

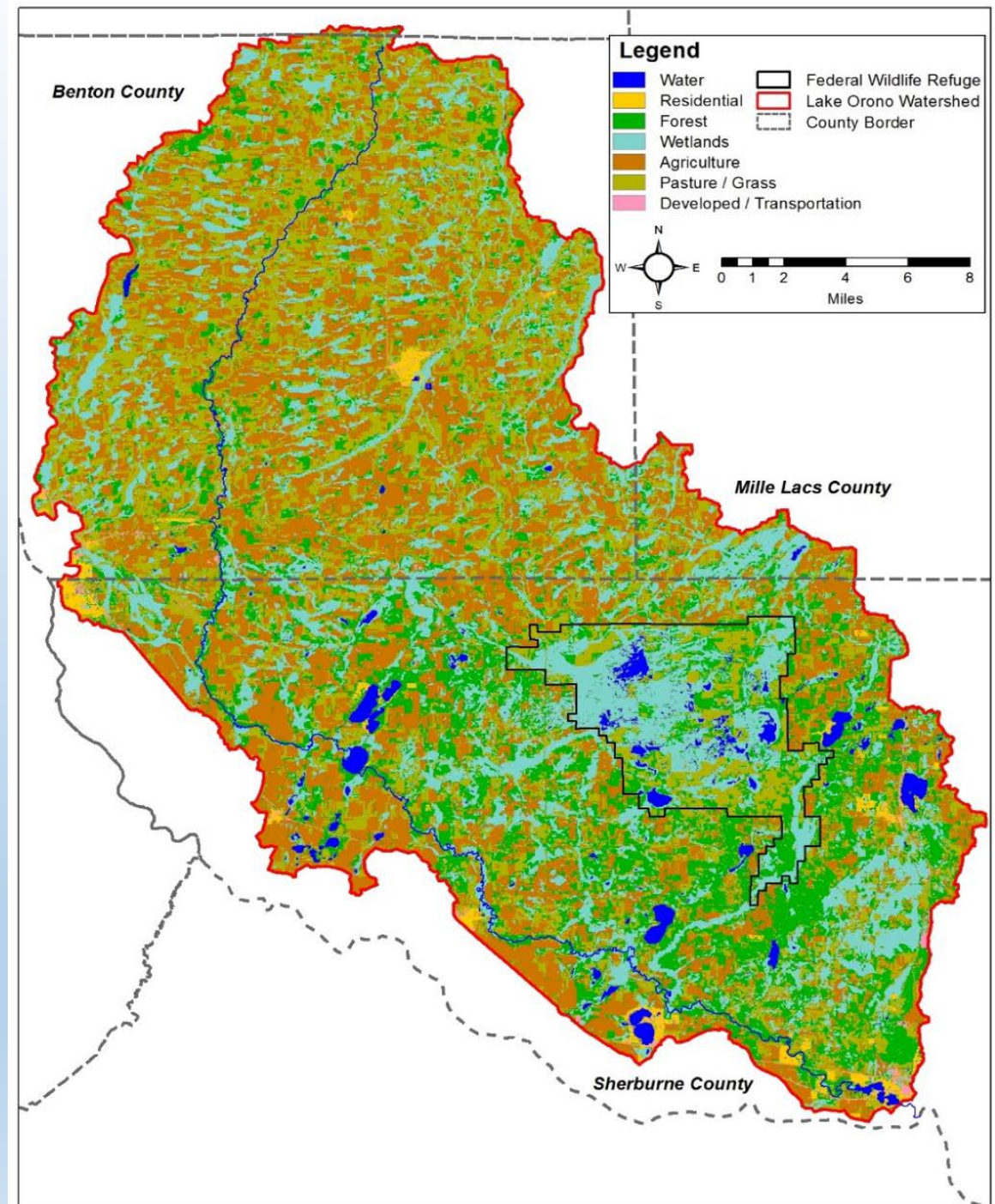
Elk River Watershed Activities Update

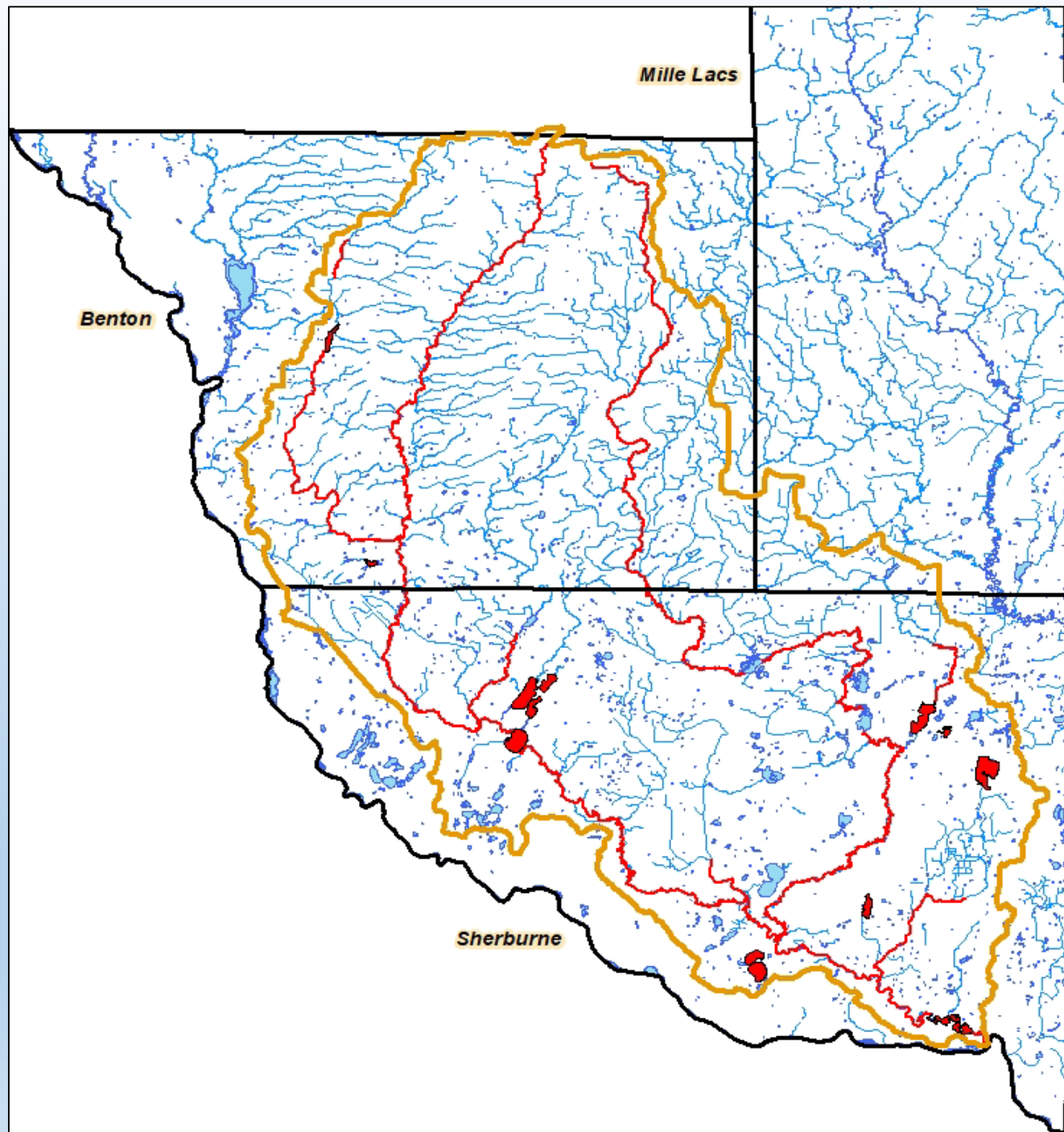
November 2018



Watershed Info

- Elk River Watershed
 - 613 square miles
 - 27% agriculture, 20% forest, 18% grass, 17% wetland, <10% urban/developed
- Elk River
 - Annual volume 140,000 – 210,000 ac-ft
 - Phosphorus load 40,000 – 60,000 lbs / yr
 - Sediment load 3-7 million lbs / yr





Impaired Waters

Lake Impairments:

- Nutrients
- Biological indicators
- Mercury

Elk River Impairments:

