1.0 INTRODUCTION

Often referred to as the Minocqua Chain of Lakes, Minocqua and Kawaguesaga Lakes are a part of a contiguous waterbody that spans over 6,000 acres that also includes the Tomahawk Lake System and Mid Lake (Figure 1.0-1). Minocqua (1,339 acres) and Kawaguesaga (700 acres) Lakes are the downstream lakes in this chain, impounded by a small dam at the Kawaguesaga outlet.

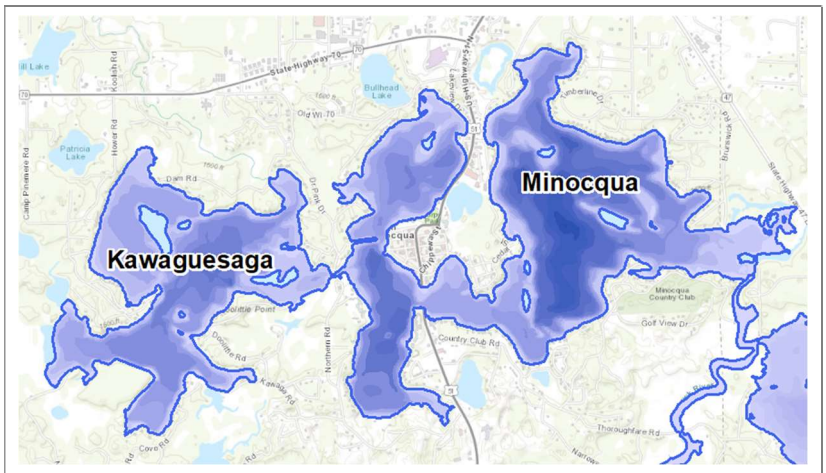


Figure 1.0-1. Minocqua and Kawaguesaga Lakes, Oneida County

The primary citizen-based organization leading management activities on Minocqua and Kawaguesaga Lakes is the Minocqua Kawaguesaga Lakes Protection Association (MKLPA). The Mid Lake Protection and Management District (MLPMD) and the Tomahawk Lake Association (TLA) are the entities focused on managing their specific waterbodies.

1.1 Historic EWM Management & Planning

Eurasian watermilfoil (EWM) was first documented in the early 2000s. The MKLPA targeted EWM populations during 2005-2015 with 2,4-D spot treatments, considered the best management practice of the time. Following a 3-year (2014-2017) hand-harvesting program and cessation of herbicide management, EWM populations in some areas of the chain increased to levels that impeded recreation and navigation. The MKLPA conducted a series of trial florpyrauxifen-benzyl (ProcellaCOR™ EC) beginning in 2019 to target EWM populations in high traffic areas of the system.

During 2022-2023, the MKLPA created an updated *Aquatic Plant Management* (APM) Plan, which primarily focused on revisiting the MKLPA's aquatic plant management-related goals and actions. The *APM Plan* was accepted by the WDNR in November 2023.

The *APM Plan* outlined several management goals, with specific actions outlined to assist with reaching each goal. In regards to EWM management, the MKLPA's defined goal is to:

Actively manage EWM to keep the population from negatively affecting water recreation and navigation, while maintaining a healthy and vibrant ecosystem

In order to reach this objective, the MKLPA developed a multi-pronged approach as part of this Integrated Pest Management (IPM) Program.

- ***Herbicide Treatment*** It is the MKLPA's preference to gain multi-year control of problematic areas through the use of spatially-targeted herbicide spot treatments, particularly when a site is too large or dense to be targeted with a manual removal program.
- ***Manual Removal*** The MKLPA will continue to conduct EWM manual removal, likely with the aid of Diver-Assisted Suction Harvest (DASH) equipment, to target scale-appropriate EWM occurrences. The objective is to maintain EWM populations below levels that would be applicable to herbicide

treatment. The MKLPA aims to use manual removal/DASH as its primary management method, but understanding that large and dense areas of EWM are not practical to be managed with this activity.

- ***Mechanical Harvesting*** The MKLPA will continue to investigate mechanical harvesting through an analysis of strengths, weaknesses, opportunities, and threats to help determine whether the method is something they would consider in the future.

In recent years, the MKLPA has used all three management techniques to resolve navigation and access impediments caused by EWM.

1.2 2025 EWM Control & Monitoring Strategy

Consistent with the MKLPA's APM Plan, the 2025 IPM strategy includes a combination of herbicide spot treatments and coordinated professional hand harvesting efforts. The MKLPA was awarded a series of WDNR AIS grants to carry out monitoring activities associated with the 2025 EWM management efforts (AEPP-839-25 & AEPP-840-25). All costs of the active management activities, such as herbicide treatment or manual removal, were borne solely by the MKLPA without state funding assistance. This report serves as the final written deliverable for these grants.

The proposed 2025 herbicide treatment strategy targets the highest EWM occurrences in high-use areas, with attention to potential basin-wide impacts from these treatments. Two sites, totaling 10.5 acres, were ultimately permitted for management with the use of herbicides in 2025: A-25 and B-25 (Map 1). During the planning stages of this treatment, herbicide impacts were predicted to extend to the two eastern bays of this southwest basin, but it was unclear if the impacts would extend to the western bay.

The professional manual removal (includes DASH as appropriate) program devised for 2025 was two pronged. The primary program would conduct professional-based EWM manual-removal on 2019-2024 treatment sites as follow-up IPM measures. The MKLPA also planned to conduct a substantial professional-based EWM hand-harvesting effort in other areas where EWM populations are low or were impacted as a result of being adjacent to prior herbicide treatments. The MKLPA planned multiple weeks of hand-harvesting in 2025. The MKLPA also selected a few sites for mechanical harvesting that were too large and dense to be targeted with manual removal, and were not part of the herbicide treatment strategy.

1.3 Pretreatment Confirmation & Refinement Survey

On June 17, 2025, an Onterra field survey crew completed the Pretreatment Confirmation and Refinement Survey within the proposed 2025 treatment areas on Kawaguesaga Lake. The main objective of the survey was to collect quantitative data within the sites to document native aquatic plants. Other tasks were to confirm active growth of EWM, evaluate the average depth of the site, and record pH and water temperatures. Water temperatures were 62-65°F throughout the water column, and pH was an average of 8.15 at mid depth in both treatment areas. EWM was largely present in the same areas documented in past mapping surveys and was

Photo 1.3-1. EWM observed during Pretreatment Survey on Kawaguesaga Lake. Photo credit Onterra.

green with plenty of active growth. Several species of pondweeds as well as common waterweed, southern naiad, forked duckweed, and water stargrass were the most commonly encountered native plants in both sites.

2.0 2025 AQUATIC PLANT MANAGEMENT ACTIVITIES

Herbicide Treatment:

The ProcellaCOR herbicide application were completed by Aquatic Plant Management, LLC on June 24, 2025. The application was completed without issue and with ideal conditions present including calm winds at the start of the early morning application. Details of the herbicide application are shown on page 4 of Appendix A. This late-June treatment was calculated to be after recently hatched walleye have outgrown their most-sensitive life stage to herbicide exposure.

Mechanical Harvesting:

Mechanical harvesting operations targeted sites B-25 and C-25; an area along the northwest shore of Minocqua Lake south of Schoolhouse Bay (sometimes referred to as Save More Bay). Approximately 80% of the 2025 mechanical harvesting effort occurred at mechanical harvesting site B-25. All of the EWM harvesting for these two chosen sites occurred during the last week of June.

Table 2.0-1. 2025 Mechanical Harvesting Summary. Table extracted from APM 2025 EWM Removal Report

Site	Cutting Hours	Cubic Feet Removed
B-25	15.5	565
C-25	5.4	65
Grand Total	**20.9**	**630**

Despite an abundance of EWM growth in 2024, the summer of 2025 saw reductions in EWM growth in and around the proposed mechanical harvesting locations. While it was originally planned to conduct 6-7 days of harvesting, that number was reduced to approximately 3 days. Despite this reduction, APM made multiple site visits over the course of the summer and decided that the EWM never reached nuisance levels again where more harvest was needed. Approximately 20.9 hours of mechanical harvesting operations occurred on Minocqua Lake in 2025 (Table 2.0-1). Additional details of the mechanical harvesting effort and amount of EWM removed on a site-by-site basis can be found in the Aquatic Plant Management (APM) 2025 Report in Appendix A.

Manual Removal:

The MKLPA contracted with Aquatic Plant Management, LLC (APM) in 2025 to provide professional hand-harvesting services which includes the use of DASH. The MKLPA, in consultation with Onterra and APM, created a site prioritization methodology that considered EWM density from the 2024 Late Season EWM Mapping Survey, traffic patterns, and recent herbicide management history (Map 2). Through a total of 75 dives on 6 sites around Minocqua and Kawaguesaga Lakes, approximately

Table 2.0-2. 2025 Hand-harvest & DASH Summary. Table extracted from APM 2025 EWM Removal Report

Dive Location	Avg. Water Depth	# of Dives	Underwater Dive Time	AIS Removed (cubic feet)
A-25	7.4	9	11.0	9.0
B-25	7.7	24	34.4	175.5
I-25	7.5	10	30.5	187.5
T-25	6.3	11	12.4	24.8
U-25	4.9	17	35.5	91.1
V-25	5.8	4	16.4	84.0
Grand Total	**6.7**	**75**	**140.2**	**571.9**

571.9 cubic feet of EWM were removed by APM in 2025 (Table 2.0-2). Of this total, 174.8 cubic feet was harvested through the use of DASH, while another 397.1 cubic feet was harvested with traditional hand harvesting techniques. Sites that received the largest amount of dive time and harvest totals included U-25, which was located on the eastern end of Minocqua Lake in Stacks, along with B-25 and I-25, which were both located in the western shores of Lake Kawaguesaga. Additional details of hand-harvesting effort and amount of EWM removed on a site-by-site basis can be found in the Aquatic Plant Management (APM) 2025 Report in Appendix A.

3.0 2025 MONITORING RESULTS

It is important to note that two types of aquatic plant surveys are discussed in the subsequent materials: 1) point-intercept surveys (Photograph 3.0-1) and 2) EWM mapping surveys (Photograph 3.0-2). Overall, each survey has its strengths and weaknesses, which is why both are utilized in different ways as part of this project.

Photograph 3.0-1. Point-intercept survey on a WI lake. Photo credit Onterra.

Photograph 3.0-2. EWM mapping survey on a Wisconsin lake. Photo credit Onterra.

The point-intercept survey provides a standardized way to gain quantitative information about a lake's aquatic plant population through visiting predetermined locations and using a rake sampler to identify all the plants at each location. The survey methodology allows comparisons to be made over time, as well as between lakes. The point-intercept survey can be applied at various scales. The point-intercept survey is most often applied at the whole-lake scale. The whole-lake point-intercept survey was last conducted on Minocqua and Kawaguesaga Lakes in 2022.

If a smaller area is being studied, a modified and finer-scale point-intercept sampling grid may be needed to produce a sufficient number of sampling points for comparison purposes. The subsample point-intercept survey methodology is often applied over management areas such as herbicide application sites. This type of sampling is used within this project as a part of the herbicide spot treatment pre/post monitoring.

While the point-intercept survey is a valuable tool to understand the overall plant population of a lake, it does not offer a full account (census) of where a particular species exists in the lake. During the EWM

mapping survey, the entire littoral area of the lake is surveyed through visual observations from the boat. Field crews supplement the visual survey by deploying a submersible camera along with periodically doing rake tows. The EWM population is mapped using sub-meter GPS technology by using either 1) point-based or 2) area-based methodologies. Large colonies >40 feet in diameter are mapped using polygons (areas) and are qualitatively attributed a density rating based upon a five-tiered scale from *highly scattered* to *surface matting*. Point-based techniques were applied to AIS locations that were considered as *small plant colonies* (<40 feet in diameter), *clumps of plants*, or *single or few plants*.

3.1 Herbicide Concentration Monitoring

The herbicide concentration monitoring plan associated with the treatment of sites A-25 and B-25 was developed by Onterra and reviewed by the WDNR, with the intent of gaining sufficient data to aid in understanding the concentrations of herbicide that were achieved after treatment. Samples were collected at three sites; one within each of the 2025 application sites and one in the middle of the southern bay of Kawaguesaga Lake.

A copy of the herbicide concentration monitoring plan and table of the results are included as Appendix B. All samples were collected by TLA volunteers and were shipped to the Wisconsin State Lab of Hygiene (WSLH) for analysis. The WSLH has lower detection limits for florpyrauxifen-benzyl (0.05 ppb vs 0.06 ppb) and florpyrauxifen acid (0.048 ppb vs .150 ppb) compared to EPL Bioanalytic which was used in prior years.

The active ingredient of ProcellaCOR is florpyrauxifen-benzyl (FPB). Following herbicide application, concentrations of FPB are initially high and immediately start to degrade (Figure 3.1-1). Based upon Onterra's experience with whole-basin ProcellaCOR treatments, FPB typically degrades below detection limits in 5-10 days after treatment (DAT) if dissipation out of that bay is minimal. If the site is minimally contained or protected, a combination of herbicide degradation and dissipation out of the basin results in herbicide concentrations only being measured for a few days application.

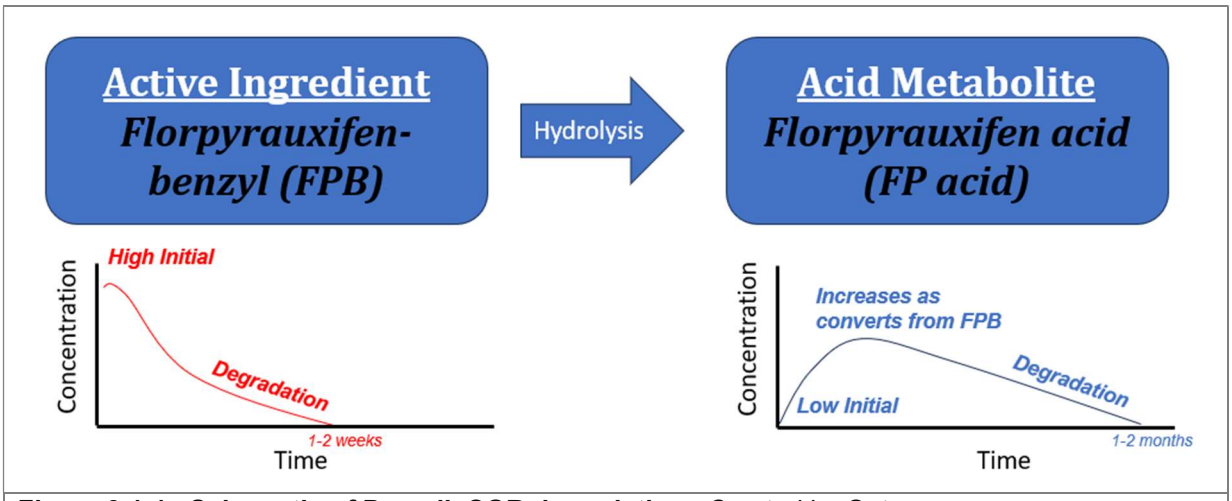


Figure 3.1-1. Schematic of ProcellaCOR degradation. Created by Onterra.

FPB degrades into a number of derivate chemicals including the acid metabolite (florpyrauxifen acid, FP acid). Albeit to a lesser degree, the acid metabolite has herbicidal properties and continues to impact EWM and other sensitive plant species, which is why testing is directed towards it. As a product of FPB

degradation, FP acid concentrations typically peak around 7-14 DAT following whole-lake treatments, often earlier in lakes with higher pH. The degradation of FP acid into inert components is less predictable than for FPB, with concentration often being below detection limits by a few weeks after treatment but have been observed persisting a few months in a few system. Similar to FPB, dissipation is the main driver that leads to low FP acid concentrations and exposure times in spot treatments and minimally contained basin-wide treatments.

The measured concentrations of florpyrauxifen-benzyl (FPB) were initially higher at the earliest sampling intervals within the application areas, with both sites containing concentrations of the active ingredient in ProcellaCOR at sufficient concentrations and exposure times to kill EWM (Figure 3.1-2, top frame). By 3 DAT, FPB concentrations were at or below 0.05 ppb in all sites. From 5 DAT through 35 DAT concentrations were below detection limits in all samples. Samples collected from the untreated location (site K6) indicated no concentration above detection limits throughout the entirety of the sampling dates.

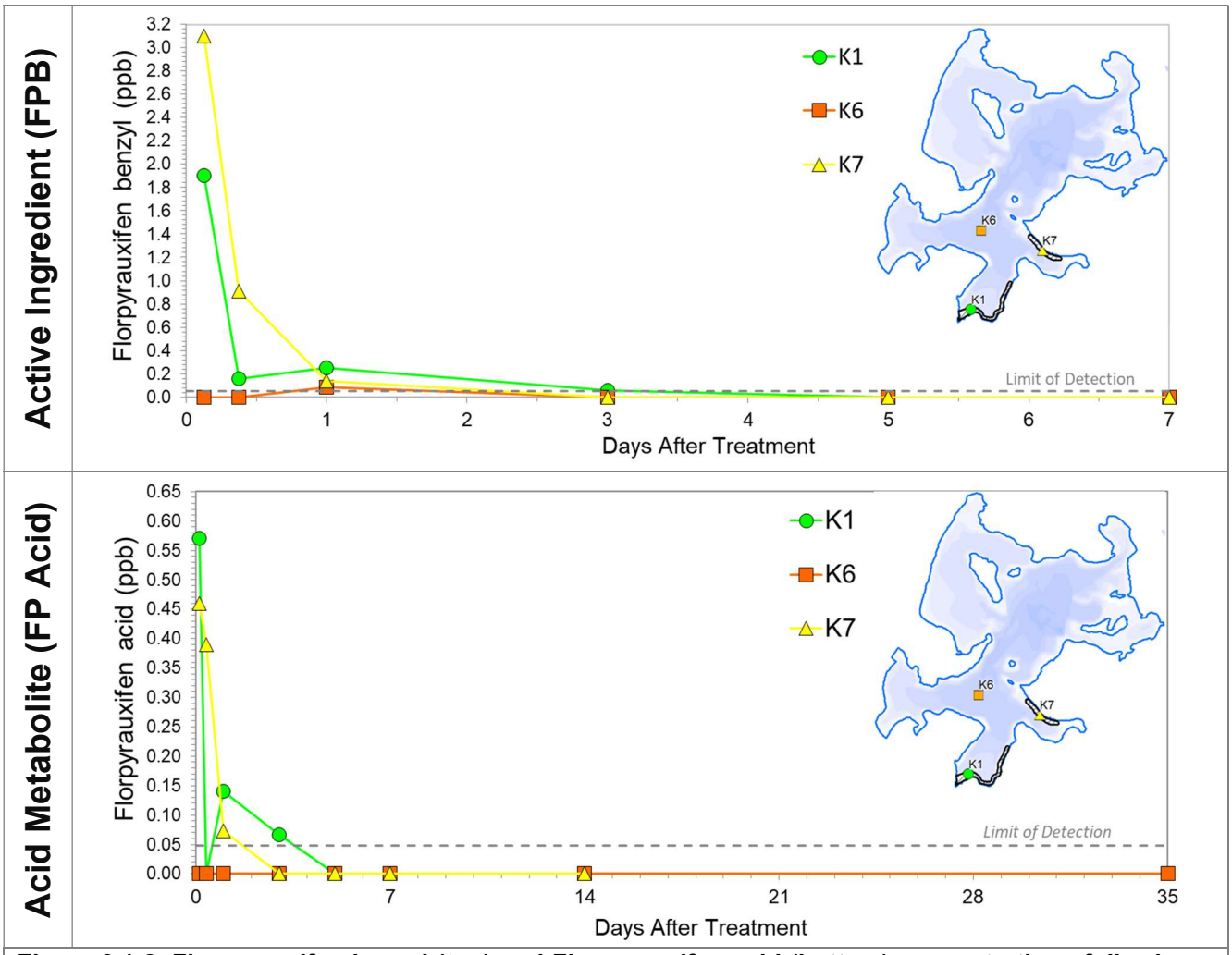


Figure 3.1-2. Florpyrauxifen-benzyl (top) and Florpyrauxifen acid (bottom) concentrations following a 2025 ProcellaCOR herbicide treatment in Kawaguesaga Lake.

