

**Removal of
Carp to
Reduce
Nutrient
Enrichment**



LakeCounty

Health Department and
Community Health Center



LakeCounty

Health Department and
Community Health Center



Lake County
Forest Preserves



STORMWATER
MANAGEMENT
COMMISSION



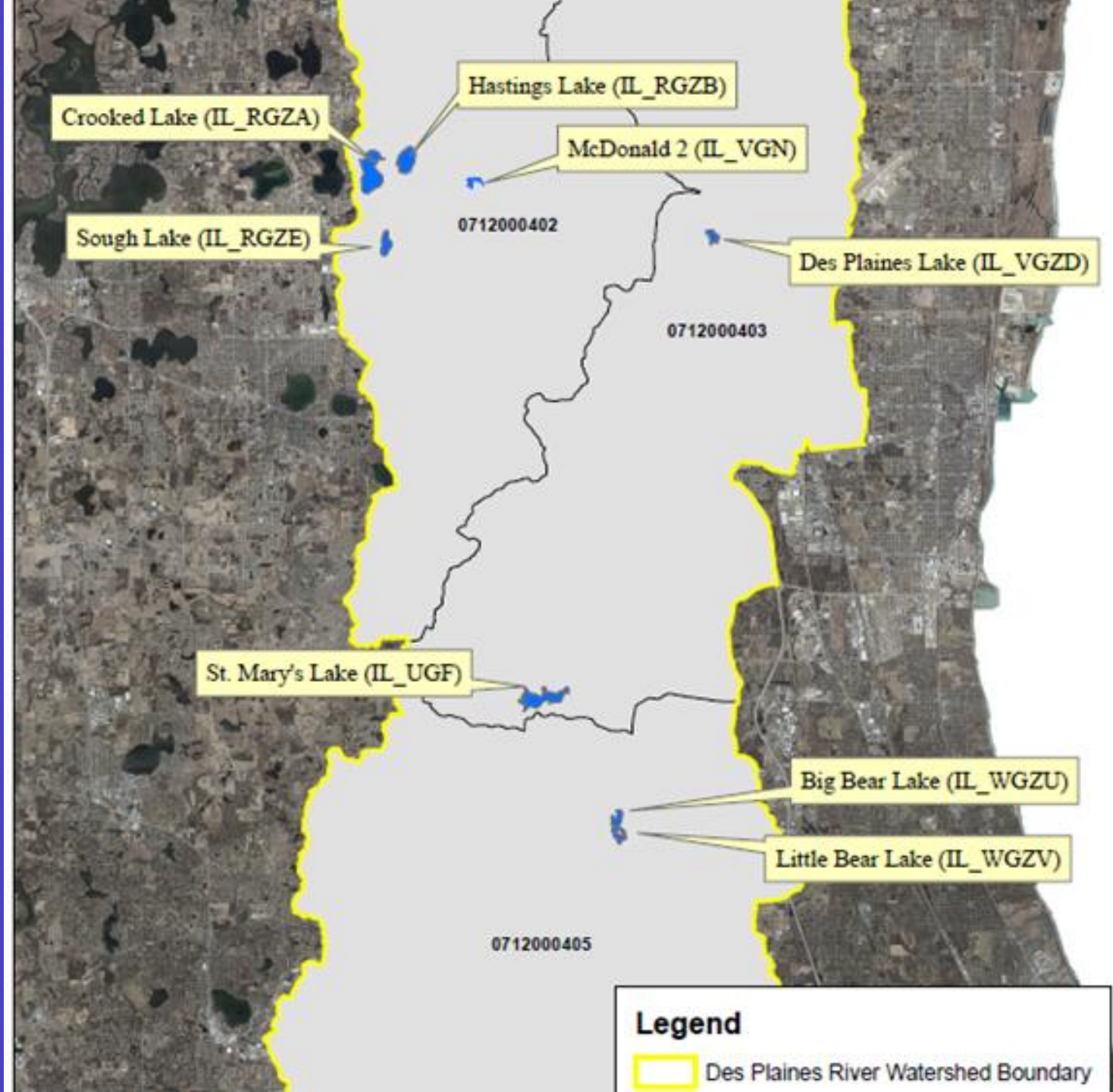
IEPA 319 Grant

Funding for this project provided in part by the Illinois Environmental Protection Agency through Section 319 of the Clean Water Act

- July 2018 - 319 Application
- November 2019 - 319 Application Approved
- March 30, 2021 - First Official Day of Carp Removal

Des Plaines River Watershed

- ❖ Hastings Lake (LCFP)
- ❖ McDonald 2 (LCFP)
- ❖ Des Plaines Lake (LCFP)
- ❖ Slough Lake (LCFP)
- ❖ Crooked Lake
- ❖ St. Mary's Lake
- ❖ Big Bear Lake
- ❖ Little Bear Lake



Des Plaines River Watershed

- ❖ Hastings Lake (LCFP)
- ❖ McDonald 2 (LCFP)
- ❖ Des Plaines Lake (LCFP)
- ❖ **Slough Lake (LCFP)**
- ❖ Crooked Lake
- ❖ **St. Mary's Lake**
- ❖ Big Bear Lake
- ❖ Little Bear Lake