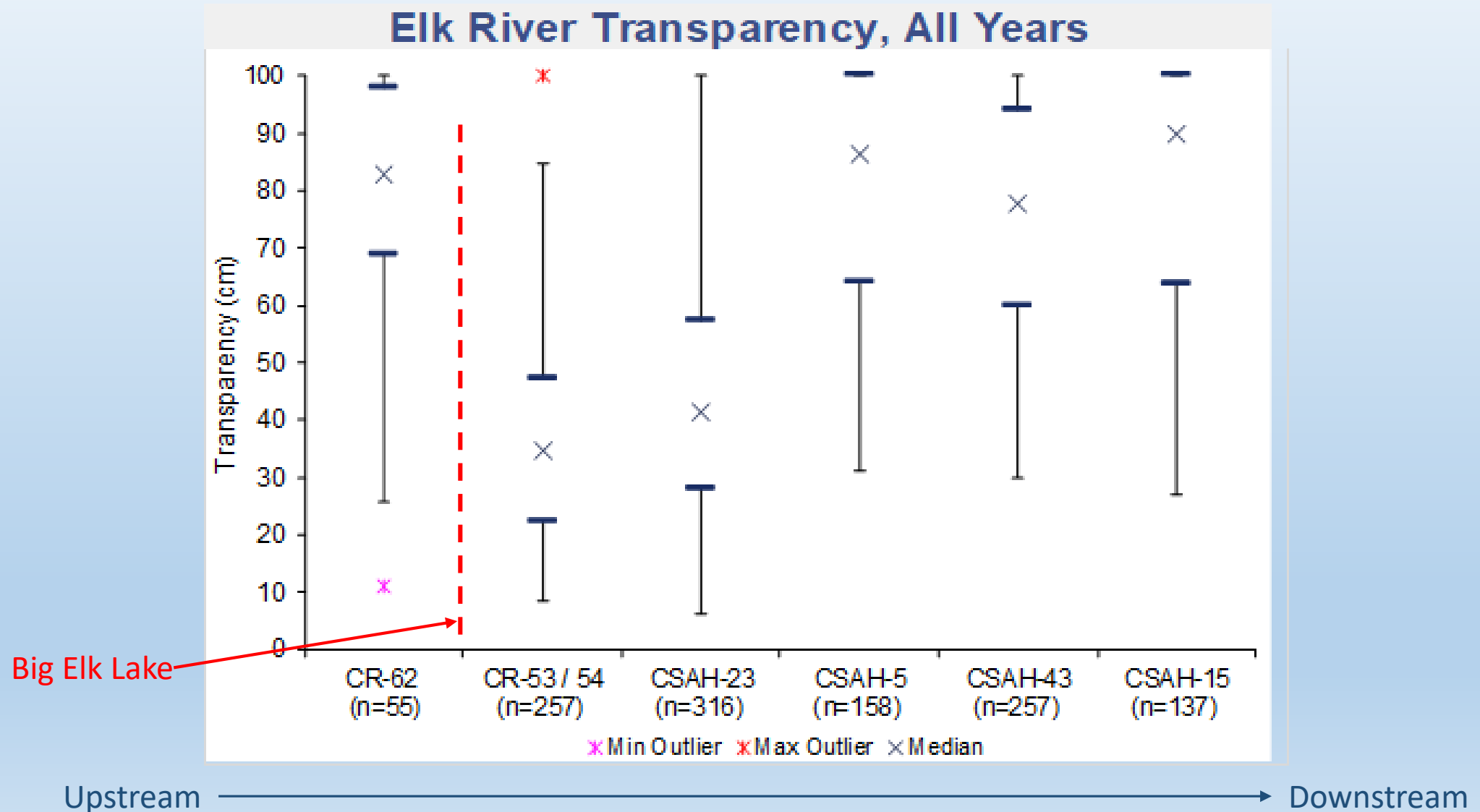
- Biological indicators
- Dissolved oxygen
- E. coli
- Mercury
- Turbidity

Water Monitoring - Streams

Stream water quality monitoring programs

1. MPCA's Watershed Pollutant Load Monitoring Network (WPLMN)
 - Examine watershed loads (large scale)
2. MPCA's Intensive Watershed Monitoring (IWM) Program 2019-2020
 - Use assessment / impairment at 24+ stream locations
3. MPCA's Citizen Volunteer WQ Monitoring Program
 - 17 volunteer sites monitored (12 in Sherburne, 5 in Benton)
 - Water clarity, perceived conditions documentation
4. Bacteria Monitoring Program
 - Stream concentration monitoring (7 continuous years)
 - 2017 genetic analysis study

