

Lake Lemon
2014 Aquatic Vegetation Management Plan Update

Introduction & Treatment History

Lake Lemon is the 11th largest lake in Indiana covering 1,512 acres with an average depth of 9.5 feet. Aquatic vegetation can quickly reach nuisance levels in such a shallow reservoir. This dense vegetation negatively impacts boating, fishing, swimming, and property values. The invasive species Eurasian watermilfoil (*Myriophyllum spicatum*) has traditionally been the primary problem species within the lake. Eurasian watermilfoil typically covers between 100-400 acres of the Lake Lemon littoral zone, and reaches nuisance levels in many of these areas. Maintenance of the milfoil population began as far back as 1979 and has continued to present day. The Lake Lemon Conservancy District (LLCD) has headed up management efforts on the lake for the past several years. Table 1 outlines treatments completed since 1996.

Table 1. Lake Lemon Treatment History.

	Acres of Milfoil, Coontail, and Pondweed Treated with Endothal	Acres of Milfoil Treated with Renovate	Total Submersed Acres Treated
1996	33.0	0.0	33.0
1997	53.0	0.0	53.0
1998	53.0	0.0	53.0
1999	0.0	0.0	0.0
2000	53.0	0.0	53.0
2001	72.0	0.0	72.0
2002	106.0	0.0	106.0
2003	0.0	76.5	76.5
2004	47.5	50.2	97.7
2005	0.0	126.0	126.0
2006	0.0	76.6	76.6
2007	76.5	52.8	129.3
2008	53.7	4.3	58.0
2009	28.7	12.2	40.9
2010	26.4	100.2	126.6
2011	18.7	0.0	18.7
2012	48.9	53.3	102.2
2013	38.8	64.7	103.5
2014	43.9	21.7	65.6

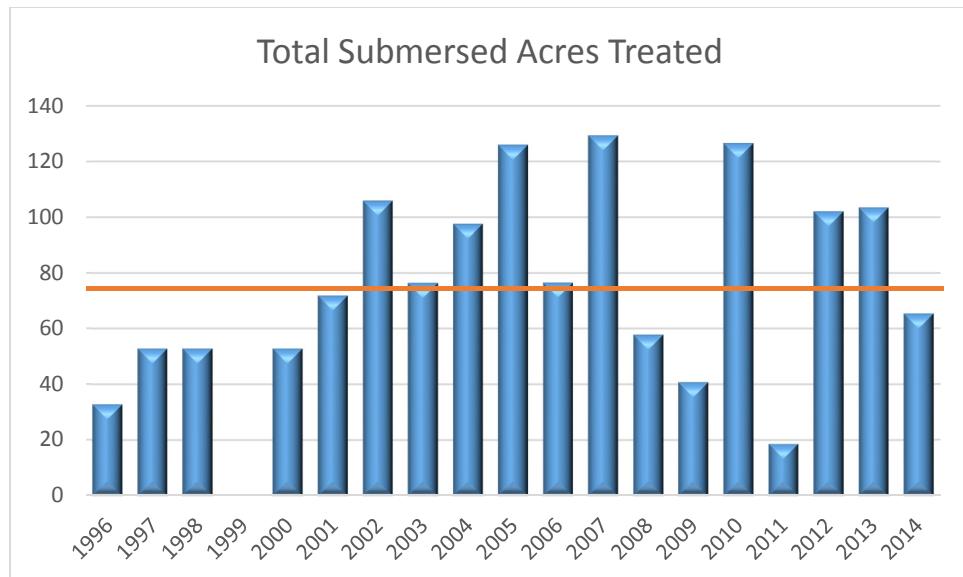


Figure 1. Total submersed acres treated since 1996 (red line is average acreage treated since 1996).

2014 Treatment Summary

LLCD received a 50% match \$5,000 grant from IDNR's LARE program for treatment of offshore milfoil areas in 2014. In past years, the lake was drawn down during the winter in order to allow for shoreline repairs and in an effort to control submersed vegetation. No drawdown was completed during the winter of 2013/2014. Despite the lack of a drawdown, submersed vegetation was less abundant in Lake Lemon in 2014. Very little growth was noted until late spring. This may have been due to a cold late arriving spring or treatment efforts from 2013, which controlled some rather large areas of milfoil in the upper end of the lake. An initial survey was delayed until June 9th and found very little offshore milfoil, but there were a few shallow areas that had nuisance levels of vegetation. A total of 33.8 acres of submersed vegetation along with 7.8 acres of spatterdock was treated on June 12th (Figure 2). A second treatment was completed on July 1st. A total of 17.1 acres of submersed vegetation was treated at this time (Figure 3). American lotus was treated on July 24th along with 4.6 acres of milfoil (Figure 4). A final application was completed on August 20th for control of 10.1 acres of submersed vegetation (Figure 5). American lotus areas were also touched up at this time. These treatments are summarized in Table 2. Since no offshore areas of milfoil needed treatment it was assumed that IDNR would not reimburse the grant amount. LLCD contacted IDNR and they agreed to take a look at the possibility of reimbursement for the shoreline Renovate treatments. At this time, IDNR has yet to respond to the request.

