

DNR Lake Vegetation Management Plan

The treatment protocols or management goals may change as new information becomes available and will be approved by the MnDNR. This variance does not preclude the requirements of applying for, and obtaining aquatic vegetation control permits (IAPM permits) as per Minnesota Rule chapter 6280. Refer to Lake Cooperator Data Summary for historic lake plant data, management history and water quality data.

Medicine Lake, Hennepin County (DOW# 27010400)	
Date Signed:	Expiration Date:
Management Targets(s):	Curly-leaf pondweed (CLP)
Variance Conditions:	<i>This Lake Vegetation Management Plan (LVMP) requests a 5-year variance to perform herbicide treatments greater than 15% of the littoral area during years when pre-treatment Frequency of Occurrence is greater than 40%.</i>
Problem Identification:	<ol style="list-style-type: none"> 1. CLP frequency of occurrence has increased substantially the past several years. 2. CLP point-intercept surveys indicate that for years with pre-treatment Frequency of Occurrence > 40% that it is difficult to control CLP within the allowed 15% of the littoral acreage. 3. CLP currently exists at >65% post-treatment Frequency of Occurrence.
DNR Management Goals:	<ol style="list-style-type: none"> 1. Maintain CLP below 25% frequency of occurrence annually 2. Reduce turion density based off year-1 densities 3. Maintain native submersed species richness to ≥ 12 species
Proposed Actions:	<ol style="list-style-type: none"> 1. Treat CLP at lake wide levels greater than the 15% allowable littoral area with a selective herbicide when pre-treatment frequency of occurrence is ≥ 40%. 2. Spot treat CLP for nuisance growth areas to the maximum allowable 15% littoral area (60 acres) with selective herbicide when pre-treatment frequency of occurrence is < 40%.

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	<ol style="list-style-type: none"> 3. The CLP treatment shall occur in the early spring (water temperatures; 50-60 °F) when the plant is actively growing and native plants are still dormant so as to minimize non-target effects.
<p>Required Monitoring (see table below for survey timing)</p>	<ol style="list-style-type: none"> 1. Spring delineation or point-intercept survey to measure CLP pre-treatment % frequency of occurrence and identify treatment areas. 2. Early summer (end of June or beginning of July) point-intercept survey <ul style="list-style-type: none"> • Measure CLP post-treatment frequency of occurrence to determine treatment effectiveness. • Measure reduction in annual CLP frequency of occurrence. • Measure frequency of occurrence of the native plant community. 3. Late season (August or September) point-intercept survey to monitor changes in the native plant community. 4. Turion sampling to show CLP reductions over time 5. Bi-weekly water quality sampling to monitor seasonal and annual changes in trophic conditions.
<p>Justification & History</p>	<p>Medicine Lake is a eutrophic lake that was placed on the MPCA impaired water’s list in 2004 for excessive nutrients. A TMDL was completed in 2010 that identified internal loading as a significant source of the total loading budget that impacts the water quality of the lake. The two sources of internal loading identified in the TMDL included sediment phosphorus release and senescence of curly-leaf pondweed. The in-lake response modeling completed as part of the TMDL process further indicated that these two sources of loading will need to be reduced for the lake to meet MPCA state water quality goals.</p> <p>Medicine Lake has had a history of nuisance growth of curly-leaf pondweed with frequencies of occurrence as high as 80% to 90% in the early 2000s. A Medicine Lake Aquatic Plant Management sub-committee was developed in 2002 to develop an aquatic vegetation management plan to target the control of curly-leaf pondweed through herbicide treatments</p>

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	<p>and improve the native plant community. The lake was one of the first lakes in Minnesota to receive a variance to conduct whole lake herbicide treatments for control of curly-leaf pondweed. The lake had whole lake herbicides treatments for three consecutive years from 2004-2006 with periodic spot treatments occurring from 2007-2021.</p> <p>The past several years CLP growth has increased substantially (almost 70% frequency of occurrence); and spot treatment management of CLP within the maximum allowable 15% littoral acreage has not effectively controlled CLP during years with excessive early season growth (pre-treatment frequency of occurrence ranging as high as 40%). There is concern that CLP growth will continue to increase to early 2000 levels that were observed prior to the whole lake management herbicide treatments for control of CLP (80% to 90% frequency of occurrence).</p> <p>The LVMP is requesting a variance to treat greater than the maximum allowable 15% littoral acreage during periods when pre-treatment CLP frequency of occurrence is $\geq 40\%$. The variance will provide maximum flexibility in our management approach during years when there is excessive early season growth of CLP. In addition, improved flexibility and control of CLP will further benefit the diverse native plant community that currently exists in the lake.</p> <p>The control of curly-leaf pondweed will be necessary before the lake will be considered a candidate for a future alum treatment. It's expected that an alum treatment will be needed for Medicine Lake to eventually meet the MPCA state water quality standards. The senescence of nuisance growth conditions of curly-leaf pondweed may compromise the longevity and effectiveness of the alum treatment. Consequently, it becomes critical to minimize the amount of curly-leaf pondweed growth in Medicine Lake.</p>
Cooperator(s):	<ol style="list-style-type: none"> 1.) Bassett Creek Watershed Management Commission 2.) Three Rivers Park District 3.) City of Plymouth 4.) Association of Medicine Lake Area Citizens - AMLAC

REQUIRED ANNUAL MONITORING & REPORTING

Failure to complete all required monitoring and reporting may result in no variance or permit the following year. Data will be provided to DNR Invasive Species Specialist using their data reporting template.

Required Monitoring	Timing	Monitored/Submitted By
Pre-treatment Delineation or Point-Intercept	Spring (April-May)	TRPD
Point-Intercept Survey(s)	Early and Late Summer (June & September)	TRPD
Turion Density Sampling	Fall - October	TRPD
Water Quality Monitoring (Secchi, TP, Chl-a)	Twice Monthly (May-September)	TRPD
DNR Data Report	Annually	TRPD

DNR Evaluation:

The DNR, in conjunction with other interested parties, will review the plant survey(s) and water quality results annually. If results are not meeting goals or producing negative results, then the approach to control may be revised at the discretion of the DNR. Notes to be filled out by the DNR annually are documented below.

YEAR	CLP % FOO	Turion # /meter²	Native % FOO	Comments
2016	22		37	No Herbicide Treatment in 2016
2017	45		59	No Herbicide Treatment in 2017
2018	14		76	63 Acres Treated in 2018
2019	49		77	50 Acres Treated in 2019
2020	65		72	49 Acres Treated in 2020

Required Monitoring		Timing		Monitored/Submitted By
2021	69		78	63 Acres Treated in 2021
2022				
2023				
2024				
2025				
2026				

SIGNATURES

This Lake Vegetation Management Plan is in effect for 7 years from date of Regional Fisheries approval. If the plan is not renewed, then permits will be issued according to the standards listed in MR6280.

DNR Approval:

Submitted By: _____

Title: _____

Date: _____

Regional Fisheries Manager_____
Date_____
Regional Ecological & Water Resources Manager_____
Date

I affirm that I am a representative of **Medicine Lake, Hennepin County** and acknowledge participation in the development or implementation of this lake vegetation management plan.

Cooperator's Signature and Title_____
Date_____
Cooperator's Signature and Title_____
Date

Either party may terminate participation in this plan at any time, with or without cause, upon 30 days' written notice to the other party. If participation is terminated, permits will be issued according to standards listed MR6280.

No language following this page supersedes the conditions in permits described above.