



Minneapolis  
Park & Recreation Board

Thursday, April 21<sup>st</sup>, 2022

# Cedar-Isles CAC Water Quality Subcommittee Meeting #3



# Land Acknowledgement



We collectively acknowledge that the Minneapolis Park and Recreation Board system is located on the traditional, ancestral, and contemporary lands of Indigenous people. This land holds great historical, spiritual, and personal significance for its original stewards, the Native nations and peoples of this region.

We also acknowledge that restrictive covenants were used to deny Black, Indigenous, Asian and in some cases Jewish individuals access to property in surrounding neighborhoods. This had an impact on who was and was not officially welcome in this area.

# Agenda

- 6:00-6:10pm Introductions
- 6:10-6:30pm Meeting #2 Content Overview  
- CAC Q&A
- 6:30-6:40pm Existing Policies Overview
- 6:40-7:45pm CAC Goals Discussion
- 7:45-8:00pm Public Comment Time

# CAC Group Agreement

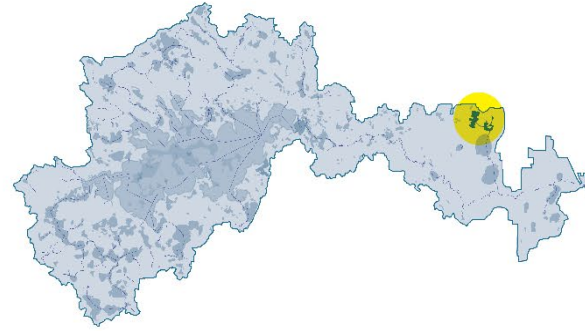
1. Assume good intent
2. One conversation: respect the speaker, actively listen
3. Value different perspectives
4. Speak from your experience
5. Be respectful even if you don't agree
6. Step up, step back

# MPRB Public Online Forum Guidelines

1. Webinar format for the meeting
2. The chat box will be open and viewable to CAC members and members of the public
3. CAC Members will be invited to speak during the Q&A and CAC Discussion
4. The public will be invited to speak during the Public Comment Time
5. We are not recording this meeting

# SCALES OF WATER QUALITY IMPROVEMENT PLANNING

## WATERSHED LEVEL PLANNING



Inter-agency  
partnerships and  
collaborations to  
address watershed

## CEDAR LAKE/LAKE OF THE ISLES MASTER PLAN



Developing  
measurable water  
quality  
recommendations  
within project area

## LAKE MANAGEMENT PLAN



Detailed modeling  
and guidance for  
individual lakes

# Cedar Lake/Lake of the Isles Master Plan

## WATER QUALITY PRESENTATION REVIEW



APRIL 21, 2022

DAT CONRAD WATER QUALITY SPECIALIST



## PART 1: LIMNOLOGY 101

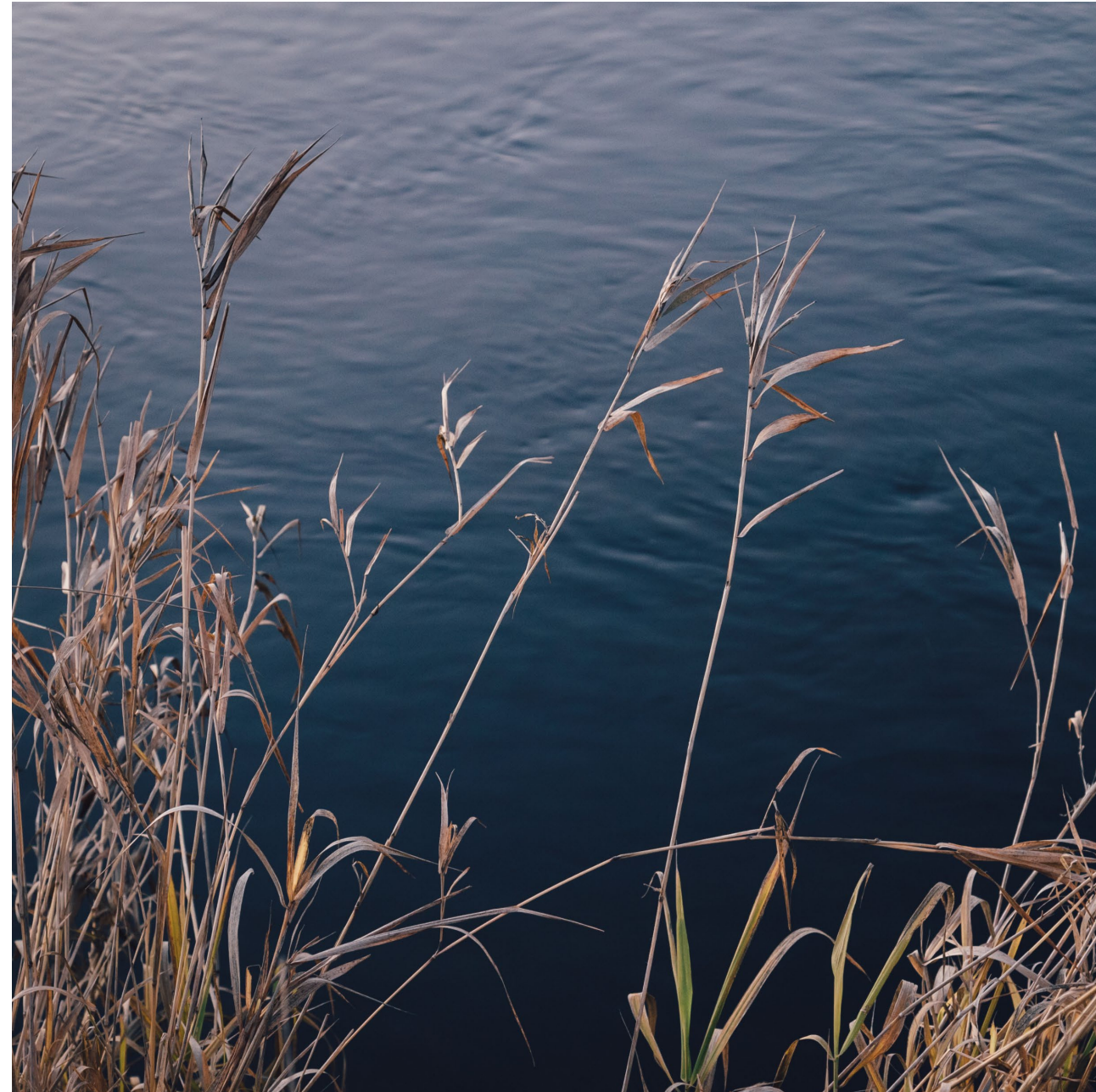
An overview of drivers influencing lake character

## PART 2: CONTEXT

How are lake conditions evaluated?

## PART 3: CONDITIONS

What is the current condition of each lake?  
How has it changed over time?





# WATERSHED INFLUENCE

OF ALL THE PHOSPHORUS COMING FROM THE WATERSHED...



