

Education



Conservation

Aerators Are Alive!

It's that time of year again when thoughts of fishing, sailing and swimming in the lake are top of mind. But for some of us – namely the board members of the Three Lakes Council and a few other hearty souls – the lakes and their general health have been a priority all winter and spring long. Since last summer, we have rebuilt the aerators in Lake Waccabuc from, quite literally, the bottom up. I hope many of you read the informative article that appeared in *The Lewisboro Ledger* on June 6, 2002. Let me just recap the highlights.

As most of you are aware, the aerators deliver compressed air to two separate locations at the bottom of Lake Waccabuc. We have reengineered the process that delivers air to the diffusers at the bottom of the aerators, which, by conservative estimation, will increase the dissolved oxygen uptake in the lake by 500 percent. As a result, there will be far more oxygen available at lower depths to burn off the 10,000

years of accumulated organic material at the bottom of the lake. Moreover, fish can now thrive at lower levels.

With the expert assistance of Lake Oscaleta summer resident Dr. Paul Fennelly, we pre-read the O₂ levels at 5-foot increments in three separate locations on Waccabuc prior to turning on the new system in early summer. These measurements provide us with critical baseline data (see Dr Fennelly's report on page 8.)

Fish can now thrive at lower levels.

Mid summer, we will retake these measurements to determine the aerators' effect and will report the findings to our membership.

To have "outsiders" perform this restoration work would have cost us at least \$80,000. Thanks to the hard work of some dedicated TLC members, we completed the aerator project on time and \$25,000 under that budget.

Mixing the best of Yankee volunteerism with old-fashioned know-how, we saved a lot of money, and we take a lot of pride in that accomplishment, especially given our lack of technical experience. But if you do the math, it becomes clear that our final cost was \$55,000. And, quite frankly, we could use your help in defraying those costs. A few individuals have shouldered the load of this organization and its mission of protecting our watershed area, but it really is a collective responsibility.

The Three Lakes Council needs your participation and your contributions to continue representing our lakes' best interests.

The aerator project was a small but significant step toward the long-term protection of our beautiful – and fragile – natural resource. I hope the example of our project team members will inspire more neighbors to become involved, especially now that

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Aerators are Alive!

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environmental pressures of all sorts close in on our ecosystem.

The Three Lakes Council plays a key role in maintaining the health of our lakes, but we are not alone in making our community a better place. We call out to the associations and residents around Lakes Waccabuc, Oscaleta and Rippowam to engage in a more lively

dialogue about the matters that concern all of us.

This call to arms is especially important as we turn to a far more widespread and costly problem, that of remediating some of the damage done by the storm drains surrounding our lakes. The Town has installed 98 such storm drains along our roads that empty directly into our wetlands and/or lakes. The Town has been very receptive to our suggestions, so we plan to keep

administering pressure... with your support.

Those interested in supporting the Three Lakes Council should contact Dr. Peter Treyz at 763-8617 or send their tax-deductible gifts to:

Three Lakes Council
P.O. Box 241
South Salem, NY 10590

Thank you and enjoy
your summer.

— Dr. Peter Treyz



EDITORIAL: Slime Rage

For six years, I've been editing this newsletter and reading with great interest the articles on preserving our Lakes... and the consequences of failing to do so. But, I must concede, I was operating under the happy illusion that these consequences would never catch up to us. These were cautionary tales we were relaying... the follies of other unenlightened ecosystems. But we Three Lakes residents... we were lake lovers, simple folk with hearts of gold and a community spirit that swelled our chests. We would never let our lakes die.

As I look out on the green water of Lake Waccabuc and the algae-coated weeds that are choking the cove I live on, I'm losing my Pollyanna positivism and giving in to slime rage. I took my first swim of the season last weekend and emerged looking like the Creature from the Black Lagoon. I was dripping seaweed and algae from every limb. I had to extract long strands from the interior of my bathing suit. And the smell was enough to drive my house guests inside... (although the sight of my pasty white thighs may have had something to do with that particular exodus).

I don't know about you, but I'm officially worried. I've



This stuff is like something out of a B-grade sci-fi movie

lived here only seven years, and there has been a marked deterioration in the water quality of Lake Waccabuc in that short span. And that deterioration has had a direct and immediate effect on my and others' enjoyment of the Lake. Am I right or am I crazy? I have a neighbor who remembers very clearly a time when there were no weeds in Lake Waccabuc; now they are absolutely everywhere and at deeper levels than ever before. We could hand-harvest from here to eternity and not make a dent. This stuff is like something out of a B-grade sci-fi movie; you can yank out garbage bags full of this

slime, and still it comes back, more lush and resilient than before.