Waterbody Name	Assessment Unit ID	10-Digit HUC	Size (acres)	Use Attainment	Causes of Impairment	Sources of Impairment
Crooked Lake	IL_RGZA	712000402	140	Fully Supporting Aquatic Life, Not Supporting Aesthetic Quality	Phosphorus (Total), Total Suspended Solids (TSS)	Internal Nutrient Recycling, Wildlife Other than Waterfowl, Agriculture, Rural (Residential Areas), Residential Districts
Hastings Lake	IL_RGZB	712000402	76	Fully Supporting Aquatic Life, Not Supporting Aesthetic Quality, Not Supporting Primary Contact	Phosphorus (Total), Total Suspended Solids (TSS), Fecal Coliform	Source Unknown, Other Recreational Pollution Sources, Agriculture, Rural (Residential Areas), Runoff from Forest/Grassland/Parkland
Slough Lake	IL_RGZE	712000402	38	Not Supporting Aesthetic Quality, Not Supporting Aquatic Life	Phosphorus (Total), Total Suspended Solids (TSS), Oxygen, Dissolved	Non-Point, Agriculture, Rural (Residential Areas), Runoff from Forest/Grassland/Parkland
Big Bear	IL_WGZU	0712000405	25	Not Supporting Aquatic Life, Not Supporting Aesthetic Quality	Total Suspended Solids (TSS), Phosphorus (Total), Aquatic Plants (Macrophytes)	Source Unknown
Little Bear	IL_WGZV	0712000405	26	Fully Supporting Aquatic Life, Not Supporting Aesthetic Quality	Total Suspended Solids (TSS), Phosphorus (Total), Aquatic Plants (Macrophytes)	Source Unknown
Des Plaines Lake	IL_VGZD	0712000403	21	Aesthetic Quality	Phosphorus (Total)	Internal Nutrient Recycling
St. Mary's Lake	IL_UGF	0712000403	105	Full Supporting Aquatic Life, Not Supporting Aesthetic Quality	Phosphorus (Total), Total Suspended Solids (TSS)	Contaminated Sediments, Littoral/shore area modifications (Non-riverine), streambank modifications/destabilizations, source unknown, urban runoff/storm sewers, runoff from Forest/Grassland/Parkland

Why?



- The common carp is one of the most damaging invasive fish species (Kulhanek et al., 2011) in the USA
- Implications of Carp on water quality
 - *Nutrient loading*
 - *Total Suspended Solids*
 - *Sediment re-suspension*
- Uproot and damage native plant communities

Common Carp

Cyprinus carpio

- Invasive (exotic) – Native to Europe and Asia
- World's Largest Minnow
- Two barbells on each side of the mouth
- Can survive in stagnant water (low DO)
- Omnivore
- Spring Spawner (64F)
- Female carp can lay around 300,000 eggs (100k – 1 million)



Carp Removal & Limnological Restoration



Carp
Removal

Improve
Water
Clarity

Aquatic
Plant
Growth

Electrofishing Boat

Electrofishing

Watercraft

16ft AAD

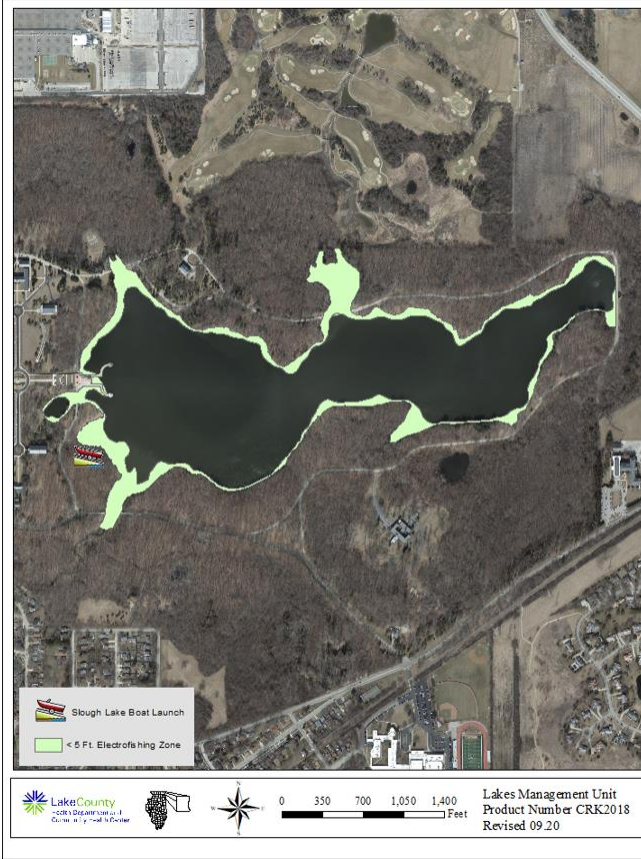
Electrofishing Boat

Protocol

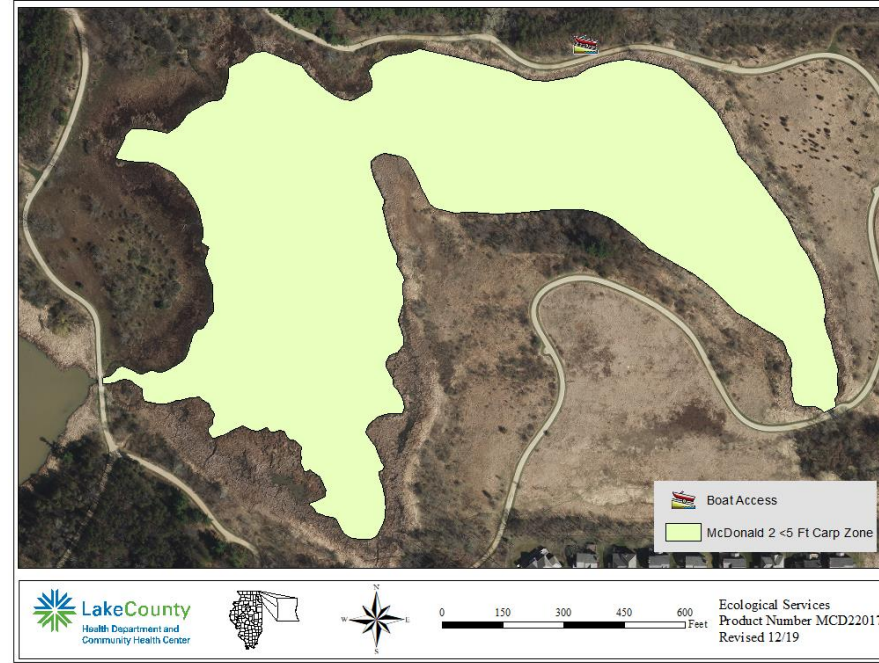
1. Turn on a 7000 W generator
2. Convert AC to DC current w the Electrofishing box
3. Electrify the water
4. Stun and capture the carp