Figure 3.1-2 (bottom frame) displays the concentrations of acid metabolite of ProcellaCOR, florpyrauxifen acid (FP acid). Note that the y-axis differs compared to the previous figure in order to

display the values. FP acid concentrations were somewhat higher at site K1 compared to K7 while both being located within the direct application areas. The relatively high FP acid values measured at 3 HAT and 9 HAT may be an indication of uptake by aquatic plants and conversion from the active ingredient to the acid form. By 5 DAT, concentrations of acid were below detection limits within the application areas. Concentrations of FP acid at the untreated site K6 site were never encountered during sampling intervals.

3.2 Subsample Point-intercept Survey

In the field, it is often difficult to distinguish between certain species of aquatic plants that are similar morphologically, especially when flowering/fruiting material is not present. Due to this, the littoral occurrences of some morphologically-similar species were combined within the analysis.

2024 Subsample Sites – Year After Treatment Monitoring Results

A quantitative monitoring study was designed for this project which included the collection of subsample point-intercept survey data in two different treatment areas *prior to treatment* and compared to post treatment assessments during the *year of treatment* and *year after treatment* (Figure 3.2-1). These surveys allowed a numeric understanding of the native and non-native aquatic plant population within the areas targeted with herbicide treatment.

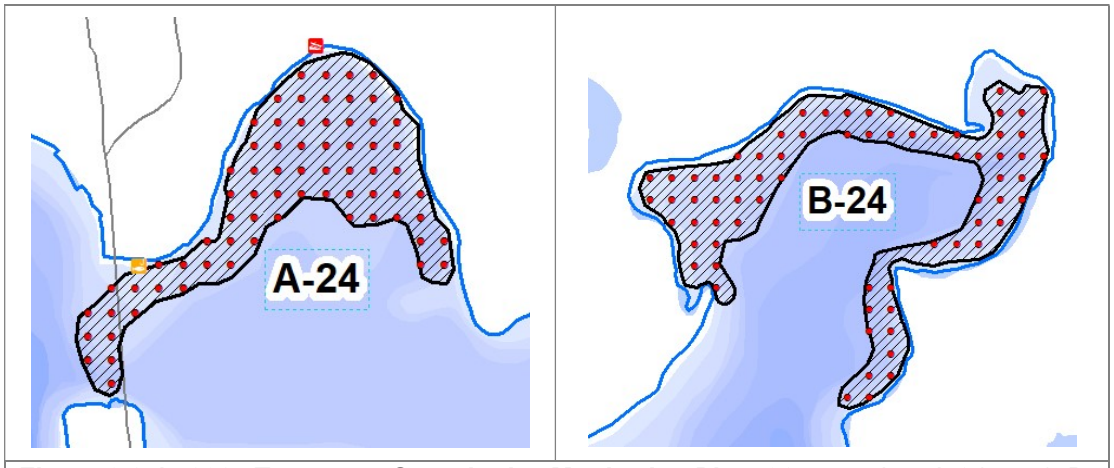


Figure 3.2-1. 2024 Treatment Quantitative Monitoring Plan. 32m spacing, A-24 n=71, B-24 n=70

When comparing aquatic plant populations over time, it is best to compare similar time periods from year to year. Often in practice, the locations of a spring herbicide treatment are not developed until after the time period to collect the late-summer pretreatment data has passed. In these instances, the early-season herbicide treatment may be delayed from roughly early-June to mid-June. This slight delay in implementation allows the pretreatment subsample point-intercept survey to take place after many native plants have emerged from winter dormancy. However, it is believed that some species such as wild celery begin to grow a bit later in the growing season and are under-represented in the June survey. In reference to the 2024 treatment sites, *pretreatmen*t data was collected during mid-June 2024 and is compared to *year of treatment* data collected during the late-summer of 2024 and *year after treatment* data collected during the late-summer of 2025.

Monitoring results from site A-24 are displayed on Figure 3.2-2. The occurrence of EWM was reduced from 59.2% to 0%. Broad-leaved (dicot) species tend to be more sensitive to herbicides like ProcellaCOR. Reductions were observed from all dicots, with a statistically valid reduction occurring in coontail and water marigold populations. These data show the most commonly encountered native species in the site, common waterweed, did not show valid changes in occurrence between the three surveys. Clasping-leaf pondweed, naiads, and wild celery all showed statistically valid increases in occurrence between the three surveys. As discussed above, some native species including wild celery, typically emerge a bit later in the growing season that some other native species and it is possible that the increased occurrence of some species is related to survey timing. The only native non-dicot species that exhibited a statistically valid decrease over the course of the three surveys was water stargrass, a monocot species known to be sensitive to ProcellaCOR treatments. The reduction in occurrence of curly leaf pondweed is believed to be simply the natural decline of this species at it typically senesces during early summer.

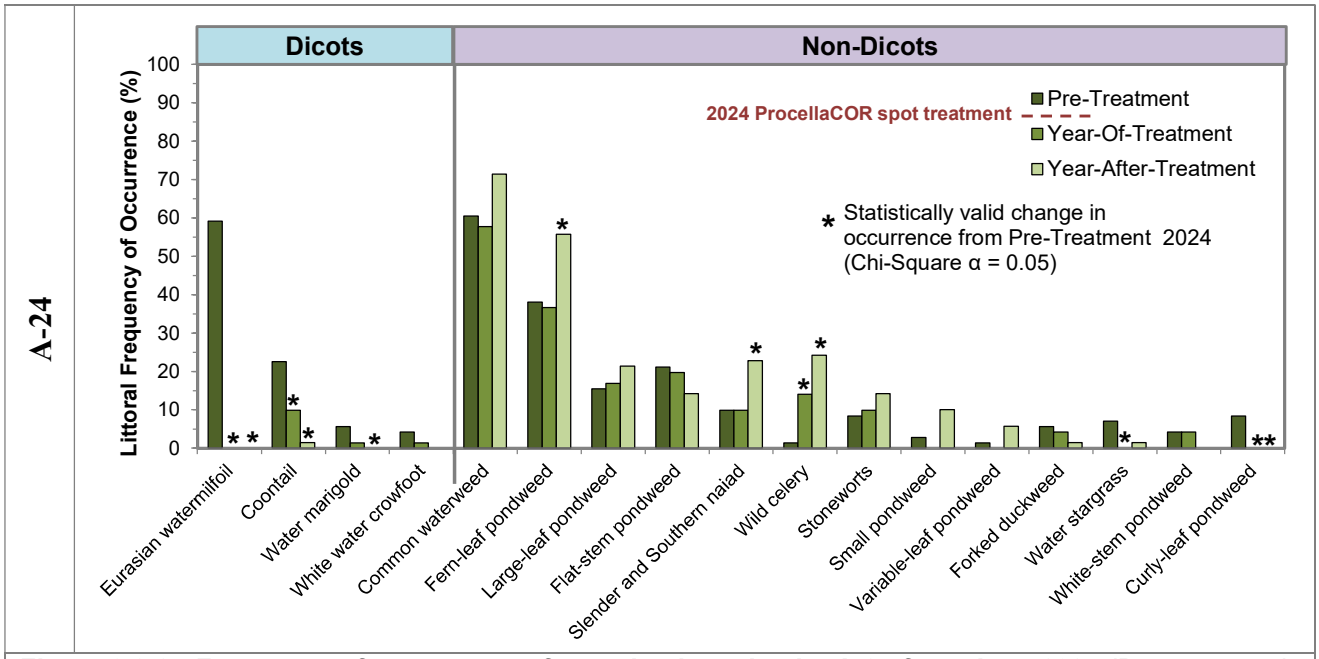


Figure 3.2-2. Frequency of occurrence of aquatic plants in site A-24 from June 2024 (Pretreatment), August 2024 (Year-of- treatment), and September 2025 (Year after Treatment) n=71

Monitoring results from site B-24 are displayed on Figure 3.2-3. The occurrence of EWM was reduced from 50.0% to 0%. These data show that three of the most commonly encountered native species in the site (common waterweed, fern-leaf pondweed and slender and southern naiad) did not show valid changes in occurrence between the three surveys. Coontail, white-water crowfoot, flat-stem pondweed, and water stargrass all showed statistically valid decreases in occurrence over the course of the three surveys, but white-water crowfoot and water stargrass saw slight increases in occurrence during the *year after treatment*, after not being found during the *year of treatment*. Large-leaf pondweed, forked duckweed and muskgrasses all showed statistically valid increases in occurrence during the *year of treatment* survey, but no species displayed a statistically valid increase in occurrence during the *year after treatment* survey.

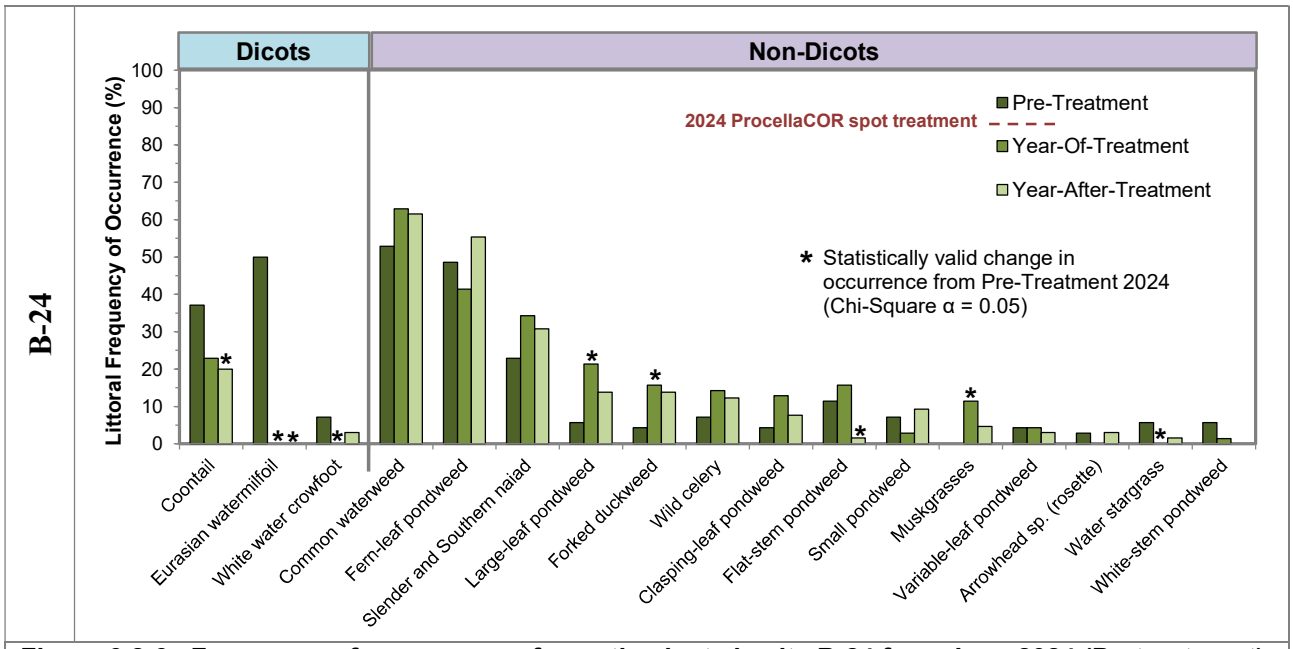


Figure 3.2-3. Frequency of occurrence of aquatic plants in site B-24 from June 2024 (Pretreatment), August 2024 (Year of Treatment), September 2025 (Year after Treatment) n=70

2025 Subsample Sites – Year of Treatment Monitoring Results

A quantitative monitoring study was designed for this project which included the collection of subsample point-intercept survey data in two different treatment areas *prior to treatment* and compared to a post treatment assessment during the *year of treatment* (Figure 3.2-1). These surveys allowed a numeric understanding of the native and non-native aquatic plant population within the areas targeted with herbicide treatment. In reference to the 2025 treatment sites, *pretreatmen*t data was collected during mid-June 2025 and is compared to *year of treatment* data collected during the late-summer of 2025.

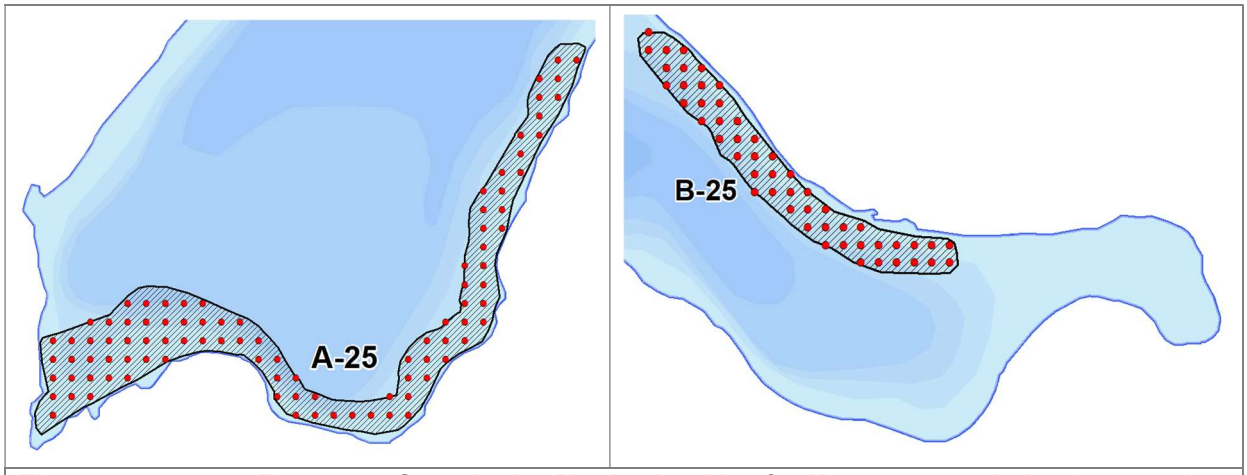


Figure 3.2-4. 2025 Treatment Quantitative Monitoring Plan for Kawaguesaga Lake. 17m spacing, A-25 n=94, B-25 n=51

Monitoring results from site A-25 are displayed on Figure 3.2-5. The occurrence of EWM was reduced from 36.6% to 0%. Reductions were observed from almost all dicots, but no statistically valid changes occurred. These data show that two of the most commonly encountered native species in the site (fern-

leaf pondweed and common waterweed) did not show valid changes in occurrence between the two surveys. Several narrow-leaved (monocot) species, such as wild celery, southern naiad, small pondweed, flat-stem pondweed and clasping-leaf pondweed showed statistically valid population increases. As discussed above, these increases are likely related to survey timing and plant's phenology. Water stargrass was the only native species that exhibited a statistically valid decrease in occurrence between the two surveys. A replication of this survey is planned to occur during 2026 which will evaluate the aquatic plant population dynamics in this site during the *Year after Treatment*.

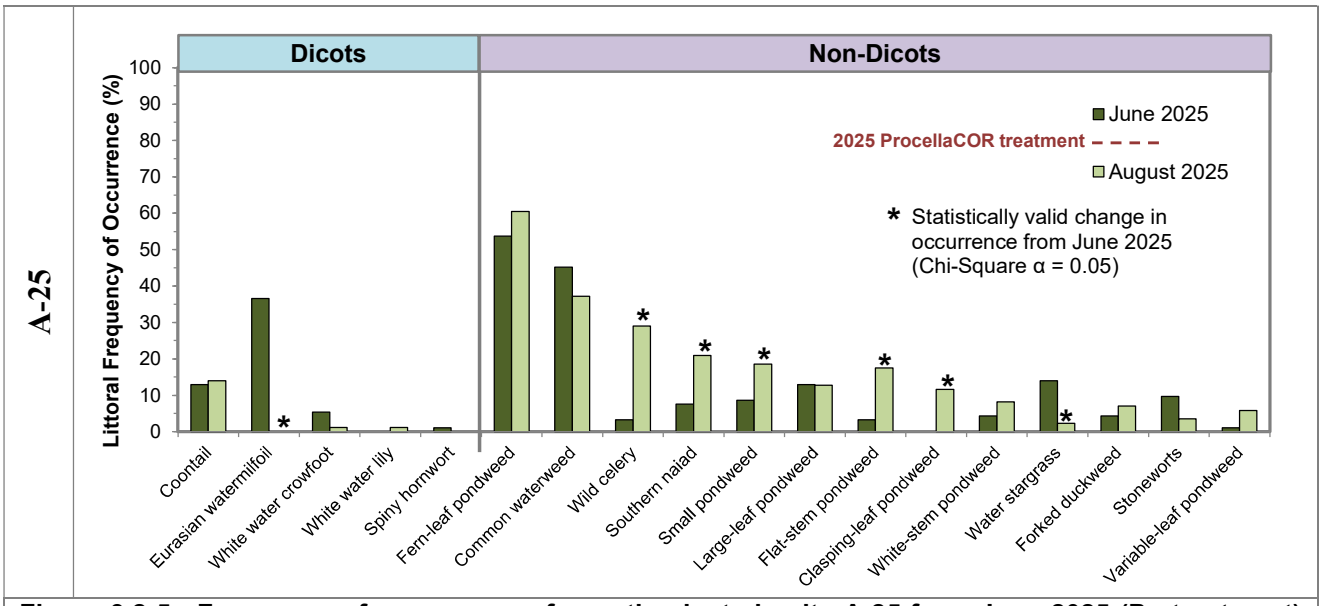


Figure 3.2-5. Frequency of occurrence of aquatic plants in site A-25 from June 2025 (Pretreatment) and August 2025 (Post treatment) n=94

Monitoring results from site B-25 are displayed on Figure 3.2-6. The occurrence of EWM was reduced from 18.0% to 0%. One broad-leaved (dicot) species, water marigold, displayed a statistically valid decrease. These data show that four of the most commonly encountered native species in the site (fern-leaf pondweed, common waterweed, forked duckweed and southern naiad) did not show valid changes in occurrence between the two surveys. Small pondweed showed a statistically valid decreases in occurrence. Wild celery and flat-stem pondweed both showed statistically valid increases in occurrence between the two surveys. A replication of this survey is planned to occur during 2026 which will evaluate the aquatic plant population dynamics in this site during the *Year after Treatment*.

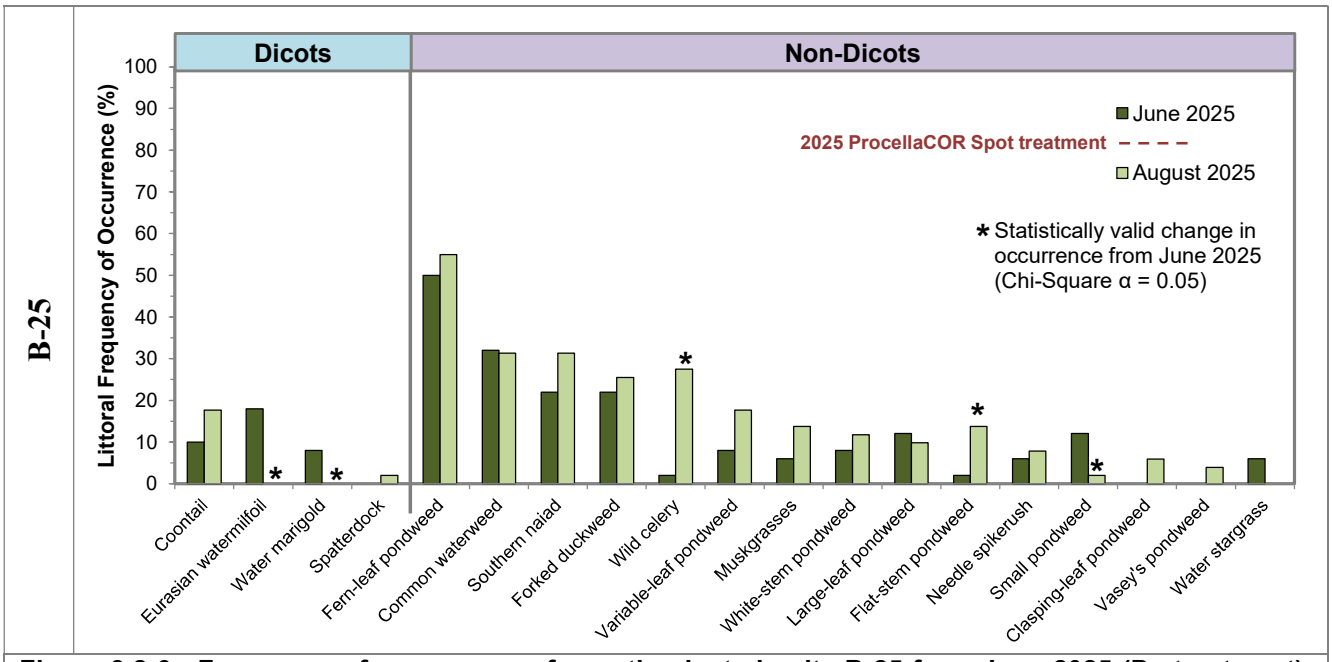


Figure 3.2-6. Frequency of occurrence of aquatic plants in site B-25 from June 2025 (Pretreatment), and August 2025 (Post treatment) n=51

3.3 Late-Summer EWM Mapping Surveys

For must lake users, investigating the EWM population before and after a treatment is best understood by comparting data from EWM mappings surveys. During this project, EWM mapping surveys occur annually during the latter part of the growing season when EWM has likely reached its peak growth stage for the year. The Late Season EWM Mapping Survey from the year preceding the treatment is comparted to the *year of treatment* survey occurring a few months after the treatment, as well as the *year after treatment* survey which allows for the understanding if the reductions were maintained or if rapid rebound occurred. At times even a *two years after treatment* survey is conducted to even further understand if the reductions were maintained or if rapid rebound occurred after the initial *year after treatment*.