TWIN LAKES  
DRAINAGE  
AREA  
CONTRIBUTION  
TO CEDAR

BROWNIE LAKE  
DRAINAGE AREA  
CONTRIBUTION  
TO CEDAR

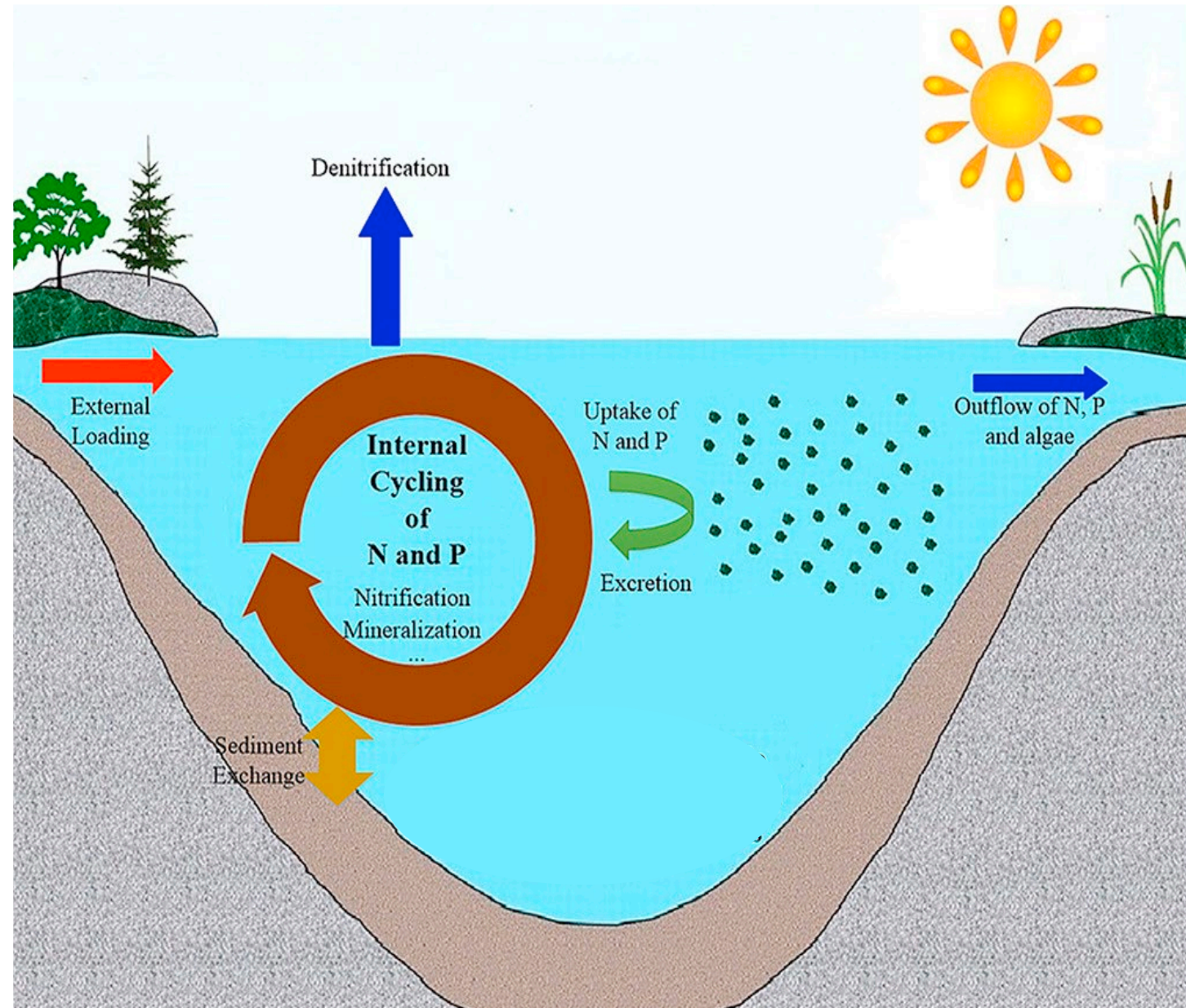
DIRECT  
DRAINAGE AREA  
CONTRIBUTION  
TO ISLES

DIRECT  
DRAINAGE AREA  
CONTRIBUTION  
TO CEDAR

CEDAR LAKE  
DRAINAGE AREA  
CONTRIBUTION  
TO ISLES

## NUTRIENT FATE

- Outflow
- Algal growth
- Plant uptake
- Nitrification (gas)
- Mineralization (sediment)



## AQUATIC PLANT DOMINATED STATE

- Clear water
- Balanced, diverse fish community
- Plants aid in keeping water clear



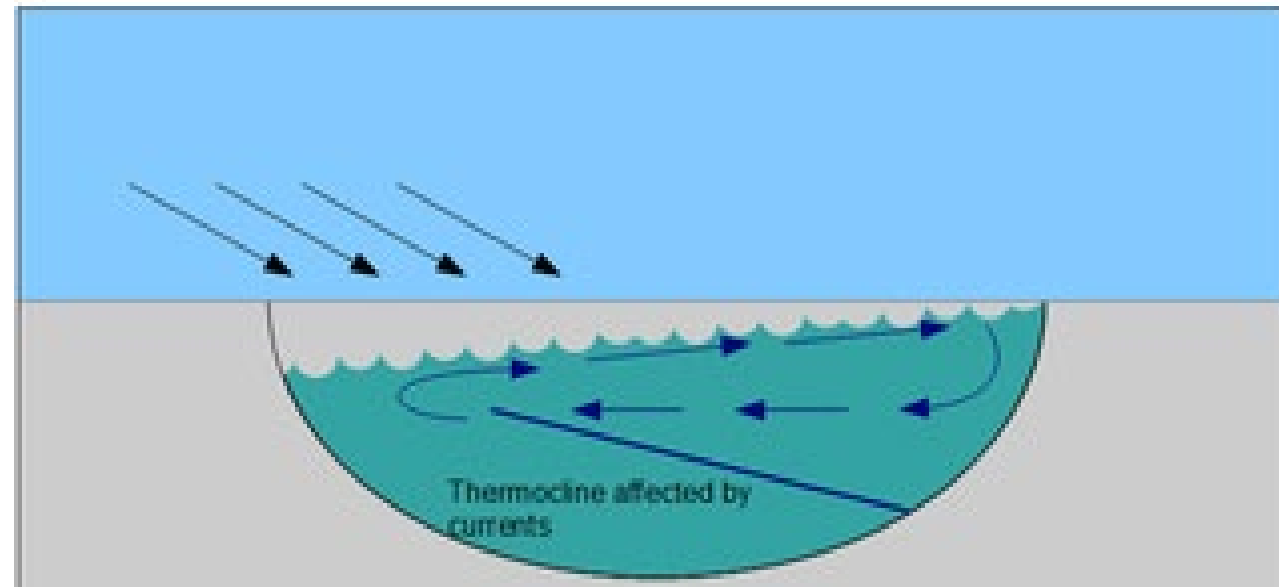
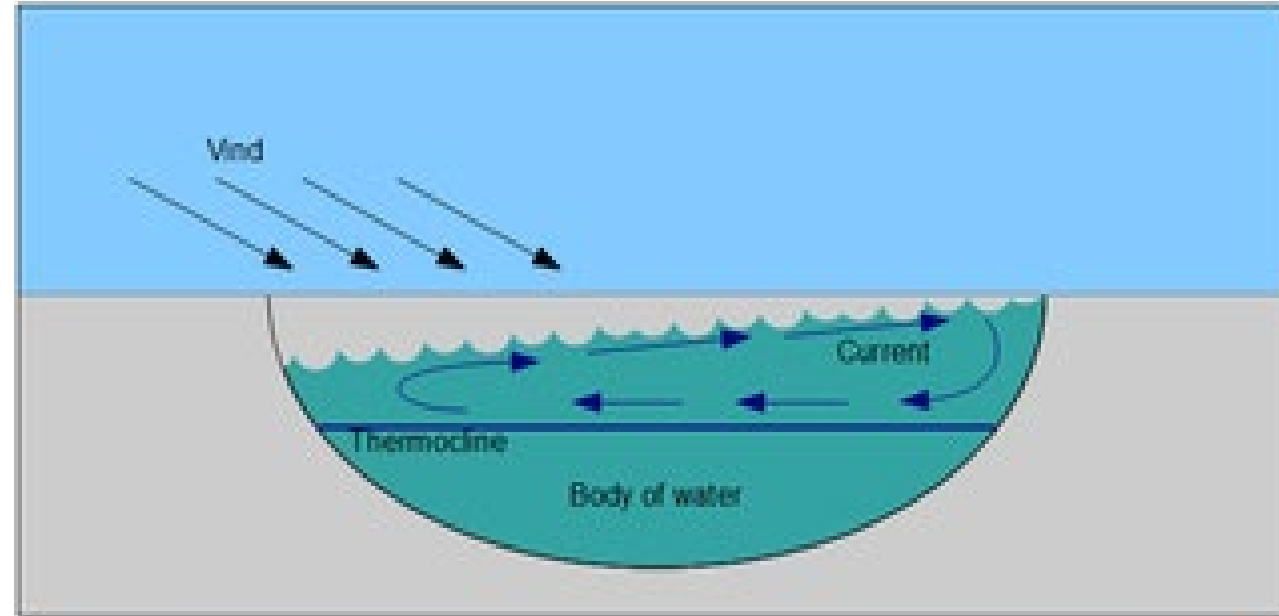
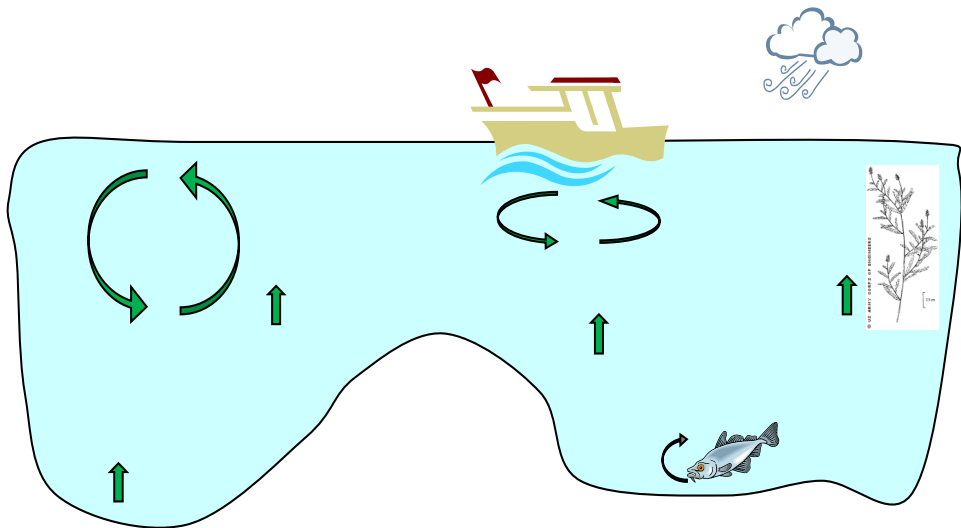
## ALGAE DOMINATED STATE

