MPCA Updates

Nicole Blasing, Municipal Director

Sherry Bock, Technical Services Unit Supervisor

MESERB Summer Conference

July 10, 2025

Topics for today

Resources and Support

Sulfate

Nitrogen

Technical Assistance

Challenges are complex

Solutions are not easy

Listening to each other & finding innovative solutions is key to success

MPCA Technical Assistance for small, rural, and tribal WWTFs

- Permit support (eDMRs)
- Clean Water Revolving Fund applications and public processes
- Pollutant identification and management plans
- Technical, managerial, and financial capacity (TMF)
- Technical evaluations of facility operation
- Process optimization
- Climate resiliency
- Energy efficiency
- Rate studies
- Standard operating procedures
- Emergency response plans
- Site sampling plans

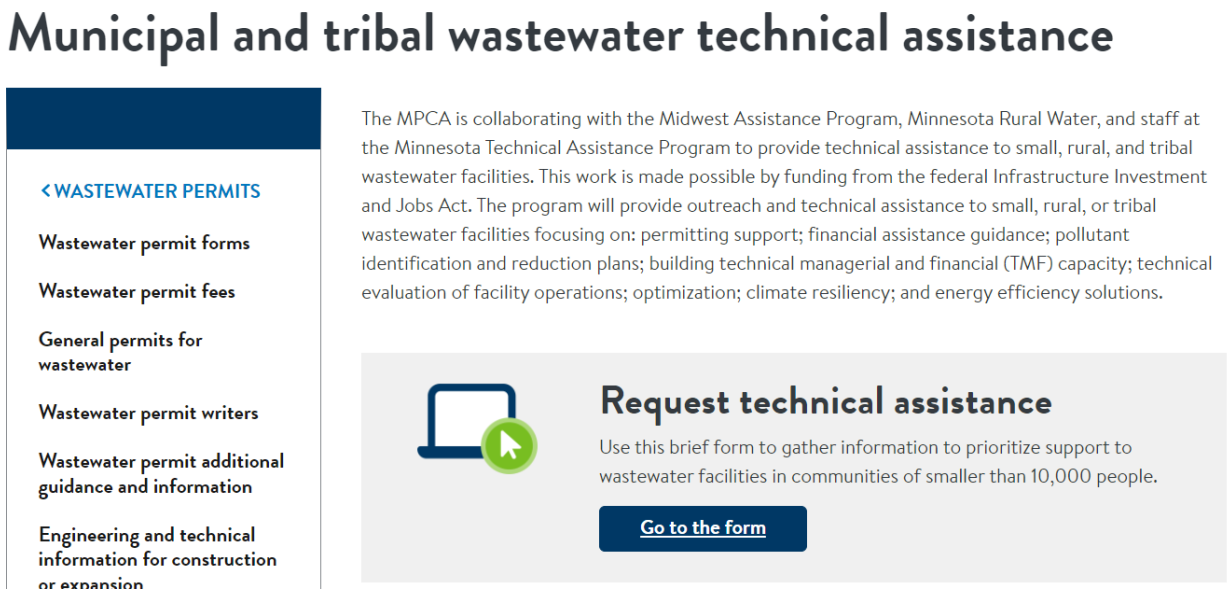
Brett Brehm
Detroit Lakes

Kira Peterson
St. Paul

MPCA Technical Assistance Overview

Funding is provided by the Infrastructure Investment and Jobs Act

- Small communities – under 1 MGD Design Flow
- Rural communities – under 10,000 population
- Tribal communities



For more information contact:

- Brett Brehm (Detroit Lakes)
  - Brett.Brehm@state.mn.us
  - 218-846-8121
- Kira Peterson (St. Paul)
  - Kira.Peterson@state.mn.us
  - 651-757-2854

MN RURAL WATER ASSOCIATION

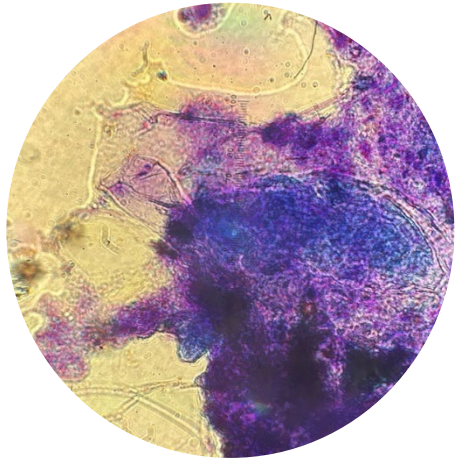
Midwest Assistance Program
serving rural communities since 1979
RCAP NETWORK MEMBER

MnTAP

Assistance Completed To Date

Type of Assistance	# of systems
General process optimization	2
eDMR submittal & revisions	12
New operator one-on-one training	9
pH & DO probe use	6
Sampling requirements & technique review	9
Identifying pollutant sources in collection system (mercury, phosphorus)	4
Biological nutrient removal evaluation	2
Financial assistance & system evaluation	7

Updated June 11, 2025



New Equipment = Expanded Technical Assistance

TA Category	Equipment
Inflow & Infiltration/ System Evaluation	Push Camera for Televising (up to 400ft)
Process Optimization (including BNR)	DR900 with • Nitrogen kits • Phosphorus kits • Alkalinity kit • Volatile fatty acid (VFA) kit ORP probe Suspended solids centrifuge
Operator Training (including lift station calibration)	DO and pH probes Water level meters
Pollutant Source Identification	Peristaltic sampling pump Telescoping sample rod Ortho-P test strips

Push Camera

Centrifuge

Questions?

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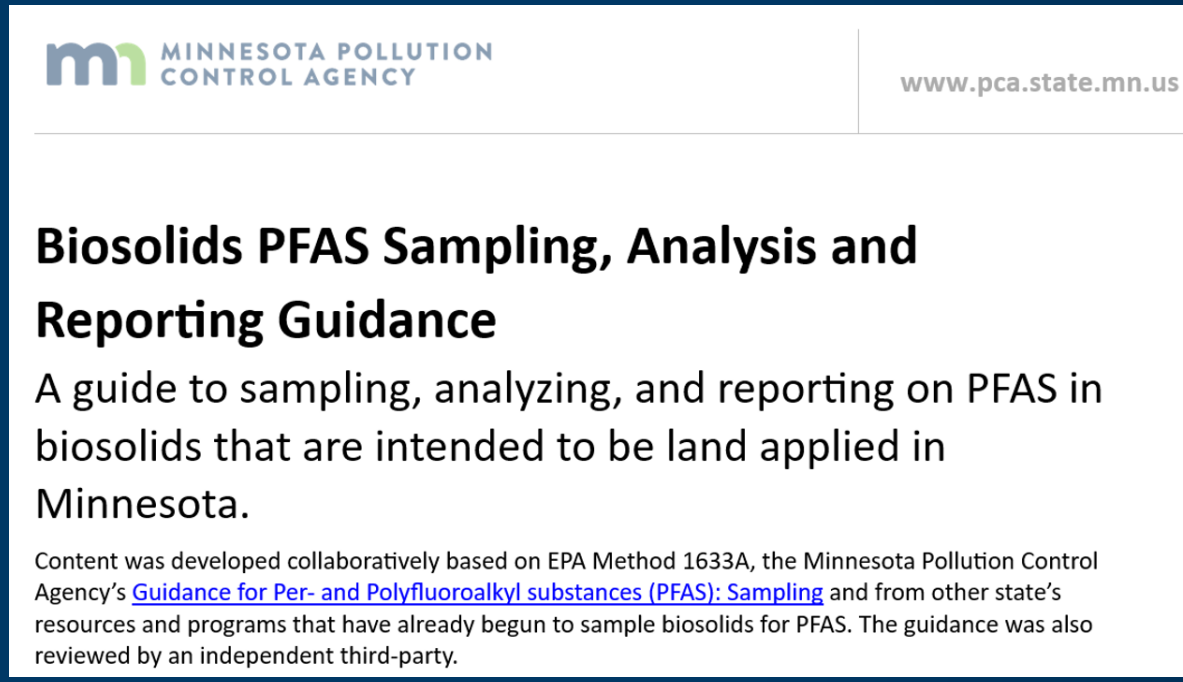
PFAS

