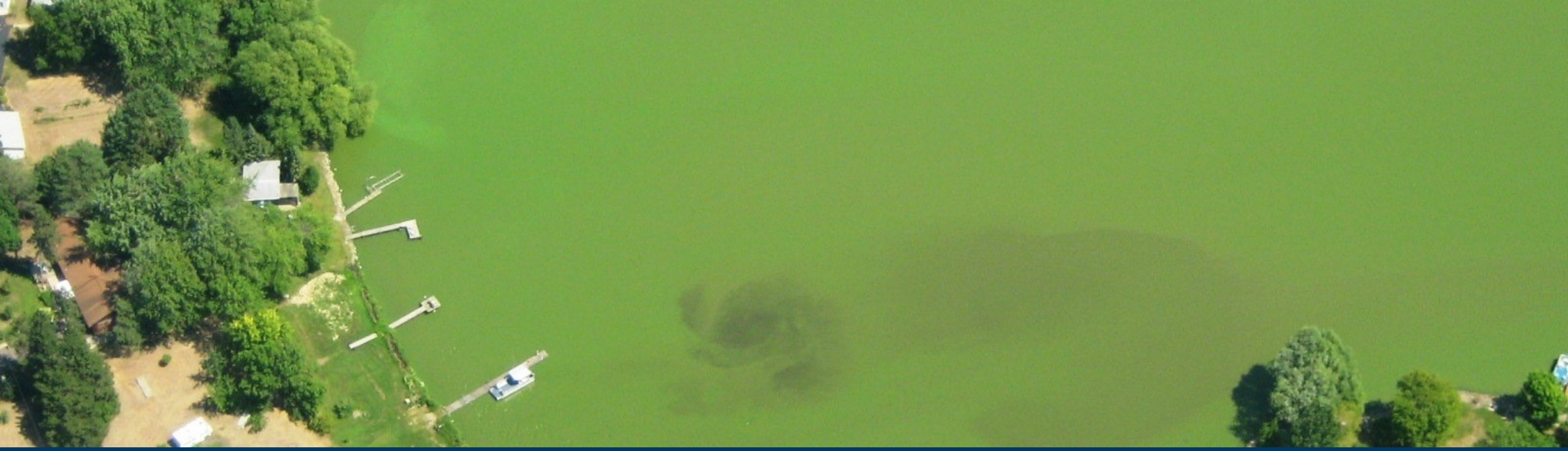


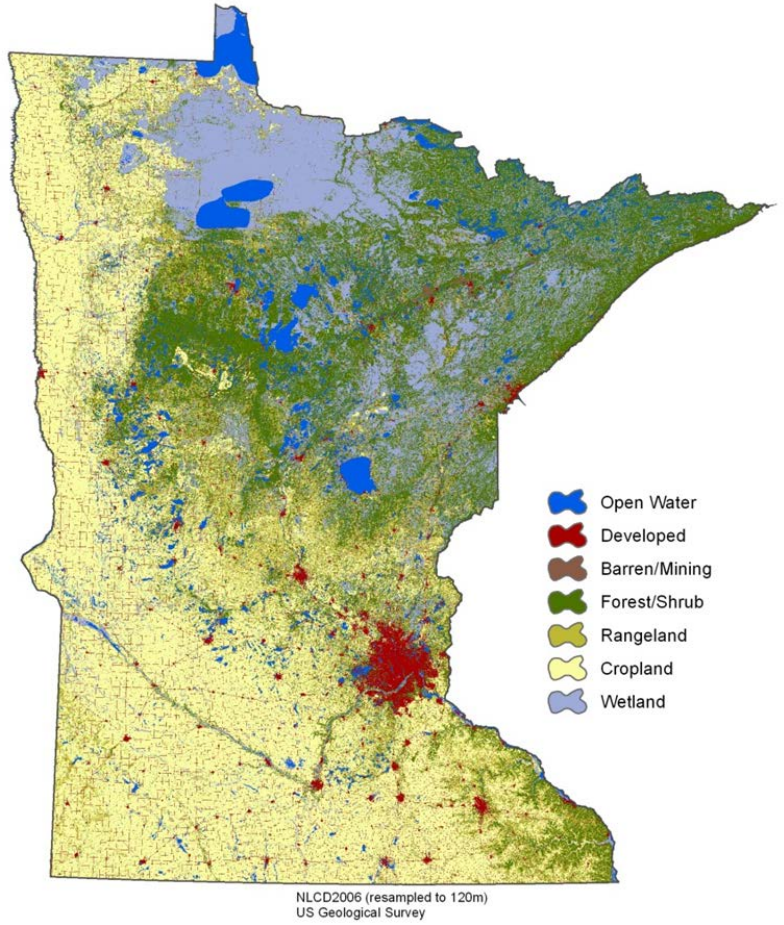
Minnesota Efforts to Reduce Nutrient Enrichment