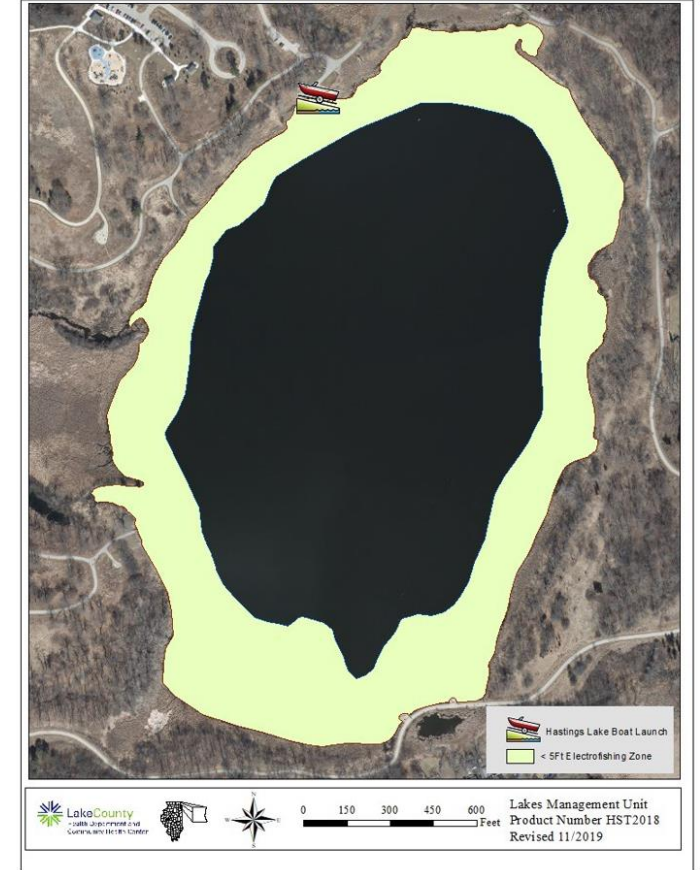
St. Mary's Lake <5 ft Carp Electrofishing Zone and Boat Launch



McDonald 2 <5 Ft Carp Electrofishing Zone and Boat Launch



Hastings Lake <5 Ft Carp Electrofishing Zone and Boat Launch



Effective Electrofishing Zone

Carp Processing

- Weigh and measure **10** representative carp
- The data is used to document carp demographics over time