PFAS Updates

- Biosolids Strategy Implementation
- Grant funding update and projects that will be completed
- Update on most recent sampling work and key takeaways
- PFAS education and communication

Biosolids Strategy Implementation

- Implementation materials
- PFAS in biosolids strategy | Minnesota Pollution Control Agency
  - Biosolids and PFAS: Facts for MN Landowners and Farmers
  - Biosolids PFAS Results Notification
  - Biosolids and PFAS Sampling, Analysis, and Reporting Guidance
  - Biosolids PFAS Sampling and Analysis Plan
- Contact email: municipal.wastewater.pfas.mpca@state.mn.us



PFAS Source Identification Grants

~40 Awardees in 4 categories;

- Municipal Wastewater
  - Sewershed mapping, Identify industrial or commercial contributors, Collection system sampling, Waste stream sampling, Biosolids sampling, Contributor outreach, Public outreach
- Industrial Wastewater
  - Product Sampling Waste stream sampling Customer Notification
- Airports
  - Product substitution, Equipment Substitution
- Landfills
  - Waste study to determine residential levels of PFAS in MSW

Deadlines

Grant closed:
May 22, 2025

Work Completed by:
Dec. 18, 2026

Final reports due by:
June 2027

PFAS Planning and Design Grants

Technology	Type
Pyrolysis	Destruction
Foam fractionation	Treatment
Electrochemical oxidation	Destruction
Microbial & geochemical assessments and bioreactor	Treatment
Bauer Torrent Units - RO & oxidation	Destruction & Treatment
Evaporation and RO	Treatment
Foam Fractionation	Treatment
Foam Fractionation and SCWO	Destruction & Treatment
SCWO, Electrochemical Oxidation and Incineration	Destruction

Current Sampling Projects

- Class 1 Water Dischargers & Major Facilities
- 22 POTWs
- No significant industrial users
- Influent
  - Average PFOA 3.33 ug/l
  - Average PFOS 4.46 ug/l
- •Biosolids
  - Average PFOA 8.02 ug/kg
  - Average PFOS 11.39 ug/kg
- Domestic Hauled Waste
- Residential Septic Tank
  - 2 of 22 samples detected PFOA
  - 20 of 22 samples detected PFOS
- Domestic Holding Tank
  - 5 of 15 samples detected PFOA
  - 13 of 15 samples had PFOS
- Portable Toilet Waste
  - 0 of 13 samples had PFOA
  - 10 of 13 sample had PFOS

How to talk to your community about PFAS

- Communications toolkit: PFAS reduction and Amara's Law
  - Powerpoint slides, social media graphics, videos, talking points, etc
- PFAS studies and reports: PFAS source eval and reduction
  - PFAS desktop screening tool
  - PFAS industrial search tool
  - Trifold mailing in English, Hmong, Somali, Spanish

What can you do to reduce PFAS use?

PFAS are difficult to avoid because they are found in so many items, and product labels generally won't tell you if they contain PFAS. Fortunately, some companies are beginning to use safer alternatives to PFAS in their products.

Be aware of products that are likely to include PFAS

Types of products that often include PFAS are: outdoor gear, waterproof apparel, shoes, cosmetics, furniture, food packaging, non-stick cookware, and carpet.

- Key words to watch for: non-stick, grease/oil/water resistant, breathable, and stain-proof.
- Ask sales staff and manufacturers if a product contains any PFAS.

Seek a PFAS-free option

- Review online sources for similar products that don't contain PFAS. Consider products advertised as PFAS-free.
- PFOA and PFOS are two types of PFAS, but there are thousands more. "PFOA- and PFOS-free" doesn't necessarily mean PFAS-free.

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We are learning more about PFAS every day, but there are resources available for you to learn more about the issue, what is being done in Minnesota, and new laws about PFAS. Beginning in 2025, many products containing PFAS will be prohibited in Minnesota.

For the most up-to-date information, visit MPCA's website:

PFAS in Minnesota
www.pca.state.mn.us/pfas-in-minnesota

Forever chemicals in consumer products:

Tips to avoid PFAS in your purchases

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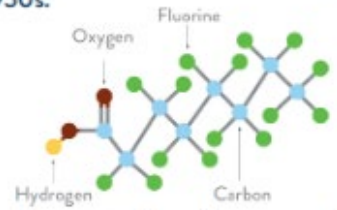
WHAT are PFAS?

Per and polyfluoroalkyl substances **(PFAS)** are a family of human-made chemicals. They are known for their water and oil repellency, heat resistance, and other useful properties, and have been used in manufacturing since the 1950s.



Today, they can be found in many products we use in our day-to-day lives.

PFAS can be found in:

- Cosmetics
- Stain resistant products
- Paints
- Cleaning products
- Fast food packaging
- Non-stick cookware
- Dental floss
- Clothing

WHY
do we care about PFAS?

PFAS are often called "forever chemicals" because they do not break down in the environment and are difficult to treat.

Some PFAS build up in the human body over time and can be harmful to health even in small amounts.

Use of PFAS-containing products can eventually lead to PFAS found in air, water, and land. People can be exposed to PFAS through drinking water, eating food, or inhaling dust that is contaminated with PFAS.

HOW do PFAS from consumer products enter the environment?

While industrial sources and the use of PFAS-containing firefighting foam are large sources of PFAS pollution, **consumer products containing PFAS are a problem too.**

Using PFAS-containing products in our everyday lives leads to **PFAS in wastewater streams and landfills.**

Eventually this PFAS can pollute soil, groundwater, surface water, fish, and **ultimately our drinking water and food supply.**

Questions?

