



Forest Lake, 1977

Forest Lake Improvement Committee

2012 Lake Management Summary 2013 Lake Management Plan

Nick Leonard, Chairman
Lou DiNicola
Todd Thomas
Larry Steker
Joe Wachter



Forest Lake Improvement Committee

2012 Lake Management Summary

Note from the Committee

Forest Lake was dominated by curly leaf pond weed (CLPW) in 2012. The Forest Lake Improvement Committee (FLIC) would like to thank everyone that made an effort to control CLPW along their property, and a special thanks goes out to those courageous few that assisted with CLPW removal in the open water. On multiple occasions, these folks dedicated several hours of precious free time to help reduce the amount of CLPW. Although our efforts seemed futile, the CLPW population could have been much worse without the efforts of these volunteers.

Water Quality Monitoring

Year	TP (mg/L)	TSS (mg/L)	SECCHI (feet)	COND (mS/cm)	TSI	LC Ranking
1985	0.144	18.6	2.10	N/A	N/A	N/A
2000	0.087	15.6	2.48	0.8450	68.7	60/86
2003	0.167	16.8	2.23	1.0776	78.0	113/130
2004	0.105	10.6	3.35	0.9767	71.0	113/161
2005	0.147	14.0	2.37	1.5816	76.1	130/162
2006	0.142	15.3	2.84	1.2298	75.3	130/162
2010	0.102	12.0	2.49	1.0390	70.0	116/165
2011	0.082	14.0	3.27	0.9120	68.0	95/171
2012	0.154	13.5	2.04	1.2450	76.8	139/171
Lake County Median	0.066	8.6	2.95	0.8320	N/A	N/A
Forest Lake Avg '85-'11	0.122	14.6	2.64	1.0945	72.4	N/A

TP - Total Phosphorous, TSS - Total Suspended Solids, COND - conductivity, TSI - Trophic State Index

After two of the best years on record in 2010 and 2011, 2012 was a disaster. In 2011, we saw the lowest average total phosphorus (TP) and nitrogen levels on record, and the Secchi depth (visibility) that was better than the Lake County average. This year we also broke records, but on the opposite end of the spectrum. Total phosphorus increased by 88% from last year, and Secchi depth decreased by 38%. The average Secchi depth was the worst, and the average TP was the second worst in the known history of Forest Lake.

The decrease in water quality in 2012 can be attributed to a combination of three main components: temperature, precipitation, and curlyleaf pondweed (CLPW). 2012 was the warmest year in history and the driest since 1988 for the Chicagoland area. Specifically, the May through August season was 3rd warmest on record. We experienced a mild winter, followed by eight days of

80 degree temperatures in March, and 17 days over 90 degrees in July. The shallow morphology of our lake allows it to warm easily, which can be desirable for certain types of planktonic algae, and undesirable for large, predatory fish.

This year also had a lower than average amount of rainfall. 2012 was the driest year since 1988, and May through August was the 4th driest season on record. In the months of June through August, we only had five days of measurable rainfall. This resulted in low lake levels all year and essentially no incoming water from mid-June through August. Forest Lake has historically had its best years when the rainfall is above average during the summer months.

The most influential component to this year's poor water quality was the presence of curly leaf pond weed. This plant species is not native to the U.S. and has a unique growing cycle that causes it to die off in mid to late summer. The decomposition of CLPW releases phosphorous into the water column and is the most likely culprit for the high phosphorus levels observed in July, August and September in 2012.

2012 Inlet Testing Program and Watershed Analysis

In an effort to obtain more information about the quality of the water entering Forest Lake, the FLIC implemented a second generation of water testing on the three main inlets. Sample sites were added at upstream locations to monitor differences in water quality at different points of the inlet. This data will enable the FLIC to quantify the effects inlet erosion on the water coming into Forest Lake, prioritize the areas of greatest concern and develop focused remediation strategies. Unfortunately, the lack of precipitation and low inlet flow did not allow sufficient sampling for a thorough analysis.

The Lake Department of Lake County Environmental Health and Safety (LCEHS) was contracted to provide our first bathymetric map since 1995. Unfortunately, the mapping was rescheduled to spring of 2013 due to lower than average lake levels.

