

The Big Picture: Water Quality, Regulations & NPDES

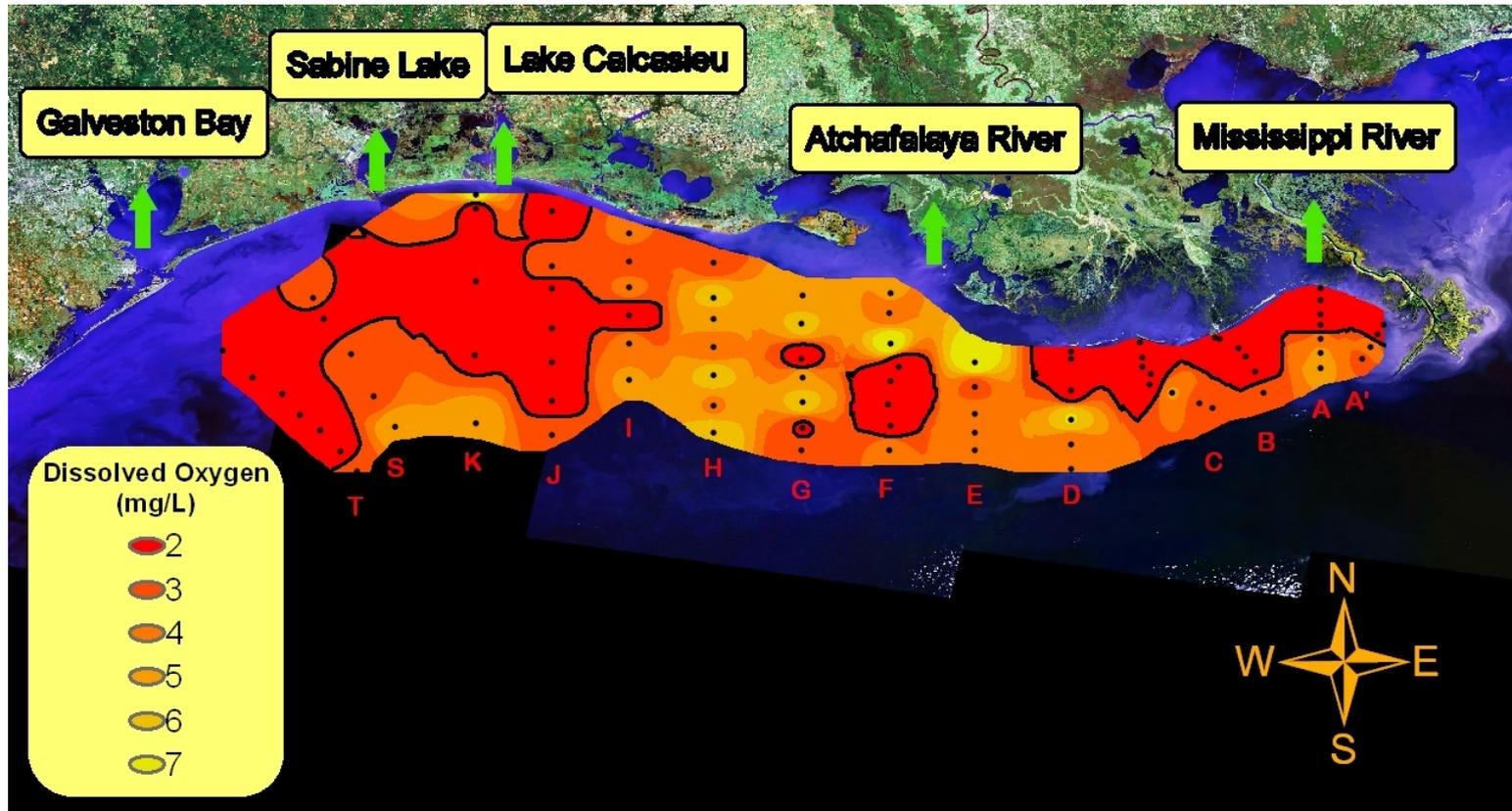


Joy Corona, PE, CFM
Bleck Engineering Company, Inc.



Credit: Jon Platek

Gulf of Mexico Dead Zone (2010)



http://www.noaanews.noaa.gov/stories2010/20100809_deadzone.html

Credit: NOAA



Gulf of Mexico Dead Zone

Dead (hypoxic) zone

Fueled by nutrient runoff in Mississippi River WS

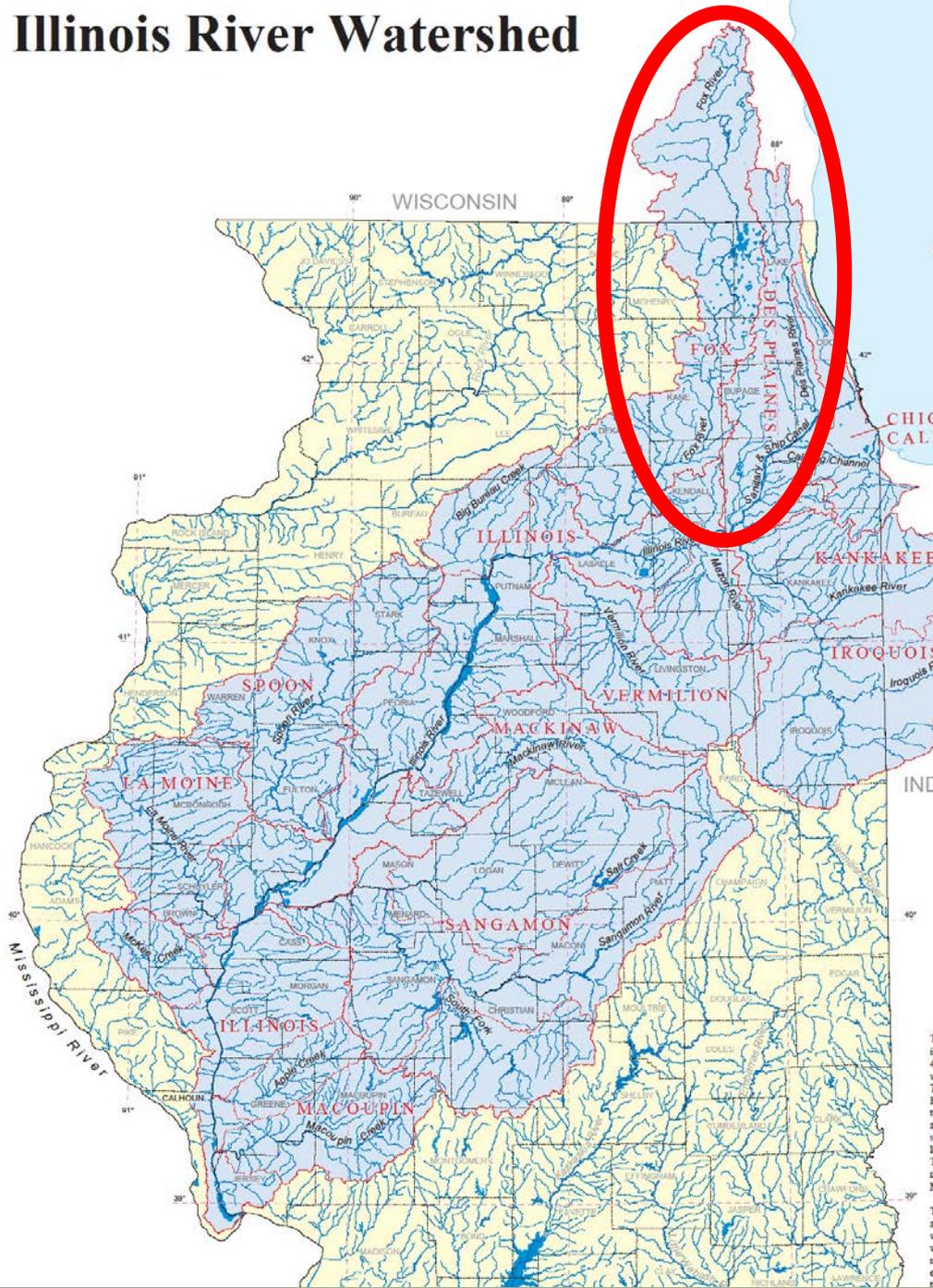
Nutrients stimulate overgrowth of algae

Algae sinks, decomposes & consumes oxygen supply in bottom waters

Threatens commercial & recreational gulf fisheries (\$2.8 billion industry annually).



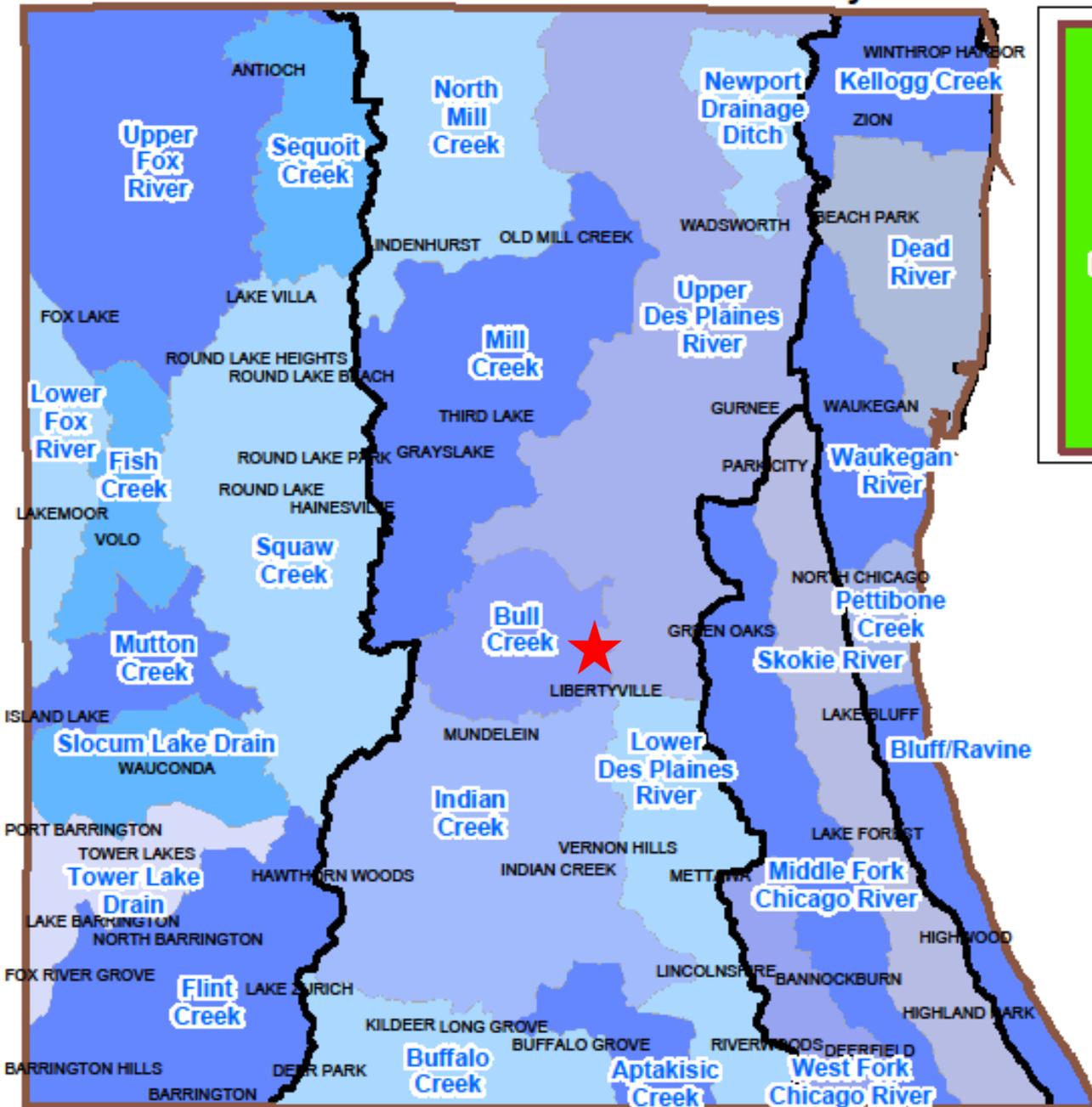
Illinois River Watershed



Fox River
Watershed

Des Plaines
River Watershed

The 26 Subwatersheds in Lake County



The 4 Watersheds in Lake County



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 released November 10, 2004

DATA SOURCES:
Lake County Stormwater Management
Lake County Department of Information And Technology, GIS & Mapping Division

Regulatory History

Federal Water Pollution Control Act (1949)



Cleveland Plain Dealer

WPCA Amended in 1972 to better protect these public assets...