Hard Work

Results



Water Quality Assessment

Secchi Depth



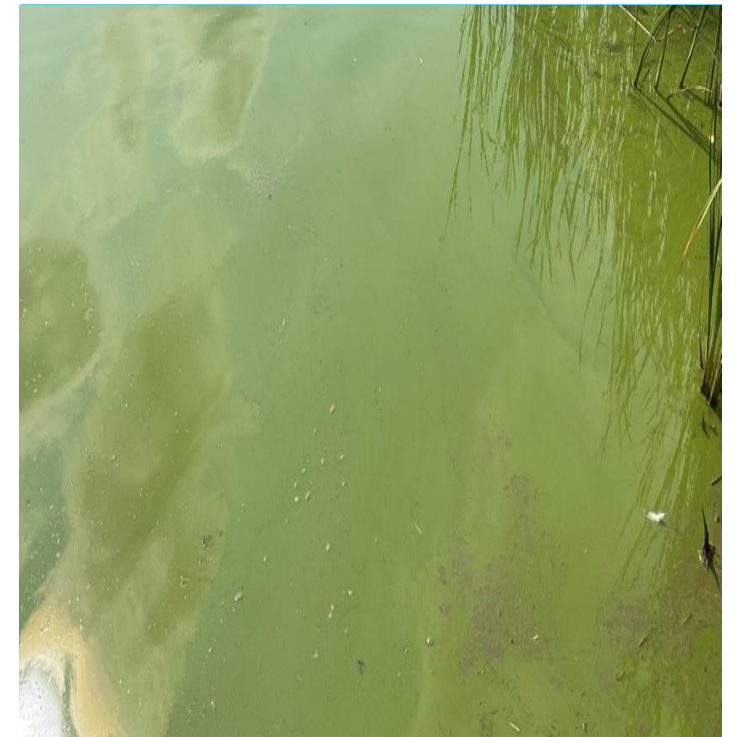
Water Quality

TSS



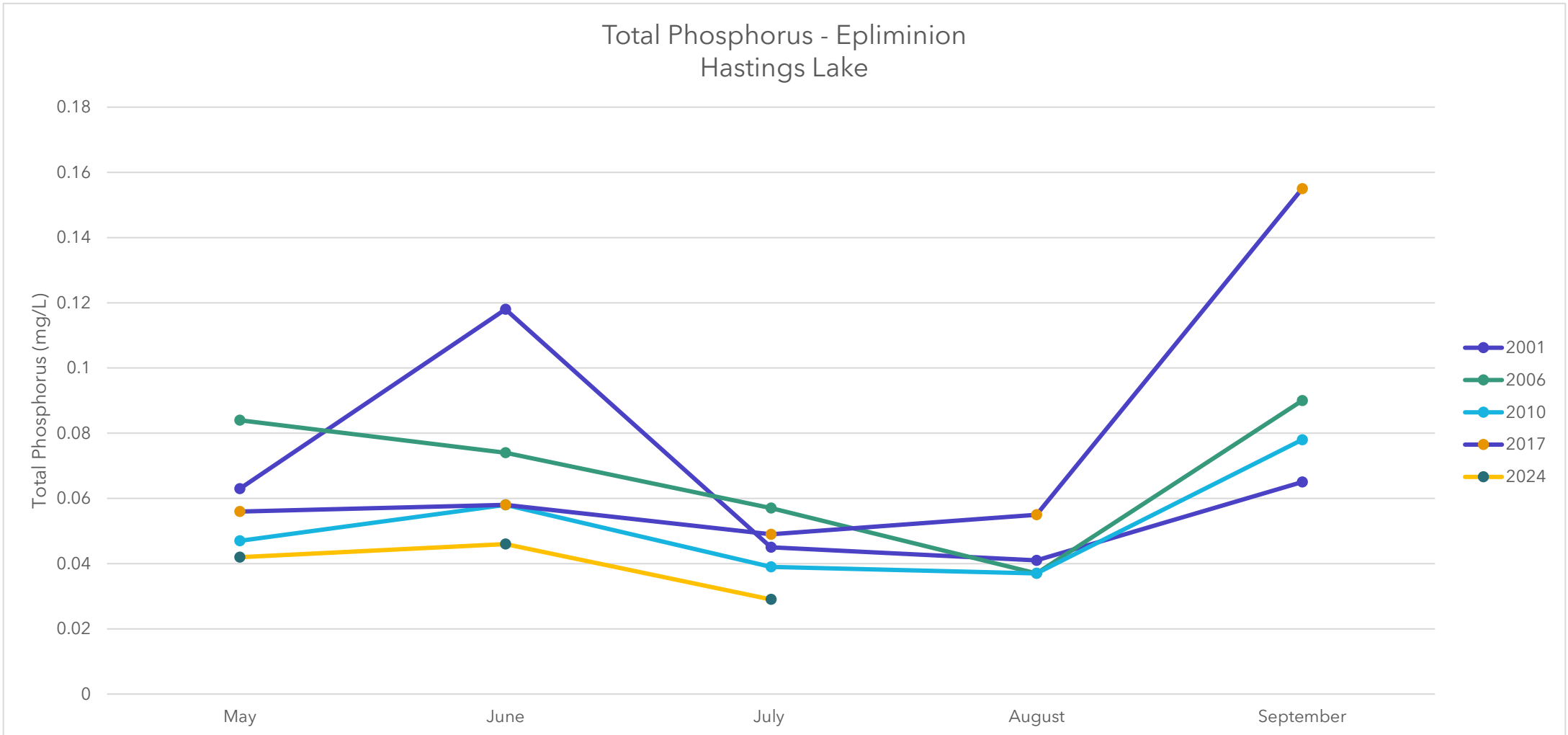
Suspended Sediment

Phosphorous Levels

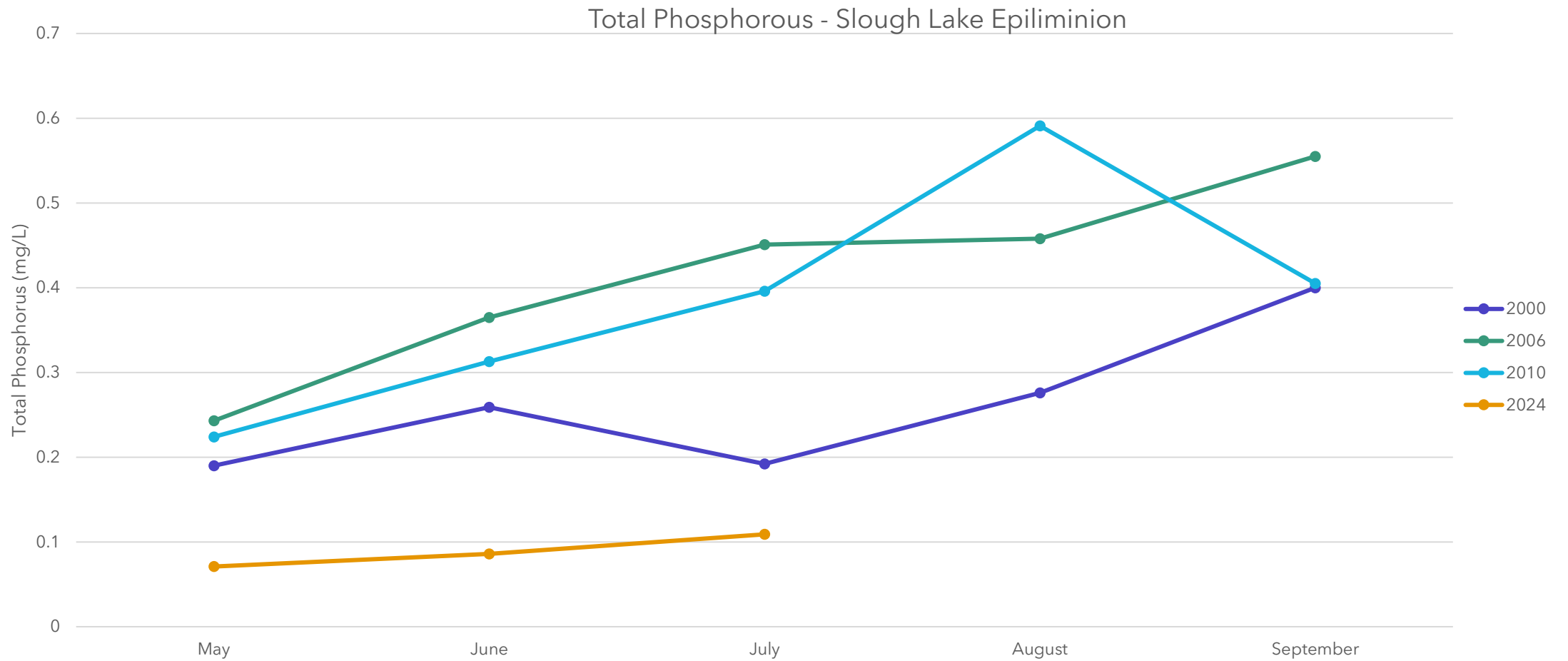


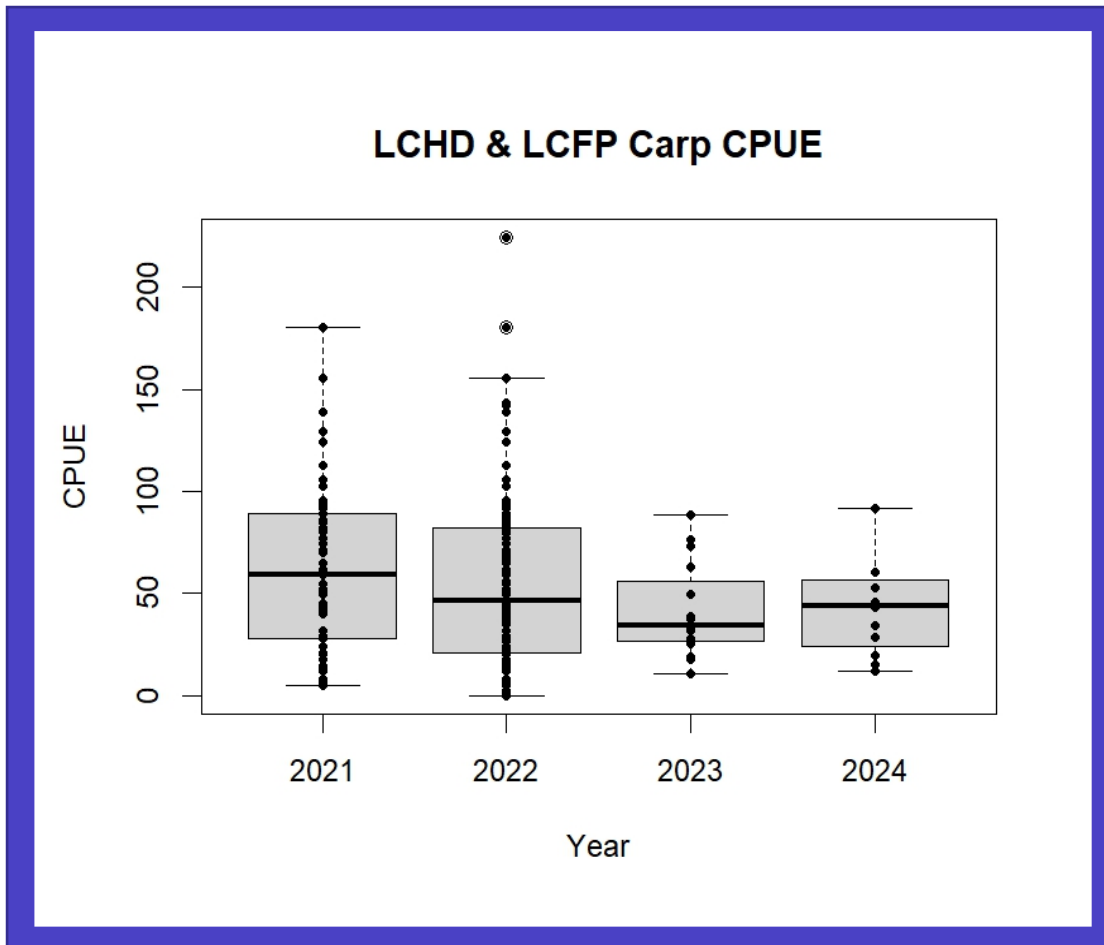
Harmful Algal Blooms (HABs)