- Turbid water
- Dominated single fish group, pan fish &/or bottom dwellers
- Fish disturb sediment & plant roots, keeping water turbid



## INTERNAL PROCESS

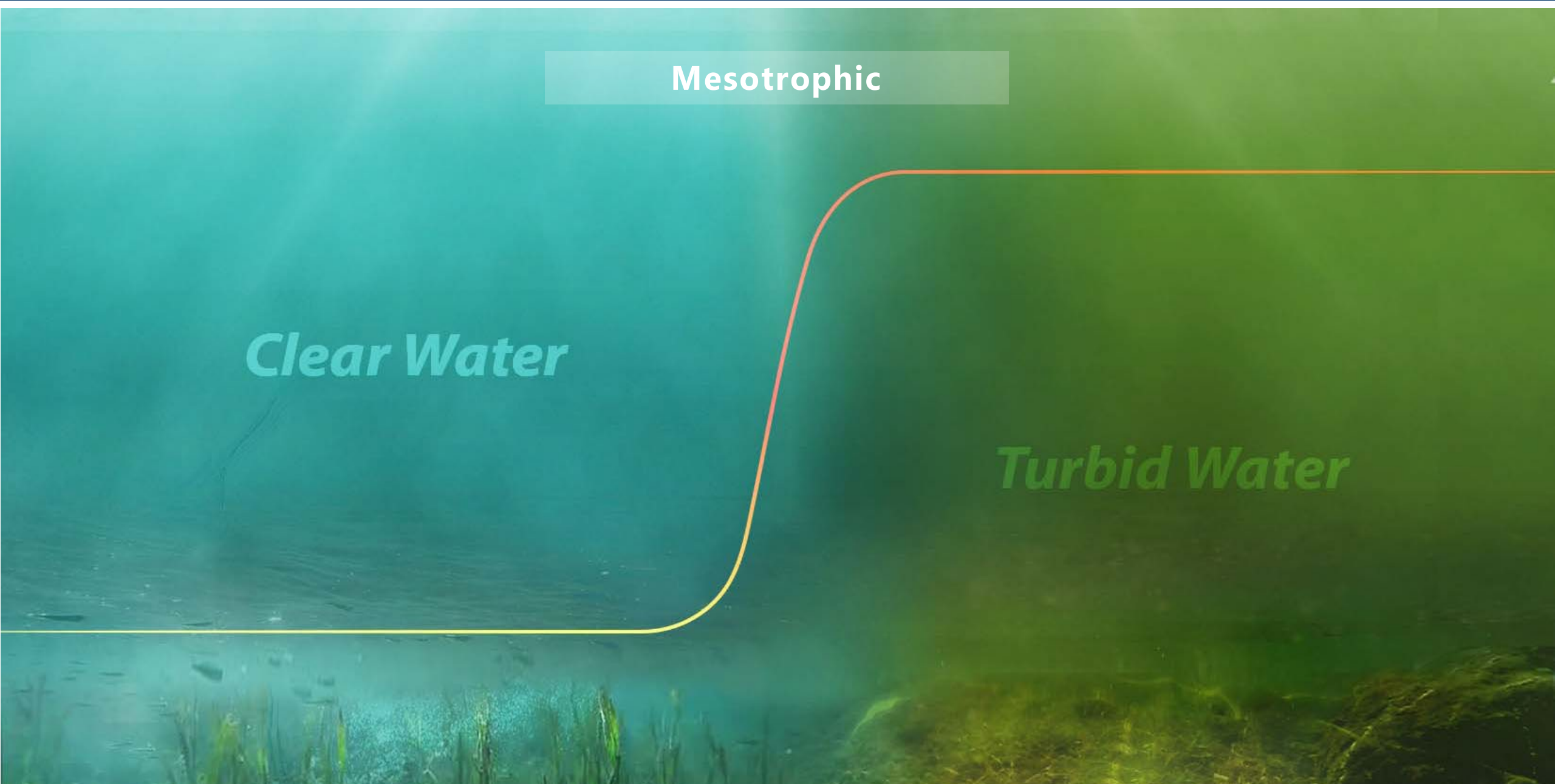
- Lake size & shape
- Wind & boat wave action
- Bottom feeding fish
- Sediment release



Mesotrophic

*Clear Water*

*Turbid Water*



# TROPHIC STATES: measure of fertility/lake productivity

**Oligotrophic (less productive)**

**Mesotrophic**

***Clear Water***

**Cooler Temperature  
More Oxygen  
Less Algae**

***Turbid Water***

# TROPHIC STATES: measure of fertility/lake productivity

**Oligotrophic (less productive)**

**Mesotrophic**

**Eutrophic (more productive)**

***Clear Water***

**Cooler Temperature  
More Oxygen  
Less Algae**

***Turbid Water***

**Warmer Temperature  
Less oxygen  
Excessive Algal Blooms**

# ECOREGION STANDARD – TROPHIC STATE INDEX

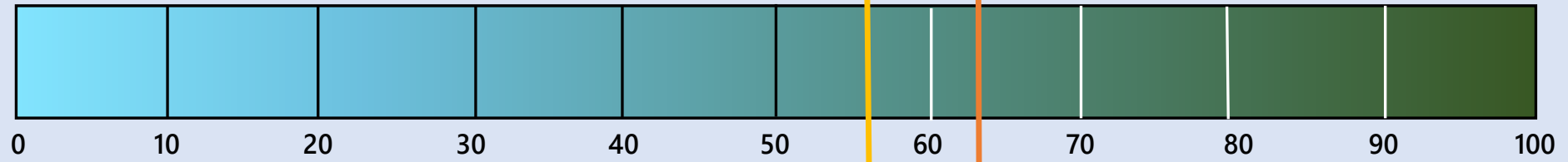
## STATE STANDARDS PER LAKE

**Oligotrophic (clear water)**      **Mesotrophic (moderately clear water)**      **Eutrophic (green water)**      **Hypereutrophic (very green water)**

