

# Curly-leaf pondweed (*Potamogeton crispus*) in Green Lake, Isanti County, Minnesota

DOW 30013600, 832.88 acres, 357 littoral acres



Prepared by:  
**Brian Kretsch**  
VP of Operations

**Paul Kretsch**  
VP of Sales and Marketing

**Codey Barby**  
AIS Coordinator



Prepared for:  
**Green Lake Improvement  
District in Isanti County**  
Gordon Haubenschild

## 2024 CLP Treatment Program Information

### Objective

Target Plant: Curly-leaf Pondweed

Treatment Area: 50.5 acres

Treatment Timing: Early spring, water temperature between 50-60F

Product and Rate: Diquat

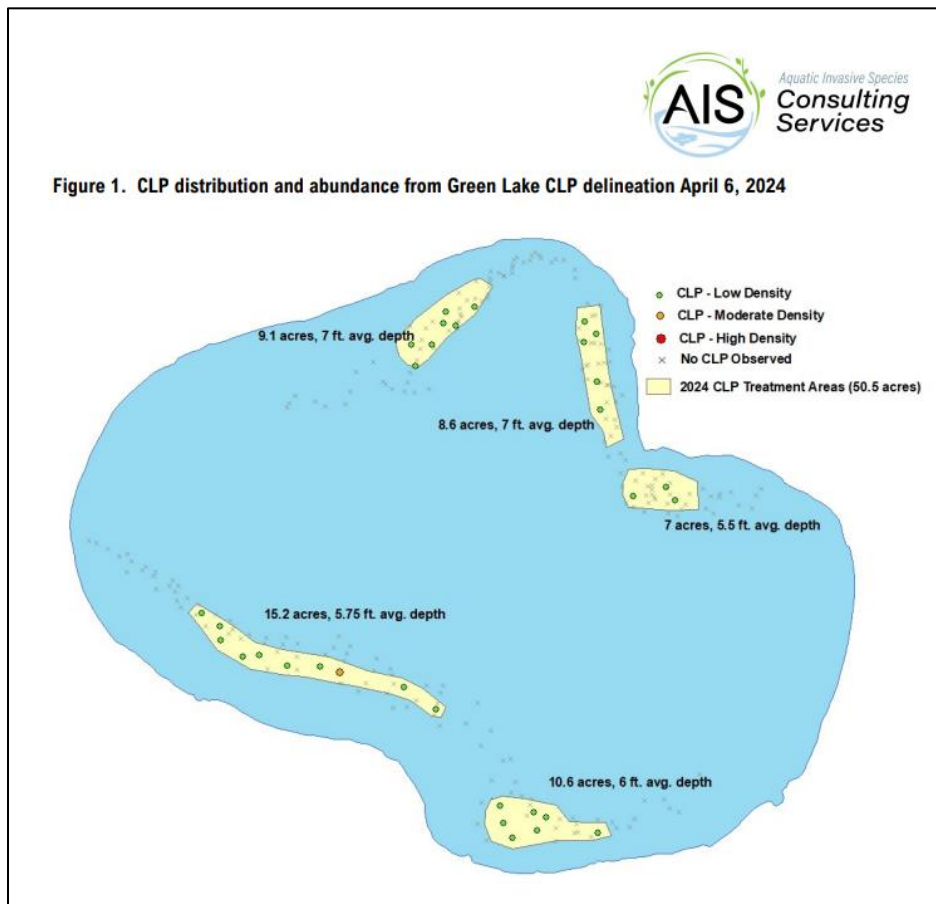


Figure 1.) 2022 survey showing CLP location in Green Lake.

