

ORDINANCE NO. 20.01 (8)

Town of Ottawa, Waukesha County, Wisconsin

AN ORDINANCE RESTRICTING ARTIFICIAL WAKE ENHANCEMENT ON PRETTY LAKE, SCHOOL SECTION LAKE AND HUNTERS LAKE IN THE TOWN OF OTTAWA MUNICIPAL CODE

WHEREAS, in the interest of public health, safety, and/or welfare, including the public's interest in preserving natural resources, the Town of Ottawa ("Town") has the authority to enact ordinances covering waters within its jurisdiction if the ordinances are not contrary to or inconsistent with Chapter 30, Wis. Stats., and they relate to the equipment, use, or operation of boats or to any activity regulated by Sections. 30.60 to 30.71, Wis. Stats.; and

WHEREAS, there exists within the Town three inland lakes known as Hunters Lake, Pretty Lake, and School Section Lake; and

WHEREAS, boats that create artificially enhanced wakes can cause safety concerns and other environmental concerns due to the force of the waves and the downward prop wash created by the boats; and

WHEREAS, Terra Vigilis Environmental Services Group completed a "Wave Impact Study" for Lake Waramaug in Connecticut to determine the impacts of wave enhancement systems on Lake Waramaug (the "Study"); and

WHEREAS, the Study is attached hereto and incorporated herein by reference as Exhibit A, and is included as a part of this Town Ordinance; and

WHEREAS, the Study found that the impact from wave enhancement systems was significant and that these wave enhancement systems had a greater impact than boats without wave enhancement systems; and

WHEREAS, the Study specifically found the following:

"Wave Heights on average were at least 200% (i.e. twice, 2X) as high for Wake Board Boats in Surf Mode compared to Ski Boats at the same distances from shore. This results in Wave Energy from a Wake Board Boat in Surf Mode that is 400% (i.e. 4X) the amount of Wave Energy from a ski boat at the same distance. To dissipate the Wake Board Boat in Surf Mode wave to the same height and energy as a Ski Boat at 100 ft requires increasing the distance from shore to over 500 feet. This corresponds with results from other studies including: Marr (U of Minnesota), WEC, TVES-NLMD"

WHEREAS, in addition to the above, the Study also found that there were impacts at greater depths than seen with traditional water ski boats:

"The study revealed impacts at depths of at least 26 feet for Wake Board Boats in surf mode. Comparative data did not reveal deep water propeller downwash effects from water ski or cruising boats. Deep water videography established fluid kinetic energy effects to the bottom sediments to include sediment re-deposition and nutrient

(Phosphorous) release events for Wake Board Boats in Surf Mode during start-up and course pass operations. Again, these impacts were not seen with traditional water ski boats.”

WHEREAS, the Study found that wave features from wake board boats, those with wake enhancement systems, are different than those from ski boats:

“The wave features of the Wake Board Boat operating in surf mode are demonstrably different from the ski boat comparative data. These data are consistent with other studies referenced in the literature review. Wake Board Boats operating in surf mode create a very different wave phenomenon, with a larger, faster, and more penetrating energy dimension under these test conditions.

The wave height data captured at Site B with the steep shoreline has limited distance for wave interaction with the lake bottom. The wave height data captured at Site A with a shallow lake bottom approaching the shoreline reveals that the waves propagating towards shore were scrubbing the lake bottom, thereby reducing the wave height and dissipating wave energy, but also causing sediment redistribution and nutrient release into the water column. See Appendix B Relationship Between Water Depth and Wave Behavior.”

WHEREAS, the Study also found that there was disturbance of the sediment at deeper levels in the water by wake board boats, when compared to other boats:

Of additional interest, total Phosphorus sampling at these deep sites (sampled at 20 feet), also reveal a 110% increase in Total phosphorus levels released immediately following startup impact measures for wake board boats in surf mode. By comparison, no significant increase in measured Total phosphorous levels was found for water ski boats in startup conditions. (The reader is cautioned that this finding is preliminary in nature, was not the primary focus of the project, and warrants additional study.)

WHEREAS, the Study also referenced numerous other studies, including one completed by Water Environment Consultants, SC (“WEC”) on Lakes Burton and Ray in Georgia in 2021; and

WHEREAS, the Study noted that the findings of the WEC study were as follows:

“The principal findings of the WEC project established that wake board boats in surf mode (Maximum ballasting, slow speed, high bow angle) produce a more powerful wave, with higher speed, height and energy resulting in a need for longer attenuation distances than waves produced from wake board boats in non-surf mode and/or traditional water ski boats. Longer buffering distances from shore and other vessels were recommended to manage these impacts.

An interesting comparison from the WEC work involving wind waves versus wakesurfing vessel wakes is also noted:

“Wakesurfing vessel wakes exceed wind waves at every site at distances within 500 feet of the vessel sailing line. In contrast, typical cruising vessel wakes do not exceed wind waves at every site, except within a very close proximity to the vessel, i.e., 75 feet”

Consideration for shoreline erosion was included in the WEC (2021) project. Although

shoreline erosion is a complex predictive problem, influenced by localized conditions such as sediment properties, topographic slope, presence of hard structures and vegetation, the WEC study did conclude that wakesurfing and wakeboard boating vessels are much more likely to contribute to shoreline erosion than typical boat waves or wind waves.