Water Monitoring - Streams

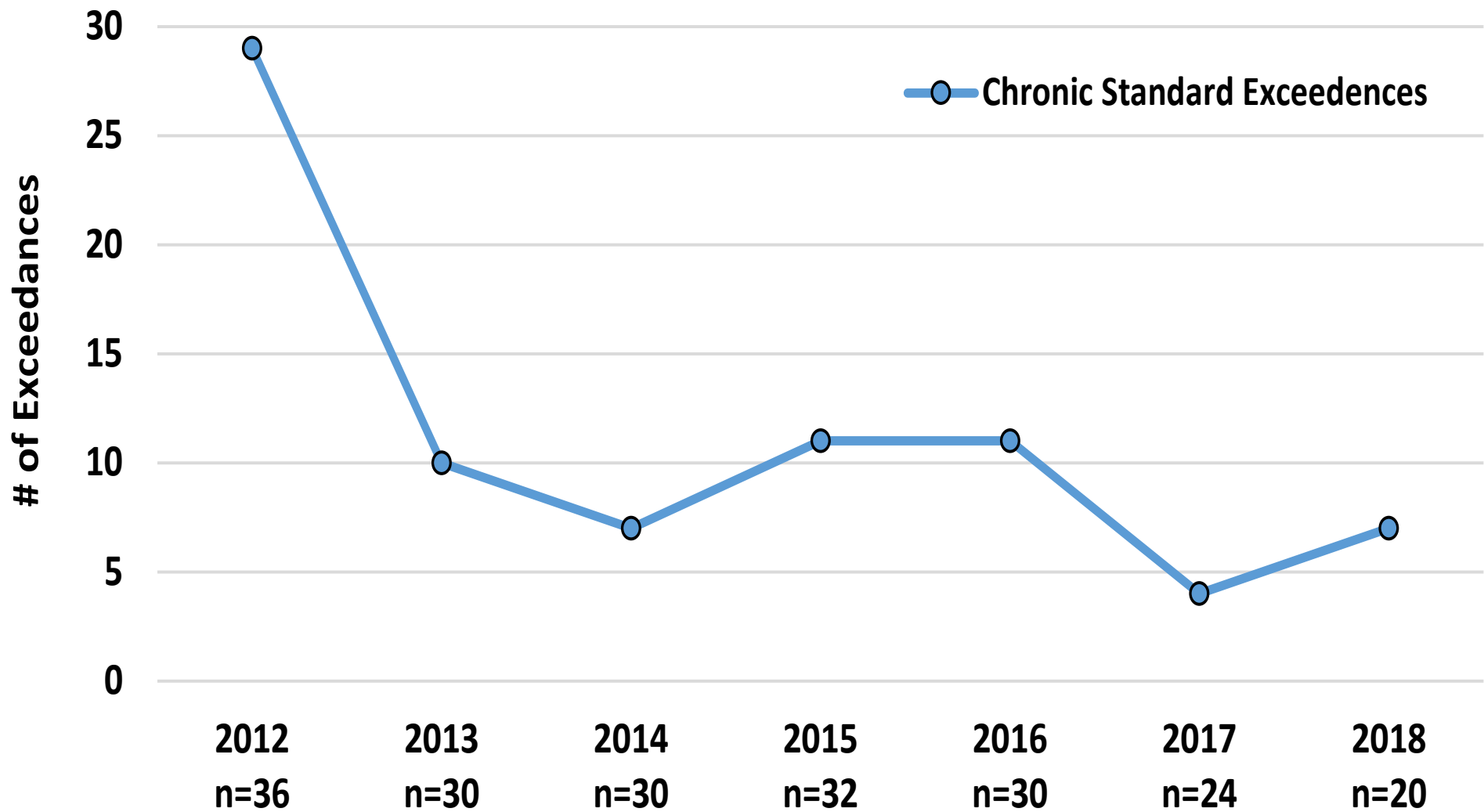


Bac

Mon

-
-
-
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Elk River Sample Bacteria Exceedances per Year