Cuyahoga River caught fire 10x through 1969



James Thomas
Cleveland Press Collection
Cleveland State University Library



Regulatory History

WPCA Amended Again

1977 became
Clean Water Act
(CWA)

To preserve, protect
and improve the
Nation's water
resources



Regulatory History CWA (1972 – 1987)



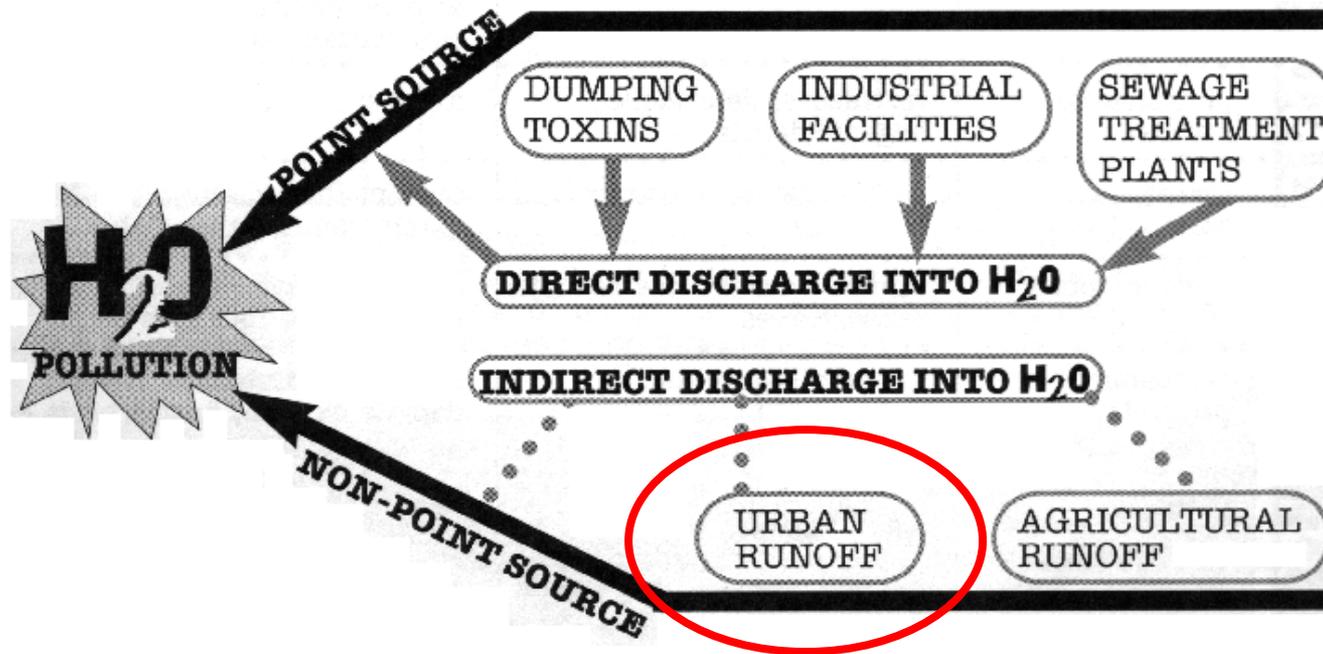
Required NPDES permitting of point-source discharges (primarily industrial and WWTP)



Did not regulate stormwater (considered a non-point source)



Regulatory History CWA (1972 – 1987)



Point Source: Pipes, ditches or other conveyances (includes discharges from sewage plants, industrial facilities)

Non-Point Source: Comes from diffused sources (sheet flow)



Regulatory History

Water Quality Act, 1987

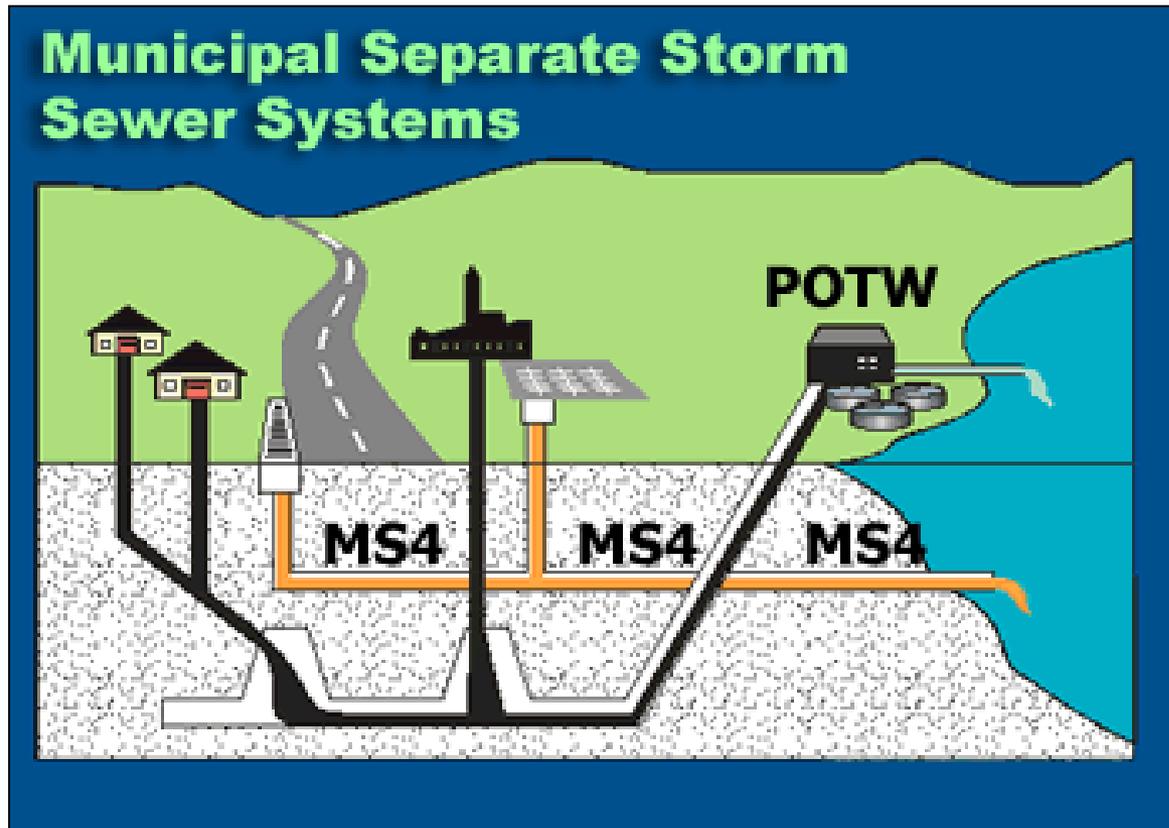
Amended 402(p) of the CWA

Required NPDES permitting of certain stormwater discharges and construction site.



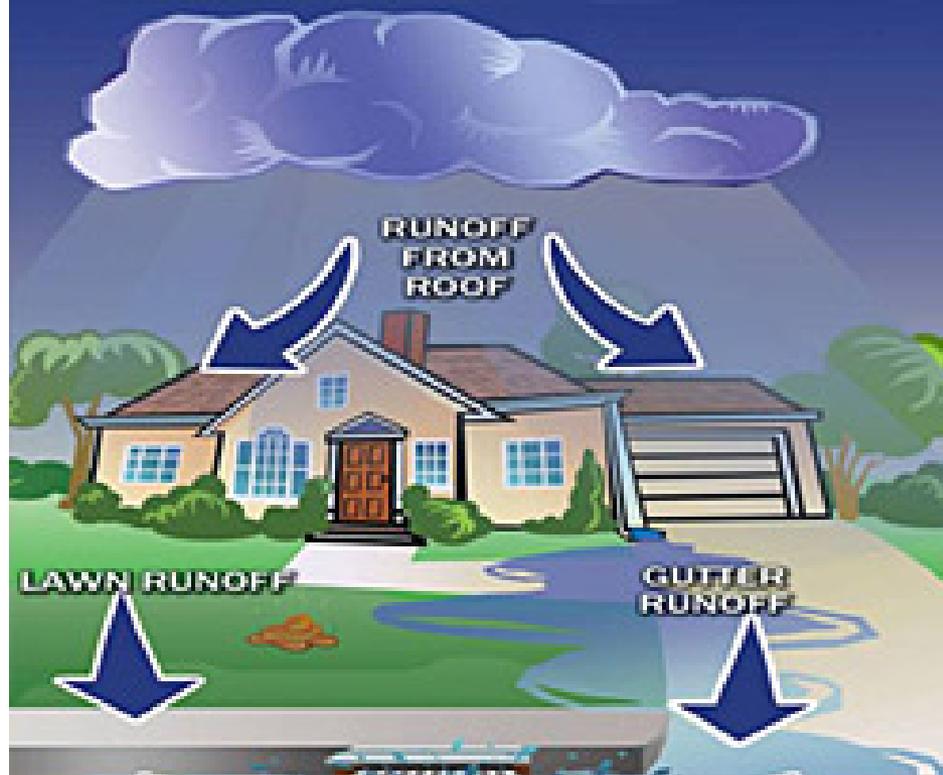
Regulatory History CWA (1987– present)

Elimination of all non-stormwater point source discharges from MS4s and management of construction and post construction runoff.

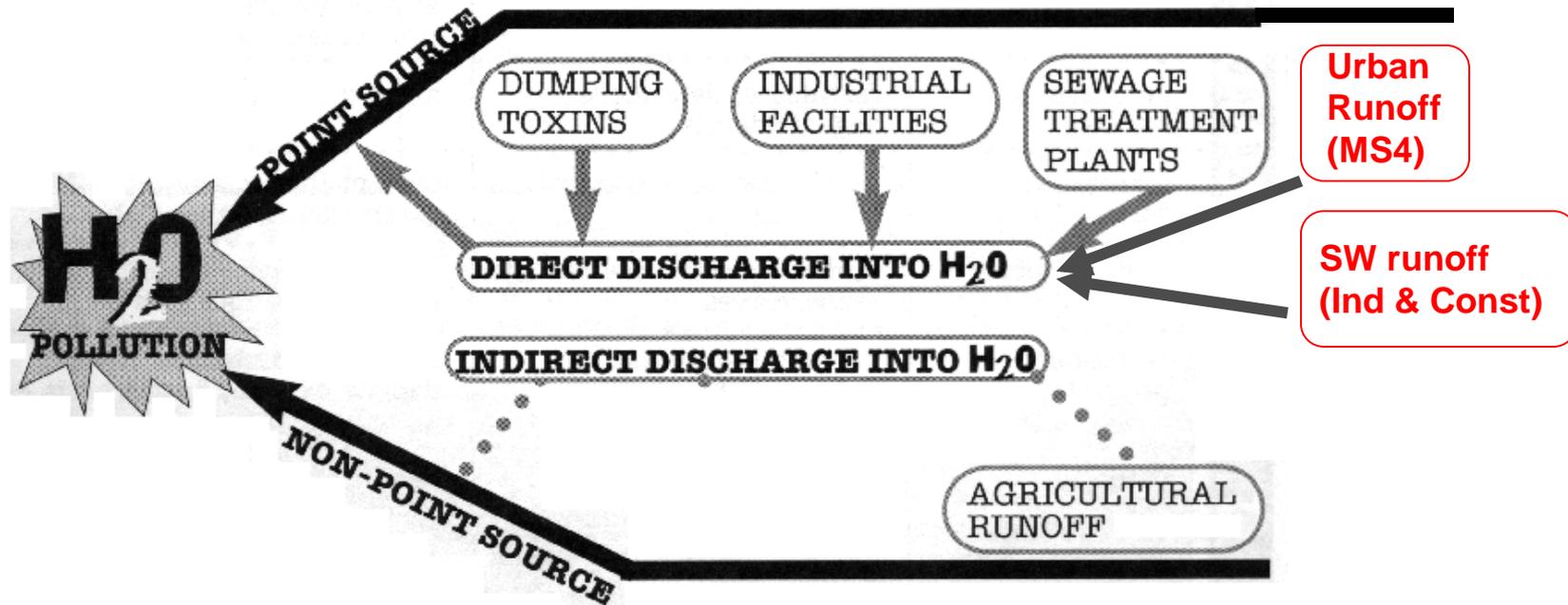


Credit: USEPA





Regulatory History CWA (1987 - present)



Point Source: Pipes, ditches or other conveyances (includes stormwater runoff from MS4, construction sites and industrial sites)

Non-Point Source: Comes from diffused sources (sheet flow)



Strategies established to translate CWA into actions

Regulatory (Requirements)

