

MCES Water Quality Monitoring Programs

Environment Committee
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Water Quality Monitoring

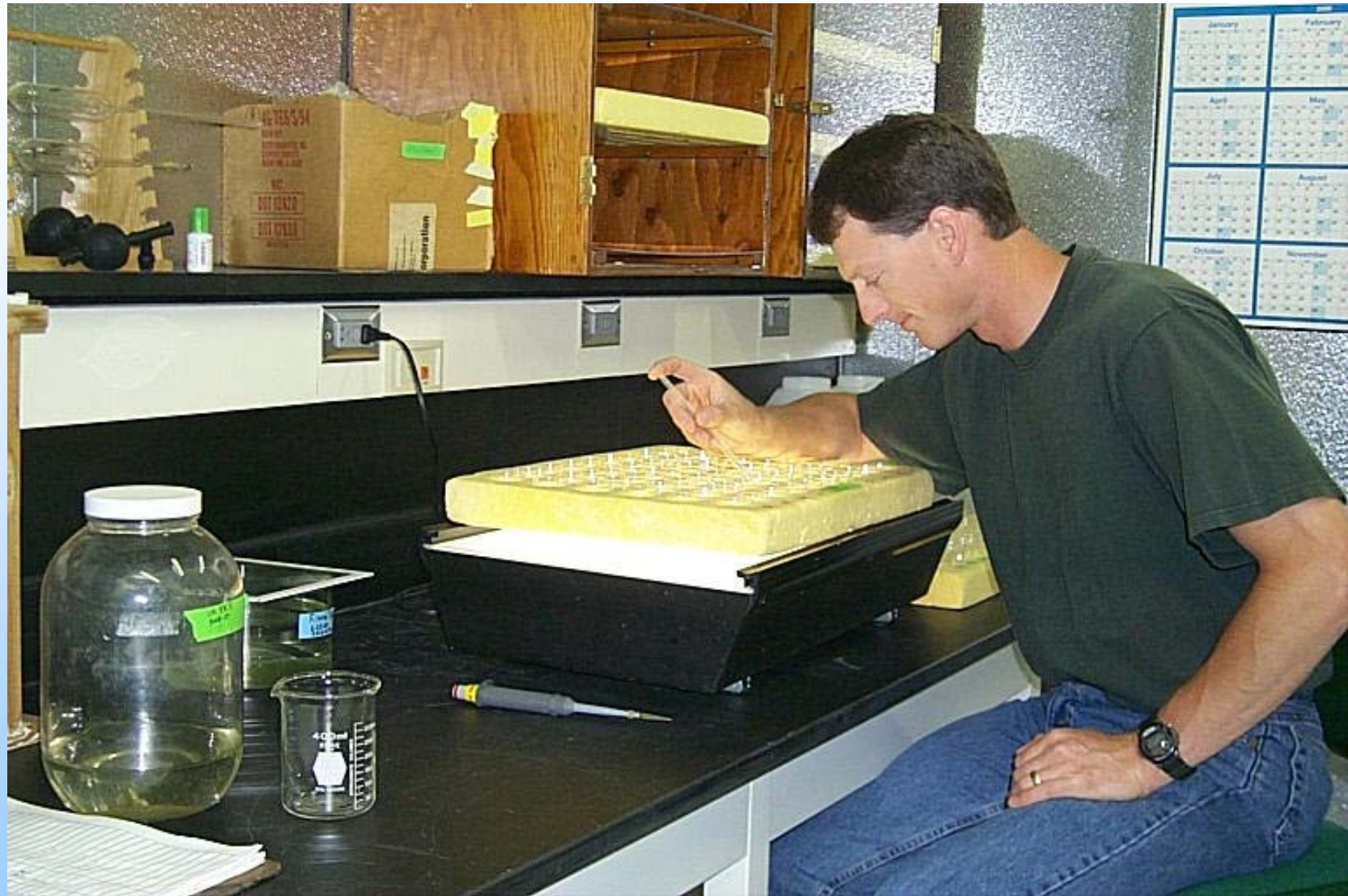
- **Wastewater Treatment Plants**
- **Rivers**
- **Streams**
- **Lakes**
- **Special Studies**



Treatment Plant Monitoring

Toxicity Testing

- **Expose organisms to treated wastewater**
- **Measure survival, growth and reproduction**





River Monitoring

Purpose:

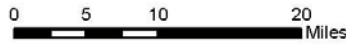
- **Fulfill permit requirements**
- **Assess performance and effectiveness of treatment plants**
- **Measure compliance with water quality standards and criteria**
- **Obtain information on sources and impacts of nonpoint source pollutants**