Pam Anderson| Surface Water Monitoring Program Manager

February 4, 2020

MINNESOTA POLLUTION CONTROL AGENCY

Minnesota landscape



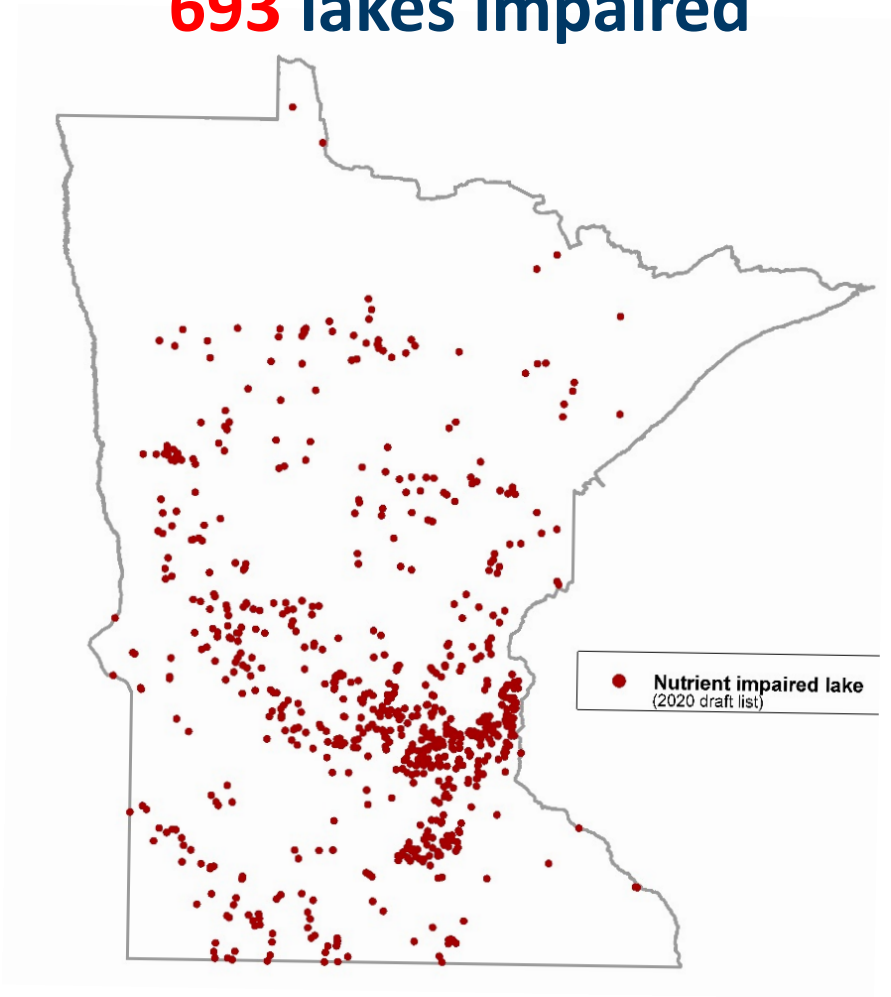
- 12,200 lakes greater than 10 acres
- 92,000 miles of rivers/streams
- Drains to 3 basins
- Land Use:
  - Agriculture 44%
  - Grassland 13%
  - Forest 32%
  - Water 5%
  - Urban 6%

Tools in the toolbox

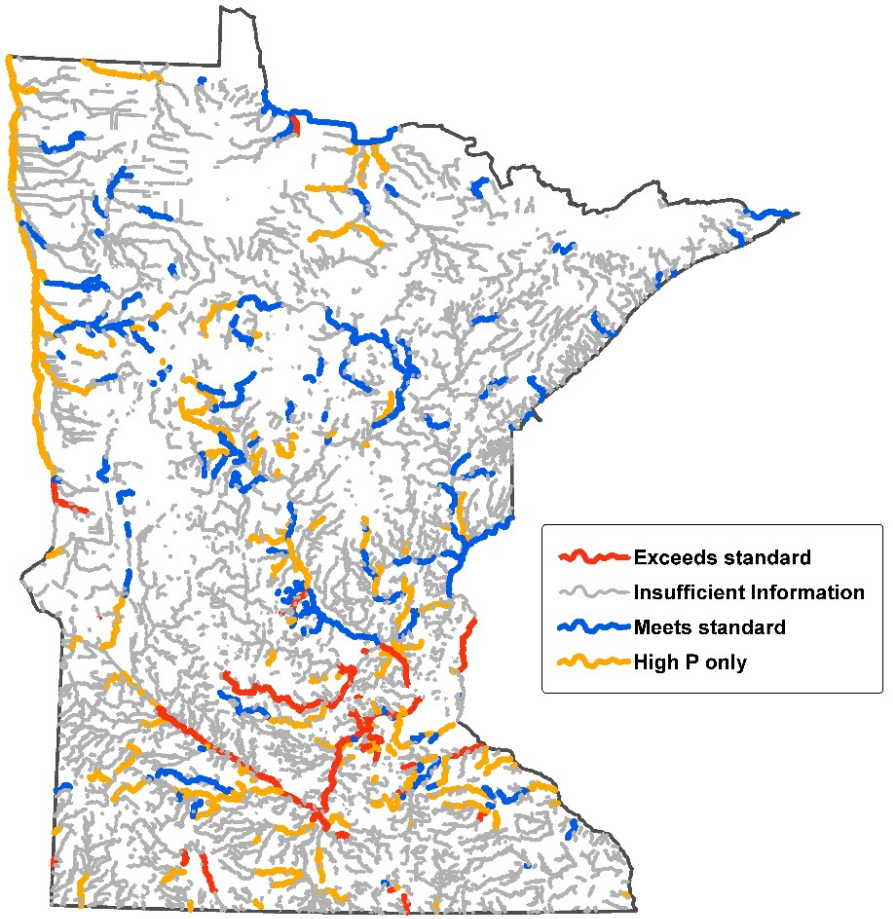
- MN has assessed lakes for eutrophication since 2002 based on a numeric translator for a narrative standard.
- In 2008, lake eutrophication standards were promulgated and assessments have been completed on over 2,500 lakes.
  - 693 impairments on draft 2020 list
- In 2015, river eutrophication standards were promulgated.
  - 53 impairments on draft 2020 list