- Section 301, 303, 306, 307... (WQS/TMDL)
- Section 402 (NDPES)
- Section 401 (certification)
- Section 404 (wetlands)

Funding (Incentives)

- State Revolving Funds (loan)
- Section 319 (grants)



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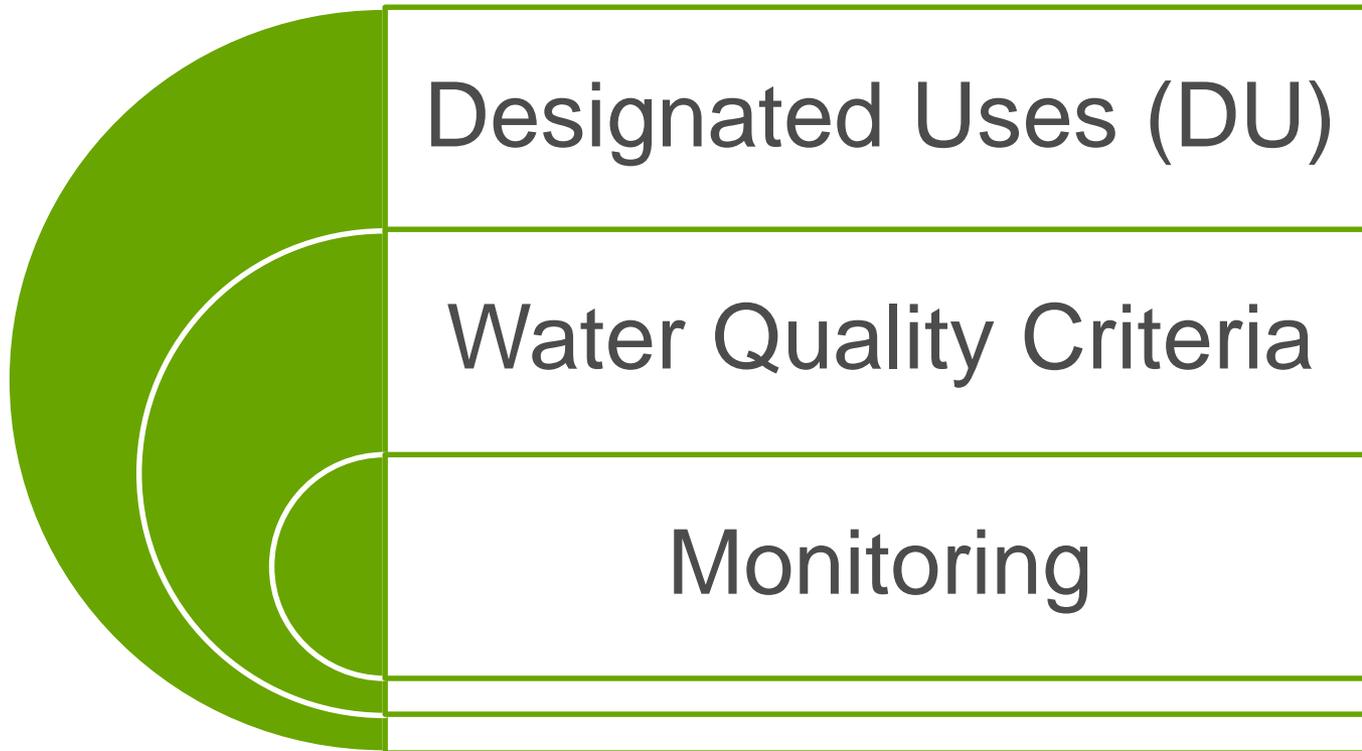
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Water Quality Standards (WQS) TMDL Approach