ProcellaCOR Treatment Site A-23 – Three Summers Post Treatment

Figure 3.3-1 highlights the EWM population from late-summer 2022 (*pretreatment*), late-summer 2023 (*year of treatment*), late-summer 2024 (*year after treatment*), and late-summer 2025 (*three summers post treatment*) for the herbicide treatment site A-23. Prior to treatment, a large portion of the site contained colonized EWM including *highly scattered*, *scattered*, and *dominant* densities along with a number of *single plants*, *clumps*, and *small plant colonies* (Figure 3.3-1, top left frame). After treatment, the only remaining EWM present in the site was several *single or few plants* occurrences located in the northwestern end of the application area (Figure 3.3-1, top right frame). In the second summer post treatment, a small amount of rebounding colonized EWM was observed within the site, including a small *highly scattered* EWM colony (Figure 3.3-1, bottom left frame). Continued rebound of colonized EWM was observed *three summers post treatment*, almost to pretreatment levels (Figure 3.3-1, bottom right frame).

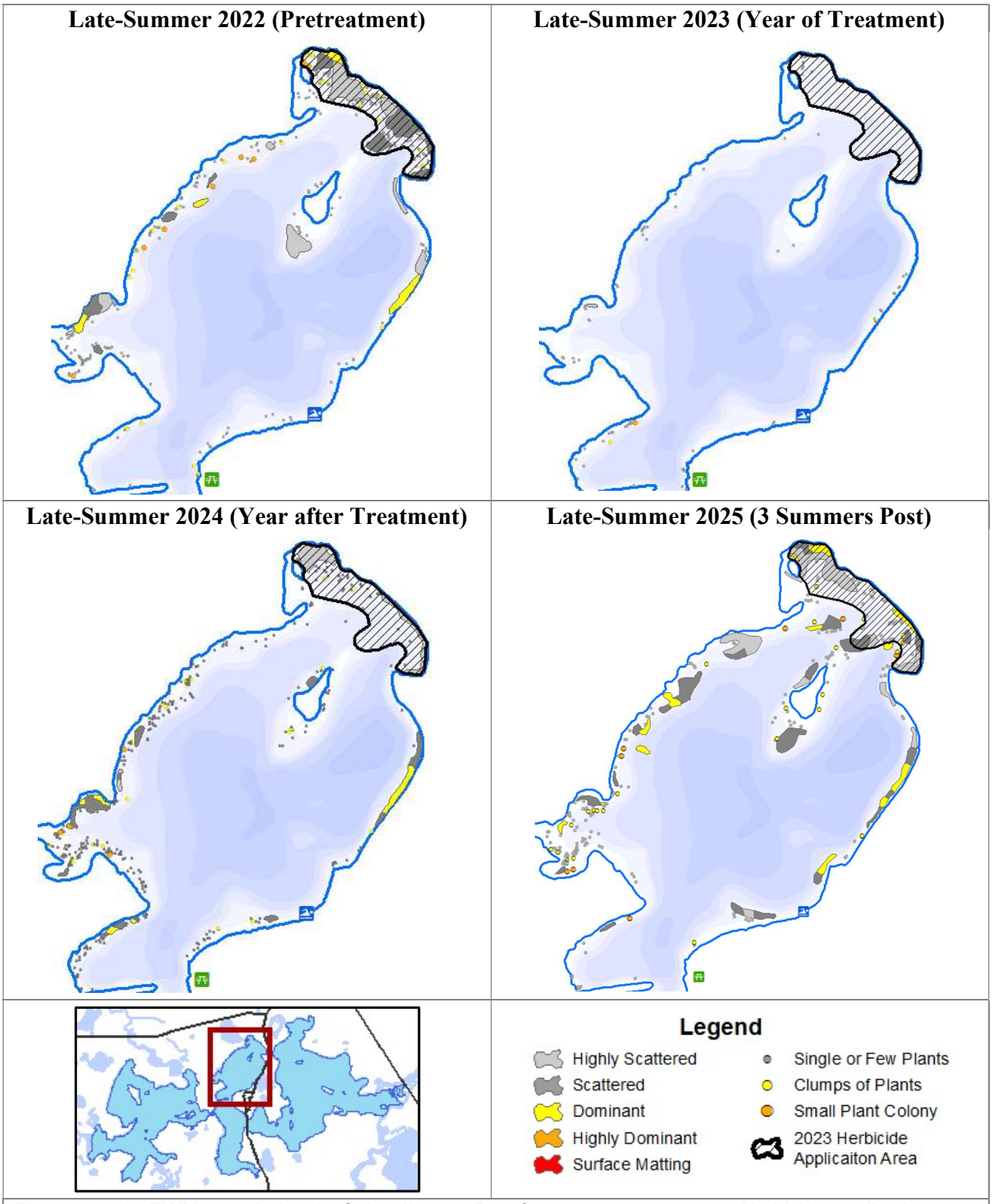


Figure 3.3-1. EWM population in Schoolhouse Bay from 2022-2025. 2023 Herbicide application area displayed in black outline.

ProcellaCOR Treatment Site A-24 – Year After Treatment

Figure 3.3-2 highlights the EWM population from late-summer 2023 (*pretreatment*), late-summer 2024 (post *year of treatment*), and late-summer 2025 (*year after* treatment) for the herbicide treatment site A-24. Prior to treatment, a large portion of the site contained colonized EWM including *dominant* and *highly dominant* densities (Figure 3.3-2, left frame). During the first summer post treatment, there was no EWM found within the entirety of the application area (Figure 3.3-2, top right frame). No EWM was found again during the *year after treatment* (Figure 3.3-2, bottom left frame).

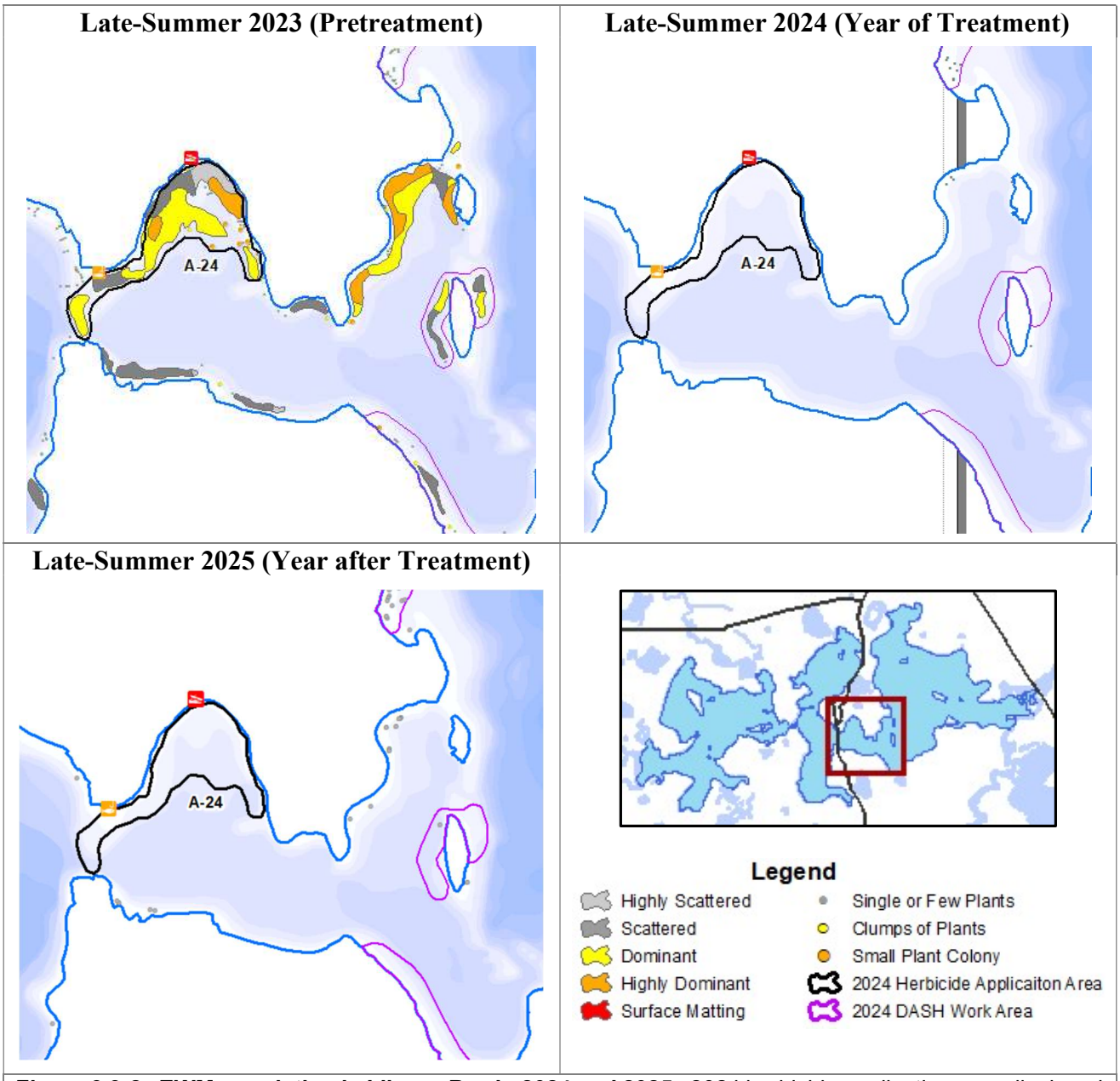


Figure 3.3-2. EWM population in Library Bay in 2024 and 2025. 2024 herbicide application area displayed in black outline. 2024 hand-harvesting areas displayed in purple outline.

ProcellaCOR Treatment Site B-24 – Year After Treatment

Figure 3.3-3 highlights the EWM population from late-summer 2023 (*pretreatment*), late-summer 2024 (post *year of treatment*), and late-summer 2025 (*year after treatment*) for the herbicide treatment site B-24. Prior to treatment, a large portion of the site contained colonized EWM including *dominant* and *highly dominant* densities along with a number of *single plants*, *clumps*, and *small plant colonies* (Figure 3.3-3, top left frame). After treatment, the only remaining EWM present in the site was several *single or few plants* occurrences located in the northeastern end of the application area (Figure 3.3-3, top right frame). In the late-summer of 2025, during the *year after treatment* survey, almost no EWM had rebounded within the application area with the exception of only a few *single or few plants* point-based locations (Figure 3.3-3, bottom left frame).

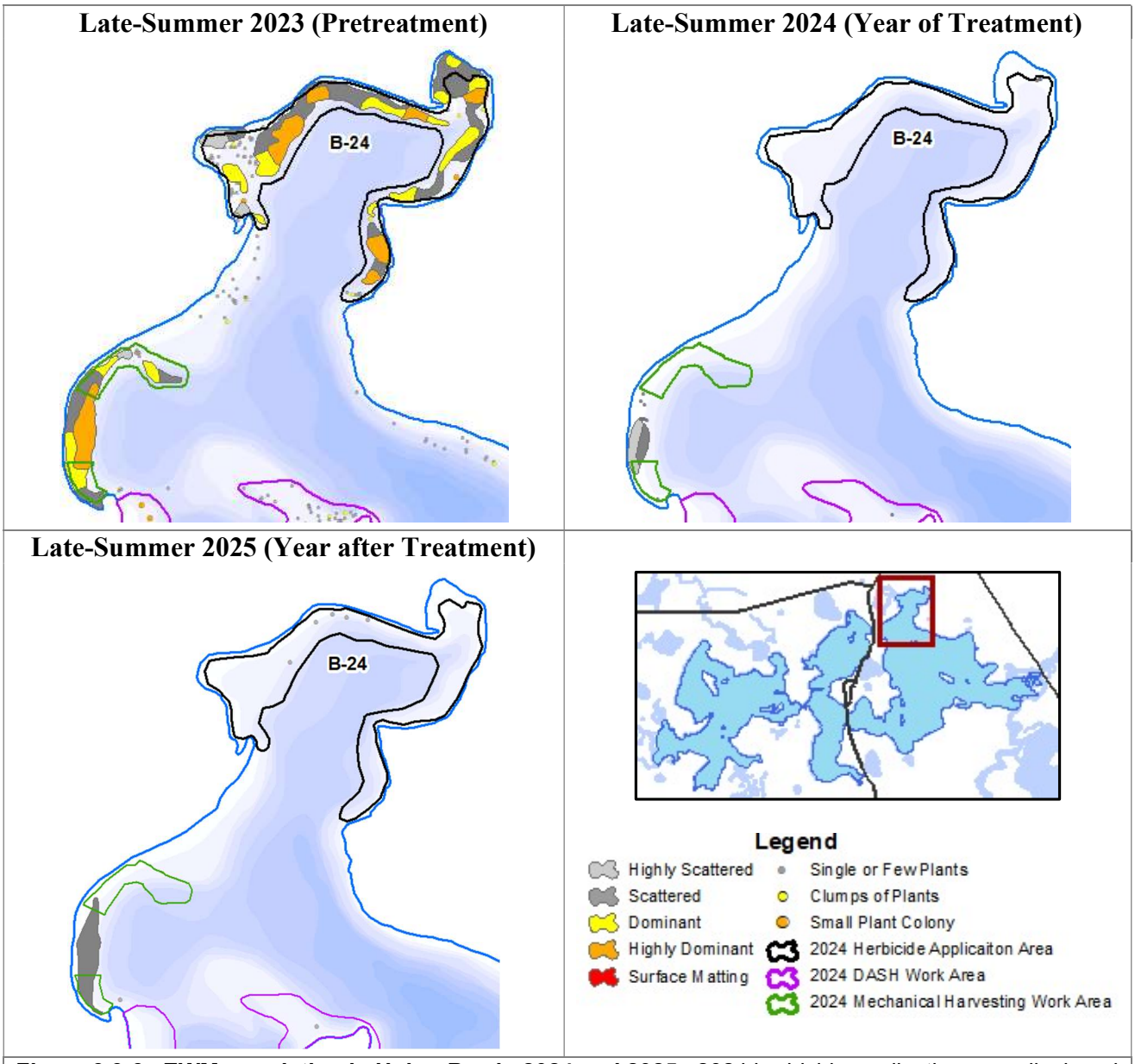


Figure 3.3-3. EWM population in Huber Bay in 2024 and 2025. 2024 herbicide application area displayed in black outline. 2024 hand-harvesting areas displayed in purple outline.

ProcellaCOR Treatment Site A-25 & B-25

Figure 3.3-4 highlights the EWM population from late-summer 2024 (*pretreatment*) and late-summer 2025 (post *year of treatment*) for the herbicide treatment sites A-25 and B-25. Prior to treatment, a large portion of the sites contained colonized EWM including *dominant* and *highly dominant* densities (Figure 3.3-4, left frame). After treatment, there was no EWM found within the entirety of the application area with treatment impacts extending to the west in the majority of this southwestern bay of Kawaguesaga Lake (Figure 3.3-4, right frame). These data show initial EWM control was very high during the *year of treatment*.

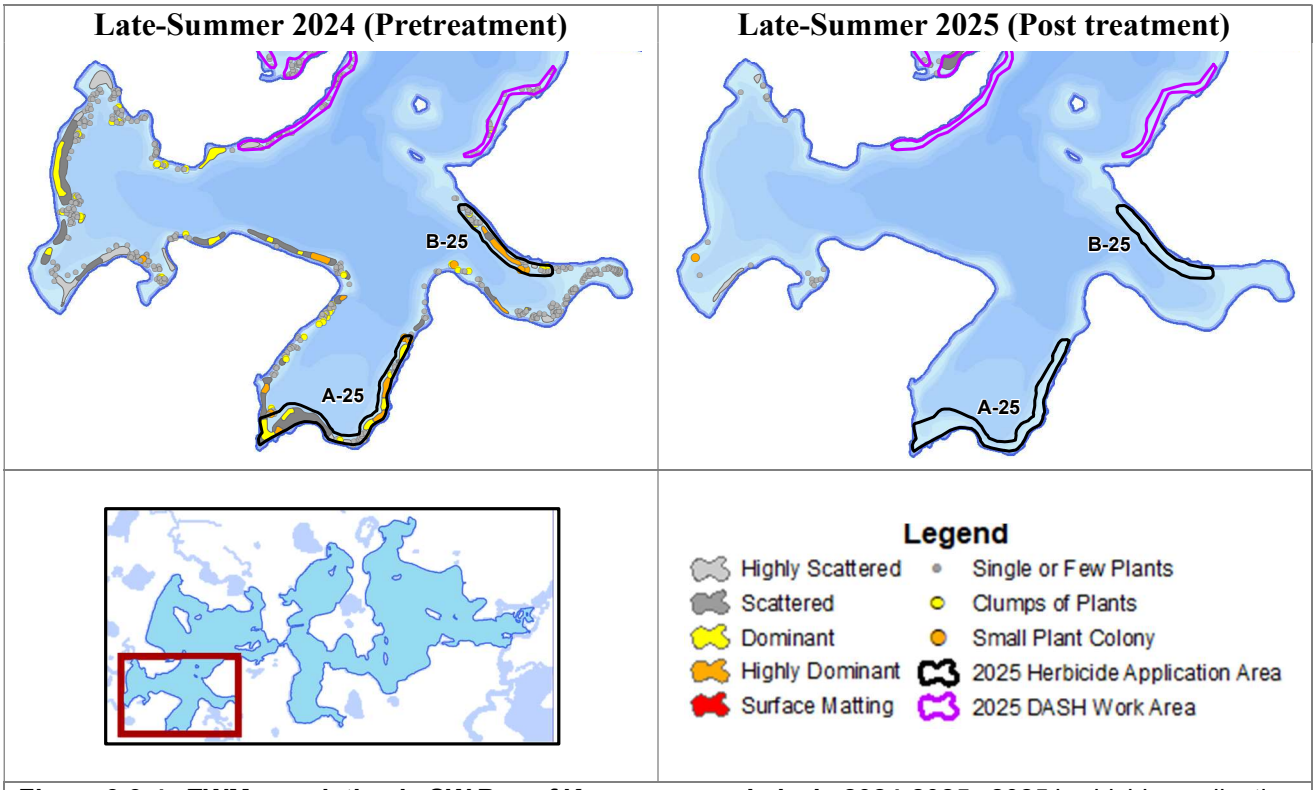


Figure 3.3-4. EWM population in SW Bay of Kawaguesaga Lake in 2024-2025. 2025 herbicide application area displayed in black outline. 2025 hand-harvesting areas displayed in purple outline.