Lake & stream eutrophication impairments

693 lakes impaired

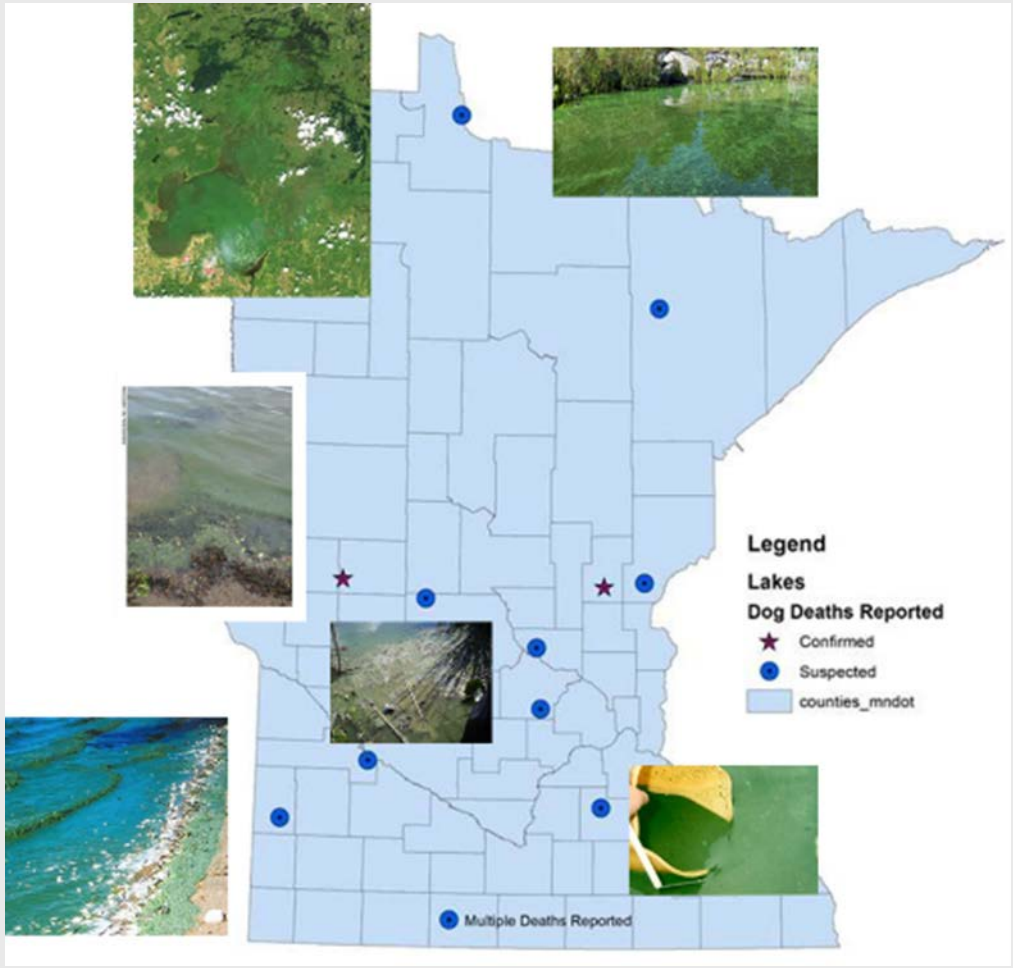


814 river miles impaired



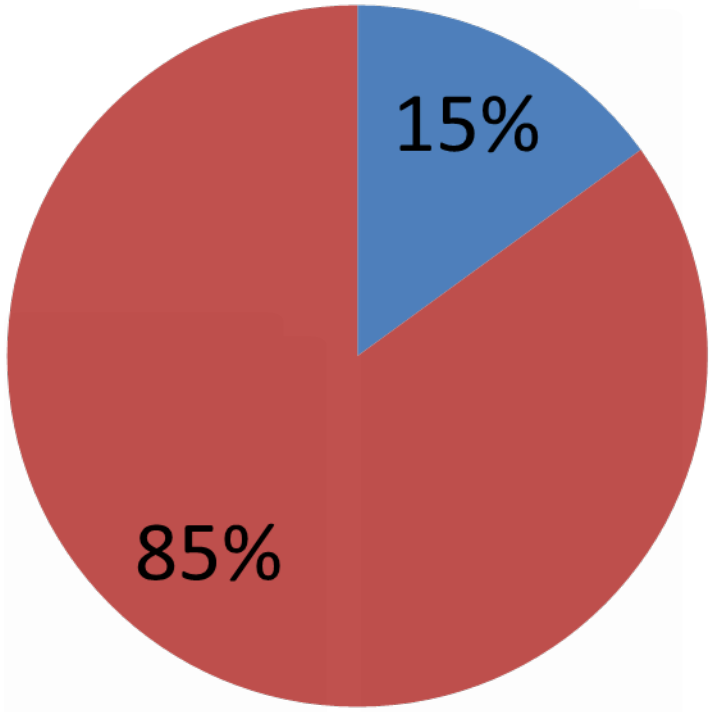
Harmful algal blooms in Minnesota

- Occur statewide
- Blooms a natural part of all MN lakes
- HABs, as measured to date:
  - Occur on nutrient impaired lakes
  - Dozen or so that aren't, would be impaired if sufficient data was collected (National Lakes Assessment lakes, for example)