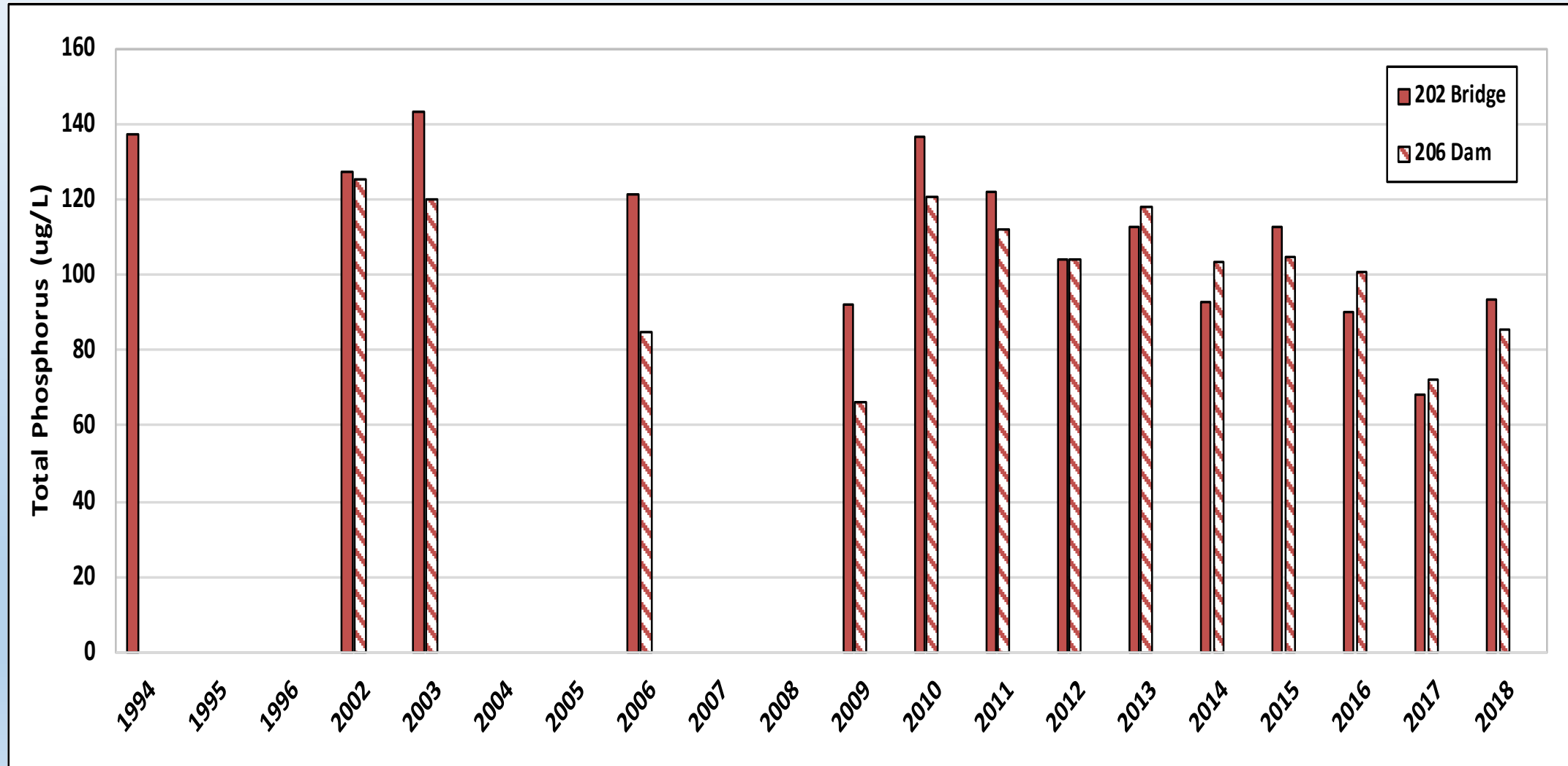
Samples collected at two sites along mainstem Elk River, Sherburne County