MCES River Monitoring Sites



EXPLANATION

- MCES Automatic Monitoring Station
- MCES Conventional Monitoring Station
- USGS Monitoring Station
- ▲ MCES Wastewater Treatment Plant (Seneca)
- ~ Hydrology Network (Major Rivers)
- ⬡ Major Drainage Basin



Note: MI = Minnesota River Basin, UM = Upper Mississippi, SC = St. Croix River Basin, Rum = Rum River, VR = Vermillion River







Automated River Monitoring







Stream Monitoring

Metro Area Monitoring

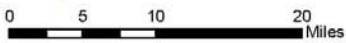
- **46 watersheds tributary to 3 rivers**
- **7 MCES sites (6 streams)**
- **15 local partner sites (15 streams)**

MCES Stream Monitoring Sites



EXPLANATION

- MCES Monitoring Station
- Continuous Turbidimeter
- Stream Network
- River Network
- Major Watershed Divide
- TCMA Subwatershed







Stream Monitoring

Metro Area Monitoring

- **Precipitation**
- **Streamflow**
- **Event-based and baseflow monitoring of runoff
(March-October)**
- **Water Chemistry
(Conventional pollutants)**





Lake Monitoring

MCES Self-Monitoring Lakes

- 124 lakes monitored since 1980
- 9 lakes monitored in 2011

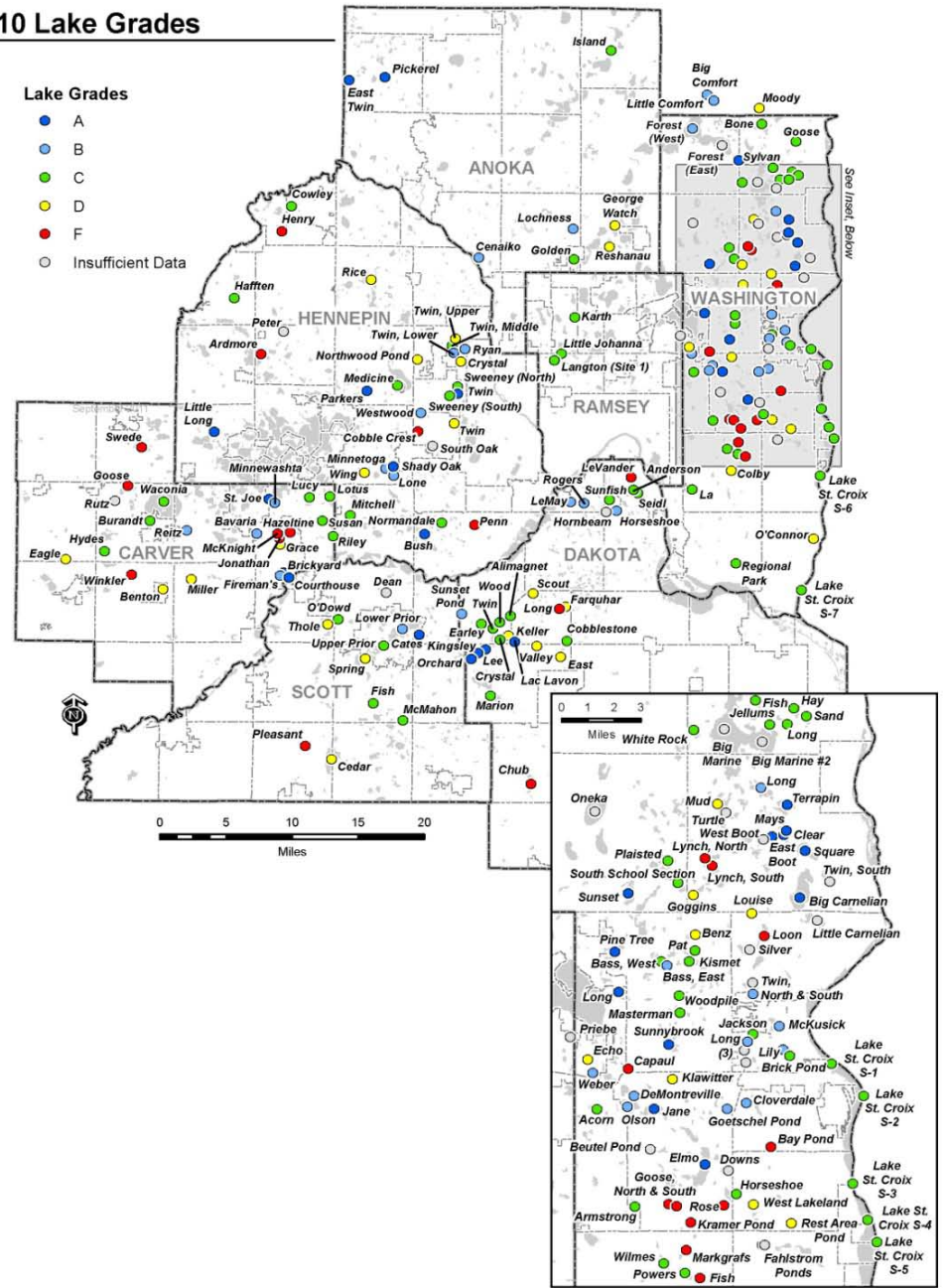
Citizen Assisted Monitoring Program (CAMP)