### Partners

DNR AIS Agent: Christine Jurek, Aquatic Invasive Species Specialist

Survey Provider: Aquatic Invasive Species Consulting Services

Treatment

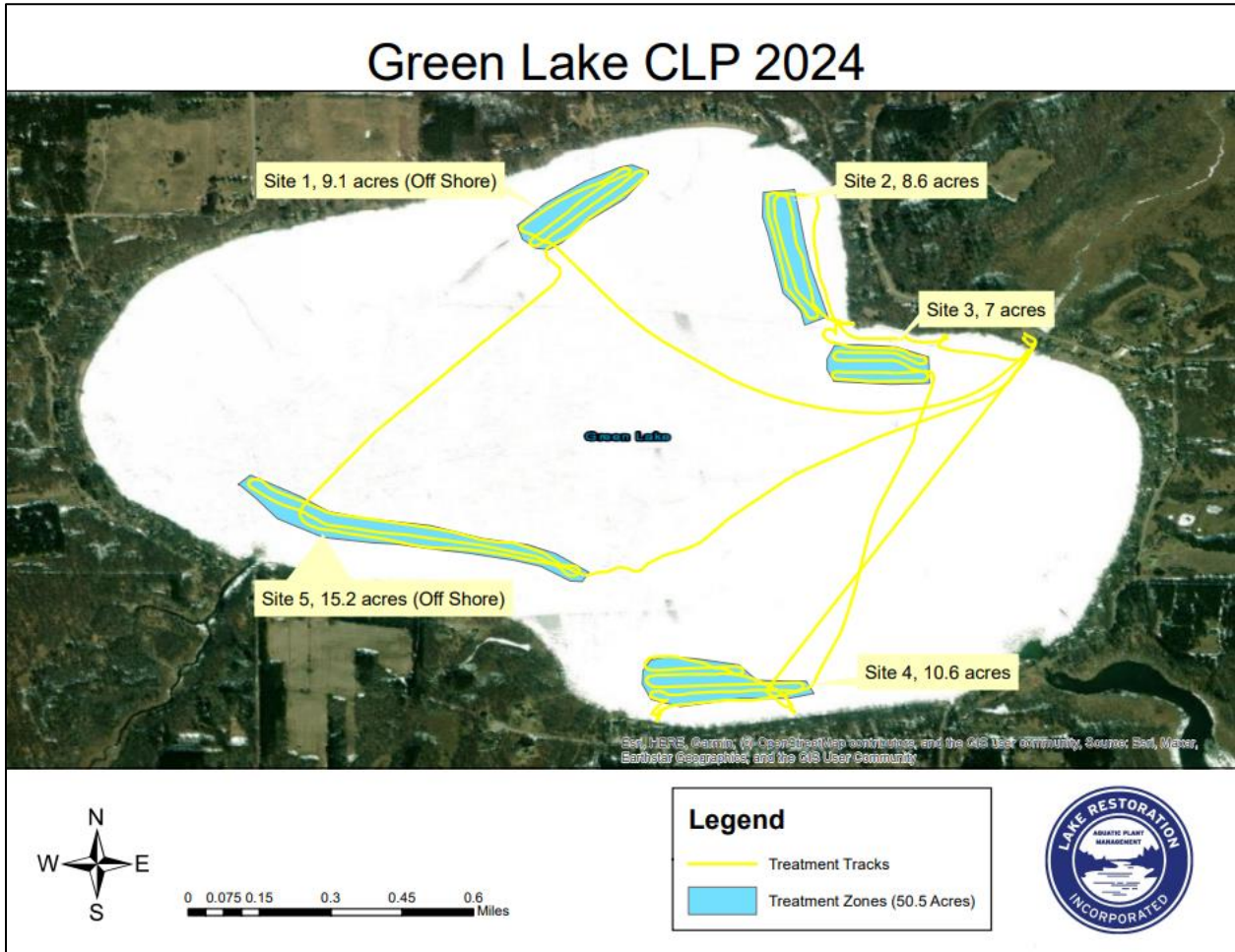


Figure 2.) Treatment tracks for 2023, showing how the sites are treated with a boom system.

Site Details:	Site 1	Site 2	Site 3	Site 4	Site 5
Acres	9.1	8.6	7	10.6	15.2
Diquat	13.7	12.9	10.5	15.9	22.8
Dosage	1.5	1.5	1.5	1.5	1.5
Average Depth	7	7	5.5	6	5.75

Table 1.) Treatment sites and the corresponding acreage, chemical, depth, and dosage rate.

**Results / Notes**

In the 2024 season 50.5 acres were treated, resulting in 75.8 gallons of Diquat applied. The survey (figure 1) shows where CLP was located on Green Lake. This lake was treated on 4/24/24 and had fair weather for treatment with a southeast wind of 7-9 miles per hour. This gave good opportunity for a treatment with little to no weather interfering with the chemical applied. The 2024 season was a success and helped further control the CLP on Green Lake. Moving ahead to 2025, after 6 years of treating these sites, we are looking for surveys to begin showing reduction in size/density of these colonies. Green Lake should also survey lake-wide to be certain the high 2024 water did not hide any CLP colonies.

**Conclusion**

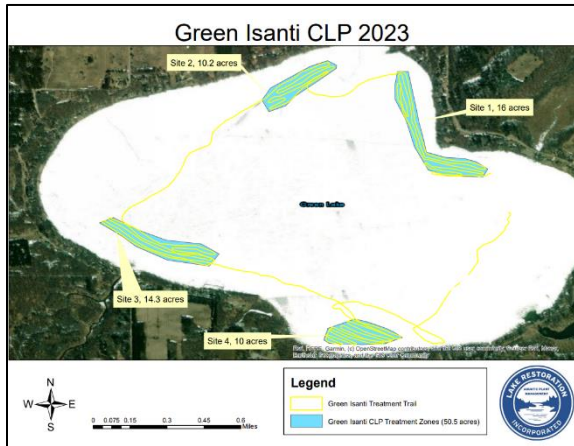


Figure 3.) 2022 survey map for Green Lake.

