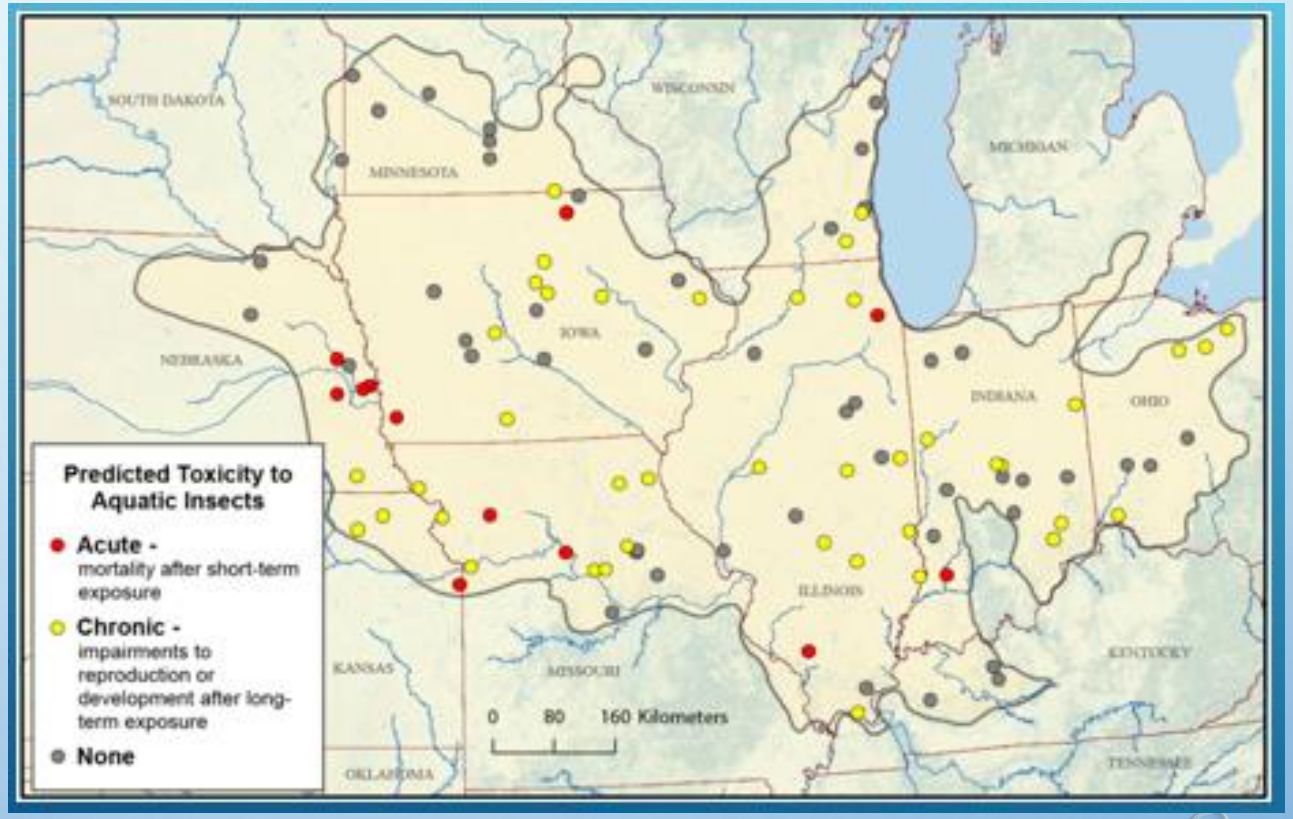
MGD

MORE CHALLENGES

How Many Can you Name

PESTICIDES IN STREAMS

AT LEAST ONE PESTICIDE IN MORE THAN HALF OF THE 100 STREAMS SAMPLED IN THE MIDWEST EXCEEDED A TOXICITY THRESHOLD PREDICTED TO CAUSE HARM TO AQUATIC INSECTS AND OTHER STREAM ORGANISMS, RANGING FROM ACUTE EFFECTS (MORTALITY AFTER SHORT-TERM EXPOSURE) IN 12 STREAMS TO CHRONIC EFFECTS (LONGER TERM IMPAIRMENTS TO REPRODUCTION AND DEVELOPMENT) IN 41 STREAMS.



THANK YOU