



A Lake Owner's Manual - 2013

Presented by Staffordville Lake Association...
...For now and for generations to come.



A Lake Owner's Manual

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Introduction

We, the property owners of Stafford, Connecticut, are the proud owners of Staffordville Lake. Today, there are some 90 houses and seasonal cottages lining its shores. In addition to these waterfront property owners, all residents of Stafford are "lake owners" and many avail themselves of the beach, pavilion and playground located at the lake's south end.

Staffordville Lake is a man-made impoundment created more than 100 years ago by damming Furnace Brook. Its original purpose was as a reservoir to provide water and water power to turn-of-the-century textile mills for which Stafford is known. Now this antique provides us with beauty and recreational opportunities, as well as abundant water for today's factories. Like all antiques, our lake requires maintenance and preservation to assure its value endures. This manual sets out the basics of caring for the lake. It also outlines behaviors encouraged to make everyone's time at the lake a healthy, pleasant and safe experience.

The Aging of a Lake

The scientific term for lake aging is eutrophication. The simple fact is that lakes do not remain the same. Whether it's people or lakes; health and beauty need more and more attention with age. With lakes, aging means weeds, algae, bottom mud, decreasing water depth, and deteriorating water quality (turbidity and oxygen loss). We can't do much to slow our own aging, but we can slow lake aging. The information provided in this pamphlet is aimed at showing how you can help.

Boating Responsibly

Watch your boat's wake between trolling speed and planing speed; your boat is not at its most efficient and its wake is the largest at this intermediate speed. Be respectful of docks, moored boats and shorelines. Get up on plane quickly (speed limit of 40 mph) or go slowly — but do not plow around at intermediate speed causing a huge and damaging wake.

Surprisingly, modest boat wakes can be beneficial; they sweep the shoreline clear of mud and soil from ice-caused erosion, leaving pleasant sand and gravel shallows. If it were not for boat wakes, the shallows would be mucky like the northern coves of the lake.

Other Boating Hints:

- Take care not to spill gas when refueling; gasoline constituents are truly toxic.
- Use bathroom facilities before your boating excursion.



Fertilizer Facts

Excess fertilizer used on the shore ends up in the lake. Once in the lake, it causes accelerated weed and algae growth. When the weeds and algae die, they decompose and rob the lake water of oxygen. They then become fertilizer for the next crop of weeds. Fish kills, turbid (that is, unclear) water and bad odors are the symptoms that result. Be careful with fertilizer:

- Use the least amount you need.
- If you must fertilize, get a fertilizer "prescription" for your particular soils and plants from UCONN's Soil Nutrient Analysis Laboratory (SNAL). Call 860-486-4274.
- Do not fertilize when heavy rains are predicted; the fertilizer will be washed into the lake before plants and grass can absorb it.
- Do not fertilize in the late summer or early fall; active plant growth has ended by then.



Weeds

There are pros and cons about weeds. Weeds are plants and plants produce oxygen while they grow. Oxygen input is needed in the lake during the summer; but, at the end of the growing season (in the fall) the weeds die and begin decomposing. Decomposition continues into the next growing season, stripping oxygen from the water and fertilizing the lake bottom for even more weed growth the following year. This cycle continues and eventually results in a weed-choked lake that none of us would appreciate.

Responsible weed management requires the removal of dead weeds in the fall. For years, lowering the lake at the end of the season for a few weeks has allowed for the cleanup of weeds from the shallows. We must renew our commitment to weed harvesting. If weeds are harvested diligently, each year's new weed crop will still inject oxygen into the lake, but less decomposing matter will lower the nutrient level in bottom muds and gradually reverse the trend of weed-bed expansion. "Hand harvesting" is environmentally most prudent and is encouraged by the State of Connecticut Department of Energy & Environmental Protection (DEEP).



Biodegradable Matter

Biodegradable matter should never be put into the lake. This means grass clippings, leaves, tree or shrubbery trimmings and dead or cut down trees. These decompose and have the same adverse effect on the lake as do decomposing weeds. Please do not use the lake as a compost heap.



Muck and Mud

Mud is the bane of the lake. It's the reservoir of nutrients that feeds weed and algae growth and harbors decomposing weeds that strip oxygen from the water. The less mud in the lake, the longer the lake's water quality will be preserved. In short, fertile muck from the lake is terrific for your garden; but it is horrible for the lake. Please support all responsible efforts to limit mud in and remove mud from the lake.



Lowering the Lake

Ice is a major culprit in shoreline erosion. Winter's ice undercuts the shoreline, causing springtime erosion. Many property owners have installed walls along the shoreline to prevent erosion; this is good for stabilizing the lake's shoreline. However, there are many undeveloped sections of the shoreline where no such protection from erosion exists. Lowering the lake for the duration of the winter ice formation prevents ice damage to these areas; it also helps control weed growth for the following year because weed roots are killed when the exposed lake bottom freezes.