Pollution sources

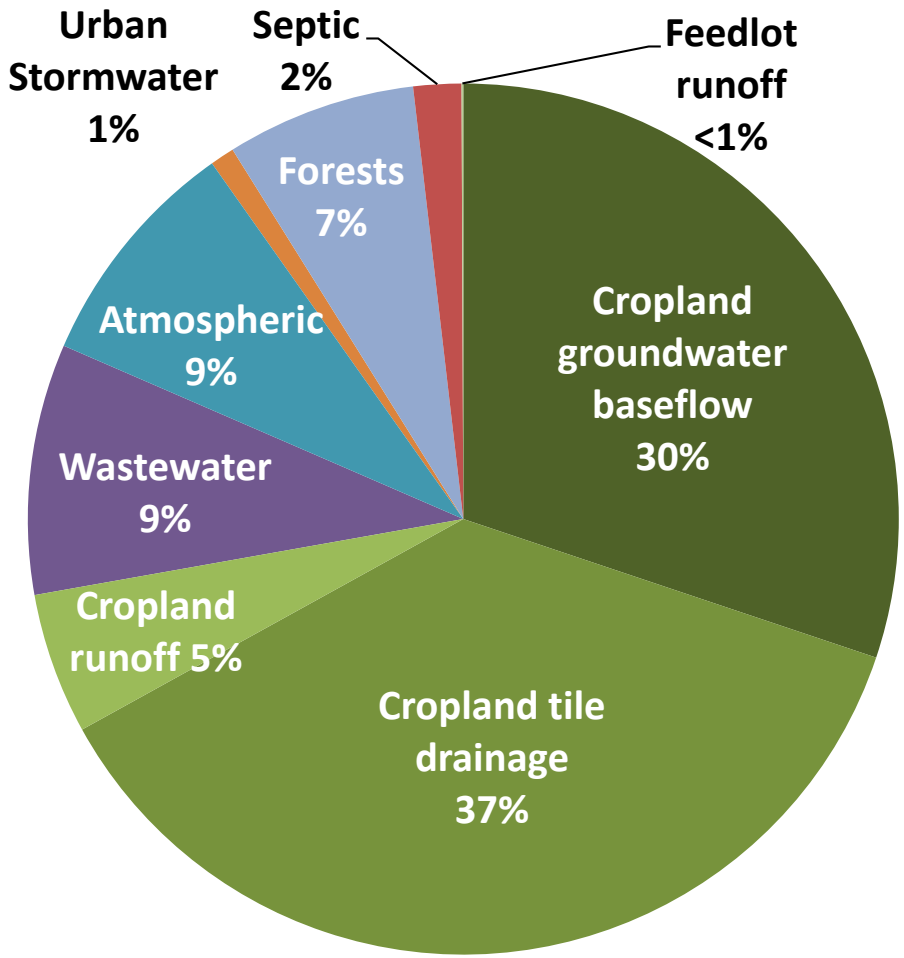
Point sources (regulated)



Non-point sources (unregulated)

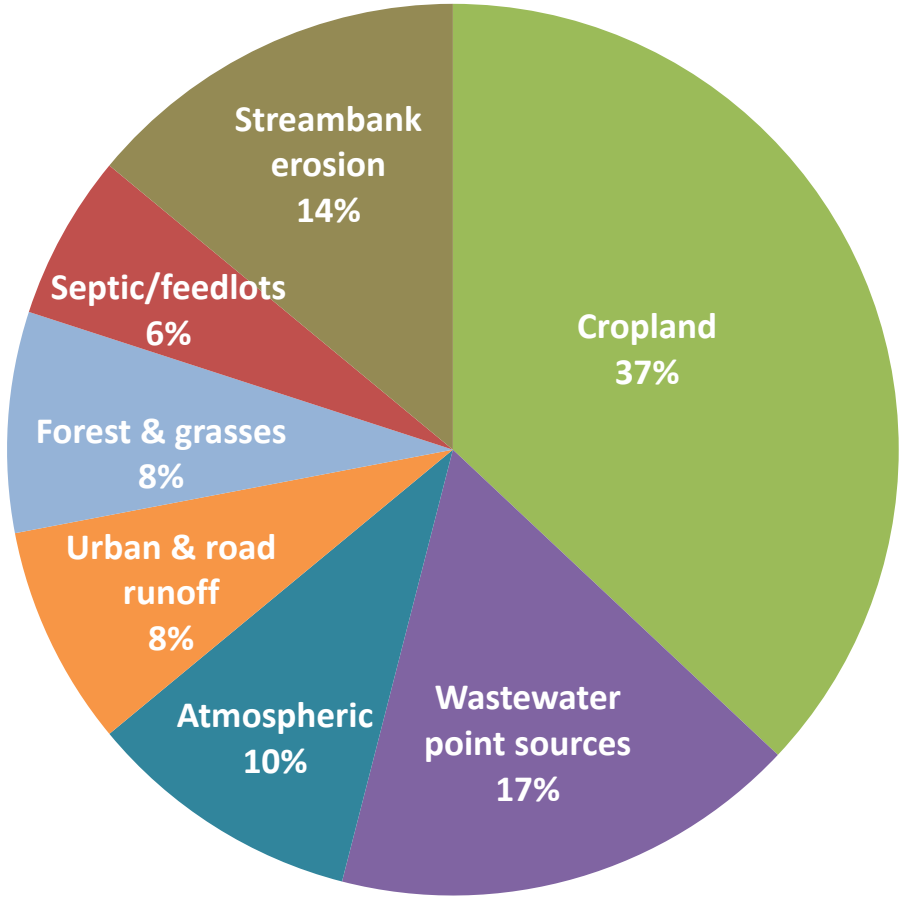
Statewide sources of nitrogen & phosphorus to rivers