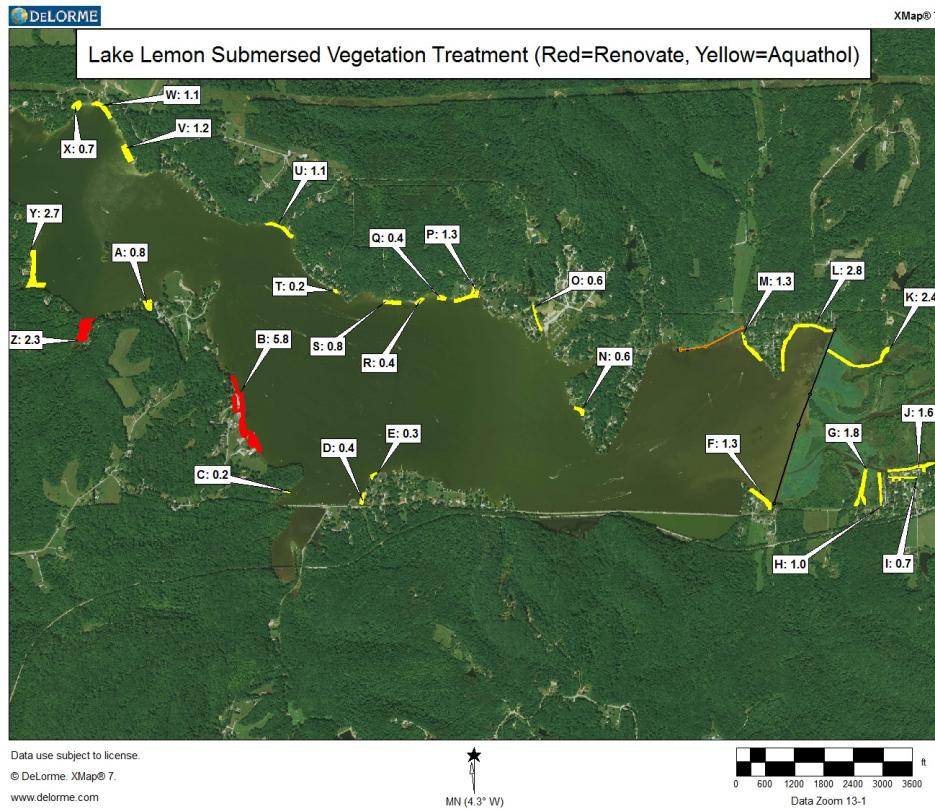


Figure 2. Lake Lemon submersed vegetation treatment, June 12, 2014.