Designated Uses in Illinois



Aquatic Life



Fish Consumption



Indigenous Aquatic Life



Primary Contact



Public and Food Processing Water Supply



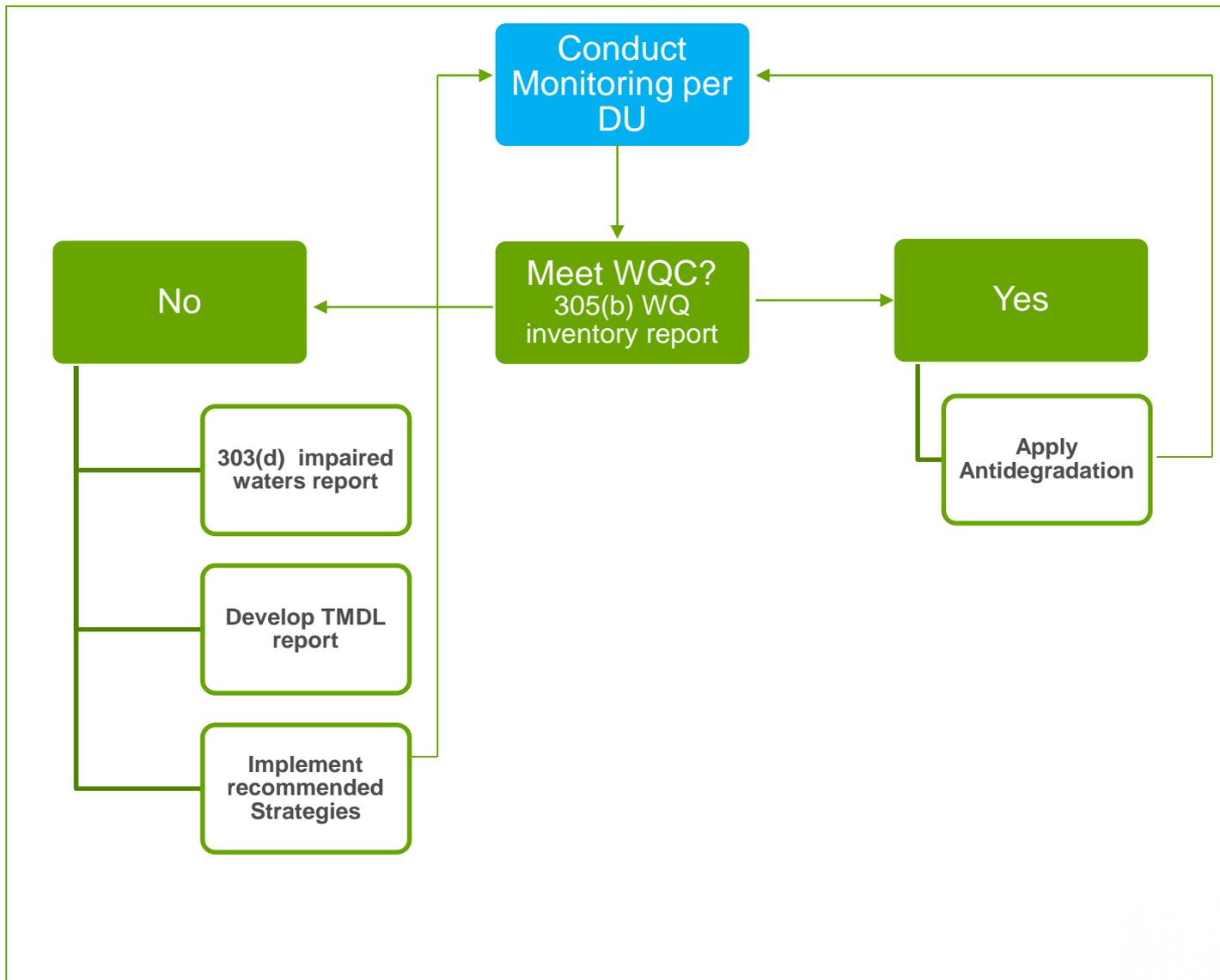
Secondary Contact



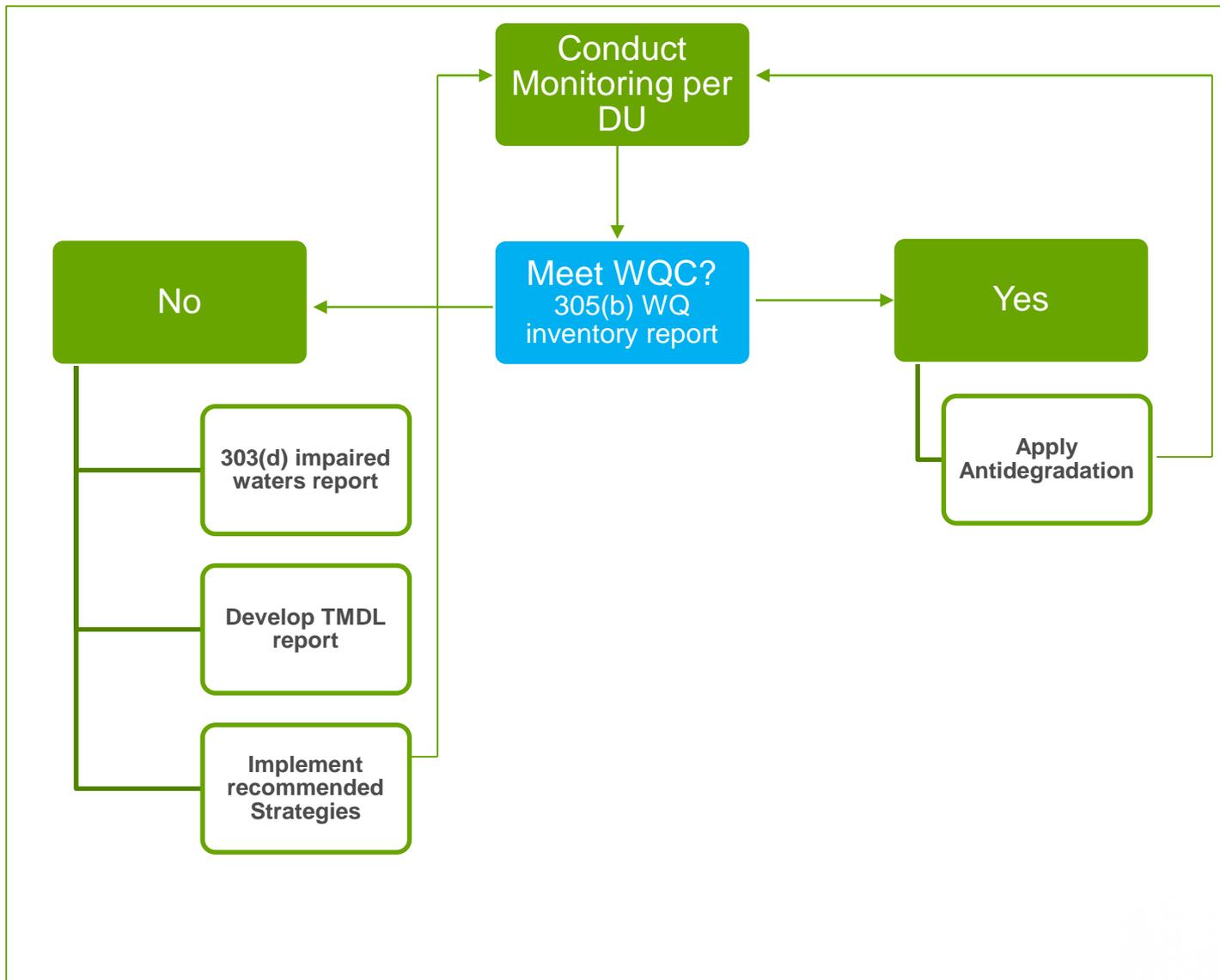
Aesthetic Quality



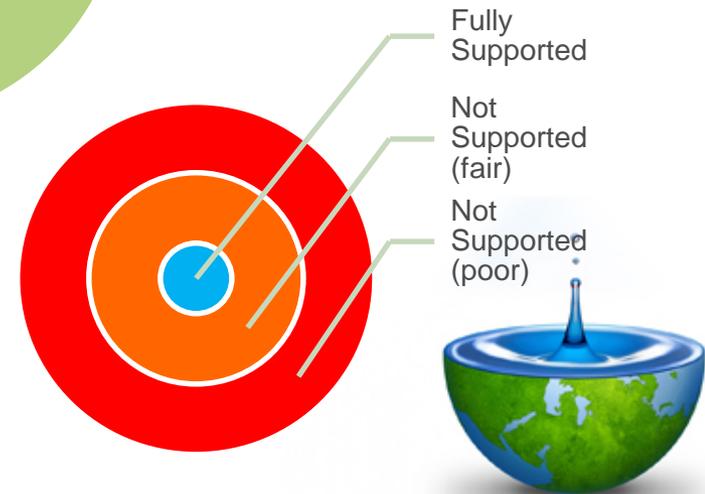
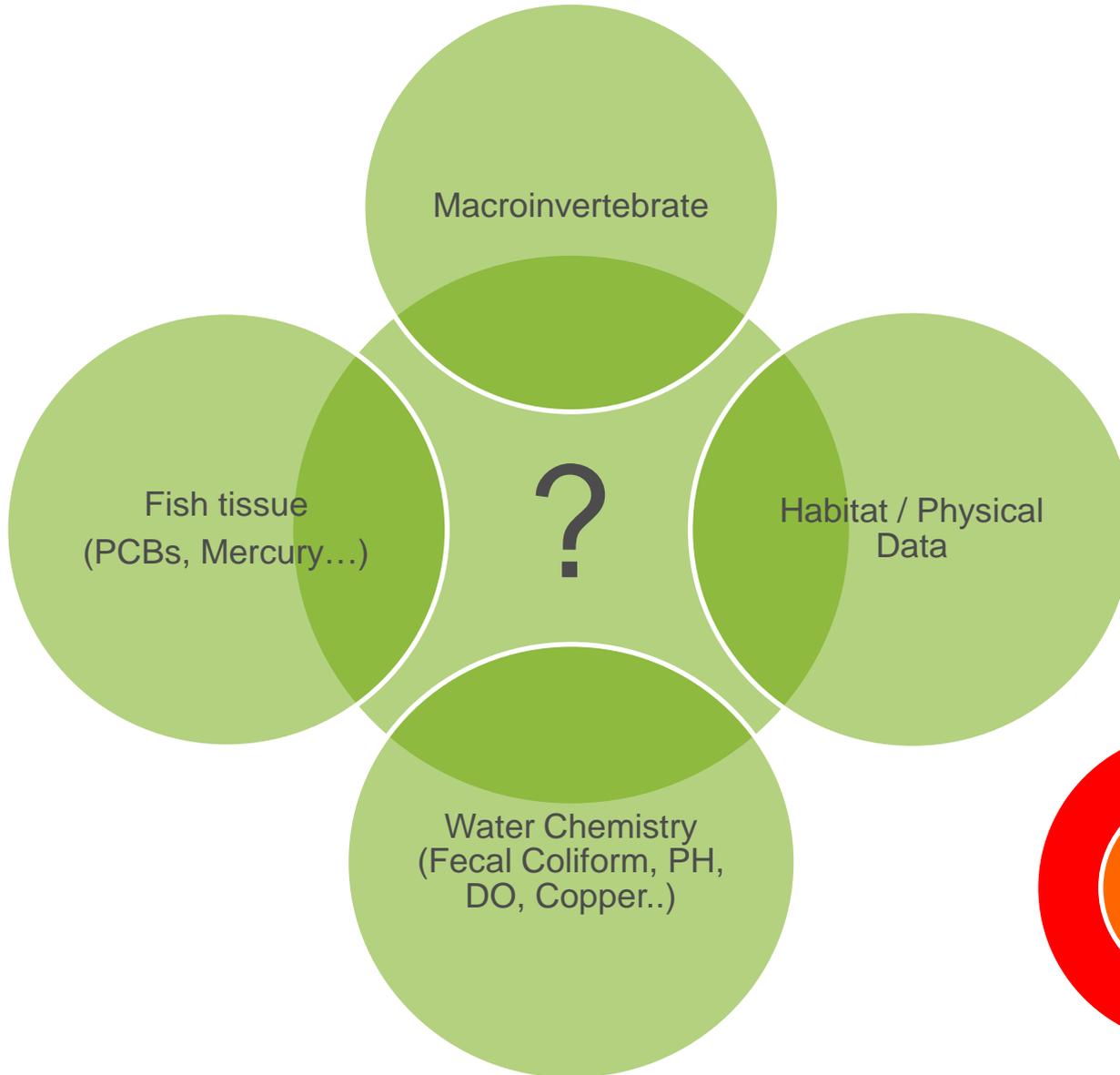
Water Quality Standards (WQS) TMDL Approach



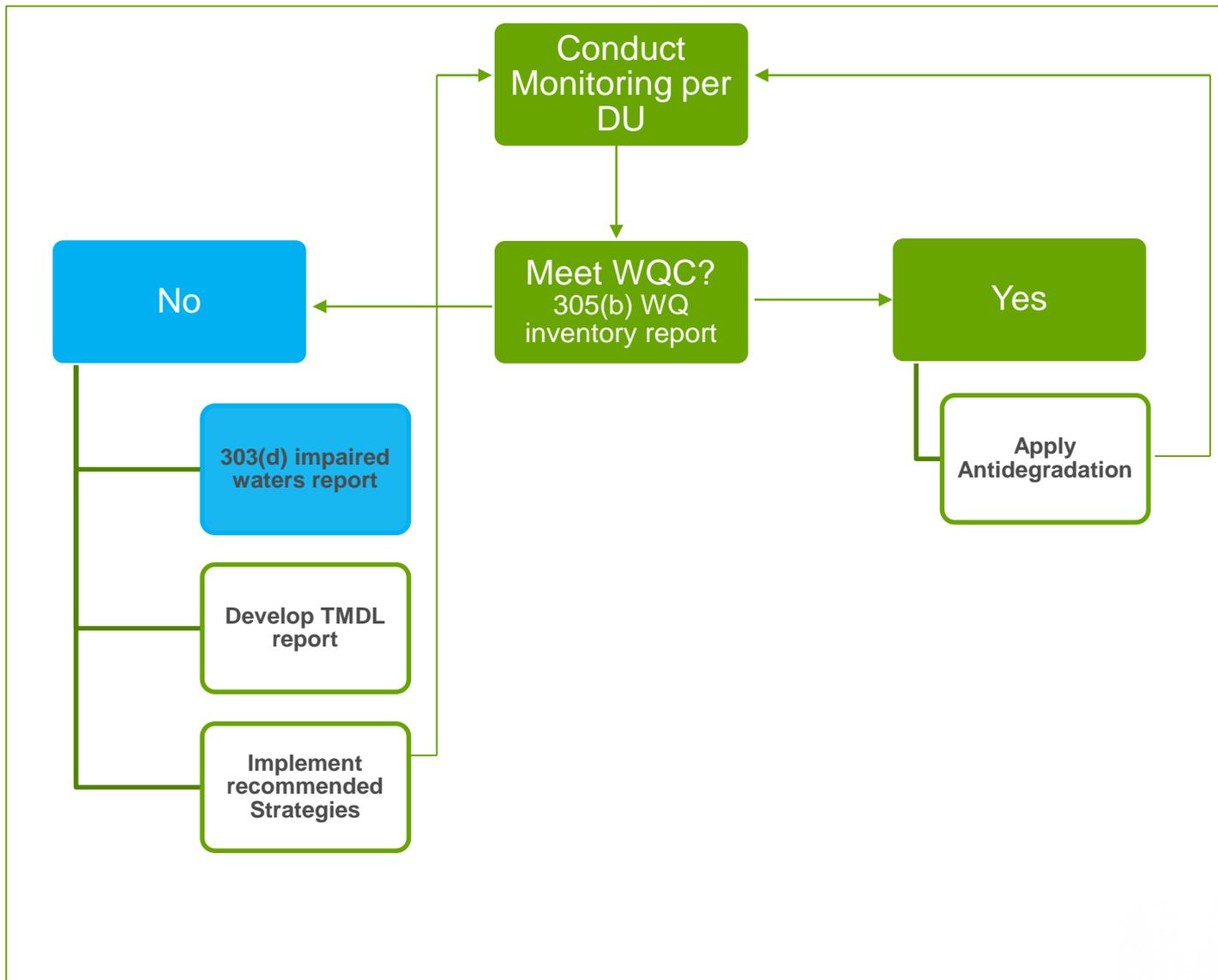
Water Quality Standards (WQS) TMDL Approach



Water Quality Criteria



Water Quality Standards (WQS) TMDL Approach



Top 4 Reasons for 303(d) listing

Lakes

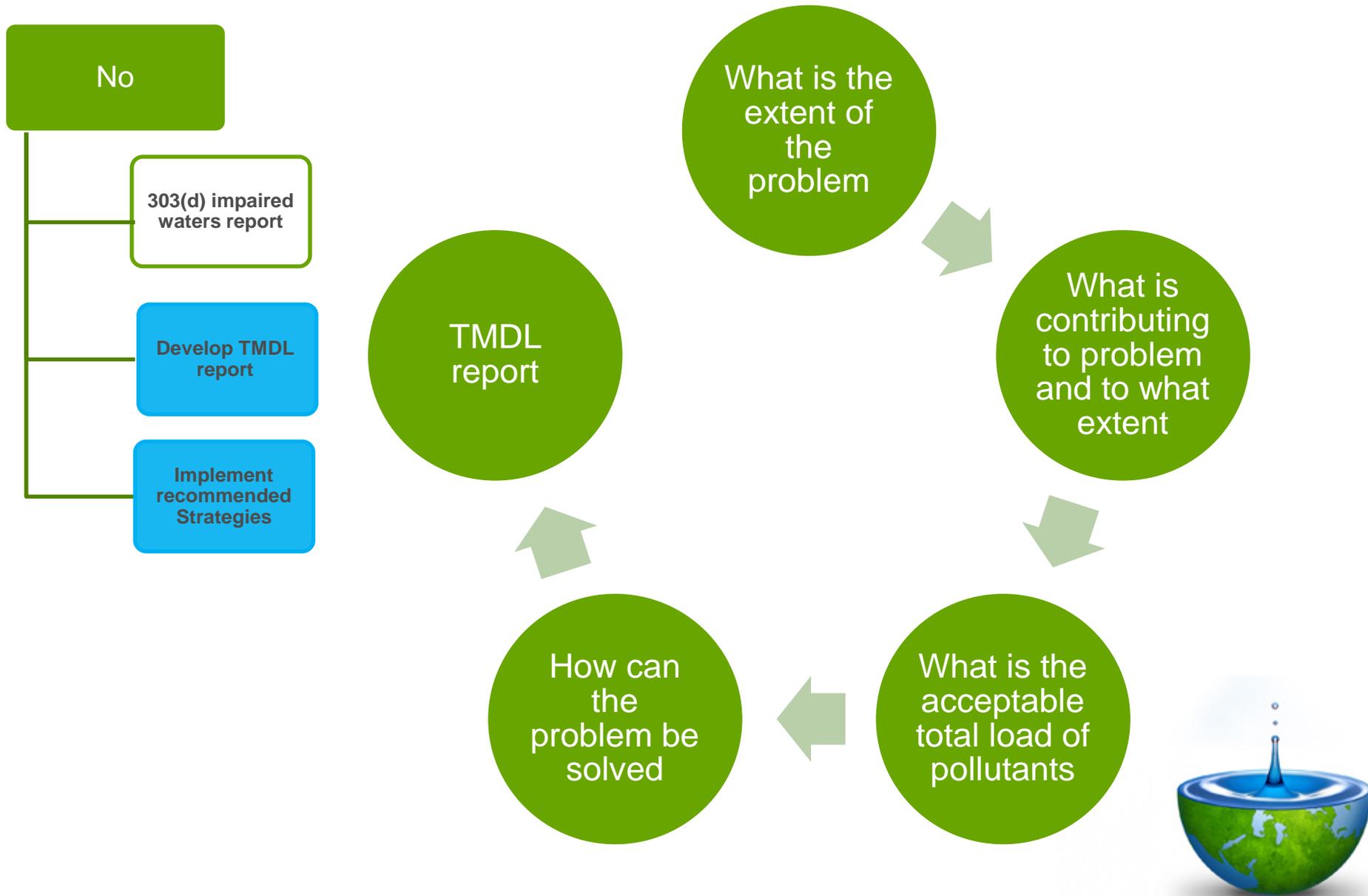
- Nutrients
- Sediments
- Dissolved Oxygen
- Ph

Streams & Rivers

- Sediments
- Metals
- Pathogens
- Nutrients



Total Maximum Daily Loads (TMDL)



TMDL report may recommend...

management strategies for “polluters” & point sources

Work with Bensenville MWWTP Salt Creek (Copper)

an overall goal

100% reduction in accessed gully erosion Prairie Creek (sediment, nitrogen, phosphorus)