The State of the Aerators

Based on the observations of the previous few years, the aerators in the main lake remained off in 2012. At the request of the lagoon residents, the lagoon aerator was operated from mid-September into November in 2011. The resulting water movement significantly reduced the presence of blue-green algae, but disturbed the sediment and caused cloudy water conditions. The lagoon aerator was refurbished in 2012. The aerator tubing was replaced and raised above the sediment. The lagoon aerator was turned on for the 2012 season and reduced the presence of blue green algae while not disturbing the sediment.

Curlyleaf Pond Weed Management

Curlyleaf pond weed (CLPW) dominated Forest Lake in 2012. CLPW begins its growing cycle under the winter ice. The mild winter of 2011-2012 allowed the curlyleaf population to explode in the spring and summer of 2012.

Because of its unique growth characteristics, CLPW is an invasive species that can essentially takeover the entire lake. It's tolerant to low-light and low-temperature, which enables it to out-complete native plants early in the season and spread into deeper water more easily. It reproduces through buds called turions, which a mature plant produces by the dozens. This unique reproductive method allows its population to grow exponentially. It also dies off in mid to late summer and provides nutrients for late summer algae blooms. CLPW is the single most detrimental issue facing Forest Lake, and its eradication will be the main goal of the FLIC over the next few years.

Shoreline Management and Rehabilitation Projects

The condition of our shorelines is the only area of lake management that is completely dependent on the actions of Forest Lake residents. For that reason, the FLIC is highly involved in the promotion of proper shoreline rehabilitation and management. Unfortunately, curlyleaf pond weed removal efforts drained most of our free time, and no shoreline rehabilitation projects were completed in 2012. The FLIC plans to reestablish its park rehabilitation project in 2013, with the goal of restoring one park per year.

We had an excellent effort on the part of lakefront residents restoring their own shorelines in 2012. Four homeowners restored their shorelines in 2012, and the FLIC has been in contact with three or four additional homeowners planning to restore their shorelines in 2013. Combined with the four restored shorelines from 2010 and 2011, we could have almost twelve of the approximately forty houses with some degree of erosion restored in just four years! With the continued collaboration of the FLIC and concerned shoreline owners, shoreline erosion and its negative effects on the lake can be effectively eliminated in the coming years.

Fishery Management

The lake was not stocked in 2012. Stocking funds were allocated to the bathymetric map. In April the Illinois DNR conducted our first fish survey since 2003. We were also able to use the electroshocking equipment to remove 36 carp from the lake! The FLIC will use the results and suggestions by representatives of the DNR to establish a stocking plan that most effectively meets the needs of the Forest Lake anglers.

Measurable Goals from 2012: Last year, the FLIC set goals for the 2012 season based on the LCEHS annual report. The 2012 goals and the results are:

- Average TP below 0.08 mg/L – **Not even close – average TP was 0.154 mg/L**
- Average TSS below 12.0 mg/L – **Not achieved but close – average TSS was 13.5mg/L**
- Average Secchi depth above 3.40' – **Not even close – average Secchi depth was 2.04'**
- 30% aquatic plant coverage – **Achieved, but by an invasive species**
- TSI rating below 67.0 – **Not even close – TSI was 76.8**
- 90 or better in the Lake County Rankings – **Nope – Forest Lake ranked 139/171**



Forest Lake Improvement Committee

2013 Lake Management Plan

Plans for 2013:

- Continue the inlet water testing program established for the 2012 season.
- Plan for future inlet rehabilitation programs.
- Implement a curly leaf pond weed management plan.
- Continue the shoreline rehabilitation program.

2013 Inlet Testing Program and Bathymetric Map

The FLIC will implement the second generation of water testing on the three main inlets that was originally scheduled for 2012. The data to be analyzed will allow the FLIC to identify the areas of greatest concern and develop focused remediation strategies.

The bathymetric map originally scheduled for 2012 will be performed by LCEHS in 2013. The results will be compared to the last bathymetric map to determine the amount of sedimentation that has occurred since 1995. This information, along with the sediment probing data obtained by the FLIC in 2012 will help determine when dredging will be necessary.