System-Wide EWM Population

In many of the past ProcellaCOR treatments on this system, EWM impacts have been observed extending beyond application areas and into a larger area of potential impact where the herbicide mixes within a portion of the waterbody and reaches concentration exposure times that have impacts to EWM. Based upon previous experience from this system, EWM rebound is typically faster in areas not directly targeted comparted to within the application sites.

Substantial professional hand harvesting activities and mechanical harvesting also occurred within sites located within the bays of each lake and outside the extents of the herbicide treatment areas, particularly along the eastern and western shoreline sites just north of herbicide treatment sites A-25 and B-25 on Kawaguesaga Lake and within Stacks Bay and near Schoolhouse Bay on Minocqua Lake. The late-summer 2025 EWM mapping survey shows reduced EWM populations throughout the entire bays of the

lake (Figures 3.3-2-4). The combination of hand harvesting efforts, mechanical harvesting, and herbicide treatment contributed to the EWM control in these areas of the lake in 2025.

Map 3 displays an overview of the 2025 Late Season EWM Mapping Survey, with the subsequent 7 maps (Maps 4-11) showing a zoomed-in perspective of an area on the system. Following more aggressive EWM management starting in the spring of 2020, EWM populations have fluctuated from 4.3 to 55.6 colonized acres. The 2025 Late Season EWM Mapping Survey delineated 55.6 acres of colonized EWM, the highest amount since the initial reduction in population in 2020 (Figure 3.3-5).

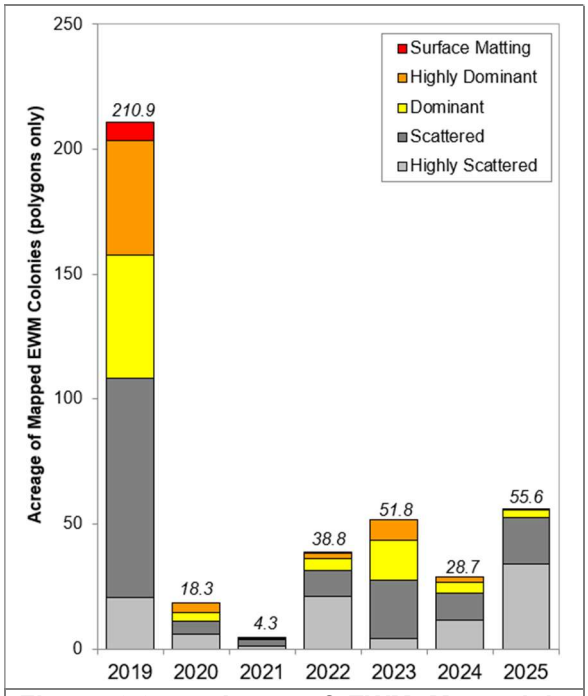


Figure 3.3-5. Acres of EWM Mapped in Minocqua & Kawaguesaga Lakes from 2019-2025. Data from Onterra Late-Summer EWM Mapping Surveys.

In an effort to increase the flow of information between lake stakeholders and project planners, the MKLPA added an interactive web map application to their website, allowing users to see each year's Late Season EWM mapping survey and management areas as they relate to their property or favorite recreation and fishing spots. Various layers can be turned on and off, and some layers can be selected and a pop-up window will provide additional information. This platform allows a better understanding of the EWM population dynamics and management strategies over time. A direct link to access this interactive map is below:

https://experience.arcgis.com/experience/a27ef48479a04b54824ca50ee71e9d76

4.0 CONCLUSIONS & DISCUSSION

The MKLPA feels strongly the positive strides in EWM management have been made since 2019. The MKLPA's IPM strategy of conducting herbicide management, contracted manual removal, and mechanical harvesting over the past several years has increased recreational use and access to the Minocqua-Kawaguesaga Lakes.

Continued monitoring of prior herbicide treatments confirms EWM reductions extending for three or more summers post treatment. While adjacent impacts from herbicide treatments have resulted in EWM reductions for a season or two following treatment, these areas rebound quicker than where direct herbicide application is applied.

The native plant response from herbicide treatments increases in predictability. Closely related dicot species are the most impacted, often decreasing by half or more during the first summer post treatment (*year of treatment*). A similar impact is observed with water stargrass, a native monocot species. Population recovery of these species has been variable, with recovery observed in some instances but not in all. Continued monitoring of these species, including through periodic whole-lake point-intercept

surveys is important to fully evaluate the herbicide treatment impacts to EWM and important native plant species.

The role of contracted manual removal and mechanical harvesting continues to be understood in these lakes. Choosing scale-appropriate sites for each method has become better understood, ensure the correct management tool is being selected with corresponding expectations of success.

4.1 2026 EWM Management & Monitoring Strategy Development

With AIS Control Grants becoming increasingly more competitive, the MKLA made a strategic decision starting in the fall of 2024 to apply in the Surface Water Planning category to increase their likelihood of securing funding for monitoring, as opposed to the gamble of applying for an AIS Control Grant and potentially not being awarded any state assistance. While this grant category does not allow for funding of active management activities such as herbicide treatment or manual removal, it ensures some state assistance is received for all other aspects of the ongoing project. The more years the MKLPA has between AIS Control Grants, the category where herbicide treatments and manual removal are eligible expenses, the higher ranking score and likelihood of funding exists. At some point in the future when a receiving an AIS Control Grant is critical to reaching management goals, the MKLPA will be better aligned to receive funding at that time. Until then, the MKLPA will fund herbicide treatments and manual removal efforts without WDNR assistance.

During a joint meeting of the MKLPA and the Tomahawk Lake Association (TLA), the WDNR lakes and fisheries departments, and Onterra (represents both the MKLPA and TLA) in early February 2026, discussions were had about the need for herbicide application in the summer of 2026. Following discussions, it was concluded that there were no areas within either Minocqua or Kawaguesaga Lakes that warranted herbicide treatment during 2026.

4.2 EWM Management Strategy

Herbicide Spot-Treatment

EWM colonies that are *dominant, highly dominant*, or *surface matting* are those most likely to impact navigation and recreation in the lake, and those with the potential to have cascading ecological impacts. Based upon the 2013 APM Plan, these locations when found in high use areas and in areas of high riparian frontage would be considered for herbicide treatment. During the 2025 Late Season EWM Mapping Survey, only 3.2 acres of EWM colonies at these densities levels were documented throughout the system. At this time, no areas of either lake contain EWM colonies that are causing large navigational or access impediments. Therefore, no herbicide treatments are being considered for 2026. EWM within Schoolhouse Bay (aka Save More Bay) has the highest potential to reach these thresholds by the end of 2026, and will be monitored for potential inclusion in a spring 2027 herbicide treatment program. This site was last targeted for herbicide treatment in spring 2023, which would be four full summers between treatments.

Manual Removal and Mechanical Harvesting

Map 12 outlines this preliminary strategy for manual removal and mechanical harvesting that offers both direction and flexibility. Similar to the strategy employed in prior years, past herbicide treatments are considered for management to assist in prolonging the EWM reductions that have occurred in these sites. Additional EWM populations will be managed to maintain densities below thresholds that would trigger

inclusion in future herbicide management plans. Based upon observations by the MKLPA and APM during the early part of the growing season, areas would be prioritized based on EWM density, navigation/access impact, and past management history.

As discussed above, parts of Schoolhouse Bay contain EWM populations that would stretch the capacity of the manual removal program. Sites R-26 and T-26 would be considered for mechanical harvesting. Mechanical harvesting would be reserved for instances where navigation and riparian access is severely impacted.

4.3 EWM Monitoring Plan

Qualitative EWM Monitoring – EWM Mapping Survey

Following the completion of the manual removal efforts, a Late Season EWM Mapping Survey would be conducted towards the end of the 2026 growing season to document a census of the EWM population within the lake at the perceived peak growth stage. Comparing these data to previous surveys will help lake stakeholders understand management outcomes and the overall state of the EWM population to direct management in subsequent years. These data are also important to drive management decisions for 2027.

Quantitative Aquatic Plant Monitoring – Subsample Point-Intercept Surveys

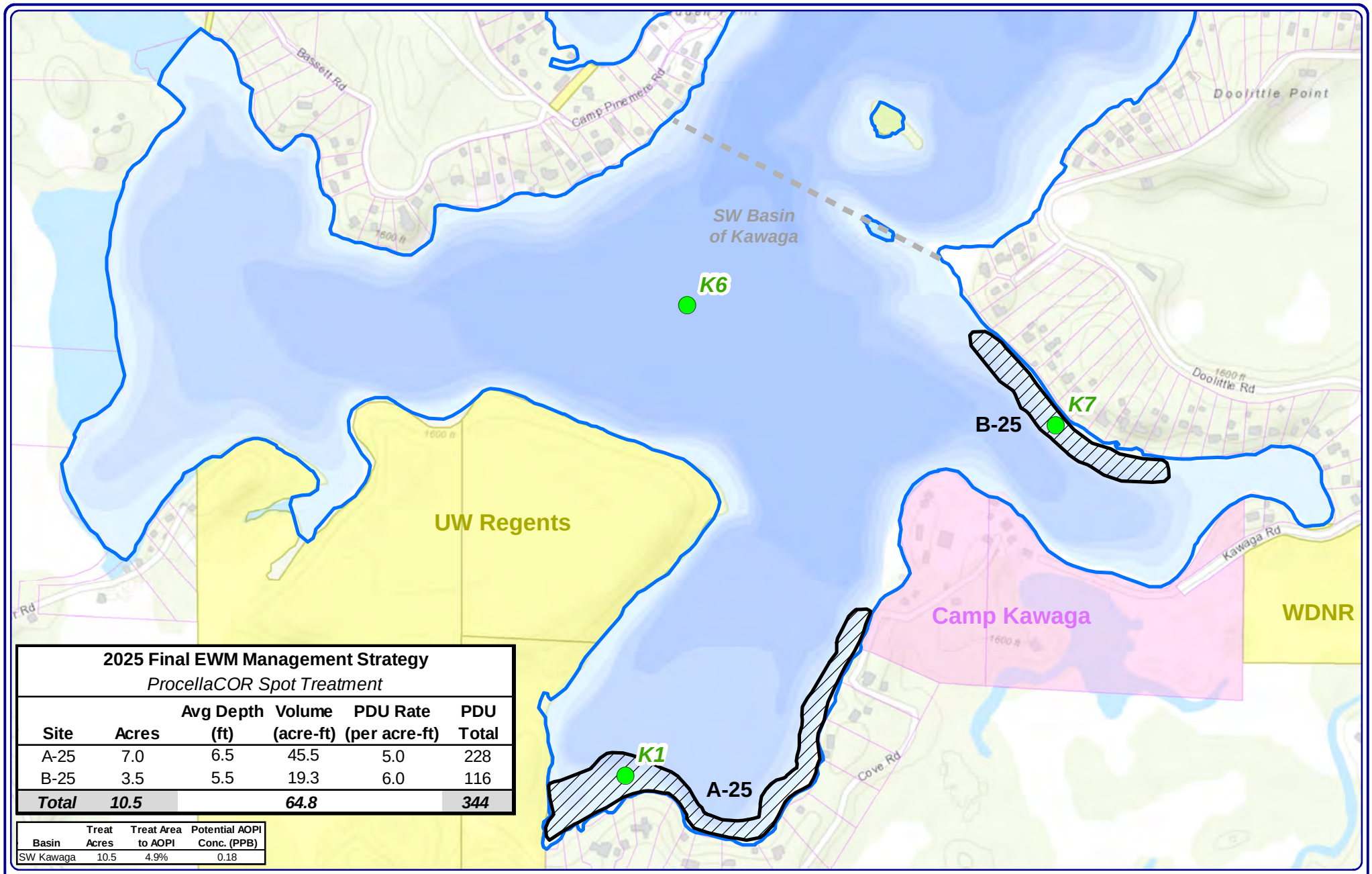
Continued quantitative monitoring of the 2025 treatment sites includes a subsample point-intercept during the late summer of 2026. This *year after treatment* survey provides important assessment of the longevity of EWM reductions and native plant recovery.

4.4 2027-2028 APM Planning Project

Best Management Practices for aquatic plant management change rapidly, as new information about effectiveness, non-target impacts, and risk assessment emerges. In the Fall of 2020, the WDNR created a new administrative code for their grant program, NR193. Under the new code, to be eligible to apply for grants that provide cost share for AIS control and monitoring, "a current plan has a completion date of no more than 5 years prior to submittal of the recommendation for approval." The WDNR is currently working to revise the aquatic plant management codes (NR107 & NR109) with similar Aquatic Plant Management (APM) Plan requirements.

The MKLPA's 2023 APM plan will be five years old in 2028. The MKLPA intends to apply for a WDNR Surface Water Planning Grant during fall 2026 to fund studies and planning activities during 2027-2028 that will ultimately lead to an updated APM Plan. The updated APM Plan will maintain the MKLPA eligibility status for WDNR grants and ultimately permits to conduct management activities.

The APM Planning project would have an obvious focus on the aquatic plant component of Minocqua-Kawaguesaga Lakes, likely to include continuation of late season EWM mapping surveys and a mid-summer point-intercept aquatic plant survey. The APM Plan may also include a trophic water quality assessment using current and historic volunteer-collected data, a general stakeholder survey open to all lake users, and a series of meetings that would create realistic management goals and associated actions for the MKLPA to carry out over the next five-year period.



2025 Final EWM Management Strategy
ProcellaCOR Spot Treatment

Site	Acres	Avg Depth (ft)	Volume (acre-ft)	PDU Rate (per acre-ft)	PDU Total
A-25	7.0	6.5	45.5	5.0	228
B-25	3.5	5.5	19.3	6.0	116
Total	***10.5***		***64.8***		***344***

Basin	Treat Acres	Treat Area to AOPI	Potential AOPI Conc. (PPB)
SW Kawaga	10.5	4.9%	0.18

N W E S

660
Feet

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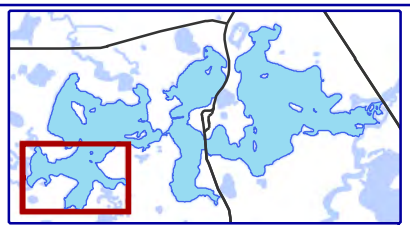
Sources:
Basemap: ESRI AGOL
Bathymetry: WDNR,1972
- digitized by Onterra
Parcels: V500 Parcel Initiative
Aquatic Plants: Onterra, 2024
Map Date: June 17, 2025 - EJH



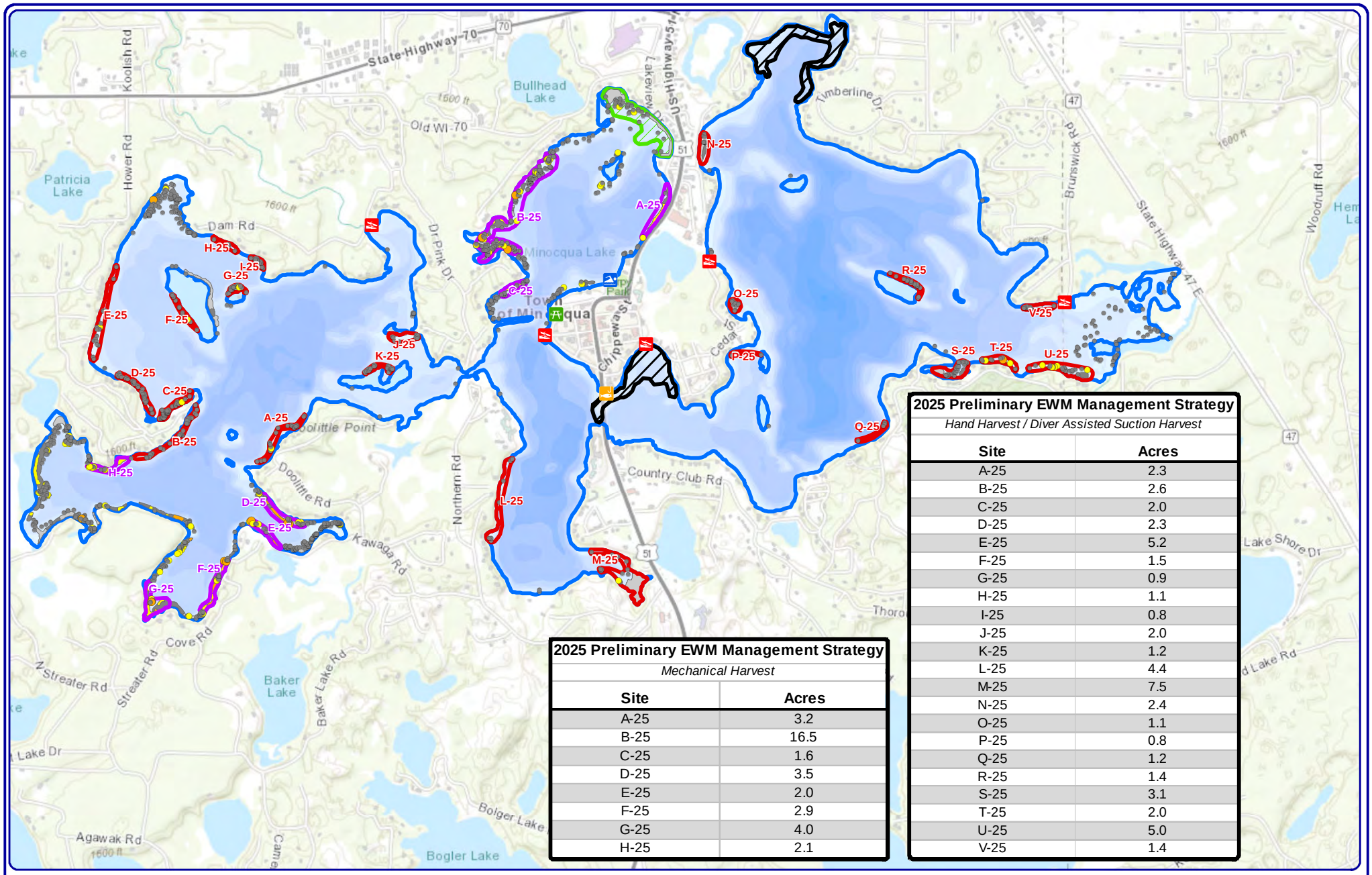
Legend

Final 2025 Herbicide Application Site

Herbicide Concentration Sampling Location

Map 1
Kawaguesaga Lake
Oneida County, Wisconsin

Final 2025 EWM Treatment Strategy



2025 Preliminary EWM Management Strategy	
Mechanical Harvest	
Site	**Acres**
A-25	3.2
B-25	16.5
C-25	1.6
D-25	3.5
E-25	2.0
F-25	2.9
G-25	4.0
H-25	2.1

2025 Preliminary EWM Management Strategy	
Hand Harvest / Diver Assisted Suction Harvest	
Site	**Acres**
A-25	2.3
B-25	2.6
C-25	2.0
D-25	2.3
E-25	5.2
F-25	1.5
G-25	0.9
H-25	1.1
I-25	0.8
J-25	2.0
K-25	1.2
L-25	4.4
M-25	7.5
N-25	2.4
O-25	1.1
P-25	0.8
Q-25	1.2
R-25	1.4
S-25	3.1
T-25	2.0
U-25	5.0
V-25	1.4

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2,600

Feet

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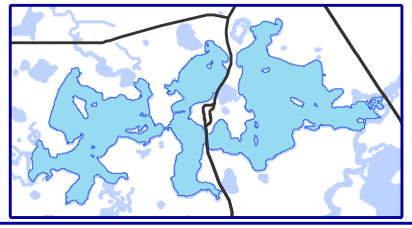
Sources:
Basemap: ESRI AGOL
Bathymetry: WDNR,1972
- digitized by Onterra
Aquatic Plants: Onterra, 2024

Map Date: March 5, 2025 - SCD



Legend

EWM Survey Results (September 3 & 4, 2024)