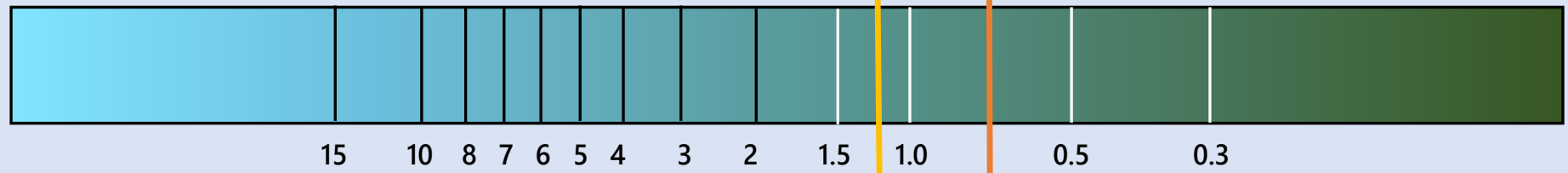
DEEP LAKE STANDARD: CEDAR LAKE

SHALLOW LAKE STANDARD LAKE OF THE ISLES

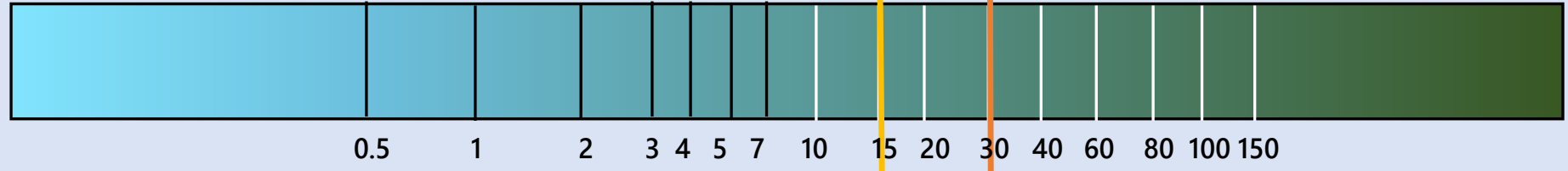
Trophic State Index (TSI)



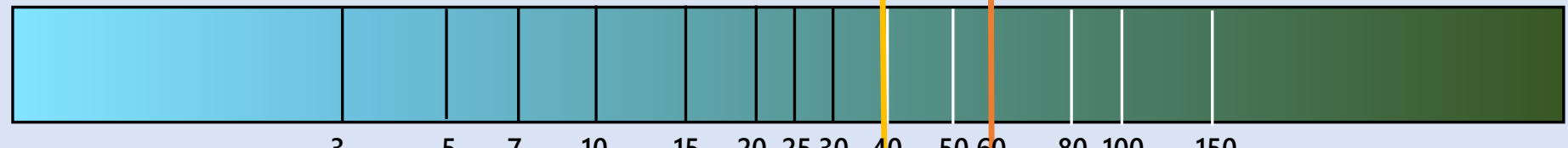
Transparency (m)



Chlorophyll-a (µg/l)



Total Phosphorus (µg/l)



## PLANNING PHASE (1990 – 1993)

- 1990 City of Minneapolis & MPRB Awarded WMP Grant
- 1992 Water Quality Management Citizens Advisory Committee Appointed
- 1993 Diagnostic Report & Implementation Plan

## IMPLEMENTATION PHASE (1994 – 1997)

- 1994 Lake of the Isles Grit Chambers
- 1995 Monitoring Program Improved Street Sweeping
- 1996 Cedar Lake Watershed Ponds Alum Treatment: Cedar Lake
- 1997 Alum Treatment: Lake of the Isles