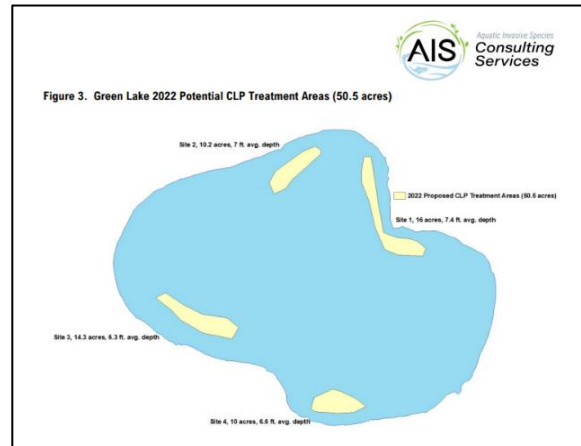


Figure 4.) 2021 treatment map for Green Lake.

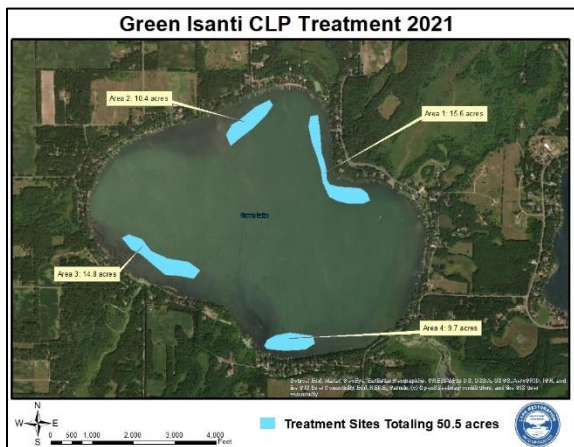


Figure 5.) 2020 treatment map for Green Lake.

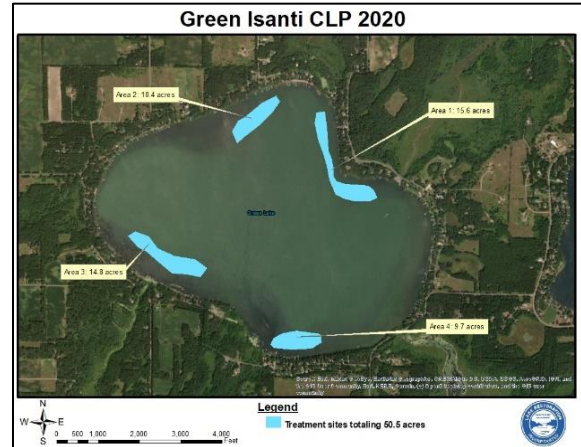
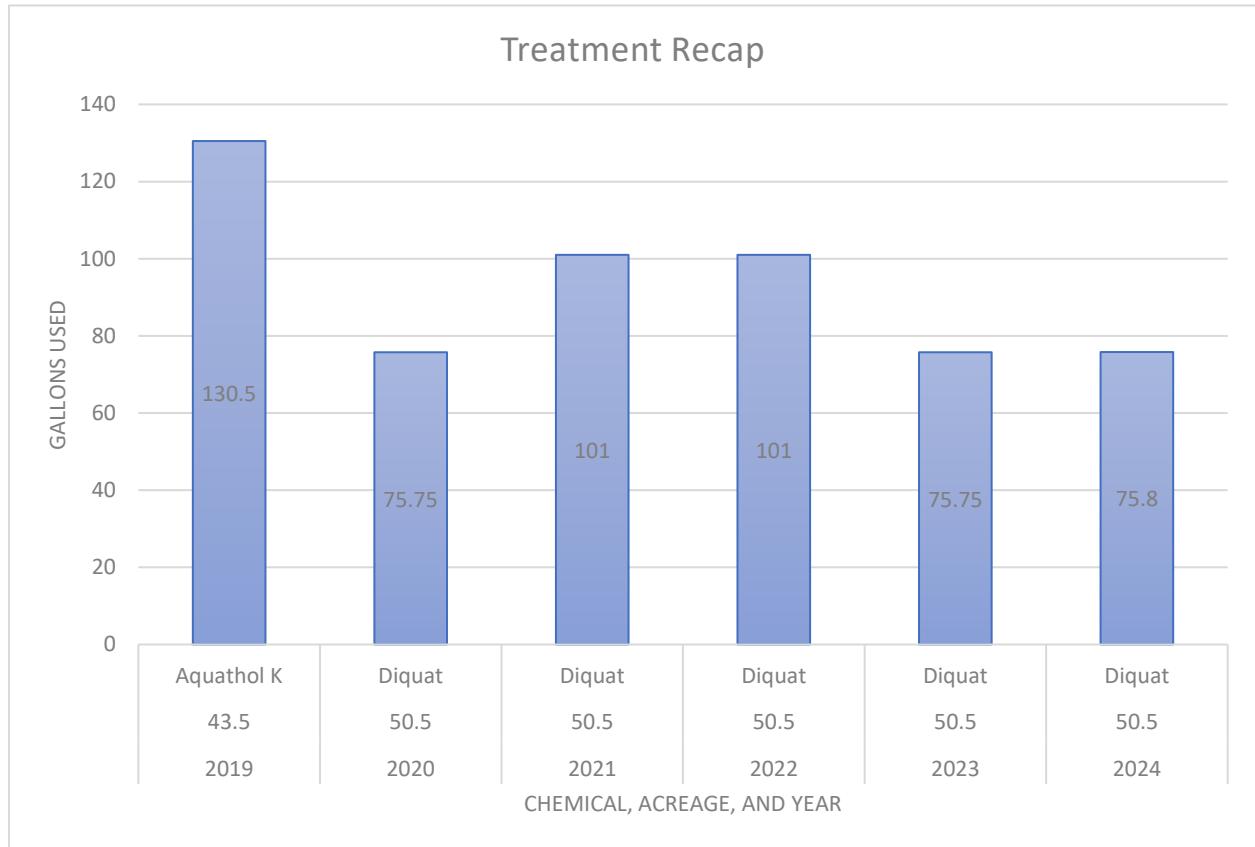