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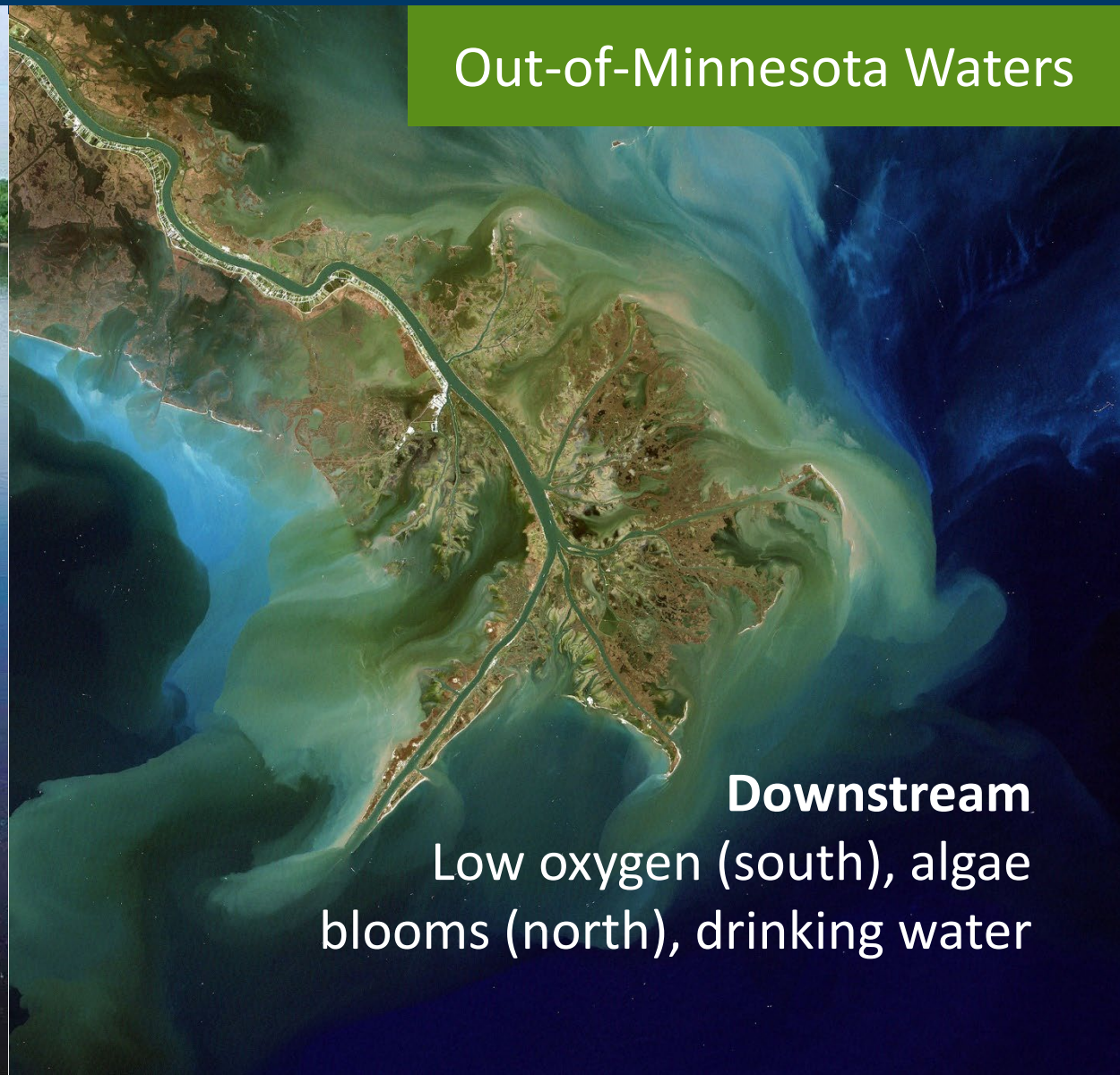
Nitrogen

Minnesota Waters

In-state
Aquatic life toxicity, drinking water

Out-of-Minnesota Waters

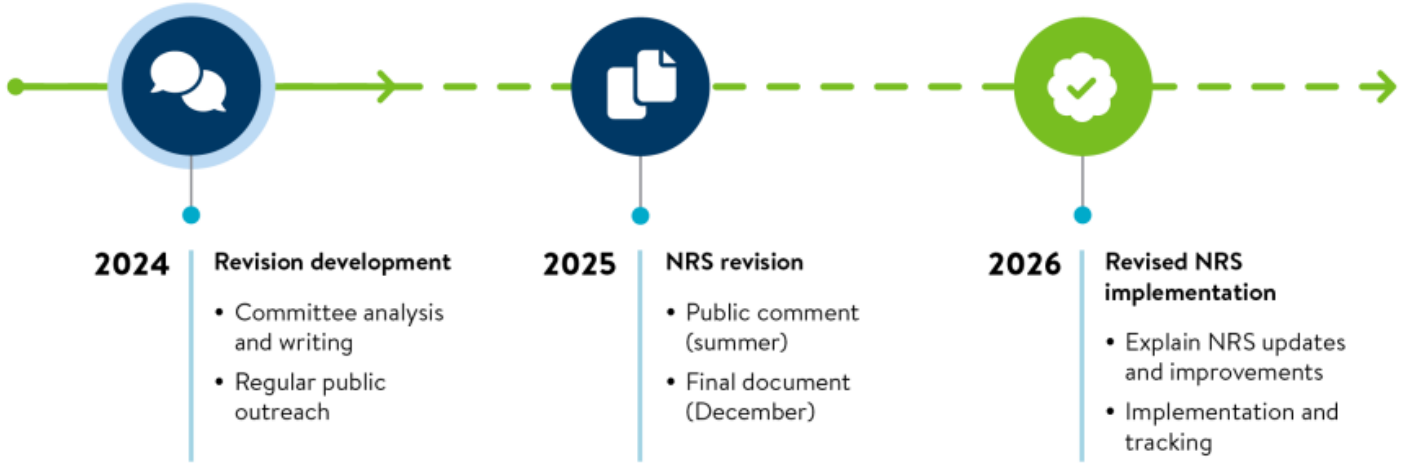


Downstream
Low oxygen (south), algae blooms (north), drinking water

Minnesota Nutrient Reduction Strategy

- Compiles the latest science, research, and data
- Establishes phosphorus and nitrogen reduction goals
- Includes voluntary & regulatory actions to reduce nutrients from point & nonpoint

Ten Year Revision Schedule



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Much progress since 2014 – much more needed before 2040

First 10 years

Next 15 years

Oct 2014
NRS published

2020
Progress report

2024-25
Update & revise

2025-2040
Implement

2040
Reach goals

Progress

- Over 30 large-scale programs advanced
- All 80 MN watersheds with strategies
- Over 5 million acres of new cropland practices
- Wastewater phosphorus reduced by 70%
- Phosphorus & nitrogen reduced in rivers
- Improved science: monitoring, modeling, solutions