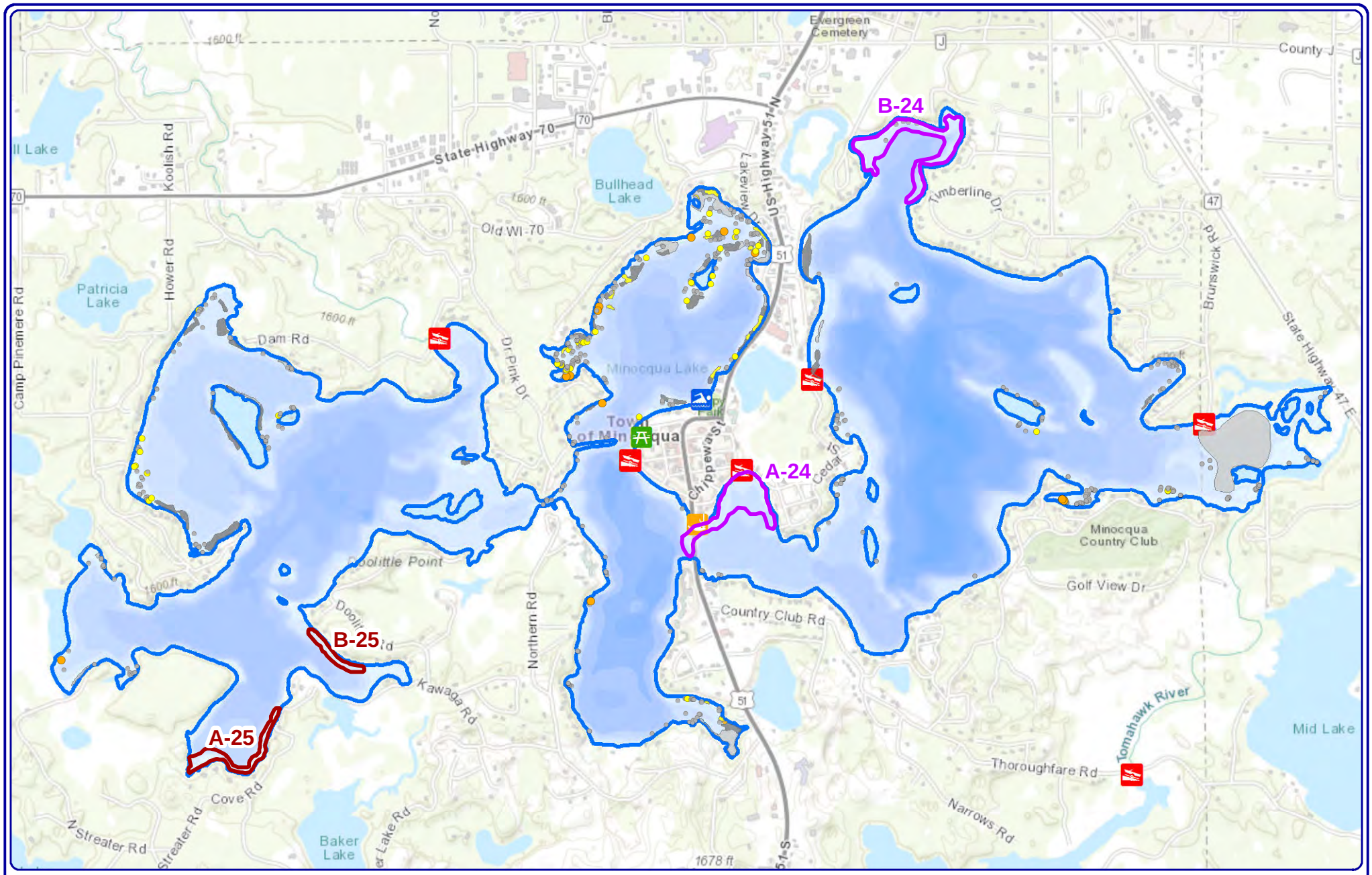
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2025 DASH Treatment Area
- 2025 Mechanical Harvesting Area
- 2024 Herbicide Applicaiton Area
- 2023 Herbicide Applicaiton Area

Map 2

Minocqua & Kawaguesaga

Oneida County, Wisconsin

2025 DASH & Mechanical Harvesting Preliminary Areas



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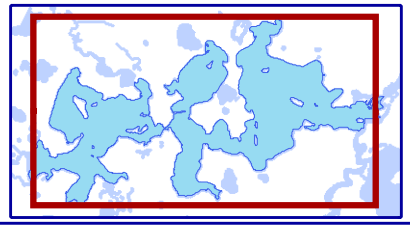
Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG



Legend

EWM Survey Results (8/14,27,28/2025)

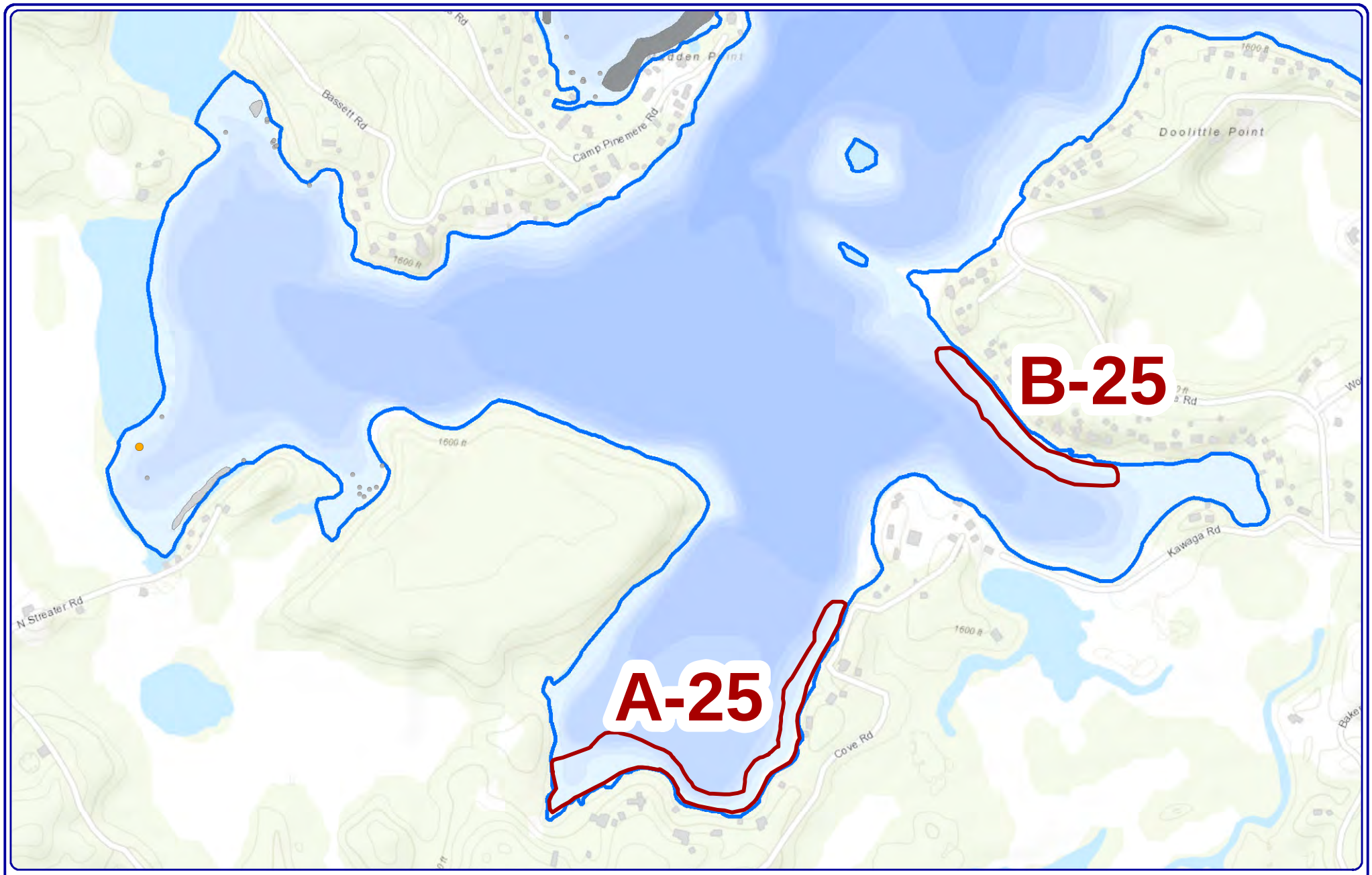
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 3 (Overview)

Minocqua & Kawaguesaga

Oneida County, Wisconsin

Late-Season 2025 EWM Survey Results



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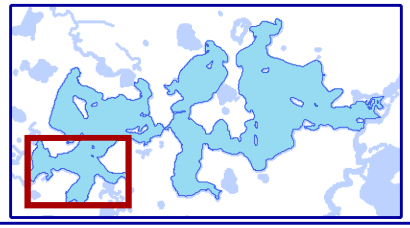
Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG



Legend

EWM Survey Results (8/14,27,28/2025)

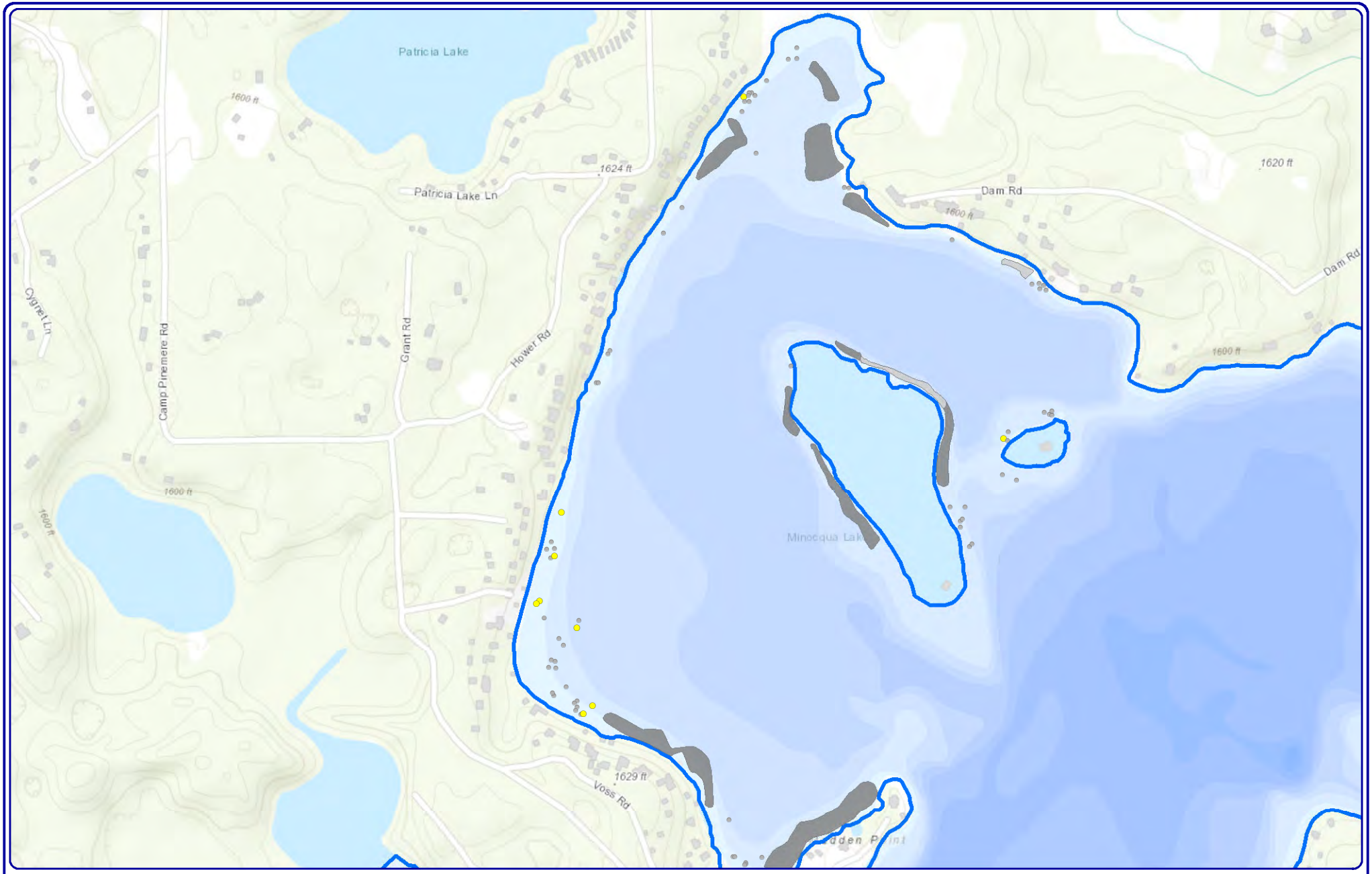
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 4 (Inset 1 of 8)

Minocqua & Kawaguesaga

Oneida County, Wisconsin

Late-Season 2025 EWM Survey Results



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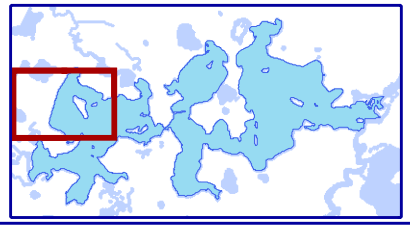
Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG



Legend

EWM Survey Results (8/14,27,28/2025)

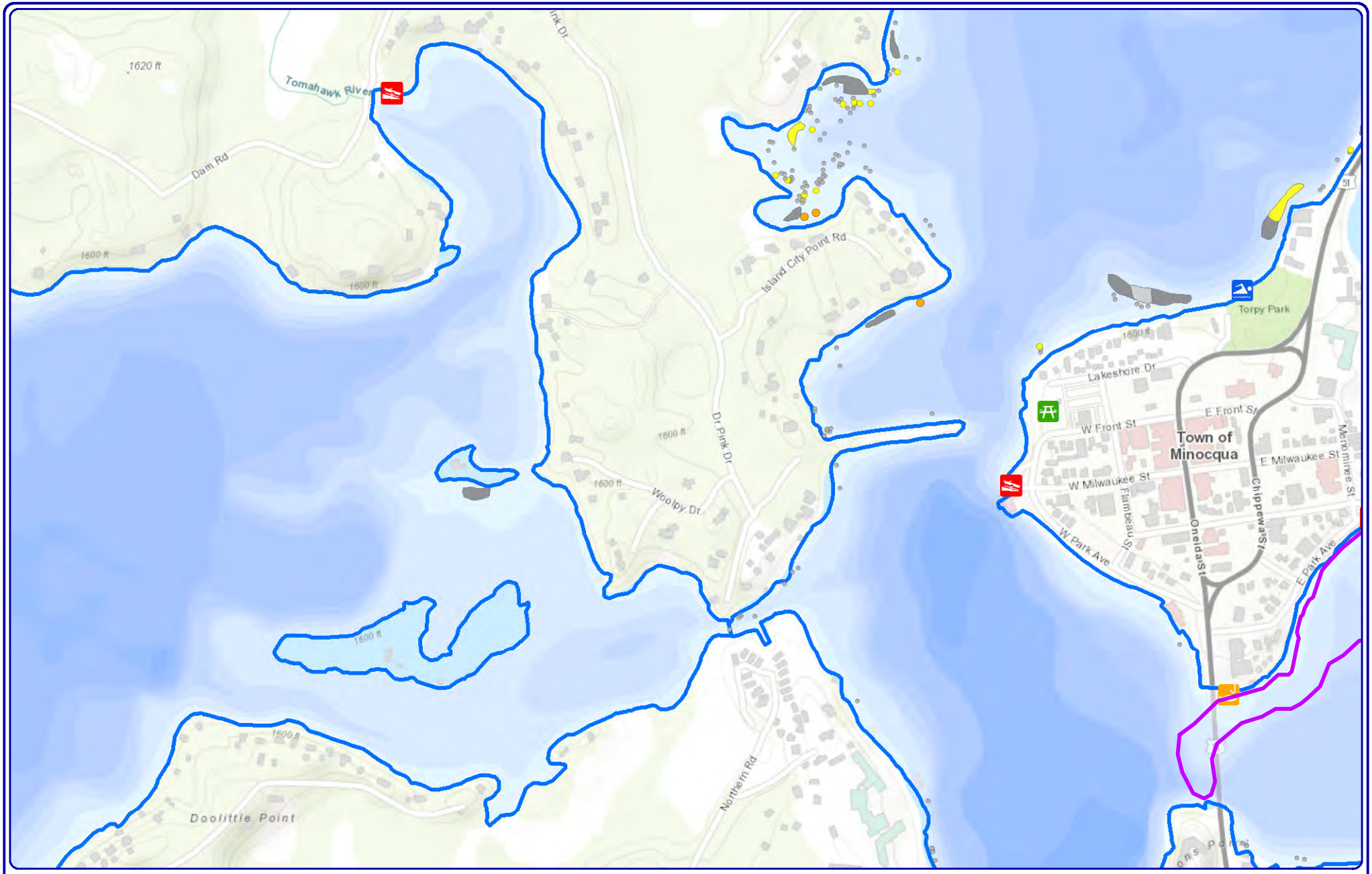
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 5 (Inset 2 of 8)

Minocqua & Kawaguesaga

Oneida County, Wisconsin

Late-Season 2025 EWM Survey Results



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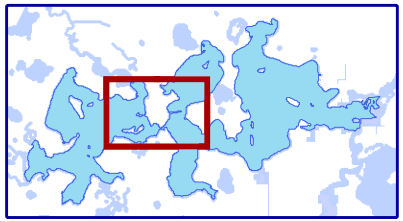
Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG



Legend

EWM Survey Results (8/14,27,28/2025)

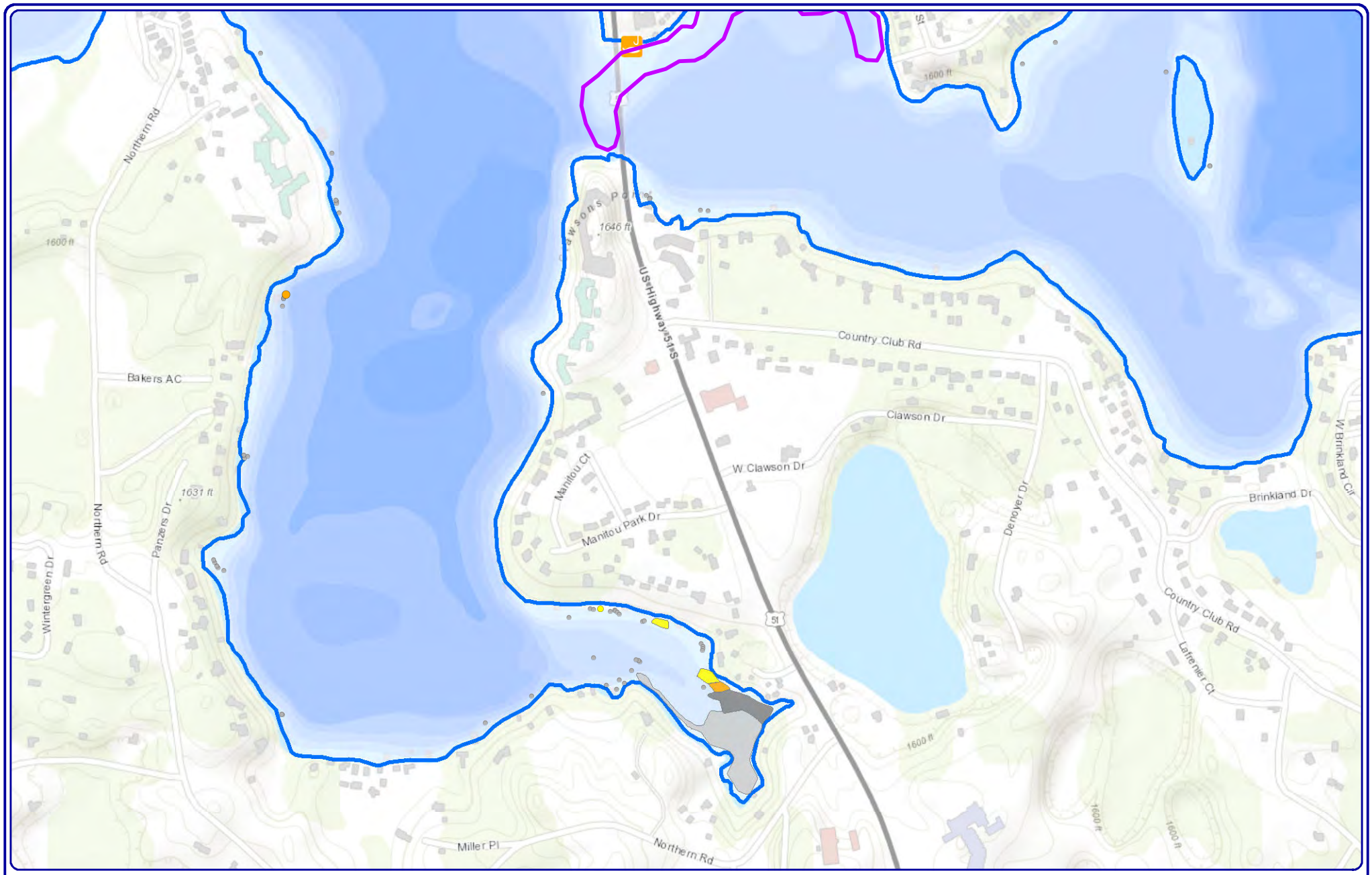
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 6 (Inset 3 of 8)

