



## Lake Waramaug Task Force, Inc.

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Dear Friends of Lake Waramaug,

As we approach our fiftieth anniversary in 2025, we have much to celebrate: Lake Waramaug was rescued from the brink of eutrophic death and is now recognized as one of the most beautiful and iconic locations in Connecticut. What an achievement for those who gathered in 1975 and those who accepted the mission in the years since!

From the beginning, we studied the lake, recorded clarity data, water temperatures, bacteria levels, and vegetation growth and we continue to do so. We measured water levels, as well as the effects of run-off from farms and residential properties, and we continue to gather this information today. We have monitored fish species in the lake and the benefits they provide to water quality. This monitoring continues in much the same way as it did when the LWTF began, but with better technology. The Task Force has applied cutting edge science to develop the best practices to thwart old and new threats to the lake's water quality. We have developed school programs and community information sessions to demonstrate how we care for the lake, and the great need to protect the lake environment today and in the future. We have always engaged in thoughtful debates as to how best to use our generous donations in order to maintain our prized lake.

We have learned a great deal during this time. When presented with the invasive weed problem in the 1990's, it was suggested by some experts that adding large quantities of chemicals to our lake was the only solution. Rather than accept this radical treatment as the absolute remedy to the weed problem, the Task Force established a weed mapping and harvesting program to eradicate invasive weeds. This proved to be a great success and the ecological balance of our lake was not compromised by toxic chemicals. Our harvesting program continues every year. The Task Force has learned that gathering information and data coupled with methodical decision-making leads to truly remarkable results. We have learned that lake conditions change from year to year, and we must adapt our decisions to the varied needs of the lake when they present themselves.

We have also learned that we can turn to the community for their help and cooperation as we did last year during the severe drought. The Task Force asked all boaters not to create wakes near the delta at the mouth of the Sucker Brook to prevent nutrient rich sediments on the delta from being dragged further into the lake by boat wave wash. Boaters were also asked to stay 300 feet from any shoreline in order to protect areas newly exposed by the drought. This was a great example of the Task Force and the lake community working to do what is best for the lake.

During the past year we made the decision to move one of our four aerators to a new location, enabling it to run more efficiently which helps to keep the thermocline stable and traps cyanobacteria in the lower layers of the lake, helping to prevent blooms. We have dredged a new channel from the mouth of the Sucker Brook to allow cold, oxygenated water to flow into the lake and not stagnate on the delta. We are also completing engineering plans that will secure one of the largest erosion sites on Sucker Brook. This represents the fourth major stabilization accomplished by the Task Force in the watershed in the past ten years.

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The Lake Waramaug Task Force is a non-profit scientific and educational organization dedicated to maintaining and preserving the ecology and water quality of Lake Waramaug and its watershed.

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Finally, this summer we contacted Terra Vigilis, a well-known and highly respected firm, to work with the three towns surrounding the lake to create and conduct a multi-town survey that will help them to understand how the communities use the lake and how they would like it used in the future.

Additionally, we are looking at Terra Vigilis's capabilities to conduct a large wave displacement impact study on Lake Waramaug. This will allow us to better understand how our lake's shoreline and sediments are affected by large wave recreation. This will be the first recreational wave impact study to be done in the state of Connecticut.

Lastly, thank you again for your continued financial support of the LWTF. Your generosity allows us to continue with our vital annual programs for the lake and to plan for future projects which will give Lake Waramaug the best chance to remain the jewel that we all know it is.



**Mike Guadagno**

Chair, Lake Waramaug Task Force

## LWTF COLLABORATES WITH THE THREE LAKE TOWNS ON RECREATIONAL WAVE STUDY

Recently, residents of Washington, Warren and Kent expressed concerns regarding wake surfing on Lake Waramaug. The three towns are currently deciding how to address these concerns. While many of the issues raised focus on safety and quality of life, the towns have asked the Task Force to comment on the impact of wake boat activity on water quality.

The Task Force is cooperating with the towns in two ways:

- 1. The towns intend to conduct a survey of residents regarding recreational boat usage on the lake, attitudes toward this usage, and perceived impacts.** This survey will be conducted by Terra Vigilis Environmental Services (TVES), a private company out of Wisconsin, and paid for by the towns. The Task Force is cooperating with them in the preparation of those sections of the survey relevant to water quality.
- 2. The Task Force has begun drawing up a list of questions that will need to be answered to provide a meaningful response to the towns.** An independent expert (likely TVES) will have to be engaged to answer these questions. No estimate of the cost has yet been received, nor has any decision been reached as to how this cost will be split between the towns, the Task Force, and other interested parties. A preliminary list of the questions to be answered:

- ▶ What is the potential water quality impact of recreational power boat activity on Lake Waramaug? How does this impact compare to the impact of natural forces?
- ▶ At what level of recreational power boat usage is this impact material? What is the current level of recreational power boat usage on the lake?
- ▶ What is the relative impact of wake surfing vs. water skiing vs. aggressive tubing vs. cruising?
- ▶ Can the impact of different types of recreational power boat usage be mitigated by operation in a specified manner? (i.e. only at a certain distance offshore, or only in certain areas of the lake.)

