



Lake Vegetation Management Plan

Cedar Lake, Scott County 70.009100

- Draft LVMP (No Signatures)
 - Final LVMP with Signatures (Variance Approved - see Section 8 & 9)
- Date Signed: 2/25/2013**
Expiration Date: 2/25/2018

Summary: This Lake Vegetation Management Plan (LVMP) authorizes a variance to allow treatment of more than 15% of the littoral area of Cedar Lake (DOW# 70.009100) to control curly-leaf pondweed. All other APM permits for submerged plants will be subject to 50 x 50 foot minimum standard. Justification for this variance includes the potential for this project to further research or evaluation of the control of invasive aquatic plants in conjunction with carp removal and watershed improvements.

Section 1: Lake Information

Name: Cedar	Surface Area: 823 acres
County: Scott	Littoral Area: 780 acres
DOW Number: 70.009100	Maximum Depth: 13 feet
Fisheries Area: West Metro	Mean Depth: 13 feet
Classification: Recreational Development	

Cooperator(s): Cedar Lake Improvement District (CLID), Scott County Watershed Organization (SWMO)

Section 2: Water Quality and Plant Community

A. Water Quality:

<i>Table 1. Water quality measures observed in Cedar Lake (70.009100)</i>			
Water Quality Measures	Averages (June-Sept)	Observations	Monitored Years
Total Phosphorus [µg per L]	203 ppb	59	2003-2012
Chlorophyll-a [µg per L]	66 ppb	58	2003-2012
Secchi Depth [Meters]	1.1 Meters	59	2003-2012

Water quality measures exceed the Trophic State Index (TSI) range for lakes in same ecoregion. Cedar Lake is listed under the impaired waters list of the Minnesota Pollution Control Agency (data available here: <http://cf.pca.state.mn.us/water/watershedweb/datasearch/waterUnit.cfm?WID=70-0091-00>).



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B. Plant Community: *(Narrative - describe plant community & refer to Table 2 below)*

- Aquatic invasive plants present: ***curly-leaf pondweed (CLP)***

The most recent aquatic plant survey for Cedar Lake was completed in 2012 by MnDNR and followed the point intercept methodology developed by Madsen (1999). Aquatic plants were surveyed at 104 points within the littoral zone of the lake (see Table 2 below). Nuisance levels of curly-leaf pondweed were recorded in the 2007 and 2009 spring surveys indicating a 98% and 96% frequency of occurrence. NOTE – curly-leaf pondweed had died-back at the time of 2012 plant survey. Heavy growth of CLP was estimated to cover 534 acres in 2007 (68% of littoral area). Refer to maps from 2007 & 2009 (see Appendix) for more information on nuisance level CLP.

Table 2. Percent frequency of occurrence of plants observed in Cedar Lake (70.0091) in 2007, 2009 & 2012

Growth form	Common name	Scientific name	2007 (May 18)	2007 (Aug. 24)	2009 (June 12)	2012 (Sept. 14)
Submersed	Coontail	<i>Ceratophyllum demersum</i>		1	1	10
	Curly-leaf pondweed	<i>Potamogeton crispus</i>	98	6	96	1
	Canadian waterweed	<i>Elodea canadensis</i>				7
	Slender Naid	<i>Najas flexilis</i>				1
	Small Pondweed	<i>Potamogeton pusillus</i>				1
	Sago Pondweed	<i>Stuckenia pectinata</i>	1	1	2	1
	Water stargrass	<i>Heteranthera dubia</i>				3

Section 3: Public Participation Process *(Narrative)*

There are approximately 304 shoreline landowners surrounding Cedar Lake, of which the largest lakeshore owner is Scott County Parks (Cedar Lake Farm Regional Park). A public input meeting was held with lake residents in December 6, 2007 to explain the TMDL process, provide information on curly-leaf pondweed control and receive public comment. October 15, 2009 a stakeholder meeting was held with lake residents and the lake TMDL results were shared. CLID held their annual meeting on February 21, 2012 where Melissa Bokman (Scott WMO) presented a review of the Cedar Lake TMDL Implementation Plan to residents around the lake. On April 10, 2012, a postcard was mailed to all CLID residents on Scott County’s tax records inviting them to the board meeting on Tuesday, April 24, 2012. The primary purpose of the meeting was to discuss proposed programs to improve water quality of Cedar Lake including CLP management, the associated costs, and the involved funding contributions.