So what's a homeowner to do? Well, we can throw up our hands and lament the fact that all lakes eventually eutrophy. We can chalk the weeds up to a warm winter or a surfeit of geese. But the truth is, we did this... and we can do something about it. There are something like eight wells along the north shore of Lake

Waccabuc that are contaminated by fecal coliform. I'm not an environmental engineer, but that says to me that a good many of our septic systems are just plain – if you'll excuse my language – crappy. They are leaking human sewage into our groundwater and into our lake. Add to that the fertilizers, the laundry detergents and the storm drain effluence, and we are literally “feeding” the weeds and hastening the demise of our Lakes and our own property values.

The Three Lakes Council is taking on the issue of the 98 storm drains surrounding Lakes Waccabuc, Oscaleta and Rippowam. Thanks to the diligent efforts of Lee

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Slime Rage

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Blum, the Town recently secured grant money from the State to replace certain of the more polluting drains around the various lakes in Lewisboro. The TLC is staying in close touch with our Town Government to make sure that this money is spent appropriately and to devise other methods for remediating the storm drain damage. But the TLC – namely Dr. Peter Treyz – can only do so much. We need to be supporting his efforts with our own calls and letters.

As for the septic systems, I think we all know that the most obvious solutions will

not be easy or cheap. Homeowners, particularly those on the north shore of Lake Waccabuc (and I count myself among them) need to get their septic systems checked. If they are not functioning properly, they need to be replaced, ideally by a large holding tank (one that does not leach into the fields surrounding it). With quarter acre plots, many properties on Cove Road are simply too close together to support traditional septic systems, and we all intuitively know that. While these self-contained holding tanks need to be pumped more regularly, they are the solution most conducive to maintaining the short and

long-term health of the Three Lakes.

There is no silver bullet... no quick fix. We either suck it up and forgo the fertilizer, or we watch the lake fill in. We either take a long hard look at where our sewage is ultimately draining, or we relinquish the pleasure of diving into a cool, clear lake. If we don't examine our own conduct and soon, we're going to be sitting on our porches talking about the good old days when the Lake was clean. And that would be a tragedy.

—Tara A. Owen



Love Your Lawn... and Your Lake



Improper lawn maintenance is one of the major factors endangering the health of our lakes. Although lawns do reduce soil erosion, the use of fertilizer, insecticides, and herbicides can adversely affect the lakes and, in some cases, your health. Therefore, it is advisable to consider alternative low-maintenance ground covers (such as pachysandra or vinca), or select methods of lawn care that minimize the negative effects on the lakes.

If you are contemplating using chemicals, please read the following information, and then ask yourself if you really need

them. If you are using fertilizers, or hiring a lawn maintenance company to do so, have your soil tested to determine whether fertilizers are even necessary, and, if so, how much should be used. The Cornell Cooperative Extension will test your soil if you send a check for \$14.75, along with a note that you want a soil analysis kit, to: CCE Westchester, 26 Legion Drive, Valhalla, NY 10595, attn: Debra. You will receive a kit and a bag to mail your soil sample to Cornell for a full analysis. You can call 914-285-4640 should you have any questions.

I obtained the following information at a meeting conducted by the Cornell Cooperative Extension at Teatown Reservation.

Fertilizers:

- Fertilizers are applied to lawns to make them thick and green. However, proper mowing (see below) can reduce or eliminate the need for fertilizer.

continued

Love your Lawn

continued

- Nitrogen is the nutrient most needed by lawns and other garden plants.

While the soil contains some nitrogen in the form of nitrates, it may not be enough to maintain a "golf green" lawn. Nitrates do not become bound to the soil and can be carried through the soil by water. These nitrates ultimately leach into the lake and accelerate weed growth and algae blooms. Just take a look at Lake Waccabuc.

