Clean Water Act

Master Water Steward
March 3, 2015
Faye Sleeper, Interim Director
Water Resources Center

Clean Water Act Overview

- **Clean Water Act Overview**
- **Local and State governance**

- **Questions from articles as they fit into lecture**
- **Quick write/draw**

Clean Water Act Context: Environmental Conditions

- Condition of surface waters
  - Potomac River
  - Cuyahoga River
  - Lake Erie and Ontario
  - Soybean oil spill in MN River

Clean Water Act Context: Societal Action

- 1960s – time of protest
- First earth day
- Upsurge in citizen lawsuits over industrial discharge
- Outrage over environmental conditions

THE GAYLORD NELSON NEWSLETTER

Washington, D.C. May 1970

Earth Day - 1970

Mass Movement Begins

In New York City, thousands of persons thronged in the warm Spring sunshine, and the world-famous Fifth Avenue belonged to the people.

For a few hours, a small portion of the great city banned motor vehicles, and people promenaded on a proud boulevard usually congested with buses, taxies and cars. It was April 22--Earth Day in New York--and it was a holiday. Assistant Chief Inspector Arthur Morgan, who was in charge of the police on the scene, observed:

"Everyone's Beautiful"

"Everyone's beautiful. Just look at them. We're actually enjoying it."

In Madison, Wis., Earth Day was observed at sunrise over Lake Mendota with a Sanskrit invocation and a reading of the last chapter of the Book of Genesis with an apology to God for man's assaults on the landscape.

Earth Day observers in Milwaukee nominated the toad, the praying mantis and the ladybug as substitutes for DDT.

Thousands Marched

In Greensboro, N.C., in Atlanta, Ga., and in Miami, Fla., thousands marched in demonstrations for a clean environment. The Governor of Maine called for the Earth Day commitment to be "a truly lasting one," and the mighty Chicago Tribune observed incredulously that, after demonstrations on the city's broad new Civic Center Plaza, "there was no post-rally litter remaining to be cleaned up."

A new movement had begun, and uncounted millions--students, laborers, farmers, housewives, politicians, professional people, liberals and conservatives--who might have found it difficult to find common agreement on any other subject, were gathering together in a massive educational effort to talk about survival and the quality of survival in a world they all share.

In the little more than seven months after Sen. Gaylord Nelson suggested the idea of national teach-ins to discuss the crisis of the environment, the movement grew rapidly through March and April. On Earth Day, it was estimated that 2,000 college campuses, 2,000 community groups and 10,000 elementary and secondary schools were holding events.

In some places it was as the poet exclaimed while watching a rally of 30,000 in Philadelphia's Fairmount Park, an "educational picnic;" in others it was the serious business of government.

Special Legislation

During April, the state legislature of Massachusetts and the House of Representatives in Pennsylvania set aside time for important addresses on the environment and the introduction and passage of legislation aimed at protecting, preserving and restoring the environment.

Scientists, ecologists, environmentalists, educators and political leaders warned darkly before massive gatherings and small meetings that time was running out for the world and that all men had a responsibility to themselves and to leave a legacy of life for their children.

500 Invitations

Senator Nelson, who received nearly 500 invitations to speak at Earth Day observances, described the national teach-ins as "dramatic and successful" in their educational value, but warned that Earth Day

Clean Water Act Context: Values

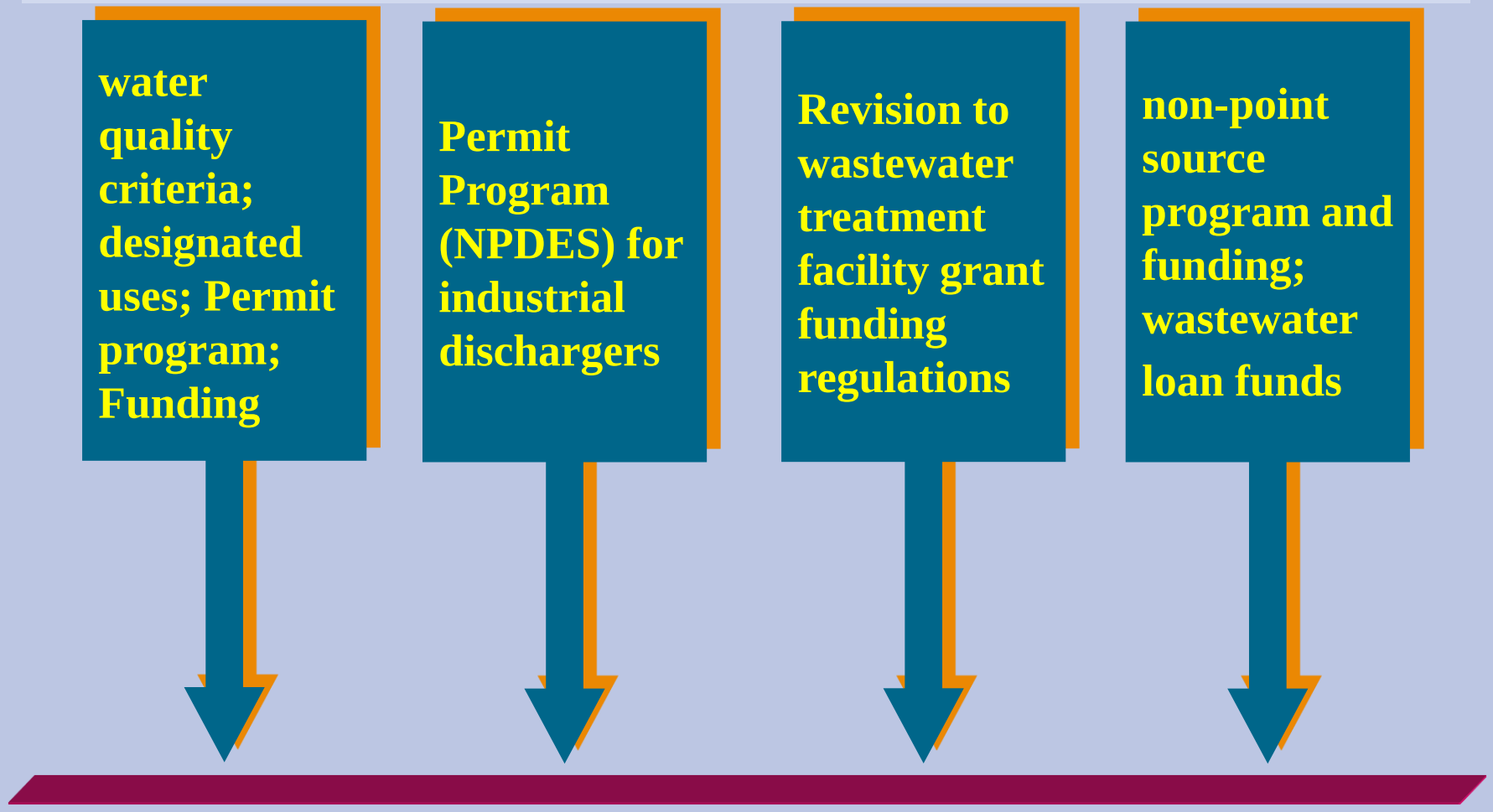
- Human Health – pre-1960s
- Water Quality Act of 1965 – aquatic life and recreation
- 1970 executive order – Refuse Act Permit Program