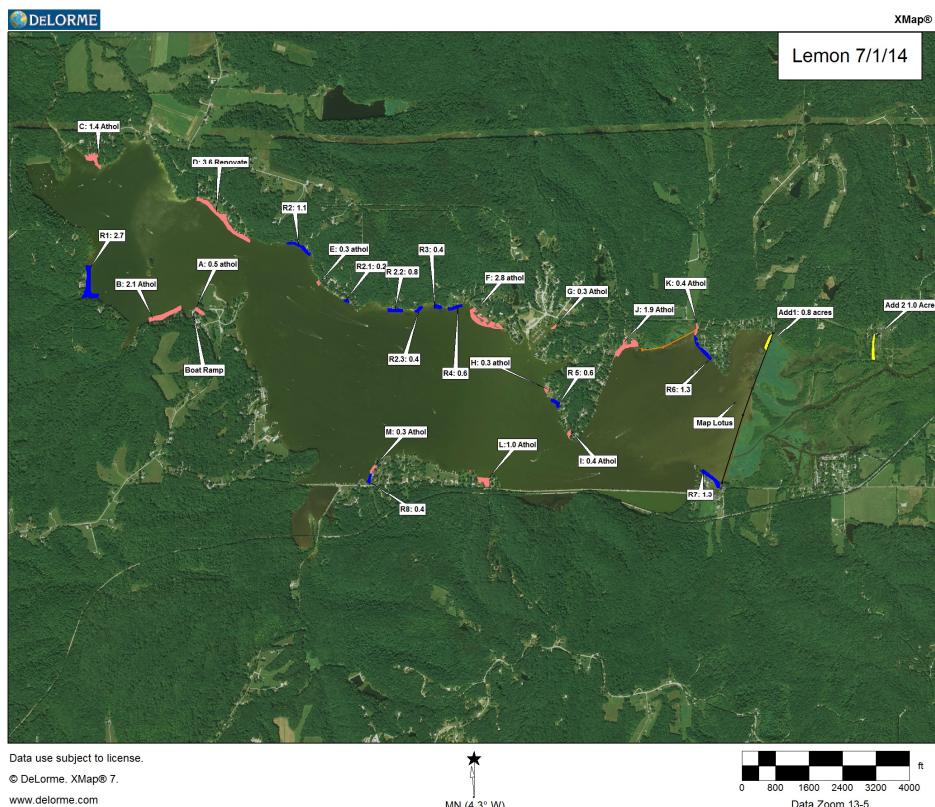


Figure 3. Lake Lemon treatment areas, July 1, 2014.

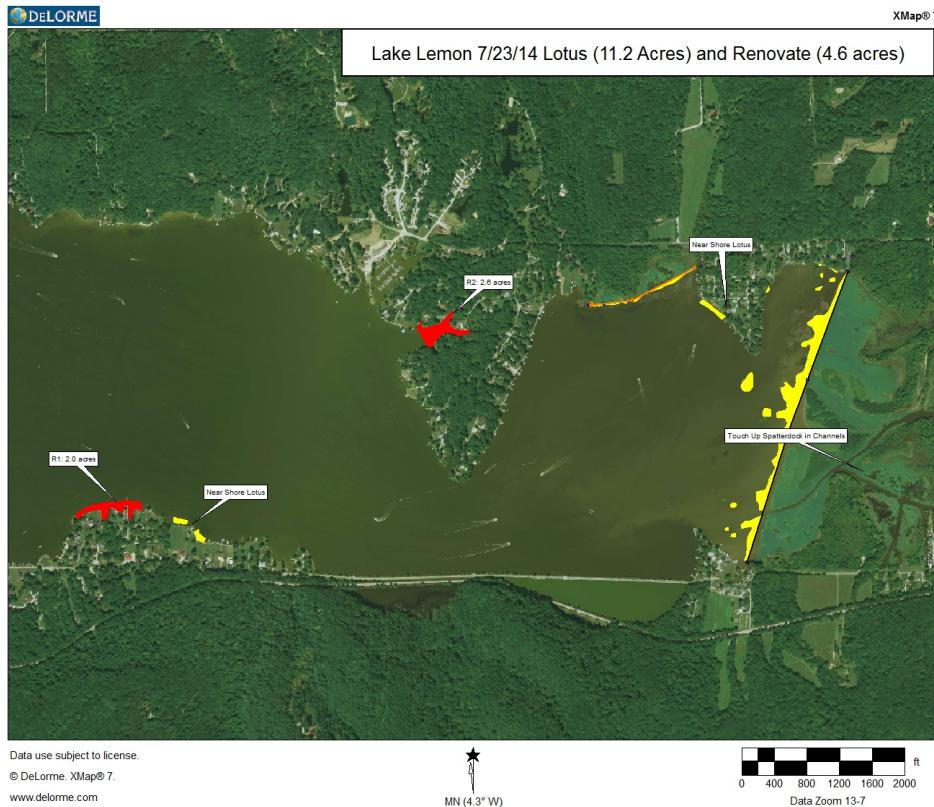


Figure 4. Lake Lemon treatment areas, July 24, 2014.