Total Phosphorous Reduction



Total Phosphorous Reduction





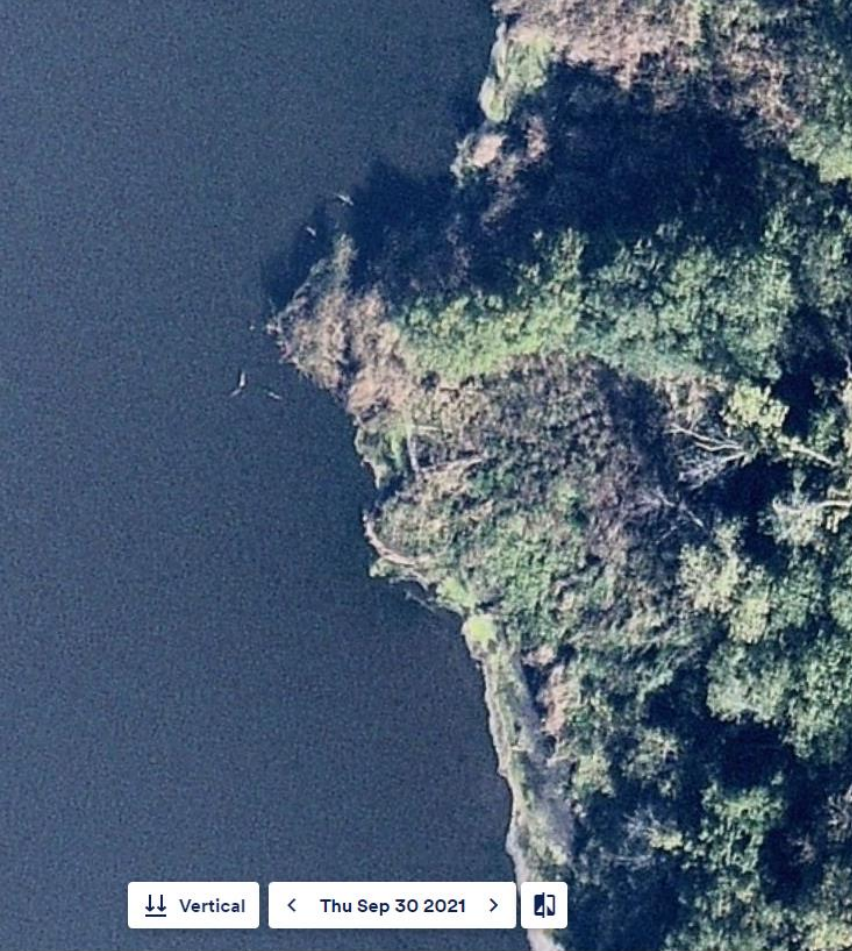
- CPUE (Catch for unit effort) is a data metric the difficulty of which carp are caught
- Allows us to determine whether the carp population is increasing, decreasing, or remaining constant
- Trends