Four Key Precepts

40 Years of Public Policy Decisions

- No right to pollute
- Permits required to discharge pollutants
- Use best technology possible
- Higher standards only based on receiving waters

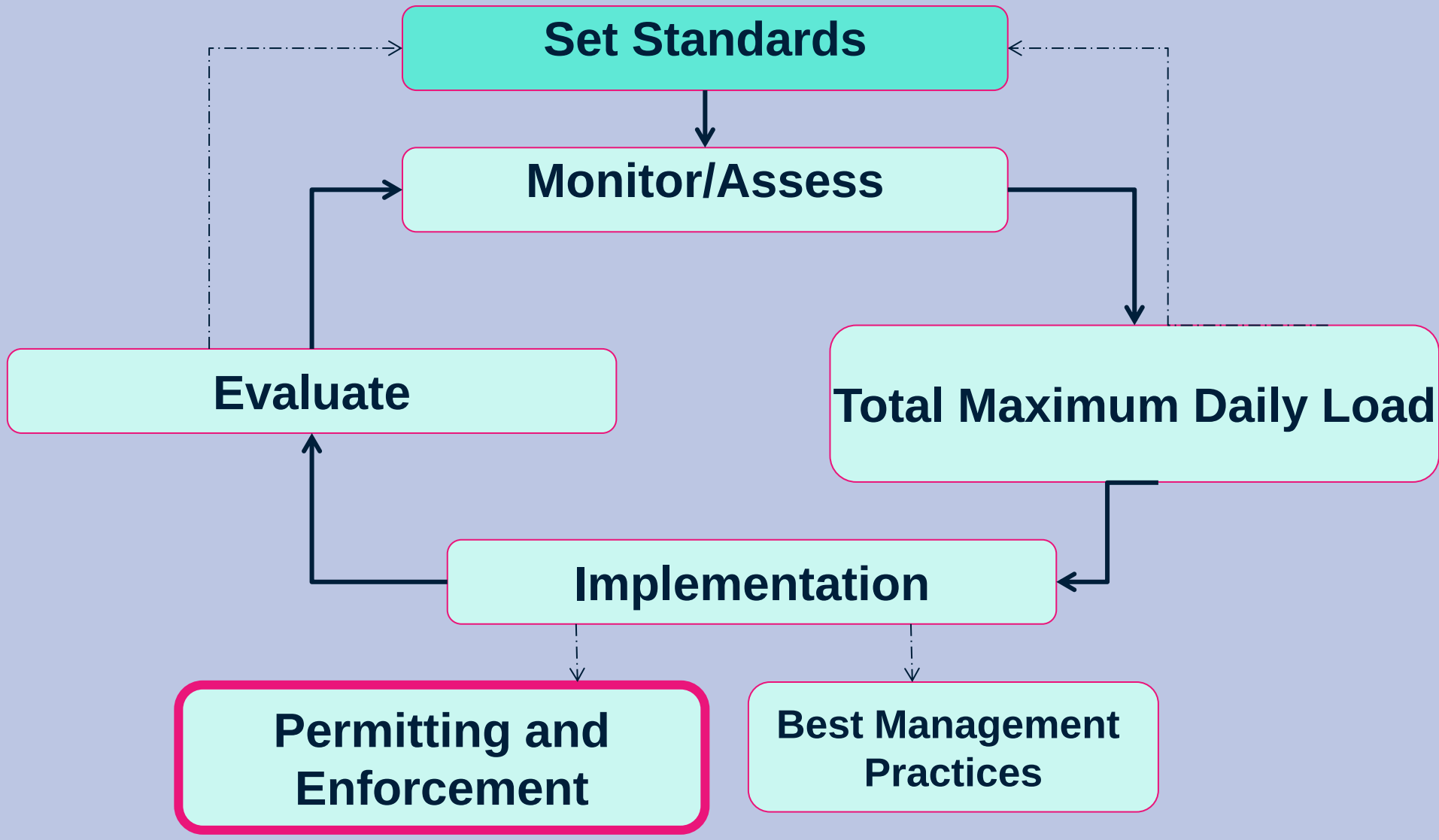
Clean Water Act Timeline



CLEAN WATER ACT

- Delegation to states
  - EPA oversight role
  - States can establish more stringent rules
  - EPA can over-file
  - Border Waters
  - EPA can withdraw delegation

Current Process – Integrating Both Pathways



Water Quality Standards

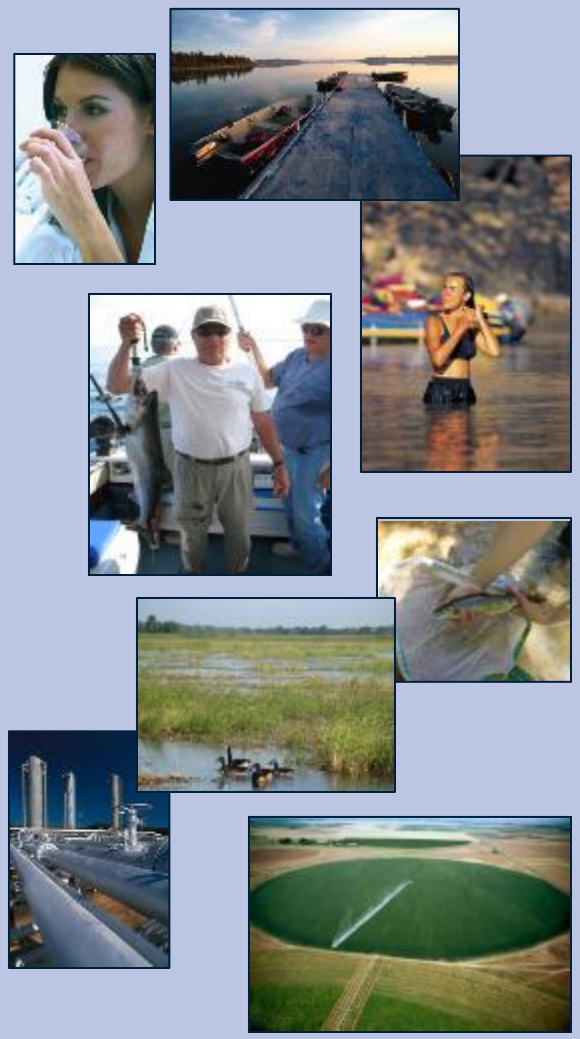
- Fundamental tool of the Clean Water Act
- CWA objective:
  - "Restore and maintain the chemical, physical and biological integrity of the nation's waters"
  - "Fishable and swimmable" interim goal
- Address three key questions:
  1. What and who are we protecting?
  2. What conditions are protective?
  3. How do we maintain high water quality?

