MACROPHYTE MANAGEMENT PLAN

Residents of Trego Flowage consider the sometimes excessive macrophyte growths in the upper one-third of the flowage problematic. The Trego Lake District expressed these concerns to FERC during the relicensing process of the hydropower facility. In particular, Trego Lake District suggested that drawdowns of the flowage might be an effective method to control the quantity of macrophyte growth within the flowage. As a part of the new operating license, NSPW is required to explore macrophyte management options. Macrophyte management options and a suggested macrophyte management plan are presented in the following paragraphs.

Regardless of the management approach chosen, WDNR and National Park Service Permits are needed before management procedures are initiated. Procedures for the management of aquatic plants have been established by the WDNR pursuant to s. 227.11, Stats., and s. 144.025 (2)(i), Stats. The permit application process has been outlined in Chapter NR 107, Aquatic Plant Management, in the Wisconsin Administrative Code, Department of Natural Resources. The WDNR and National Park Service should be contacted regarding a permit prior to beginning any type of aquatic plant management program. For this reason, discussions with representatives of the WDNR occurred prior to making recommendations for an aquatic plant management plan for Trego Flowage. Recommendations for the flowage are within the guidelines established by the WDNR for aquatic plant management.

Macrophyte management generally follows one of two approaches: a basin-wide approach or a localized approach. A basin-wide approach is only considered when a lake is weed-choked and there are no open water areas. When problematic macrophyte growth occurs in only a portion of a lake, a localized approach is used to help boaters get to deeper water. Problematic macrophyte growth in Trego Flowage is confined to the upper one-third of the flowage. The remaining portion of the flowage consists of open water suitable for boating, fishing, and other recreational uses. Therefore, a localized management approach is the suitable approach for this flowage.

Localized Management Approach

Localized approaches to macrophyte management generally involve harvesting, chemical control, hand raking, or a suitable combination of these options. The objective of macrophyte management in the flowage is to:

- clear paths to enable boats to reach open water;
- clear areas in front of residences for swimming and wading purposes.

Harvesting is the most practical and cost-effective option for clearing paths for boaters when large areas of macrophyte coverage occur, such as in Trego Flowage. It is, therefore, recommended that a harvester be hired to remove macrophytes to form interconnected channels from residences to the river channel. This option would enable residents to boat to the river channel and the downstream portion of the flowage. Macrophytes remaining in the flowage (i.e., between channels) would provide water quality protection for the flowage and a variety of other functions. Harvesting is recommended rather than cutting because removal of the macrophytes from the flowage by the harvester also removes nutrients from the flowage. Cutting results in the addition of nutrients to the flowage as plants decompose. Harvesting would probably occur once per summer, although twice per summer initially may be necessary. The current cost of contracting a harvester in the Trego area is approximately $100 per hour (Engel, WDNR, Personal Communication). Annual harvesting costs will be determined by the area harvested. Assuming an average harvest rate of one acre per hour, a harvest area of 50 acres, and a harvest frequency of once per year, the estimated annual cost of harvesting would be approximately $5,000 (Lindberg, Aquatic Nuisance Control, Personal Communication).

Hand raking by individual residents is recommended to clear areas in front of residences for swimming and wading purposes. This option can be compared to lawn maintenance on the lake owner's property. Alternatively, residents can explore the feasibility of using a mechanical device, such as a weed roller, to maintain a weed free area in front of their property.

Herbicide usage to spot treat areas in the late summer may prove feasible for Trego Flowage. However, herbicide usage as a macrophyte control method is not recommended. Herbicide treatments tend to be cheaper than harvesting for small areas. However, the economics shift in favor of harvesting in large areas, such as Trego Flowage. Because some species of macrophytes grow faster

than others, it is possible that some portions of the interconnected channels may experience problematic growth during the late summer. Spot treatment of these areas by a herbicide may be more cost-effective than hiring a harvester to remove the vegetation.

Several factors should be considered in the selection of an appropriate herbicide for spot treatments. One factor to consider is the effect of each herbicide on the type of plants found in the flowage. The herbicide 2-4-D would not be effective on the submersed vegetation in the flowage and would not suppress them. DNR regulations should also be considered in the selection of a herbicide. The herbicide Sonar would likely be effective in suppressing the species of macrophytes found in the flowage, but its use is not allowed in Wisconsin. Therefore, a DNR permit for its use could not be obtained. Another factor to consider is the likelihood of downstream drift and environmental impacts of the herbicide residue. Diquat would effectively suppress plants in the flowage, because it is a broad spectrum herbicide. However, its effects would be temporary due to downstream drift which would make it very difficult to contain the herbicide in the impoundment. The residue from the herbicide is harmful, and sending it downstream is, therefore, undesirable from an environmental perspective.