Staffordville Lake Association has historically supported fall and winter lake lowerings. Temporary lake-lowerings (by 4 feet) in the fall allow:

- Shoreline property owners to hand-harvest weeds, remove muck and/or put down stone carpets (revetment) to hold soil in place.
- New retaining walls to be built (a good design is essential and a permit is required).
- Existing retaining walls to be serviced.

Deep winter drawdowns are the only zero-cost actions available to manage weeds throughout the lake. The State of Connecticut DEEP uses deep (around 8 feet) drawdowns to control weed growth at state-managed lakes. Since regulation of our lake's water level is under the control of Town of Stafford Officials, Staffordville Lake Association requests annual fall drawdowns and deep winter drawdowns for the lake's benefit. Lake drawdowns are the only zero-cost actions available to us for effective preservation of the whole lake.

Siltation

Staffordville Lake is shallow, with an average depth of 9 feet. Sand and silt washing into the lake cause shoaling (that is, causes the lake to get shallower). Shallow bottoms are where weeds grow. Also, the loss of deep holes means the loss of cool water for summertime fish refuge. To avoid siltation:

- Be vigilant not to allow erosion around the lake.
- Alert the Town and State DOT to keep storm drains that feed the lake (Route 19 and Lake Shore Boulevard) clear of accumulated sediment.
- Alert authorities when streets need sweeping, to avoid sand/silt from washing into the lake.
- Monitor construction around the lake for proper sedimentation and erosion control.
- Request the excavation of problem sites (such as sand "deltas" that form near storm drains and streams discharging to the lake).

Stratification and Algae Blooms

Staffordville Lake becomes stratified in the summer, meaning the warm shallow water floats over the cool deep water and the two layers do not mix very much. This leads to a loss of oxygen in the deep water, due to decaying dead algae and weeds on the bottom, and good fish habitat is lost.

Also, phosphorous and nitrogen nutrients are released into deeper water from muck and decomposing matter on the bottom and then build up for lack of mixing. In the late summer, the shallow water cools, loses its buoyancy and the nutrient-laden deep water mixes upward, into the sunny shallow water. All that nutrient-rich water fertilizes the lake's algae (microscopic plants) causing an unsightly, smelly algae "bloom." Telltale signs of such a bloom is brownish water and a scum on the surface that can look like, but is not, a petroleum spill. Even the most diehard swimmers are reluctant to go in the water during an algae bloom. Many of the tips in this manual are aimed at reducing nutrient build-up in bottom waters, hence avoiding algae blooms and promoting clear water conditions.



Watching the Watershed

While many of the items discussed so far deal with things happening directly to the lake, we often do not think about the impact of similar behaviors within the watershed. The watershed is the area of land around the lake from which water feeding the lake originates. Thus what is happening even out of sight of the lake can have a bad effect on the quality of our lake water.

The watershed draining into Staffordville Lake is very narrow to the west (about 1,200 feet). The homes along Colburn Road and Lake Shore Boulevard, and the undeveloped slope up Colburn Hill, make up the westerly portion of the watershed. Although small in area, this portion is very important because adverse land uses and management could have immediate impacts on the lake. To the northwest the watershed stretches from the north cove, up the steep and narrow valley along Potash Brook for about one third mile, just into Massachusetts. There is virtually no development along Potash Brook where much of the land is set aside as a Norcross preservation.

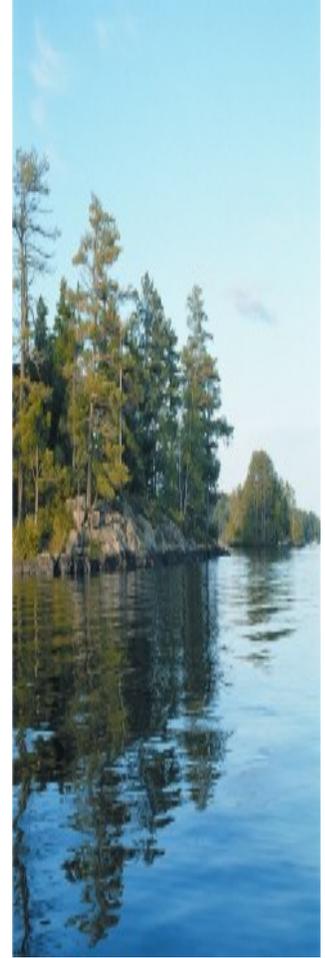
The watershed also stretches north-northeasterly up Delphi Brook, along Route 19, for about two and three-quarters miles to just south of Lake George in Wales, Massachusetts. However, it is important to understand that Lake George does not drain into our lake.

Watching the Watershed (continued)

Properties along Route 19 have been developed for years, and some are under development now. This watershed area is of great importance because the property owners there may be completely unaware of their connection (and potential impact) to the lake!