Setting Water Quality Standards

- Set in 1974
- Determine the use of the water body, what conditions are protective of those uses and ensure protection of those waters that are already good (anti-degradation)
- Eg.
  - Use: swimming and recreation
  - Limiting Phosphorus to 30 ug/L

Beneficial Uses

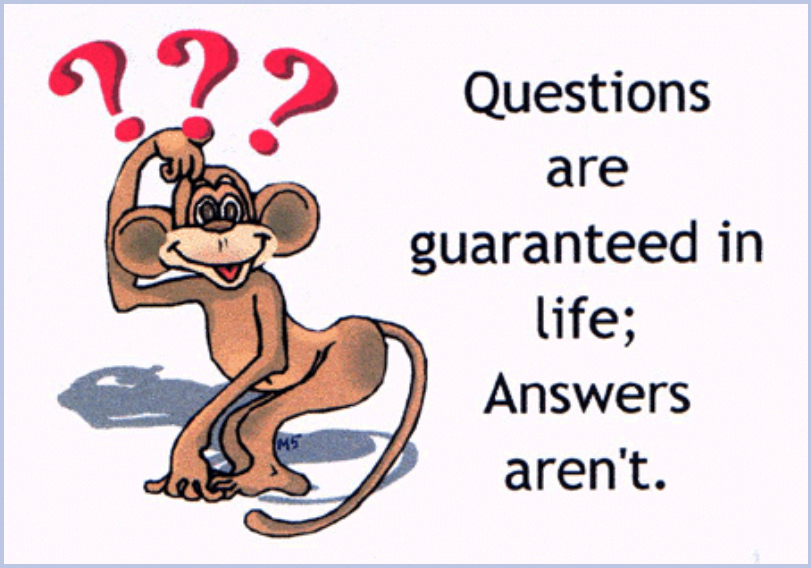
- Seven classes in MN Rules:
  1. Drinking water
  2. Aquatic life and recreation
  3. Industrial use and cooling
  4. Agricultural and wildlife use
  5. Aesthetics and navigation
  6. Other uses
  7. Limited resource value
- Waters have multiple uses
- Existing, designated



Questions and Quick Write

Ask questions/any questions from your article?