# CLEAN WATER PARTNERSHIP GOALS

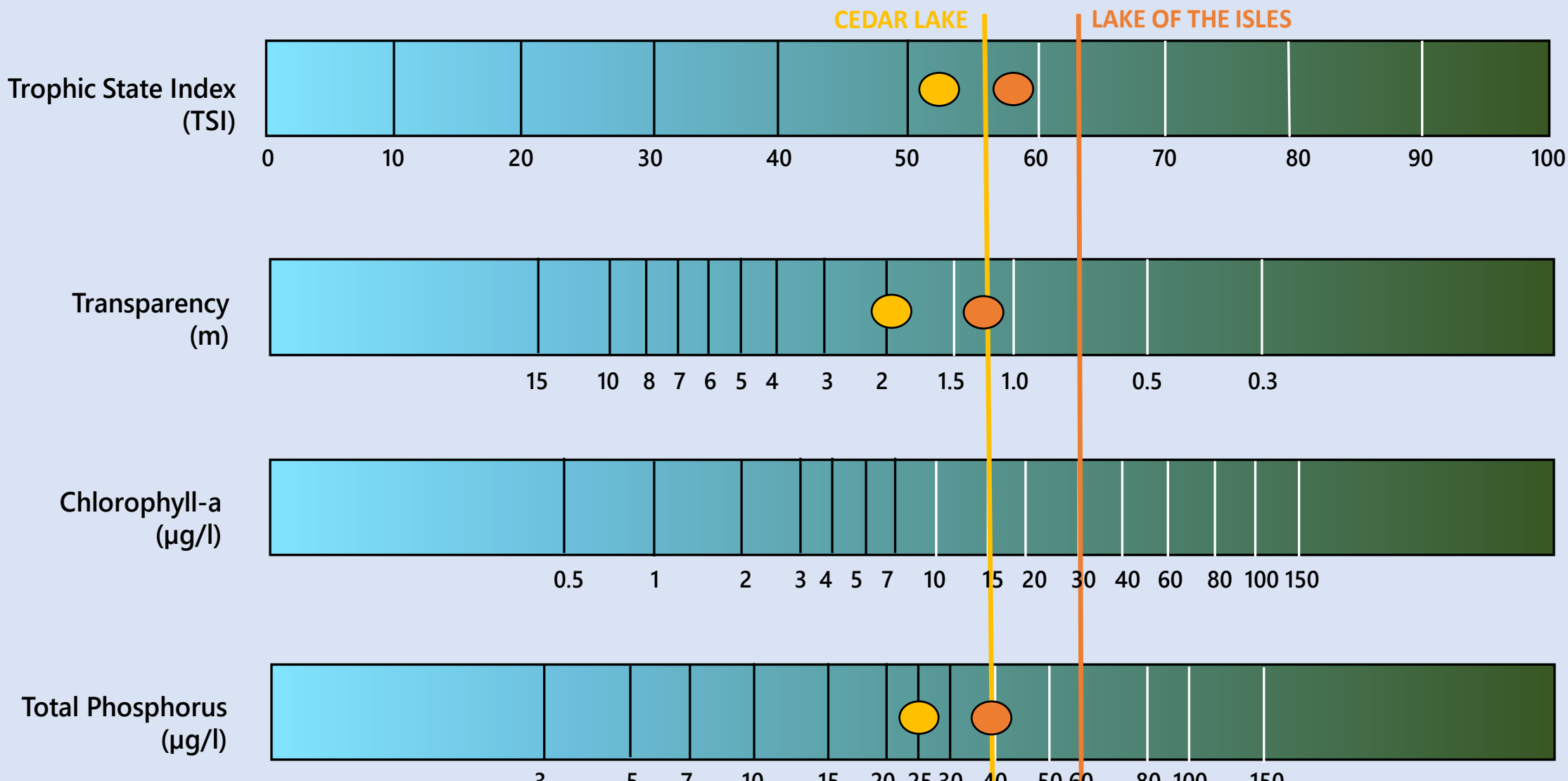
## STATE STANDARDS PER LAKE

**Oligotrophic**  
(clear water)

**Mesotrophic**  
(moderately clear water)

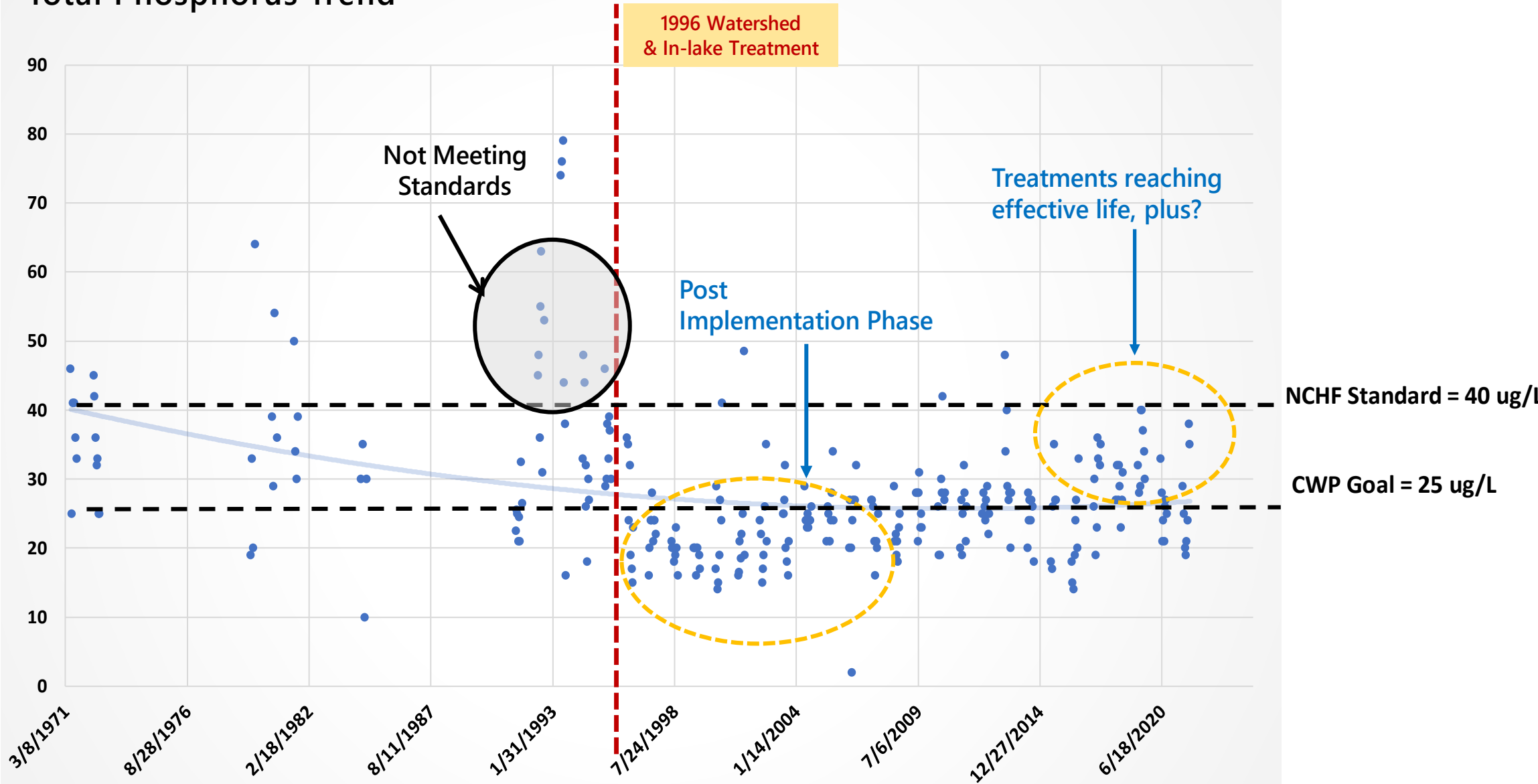
**Eutrophic**  
(green water)

**Hypereutrophic**  
(very green water)



# CEDAR LAKE PHOSPHORUS (1971-2021)

## Total Phosphorus Trend



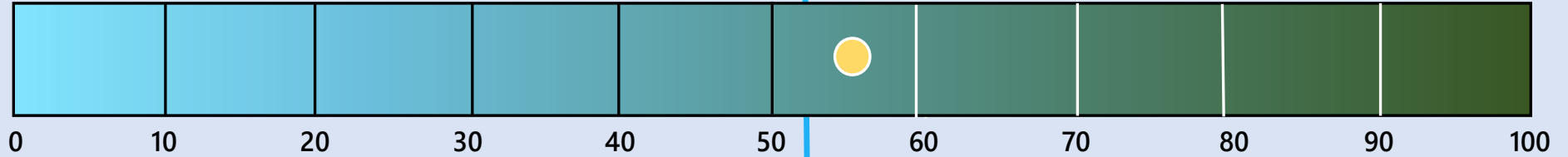
# CEDAR LAKE TROPHIC STATE INDEX (TSI)

MONITORING YEARS

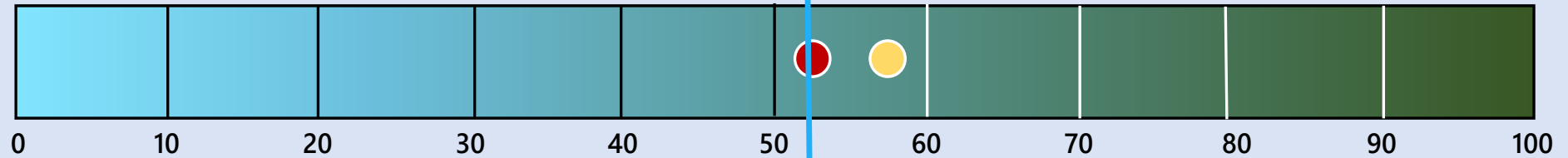
- 2008-2017
- 2017-2021

**Oligotrophic**  
(clear water)      **Mesotrophic**  
(moderately clear water)      **Eutrophic**  
(green water)      **Hypereutrophic**  
(very green water)

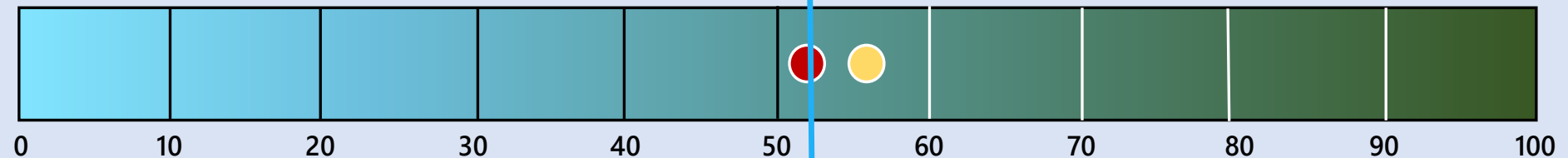
Trophic State Index  
(TSI)