Average Size and Weight

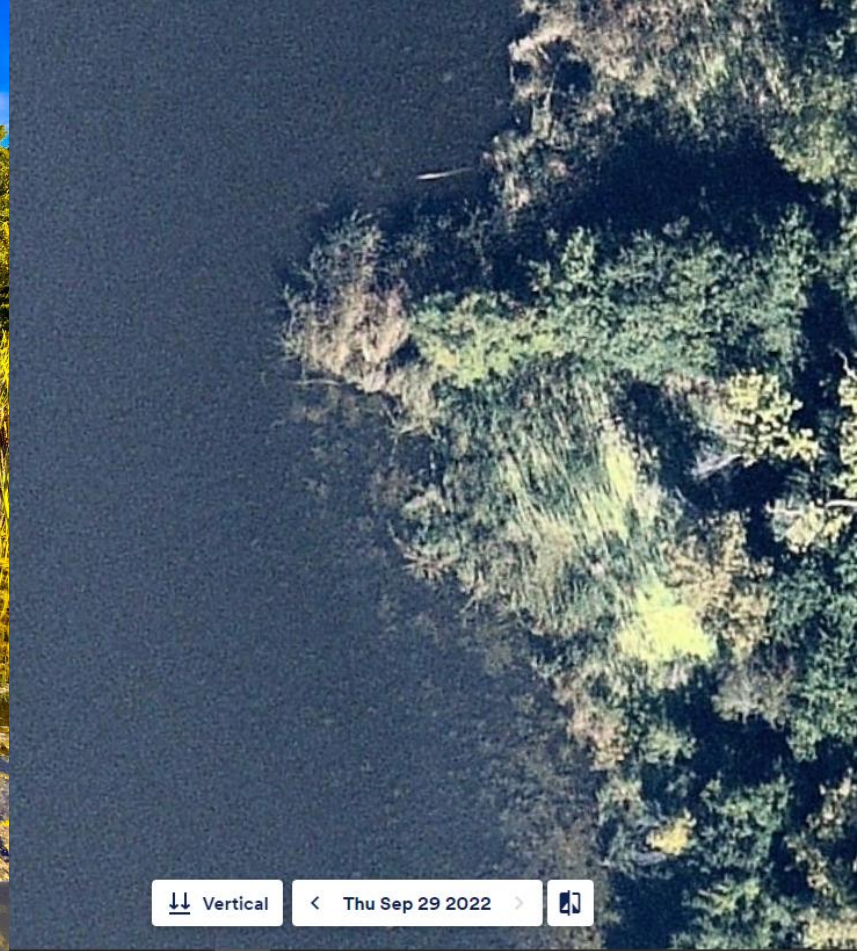
Lower TSS Levels

Aquatic Plants Slough Lake





Vertical < Thu Sep 30 2021 >



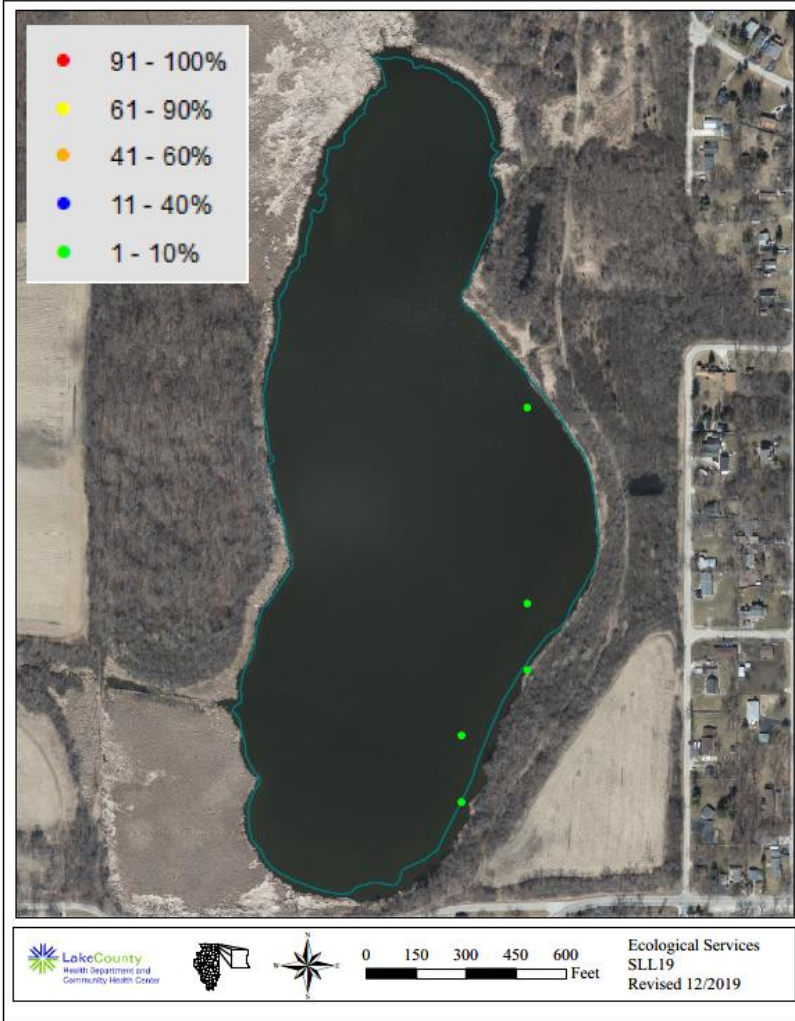
Vertical < Thu Sep 29 2022 >

Aquatic Plants - Slough Lake