What do you want to remember – 2 minutes



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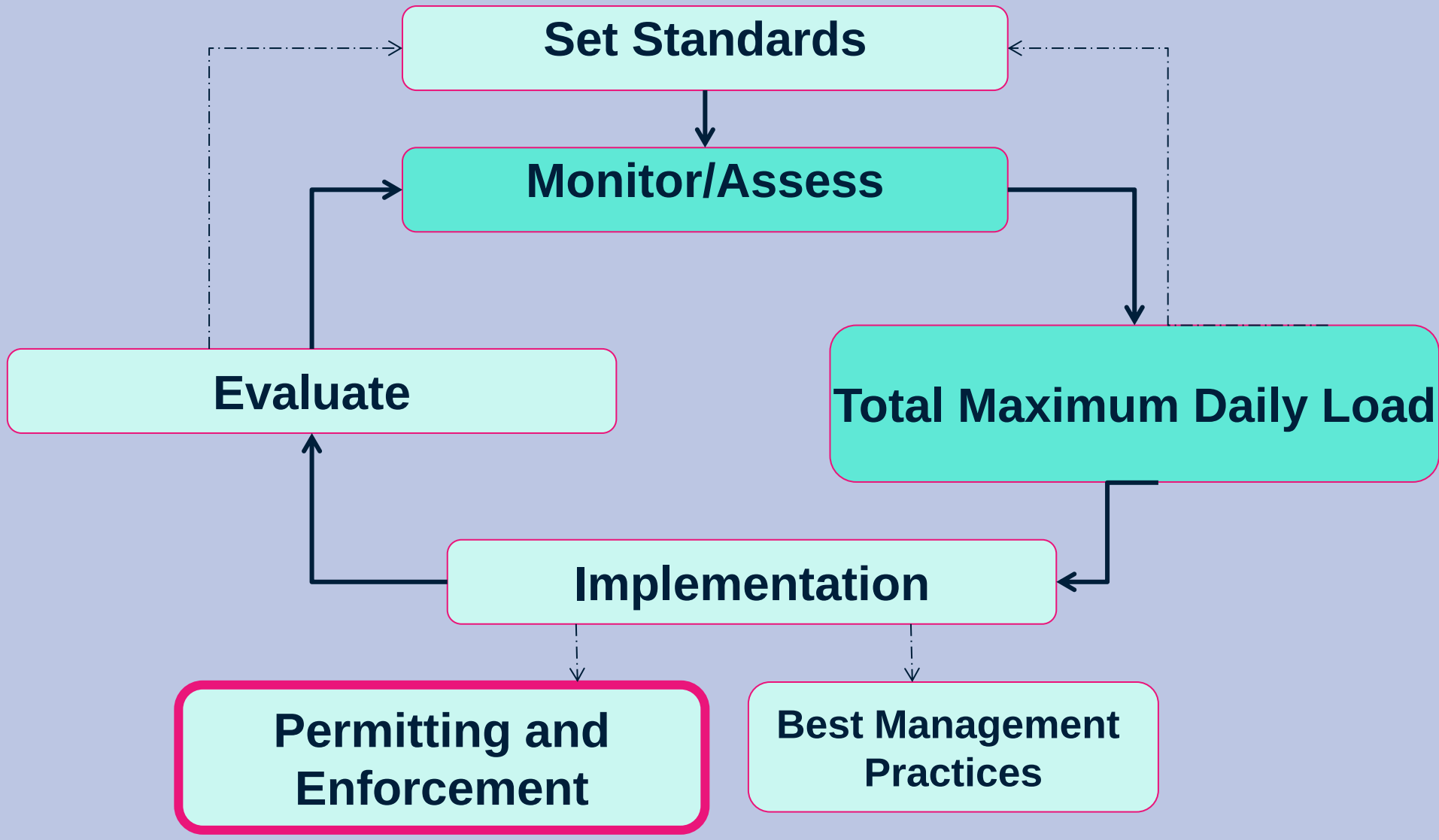
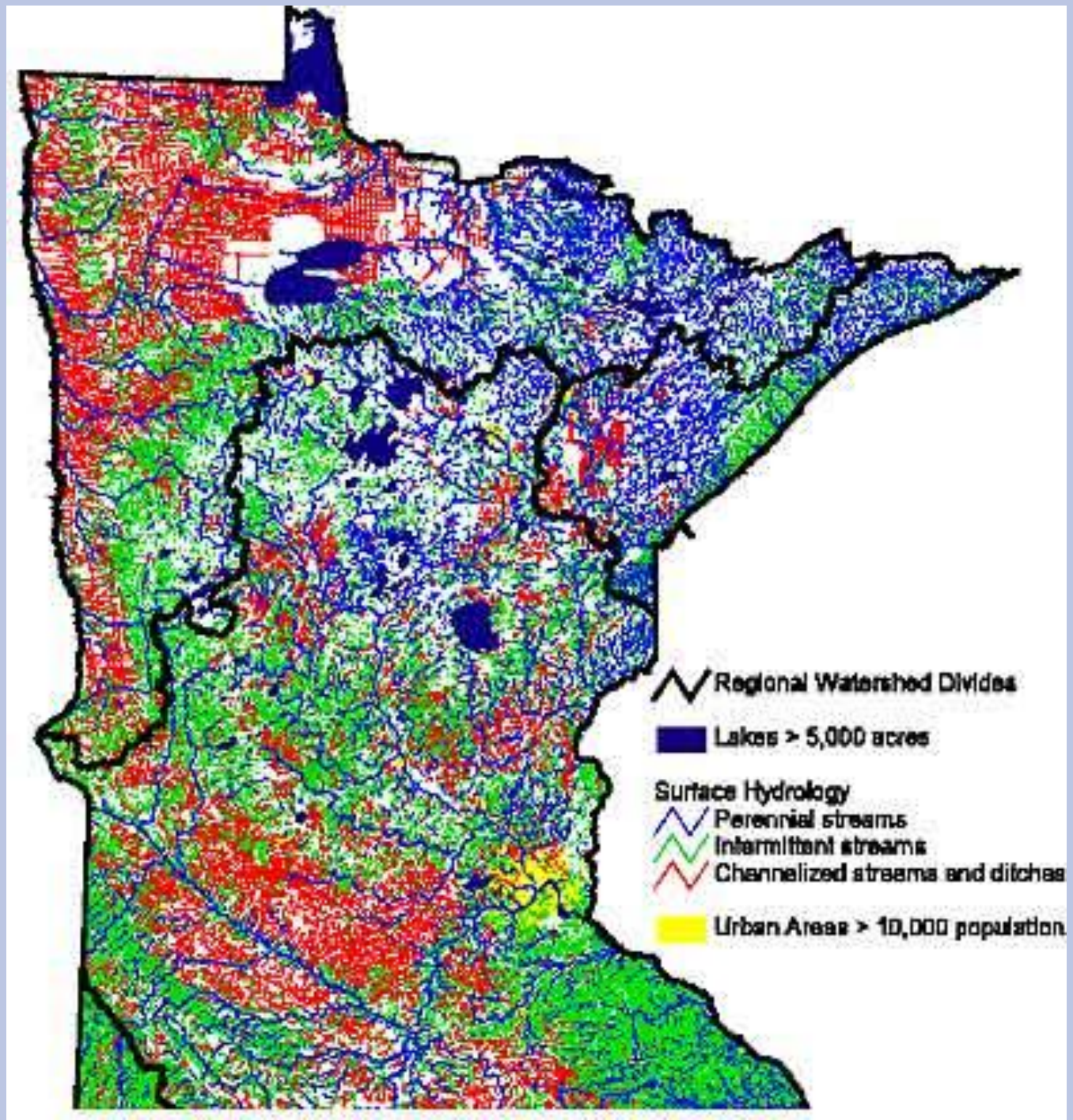
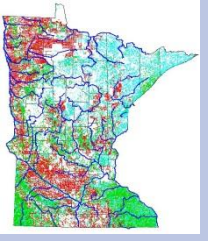



Regional Watershed Divides
Lakes > 5,000 acres
Surface Hydrology
Perennial streams
Intermittent streams
Channelized streams and ditches
Urban Areas > 10,000 population



Rotating Through the Major Watersheds on a Ten-Year Cycle

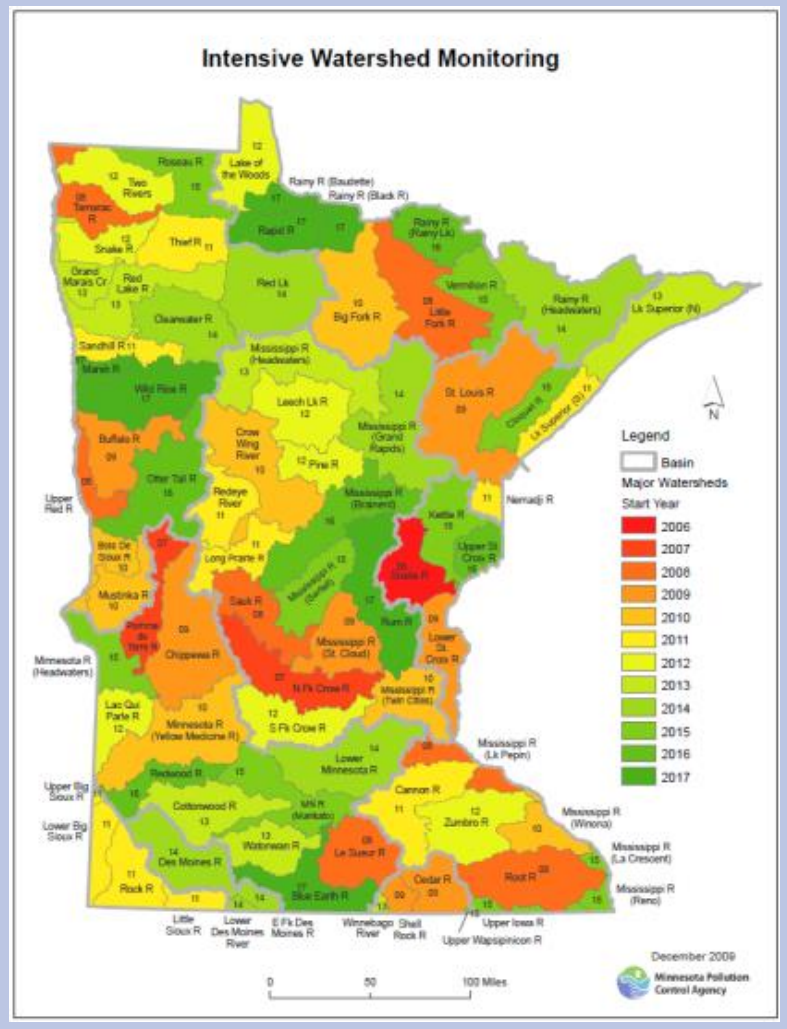
Monitoring and Assessment
Condition monitoring
Effectiveness monitoring