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The meeting was well attended with approximately 200 residents. In addition to the public meetings; CLID maintains an actively managed and monitored website (www.cedarlakeimprovement.org).

Section 4: Problem Identification

1. Low abundance of native plants
2. Curly-leaf pondweed (CLP) surface matting interferes with recreational uses
3. Low water clarity
4. High concentration of phosphorous and subsequent algal blooms

Section 5: Goals & Measureable Objectives

A. Plant Management Goals & Measureable Objectives:

1. Increase native plant abundance and diversity
 - a. Native plant frequency and diversity shall be maintained/increase
 - b. Subsequent treatment of native plants for access shall be reduced.
2. Control CLP to reduce interference with recreational lake use
 - a. Reduction in annual delineated acres of CLP in spring
 - b. Reduction in annual delineated acres of CLP surface matting

B. Additional Management Goals & Measureable Objectives:

1. Increase water clarity
 - a. Water clarity as indicated by Secchi depth shall be maintained or increase
2. Reduce concentration of phosphorous (TP)
 - a. TP shall decrease (compared to 2012 data & ecoregion standard)
 - b. Phytoplankton, as indicated by Chlorophyll-*a* shall decrease

Section 6: Proposed Management Actions (*See Maps & Management Timeframe in Appendix*)

A. Whole lake treatment:

- Herbicide Control:** Selective control of curly-leaf pondweed beyond the 15% littoral limit.
The treatment area will be determined by early spring delineation and MNDNR inspection.

Narrative:

Cedar Lake partners will conduct selective treatments of curly leaf pondweed using a combination of selective herbicides and selective timing. Specifically, curly leaf pondweed will be treated using the early season application of endothol. Treatment areas will be based on pre-treatment delineation submitted to the MNDNR as part of the permit application and verified by the MNDNR through



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inspection of pre-treatment delineation and approved based on presence of CLP. Chemical application will occur prior to the germination of native plants to specifically target curly-leaf pondweed.

NOTE - The treatment protocol may change as new information becomes available. If the treatment protocol changes the new treatment protocol and why it was changed will be added to the LVMP in the appendix and those conditions will be incorporated into the APM permits.

B. Individual Near-Shore Permit Standards: *(New permits after lake-wide treatment)*

- Herbicide Control: Treatment of submerged plants up to 50 feet or half the frontage whichever is less, 50 feet lakeward

Narrative:

Any permit applications received from riparian landowners for chemical treatment of native submersed plant after the lake-wide treatment will be considered on an individual basis. Removal of native submersed vegetation will be limited to only that area necessary to allow reasonable use. No removal of sparse native vegetation through the use of chemicals will be permitted. Permit requests are subject to inspection and the aforementioned limits are maximums allowed for native species control.

C. Additional Management Actions: *(Narrative of other planned actions relevant to this LVMP)*

In addition to proposed lake-wide CLP control, cooperators of this plan have outlined the existing Cedar Lake TMDL implementation plan (available here: <http://www.pca.state.mn.us/index.php/view-document.html?gid=17982>). Partners involved with the development of this LVMP have a comprehensive approach to enhance the native plant community and improve water quality which includes: annual monitoring, external watershed treatments, in-lake carp management and a proposed alum treatment for the future.

D. Alternative Methods Considered: *(Description of pest management alternatives considered including impacts to water quality, impact to non-target organisms, feasibility and cost effectiveness)*

This section is required to meet the requirements of MNG87D000 Vegetative Pets and Algae Control Pesticide General Permit, which was issued by the Minnesota Pollution Control Agency to meet requirements of the National Pollution Discharge Elimination System.

Target Pest:

Curly-leaf pondweed



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No Action:

The result of no action would be impaired recreation through continued nuisance level surface matting of CLP and could also result in transport of invasive plants to other water bodies. Curly-leaf pondweed has the ability to compete with and displace the native plants and alter the native plant community. In addition, no action could result in continued internal loading of phosphorous, due to CLP growth and senescence, further contributing to poor water quality.

Prevention:

The MN DNR has an AIS Prevention program to stop the spread of invasive species. This includes designating and posting signage on infested waters, enforcement of AIS laws, inspect and educate boaters at water accesses, and decontaminate water equipment as needed.

