

To: Rex Vaughn, Chair
Cedar Lake Improvement Board

Date: July 22, 2025

From: Natalie Crum, Project Manager
Kieser & Associates, LLC (K&A)

cc: Josh Kieser, Field Manager
Kieser & Associates, LLC

RE: 2025 Cedar Lake South Early-Season Vegetation Survey Results

Date of Vegetation Survey: 7/1/2025

Date of Treatment: 7/8/2025

NOTE: Herbicide treatments typically take at least 10 days for full effect.

Background

The LakeScan™ program combines detailed data collection with mapping capabilities and scientifically backed analysis metrics which enable K&A to identify successful lake management activities and highlight issues that may require attention. Vegetation surveys are based on a system where the lake is divided into Aquatic Resource Observation Sites (AROS) where plant density, distribution, and position in the water column are recorded by field personnel. Special attention is given to invasive plants and nuisance conditions.

Cedar Lake South LakeScan™ Early-Season Survey

The Cedar Lake South early-season LakeScan™ vegetation survey was conducted on July 1, 2025. The weather was mostly sunny with temperatures around 78°F and gentle northwestern winds around 4 mph. Visibility in the water column was fair with a Secchi Disk reading of 5.5 feet.

The most common native species observed during the survey were *Chara* (*Chara* sp.), white waterlily (*Nymphaea odorata*), broadleaf pondweed (*Potamogeton amplifolius*), rush (*Juncus pelocarpus* Meyer) and Richardson's pondweed (*Potamogeton richardsonii*). *Chara* was the most commonly observed species and was found at moderate to high densities throughout a majority of observation areas. Broadleaf and Richardson's pondweeds were observed at moderate densities around the lake, flowering in some locations, but not causing any nuisance concerns at the time of the survey. Native pondweeds were the densest and widely distributed in AROS 228-230, 221, 224, 225, 236, 239, 242, 240, 203, and 281 which could cause some minor recreational nuisance conditions but are expected to rapidly drop from the water column post-flowering (Figure 1).

The submerged aquatic invasive species observed in Cedar Lake South during the 2025 early-season survey were hybrid Eurasian watermilfoil (*Myriophyllum spicatum x sibiricum*) and starry stonewort (*Nitellopsis obtusa*). Hybrid Eurasian watermilfoil was found in 9 AROS, including as light clusters in AROS 205, 281, 282, 248, 258 and as a denser cluster in AROS 217, 216, 510, and 511 (Figure 2). Starry

stonewort was found only in the north-east portion of AROS 503 and was not causing any recreational nuisance concerns at the time of the survey (Figure 3).

The emergent aquatic invasive species purple loosestrife (*Lythrum salicaria* L.) was found at four locations along the shoreline (AROS 213, 237, 249 and 253) (Figure 4), not causing any management concerns during the time of the survey. A suspected cluster of *Phragmites* (*Phragmites australis*) was noted in AROS 213, but could not be reasonably identified from the boat survey.