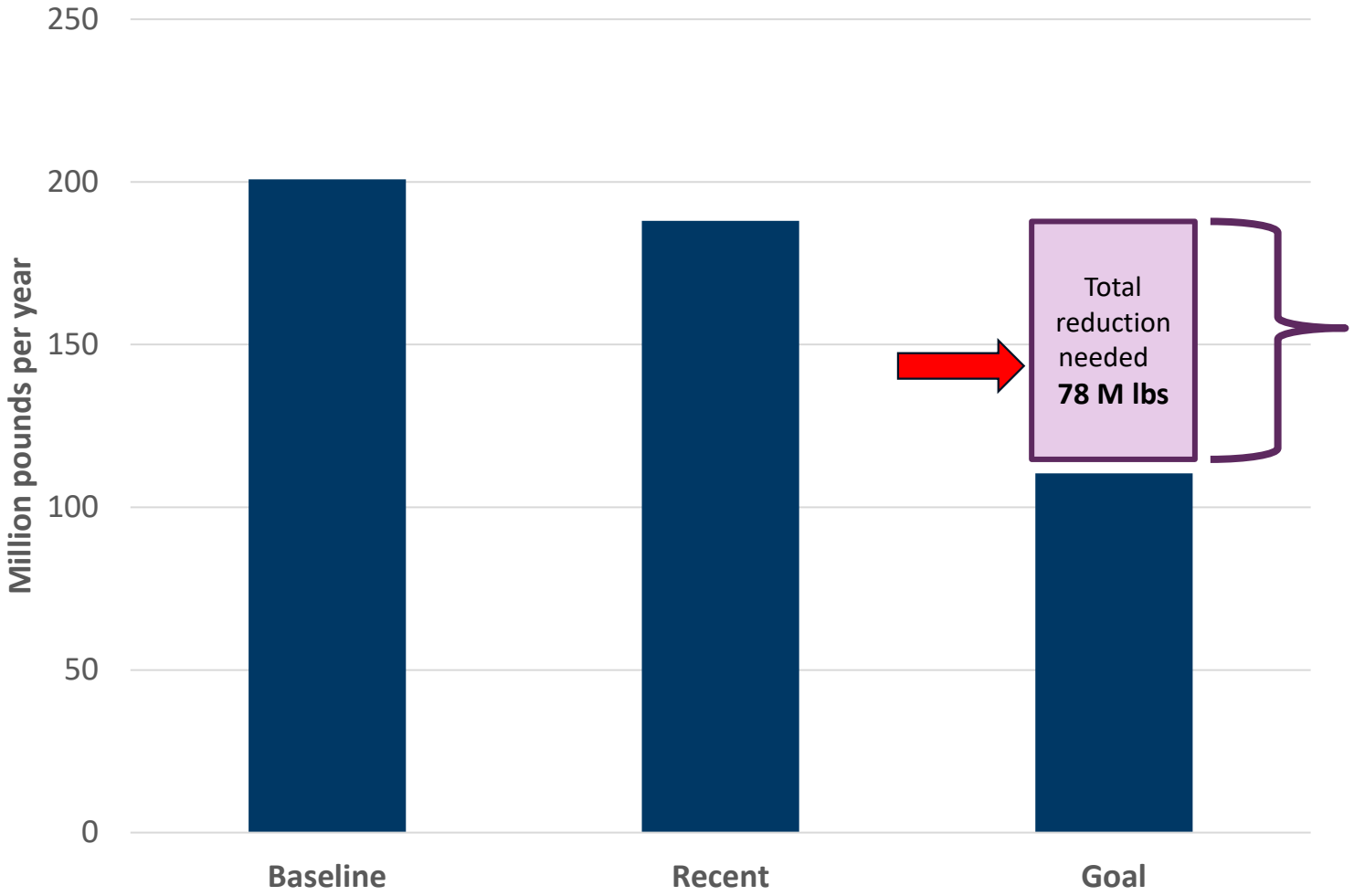
Improvements needed to achieve goals

- Which technologies?
- Which programs and approaches?
- How to support watershed efforts?
- Where to focus geographically?
- Which new research and monitoring?

Updating and strengthening 24 building blocks

Six working groups					
Water loads, goals & priorities	**Urban nutrients**	**Agricultural BMP science**	**Agric BMP adoption**	**Watershed support/tools**	**Progress tracking**
River loads & trends analysis	Wastewater data analysis	BMP efficiency science	Approaches to scale-up BMPs	Mining WRAPS & 1W1Ps	Water changes dashboard
Priority areas for in-state needs	Wastewater technologies	BMP combination scenarios	BMP socio-economics	Watershed tools survey	BMP adoption tracking
Nutrient sources verification	Stormwater science/data	Research needs identification	Maximum practical BMP increases	Local staff needs assessment	Priority metrics and measures
Goals update	Wastewater N strategies	Nutrient balance on land analysis	Existing programs analysis	Watershed load reduction needs	Permit program dashboard

Nitrogen reduction example practices for Mississippi River – what will it take in Minnesota?

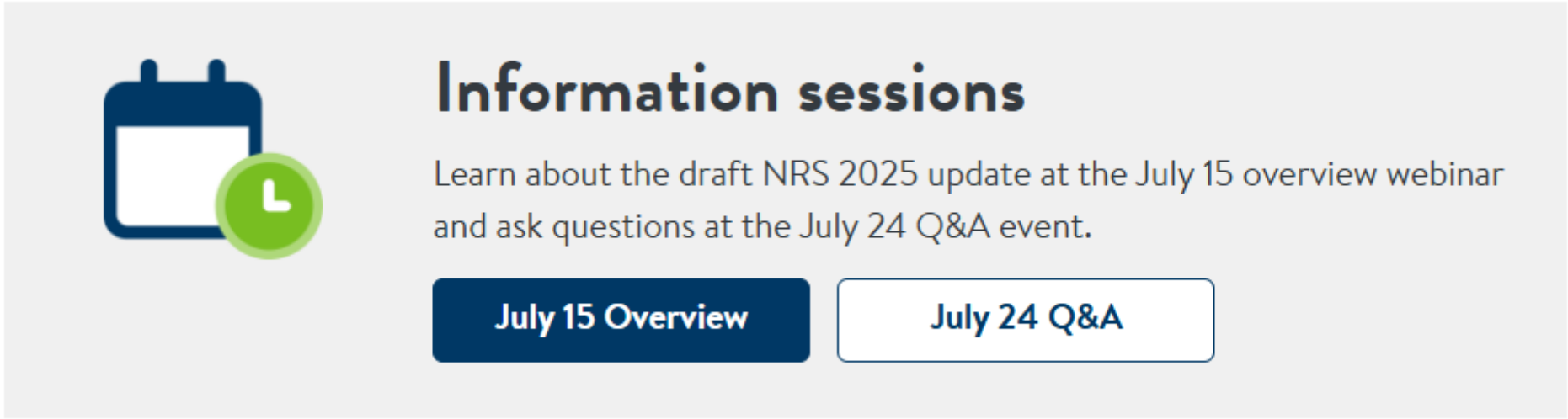


Nitrogen

Practice type	Acres added (millions)	TN Load reduction (lbs/yr at state line)
Tile water management	3.0 M	13.8 M
Fertilizer & manure mgmt.	2.8 M	4.4 M
Continuous living cover	7.8 M	33.4 M
Overland runoff controls	1.2 M	1.3 M
Tillage with more residue	2.0 M	2.0 M
Streambank/flood plains	TBD	7.0 M
Urban wastewater N		11.0 M
Other	TBD	5.0 M
TOTAL	**17+ M acres**	**78 M lbs TN**

Nutrient Reduction Strategy

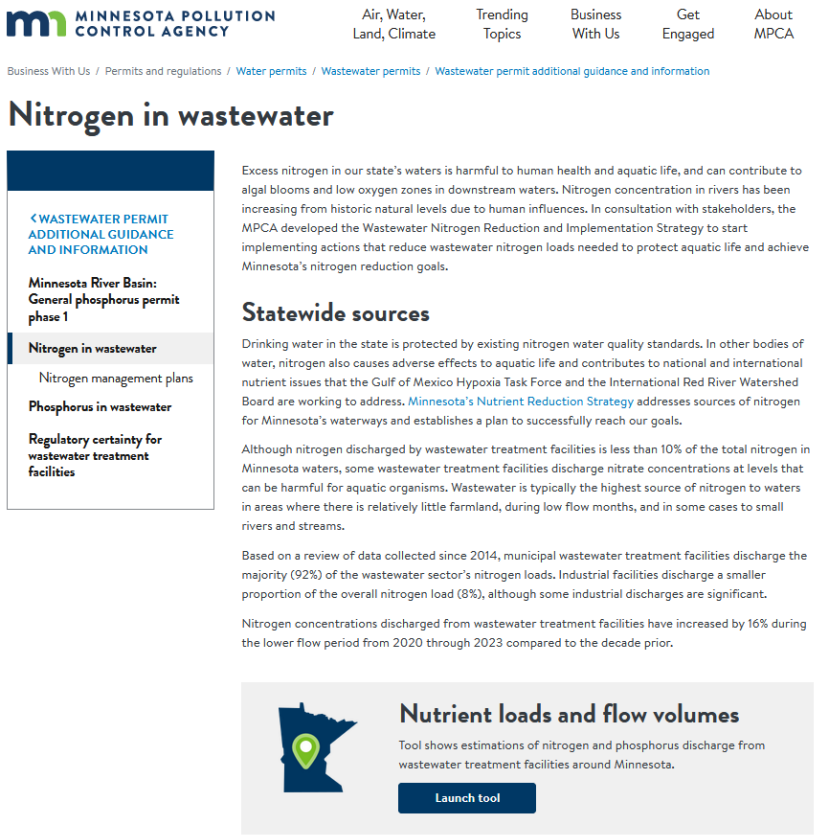
- Public comment period: **July 14 – August 28, 2005**



Wastewater Nitrogen Reduction Strategy

https://www.pca.state.mn.us/business-with-us/nitrogen-in-wastewater

- Finalized in April 2024
- Nitrogen Management Plans
- Implement existing Class 1 standard
- Design considerations for denitrification
- Future rulemakings to adopt standards
  - Implementation in permits upon adopted



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Questions?