A 41% reduction in overall chloride application Addison Creek

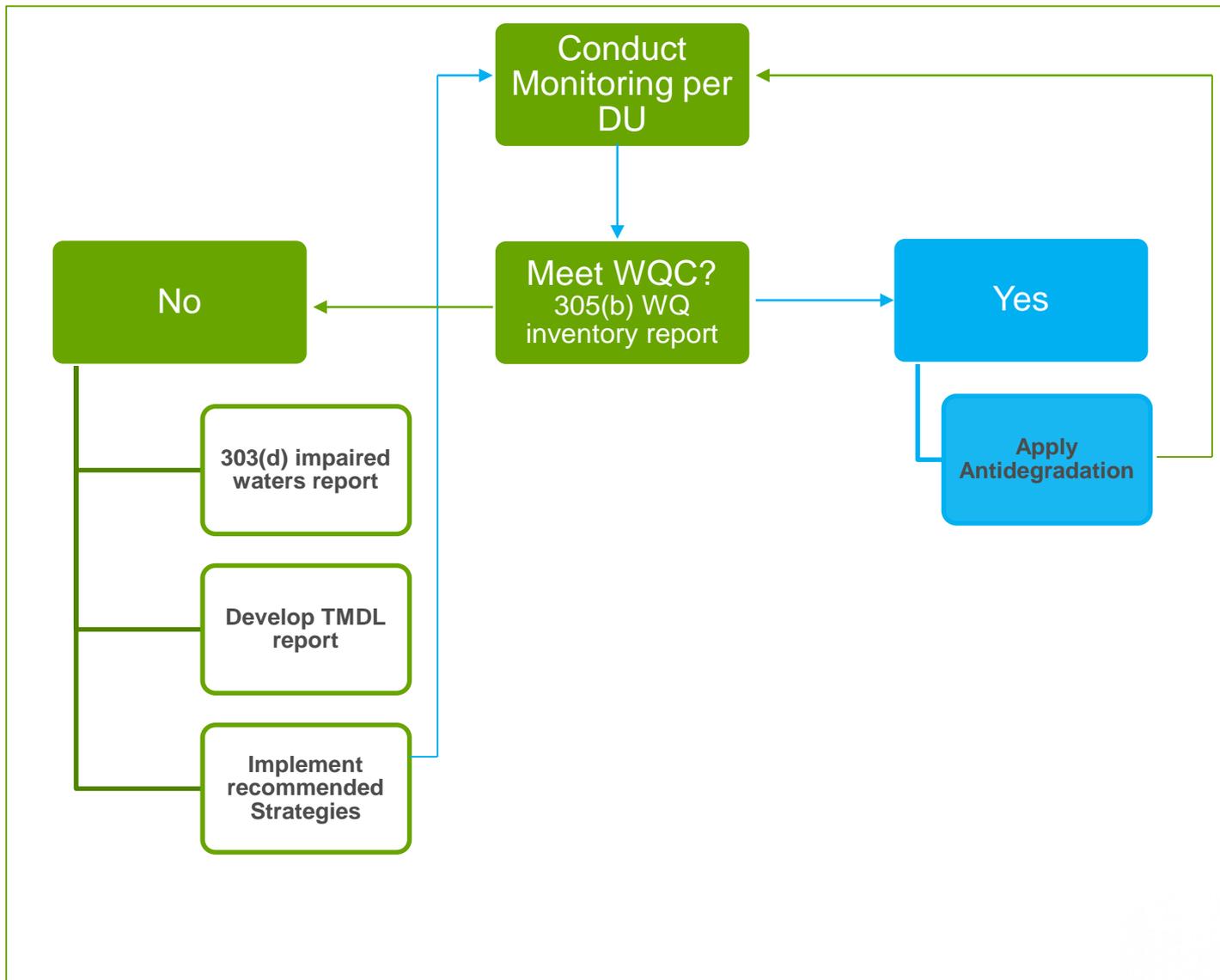
BMP for non-point source

Restrict livestock access to Harding Creek (fecal coliform)

Conservation tillage practices Frank Holten Lakes (phosphorus)

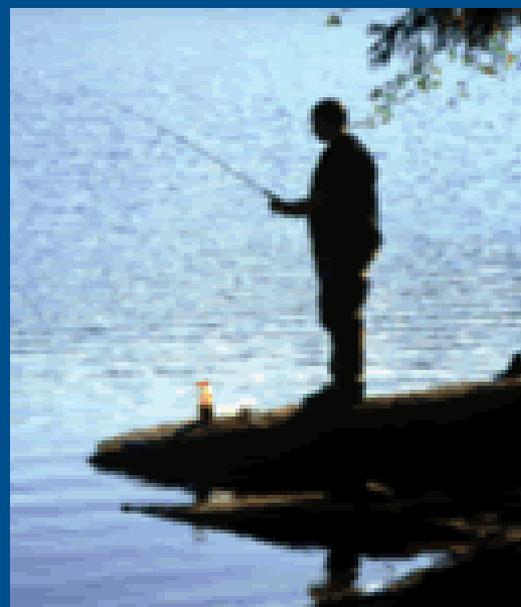


Water Quality Standards (WQS) TMDL Approach

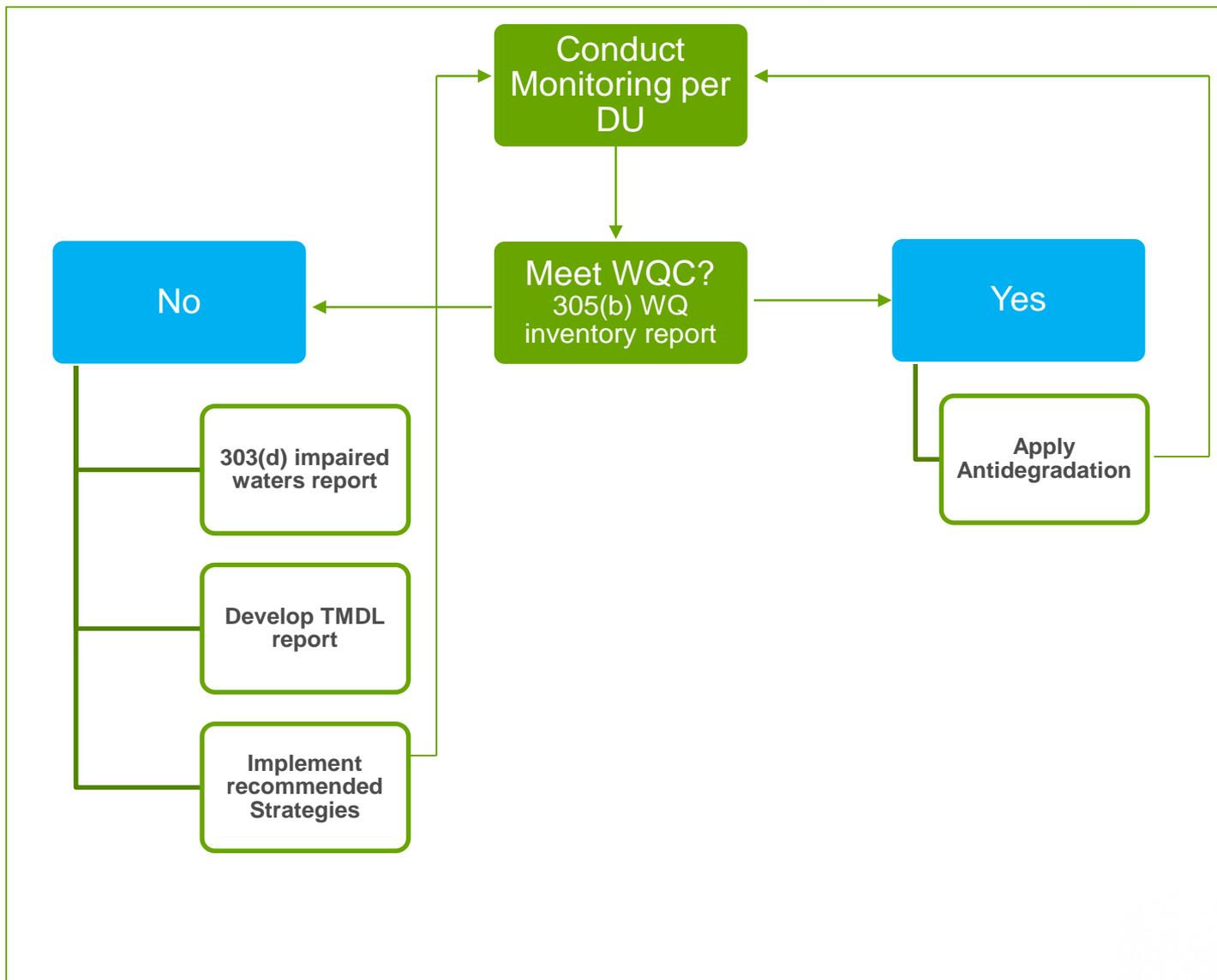


Keep clean waters clean

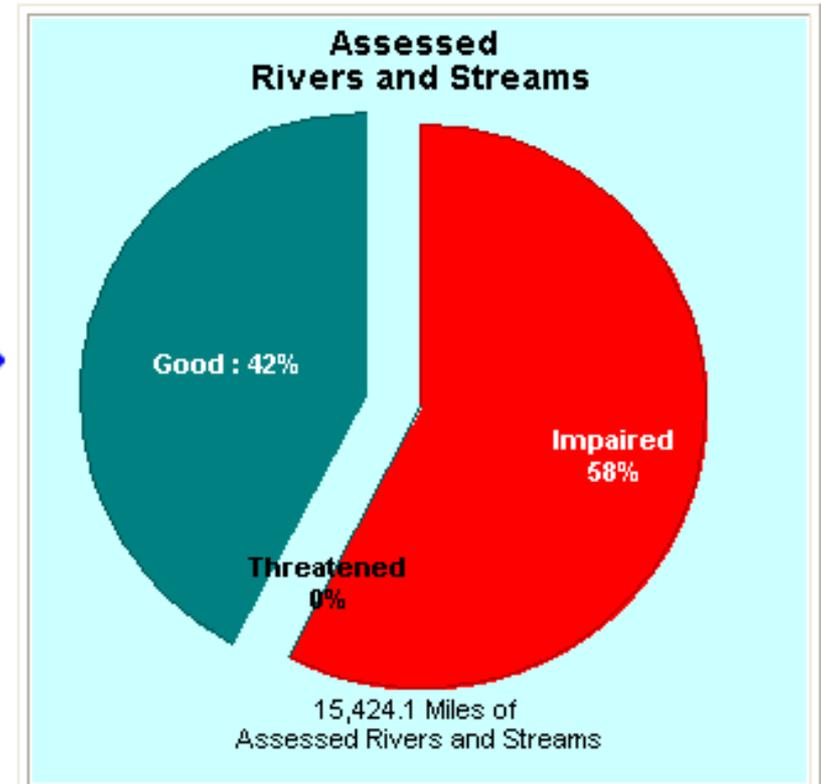
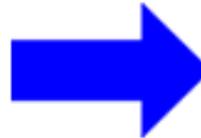
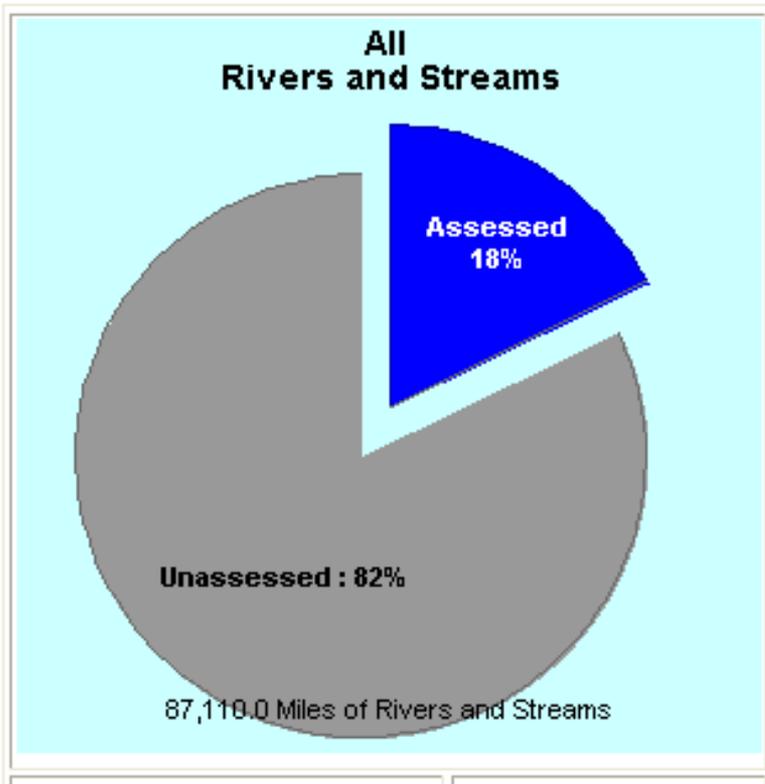
Antidegradation policies are designed to maintain high quality waters.