Every 10 Years

Watershed Restoration and Protection Strategy
TMDL
Protection Strategy
Implementation Plans

Implementation Activities
BMPs
Permits
etc

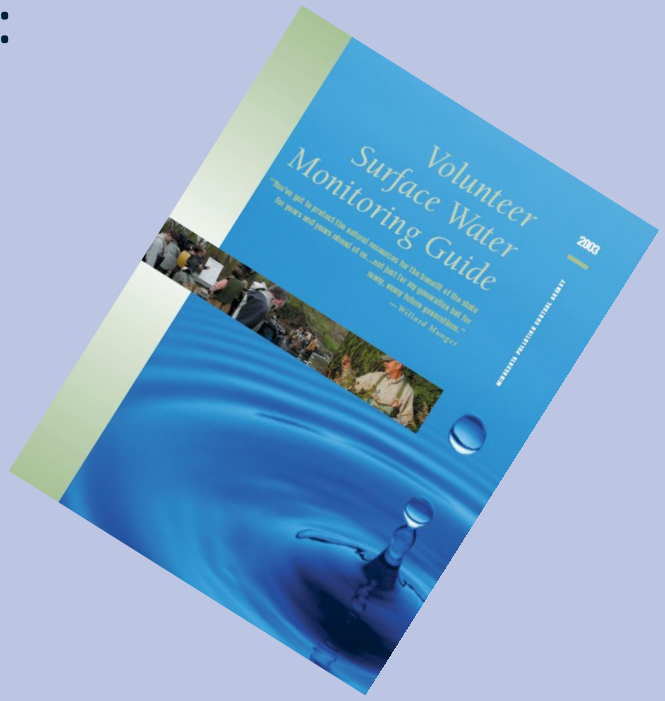
Goals of Monitoring



- Monitor/assess waters on a 10-year cycle
- Integrate agency, citizen & local efforts
- Assess conditions (not just impairments)
- Identify stressors
- Inform TMDL/protection strategy development
- Track trends
- Report to Congress every 2 years

Assessment

- Compare monitoring results to standards
- Waters identified as supporting beneficial use, not supporting use, or not assessed
- In selecting monitoring data, consider:
  - Data quality
  - Monitoring design/purpose
  - Frequency of exceedence
  - Local knowledge



What is a Total Maximum Daily Load

Calculation for waters that do not meet standards

Point source

(Waste Load Allocation)

+

Nonpoint source

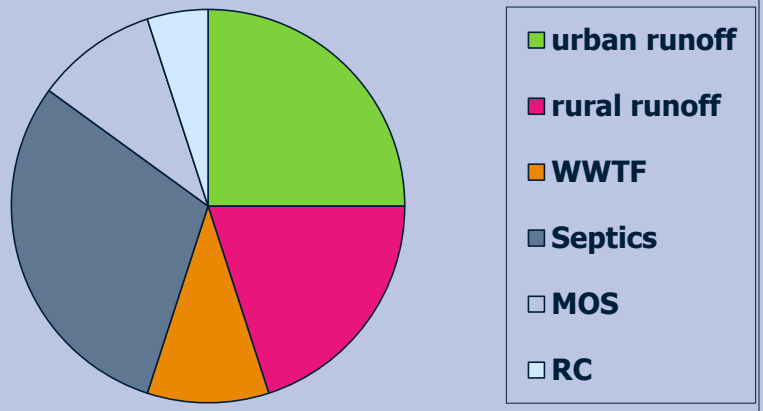
(Load Allocation)

+

Margin of safety

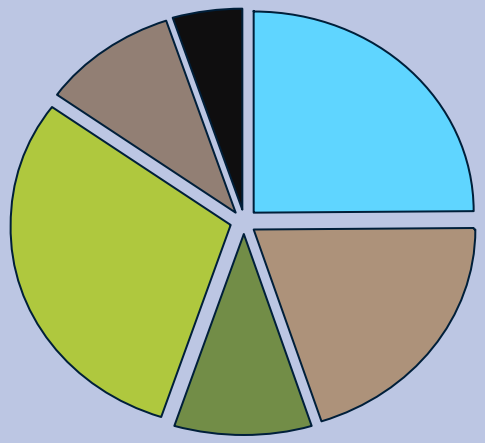
(+ reserve capacity)

Example Allocation

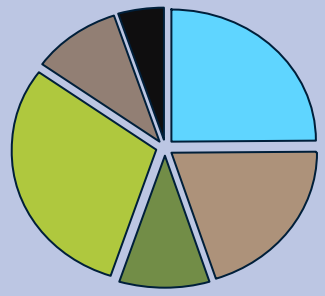


Reducing the pollutant load

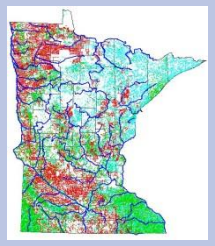
Current Allocation



Future Allocation



- urban runoff
- rural runoff
- WWTF
- suburban runoff
- MOS
- RC



Watershed Restoration and Protection Strategy

The goal is clean water. To get there we are:

- Monitoring all 81 watersheds by 2017; by watershed
- Monitoring: chemical, physical and biological
- Protection and restoration strategies
- Taking a comprehensive, focused and targeted approach
- Adapting – revisit and build off what's been done and see if it's working
- Incorporates TMDLs