- Weed growth in most lakes is limited by the amount of phosphate available. Therefore, even a small release of phosphate can result in a substantial increase in weed growth in the lakes. Phosphate levels as low as 5 to 15 parts per billion can cause problems.
- Soils in our area generally contain sufficient phosphate, so fertilizers with phosphates are not needed in most cases. That said, it is hard to find fertilizers without phosphate; one option is dried blood. At the very least, look for a fertilizer with a low percentage of phosphate relative to nitrogen.
- The three-segment number on the bag of

fertilizer indicates the amount of each of its nutrients:

- A 32-3-5 fertilizer contains 32% nitrogen, 3% phosphorous, and 5% potassium; thus it has a low ratio (10%) of phosphorous to nitrogen.
- A 10-5-5 fertilizer (10% nitrogen, 5% phosphorous, 5% potassium) has a high ratio (50%) of phosphorous to nitrogen.
- Only one third as much 32-3-5 fertilizer (as compared to the 10-5-5) should be used to obtain the same amount of nitrogen. Nitrogen should not be applied at a rate greater than 1 pound per 1,000 square feet.

If you have had your soil tested and feel you must use a fertilizer, you can minimize the amount of nitrates leaching into the lakes in the following ways:

- Do not fertilize close to the lakes.
- Use slow release fertilizers. Most slow release fertilizers release nitrogen at a rate similar to the rate needed by the plants, leaving little nitrogen to leach into the ground. Examples of

slow release fertilizers include bone meal, activated sewage sludge (Milorganite), poultry manure, ureaform, sulfur coated urea, and IBDU. Avoid fertilizers that contain a large percentage of urea, ammonium nitrate, ammonium sulfate or ammonium phosphates. These are not slow release fertilizers. This information can be found on the fertilizer bag.

- Don't over fertilize. Apply no more than 1 pound of nitrogen per 1,000 square feet. The amount of fertilizer you apply will depend greatly upon the percentage of nitrogen in the fertilizer. Fertilize lightly 3 times per year, Memorial Day, Labor Day and Thanksgiving for a maximum of 2 to 3 pounds of nitrogen per year. Read the information on the bag carefully. Excess fertilizer will leach into the soil or into runoff and, in either case, will likely reach the lakes, particularly in a heavy rain.

Proper Mowing Procedure

The best way to control weeds is to promote healthy grass growth, giving the grass a competitive advantage over the weeds.

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Love your Lawn

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- Lawns should be cut to a length of $2\frac{1}{2}$ or 3 inches. The longer length enables the grass to develop a healthier root system, which, in turn, helps the grass survive drought, disease, and insect damage.

- No more than 1/3 of the length of the grass should be cut off at a time. Grass adjusts better to frequent cutting than to infrequent, more severe mowing.
- Grass clippings contain nutrients, so leave them. Frequent cutting reduces the length of the clippings and they will sift down through the grass more easily and

then decay, releasing nutrients into the soil.

- Ensure that your mower has sharp blades so the ends of the grass are cleanly cut. Damaged ends permit diseases to enter and lead to a more rapid loss of moisture

---Paul Lewis

Beware the Zebra Mussel!

According to New York State Sea Grant Extension Services, zebra mussels have now advanced as far south on the Hudson River as West Point and West

The zebra mussel, *Dreissena polymorpha*



Haverstraw. They have also been found in lakes in northwestern Connecticut less than 30 miles from Lake Candlewood. This is alarming news.

What is a zebra mussel? A zebra mussel is a non-indigenous bivalve

organism, which invades and takes over fresh water ecosystems. Zebra mussels disrupt food webs and ecosystem balances by destroying the bottom of the food chain. They can interfere with sport fishing, recreational boating, and beach use. Once contaminated, a lake can "die" within 15 to 20 years.

Zebra mussels are presently the most threatening, but there are many types of "aquatic nuisance" species. An aquatic nuisance is defined as a fish, animal, or plant species that, once introduced to a new ecosystem, has a harmful impact on the natural resources and the human use

of those resources (www.anstaskforce.gov). The spread of Eurasian milfoil through our lakes – particularly along the shores of Lake Waccabuc – is a prime and alarming example of the damage these invading species can do.

The newest nasty critter to wreak havoc in lakes upstate is called the *spiny waterflea*. Like zebra



mussels, spiny waterfleas disrupt the food chain and significantly impair lake front recreation. They are

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Beware the Zebra Mussel!

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presently destroying the Finger Lakes and seem to be even more resilient than zebra mussels.