Where are we?



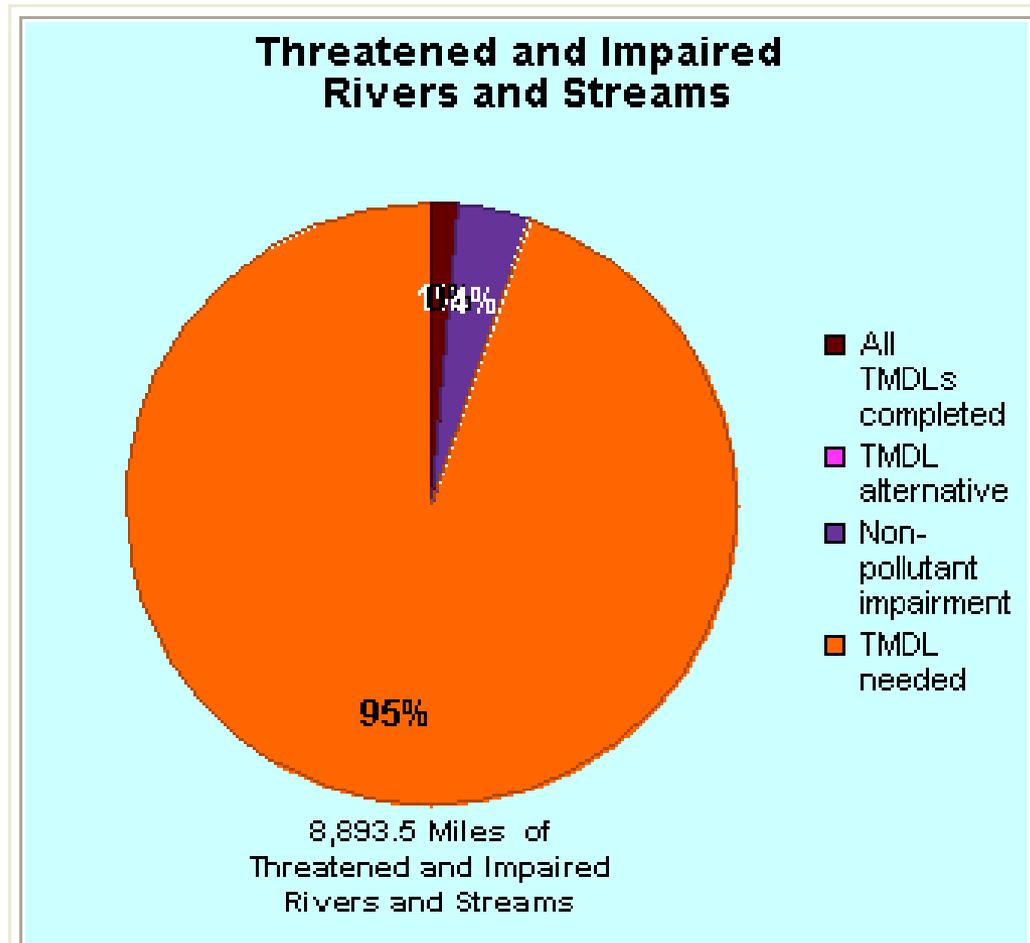
Illinois Assessment Data for 2006



http://iaspub.epa.gov/waters10/attains_state.report_control?p_state=IL&p_cycle=2006&p_report_type=A



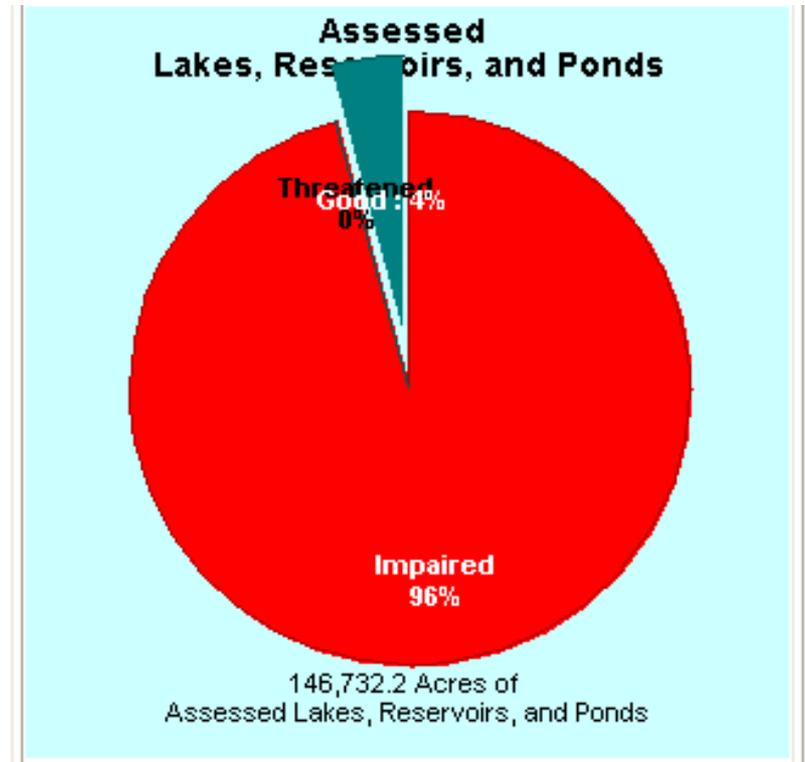
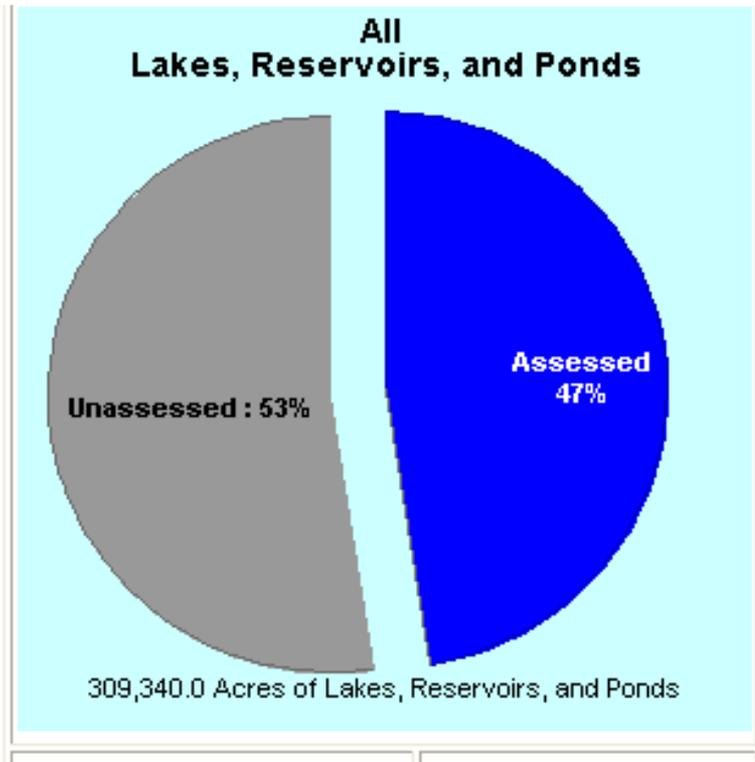
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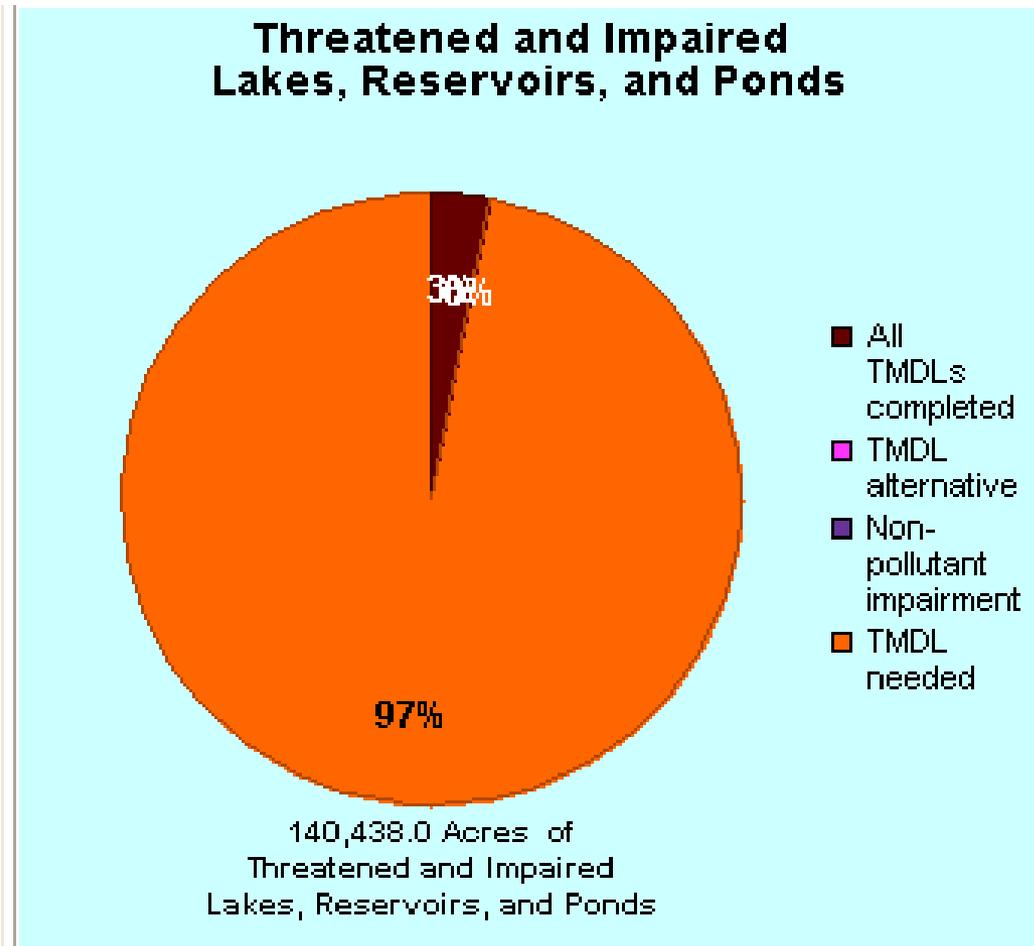
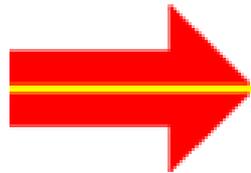
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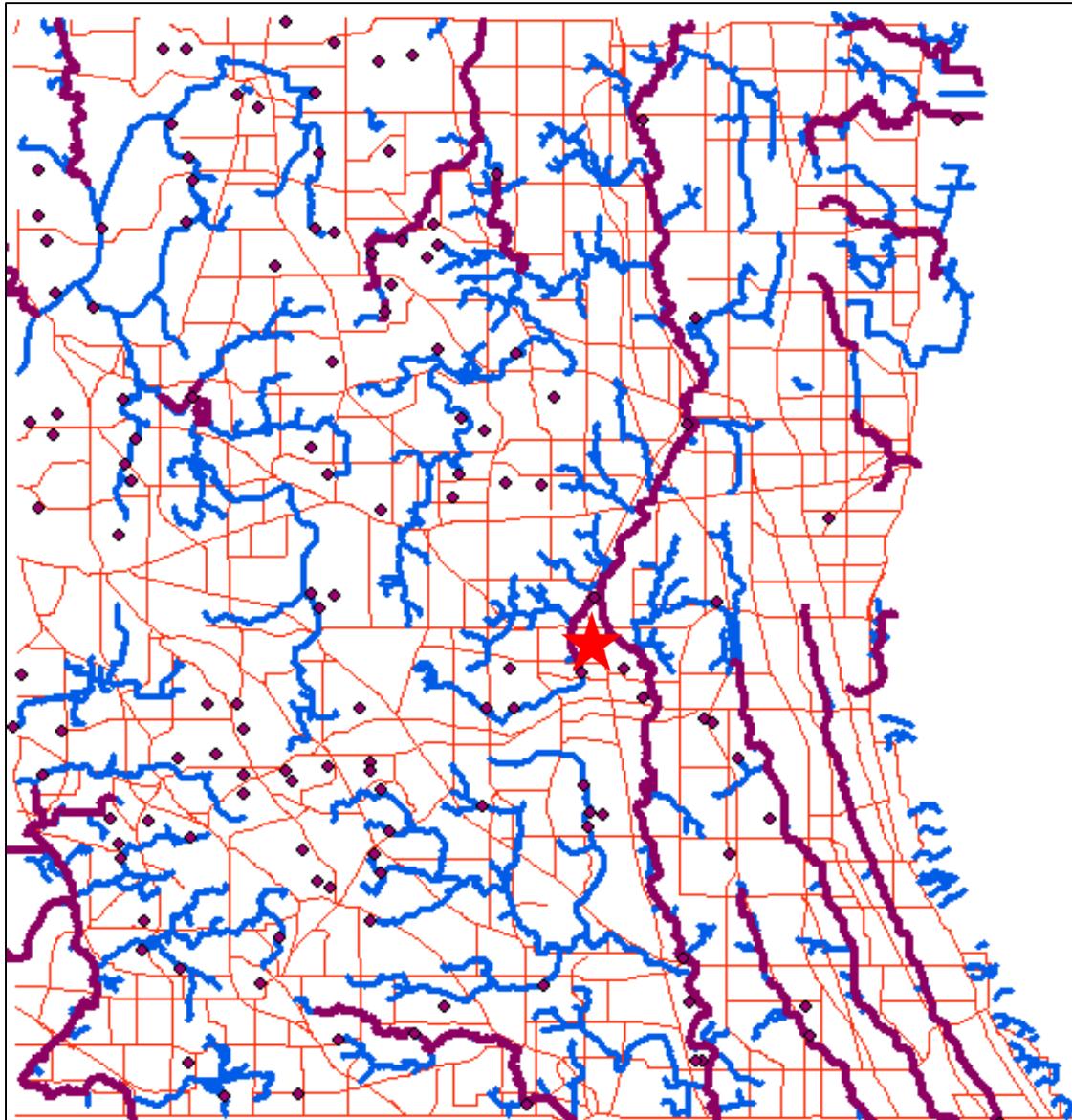
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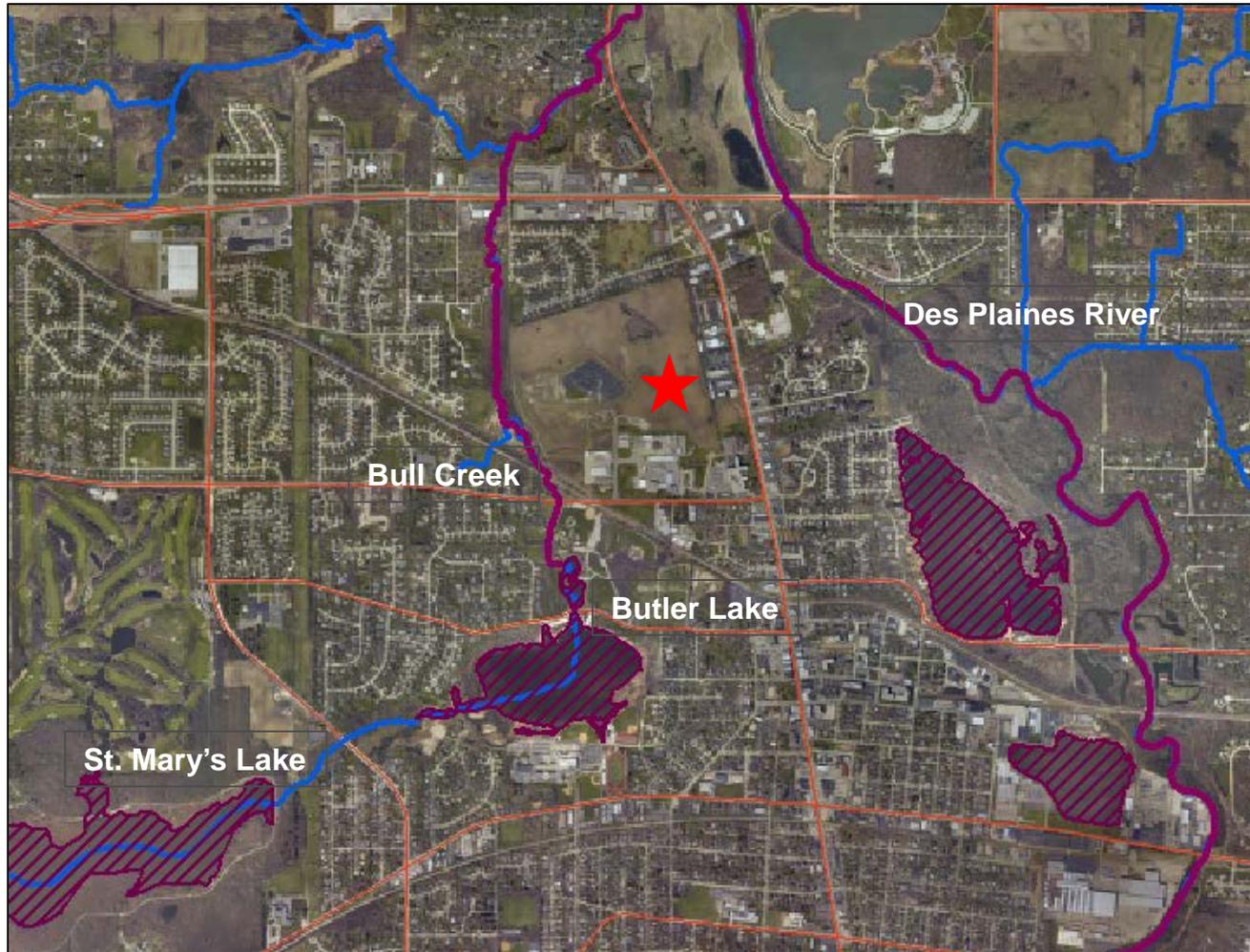
Impaired Waters