Curlyleaf Pondweed Management Program

The continued expansion of curly leaf pond weed (CLPW) will be one of the major focuses of the FLIC in 2013. The FLIC organized multiple, lake-wide CLPW manual removal events in the spring and summer of 2012. The FLIC also purchased five weed-specific rakes, and loaned them out to lakefront residents to remove CLPW from their own shorelines. Many shoreline property owners maintained their own shorelines, but only a handful of residents participated in the lake-wide events. Although we greatly appreciate the time dedicated by the volunteers, the FLIC has realized that the amount of CLPW in the open water areas of the lake is too much for us to handle alone. Alternative measures need to be taken.

The FLIC has reviewed all available options for managing curlyleaf pondweed, and has concluded that treatment of the lake with the herbicide fluridone would be most appropriate. Fluridone is a systemic herbicide, which means it enters the plant and interrupts its ability to photosynthesize, eventually causing death. Because of this unique mode of action, fluridone needs to remain in the water column for 45-90 days, but only requires a concentration of 4-12 parts per

billion (ppb). Fluridone can affect all aquatic plants, including native species, but multiple studies have shown no effects on aquatic life or humans, even at concentrations 100 times greater than the effective concentration. Because CLPW begins growing early in the season, CLPW can be targeted by applying fluridone early in the year before native plants begin to grow. Plant death before reaching maturation will reduce the number of turions produced for the next generation of plants and reduce the amount of decomposing plant biomass that can release nutrients into the water. The FLIC obtained a quote from a local applicator for \$5,000. This plan was adopted at the March FLCA Board meeting and application will take place the third week in April. Visit the Lake page of the FLCA website to view the proposal and for more information on fluridone.

Blue-Green Algae Bloom Management

The combination of high temperatures, low precipitation and a large CLPW population resulted in severe blue-green algae blooms in the late summer of 2012. Unfortunately, there are limited options for combating blue-green algae blooms. Chemical treatments are ineffective, and surface agitation with aerators or circulators are not effective over large areas. The most effective way to manage blue-green algae blooms is to lower the phosphorous levels of Forest Lake. This involves continued efforts to decrease nutrient-rich runoff and rehabilitate eroding shorelines, but the main contributor in 2012 was decomposing CLPW plants. The reduction of late summer algae blooms is dependent on our ability to eliminate CLPW from the lake.

Shoreline Rehabilitation Program

The FLIC will continue to rehabilitate the shorelines of the community parks and provide assistance to lakefront residents interested in rehabilitating their shorelines. In addition, the FLIC will reach out to those lakefront homeowners whose shoreline erosion has been designated as “severe” and provide options and advice for rehabilitation. Also in 2013, the FLIC is planning a follow-up project to remediate additional erosion concerns at Ercker Park, as well as rehabilitate a second community beach.

Fishery Management

The fish population in Forest Lake continues to do well, and the intended actions of the FLIC aim to improve the future of the fishery. Based on the results of the 2012 fish survey and the recommendations of the IL DNR, future stocking will include a rotation of predatory species that are not able to naturally reproduce in the lake. Specifically, channel catfish, walleye pike, northern pike, and musky will be stocked, with the goal of keeping the bluegill and crappie populations in check. In 2013, channel catfish will be the only species stocked. The stocking history and state of the fishery will be assessed each year to determine the appropriate species to be stocked.

While it is not believed the Forest Lake’s carp population is problematic, significant, yearly spawning activities have been observed. In an effort to control the population of common carp, the FLIC supports the removal of all carp from the lake.

Dredging

Forest Lake was last dredged in the winter of 1994-95, and it's believed that some degree of dredging will be required in the next few years. Before dredging is even a discussion, a wealth of information is needed. The FLIC has begun to collect the required information, starting with the question of whether the benefits of dredging would offset the tremendous cost. The FLIC sent our sediment probing results to a local dredging professional for analysis. After a brief analysis, it was concluded that the south end of the lake would benefit most from dredging, the cost of which would be \$200,000 - \$300,000. More information will be acquired over the next few years, but the FLIC stresses the importance to fixing the *causes* of sedimentation before a dredging project is undertaken. To maximize the results of a costly dredging project, we must first rehabilitate our eroding inlets and shorelines.