Minocqua & Kawaguesaga

Oneida County, Wisconsin

Late-Season 2025 EWM Survey Results



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Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG

Legend

EWM Survey Results (8/14,27,28/2025)

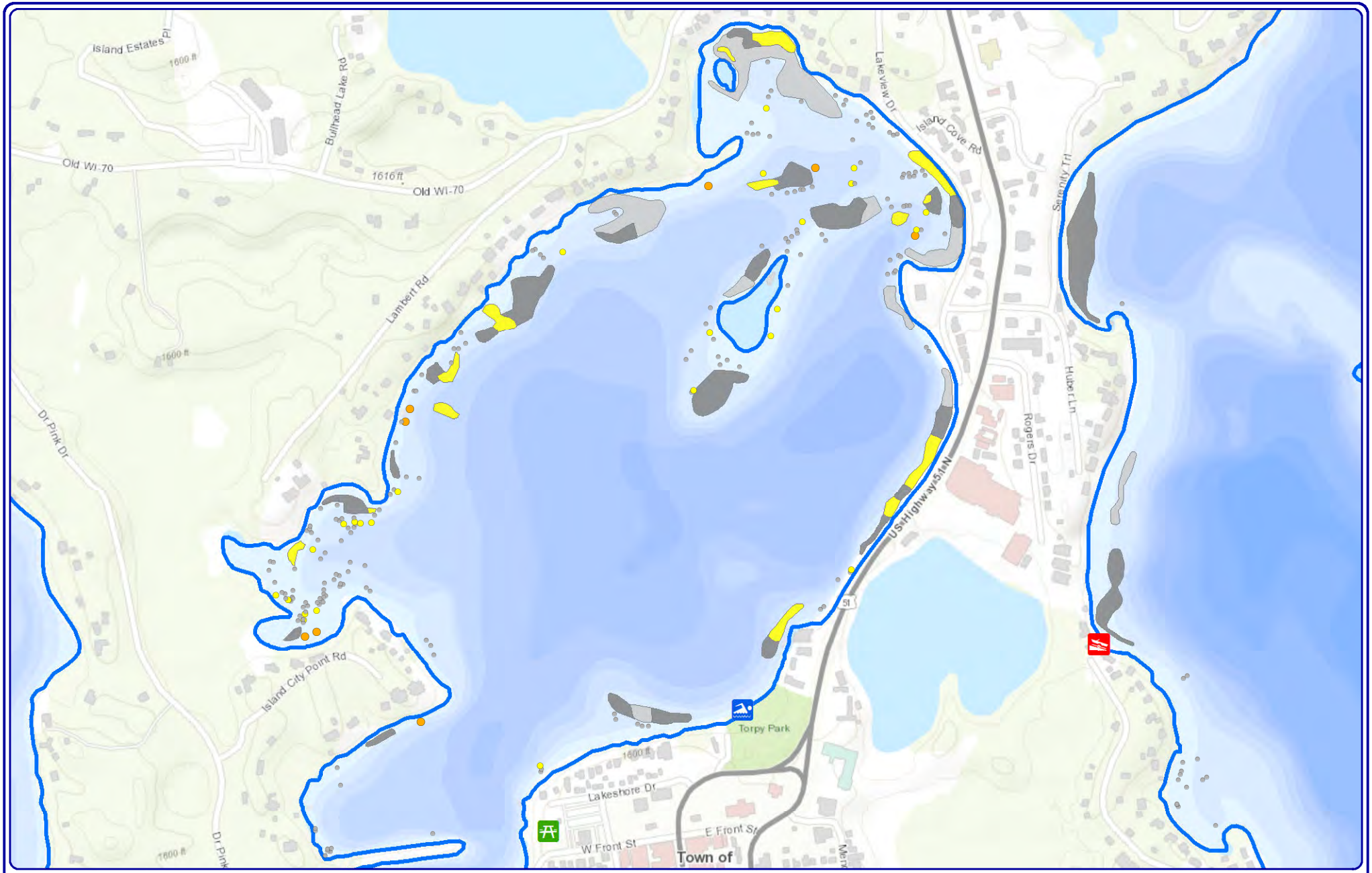
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 7 (Inset 4 of 8)

Minocqua & Kawaguesaga

Oneida County, Wisconsin

Late-Season 2025 EWM Survey Results



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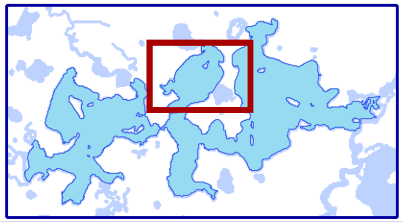
Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG



Legend

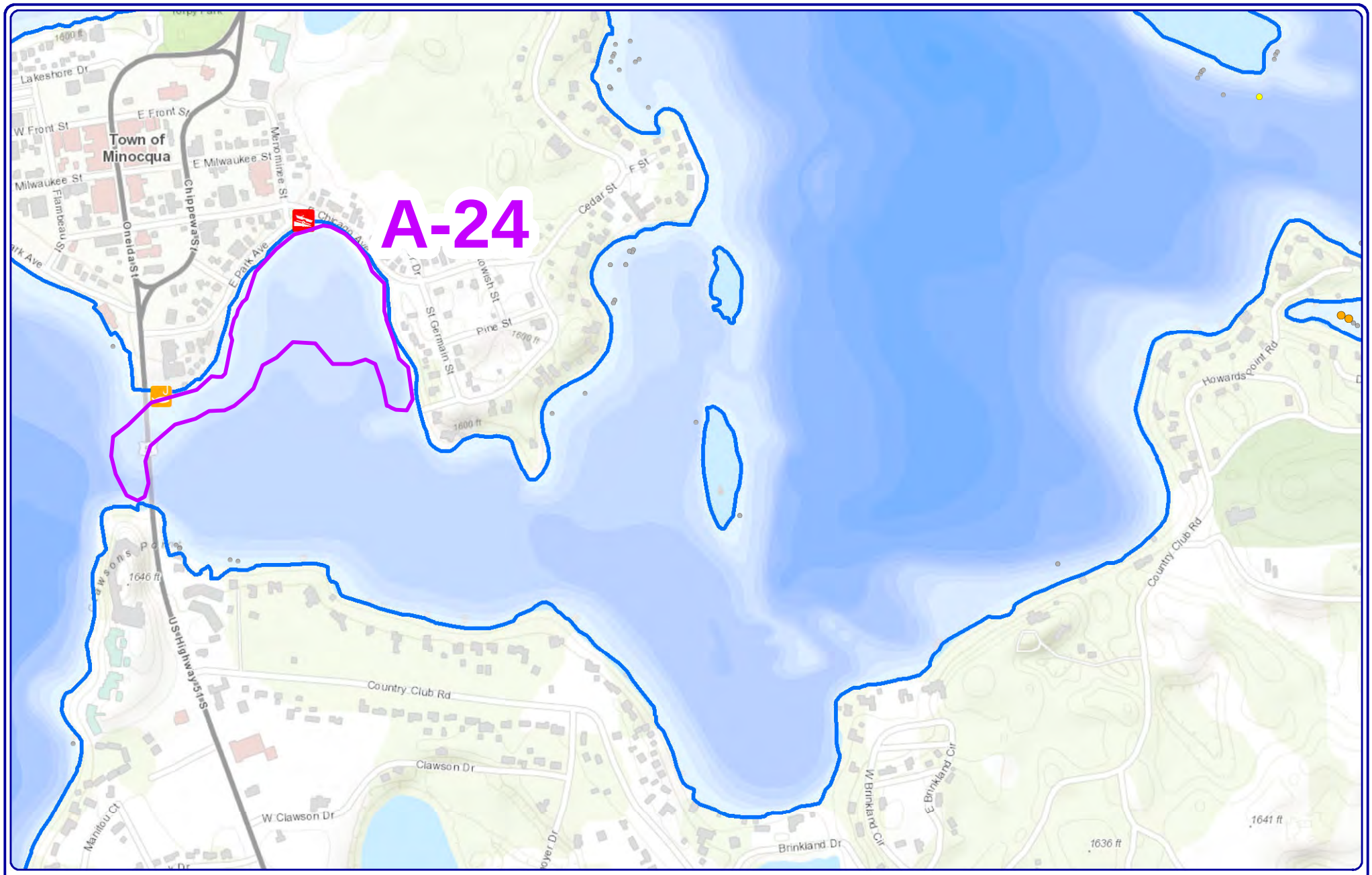
EWM Survey Results (8/14,27,28/2025)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 8 (Inset 5 of 8)

Minocqua & Kawaguesaga
Oneida County, Wisconsin

Late-Season 2025 EWM Survey Results



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Feet

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Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG

Legend

EWM Survey Results (8/14,27,28/2025)

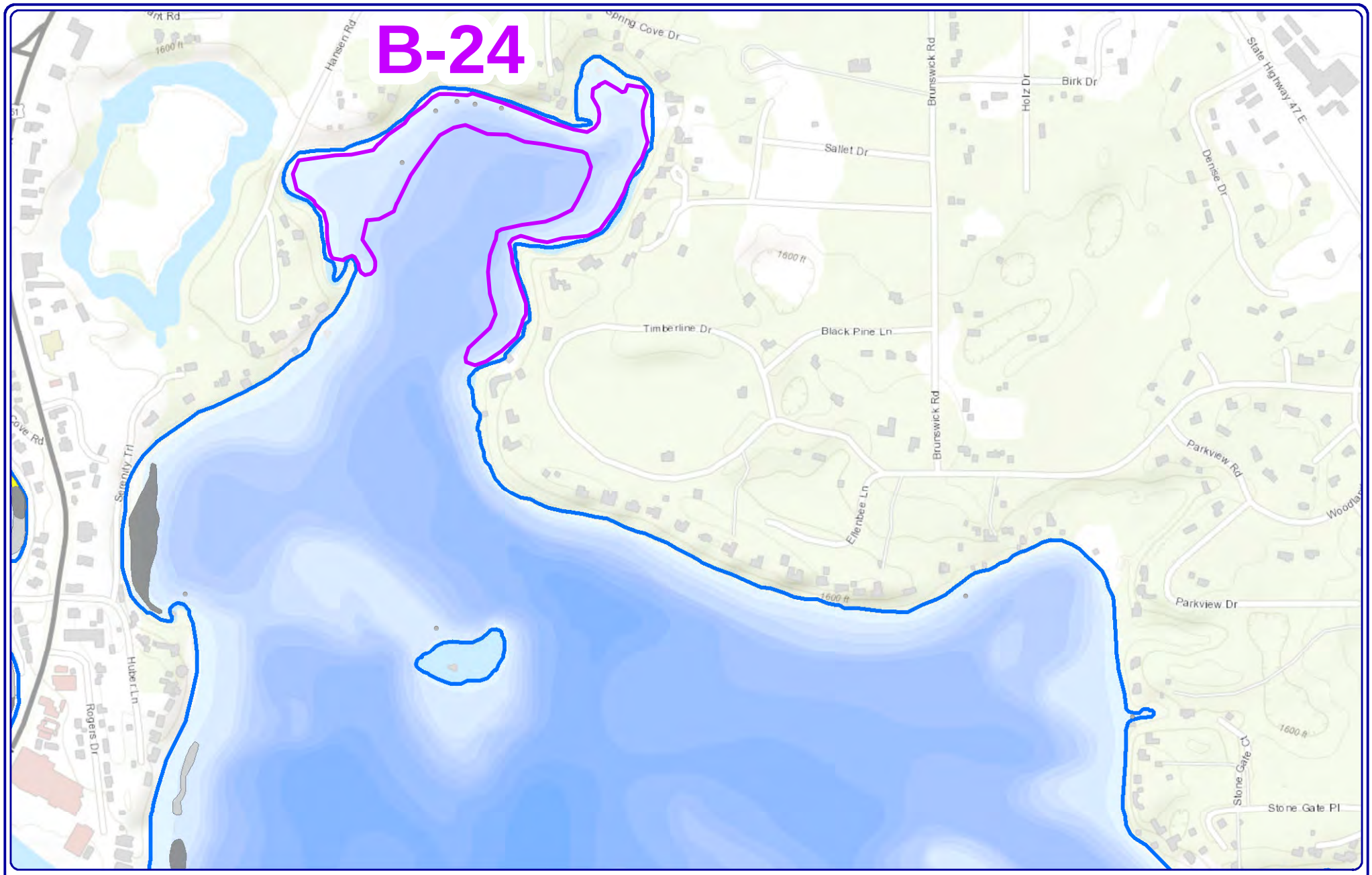
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 9 (Inset 6 of 8)

Minocqua & Kawaguesaga

Oneida County, Wisconsin

Late-Season 2025 EWM Survey Results



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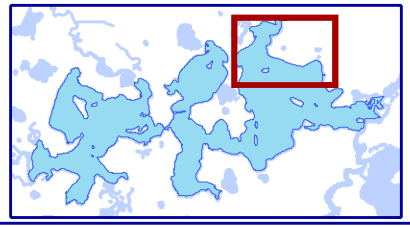
Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG



Legend

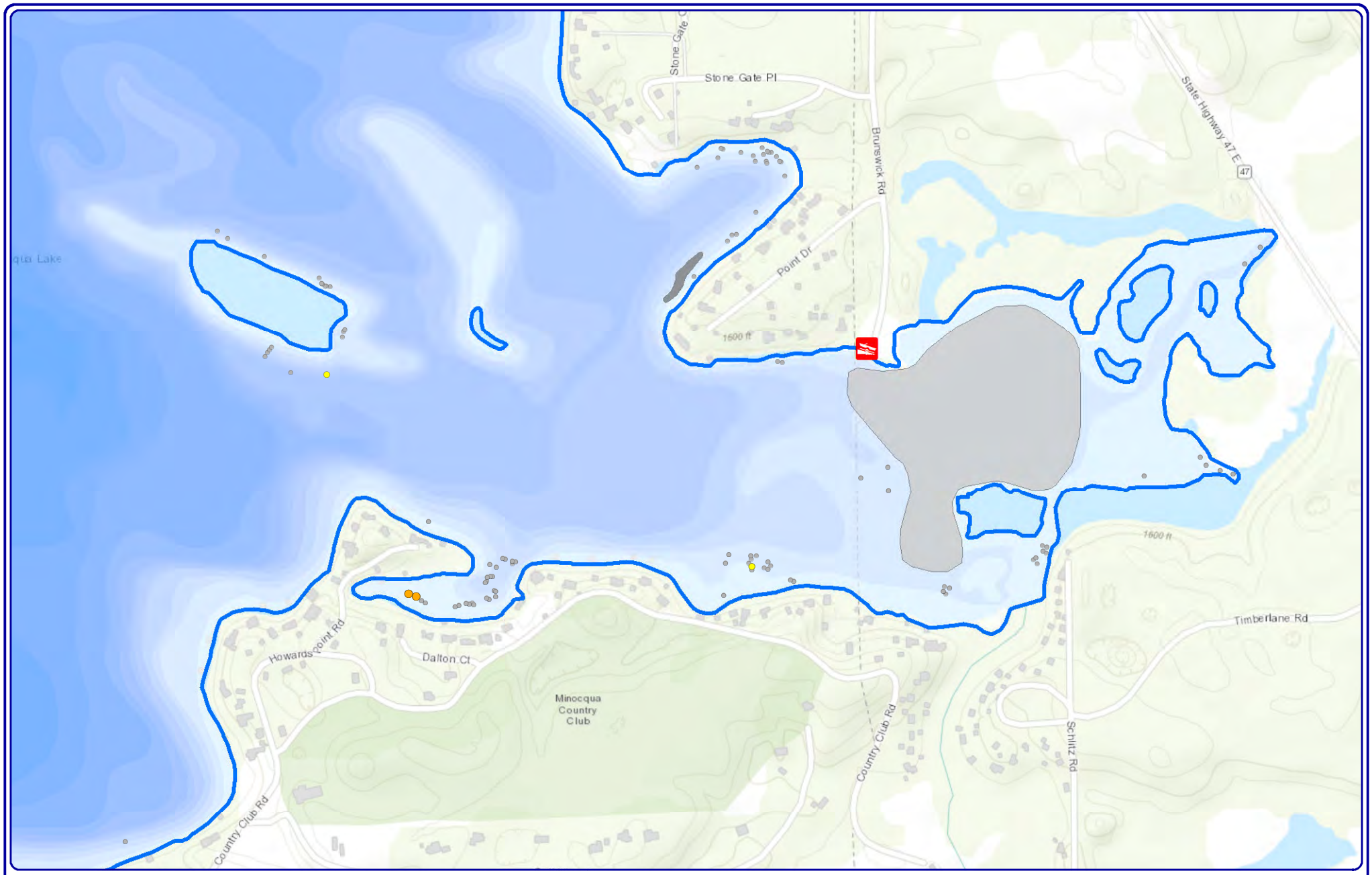
EWM Survey Results (8/14,27,28/2025)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 10 (Inset 7 of 8)

Minocqua & Kawaguesaga
Oneida County, Wisconsin

Late-Season 2025
EWM Survey Results

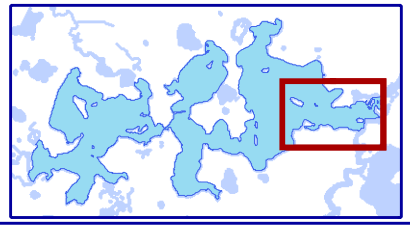


N
W E
S

725
Feet

Onterra, LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Basemap: ESRI AGOL
Bathy: WDNR. Digitized by Onterra
Aquatic Plants: Onterra, 2025
Map Date: October 9, 2025 - KRG