- 307 lakes monitored since 1993
- 170 lakes monitored in 2011

2010 Lake Grades

Lake Grades

- A
- B
- C
- D
- F
- Insufficient Data







Lake Monitoring

Water Chemistry and Biology

- **10 Conventional Pollutants**
(Nutrients and chlorophyll)
- **2 Biological Organism Groups**
(Phytoplankton and zooplankton)
- **Citizen Perception**
(Physical/recreational suitability; Secchi)



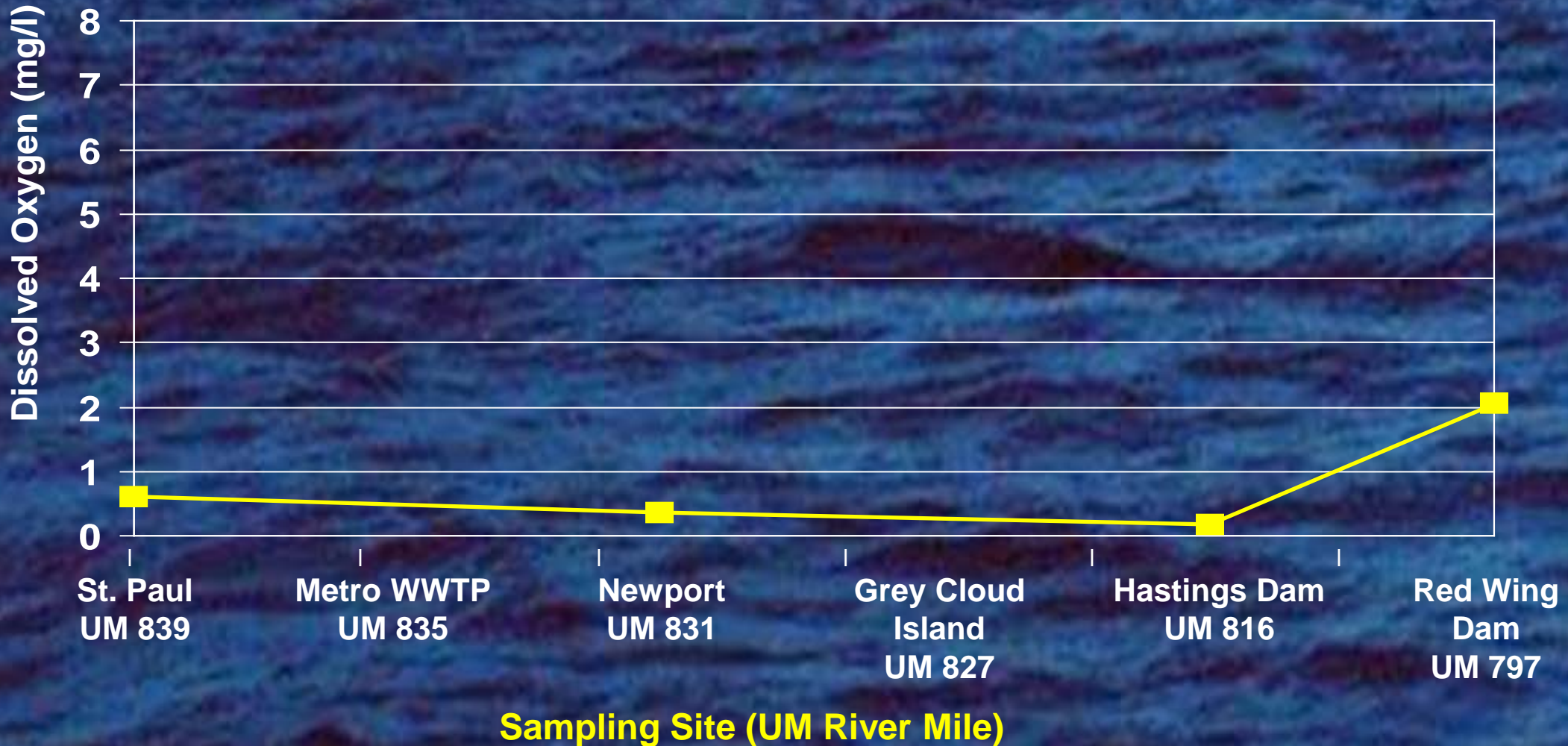
Special Studies

WWTP Planning & Expansion Support

- **Mississippi River phosphorus study**
- **Water quality modeling and facility planning**