Most of these organisms, both animal and plant, can be transferred to our lakes from seemingly harmless sources. They can survive in the small amounts of water left in the bottom of a kayak, canoe, or even a motor boat engine. They can attach themselves to small pieces of plant matter that get stuck on a boat or paddle. The speed with which they have spread from the Great Lakes Region southward is testimony to the ease with which they can migrate and contaminate new water systems. Trace amounts of "foreign" water or foliage can potentially infect, and ultimately kill, our Three Lakes.

So what can we do?

First, and most essential, **DO NOT PUT FOREIGN BOATS INTO THE WATER.** Whether

they are guest boats or used boats brought from other waters (oceans, rivers, or lakes), please do not launch them here. Contamination happens very quickly, and the results are devastating. The best and safest policy is just to keep foreign boats out of our lakes.

Second, **PLACE "THREE LAKES COUNCIL" STICKERS ON YOUR BOATS.** If you see a boat that does not have a green TLC sticker on it, politely ask the occupant which house the boat belongs to and then offer to provide them with a proper sticker. This may strike you as a little intrusive, but people who care about the lakes will understand your concern and, it is hoped, be grateful you reminded them, or informed them for the first time, of the need for accurate tagging of the boats in our lakes.

Third, **DO NOT DUMP YOUR BAIT BUCKETS INTO THE WATER AT THE END OF THE DAY.** The water, even the fish, in your bait buckets

may not be native to the Three Lakes. Many foreign fish species have inadvertently been spread by this seemingly well-intentioned act.

As caretakers of this aquatic paradise we need to take a more active role in maintaining its health. The best tools we bring to this job are knowledge and an attentive pair of eyes. By following the simple steps noted above, we can slow the spread of these predatory species and, if we are conscientious, prevent them from ever entering our lakes.

If you would like further information on zebra mussels or aquatic nuisance species, check out these web sites:

www.aquaticinvaders.org
www.usgs.gov
www.protectyourwaters.net
www.threelakescouncil.org

-- Lisa Treyz Bladis

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Aerator Baseline Report

Dissolved Oxygen Testing – Lake Waccabuc –

April 27, 2002

A series of measurements of dissolved oxygen as a function of depth were taken at Lake Waccabuc on Saturday, April 27, 2002. The tests were done to provide some baseline data before the newly refurbished aerators were installed. This data will provide a means to possibly ascertain, on a limited basis, the effect of the aerators on improving dissolved oxygen levels at lower depths in Lake Waccabuc.

Testing Locations

Three sampling locations were selected: 1) the floating dock in front of the beach at Waccabuc Country Club; 2) a point approximately 25 feet south of the planned aerator locations and; 3) a point about 25 feet north of the planned aerator locations. During the testing procedure, the probe from the Dissolved Oxygen Meter was lowered at 5 ft depth intervals from 5 to 40 feet. At each depth interval, the meter was allowed to stabilize, and both dissolved oxygen (D.O.) and temperature (°C) were recorded.

Readings for dissolved oxygen (D.O.) were in parts per million (ppm) and were generally stable to within ± 0.3 D.O. unit. For comparative purposes, temperature data were converted to degrees Fahrenheit. The temperature data in the accompanying graphs are in degrees Fahrenheit. The temperature readings were stable to within ± 0.2 °C.

Results

The results shown in the graphs show depth profiles of both dissolved oxygen (ppm) and temperature in degrees Fahrenheit at each of the three sampling locations.

One part per million of oxygen represents 1 liter of oxygen at 1 atmosphere pressure being dissolved in 1 million liters of water, so the measure effectively conveys the relatively low solubility of oxygen in water. Under the conditions of this test, oxygen was expected to reach its full saturation (i.e. 100% solubility) in a range of 9-12 ppm.

The results showed a steady decrease in the amount of oxygen dissolved in the lake water as depth

increased, as expected, since the water column at extended depths has increasingly diminished access to the air/water interface at the lake surface. The declining temperature, as a function of depth, also reduces the amount of oxygen dissolved in the water column. At the lowest depths, the organic matter in the lake sediment consumes oxygen in the water column.

(Note: The effect of the aerator when operating should be to increase the amount of oxygen at the lower depths of the lake, as the aerator will be injecting air into this oxygen-deprived zone of the water column.)

The three curves show, in general, the expected shape of an oxygen/depth profile in a lake with Lake Waccabuc's age, size, depth and water supply characteristics.