Legend

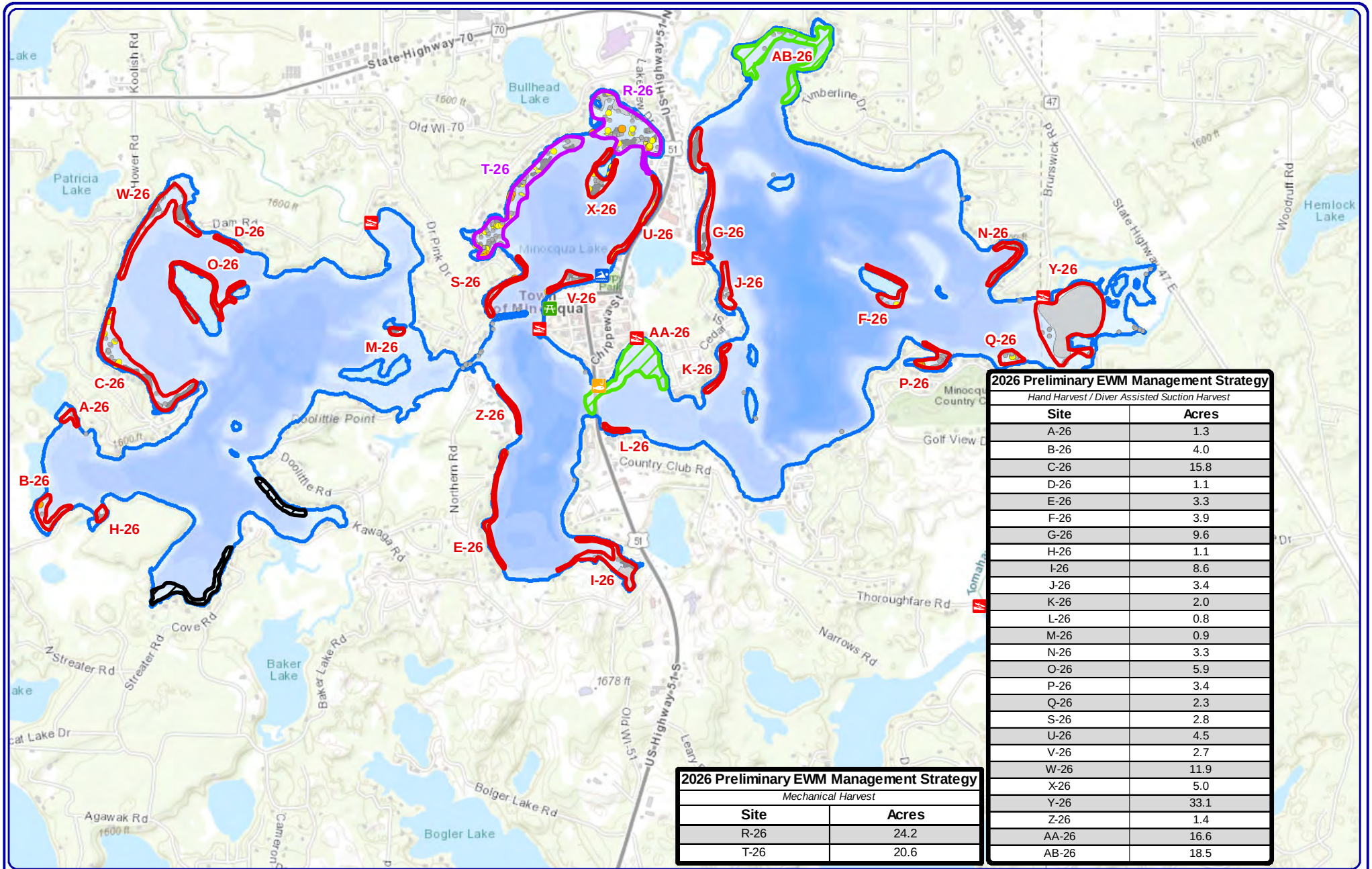
EWM Survey Results (8/14,27,28/2025)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2024 Herbicide Applicaiton Area
- 2025 Herbicide Applicaiton Area

Map 11 (Inset 8 of 8)

Minocqua & Kawaguesaga
Oneida County, Wisconsin

Late-Season 2025 EWM Survey Results



2026 Preliminary EWM Management Strategy	
Mechanical Harvest	
Site	**Acres**
R-26	24.2
T-26	20.6

2026 Preliminary EWM Management Strategy	
Hand Harvest / Diver Assisted Suction Harvest	
Site	**Acres**
A-26	1.3
B-26	4.0
C-26	15.8
D-26	1.1
E-26	3.3
F-26	3.9
G-26	9.6
H-26	1.1
I-26	8.6
J-26	3.4
K-26	2.0
L-26	0.8
M-26	0.9
N-26	3.3
O-26	5.9
P-26	3.4
Q-26	2.3
S-26	2.8
U-26	4.5
V-26	2.7
W-26	11.9
X-26	5.0
Y-26	33.1
Z-26	1.4
AA-26	16.6
AB-26	18.5

N W E S

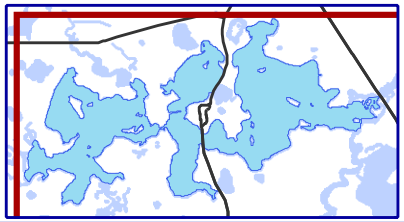
2,600

Feet

Onterra, LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Basemap: ESRI AGOL
Bathymetry: WDNR,1972
- digitized by Onterra
Aquatic Plants: Onterra, 2025

Map Date: February 11, 2026 - SCD



Legend

EWM Survey Results (August 14, 27-28, 2025)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting *(None)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

- 2026 DASH Treatment Area
- 2026 Mechanical Harvesting Area
- 2025 Herbicide Applicaiton Area
- 2024 Herbicide Applicaiton Area

Map 12

Minocqua & Kawaguesaga

Oneida County, Wisconsin

2026 DASH & Mechanical Harvesting Preliminary Areas

A

APPENDIX A

Minocqua Kawaguesaga Lakes 2025 EWM Manual Removal Report – *Aquatic Plant Management LLC.*

EST. 2013

AQUATIC PLANT MANAGEMENT

MKLPA EWM Management Report 2025

PO Box 1134 Minocqua, WI 54548

Executive Summary

- Minocqua and Kawaguesaga Lakes in Oneida County, WI have an extensive population of Eurasian Watermilfoil (EWM) covering ~86+ acres

- To address the EWM population, the Minocqua Kawaguesaga Lakes Protection Association (MKLPA) and Aquatic Plant Management (APM) have partnered on a program of mechanical harvesting, diver assisted suction harvesting (DASH), hand harvesting, and herbicide control

- In the 2025, APM completed
  - ~3 days of mechanical harvesting at 2 locations, removing 630 cubic feet
  - ~9 days of DASH at 5 locations, removing 174.8 cubic feet
  - ~13.5 days of Hand Harvesting at 6 locations, removing 397.1 cubic feet
  - 1 herbicide treatment with ProcellaCOR at two locations on Kawaguesaga Lake

- In total, APM has removed 1201.9 cubic feet of EWM from Minocqua and Kawaguesaga Lakes and treated 10.5 acres with herbicide

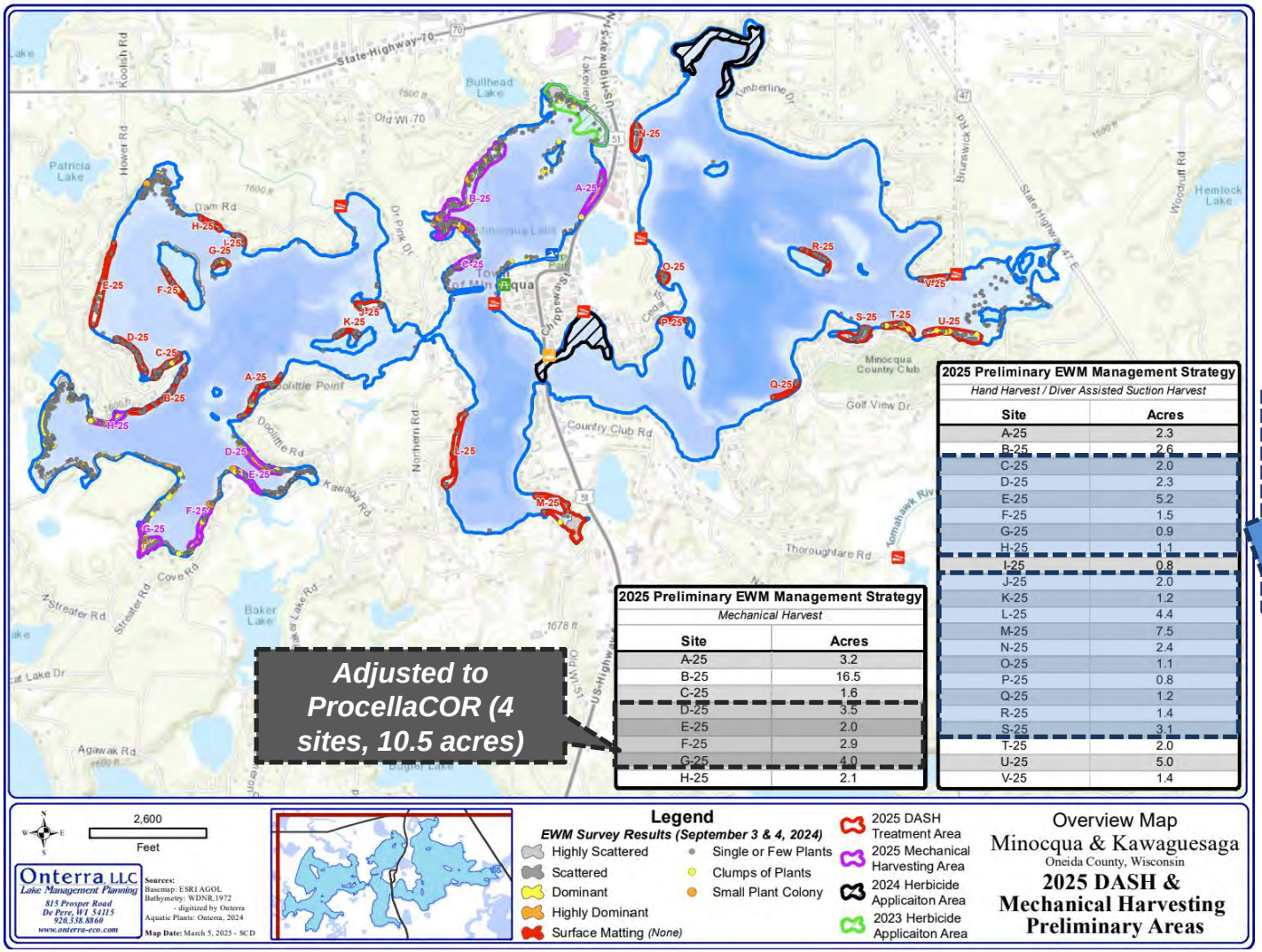
Initial 2025 AIS Management Approach

The IPM Approach for MKLPA

- **Selected best tool for management based on EWM conditions at each bed**
- **Multiple reviews with MKLPA to align on approach**
- **Ensured alignment with budget and benefits to riparians**
- **Multi-pronged approach requires WDNR approval**

EWM Management Approach	Acres	# of Sites	# of Days
Hand Harvesting & DASH	14.1	6	22.5
Herbicide (ProcellaCOR)	10.5	2	1
Mechanical Harvesting	23.4	4	6.7
Management Sub-total	**48.0**	**12**	**30.2**
No Management in 2025	38.1	16	-
Total:	**86.1**	**32**	**68**

EWM Extent from Onterra September 2024



2025 Preliminary EWM Management Strategy
Mechanical Harvest

Site	Acres
A-25	3.2
B-25	16.5
C-25	1.6
D-25	3.5
E-25	2.0
F-25	2.9
G-25	4.0
H-25	2.1

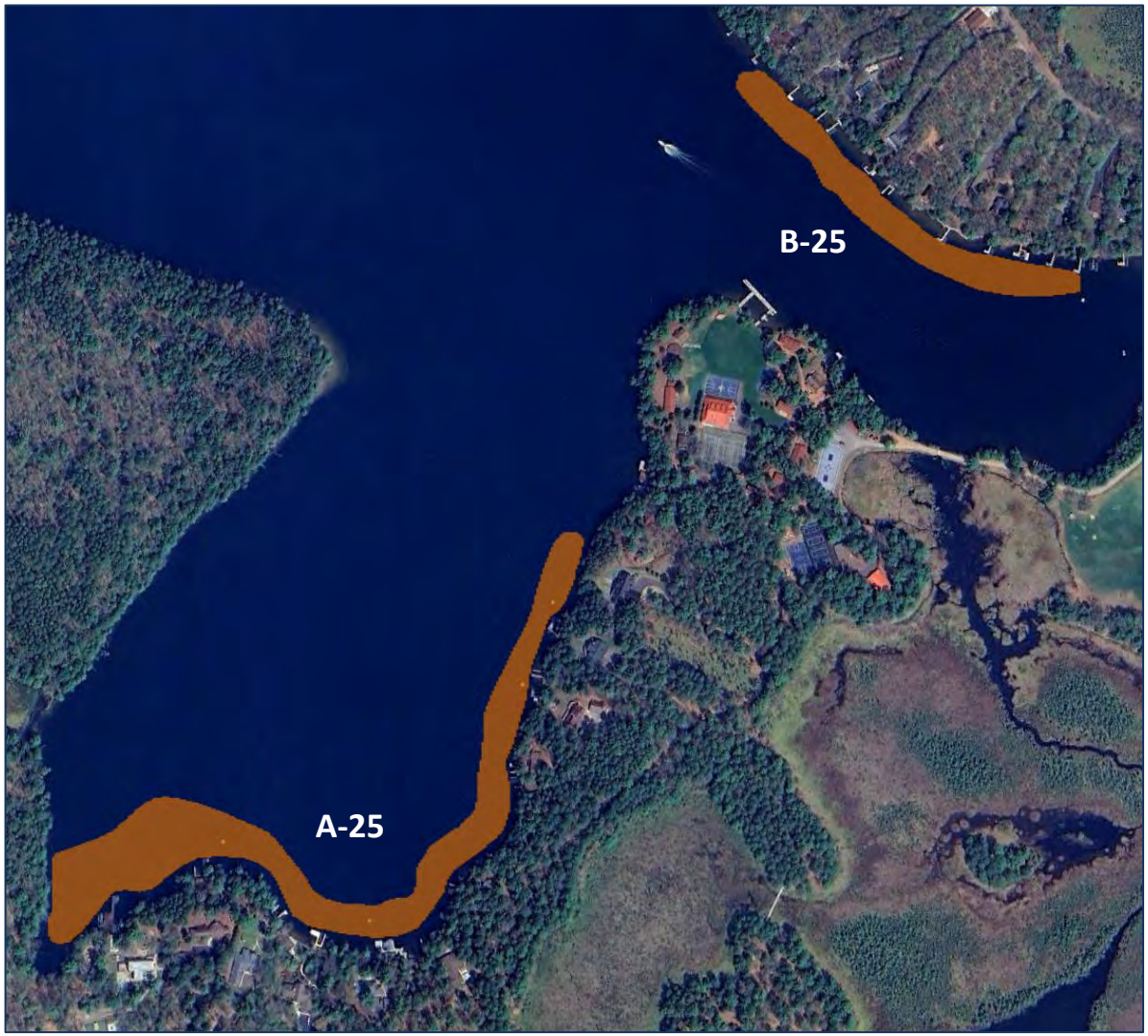
2025 Preliminary EWM Management Strategy
Hand Harvest / Diver Assisted Suction Harvest

Site	Acres
A-25	2.3
B-25	2.6
C-25	2.0
D-25	2.3
E-25	5.2
F-25	1.5
G-25	0.9
H-25	1.1
I-25	0.8
J-25	2.0
K-25	1.2
L-25	4.4
M-25	7.5
N-25	2.4
O-25	1.1
P-25	0.8
Q-25	1.2
R-25	1.4
S-25	3.1
T-25	2.0
U-25	5.0
V-25	1.4

Adjusted to ProcellaCOR (4 sites, 10.5 acres)

No Management in 2025 (16 sites, 38.1 acres)

ProcellaCOR Treatment on June 24th



Treatment Overview

- APM treated Kawaguesga Lake **with ProcellaCOR EC** on June 24th
- The treatment occurred over a **~1.5 hour period** from 5:10 am to 6:40 am
- Ambient air temperature was 63.6 degrees with a **west wind** averaging 0.8 miles per hour at the beginning of treatment, and the water temperature was 72.7 degrees

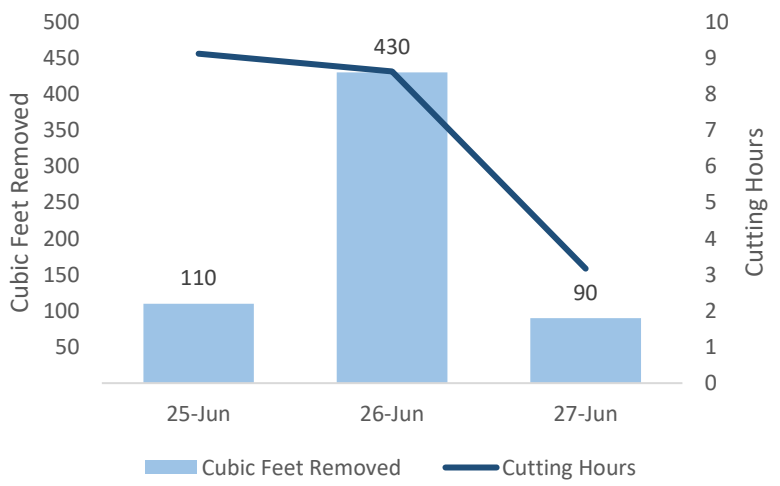
Site Name	Treated Acres	PDUs
A-25	7.0	228
B-25	2.5	116
Total	**10.5**	**344**

Summarized Harvesting Results

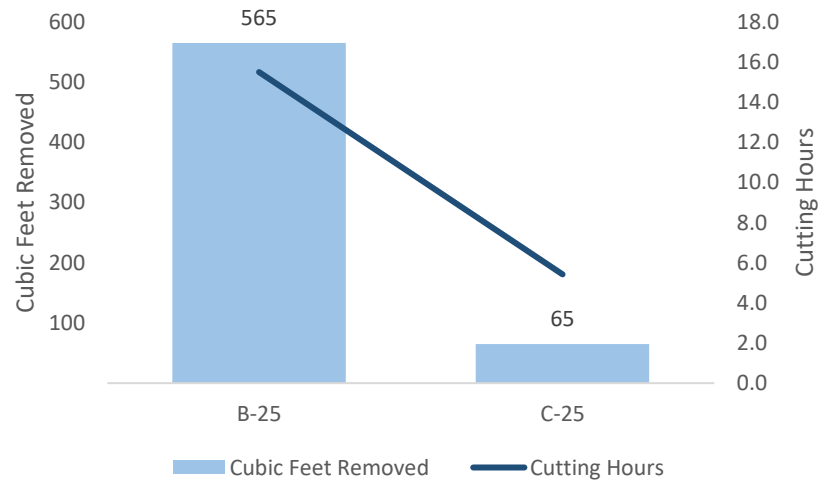
Mechanical Harvesting Commentary

- All of the EWM harvest occurred during the last week of June
- Over 80% of the EWM was harvested from the highest priority zone, B-25
- After multiple site visits throughout the course of the summer, APM ultimately decided the EWM never made it to a nuisance level where harvesting would be appropriate
- The original plan of 6.7 days of harvesting was shortened to ~3 days
- In addition to harvesting, APM conducted fragment collection coinciding with each harvest