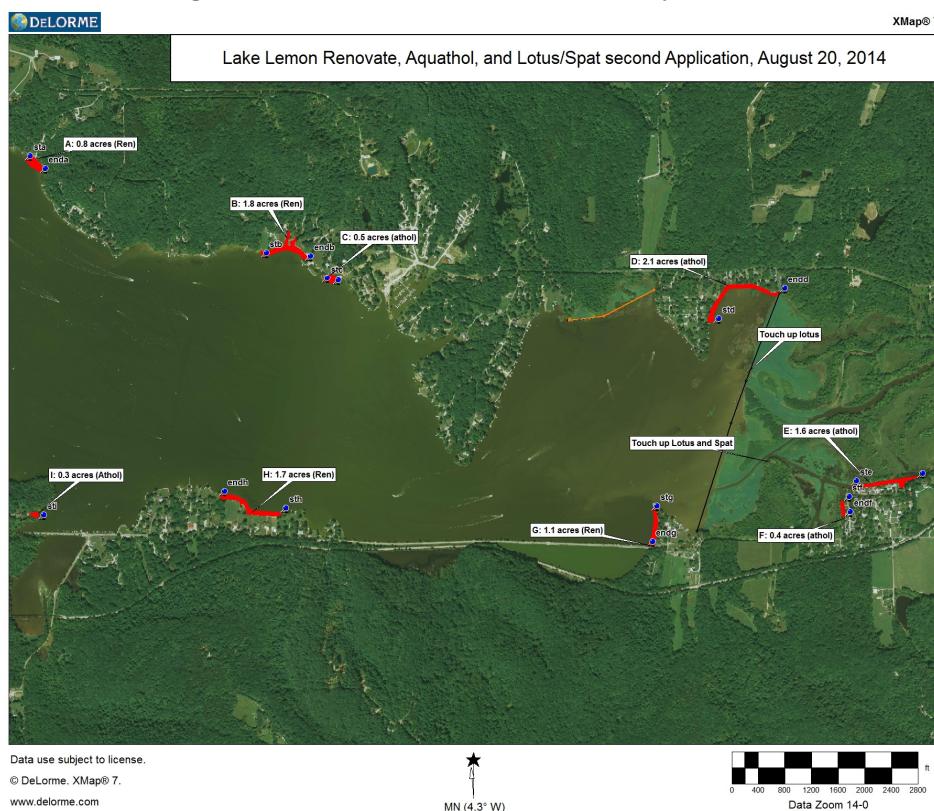


Figure 5. Lake Lemon treatment areas, August 20, 2014.

Table 2. Lake Lemon, 2013 Treatment Summary

Date	Acres Treated	Targeted Species	Products Applied
6/12/2014	41.6	Submersed (33.8) Spatterdock (7.8)	Aquathol, Renovate, and glyphosate
7/1/2014	17.1	Submersed	Aquathol and Renovate
7/24/2014	15.8	Lotus (11.2) Submersed (4.6)	Renovate and glyphosate
8/20/2014	10.1	Submersed	Aquathol, Renovate

2014 Action Plan and Budget

Since 2006, an average of 73.2 acres of submersed vegetation is treated on Lake Lemon. Only 65.6 acres was treated in 2014. Spring weather conditions and past treatments appear to play a significant role on the level of nuisance vegetation. It is expected that there will be some residual control of Eurasian watermilfoil in the areas where systemic herbicide was used. It is also expected that there will be regrowth of submersed vegetation where contact herbicides were applied and that there may be new areas of nuisance vegetative growth. If conditions are similar to 2014, there could be over 50 acres of dense milfoil in the spring of 2015. LARE funding may help offset some of these treatment expenses. LARE funds have been used in the past to control offshore areas when not enough funds were available from LLCD. Up to \$5,000 in LARE funds will likely be available again next season. If LARE funds are not available, LLCD will need to budget accordingly. Contact herbicide treatments should continue to be used in areas of mixed vegetation. The contact treatments should only focus on areas where lake access and boating lanes are impaired by plant growth. If control is needed before the Memorial Day Holiday, LLCD should expect re-growth by late summer if using contact herbicides. If milfoil is the dominant species in the nuisance areas, past results show that Renovate is the tool of choice, as the Conservancy gets far more bang for its buck (up to 2 years control with Renovate vs. a few months with contacts). The estimated costs for 2015 actions include \$30,000 for treatment of up to 57 acres with Renovate herbicide, \$20,000 for near-shore contact herbicide treatments where mixed plant populations occur. It is recommended that you request \$30,000 from LARE along with \$4,000 for an update to your Aquatic Vegetation Management Plan. Plant sampling should consist of a spring Invasive Species Mapping Survey and a summer Tier 2 survey. A proposed maintenance budget is illustrated in Table 3 below.

Table 3. Updated Budget Estimate.

	2015	2016	2017
Milfoil Treatments	\$30,000	\$30,000	\$10,000
Shoreline Nuisance Treatments (spatterdock, lotus, milfoil, coontail and pondweeds)	\$20,000	\$20,000	\$20,000
Vegetation Sampling & Plan Update	\$50,000	\$50,000	\$50,000