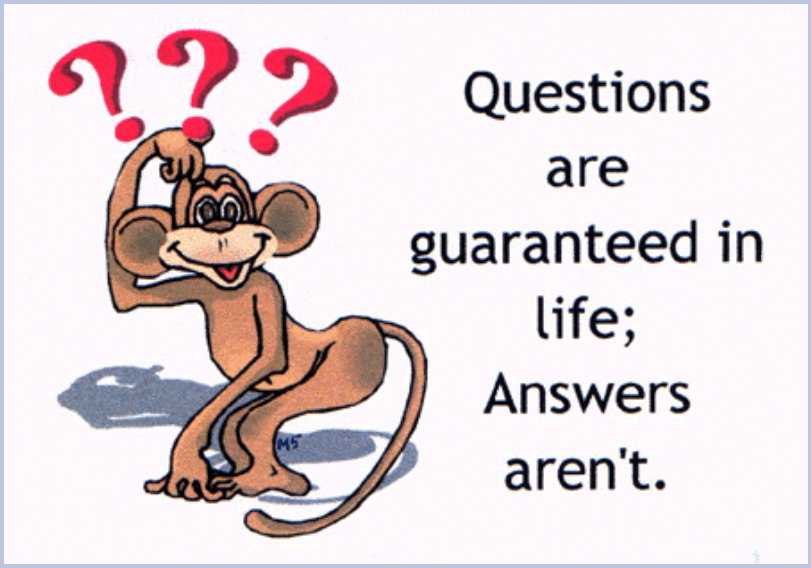
Implementation Table

Water Quality Parameter	Current Conditions	Water Quality Targets by Parameter.	Strategies	Required Adoption Rate	Measures	Who	Milestone
Total Suspended Solids Watershed Derived Sediment: approx. 35% Pervious Areas by land-use category	**Current Loading by Flow Zone all sources.** Very High – 29 T/day High 4.9 T/day Mid - 1.6 T/day Low – 0.49 T/day Very low – 0.027 T/day	TSS levels reduced by _% by flow zones, to achieve WQ standards. Moving the 90% to 52mg/l TSS. **Loading Capacity by Flow Zone all sources.** Very High – 15 T/day High – 3.1 T/day Mid - 1.2 T/day Low – 0.40 T/day Very low – 0.027 T/day	**Source Prevention:** **Interception & Treatment:** **In-Channel Work:**	All cropland continuously protected by 30% residue or equivalent. 100 year flood plan in permanent vegetation. * Top 5% of EBI areas protected. *	Percent of TSS reduced by flow zone per year to meet TMDL reduction targets	Land-owners SWCD BWSR NRCS	100% in 10 years. 10% or more protected during each year.
Total Suspended Solids Watershed Derived Sediment: Impervious Areas. - MS4	NA this watershed	TSS levels reduced by _% to achieve WQ standards. BMPs designed to achieve target levels.	**Source Prevention:** **Interception & Treatment:** **In-Channel Work:**	Compliance with SWPPP	None – no MS4s in watershed	NPDES Permit Holders MS4s.	Schedule of Compliance if needed.
Total Suspended Solids Near-Channel Derived Sediment. Approx. 65%		TSS levels reduced by _% to achieve WQ standards. Moving the 90% to 52mg/l TSS. Channel embeddedness.	**Source Prevention:** **Interception & Treatment:** **In-Channel Work:**	100 year flood plan in permanent vegetation. * Top 5% of EBI areas protected. *	Percent of TSS reduced from near channel sources to meet TMDL reduction targets	Land-owners SWCD BWSR NRCS	100% in 10 years. 10% or more protected during each year.
Phosphorus Nonpoint Phosphorus – by land-use category	**Current Loading by Flow Zone all sources.** Very High –82 lbs./day High – 8.4 lbs. /day Mid - 2.4 lbs./day Low – 0.90 lbs./day Very low – 0.15 lbs./day	Reduce phosphorus levels to FWM 18.4 lbs. /day or less. This level set to achieve compliance with D.O. WQ standard during 7Q10 flows. WLA – 0.02 lbs./day MOS 1.84 lbs./day LA: Very High –27 lbs./day High – 4.7 lbs. /day Mid - 1.6 lbs./day Low – 0.69 lbs./day Very low – 0.13 lbs./day	**Source Prevention:** **Interception & Treatment:** **In-Channel Work:**	All manure applied at agronomic rates for phosphorus. 25 foot permanent vegetation buffers around all pasture lands.*	Percent of flow-weighted mean goal achieved from nonpoint sources	Land-owners SWCD BWSR NRCS	100% in 10 years. 10% or more protected during each year.