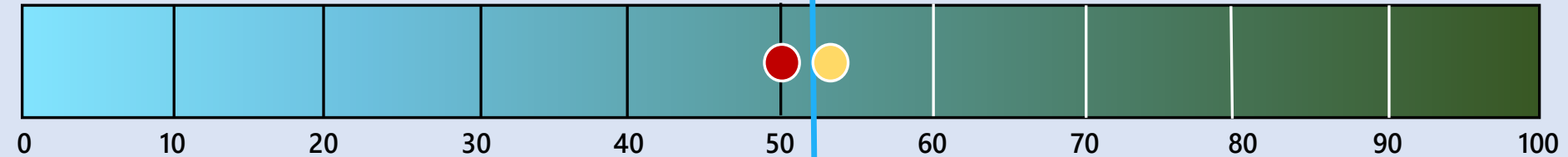
Transparency



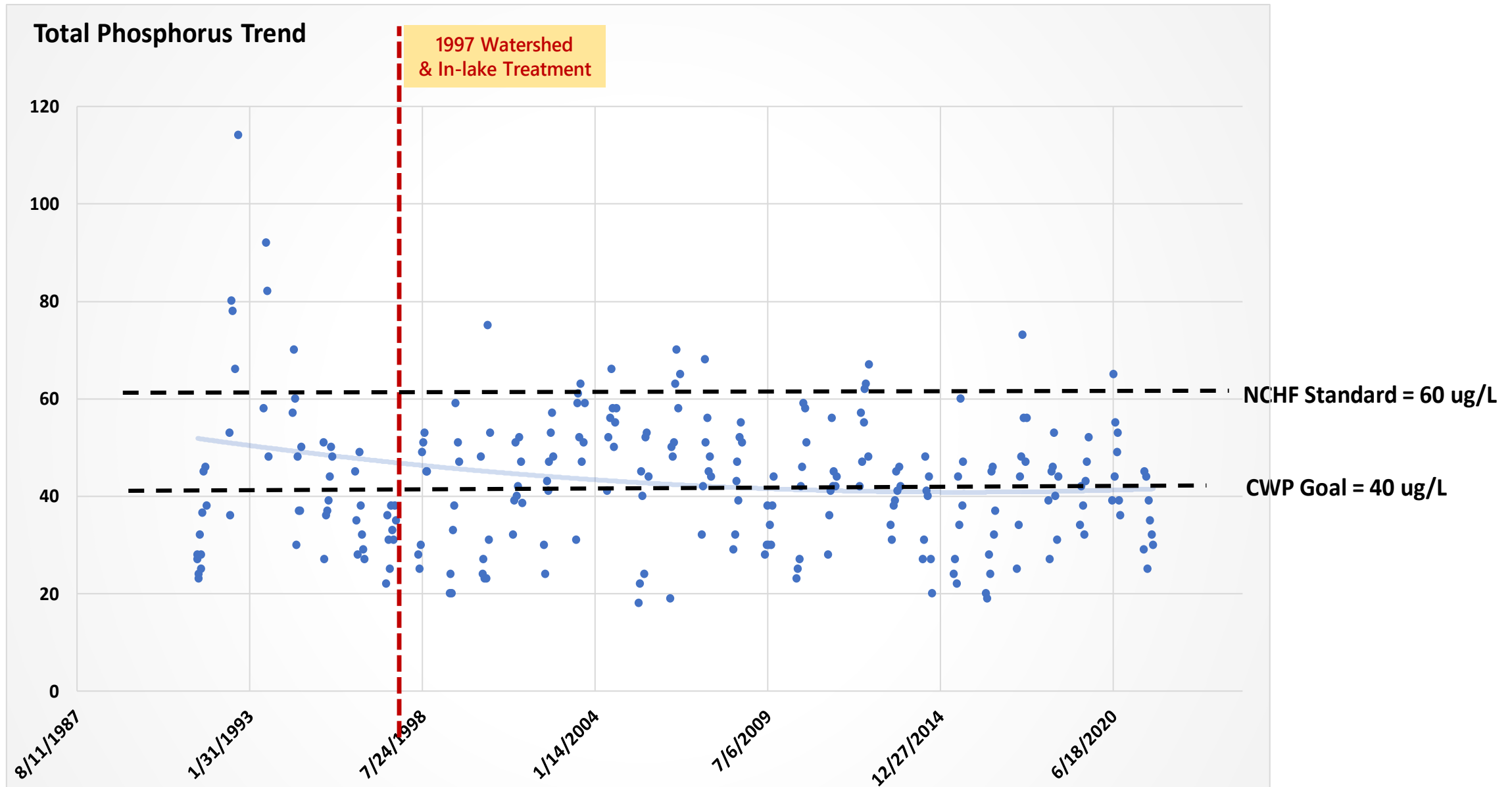
Chlorophyll-a



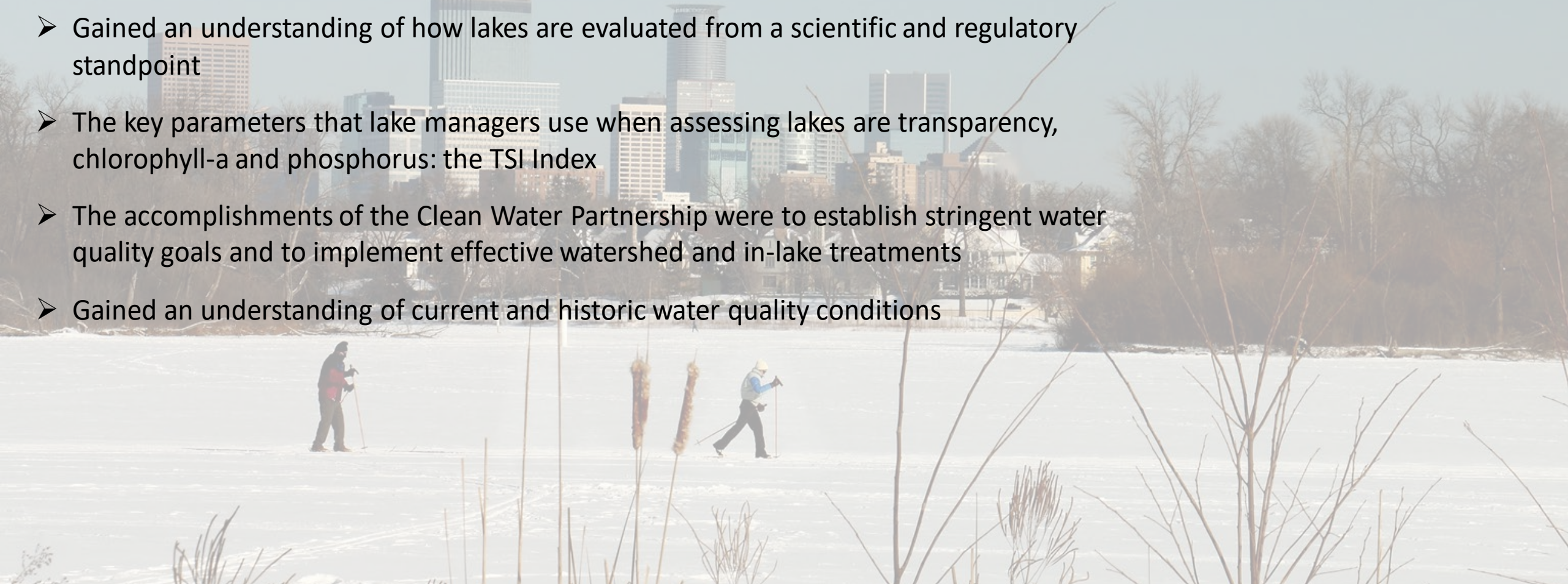
Total Phosphorus



# LAKE OF THE ISLES PHOSPHORUS (1987-2021)



- Primary drivers of water quality in lakes are watershed influence and internal dynamics
- Deep (Cedar) and shallow (Isles) lakes are fundamentally different - these differences form the basis for future management strategies
- Gained an understanding of how lakes are evaluated from a scientific and regulatory standpoint
- The key parameters that lake managers use when assessing lakes are transparency, chlorophyll-a and phosphorus: the TSI Index
- The accomplishments of the Clean Water Partnership were to establish stringent water quality goals and to implement effective watershed and in-lake treatments
- Gained an understanding of current and historic water quality conditions



# Clean Water Partnership Goals

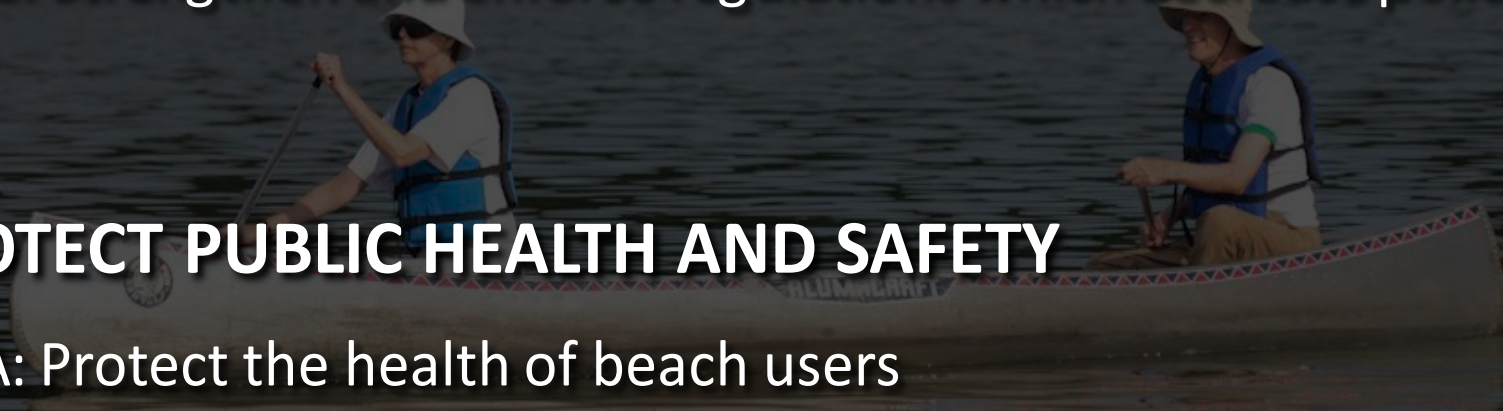


## **GOAL 1: INCREASE PUBLIC AWARENESS OF WATER QUALITY ISSUES**

- Objective A: Develop public education programs to teach citizens how to reduce the negative effects of their activities on lake water quality.
- Objective B: Establish new regulatory controls aimed at eliminating the introduction of pollutants into water bodies.
- Objective C: Strengthen and enforce regulations which decrease pollutant loads