Nitrogen



Source: MPCA & UMN 2013

Phosphorus



Source: MPCA et al., 2014

Information to implementation

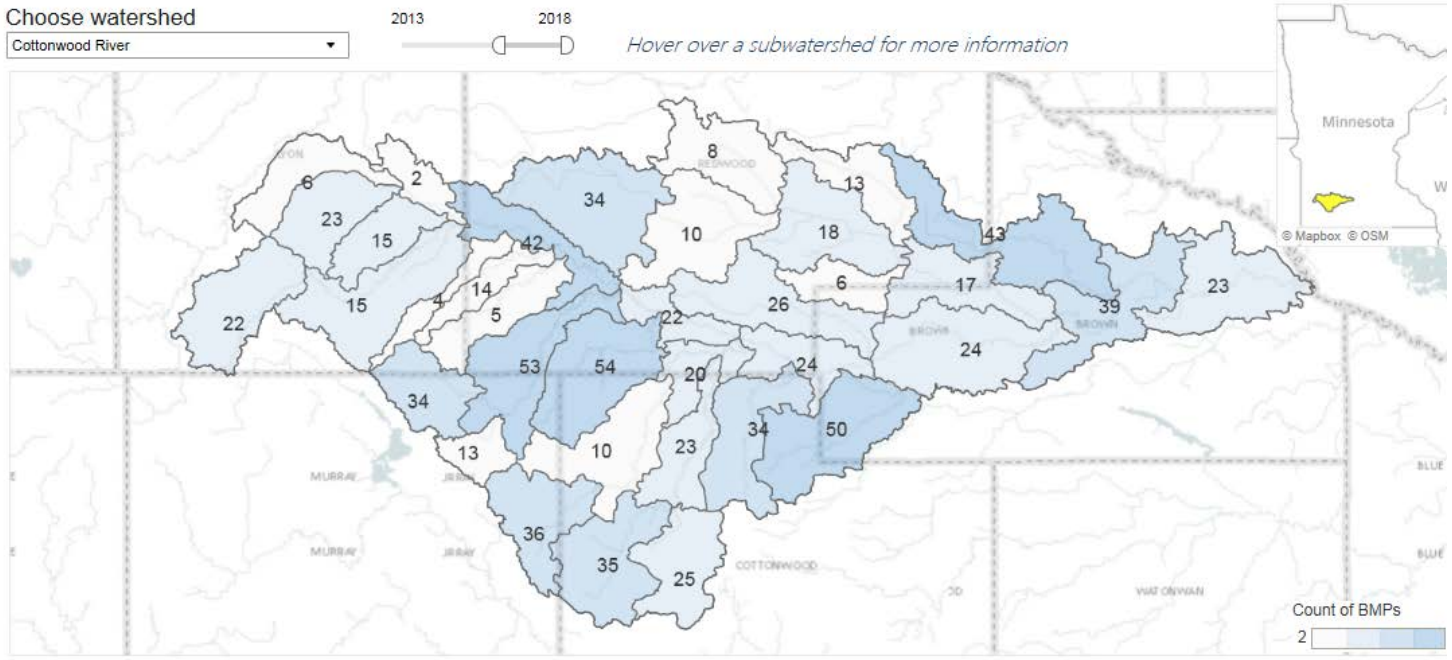
Monitor and Assess

Watershed Restoration and Protection Strategy

One Watershed One Plan

Implementation

BMP adoption through government programs



Cottonwood Watershed 2013-18 BMP #s

https://www.pca.state.mn.us/water/healthier-watersheds

Cottonwood River watershed

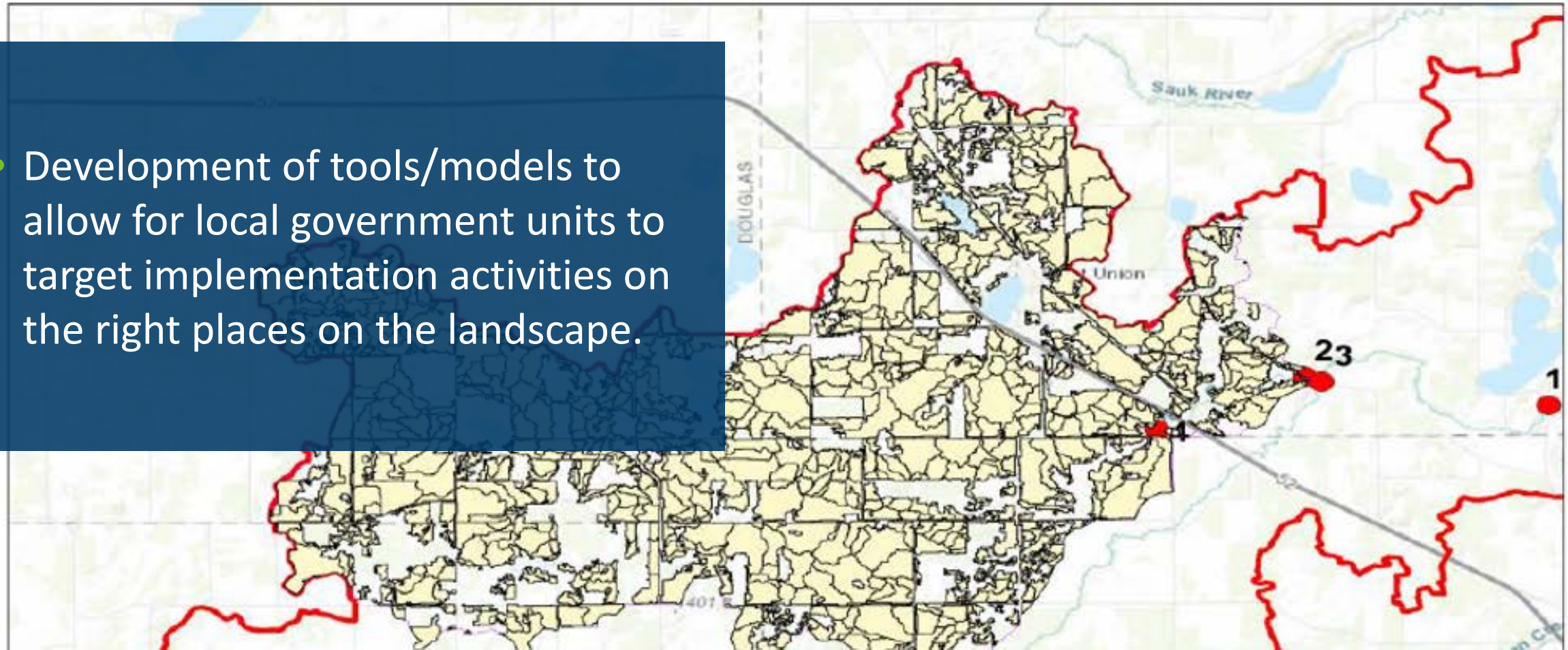
Strategy	Practice Description	Total BMPs	Number of BMPs (by unit)	Installed Amount (by unit)	Units
Designed erosion control	Water & Sediment Control Basins	100	2	1,001	Feet
			98	1,450	Count
	Grassed Waterway	43	43	113	Acres
	Terrace	14	3	7,057	Feet
			11	3	Acres
	Sediment Basin	1	1	2	Count
Stream banks, bluffs & ravines	Grade Stabilization Structure	43	43	43	Count
	Streambank and Shoreline Protection	24	24	5,560	Feet
	Structure for Water Control	2	2	7	Count