Several conditions can affect the results and the shape of the curves, including: 1) Windy conditions which cause some readings to be taken when the sampling line is not completely vertical, hence creating some minor uncertainty in true depth

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Aerator Baseline Report
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recordings. 2) Variable conditions associated with

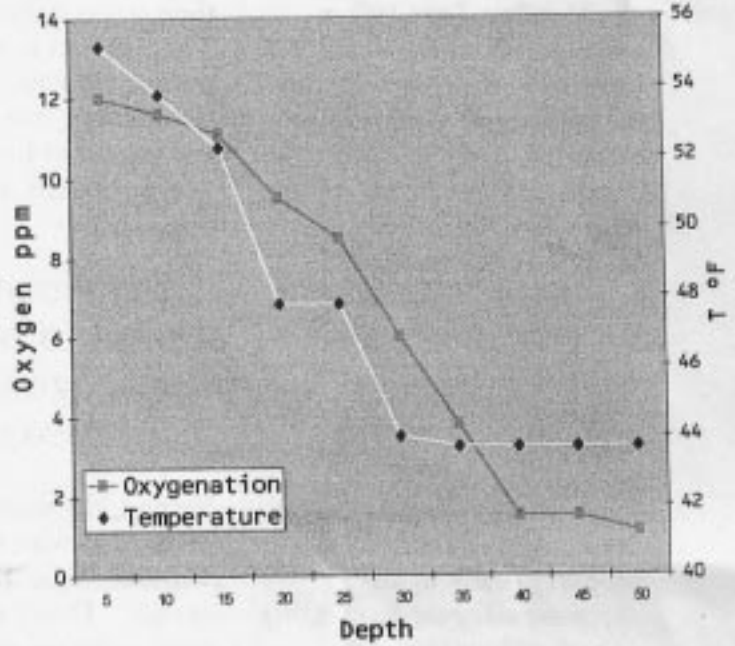
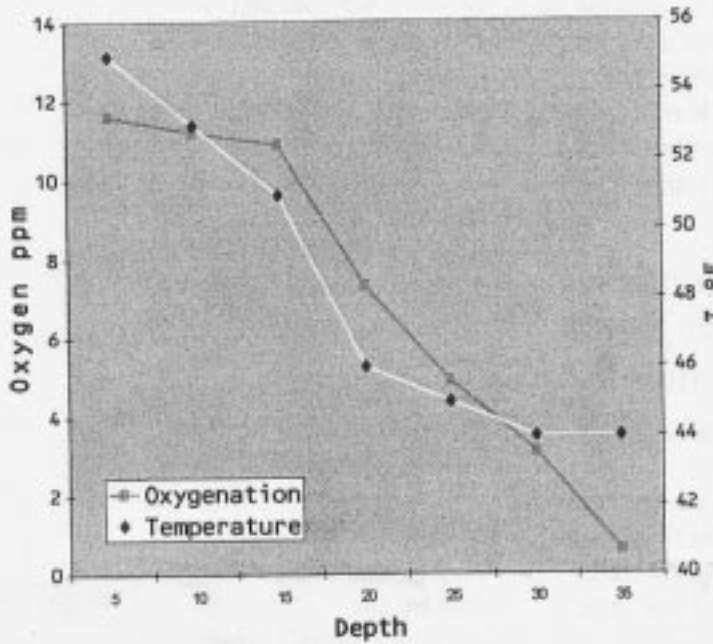
mixing within the lake as the lake adjusts to the usual spring/summer thermal stratification. Future tests will shed more light on the consistency that can be

expected from this sampling approach.