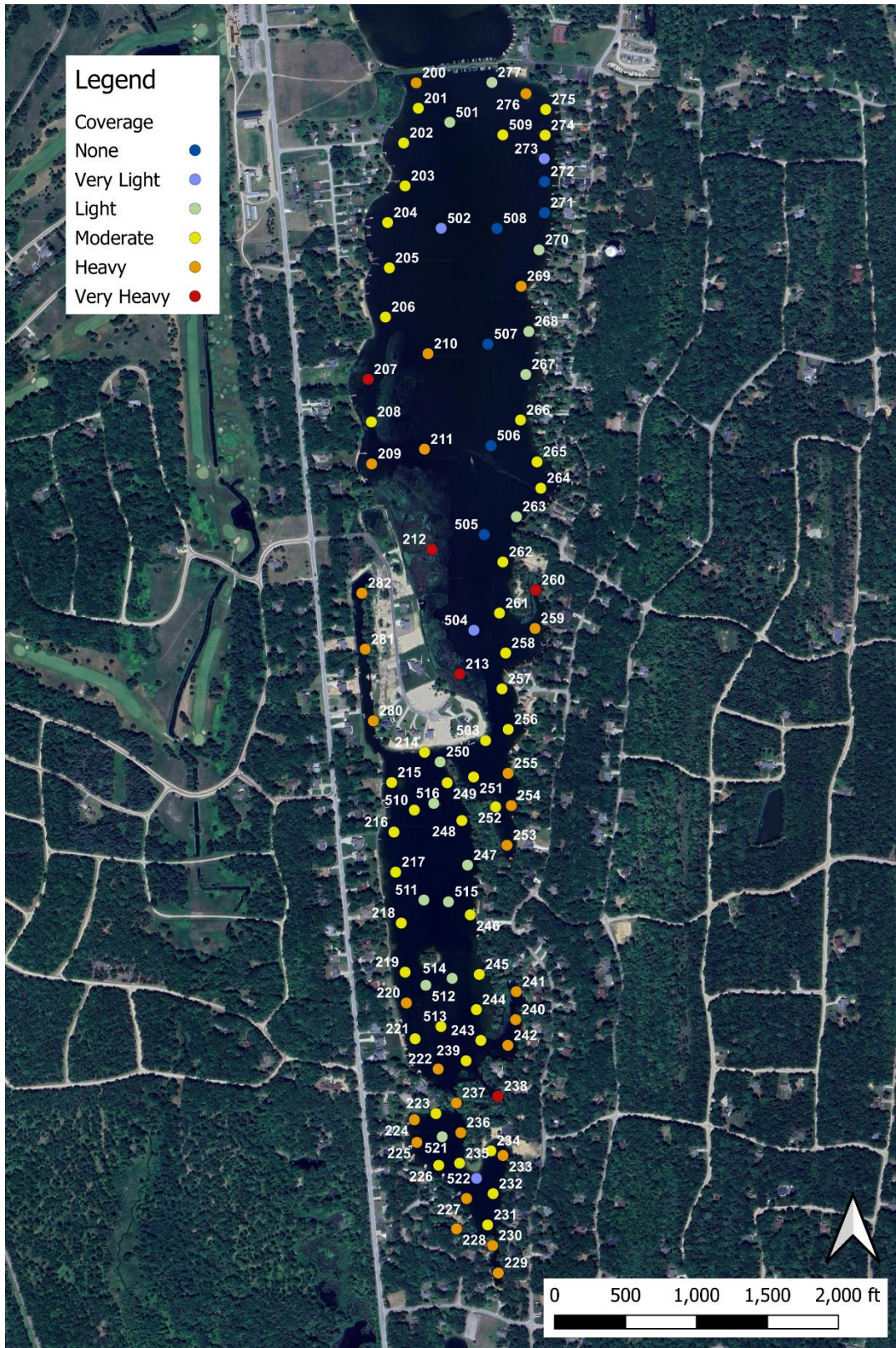


Figure 1. Early-season survey (7/1/2025) vegetation 3D-Density (a function of observed coverage and height of all vegetation).



Figure 2. Early-season (7/1/2025) hybrid Eurasian watermilfoil coverage (a combination of the LakeScan™ density and distribution observations).



Figure 3. Early-season (7/1/2025) starry stonewort coverage (a combination of the LakeScan™ density and distribution observations).



Figure 4. Early-season (7/1/2025) purple loosestrife coverage (a combination of the LakeScan™ density and distribution observations).

Results for LakeScan™ Metrics

Colored shading in Table 1 highlights how early-season plant survey observations align with management goals. Green shading indicates scores meeting management goals, while yellow and red shading represent scores needing improvement, with red scores being further away from the optimal management goals, potentially requiring a higher level of management attention. Descriptions of each of the six metrics are detailed below:

- **Species Richness** – the number of aquatic plant species present in the lake. More species are generally indicative of a healthier ecosystem.
- **Shannon Biodiversity Index** – a measure of species diversity and distribution evenness, indicative of the stability and diversity of the plant community.
- **Shannon Morphology Index** – a measure of aquatic plant morphology diversity and distribution evenness, indicative of fish and macroinvertebrate habitat quality.
- **Floristic Quality Index** – a measure of the distribution of desirable aquatic plants, with higher scores indicative of a favorable ratio between native and invasive aquatic plants.
- **Recreational Nuisance Presence** – the percentage of survey sites that identified aquatic plants inhibiting recreational activities.
- **Algal Bloom Risk** – the risk of algal bloom issues, based on the characteristics of the lake watershed.

Table 1. 2025 early-season survey scores in comparison to the previous year.

Category	Early Season 2024 Rating	Early Season 2025 Rating	Management Goal	LakeScan Metric
<i>Species Richness</i>	24	23	n/a	
<i>Shannon Biodiversity Index</i>	9.8	10.7	> 6.7	Shannon Biodiversity Index
<i>Shannon Morphological Index</i>	7.9	8.0	> 5.0	Shannon Morphological Index
<i>Floristic Quality Index</i>	30.4	28.5	> 20.0	Floristic Quality Index
<i>Recreational Nuisance Presence</i>	5%	0%	< 10%	Recreational Nuisance Presence
<i>Algal Bloom Risk</i>	Low	Low	Low	Algal Bloom Risk

The assessed LakeScan™ metrics for the early-season survey on Cedar Lake South indicate that the lake met each optimal management goal during the 2025 early-season survey. There were minimal variations in metrics between the 2024 and 2025 early-season surveys indicating a high level of lake stability. The most notable change was the decrease in *Recreational Nuisance Presence* from 5% to 0%, indicating more favorable recreation conditions in 2025.

It is important to note that the findings detailed in this “Interim” report are preliminary findings based on a single survey. The annual final report will include ratings based on both early- and late-season surveys, giving a more comprehensive view of lake conditions for the year. If you have any questions on these scores, please do not hesitate to contact us. Contact information is available at the end of this document.

A Final Note on LakeScan™ Surveys

When scheduling aquatic vegetation surveys, the LakeScan™ team focuses on three important considerations including: survey goals, survey effectiveness, and lake-user convenience.

Survey Goals: K&A attempts to survey before or within 14 days of early-summer chemical treatments to observe densities and distributions of treatment-targeted and non-targeted vegetation. A survey conducted during this timeframe can be utilized as an early indication of treatment effectiveness.

Survey Effectiveness: Weather plays a key role here. Rain and wind, in addition to creating safety hazards, obstruct the water surface and make it difficult to see plants in the water column. Rain can damage the onboard electronic equipment during the survey and wind can make it difficult to stay in one AROS without being blown into an adjacent AROS or into a dock while we focus on detailed characterization of vegetation.

Lake-user Convenience: The LakeScan™ team tries to avoid surveys on Fridays, Saturdays or Sundays due to boat activity on the lake. We also prefer to have early-summer surveys completed prior to the 4th of July, and late-summer surveys completed before Labor Day so that if any problems with nuisance species can be addressed before the holidays, if budgeted. Where desired, your team can also schedule mid-season checks. Feel free to contact us on costs for additional visits.

Questions?

Contact your LakeScan™ representatives:

Natalie Crum, Project Manager, Kieser & Associates, LLC
(269) 344-7117; nhoward@kieser-associates.com

Josh Kieser, Field Manager, Kieser & Associates, LLC
(269) 344-7117; jkieser@kieser-associates.com