Buffers and filters - field edge	Conservation Cover	33	33	487	Acres
	Filter Strip	40	40	286	Acres
Lliving cover to crops in fall/spri..	Cover Crop	75	75	13,002	Acres
Converting land to perennials	Conservation Cover	33	33	487	Acres
	Critical Area Planting	24	24	60	Acres

Targeting Investments

Report Generation Date: 2019-07-16

Method Used to Select BMPs: Number of Highest Ranked BMPs

- Development of tools/models to allow for local government units to target implementation activities on the right places on the landscape.



Targeted Land Retirement

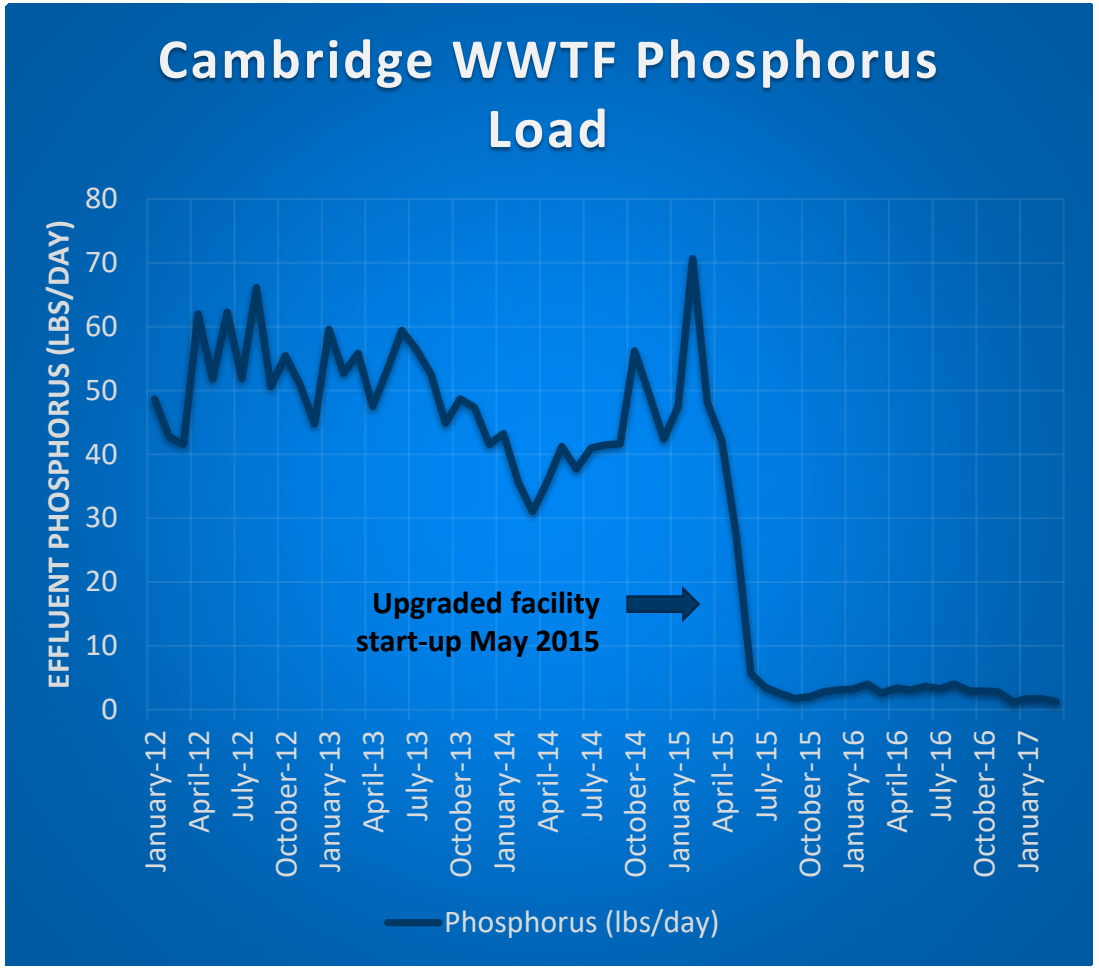
- MN CREP will protect up to 60,000 acres of the highest priority areas across 54 counties. It will:
  - Target riparian areas and marginal agricultural land
  - Restore hydrology, increase infiltration and provide flood mitigation
  - Provide habitat for wildlife, non-game species and pollinators
  - Reduce nitrate loading in drinking supplies