—Dr. Paul Fennelly

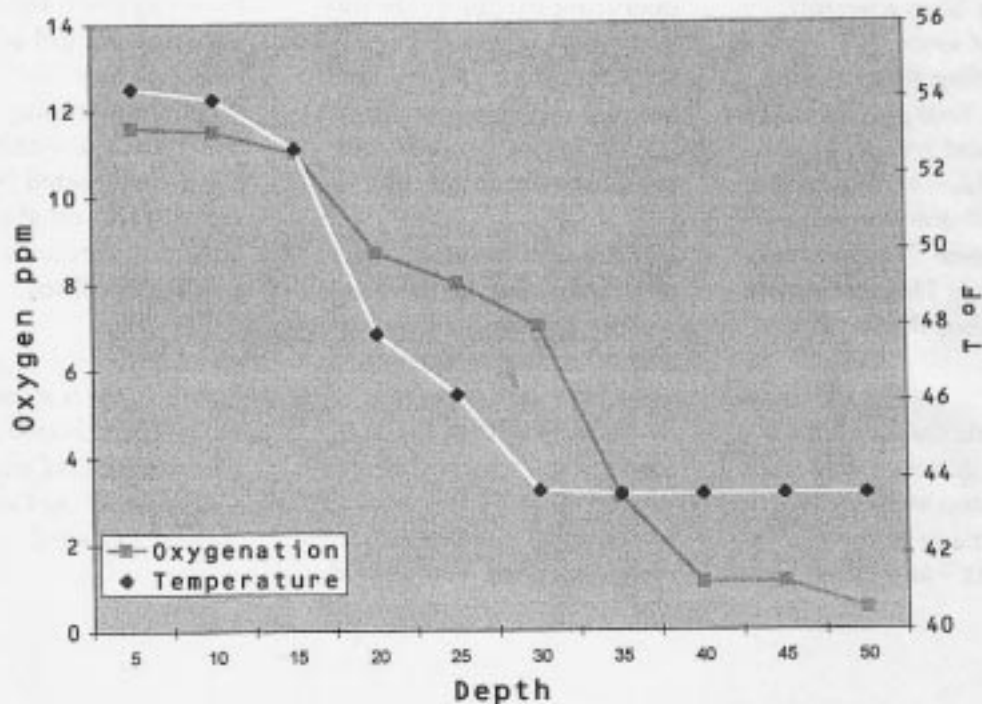
Waccabuc CC Dock

North of Aerator



South of Aerator

O₂



O₂

Lake Front Construction Advisory

In the late afternoon of Monday, June 10th, a friend of mine, who happens to be a member of the Lewisboro Conservation Advisory Council, and I took a walk on Cove Road. When we reached the hill at Lakeview, our ears were accosted by a bulldozer working away somewhere near the water's edge, and we took a moment to look into the matter.

What we saw was a machine dredging the lakefront of a property, without any apparent safeguards, creating very muddy water. Of course, we assumed there must have been a permit issued, but since there was a CAC meeting that evening, my friend brought the matter up there and was told the CAC – which should have been notified and involved – had not been. Neither had the Building Department or the Planning Board, as it turns out.

By the time the building inspector got over there and issued a stop work order, the major damage to the waterfront – and those homes

that depend on the lake for their water – had been done. The incident is troubling for several reasons. First, the homeowner was clearly unaware that Lewisboro has a very stringent wetlands ordinance.

Any violation is subject to very large fines. Ignorance is no excuse.

Second, the machine operator proceeded with the dredging without requesting to see a permit. Third, and perhaps most unfortunate, some neighbors saw the machine operating earlier in the day, knew that it was engaged in the rebuilding of a sea wall... and did not check to see that the proper safeguards and permits were in place.

For anyone contemplating reconstructing an existing wall or building a new one or any other major activity, especially one requiring machinery within the 100 foot buffer (which is soon to be extended by the new wetlands ordinance under consideration), you should

know that any violation is subject to very large fines. Ignorance is no excuse.

Few people realize that there are a considerable number of homes around the Three Lakes that draw their primary water from the lake. Sediment created by activities such as that described above clogs up their water pipes, which, in turn, leads to expensive repairs, not to mention non-potable water.

We don't, at the time of this writing, know the ruling made by the building/wetlands inspector or what amelioration has been required, but this situation should serve as notice to any lakefront dwellers planning construction within the town-designated buffer zones. You must apply for a building/wetlands permit, or you will be fined.

Lee V. Blum is a former member of the Town Board and Planning Board and is a former Chairman of the Conservation Advisory Council

News & Notes

Neighborhood Watch

On a more depressing note, we have been experiencing some theft and vandalism on the lakes this year. Several canoes and kayaks have been taken from docks. Most have been found left abandoned. The Greaves' electric boat was stolen from their dock on Lake Waccabuc late in the evening

on Friday night, May 31st. The boat was recovered near the Twin Lakes beach the next day but had been badly vandalized. The local and state police were notified, and the Greaves are offering a reward for information on this matter. You may want to make special efforts to keep your boats and equipment secure until the people involved are caught!