-  Streams meeting WQS, or not yet assessed
-  Impaired Streams
-  Impaired Lakes



Impaired Waters



— Streams meeting WQS, or not yet assessed

— Impaired Streams

▨ Impaired Lakes



303 (d) List per 3-29-10 draft report

Segment	Impaired DU	Potential Cause	Potential Source	TMDL Status
Butler Lake	Aesthetic Quality	TSS ¹ , P ² ,	road runoff, shoreline, streambank, waterfowl, urban point & non-point, unknown	Needed ('10-'12)
St. Mary's Lake	Aesthetic Quality	TSS ¹ , P ²	contaminated sediment, shoreline, streambank, urban point & non-point, unknown	Needed ('10-'12)
Bull Creek	Aquatic Life	As ³ , Mg ⁴ , Pesticide ¹	Contaminated sediment	Needed (??)
Des Plaines	Fish Eating	PCBs ⁵ & Hg ⁶	Atmospheric Deposition (Toxics), unknown	Needed (??)

¹ Total Suspended Solids (needs numeric WQS)

² Phosphorus

³ Arsenic

⁴ Magnesium

⁵ Polychlorinated biphenyls

⁶ Mercury



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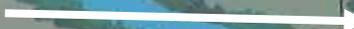


NPDES Stormwater Program

Industrial



Municipal

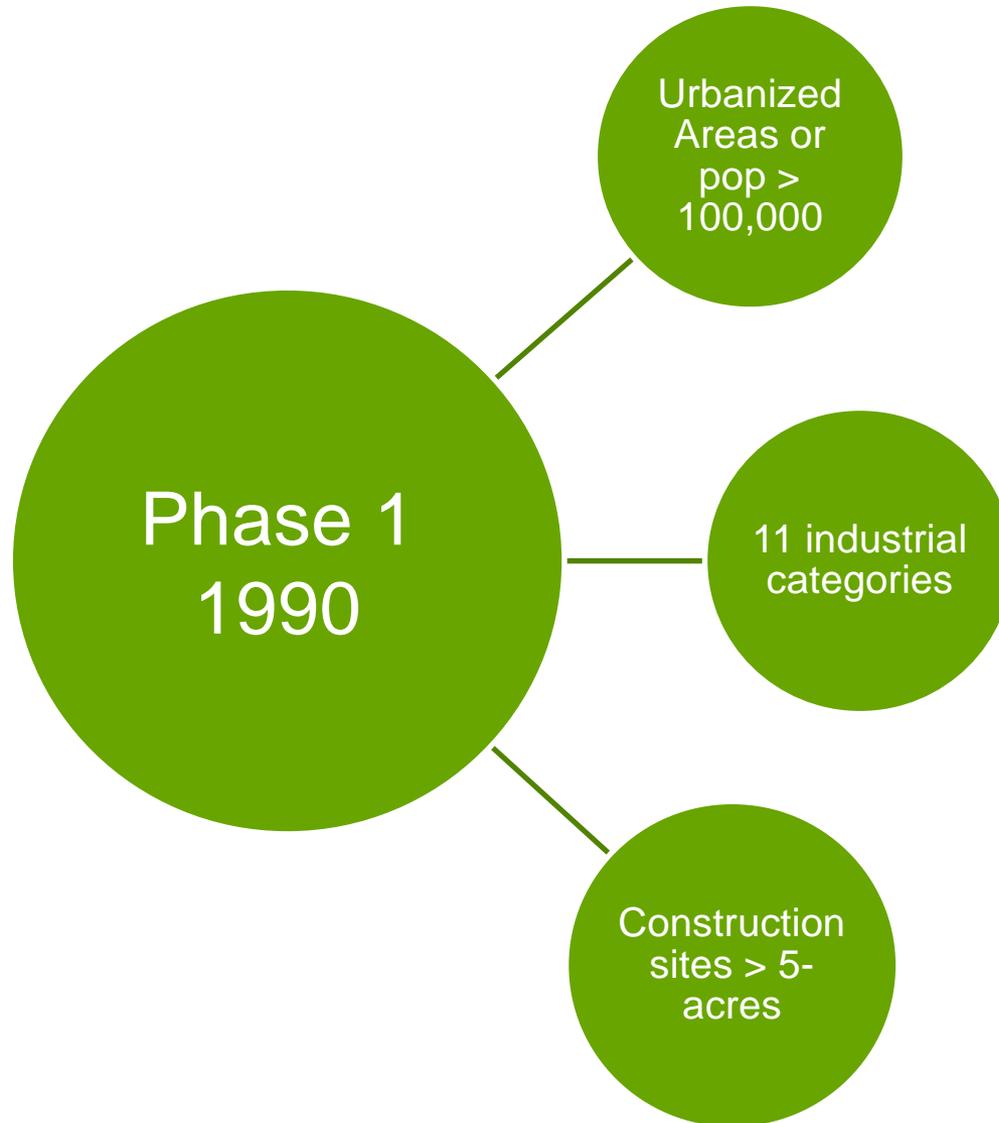


Construction

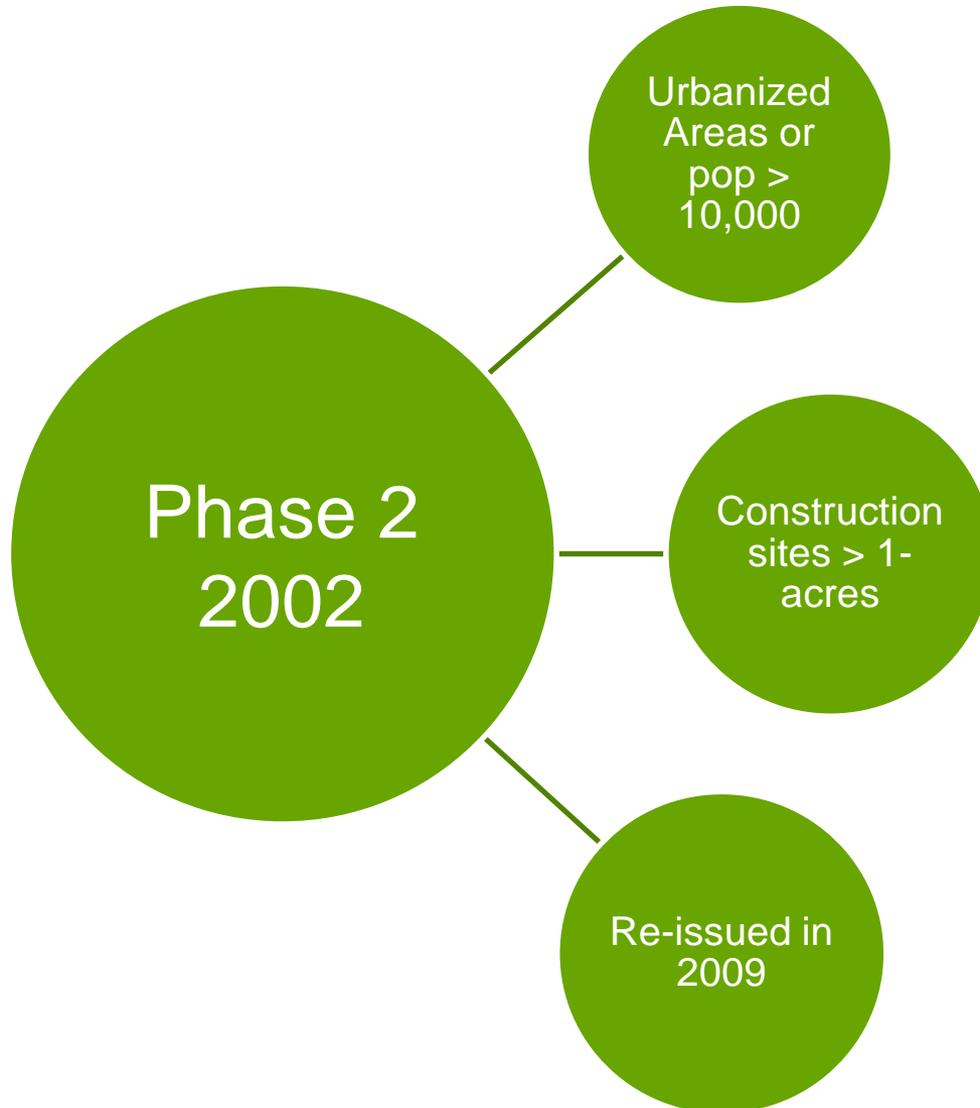


Courtesy: Nikos Singelis, U.S. EPA

NPDES



NPDES



Original Permit (2002-2009)