Mississippi River: 1926

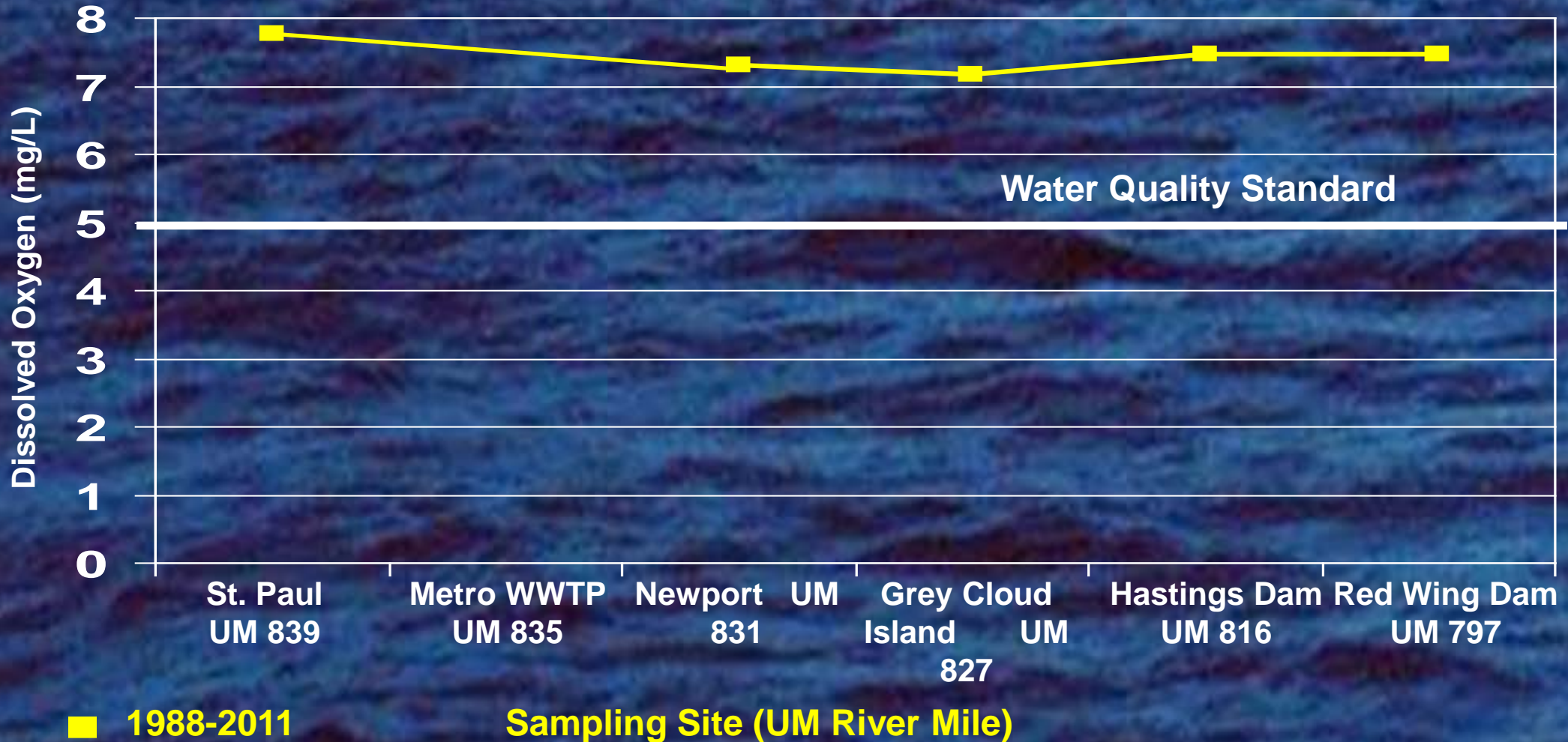
Mean August Dissolved Oxygen Concentration*



*Mean of all August observations for the time period

Mississippi River (1988-2011)

Mean August Dissolved Oxygen Concentration*



*Mean of all August observations for the time period

Metro Plant Performance: 1942-2011