Figure 6.) 2019 treatment map for Green Lake.





**Graph 1.)** Treatment recap showing the past years acreage, chemical, and gallons used.

Over the past 6 years the treatment sites and acreage have remained relatively the same. This is indicative of a massive seedbed in the sediment of these historic sites. The challenge with this plant is its ability to grow under the ice in winter and by spring drop its turions (“seeds”) and die back rapidly, making the window of time for treatment limited to early spring so it can be removed before its production of turions. These turions can live in the sediment for 5-7+ years and still be viable, making that early treatment key for successful control. The 2024 season was highly concerned with this plant’s abilities due to the weak winter and more sunlight being able to go through the thin ice with no snow cover, allowing more photosynthesis, causing the plants to grow and reproduce faster. To gain control of Green Lake, Lake restoration plans to treat these historic sites annually, suppressing the addition of new turions in the seedbed, which will control the spread of CLP throughout the lake. Ultimately, Green Lake was able to handle these challenges presented and is headed in the correct direction with CLP management yielding better use of the lake in each treatment year and working at the long-term goal of reducing the presence of CLP in Green Lake.

## Curly-leaf pondweed

### Description

Submersed, rooted aquatic plant. Colors vary from olive green to reddish brown. Leaves are approximately half-inch wide and two to three inches long and look wavy. The leaves also have serrated edges and blunt tips. The main stem can vary in color, including brown, green, red and white. May mat at the surface but does not have true floating leaves. The flower stalk grows above the water around June, grows around one inch tall and appears reddish-brown. Their reproductive structure is called turions which begin to develop in the fall and are ready to drop by June. These turions are brown and look like small pinecones. This plant grows through rhizomes (an underground stem that sends out roots and shoots from its nodes) which can make one plant look like many, due to stems being connected to one rhizome.

### Biology

Shore plant that grows in water depths of fifteen feet and can grow to be fifteen feet tall. Can handle low water clarity and will invade disturbed areas. Unique life cycle, turions sprout in the fall, grow under the ice in winter, and typically one of the first pondweeds to appear in the spring. Typically flowers, fruits, and produce turions by June and die back mid-summer.

### Origin

Native to Eurasia, Africa, and Australia. Thought to have been introduced through the common carp when it was intentionally introduced into the Midwest waters as a game fish in the 1880s. Was spread throughout the Midwest due to watercraft and water related equipment. First seen and documented in Minnesota in 1910.

### Threats

- Dense mats on water surface, inhibit recreation
- Outcompetes native aquatic plants, takes over territory and lowers biodiversity
- Unsuitable shelter, food, and nesting habitat for native animals
- Shoreline littered with dead plants due to midsummer die-off

### Prevention

- Clean watercraft of all aquatic plants and species
- Drain all water from watercraft and keep drain plug out during transport
- Dispose of unwanted bait in trash
- Dry off docks, lifts, swim rafts and all other water equipment for 21 days before putting into another body of water