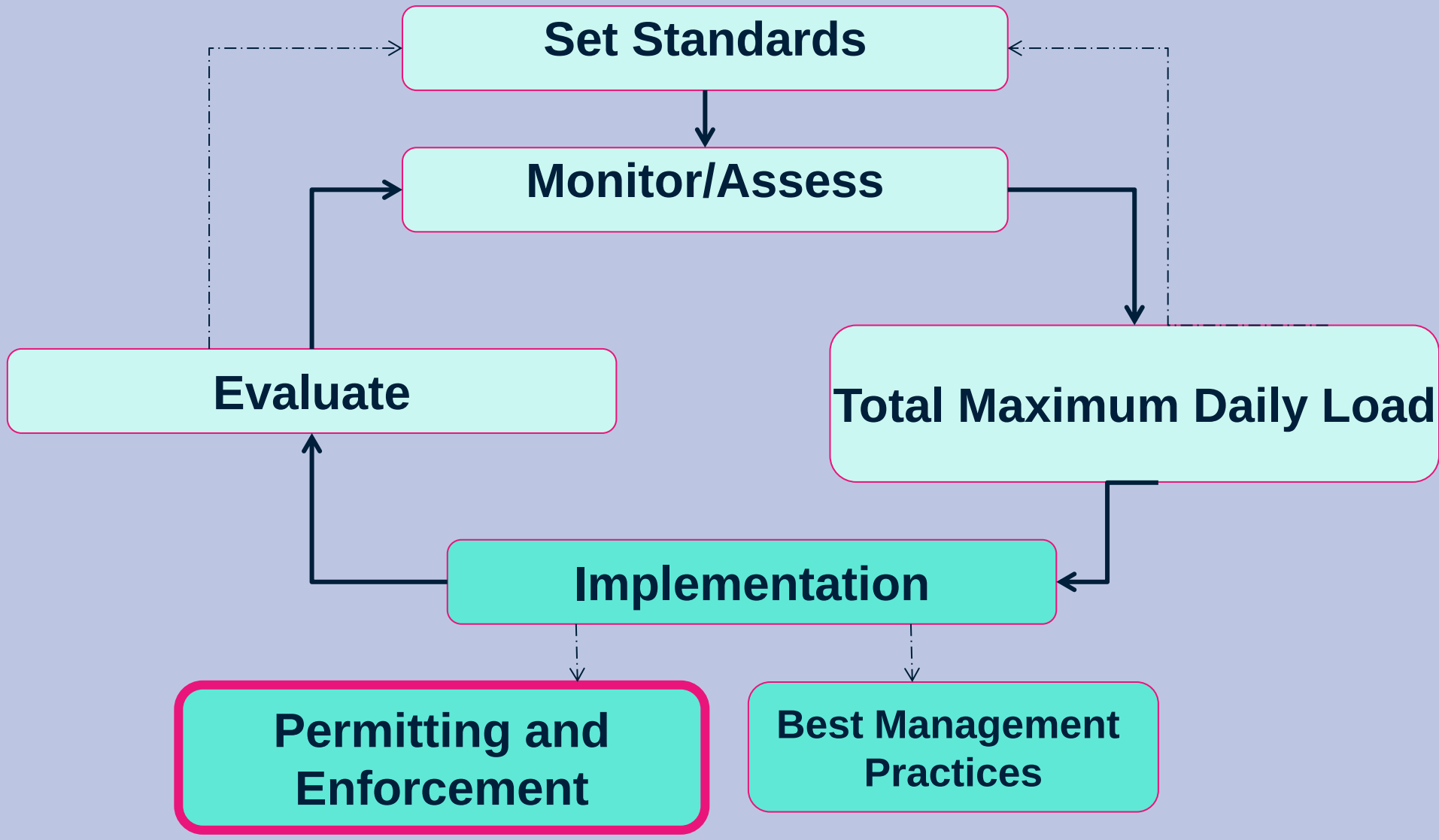
Questions and Quick Write

Ask questions/any questions from your article?

What do you want to remember – 2 minutes



Current Process – Integrating Both Pathways



Implementation : Regulatory and Voluntary

- Regulatory (through the Permits)
  - Industrial and Municipal wastewater
  - Large Animal Feeding operations
  - Permitted Storm water
- Voluntary (incentives)
  - Non-permitted urban run-off
  - Agricultural run-off
  - Septic Systems

Municipal Wastewater Treatment - Regulatory

- National Pollutant Elimination Discharge System (NPDES) Permit
- Direct discharge into waters of the United States
  - Navigable waters and tributaries
  - Interstate waters
- Storm water used to flow into the sanitary sewer

Storm water

- Three permit types
  - Municipal Separate Storm Sewer System (MS4)
  - Industrial
    - Certain industries
    - Plan similar to MS4
  - Construction
    - 1 acre more
    - Plan similar to MS4

Storm water – Urban Runoff (MS4)

- Who is covered
  - Publicly owned or operated storm water infrastructure
  - Cities, townships, public institutions
  - Within Minnehaha Creek Watershed District

Municipal Separate Storm Sewer System

- No effluent limits
- Storm water Pollution Protection Plan
  1. Public education
  2. Public participation
     - Annual meeting and report
  3. A plan to detect illicit discharges

Municipal Separate Storm Sewer System

- Six elements
  4. Construction-site runoff controls
  5. Post construction runoff controls
  6. Storm water Pollution Prevention Plan (SWPPP)

Clean Water Act
What isn't regulated

- Ground water
  - State protection, no federal
- Septic Systems
  - State law, no federal
- Agricultural runoff
  - Huge controversy

Non-regulated “urban/rural” runoff

- Not under a permit
- Smaller municipalities and rural communities
- Voluntary measures
  - Rain gardens
  - Buffers
  - Keeping water where it falls
  - Homeowners and businesses

Voluntary Agricultural restoration

Board of Water and Soil Resources Photo

Pennsylvania Dept. of Transportation Photo

Storm Water Pollution Prevention Plan

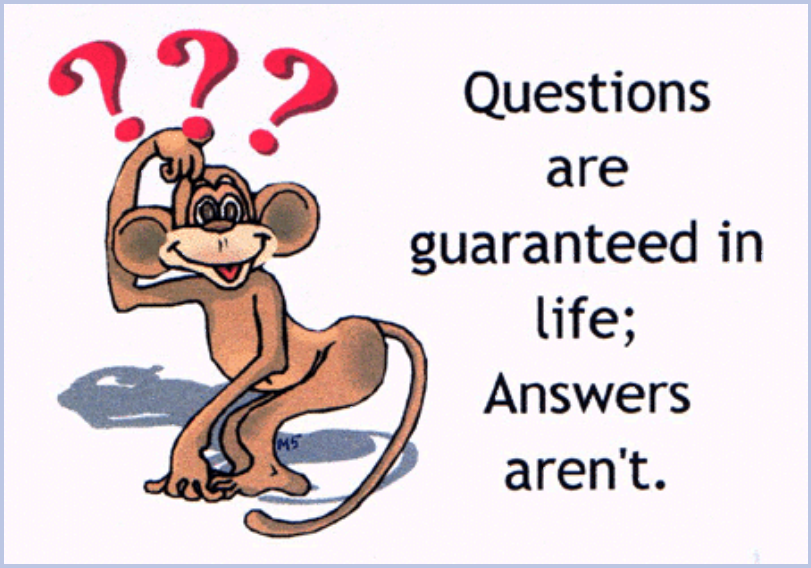
- Where do Master Water Stewards fit?
  - 10 minute exercise

- Groups: Minneapolis, St. Louis Park, Edina
  - Look through SWPPP – figure out where you can have influence/fit.

Questions and Quick Write

Ask questions/any questions from your article?

What do you want to remember – 2 minutes



Primary State Agencies – Water Responsibilities

Agency	A Primary role	Other roles
Agriculture	Pesticides	loan program; ag/water research
Environmental Quality	Water plan	Coordination, environmental review
Health	Drinking water	Ground water
Natural Resources	Water Quantity	Drought; lakes; training; ground water permitting
Pollution Control	Water Quality – point and nonpoint source	Ground water; local monitoring; training & certification
Water & Soil Resources	Local implementation	Wetland conservation act

Primary Local Agencies

Entity	Primary Water Activities	Taxing Authority	Plan	Number
Municipalities	Wastewater, stormwater, drinking water	yes	land use planning	584
Counties	Feedlots, septic systems, stormwater	yes	comprehensive plan; county water plan;	87
SWCDs	Water and soil conservation programs	no	SWCD 10 year plan	91
WD	Stormwater, flooding, conservation	yes	Watershed plan – 10 year	46 (31 non metro)
WMO	stormwater	yes	Watershed plan 10 year	43 (metro only)

SWCDs – Soil and Water Conservation Districts; WD – Watershed Districts
WMO – Watershed Management Organizations