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Wild rice sulfate standard

Wild rice is important, and it needs to be protected

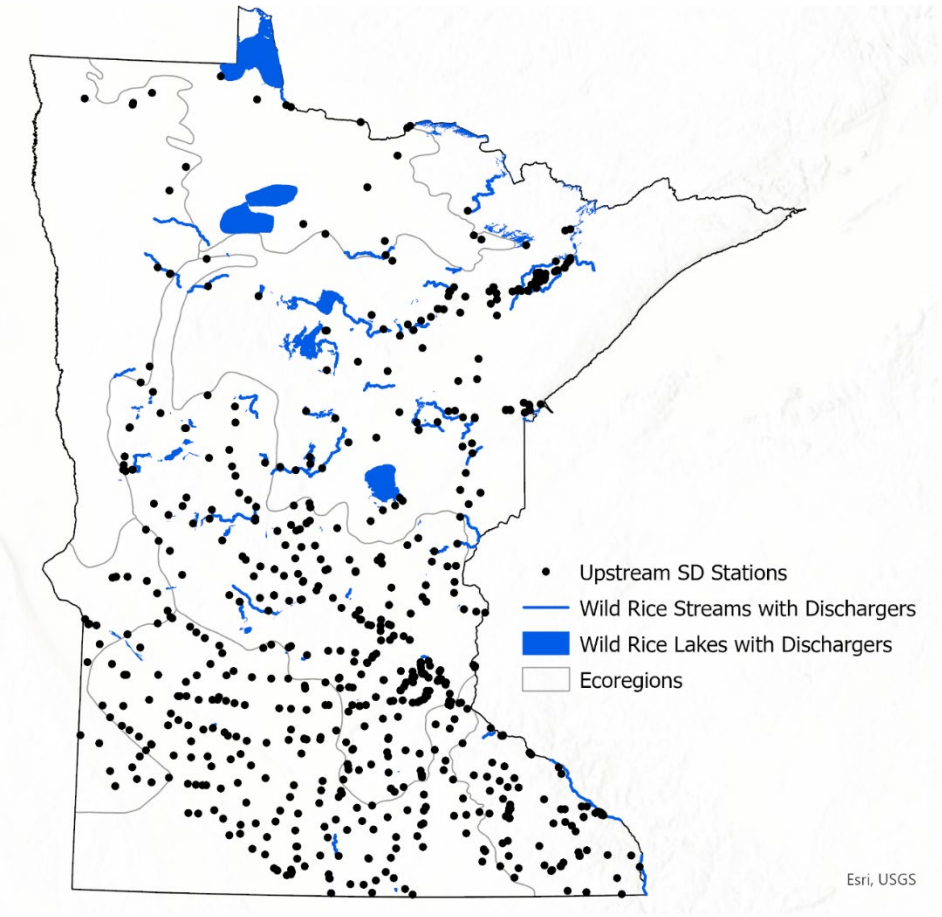
The 10 mg/L sulfate standard to protect wild rice was adopted in 1973

2010 – 2017 Research and rulemaking efforts took place

In 2022, MPCA was directed to implement existing standard

Permitting approach

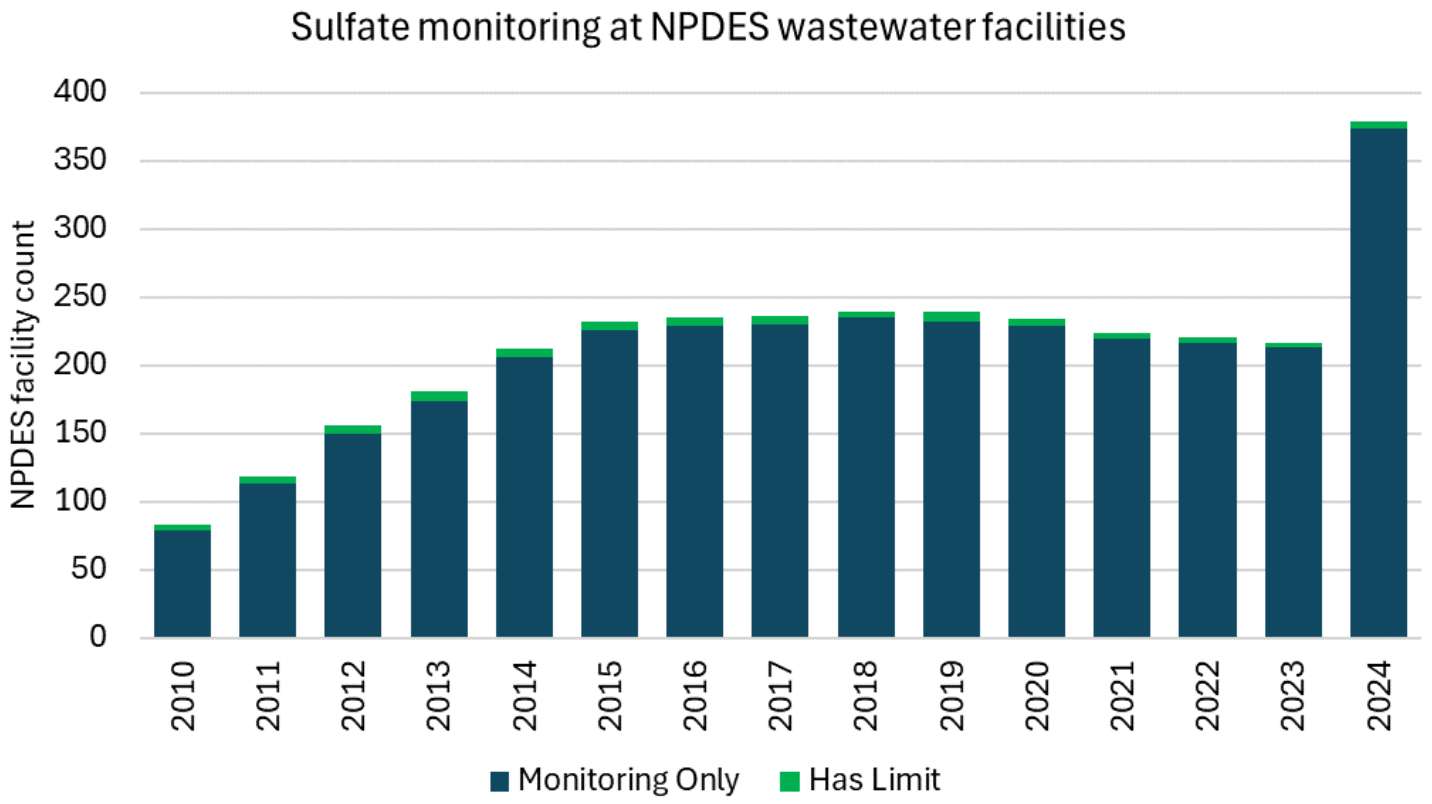
- 576 Wastewater facilities discharge upstream of a “Waters Used for the Production of Wild Rice”
  - If upstream→ monitor
  - If you’ve already monitored → reasonable potential evaluation
- Tools are available online to locate your facility in relation to the waters
- Time, flexibility & other tools are key to implementation efforts.
  - Compliance Schedules
  - Water Quality Variances: Individual or Multi-Discharger