We invite all members of the community to submit to the Task Force your thoughts or additional questions the study should seek to answer as we refine the parameters of a potential study.

**NOTE:** The Lake Waramaug Task Force is not a regulatory body. The Task Force is focused exclusively on maintaining and improving the water quality of Lake Waramaug. Please visit the Task Force website ([www.lakewaramaug.org](http://www.lakewaramaug.org)) for a detailed description of the extensive, in-lake work done with your support. The Task Force is committed to absolute donor transparency. Please contact the Task Force directly if you have any questions or concerns.

## AERATION TOWER MOVE

This past May, the Task Force moved one of our Washington Bay aerators to shallower waters. While it was performing as expected at the old site, three decades of data collecting indicated this move was a necessary upgrade to better adapt to the negative water quality impacts due to warmer water temperatures, a symptom of climate change.

There are four layer-aeration towers in Lake Waramaug. The first two were installed in 1989, suspended in deep water along Route 45 in Washington Bay. In 2015, two more aerators were installed off the tip of Arrow Point. In 1989, these aeration towers were the first of their kind, prototypes designed and installed by our long-time consulting limnologist Bob Kortmann. Today, these aeration towers are now used nationwide and beyond, mostly in drinking water reservoirs to combat cyanobacteria blooms.

The towers came from years of hard work and experimentation. Early 'aerator' prototypes were created in the early 1980's from the old bass fish hatchery basins along the East Aspetuck River, just south of the Washington Dam. Coined the Hypolimnion Withdrawal System, water was piped from the bottom layer of the lake to the surface to add oxygen from the atmosphere. Another system took water from the east side of Arrow Point, known as the Frost Site, channeled it through a series of concrete baffles, removing nutrients and aerating the water before returning it on the west side of the point. The system was installed in the early 1980s and had an anticipated useful lifespan of 25 years. Although largely responsible for water quality improvements over that time, those benefits leveled off and maintenance costs increased rapidly. While the Hypolimnion Withdrawal Systems had some positive lake effects,



they were deemed not as effective as possible, and the negatives, being large amounts of foul smelling byproducts filled with iron and sulfur, out-weighted the positives. Yet much was learned from their failure, which led to

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**Dr. Kortmann has been recognized in his field for this groundbreaking work in limnology, and it began here on Waramaug.**

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the development of the current aeration tower model, by which we oxygenate the middle layer of the lake instead of the bottom.

Proposals under consideration for the Frost Site's concrete structure included the construction of solar panels to power the entire system and/or the possibility of nurturing the growth of zooplankton for possible re-introduction to the

water. Zooplankton eat algae and therefore have a positive effect on water clarity. In 2016, the Task Force converted the Frost System into an experimental Zooplankton Farm; in the last two years, we have been collaborating with a graduate student at Western Connecticut State University to continue to experiment on the effectiveness of the zooplankton project.

Dr. Kortmann has been recognized in his field for this groundbreaking work in limnology, and it began here on Waramaug. He has published dozens of papers dealing with applied limnology and lake restoration. He invented several naturalistic lake restoration technologies, was awarded four US Patents, as well as the Technology Innovator Award by Environmental Protection Agency for inventing Layer Aeration.

We're lucky to have him.



## KEEP IN-THE-KNOW. IT'S EASY TO LEARN MORE ABOUT LWTF ACTIVITIES:

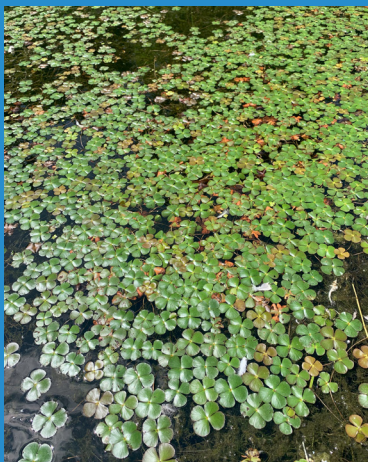
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## CLEAN WATER CORNER

### ALWAYS KEEPING AN EYE ON AQUATIC PLANTS IN THE LAKE

We survey the entire lake two times a year (in early summer and fall) for non-native invasive aquatic plants. These surveys take several days and requires a three-person team to do accurately. While we can say that we have virtually eradicated all non-native invasive



species from the lake, we cannot drop our guard. This summer we found a rather charismatic looking but lake degrading species known as Four Leaf Water Clover (*Marsilea quadrifolia*). While it may seem like a lucky charm has joined the lake's diverse array of aquatic plants, this non-native



species' days are numbered and it needs to go. This is an aggressive invasive that will choke out many native plants that work to improve water quality. We are removing it by hand pulling. Thanks to you all, we are able to put resources to work to surveil and manage in-lake vegetation.