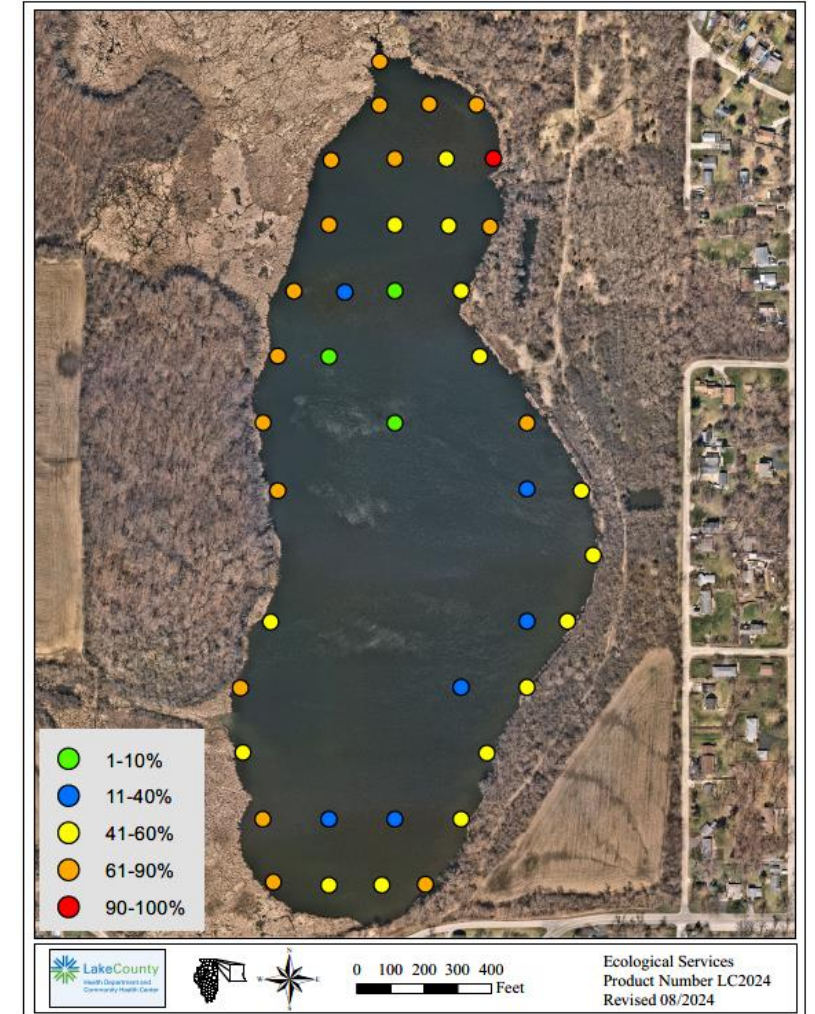
2208 Carp Removed 2021-2022

Re-emergence of Plants!

2019 Slough Lake Plant Rake Density



Slough Lake Rake Density 2024





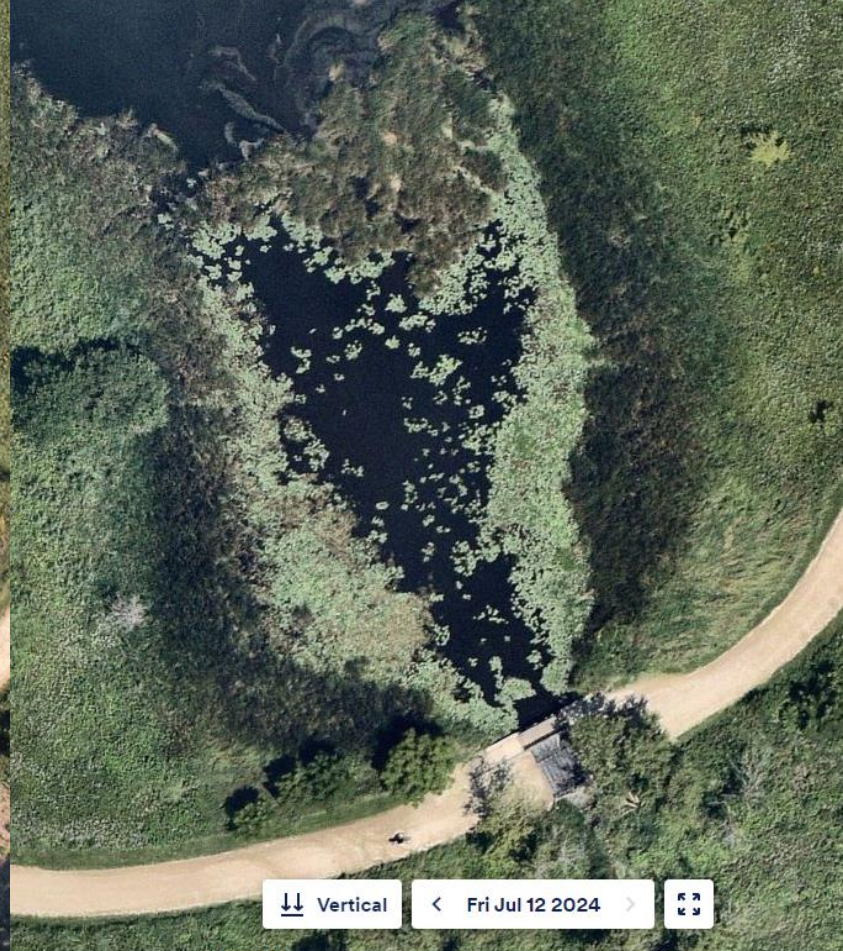
Emergence of Plants!