Implementing the standard in permits: monitoring data

379 permits with sulfate monitoring

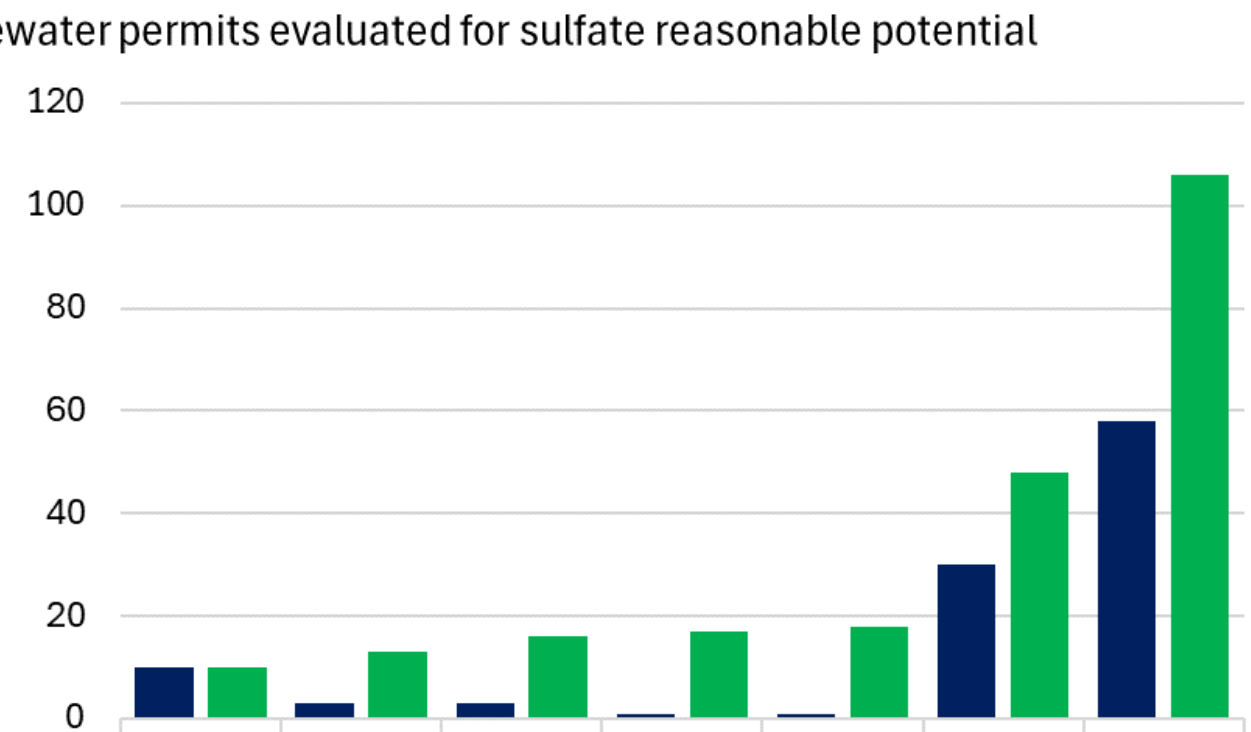
- ~331 Municipal, ~48 Industrial



Implementing the standard in permits: RP reviews

Total: 106 Reasonable Potential reviews since 2015

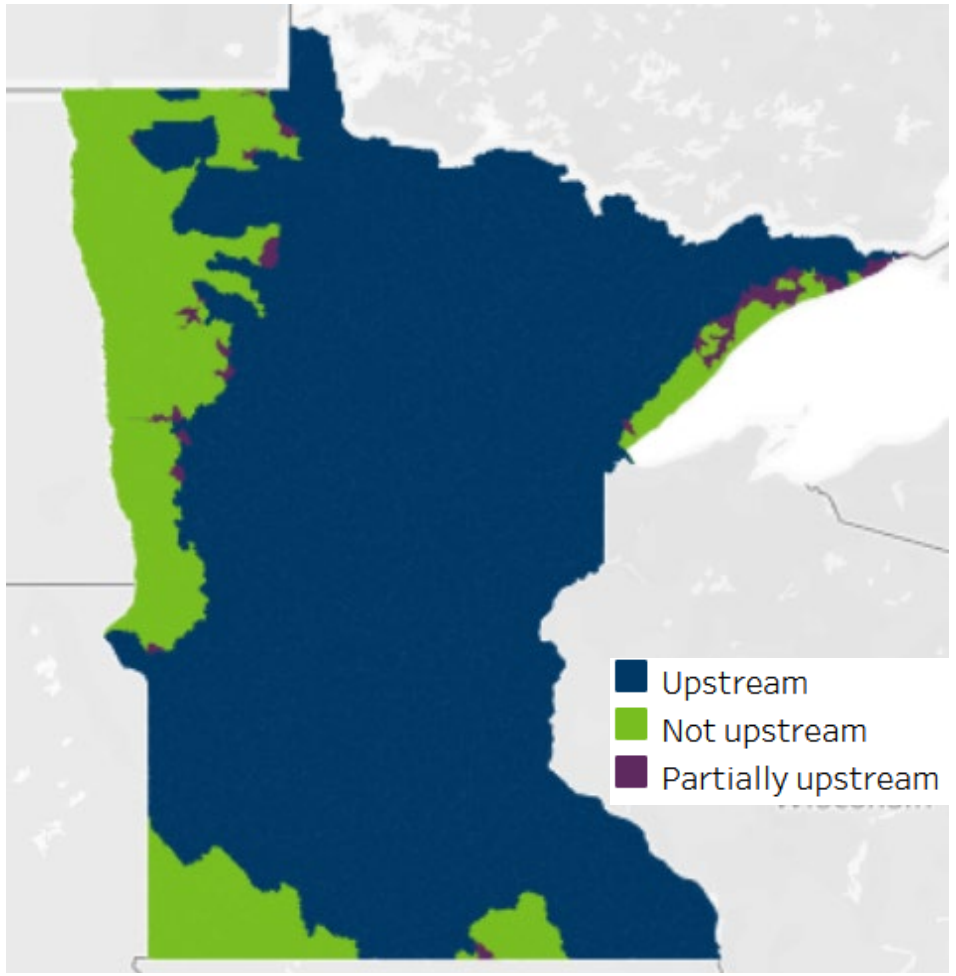
- 9% of NPDES permits have been evaluated.



