

## MEMORANDUM

**TO:** RPBCWD Board of Managers  
**FROM:** Joshua Maxwell – Water Resources Coordinator  
**DATE:** March 8<sup>th</sup>, 2022  
**RE:** 2022 Staring Lake Fluridone AS Treatment

Description	PLM	Limnopro	Lake Mgmt Inc
<b>Initial Treatment</b>	\$7,860.24	\$16,516.07	x
<b>Bump Application</b>	\$3,930.12	\$4,289.49	x
<b>Bump Application</b>	\$3,930.12	\$4,289.49	x
<b>Monitoring</b>	\$2,400.00	\$1,089.80	x
<b>Total</b>	\$18,120.48	\$26,184.85	x
<b>MNDNR Grant Funding</b>	Grant Funds Pending		

The District sent out request for quotes for the Staring Lake Fluridone Treatment to five herbicide applicators approved by the MN DNR and only heard back from three. Lake Management Inc. could not accept any additional treatments for the 2022 season. The lowest bid came from PLM Lake and Land Management Corporation at \$18,120.48. The District did apply for the MN DNR Traditional Aquatic Invasive Species Control Grant which could cover up to \$10,000.

Staff recommends to the Board of Managers to move forward with PLM as the fluridone applicator for Staring Lake in 2022.

### BOARD ACTION

It was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_ to authorize the District Administrator to enter into an agreement with PLM Lake and Land Management Corporation to carry out the fluridone herbicide treatment for Staring Lake with 2022 AIS Plant Management funds not to exceed \$19,000.

## Background

Eurasian watermilfoil (EWM) and Curly-leaf pondweed (CLP) are non-native species that can rapidly expand within lakes if not kept in check. Both plants can form dense mats at the water's surface inhibiting water recreation. They can also overtake habitat and outcompete native aquatic plants, potentially lowering diversity while providing unsuitable shelter, food, and nesting habitat for native animals. CLP also has midsummer die-offs which can litter the shoreline with dead plants and increase nutrients levels within the lake. Both species are spread primarily through the movement of watercraft and water-related equipment. The District has been consistently treating both of these plants across many of the lakes with varying degrees of success. Depending on the lake, these plants are often treated yearly in attempt to control their negative impacts. Other lakes have had a successful treatment or consecutive treatments which have allowed for control of these plants for multiple years.

Whole-lake, low-dose applications of fluridone herbicide have been used to control infestations of EWM. Studies in mesotrophic lakes have documented extended reductions in EWM with limited effects on native macrophytes and water quality with the use of fluridone. This has been documented on a number of lakes in the state of Minnesota as well as in North America. Although the use of fluridone in MN is increasing, it is still considered experimental by the MN Department of Natural Resources (MNDNR). District staff have been in discussion and has had the support of the MNDNR for an application of the herbicide fluridone to Staring Lake since 2020. Additionally, Professor Ray Newman (U of MN) who worked on Staring Lake from 2011-2020 has recommended this treatment type. A Lake Vegetation Management Plan was sent to the MNDNR in February 2022 and is currently in the process of being finalized. A fluridone treatment in Staring Lake would potentially:

- Reduce the abundance EWM (primary), CLP (secondary), and likely Coontail (which is a native plant species)
- Allow for the potential expansion of the abundance and distribution of native plants
- Potentially reduce the frequency of treatment needed to control EWM
- Be the first of its kind within the District and provide support to use in other District lakes if successful
- Expand upon the knowledge base of this type of treatment and its impacts on native and nonnative aquatic plants
- Support research currently being conducted by the U of MN/Ray Newman

## Staring Lake Aquatic Vegetation Summary

The plant community in Staring Lake was assessed over several years using point intercept (PI) plant surveys starting in 2011 by the District (Professor Ray Newman/U of MN) in anticipation of common carp (*Cyprinus carpio*) removal to improve water clarity. A summary of the PI surveys and secchi disk depths from 2011-2021 can be seen in **Table 1**. In Staring Lake, carp removal began in the winter of 2012. Removal led to the desired carp biomass goal of <100 kg/ha. Prior to carp removal, water clarity was poor, and the aquatic plant community was limited. Coontail was the dominant macrophyte and plants were rarely found beyond a depth of 4.6 ft. After the carp population was reduced in winter 2014, the plant community started to increase in abundance and distribution but was still dominated by coontail.

In 2021 plant distribution and abundance has increased significantly and plants were seen at depths of 11.6 ft. Plants were observed at depths >15 ft in 2019 and 2020. Coontail abundance has also increased, reaching 53% in 2016 and 94% in 2021. Coontail abundance was less than 5% in 2011.

Unfortunately, nonnative plants have also seen an increase in abundance and distribution, including CLP and EWM (Table 1). Immediate action by the District in 2015 (consecutive herbicide treatments and manual removal events) likely delayed the expansion of EWM for multiple years following its arrival. CLP increased rapidly after water clarity improved, and it was effectively treated in 2017. Now both CLP and EWM (primarily) have been increasing in recent years. EWM is now at a frequency of occurrence that is affecting the expansion of native plants. If left untreated it could expand further, reducing native plant abundance and distribution.

<b>Table 1: Staring Lake Aquatic Vegetation and Secchi Disk Summary</b>					
<b>Date</b>	<b>Secchi (m)</b>	<b>Submersed Native Taxa</b>	<b>FOO Natives</b>	<b>FOO EWM</b>	<b>FOO CLP</b>
<b>2011</b>	0.63	4	4		7
<b>2012</b>	0.58	3	2		5
<b>2013</b>	0.78	7	7		7
<b>2014</b>	1.00	13	16		17
<b>2015</b>	1.14	11	44		37
<b>2016</b>	0.84	6	44		44
<b>2017</b>	1.04	3	43		21
<b>2018</b>	1.11	5	55		14
<b>2019</b>	1.48	9	67	8	26
<b>2020</b>	1.04	11	66	15	12
<b>2021</b>	1.49	3	94	34	n/a
*Sub Native Taxa, Freq of Occurrence and EWM, based on August Point Intercept Surveys					
*Frequency Occurrence of curly leaf pondweed based on June Point Intercept Surveys					
*Secchi = average depth in meters from June-September					
*FOO=Frequency of Occurrence					

Overall, the plant community in Staring has responded positively to carp removal and natives still are more frequent than invasives. EWM has been increasing and the invasives will need continued monitoring. A herbicide treatment (such as fluridone) should be planned for during the 2022 season to control invasives, particularly EWM, and sustain an effective native plant community. It is likely that the high abundance of native plants, albeit primary coontail, is helping to sustain water clarity and suitable habitat for native plant expansion. Coontail is very dominant and may be also contributing to a reduction in other native plant growth. Fluridone is known to effect coontail which may reduce the abundance and allow for the expansion of native plants.