MN Agricultural Water Quality Certification Program

- Voluntary program for producers to implement and maintain approved farm management practices
- Involves a whole farm assessment for water quality risks and actions to mitigate those risks
- Results in regulatory certainty for any new water quality rules/laws for 10 years
- Recognition for their work
- Priority for technical assistance and financial assistance

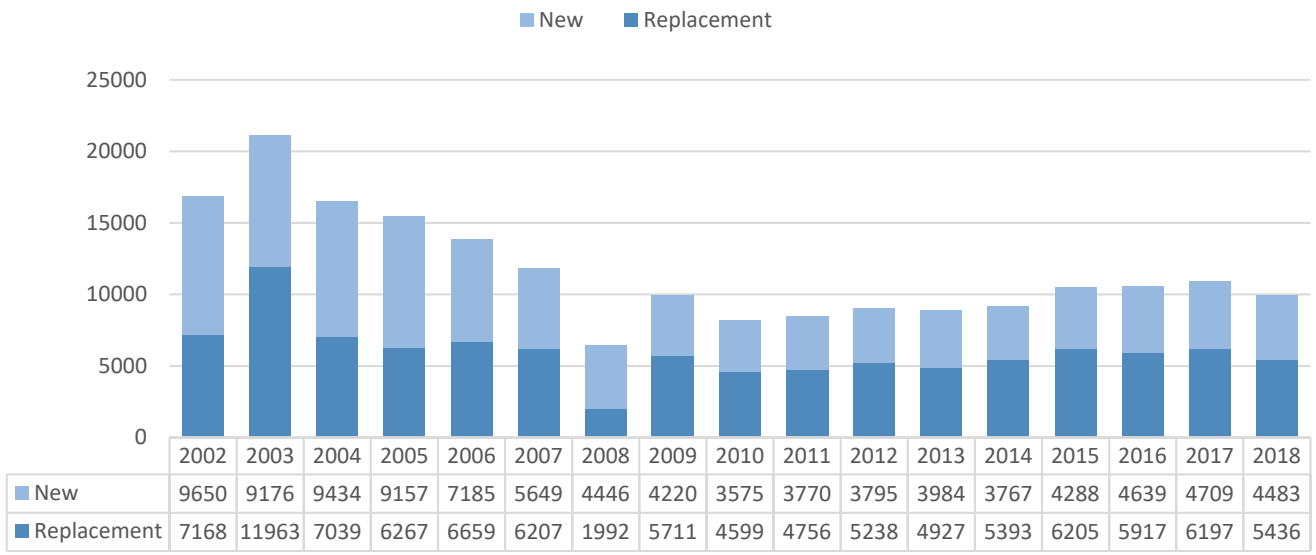
Darren Newville, District Manager at East Otter Tail and Wadena Soil and Water Conservation Districts; MAWQCP certified producers Andrew and Dale Schock; MAWQCP Area Certification Specialist Jim Lahn.