	2015	2016	2017	2019	2020	2023	2024
Review by year	10	3	3	1	1	30	58
Running total of reviews	10	13	16	17	18	48	106

Implementing the standard in permits

- In 2024:
  - 1 permit issued with an effective sulfate limit
  - 2 permits with sulfate compliance schedules
- Many permits on hold waiting for variances
- Current Variance Applications
  - 24 Domestic, 3 Industrial



Variances in Minnesota

True Individual	• Permittee conducts analysis of treatment options • Permittee identifies eligibility based on federal rule
Streamlined Individual	• MPCA determines the applicable eligibility and conducted general alternative analyses for most common alternatives for the facilities
Multi-discharger Variances (MDV)	• MPCA carries out alternatives analysis and eligibility considerations for similar facilities and defines each eligible discharge and its downstream water.

Minnesota's sulfate MDV

This variance will apply to several facilities, **but it is not a statewide variance**

MPCA is still refining eligibility factors

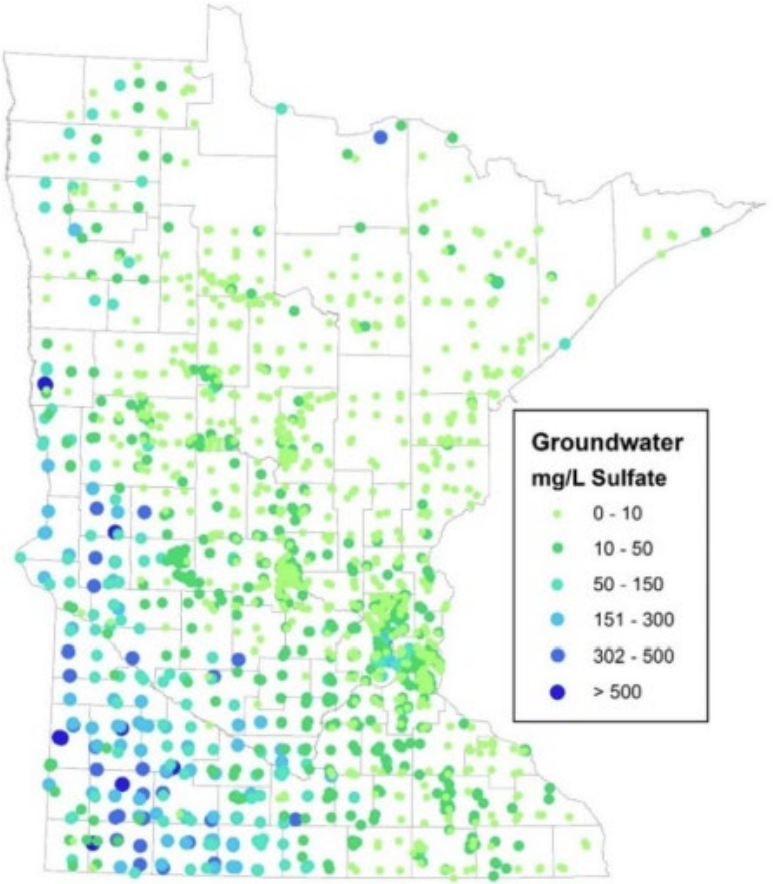
Some facilities will not be eligible for the MDV, they can request an individual variance

MPCA Sulfate MDV Approach

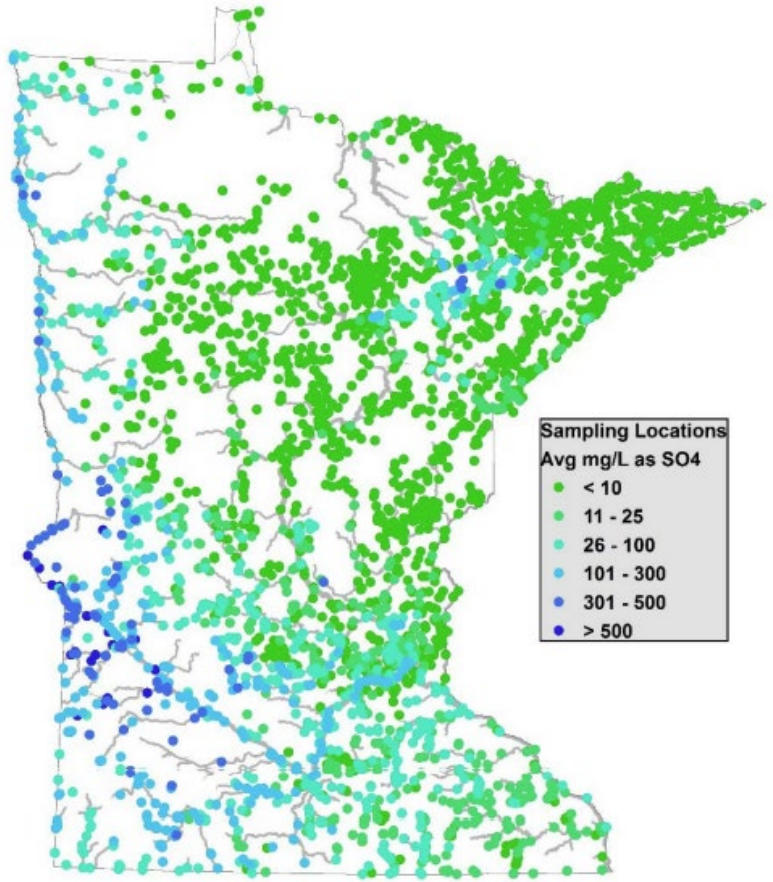
- Humans inhabit areas of the state that have naturally high levels of sulfate. There are not available water sources in those portions of the state that would induce compliance with the WQBEL.
- Some amount of sulfate ~20-80 mg/L are added in a WWTF collection system as a function of human actions (personal care products etc.).
- The downstream water body offers no assimilative capacity, due to circumstances not associated with the permittee.
- The only viable alternative to remove sulfate is RO/Crystallization, which is unaffordable by many
- Still determining which/if industrial facilities will be eligible.