## **GOAL 2: PROTECT PUBLIC HEALTH AND SAFETY**

- Objective A: Protect the health of beach users
- Objective B: Protect the health of fish consumers



## **GOAL 3: REDUCE IN-LAKE POLLUTANTS**

- Objective A: Manage in-lake nutrients, zooplankton populations and fish populations

## **GOAL 4: REDUCE POLLUTANT LOADINGS THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES**

- Objective A: Initiate watershed-wide practices to reduce the flow of pollutants into the lakes



## **GOAL 5: IMPROVE GOVERNMENT MANAGEMENT**

- Objective A: Develop water quality goals and management plans for each lake, wetland and stream in Minneapolis.
- Objective B: Increase intergovernmental cooperation & citizen participation in government

## **GOAL 6: MONITOR LAKE WATER QUALITY AND MANAGEMENT PRACTICE**

- Objective A: Create a water quality monitoring program for the Minneapolis lakes
- Objective B: Conduct Secchi disk monitoring at all Minneapolis lakes.
- Objective C: Monitor activities that contribute pollutants to surface waters

# CWP Numeric Goals

	Mean Summer	Mean Summer	Mean Trophic State
	Total Phosphorus	Transparency	Index Value
Cedar Lake	25 ug/l	1.9m	51
Lake of the Isles	40 ug/l	1.2m	57

## Load Reduction Goals (as a percentage of total watershed load)

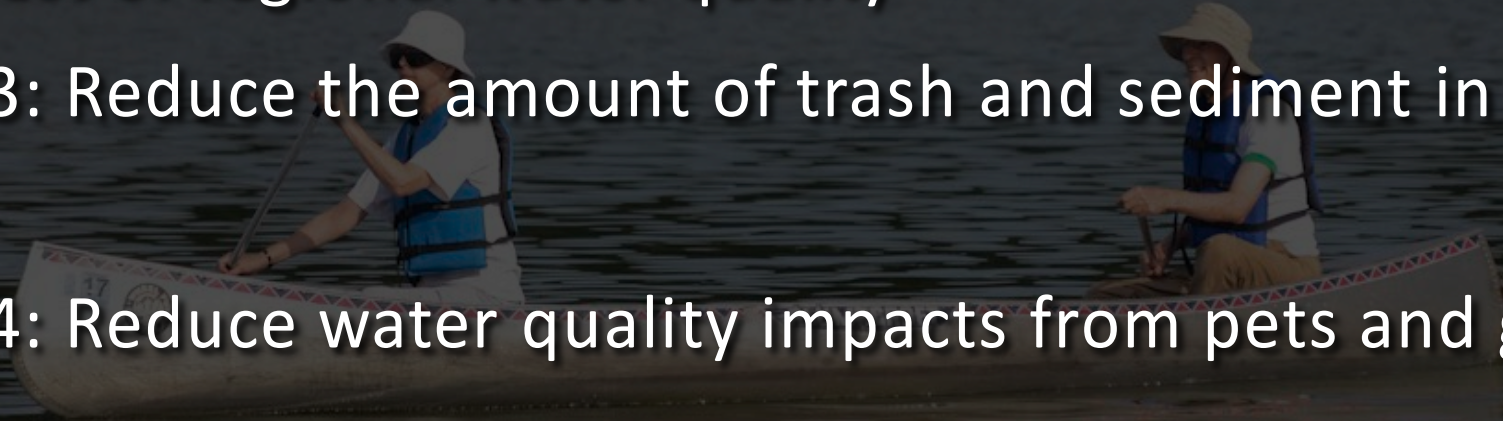
- Cedar Lake – 40%
- Lake of the Isles – 20%

# MPRB Ecological System Plan Goals

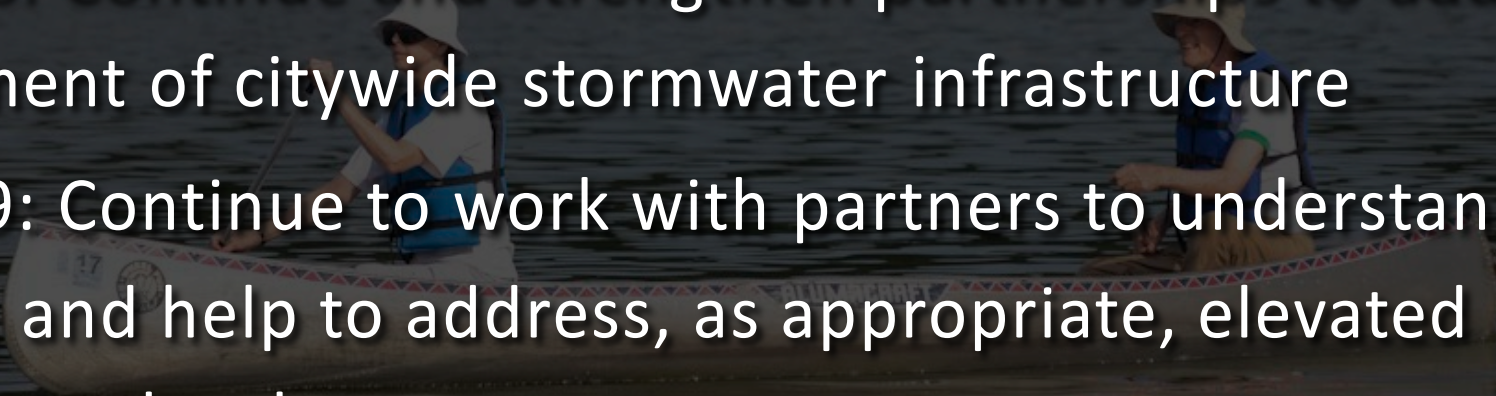


## GOAL A: WATER - IMPROVE WATER QUALITY

- Strategy 1: Improve management of park-generated stormwater runoff
- Strategy 2: Contribute to management of regional stormwater in the interest of regional water quality
- Strategy 3: Reduce the amount of trash and sediment in water bodies
- Strategy 4: Reduce water quality impacts from pets and geese