Water Monitoring - Lakes

Lake water quality monitoring

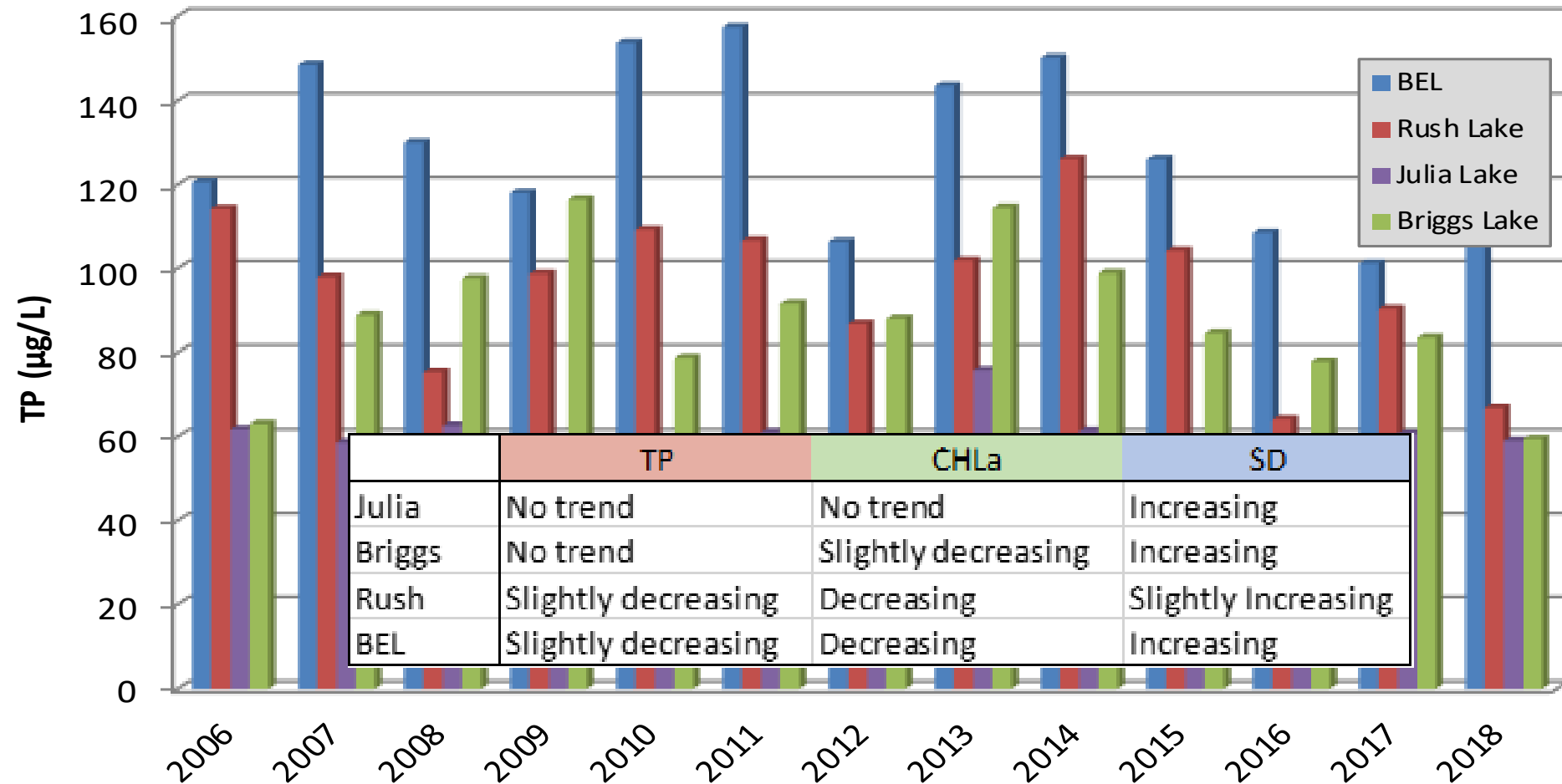
1. MPCA's Citizen Volunteer WQ Monitoring Program
 - 12 lakes currently monitored
 - Briggs Chain, Orono have advanced monitoring programs
2. MPCA's Intensive Watershed Monitoring (IWM) Program 2019-2020
 - Elk, Eagle, Little Elk, Birch Lakes
3. Lake Association / Improvement District studies
 - TLID – water budget study and follow-up monitoring
 - Anticipating a 2019-2022 Eagle Lake nutrient budget study