Municipal infrastructure

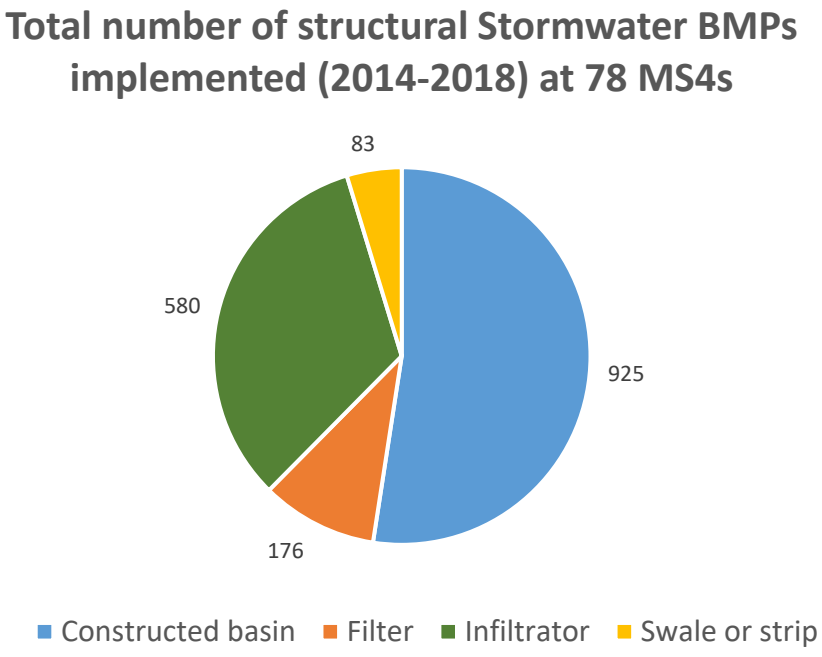


- 729 permitted wastewater treatment facilities
  - 80% Minnesotans connected
  - 321 have water quality based effluent limits of 1 mg/L per day or less
- Since 2010 funding awarded for:
  - 48 WW construction projects to reduce discharges to 1 mg/L
  - Small unsewered communities
    - 28 WW construction projects
    - 34 technical assistance projects

Septic & stormwater programs making progress



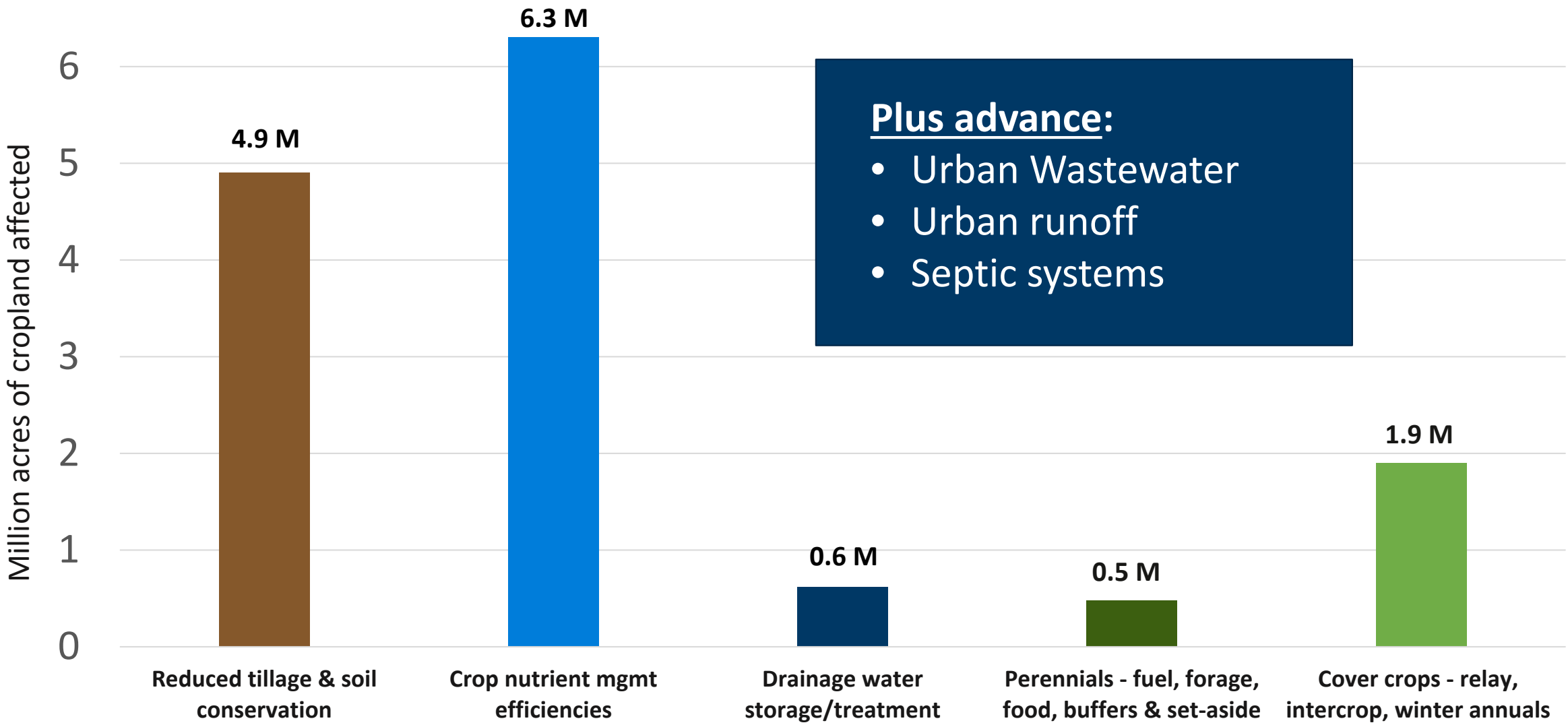
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
New	9650	9176	9434	9157	7185	5649	4446	4220	3575	3770	3795	3984	3767	4288	4639	4709	4483
Replacement	7168	11963	7039	6267	6659	6207	1992	5711	4599	4756	5238	4927	5393	6205	5917	6197	5436



Success stories

- To date, 30 lake eutrophication delistings have occurred due to corrective actions
- Primarily in the TCMA, with completely built watersheds, fully implemented stormwater management, and internal load management.
- Phosphorus concentrations are dropping on rivers around the state.

Action needed to meet nutrient reduction goals



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Thank you