Mechanical/Physical Methods:

Hand pulling of submersed vegetation is a control option. Hand pulling is work intensive and typically is done in shallow water, less than five feet in depth around docks and beaches. Mechanical harvesting is another control option. In this case, these methods are considered to be infeasible due to high cost and large amount of time required to employ these methods.

Cultural Methods:

These are manipulations of the habitat to increase pest mortality by making the habitat less suitable to the pest. For example, one might dredge a lake to make it too deep for the pest, an invasive aquatic plant, to obtain enough light to survive. Generally, such approaches are infeasible due to high cost and potential to reduce the abundance of desirable native plants.

Biological Control Agents:

At present, there are no proven and acceptable biocontrol agents for curly-leaf pondweed.

Section 7: Variance Conditions & Approval (Check all that apply)

The commissioner may issue APM permits (and IAPM permits) with a variance from one or more of the provisions of parts 6280.0250, subpart 4, and 6280.0350, except that no variance may be issued for part 6280.0250, subpart 4, items B and C. Variances may be issued to control invasive aquatic plants, protect or improve aquatic resources, provide riparian access, or enhance recreational use on public waters (6280.1000, subpart 1).

Variance(s) and Justification(s):

Application of pesticides to control submerged vegetation in more than 15 percent of the littoral area (M.R. 6280.0350, Subp. 4, A).

Justifications:

A variance to control CLP in more than 15% littoral area will provide recreational and ecological benefits by (1) minimizing recreational impairment, (2) promoting the survival and growth of native submerged aquatic plants, and (3) increasing the likelihood of effective CLP control by allowing for



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larger contiguous areas to be treated. In addition this variance will further research and evaluation of the effects of aquatic plant control on CLP and the response of the native plant community (*variance to M.R. 6280.0350, Subp. 4, A*).

Waiver of dated signature requirement for invasive aquatic plant management permits because collecting a signatures would create an undue burden (M.S. 103G.615, Subp. 3a (b)).

Variance approved with monitoring conditions (See Table 3 below)

Section 8: Required Monitoring (See Table 3 below)

All monitoring reports must be submitted in the appropriate format annually to the MNDNR unless noted otherwise below

Table 3. Cedar Lake (70.0091) aquatic plant management monitoring requirements

	Annual monitoring requirements	When?	Completed by whom?
A	Pre-treatment delineation of curly-leaf pondweed (1)	Early spring with report/map provided to the MnDNR	SWMO or approved contractor other than the commercial applicator for this project
B	Whole-lake plant survey using point intercept methodology (1)	Mid-summer (July-September) with report provided to the MnDNR by 31 December annually	SWMO or approved contractor other than the commercial applicator for this project
C	Observations of Secchi depth, Total Phosphorous and Chlorophyll-a (multiple)	Twice per month from May 1 st - September 30 th with report provided to the MnDNR by 31 December annually	SWMO or approved contractor other than the commercial applicator for this project
E	Post herbicide treatment report (1)	Provided to the MnDNR by 31 December annually	SWMO or approved contractor/commercial applicator



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Section 9: Signatures

This Lake Vegetation Management Plan is in effect for 5 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: Keegan Lund

Title: Invasive Species Specialist

Date: 20 February 2013

Bredford Pausan
Regional Fisheries Manager

2-20-13
Date

Mi Greenwood
Regional Ecological & Water Resources Manager

02-20-2013
Date

I affirm that I am an authorized representative of *Cedar Lake, Scott County* and acknowledge participation in the development and implementation of this lake vegetation management plan.

Tom Hled
Cooperator's Signature and Title

2/25/13
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.