Water Monitoring – Lake Orono



Water Monitoring – Briggs Chain

Summer Ave. Total Phosphorus - Briggs Chain

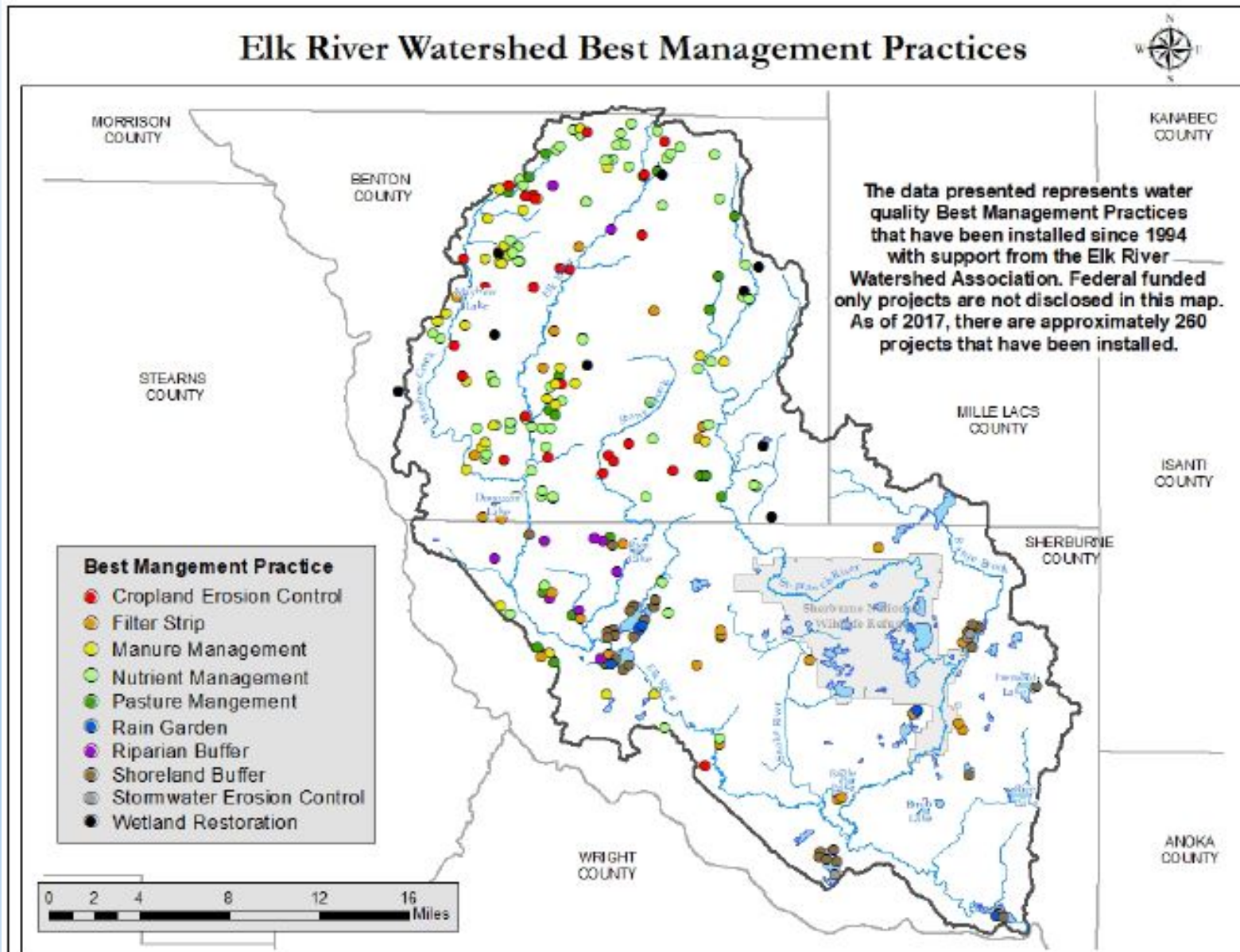


Elk River Watershed Conservation Activities

- Environmental Assessments
- BMP Implementation
- Conservation Partnerships
- Education & Outreach



Environmental Assessments



ERW Priority Sites

Level 1: 13% of sites assessed

Level 2: 21% of sites assessed

ERW BMP Implementation

Approx. 260 BMPs installed to target soil erosion, manure management, stormwater management, water infiltration and storage

Complimentary Programs

2018 data compilation report includes mention of Sherburne SWCD programs that were compiled for an Elk River City Council meeting and may be of interest to the ERWA Board.

