

## Appendix B – 2023-27 Upper Turtle Lake Aquatic Plant Management Goals

This Aquatic Plant Management Plan establishes the following goals for aquatic plant management in Upper Turtle Lake:

1. **CLP Management.** Maintain CLP at or below 2022 (and 2010) levels through environmentally responsible management methods that will minimize negative impacts to the native plant community.
2. **AIS Education and Awareness.** Continue to educate property owners and lake users on aquatic invasive species through public outreach and education programs to help contain existing AIS in and around the lake and new AIS that could get introduced to the lake.
3. **Research and Monitoring.** Develop a better understanding of the lake and the factors affecting lake water quality through continued and expanded monitoring efforts.
4. **Adaptive Management.** Follow an adaptive management approach that measures and analyzes the effectiveness of control activities and modifies the management plan as necessary to meet goals and objectives.

### Goal 1. CLP Management

In the first APM Plan for UTL completed in 2010 the only goal for CLP was to make property owners and lake users aware of its presence and to monitor it for expansion. Unfortunately, this goal did not reach the level of importance necessary to really be effective and as a result, CLP expanded to a level considered to be very detrimental to the lake by 2017.

The second APM Plan for UTL focused on returning CLP to a level where it had little negative impact on the lake (like in 2010). The main goal of management was to reduce both the visible mats of CLP that dominated more than 25% of the total surface area of the lake and the turion density in the sediment that supported this level of visible growth to what they were back in 2010. Four years of large-scale, application of aquatic herbicides did just that, but also negatively impacted several native aquatic plant species and may have exacerbated poor water quality. A lake needs aquatic vegetation and minimizing repeated losses of any native species is vital to its health.

The main goal of this third installment of the APM Plan for UTL is to keep CLP at levels where its negative impact to the lake is minimized without causing undue harm to the native aquatic plant community. With no management, CLP will likely reclaim much of the dominance it showed in 2017. Some level of CLP management is needed if only to reduce nuisance conditions that interfere with early season navigation and summer native plant growth. Repeated large-scale herbicide application in the same areas multiple years in succession is likely no longer necessary. Instead, CLP management actions will be scenario-based and include small-scale physical removal, diver removal, DASH, mechanical harvesting, and the targeted use of aquatic herbicides.

### CLP Survey Work

Management of CLP will be updated regularly based on pre-management surveys and annual bed mapping surveys completed by either trained UTLD volunteers or resource professionals retained by the UTLD. Pre-management surveys should be completed as soon after ice out as possible to begin getting a perspective on

how the given growing season will impact the amount of CLP in the lake. WDNR permitting either needs to wait to be completed until some perspective is gained from these surveys, or have the possibility of managing more CLP than expected built into it. This is easy with a mechanical harvesting permit, more difficult with a chemical application permit. Once pre-management surveys are completed management plans should be reviewed and modified if necessary. Annual CLP bed mapping surveys, completed at the height of CLP growth, will be used to quantify the extent of CLP in the lake in any given year. Generally speaking, greater amounts of CLP during a bed mapping survey will lead to more extensive management plans the following year.

Once these surveys are completed discussion pertaining to next season management will begin. Should it be determined that large-scale application of aquatic herbicides will come into play in the following year, additional pre-treatment surveys of aquatic plants may be completed to document the present of native plants. Post-treatment surveys may be included in the year of treatment and/or in the year after treatment. Pre and post treatment surveys are not required by the WDNR unless the chemically treated area covers more than 10% of the littoral zone (18 acres in UTL). However, completing these tasks is highly recommended in any treatment program as they provide a means to measure success.

### **Herbicide Concentration Testing**

Herbicide concentration testing was last completed in UTL in 2018 to determine how long the herbicide placed in the lake to control CLP would remain and how far it would travel outside of the area it was placed. The approach taken to determine the answers to these questions was a rhodamine dye study, where red dye is put in the water at a concentration similar to what would be applied if it were the herbicide. Since 2018, no herbicide concentration testing has been completed primarily because it was not required by the WDNR given that the UTLD was covering 100% of management costs themselves.

At least in the first year covered in this APM Plan where aquatic herbicides are used, it is highly recommended that herbicide concentration testing be done in real time. Herbicide concentration testing helps determine if the amount of herbicide applied reached the expected concentrations, how fast it dissipates, and if it is transported to other parts of the lake that were not intended for treatment. If a chemical treatment is not very effective, concentration testing can help determine why.