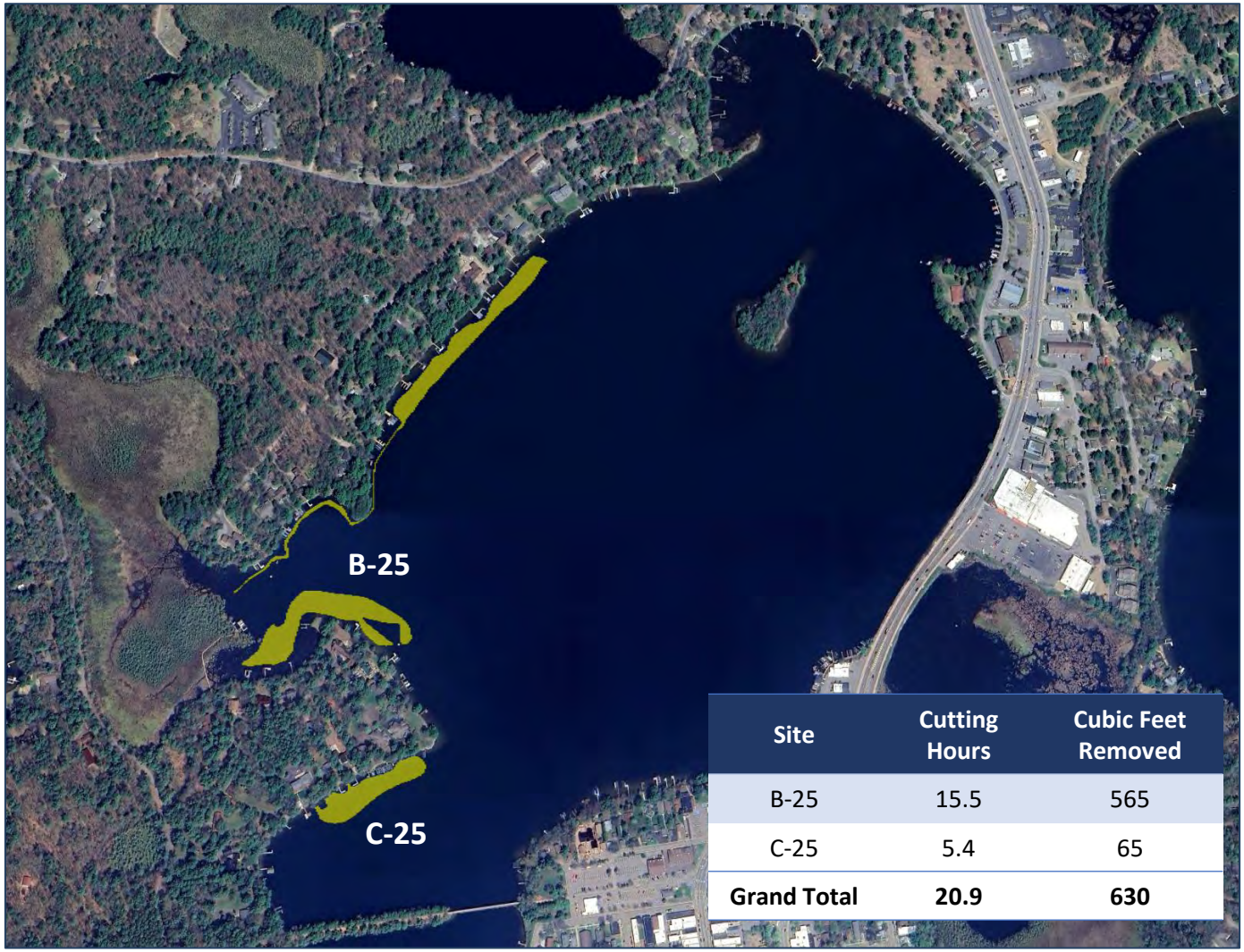
Harvest by Date



Harvest by Site



EWM Mechanical Removal Summary



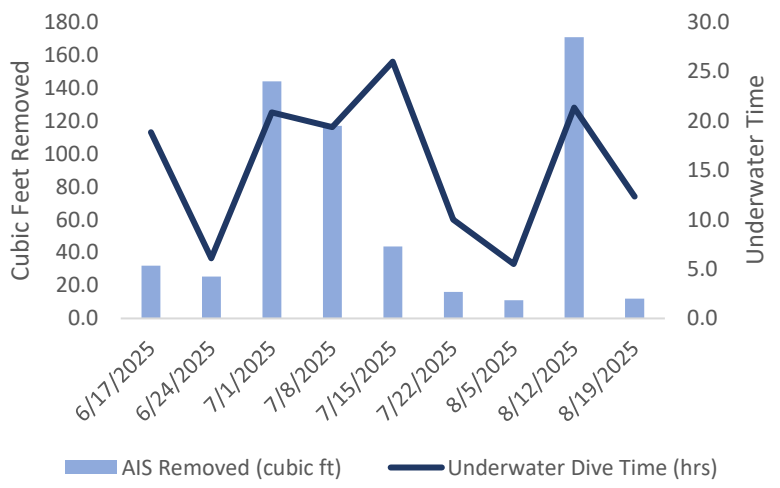
Site	Cutting Hours	Cubic Feet Removed
B-25	15.5	565
C-25	5.4	65
Grand Total	**20.9**	**630**

Summarized Manual Removal Results

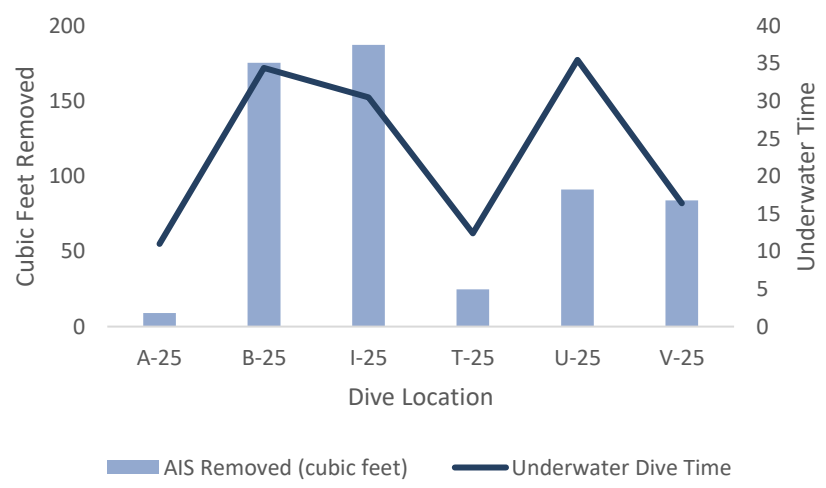
Manual Removal Commentary

- Over the course of the summer, APM conducted ~9 days of DASH and ~13.5 days of hand harvesting
- 372 cubic feet (65%) was from 3 sites on Kawaguesaga Lake, and the remaining ~200 cubic feet was removed from 3 sites on Minocqua Lake
- The dive teams noted that towards the end of the summer they had difficulty locating any plants from Kawaguesaga sites

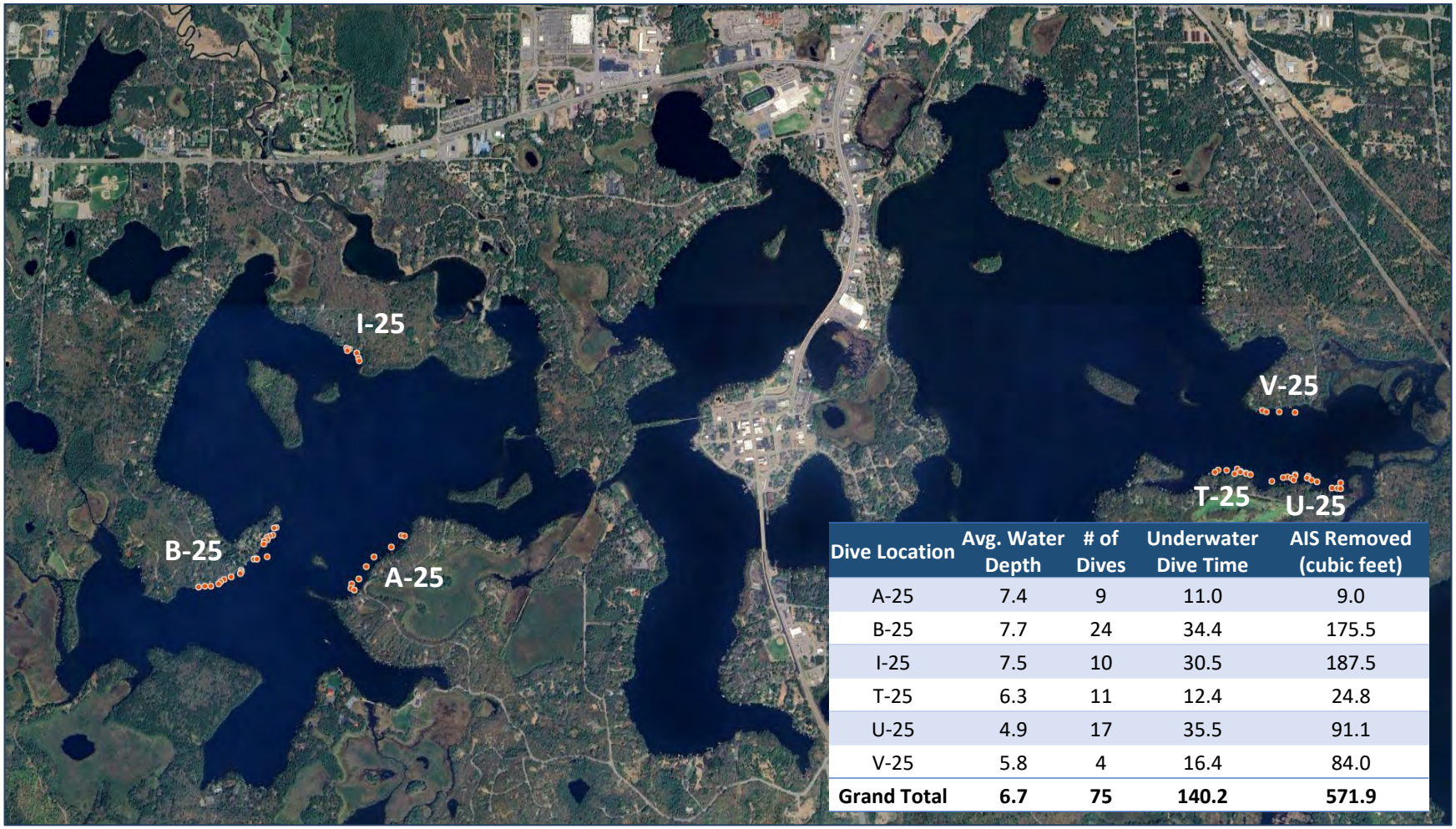
Summary by Week



Harvest by Site

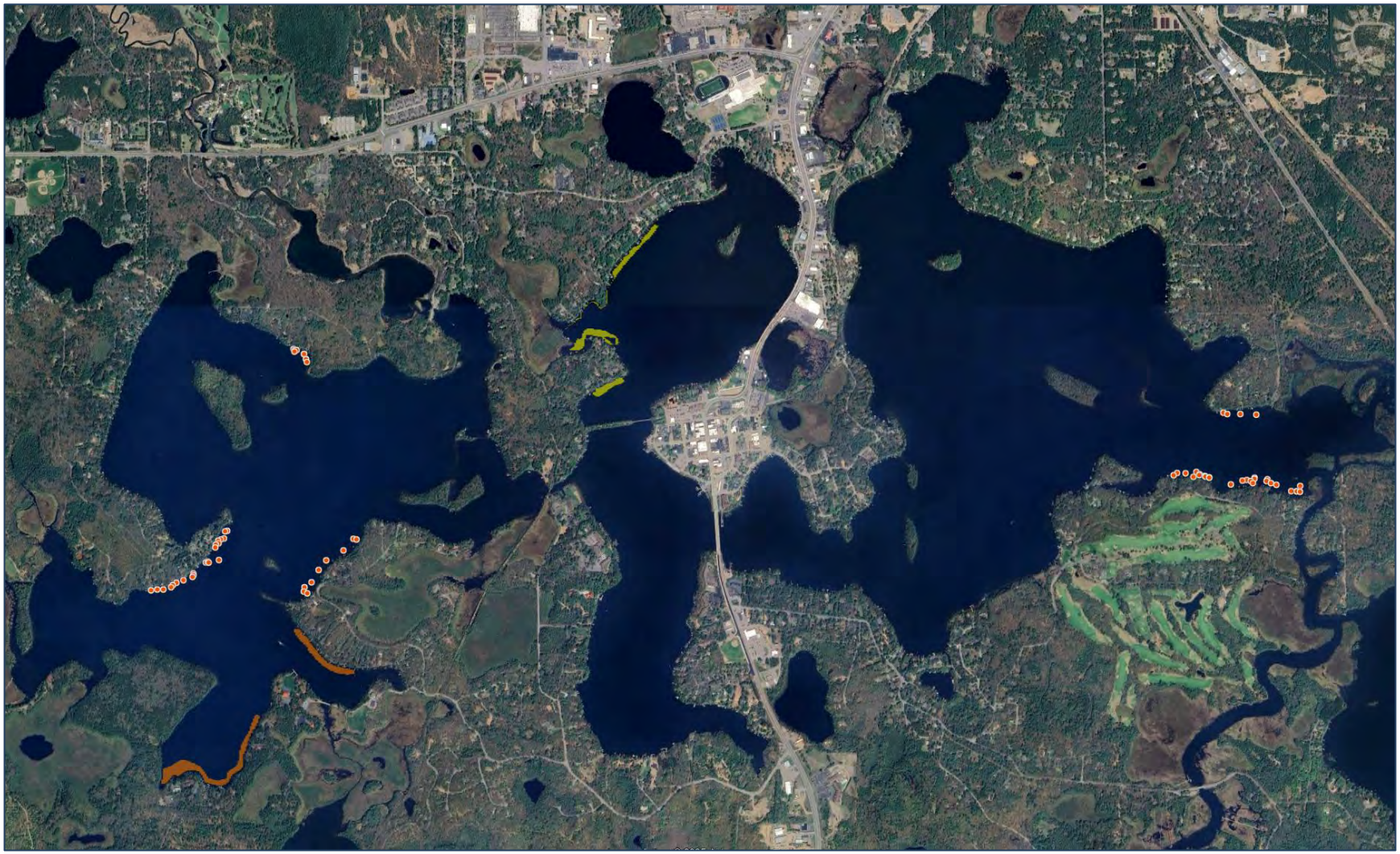


EWM Manual Removal Summary



Dive Location	Avg. Water Depth	# of Dives	Underwater Dive Time	AIS Removed (cubic feet)
A-25	7.4	9	11.0	9.0
B-25	7.7	24	34.4	175.5
I-25	7.5	10	30.5	187.5
T-25	6.3	11	12.4	24.8
U-25	4.9	17	35.5	91.1
V-25	5.8	4	16.4	84.0
Grand Total	**6.7**	**75**	**140.2**	**571.9**

Map of All Management Activities



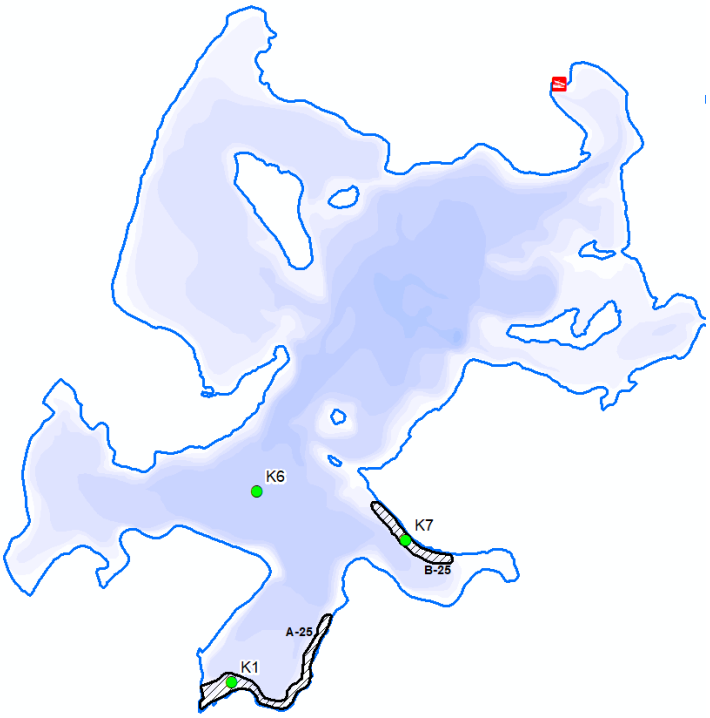
B

APPENDIX B

- **2025 Herbicide Concentration Monitoring Plan**
- **2025 Tabular Herbicide Concentration Monitoring Results**

Kawaguesaga Lake, Oneida County (WBIC: 1542300)
2025 Herbicide Sample Plan
Onterra, LLC

Kawaguesaga Lake, located in Oneida County, is a 700-acre drainage lake that has a maximum depth of approximately 44 feet. Florpyrauxifen-benzyl (ProcellaCOR™) is proposed to be applied to 10.5 acres in early-summer 2025 to control Eurasian watermilfoil. Herbicide concentration sampling will be conducted to monitor the herbicide concentrations in the days and weeks following the application. Water samples will need to be collected at the sites and depths listed below. Coordinates are in decimal degrees. Locations of each sampling site are displayed with green circles on the image below.



Kawaguesaga Lake Herbicide Sample Sites					
Site Label	**Site Description**	**Station ID**	**Latitude**	**Longitude**	**Sample Depth**
K1	Area A-25	10055075	45.855952	-89.743252	Integrated (0-6 feet)
K6	SW basin AOPI	10055078	45.862463	-89.741992	Integrated (0-6 feet)
K7	Area B-25	10060131	45.860787	-89.734702	Integrated (0-6 feet)

Please note that a single sample is to be collected before the treatment as a 'blank' for the lab analysis. Please collect the pre-treatment sample the day before treatment occurs. After the herbicide application is completed, additional samples will need to be collected at specific time intervals throughout the project and are listed in the table below. Sample collection intervals are listed either as Hours After Treatment (HAT) or Days After Treatment (DAT). Direct communication between the water sample collector and the herbicide applicator is necessary to ensure the collector is prepared to begin three hours after treatment is completed. If a sample cannot be collected at the interval listed below, please collect the sample as soon as possible and record the change.

Sampling Interval Matrix (X indicates sample to be collected)			
	Sampling Sites		
Interval	K1	K6	K7
Pre-Treatment		X	
3 HAT	X	X	X
9 HAT	X	X	X
24 HAT	X	X	X
3 DAT	X	X	X
5 DAT	X	X	X
7 DAT	X	X	X
14 DAT	X	X	X
21 DAT		X	
35 DAT		X	
HAT = Hours After Treatment *DAT = Days After Treatment*			

All water samples will be collected using a six-foot integrated sampler (Photo 1). A video tutorial demonstrating the proper sample collection methodology is available on Onterra's YouTube web page: click here. Please review the *water sample handling instructions* provided by the Wisconsin State Lab of Hygiene for detailed instructions of the sample collection procedure.

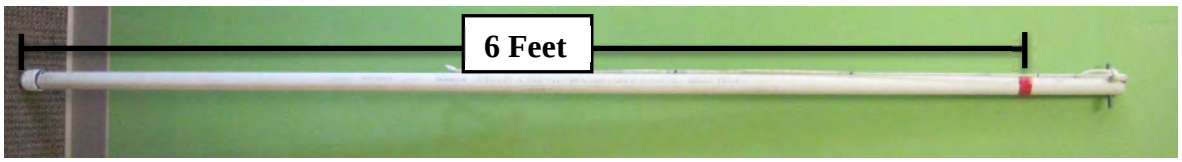


Photo 1. 6-foot Integrated sampling device constructed of PVC tubing.

Onterra will provide all the necessary supplies, equipment, and training to the volunteer(s) collecting the samples. Onterra has a limited supply of handheld GPS units and six-foot integrated sampler devices available to loan out for the duration of the sampling upon request. All other materials, including sampling bottles with labels, a composite water collection bottle and sampling data sheets will be provided.

If you have any questions, please reach out to one of the contacts listed below.

Project specifics, logistics and sampling methods	Shipping
Todd Hanke **Aquatic Ecologist, Onterra, LLC** **thanke@onterra-eco.com** **Office (920) 338-8860**	**Wisconsin State Lab of Hygiene** **(608)-224-6271**

2025
Herbicide Concentration Data

Active Ingredient Florpyrauxifen-benzyl (ng/mL)			
	Sampling Sites		
Interval	K1	K6	K7
Pre-Treatment		<0.050	
3 HAT	1.9	<0.050	3.1
9 HAT	0.16	<0.050	0.91
24 HAT	0.25	0.082	0.14
3 DAT	0.054	<0.050	<0.050
5 DAT	<0.050	<0.050	<0.050
7 DAT	<0.050	<0.050	<0.050
14 DAT	<0.050	<0.050	<0.050
35 DAT		<0.050	
HAT = Hours After Treatment *DAT = Days After Treatment*			

Acid Metabolite Florpyrauxifen (ng/mL)			
	Sampling Sites		
Interval	K1	K6	K7
Pre-Treatment		<0.048	
3 HAT	0.57	<0.048	0.46
9 HAT	<0.048	<0.048	0.39
24 HAT	0.14	<0.048	0.073
3 DAT	0.066	<0.048	<0.048
5 DAT	<0.048	<0.048	<0.048
7 DAT	<0.048	<0.048	<0.048
14 DAT	<0.048	<0.048	<0.048
35 DAT		<0.048	
HAT = Hours After Treatment *DAT = Days After Treatment*			

Data Compiled from WI State Lab of Hygiene Analysis