1. Forestry programs

- Forestry assessments, disease and pest tracking
- Public land inventories: Ex. City of Elk River receives \$85k in economic value and 4.3 million gallons stormwater mitigation through public tree community

2. Agriculture and prairie programs

- Sherburne focus has been on cover crops and irrigation management
- Native prairie program has been popular with residents – 14 projects installed in 2018 to reduce erosion, sequester carbon, and increase pollinator habitat

Complimentary Programs Continued...

The following is a summary of Benton SWCD programs that have worked and are currently working directly with implementing projects in the Elk River watershed.

1. FY2016 Mayhew and Big Elk Lake Phosphorus Reduction Program (recently closed out)

- 1 – Manure Pit Closure
- 3 – Manure Storage
- 1 – Nutrient Management
- 8 – Erosion Control
- 3 – Cover Crops

Owner Match	Other C/S Match	Other C/S Non-Match	Total Match	Total Dollars Spent
\$ 216,077.94	\$ 641,687.56	\$ 25,000.00	\$ 882,765.50	\$ 1,182,765.50

Indicator Name	Total Value	Unit
BOD 5	1,162.00	LBS/YR
SEDIMENT (TSS)	794.31	TONS/YR
PHOSPHORUS (EST. REDUCTION)	735.41	LBS/YR
PREVENTION	0.00	COUNT
FECAL COLIFORM	631,700,000,000,000.00	CFU/YR
SOIL (EST. SAVINGS)	1,389.33	TONS/YR
COD	5,235.00	LBS/YR
NITROGEN	660.40	LBS/YR
PHOSPHORUS FEEDLOT (EST. REDUCTION)	91.00	LBS/YR

* A \$300,000 grant that required \$75,000 match.

Complimentary Programs Continued...

2. FY2017 Mayhew and Big Elk Lake Phosphorus Reduction Program (grant is ongoing)

- 3 – Manure Storage
- 2 – Nutrient Management
- 7 – Erosion Control
- 12 – Cover Crops
- 1 – Stream Crossing
- 1 – Wetland Restoration

Owner Match	Other C/S Match	Total Match	Total Dollars Spent
\$ 73,106.85	\$815,040.57	\$ 888,147.42	\$ 1,088,147.42

Indicator Name	Total Value	Unit
BOD 5	413.00	LBS/YR
SEDIMENT (TSS)	318.60	TONS/YR
PHOSPHORUS (EST. REDUCTION)	478.43	LBS/YR
FECAL COLIFORM	364,700,000,000,000.00	CFU/YR
SOIL (EST. SAVINGS)	573.58	TONS/YR
COD	1,960.00	LBS/YR
NITROGEN	2,674.30	LBS/YR
PHOSPHORUS FEEDLOT (EST. REDUCTION)	30.00	LBS/YR

* A \$200,000 grant that required \$50,000 match.

Complimentary Programs Continued...

3. FY2017 Elk River Watershed Strategic BMP Assessments (grant is ongoing)

- 25 assessments completed in Benton & Sherburne
- 8 projects under construction or that have been completed
- More scheduled for next year (uncertain of this number at this time)

* A \$182,500 grant that required \$45,625 match.

Project Development	Administration	Other C/S Match	Total Dollars Spent
\$ 110,292.03	\$6,118.63	\$ 170,089.86	\$ 286,500.52

Conservation Partnerships & Outreach

Partnerships

- Miss. River St. Cloud Watershed
- Elk River Watershed Association
- Natural Resource Conservation Service
- Farm Service Agency
- Sherburne County Coalition of Lake Associations
- County Cities
- County Townships
- State Agencies (BWSR, MPCA, MDA, DNR, MDH, etc.)

Educational Programs

- Elementary and High School Education
- Lake Association Engagement
- Elected Officials / City & Township Staff
- Elk River Watershed Cleanup