Sulfate Levels

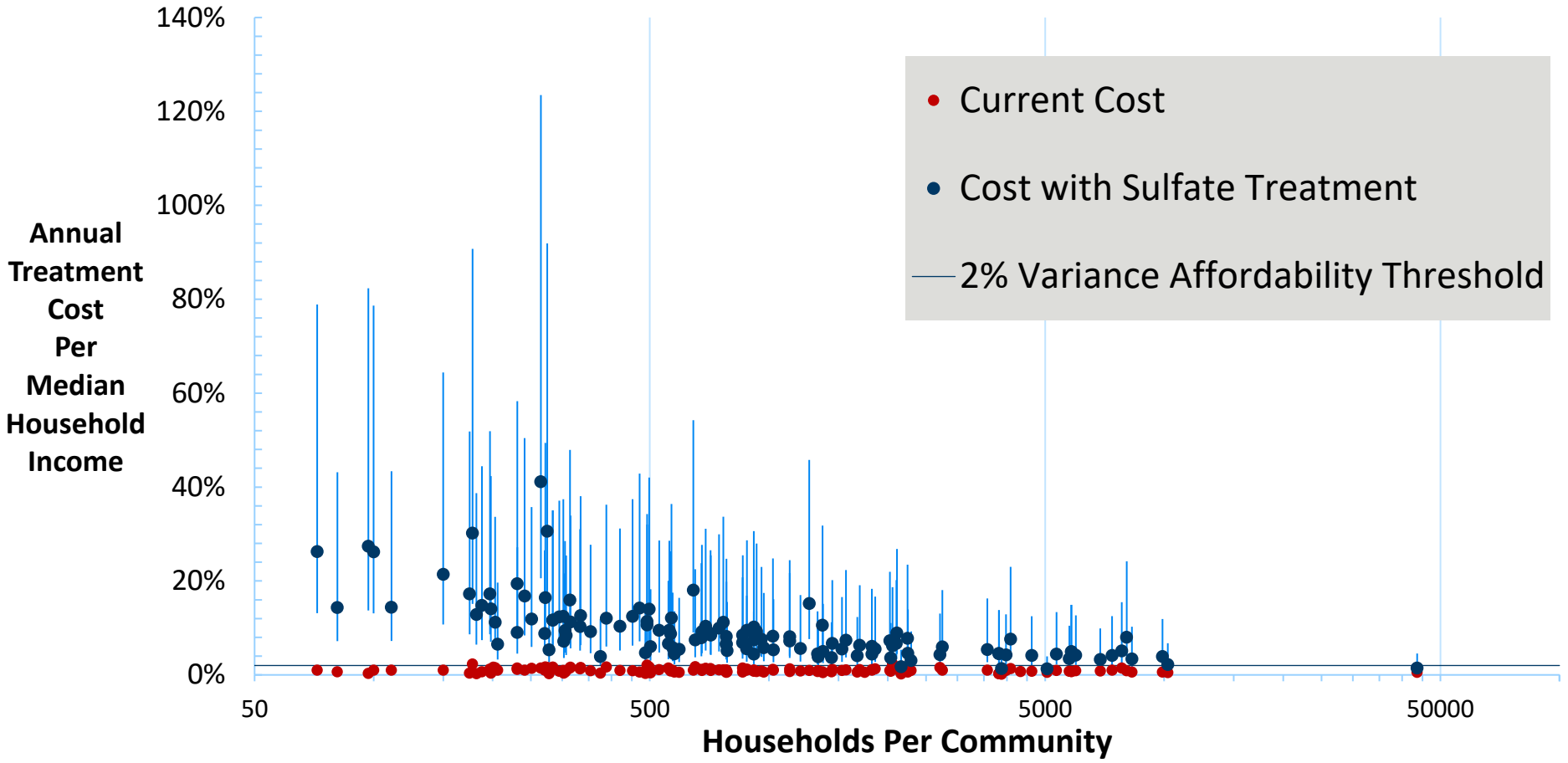
Ground water sulfate concentrations



Surface water sulfate concentrations



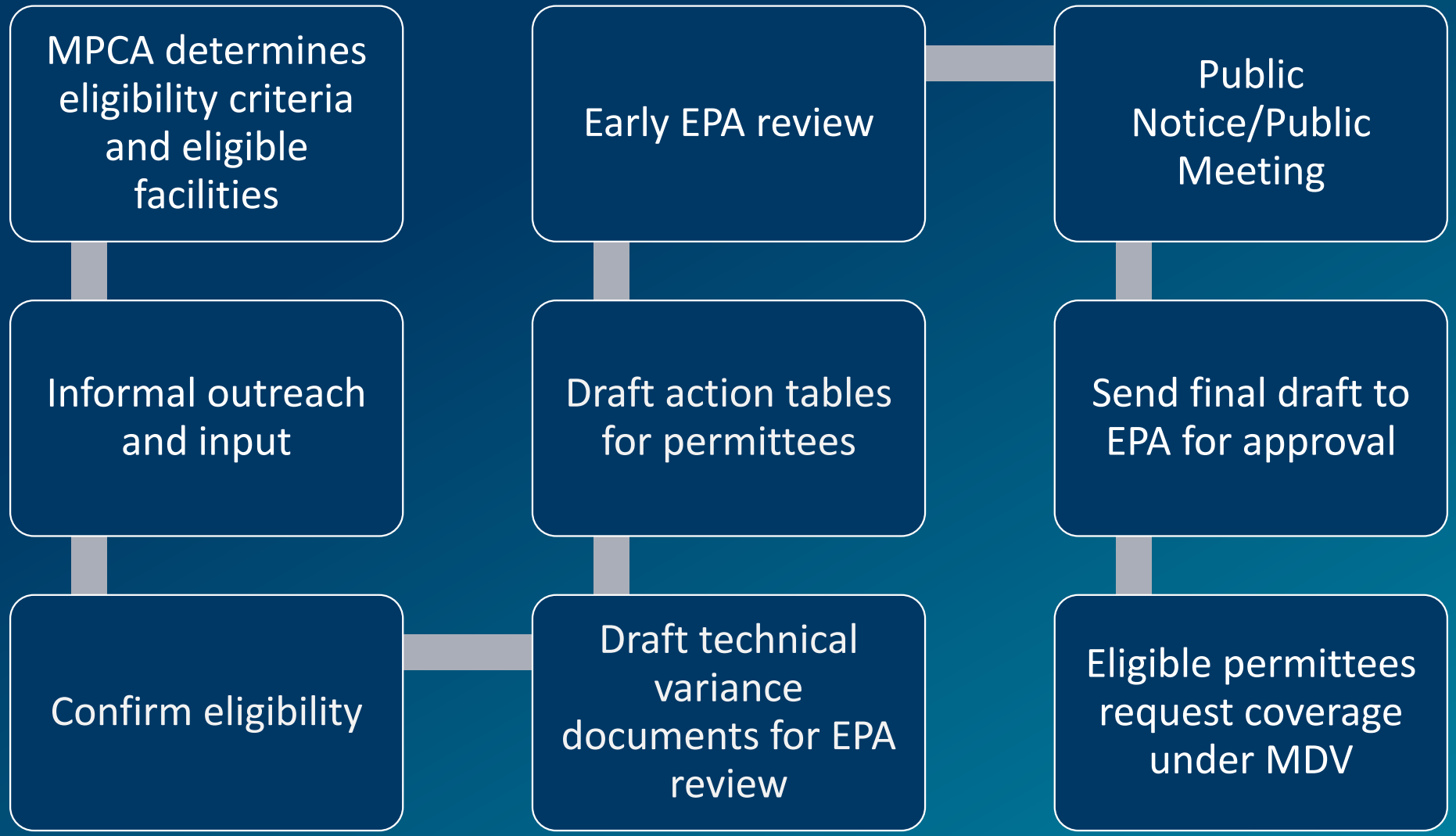
Implementing the standard in permits: meeting limits



6 Variance Eligibility Criteria

1. Naturally occurring pollutants prevent attainment of water quality standards.
2. Natural physical features of a stream prevent attainment of water quality standards.
3. **Human-caused pollutants cannot be remedied or would cause more environmental damage to correct.**
4. Hydrologic modifications prevent attainment of water quality standards.
5. Flow conditions or water levels prevent attainment of water quality standards.
6. **Controls to reduce pollutant would cause substantial and widespread economic and social impact.**

Sulfate MDV process



Next Steps

- Seeking and considering input
  - Permittees, Tribal Nations, Watershed Groups
  - Expected Fall 2025
- Finalize documentation, criteria, etc
- EPA Review
- Public Meeting
- EPA Approval

Mississippi River SSS

- MPCA is continuing to evaluate existing data, identifying data needs and working with partners
  - Examining condition and composition of multiple river segments and backwater environments
  - Using historical as well as recently-collected data to understand trends and patterns
  - Working with multiple partners to identify data gaps, collect additional sulfate data, and gather existing data/information on wild rice
- Scope: downstream of Lake Pepin in Pool 4
- Final results are not guaranteed

Thank you!

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Permittee Actions during MDV

- Permittees will sample source water, WWTP influent/effluent, and non-point sources under their control
- Permittees will be required to reduce sulfate load when possible
- Permittees will be required to reduce non-point source loads under their control, when possible
- Actions will likely vary based upon facility size