Paul Wern

2/25/13

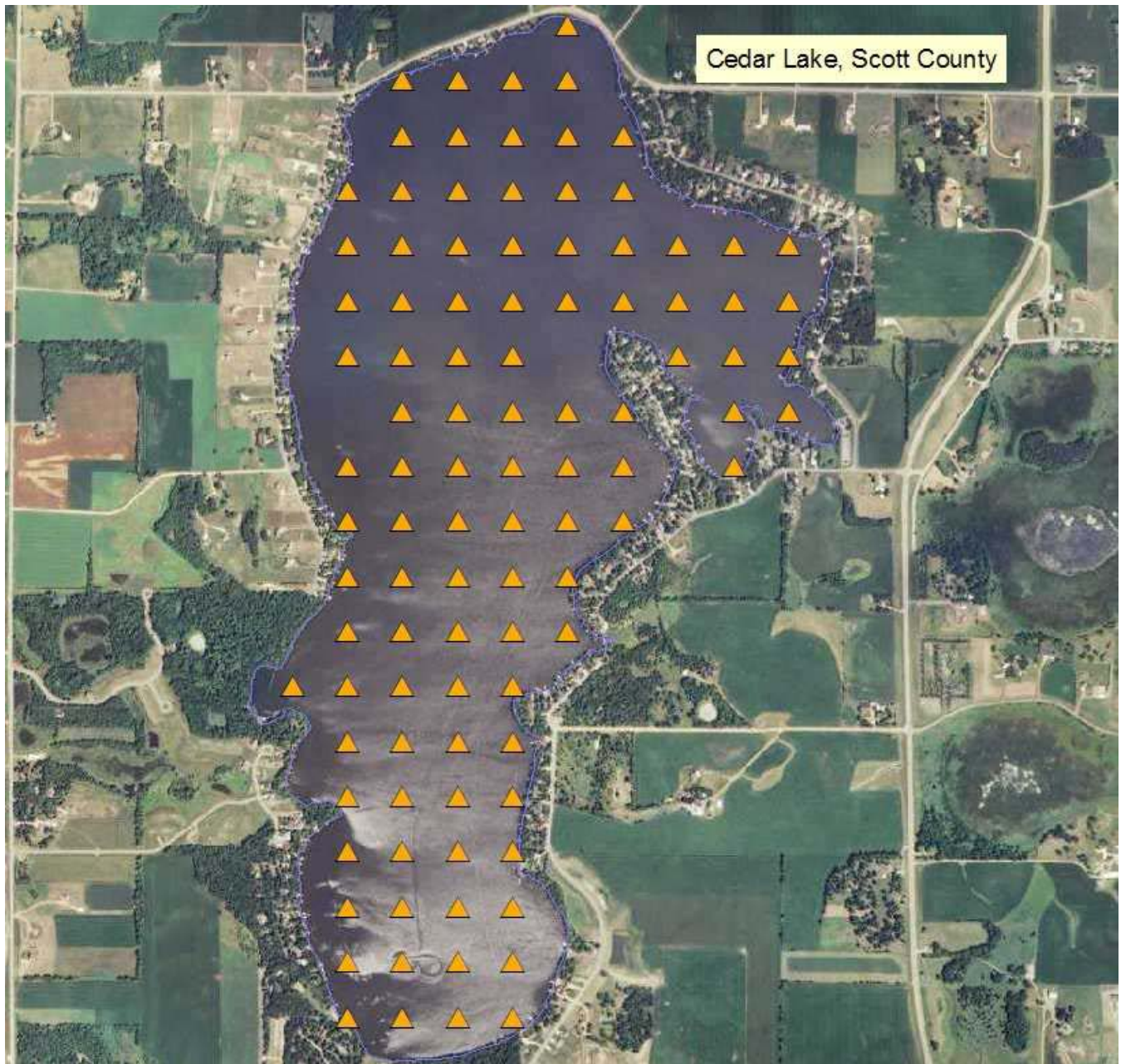


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Section 10: Appendix

Map 1: 2009 spring plant survey conducted by MNDNR (B. Hummel). 96% of all surveyed points contained CLP as indicated by the orange triangles below.