Spot treatment of isolated areas of the flowage during August with the chemical Sodium Salt of Endothol may be an appropriate use of a herbicide in Trego Flowage. Sodium Salt of Endothol is a safe herbicide because it breaks down completely, leaving no refractory residue. It should be noted that an applicators license is required for the application of all herbicides, and must be obtained by the entity treating the flowage.

Basin-Wide Management Approach

Drawdown is a basin-wide management approach and, therefore, not a suitable approach for Trego Flowage. Residents have expressed their desire that a drawdown be used for macrophyte control in the upper one-third of the flowage. Use of a drawdown in this instance would be to use a basin-wide approach to solve a localized problem.

Past use of drawdowns have demonstrated that this technique has only temporary benefit for the flowage. Studies of previous drawdowns have documented the price paid by the downstream portion of the flowage, the recipient of the sediment and plants from the upper portion of the flowage. These studies have also documented that the drawdown does not prevent regrowth of macrophytes or stop

sedimentation from the watershed. Previous drawdowns have suppressed macrophyte growth for 2 or 3 years, and then growth has returned to previous levels. Drawdowns have transferred sediment from the upper portion of the flowage to the lower portion of the flowage. Depth in the upper portion of the flowage has increased temporarily, making boating easier for a period of time. However, sediment from the lake's watershed was again deposited in the upper portion of the flowage and depths eventually returned to pre-drawdown levels (i.e., the area again filled in). The temporary benefits of drawdown to the upstream portion of the flowage and the transfer of sediment and dead plant material to the downstream portion of the flowage suggest use of another management approach for the flowage would be preferable to this option.

The indiscriminate elimination of macrophytes during drawdown may result in water quality degradation for the entire basin. Macrophytes in the upper portion of Trego Flowage perform the valuable function of trapping sediment entering the basin from its inflow. In their absence, sediment could flow downstream and be deposited in the lower portion of the flowage. Macrophytes also trap nutrients, rendering them unavailable for use by algae in the flowage. Elimination of plants during a drawdown also eliminates their water quality protection function. Availability of nutrients following a drawdown could result in a basin-wide algal bloom problem. Then the problem would no longer be a localized problem (i.e., macrophytes in the upper portion of the flowage) but a basin-wide problem (algal blooms throughout the flowage). Therefore, a localized solution to the basin's macrophyte problem is recommended because it will preserve the water quality protection role of the basin's macrophyte community.

Recommended Management Plan

Due to the localized nature of the Trego Flowage macrophyte problem, a localized management plan is recommended, and the Trego Lake District may be the most appropriate organization to implement the plan. The following approach is recommended.

- A meeting should be held with residents to determine their expectations. Often, residents have unrealistic expectations of macrophytes. Weeds (macrophytes) don't fit their vision of a lake resembling a natural swimming pool, free of plants. The meeting should serve as an opportunity to help residents understand the function and value of macrophytes, help them understand the difference between a localized and basin-wide approach to

management, and help them establish realistic management goals. Personnel from WDNR, who are familiar with Trego flowage, are available for this meeting. They will provide information to residents and facilitate a discussion of management goals.

- Macrophyte distribution and abundance relative to recreational usage should be evaluated relative to recreational usage.

- The Lake District should establish realistic macrophyte management goals.

- A site specific strategy consistent with established goals should be developed and requisite WDNR and National Park Service permits obtained.

- The appropriate entity to implement the plan should be determined and the plan implemented. The plan would include harvesting during the early summer to form interconnected corridors to the river channel. Spot treatment during the late summer with Sodium Salt of Endothol would be included to keep corridors open, if necessary. This work could be contracted. Residents would be encouraged to use manual removal to provide swimming and wading areas in front of their properties. An educational program would occur during implementation to help residents understand functions and values of macrophytes and the aquatic macrophyte management plan.

The recommended management plan would not result in impaired usage of the flowage. In fact, recreational usage of the flowage would be facilitated by the implementation of this plan. Drawdown, however, could result in impaired recreational usage of the facility during the November through March period due to lowered water levels.

Funding Assistance

If the Trego Lake District was to implement the management plan, financial assistance would be possible through the Wisconsin Lake Planning Grant Program. Application for the program should be made to the WDNR. Deadlines for application are February 1 and August 1 of each year. Through this program, the Lake District could receive up to $10,000 from the WDNR if they provide a local match of 25 percent or up to $3,333. Up to three separate grants may be received for Trego Flowage.

The Lake District could use grant monies to initiate an aquatic macrophyte management program. They could also use grant monies to develop a watershed management plan to reduce sediment transport from the watershed to the flowage.

The Lake District could also pursue funding for navigational dredging in the upper portion of the flowage. Currently, a 50 percent cost-share is available for navigational dredging. Funding may be obtained from the Wisconsin State Waterways Commission. A prerequisite of any proposed dredging activity, however, would be the need to gain appropriate regulatory approvals. Interaction with the WDNR, Army Corps of Engineers, and the National Park Service would be required.