Vertical < Sun Jul 7 2019 >



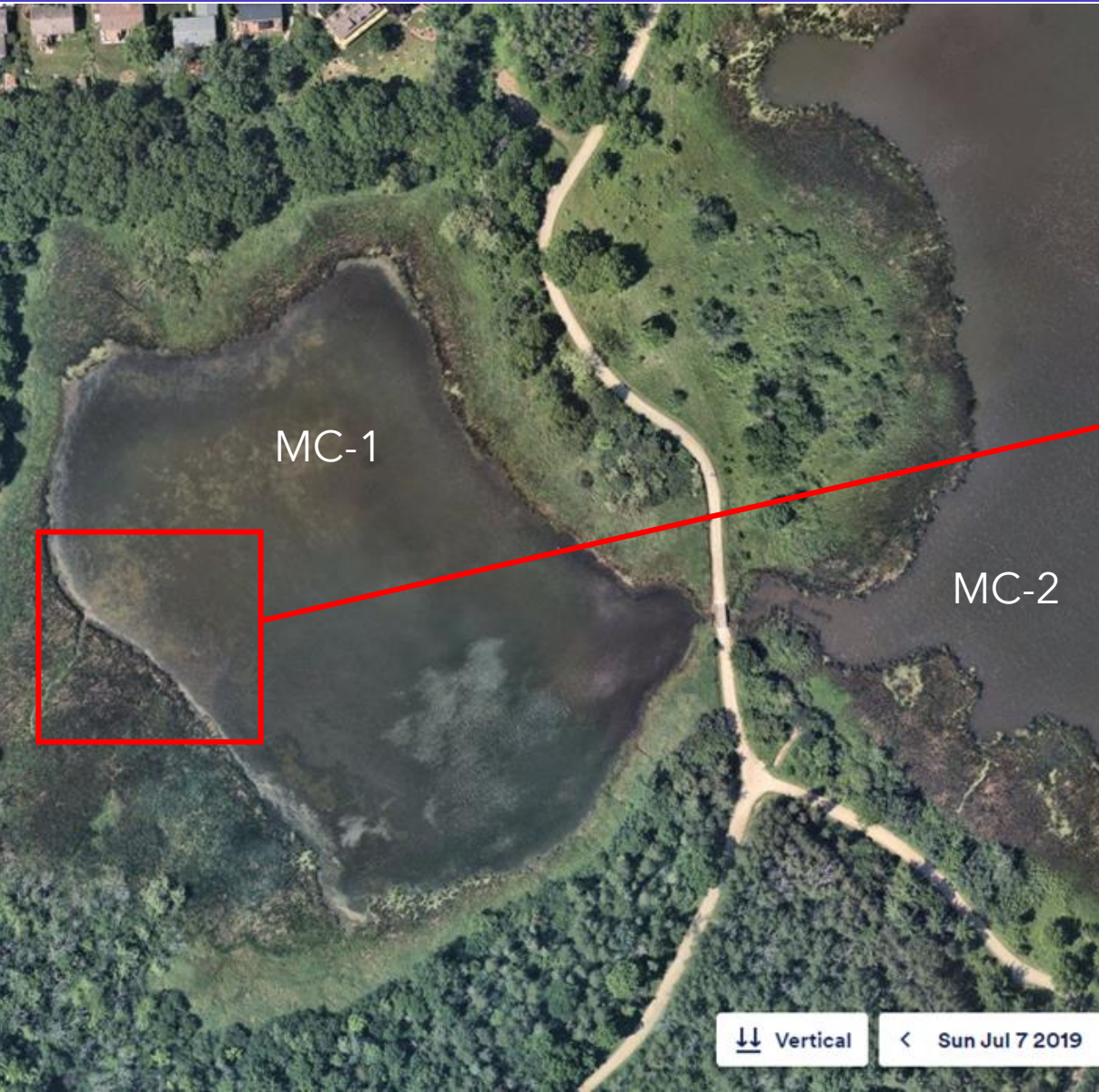
Vertical < Tue Jul 12 2022 >



Vertical < Fri Jul 12 2024 >

Aquatic Plants - McDonald Woods 2598 Carp Removed 2021-2022

Aquatic Plants - McDonald Woods



McDonald Woods



MC1

MC2

Vertical

Fri Jul 12 2024





Lake County Health
Department
Ecological Services

Questions?



LakeCounty

Health Department and
Community Health Center

Alana Bartolai
Ecological Services Coordinator

Gerard Urbanozo
Senior Water Quality Specialist

James Fitzgerald
Water Quality Specialist

Nick Psimaras
Temp Water Quality Tech