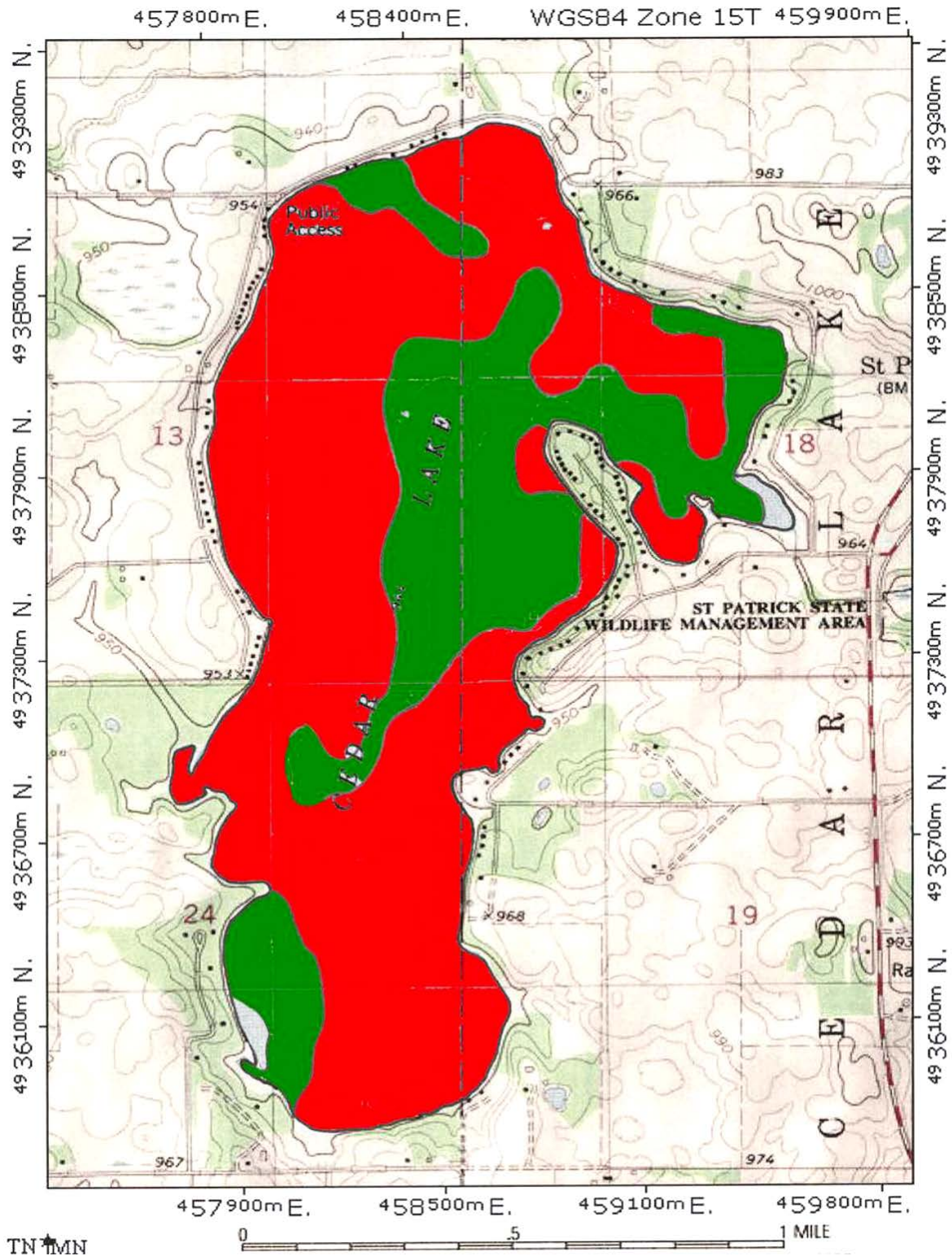




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Map 2: 2007 spring plant survey conducted by Steve McComas (Blue Water Science). CLP occurred at 98% of all sampled points (n=339). Heavy growth CLP is in red and light to moderate CLP is in green.





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Table 5: Management Timeframe Proposal (provided by SWMO)

Year	Action	Acres Treated*	Total % of Lake
2012	CLP Treatment Lake Monitoring Aquatic Plant Survey (by DNR late season – Sept)	100 acres	12.5%
2013	CLP Treatment Lake monitoring Aquatic plant survey	200 acres	25%
2014	CLP Treatment Lake monitoring Aquatic plant survey	400 acres	50%
2015	CLP Treatment Carp Harvest Lake monitoring Aquatic plant survey	500 acres	62.5%
2016	CLP Treatment Lake monitoring Aquatic plant survey	600 acres	75%
2017	CLP Treatment Carp Harvest Lake monitoring Aquatic plant survey	400 acres	50%
2018	CLP Treatment Lake monitoring Aquatic plant survey	200 acres	25%

*Area for Curlyleaf Pondweed chemical treatment to be determined with input from the DNR