### **Goal 2. AIS Education and Awareness**

Aquatic invasive species can be transported via a number of vectors, but most invasions are associated with human activity. Maintaining signs and continuing watercraft inspection at the public boat landing should be done to educate lake users about what they can do to prevent the spread of AIS.

Early detection and rapid response efforts increase the likelihood that a new aquatic invasive species will be addressed successfully while the population is still localized and levels are not beyond that which can be contained and eradicated. Once an aquatic invasive species becomes widely established in a lake, complete eradication becomes extremely difficult, so attempting to partially mitigate negative impacts becomes the goal. The costs of early detection and rapid response efforts are typically far less than those of long-term invasive species management programs needed when an AIS becomes established.

It is recommended that the UTLD continue to implement a proactive and consistent AIS monitoring program. At least three times during the open water season, trained volunteers should patrol the shoreline and littoral zone looking for EWM and other species like purple loosestrife, Japanese knotweed, giant reed grass, and zebra mussels. Free support for this kind of monitoring program is provided as part of the UW-Extension Lakes/WDNR CLMN AIS Monitoring Program. Any monitoring data collected should be recorded annually and submitted to the WDNR SWIMS database.

Providing education, outreach opportunities, and materials to the lake community will improve general knowledge and likely increase participation in lake protection and restoration activities. It is further recommended that the UTLD continue to cultivate an awareness of the problems associated with AIS and enough community knowledge about certain species to aid in detection, planning, and implementation of management alternatives within their lake community. It is also recommended that the UTLD continue to strive to foster greater understanding and appreciation of the entire aquatic ecosystem including the important role plants, animals, and people play in that system.

Understanding how their activities impact the aquatic plants and water quality of the lakes is crucial in fostering a responsible community of lakeshore property owners. To accomplish this, the UTLD should distribute, or redistribute informational materials and provide educational opportunities on aquatic invasive species and other factors that affect the lakes. At least one annual activity (picnic at the lake, public workshop, guest speakers, etc.) should be sponsored and promoted by the UTLD that is focused on AIS. Results of water quality monitoring should be shared with the lake community at the annual meeting, or another event, to promote a greater understanding of the lake ecosystem and potentially increase participation in planning and management.

### **Goal 3. Research and Monitoring**

Long-term data can be used to identify the factors leading to changes in water quality. Such factors include aquatic plant management activities, changes in the watershed land use, and the response of the lakes to environmental changes. The CLMN Water Quality Monitoring Program supports volunteer water quality monitors across the state following a clearly defined schedule. UTL has been a part of this program for many years and should continue its involvement.

The intensity/success of water quality monitoring efforts should be evaluated at least every three years. The background information and trends provided by these data are invaluable for current and future lake and aquatic plant management planning.

To monitor any changes in the plant community, it is recommended that whole-lake point intercept aquatic plant surveys be completed at three to five-year intervals. This will allow managers to adjust the APM Plan as needed in response to how the plant community changes as a result of management and natural factors. The next whole-lake point-intercept survey should be planned for 2026 with an update of this plan completed in 2027.

Since at least 2010, the UTLD has supported efforts to improve/restore native shoreland around the lake that lead to healthier habitat and less polluted runoff from properties immediately adjacent to the lake. These efforts should continue and can be supported by the Wisconsin Healthy Lakes and Rivers Initiative. In addition, the UTLD should continue to work with the Barron County Soil and Water Conservation Department to address runoff concerns in the greater watershed. Fortunately for the UTLD, many of the agricultural producers in the watershed already support best management practices that keep valuable soil on the land – not allowing it to get to the lake. Partnerships between these farmers, the UTLD, and Barron County should continue to be fostered and maintained.

### **Goal 4. Adaptive Management**

This APM Plan is a working document guiding management actions on Upper Turtle Lake for the next five years. This plan will follow a scenario-based, adaptive management approach by adjusting actions as the results of management and data obtained deem fit following IPM strategy. This plan is therefore a living document, progressively evolving and improving to meet environmental, social, and economic goals, to increase scientific knowledge, and to foster good relations among stakeholders. Annual and end of project assessment reports are necessary to monitor progress and justify changes to the management strategy, with or without state grant funding. Project reporting will meet the requirements of all stakeholders, gain proper

approval, allow for timely reimbursement of expenses, and provide the appropriate data for continued management success. Success will be measured by the efficiency and ease in which these actions are completed.