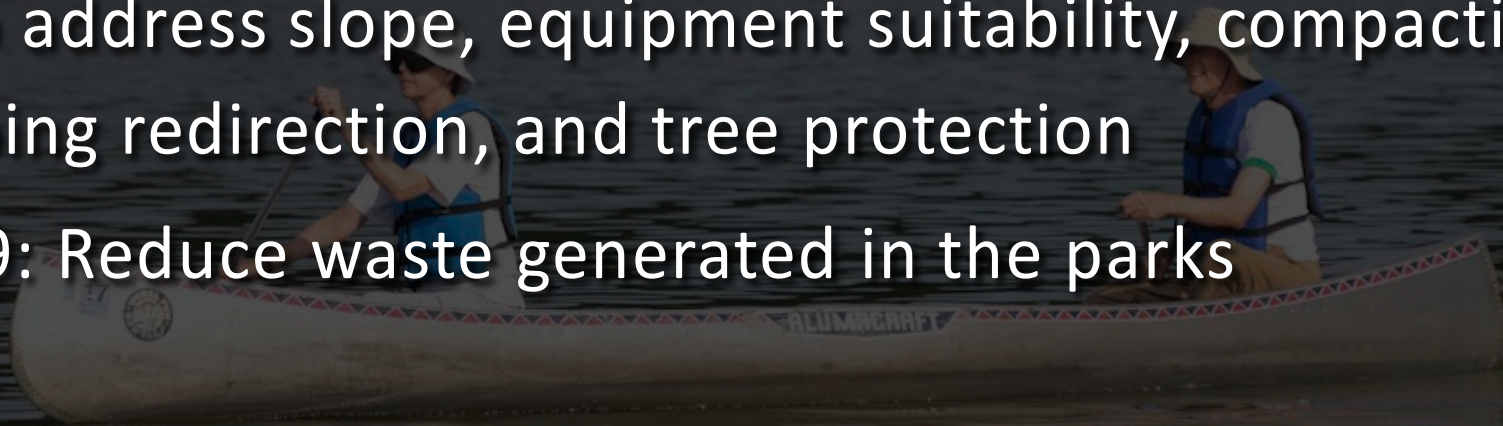


## GOAL B: WATER - BUILD RESILIENCY IN THE FACE OF CHANGING WATER LEVELS

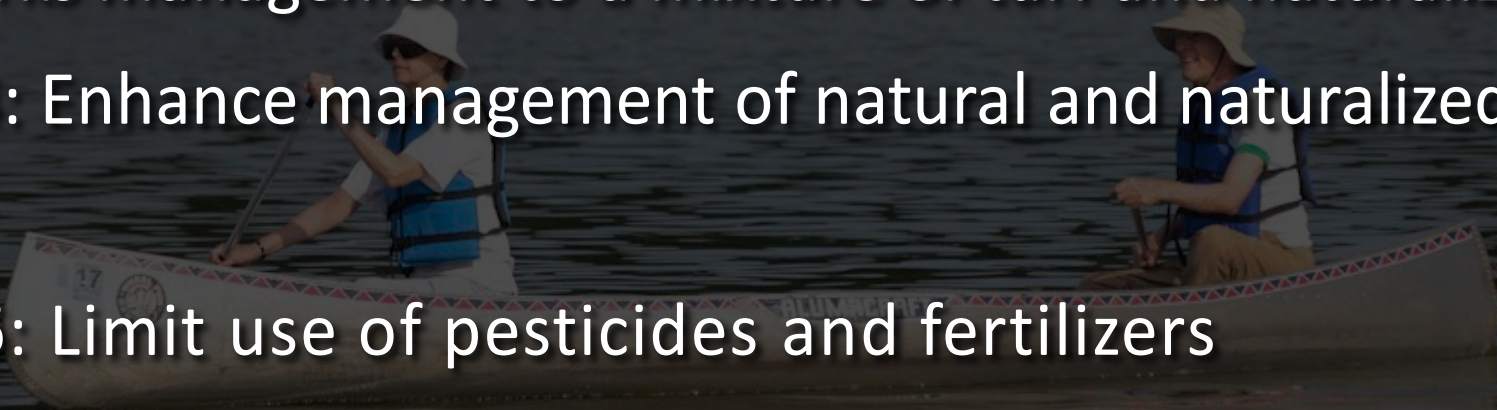
- Strategy 7: Design, plan, and manage park facilities in the light of changing water levels
  - Strategy 8: Continue and strengthen partnerships to address management of citywide stormwater infrastructure
  - Strategy 9: Continue to work with partners to understand, evaluate, and help to address, as appropriate, elevated groundwater levels
- 
- A photograph of two people in a canoe on a body of water. The person in the front is wearing a white shirt and a white hat, and the person in the back is wearing a blue shirt and a white hat. The canoe is white with a red and black patterned stripe along the side. The background is a dark, calm body of water with a dark shoreline in the distance.

## GOAL: LAND – MAINTAIN AND IMPROVE SOIL HEALTH

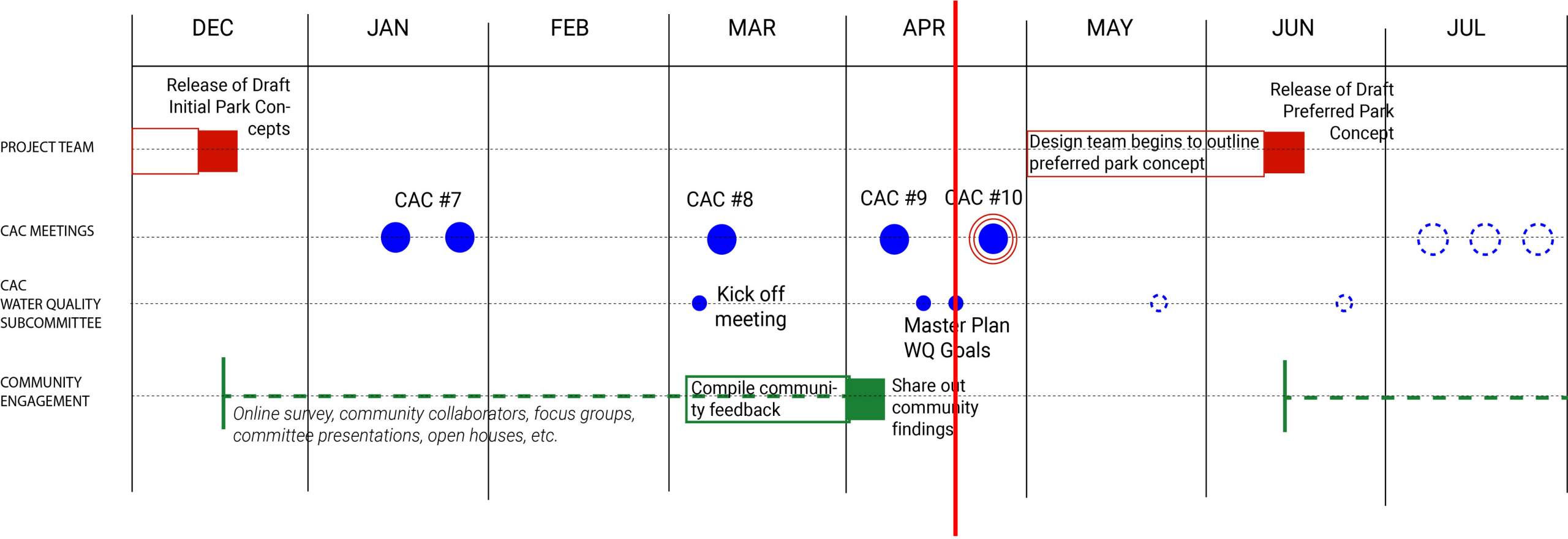
- Strategy 20. Address soil compaction during park construction and after events
- Strategy 23: Initiate mandatory pre-season mower and trimmer training to address slope, equipment suitability, compaction, grass clipping redirection, and tree protection
- Strategy 29: Reduce waste generated in the parks



# GOAL: LIFE – MAINTAIN AND ENHANCE LAND AND AQUATIC HABITAT

- Strategy 31: Identify potential habitat areas as part of master planning efforts
  - Strategy 33: Reduce total acreage of turf by transitioning from turf-focused parks management to a mixture of turf and naturalized areas
  - Strategy 34: Enhance management of natural and naturalized areas in parks
  - Strategy 36: Limit use of pesticides and fertilizers
  - Strategy 44: Develop an Aquatic Plant Management Plan that addresses fish habitat
- 
- A photograph of two people in a canoe on a body of water. The canoe is white with a red and black patterned trim along the edge. The person in the front is wearing a white shirt, a blue life vest, and a white hat. The person in the back is wearing a blue shirt, a blue life vest, and a white hat. The water is dark and calm, and the background is a blurred shoreline with green vegetation.

# Next Steps



A scenic view of a river at sunset. The sun is low on the horizon, creating a bright, shimmering reflection on the water's surface. In the foreground, numerous lily pads float on the water. The background is filled with dense green trees, and a small white structure is visible on the left bank. The overall atmosphere is peaceful and serene.

# Public Comment Time

# How to share your feedback

- Share your feedback verbally:
  - Up to 1 minute
  - Write "YES" in the chatbox and staff will invite you to unmute and turn on camera
- Share your feedback through writing:
  - Write your feedback in the chatbox

**THANK YOU for participating!**

**Questions or comments?**

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**612-499-3711**

**[epachuta@minneapolisparcs.org](mailto:epachuta@minneapolisparcs.org)**

**Find more project information at**

**[www.minneapolisparcs.org/cedar-isles](http://www.minneapolisparcs.org/cedar-isles)**