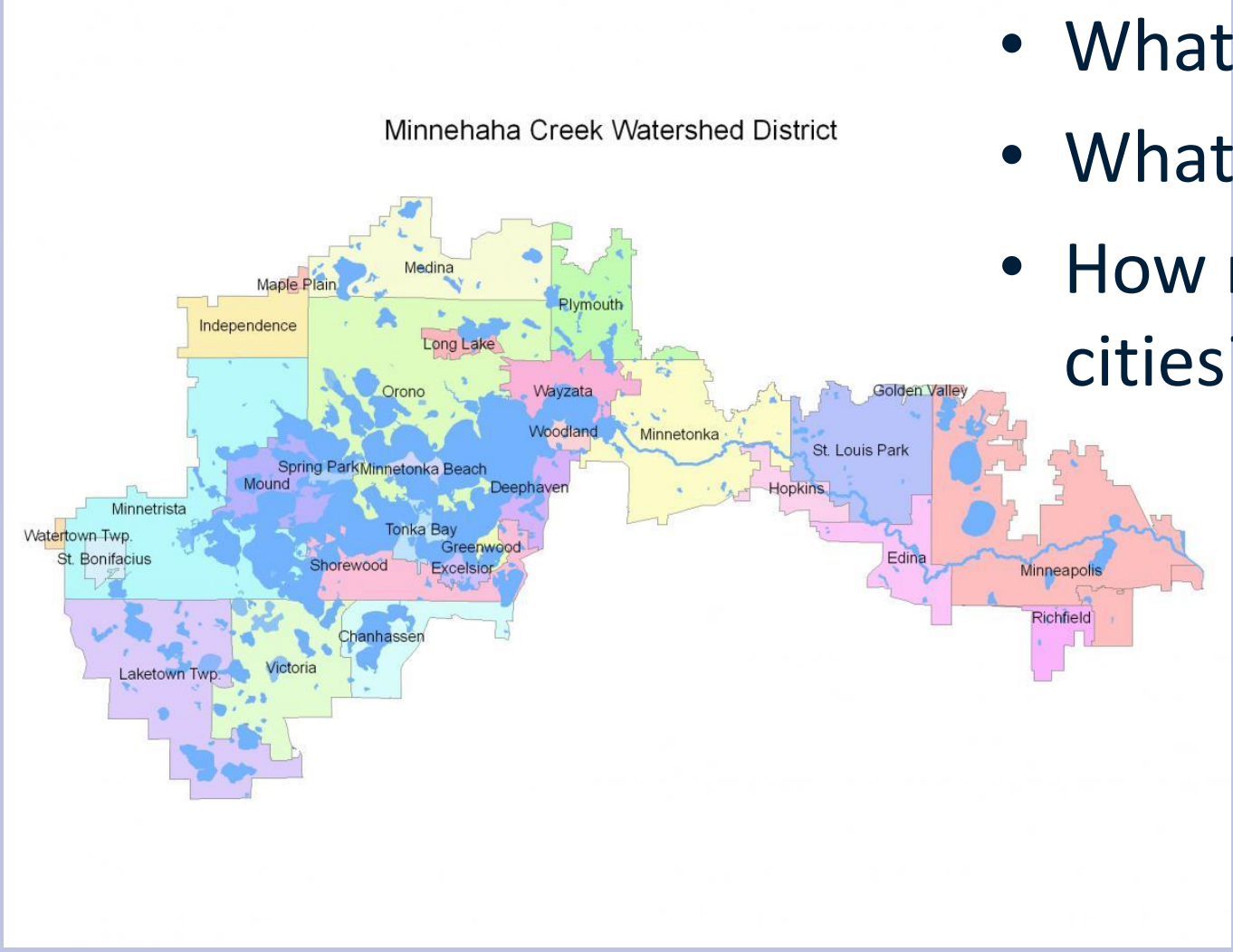
Watershed Districts

- Boundaries follow natural watershed boundaries
- Est. by legislature in 1955
- Manage water by watershed districts rather than other political subdivisions
- Board of Managers + staff
- Voluntary

Watershed Management Organizations

- Metropolitan area only
- 1982 Metropolitan Area Surface Water Management Act (103B)
- Implement comprehensive surface water management plans
- Mandatory
- Storm water management
- Funding

Minnehaha Creek Watershed District



- What counties?
- What SWCDs?
- How many cities?

How do you fund your work?

- **MCWD Grants**
  - Raingardens and Other Stormwater BMP's
  - Shoreline/Streambank Stabilization
  - Subsurface Sewage Treatment Systems
  - Cynthia Krieg Watershed Stewardship Fund
  - Low Impact Development Program

- **State Grant programs (work with MCWD)**
  - BWSR – clean water funds
  - MPCA – nonpoint source funds

Technical resources

- Group brainstorm!

Other ways you can influence?

- Think Broadly

The importance of Master Water Stewards

Old tools:

1) Command and control approaches (regulation)
2) Market-based incentives

"New tools"-- rely on voluntary behavioral changes:

1) Education (encourages understanding, creates values and norms for behavior)
2) Information (provides facts intended to change behaviors)
3) Voluntary measures

New tools effective for addressing local environmental problems

Encourages use of a strategic combination of:

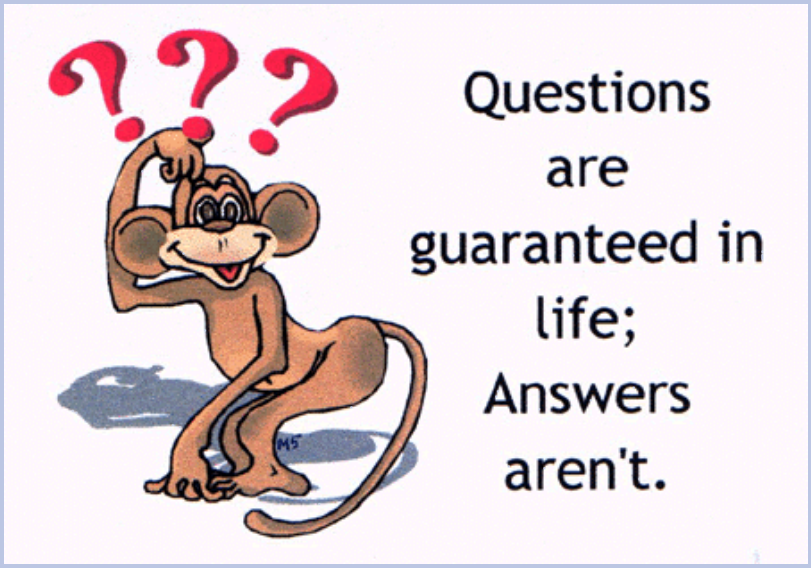
- ✓education and information
- ✓incentives
- ✓stakeholder involvement
- ✓inter-personal communication and persuasion
- ✓development of new social norms
- ✓peer pressure
- ✓removal of barriers to participation

Local, small scale focus

Final Questions, Evaluation and Quick Write

Ask questions/any questions from your article?

What do you want to remember – 2 minutes



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Water Resources Center Website

http://wrc.umn.edu