Stormwater Management Program Plan



Independence Grove Forest Preserve - Libertyville, IL Photo by: Sharon Doty

(INSERT MS4 NAME)

LAKE COUNTY, ILLINOIS

(INSERT EFFECTIVE DATE)

- Required stormwater management programs
 - **BMPs to address six minimum control measures**



Revised Permit (2016 -)

General NPDES Permit No. ILR40

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand East
P.O. Box 19276
Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

General NPDES Permit For Discharges from Small Municipal Separate Storm Sewer Systems

Expiration Date: February 28, 2021

Issue Date: February 10, 2016

Effective Date: March 1, 2016

In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of only storm water from small municipal separate storm sewer systems (MS4s), as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit a Notice of Intent (NOI) as described in Part II of this permit to the Illinois Environmental Protection Agency (Illinois EPA). Authorization, if granted, will be by letter and include a copy of this permit.


Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

NPDES/Hutton/stormwater/MS4/MSFinal2-9-16.daa

- Expanded requirements for stormwater management programs



Where Are We At?

Year 9 Just
Began

Proposed
WDO
Amendments

SMPP
Revisions

Year 8
Annual
Report Due
by June 1

Continuing
Program
Support



Where are we at...

Proposed WDO Amendments

2

- To enhance the DECI program and to match IEPA NPDES requirements.

10

- To the Runoff Volume Reduction Hierarchy section in accordance ILR40 green infrastructure and other post construction control runoff control measure requirements.

2

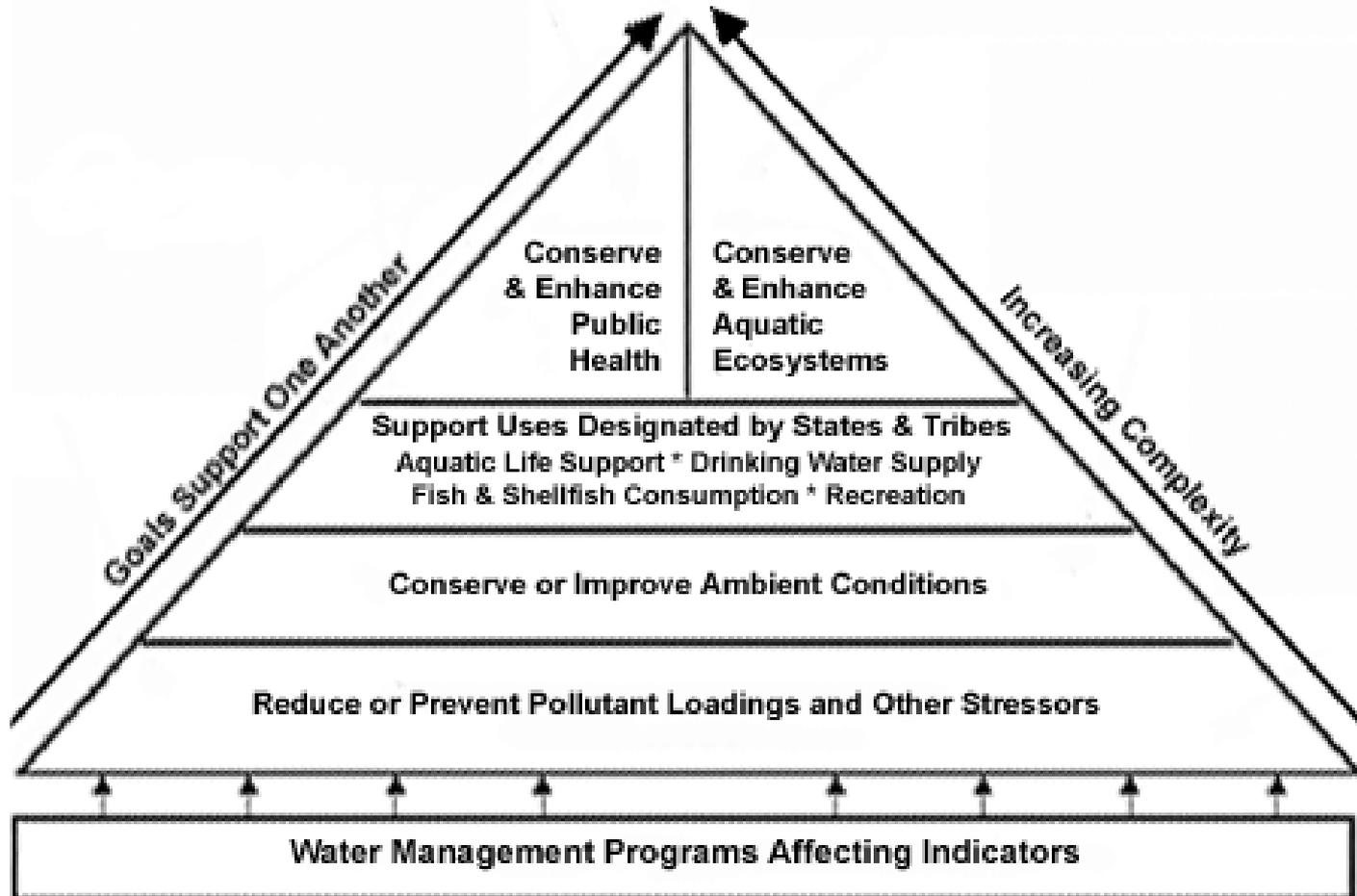
- Regarding Effluent Limitation Guidelines Amendments (per IEPA NPDES & USEPA pending regulations)



Where are we at...

SMPP Revisions

V. C. 1. The status of compliance with permit conditions, an assessment of the appropriateness of your identified best management practices and progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP, and your identified measurable goals for each of the minimum control measures;



Environmental Indicators for assessing Stormwater Programs

Water Quality Indicators

- Water quality pollutant constituent monitoring
- Toxicity testing
- Loadings
- Exceedance frequencies of water quality standards
- Sediment contamination
- Human health criteria

Physical & Hydrological Indicators

- Stream widening/downcutting
- Physical habitat monitoring
- Impacted dry weather flows
- Increased flooding frequency
- Stream temperature monitoring

Biological Indicators Fish assemblage

- Macroinvertebrate assemblage
- Single species indicator
- Composite indicator
- Other biological indicators



Environmental Indicators for assessing Stormwater Programs

Social Indicators

- Public attitude surveys
- Industrial/commercial pollution prevention
- Public involvement & monitoring
- User perception

Programmatic Indicators

- Number of illicit connections identified/corrected
- Number of BMPs installed, inspected & maintained
- Permitting & compliance
- Growth & development

Site Indicators

- BMP performance monitoring
- Industrial site compliance monitoring



Where Are We At?

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SMC supports all Lake County MS4s regulated under IEPA's NPDES Program

Provides a forum for inter-jurisdictional coordination

- Municipal Advisory Council (MAC)

Provides technical assistance

- Stormwater Management Program Plan (SMPP) template
- Program tracking forms
- **Annual Facility Inspection Report (AFIR) template**

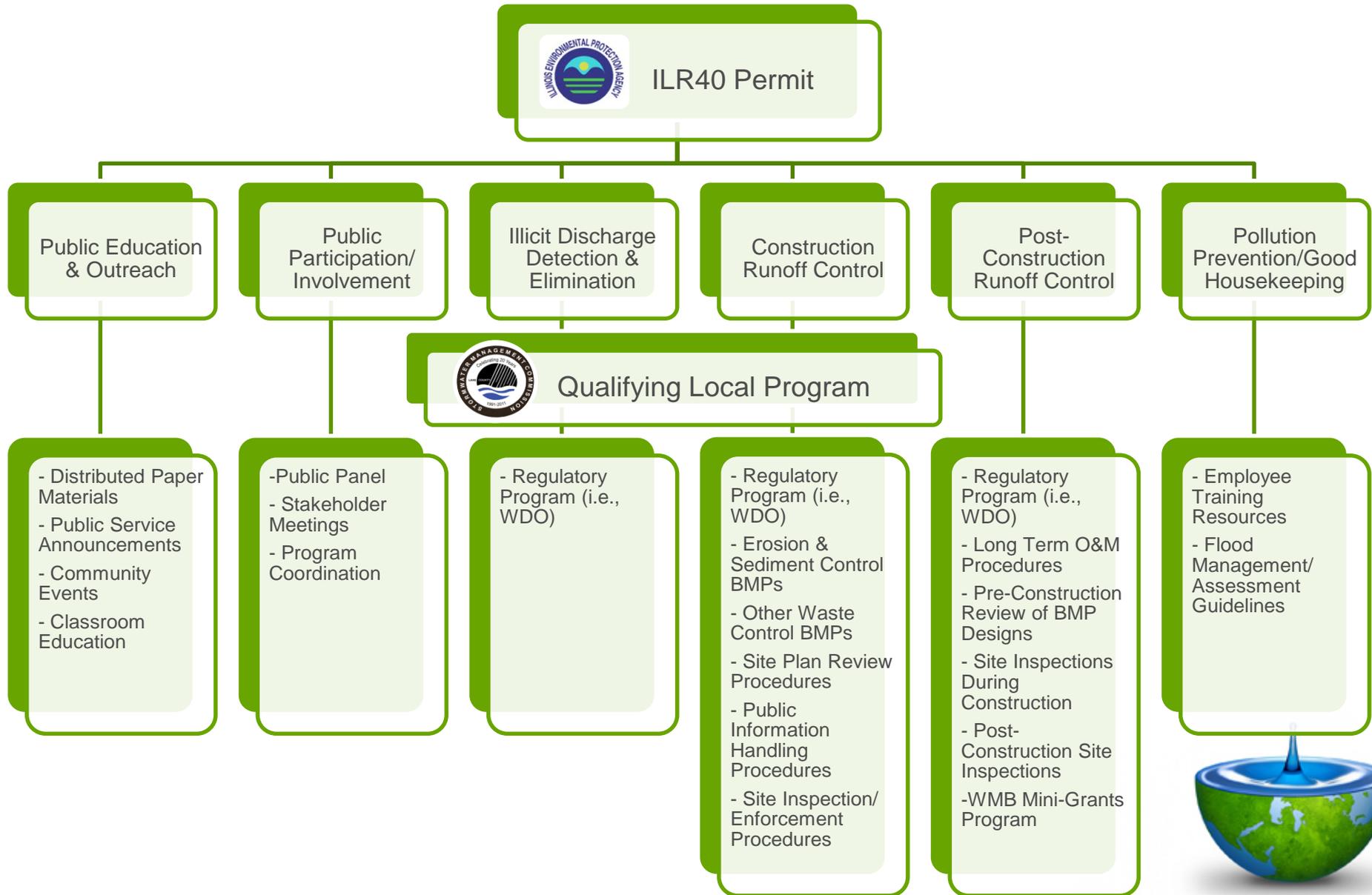
Serves as a Qualifying Local Program

- Communities should take credit for this "program"

Lake County MS4s



SMC's Qualifying Local Program touches all six minimum control measures



**For additional technical assistance,
please contact:**

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Water Resources Professional
500 W. Winchester Rd
Libertyville, IL 60048
(847) 377-7715
mnovotney@lakecountyil.gov



Year 8 Annual Facility Inspection Report (AFIR) Template