On the eastern side of the lake, the lake side properties along Route 19 are included in the watershed and are of note for the fact that they are not hooked up to municipal sewers. The sparsely-developed hills to the east, out to about two miles, also drain into the lake. There is little on-going development in this area, which encompasses New City Pond, the only other lake in Staffordville Lake's watershed.

Our lake's water quality is as good as it is because the watershed is relatively undeveloped. Be sensitive not just to existing conditions within the watershed, but to new and changing uses. Be on the lookout for poor land management practices, such as land clearing and excavation without erosion control. Report potential problems to the Stafford Conservation/Zoning Enforcement officer for responsible follow-up action. Call (860) 684-1775.



Our Water Testing Program

After considerable information-gathering and planning, and with input from environmental professionals, a water quality monitoring program was begun in 1996. Unlike the Town of Stafford's periodic testing of the water for microbes (specifically, e. coli at the beach), our testing pertains to other aspects of water quality. The program is designed to provide hard data to detect trends in the environmental and aesthetic "health" of the lake. The accelerating deterioration of a lake can be signaled by depleted oxygen and high nutrient levels in deep summertime waters, increasing levels of algae, weed infestation and fish kills.

Over the years, results of these tests have provided reassurance that water quality remains good, but they have also provided warning signals that immediate actions are imperative to maintain that quality and reverse some deterioration that has already occurred.

The monitoring is designed to detect sources of problems which can be dealt with before they damage the lake. We monitor:

- The clarity (transparency) of the lake water (reflecting the concentration of algae);
- The temperature variation by depth (as an indicator of degree of stratification);

Our Water Testing Program (continued)

- Dissolved oxygen (the lack of which can signal excess stress on the deeper water fish habitat due to too much decaying organic matter in the lake);
- Nutrient levels, specifically, nitrogen and phosphorus levels — which can signal failing septic systems, poor land use within the watershed, over-use of fertilizer, erosion, and inadequate weed management — all contributors to the premature aging of the lake.

Water samples taken from the lake and from the three streams entering it, are laboratory-analyzed (in part) and are tested in the field by our volunteers (in part). A strict protocol for sampling and testing has been established so that monitoring results from year to year can be evaluated for telltale signs of problems. While Staffordville Lake Association pays for the laboratory tests, the whole program is made possible only by the volunteer effort of the Staffordville Lake Association's Environment Committee.

How do we protect Staffordville Lake?

Be serious and coordinated, or else nature and our neglect will take their course — with regrettable results. Staffordville Lake Association's Environment Committee is "serious and coordinated" about the lake's preservation and water quality. The Committee encourages lake lowerings, participates in fall cleanups, helps to remove dead trees from the water, maintains a detailed, scientifically valid water monitoring program and has produced this manual so that all lake "owners" — YOU included — are made aware of steps we can all take to help.

A Final Word ...

It may seem, upon reviewing this manual, that the Environment Committee "is taking care of things" and there is no cause for worry about our lake; but in reality, the job belongs to all of us. Please, take a few moments to think about the habits you and your family may have developed over the years that might harm the health of the lake:

- Is your septic system cleaned regularly and in good repair so that it does no harm?
- Are you harming the lake by pumping "gray water" (water from washing machines, sinks, etc.) into the lake?
- Do you have a tree down in the water from your property that needs to be removed?
- Are you careful not to dump used oil or other chemical wastes in the woods, or worse, into storm drains?
- To everyone in the watershed — Is your heating oil tank sound (leak free)?
- To everyone — Do not feed waterfowl; their feces are harmful.



STAFFORDVILLE LAKE
ASSOCIATION

**For now and for
generations to come.**

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We're on the web! www.staffordvillelake.com

Acknowledgments

Staffordville Lake Association's Environmental Task Force, established in 1995, is now a permanent committee simply named the Environment Committee. The Environment Committee has made maintaining and improving the lake's water quality its highest priority. In 1996, a water testing and monitoring program (funded by Staffordville Lake Association and carried out by Staffordville Lake Association volunteers) began. In 1998, members of the Environmental Task Force undertook research and planning, and contributed time and valuable input to help create the first edition of this manual. Members of the original Environmental Task Force were: Joyce Arthur, Bill Curtin, Bill D'Aquila, Pat Fenton, Mary Forbes, Jeff Gay, Lisa Guzzo, Jamie Jarvis, Julie Nichols, Eileen Tocchetti and Dennis Waslenchuk.

Today: the Environment Committee is currently chaired by Dennis Waslenchuk. Maintaining and improving the lake's water quality is its highest priority. Volunteers continue to perform the water quality monitoring program, which includes water testing, and to make management recommendations to "lake owners" and Town of Stafford administrators. Current committee members are: Joyce Arthur, Joe Criniti, Pat Fenton, Cheryl Mawaka, Mark Price, Eileen Tocchetti, Donna Vail and Dennis Waslenchuk. Their efforts help preserve the lake to enjoy now and for generations to come.

Please keep this manual for future reference; share with your family and visitors.

Remember, you are a lake owner — protect your asset!