Finally, the WEC study addressed shallow near shore areas for bottom scrubbing impacts by wake surf mode vessels. Risks for “slip failure” of the soils behind sea walls leading to bulkhead failures was reported. “Overtopping” effects based on excessive wave heights from the surf mode wakeboard vessels can also produce structural damage per the WEC (2021) data.”

WHEREAS, a study by the University of Minnesota, St. Anthony Lab project, led by Jeff Marr in 2020, made the following conclusions:

“The Marr team has called for extended buffering distances of 500-700 feet from active surf mode vessels, and the research team is currently completing additional work measuring propeller downwash depths using sonar acoustic returns.”

WHEREAS, Alex Ray from Western Colorado University also conducted a series of studies from 2020-2021 in Payette Lake, Idaho, and focused on the impact of propeller slipstreams on lakebed sediments in the lake, and the Study noted the following regarding Alex Ray’s study:

Based upon growing concern for nutrient load impacts to the waters of this large lake system, and specifically the risk of toxic blue green algae and other cyanobacterial blooms, the author studied non-buoyant jet streams produced by current model, powerful wake board boats in surf mode (ex: 2019 Axis T-23). Significant impacts from surf mode operations and their consequent slipstream bottom impacts on sediment redistribution were delineated in this work. See Figures 2 and 3

WHEREAS, the Study also noted particular findings made by Ray, which were as follows:

“According to modeling results, wake boat slipstreams have the potential to affect bed sediments at 33’ of depth’ Ray, 2021

Ray goes further by noting,

‘Adding passengers and ballast also creates higher slipstream velocities, as it increases drag on the boat. Additionally, while most boats pass through the RPM band correlating to the highest slipstream velocities (during acceleration to planing mode), surf-boats are often continuously operated at the speed where displacement, slipstream velocities, and trim angle are highest.’”

WHEREAS, the Study made the following summarizations of the studies conducted regarding wake enhancement systems:

“In summary, there is an impressive consistency in the studies being conducted which demonstrates larger, faster, high energy, large displacement wave risks across multiple areas including:

- 1) Surface threats to other vessels
- 2) Near shoreline disruptions

- 3) Bottom scrubbing effects
- 4) Shoreline structure impacts
- 5) Nutrient release events to the water column
- 6) Deep penetration propeller downwash effects
- 7) Wave attenuation distances prompting changes to traditional buffer distances"

WHEREAS, a number of Town residents spoke during the public comment period of the June 10, 2024 Town Board meeting (as referenced in the Town Board minutes) as well as the July 8, 2024 Town Board meeting, August 12, 2024 Town Board meeting, December 9, 2024 Town Board meeting, and January 13, 2025 Town Board meeting, as well as resident communications to the Town Board outlining their concerns with the operation of wake enhancement boats on lakes in the Town of Ottawa; and

WHEREAS, the Town Board considered all information provided during the Town Board meeting of June 10, 2024 as well as the July 8, 2024 Town Board meeting, August 12, 2024 Town Board meeting, December 9, 2024 Town Board meeting, and January 13, 2025 Town Board meeting and resident communications to the Town Board when adopting the standards for the use of wake enhancement boats in the Town of Ottawa; and

WHEREAS, the Town submitted a draft of this ordinance to the Wisconsin DNR on February 11, 2025 for advisory review at least 60 days prior to passage, pursuant to 30.77(3)(d), Wis. Stats., and the Wisconsin DNR provided their review to the Town on February 23, 2025; and

WHEREAS, the Town Board, after considering public comments and any DNR suggestions, determines that adopting this Ordinance is consistent with all other ordinances of the Town and would promote the public health, safety and welfare, including the public's interest in preserving natural resources.

NOW, THEREFORE, the Board of Supervisors of the Town of Ottawa, Waukesha County, Wisconsin, does hereby ordain as follows:

SECTION 1. Chapter 20 of the Town of Ottawa Municipal Code entitled "Lakes and Beaches," Section 20.01 entitled "Boat Traffic," subsection (8) is created to read as follows:

(8) ARTIFICIAL WAKE ENHANCEMENT PROHIBITED ON PRETTY, SCHOOL SECTION AND HUNTERS LAKES.

- a. **Applicability and Enforcement:** The provisions of this ordinance shall apply to Hunters Lake, Pretty Lake, and School Section Lake within the Town of Ottawa, Waukesha County, Wisconsin. This ordinance shall be enforced by all officers of Waukesha County, Wisconsin and all other individuals empowered to enforce ordinances in this Town.

b. Certain Artificial Wake Enhancement Prohibited

(1) **Prohibited Equipment.** No person may use or employ ballast tanks, water sacks, or fins to cause a boat to operate in a bow-high manner, or which increases or enhances a boat's wake.

(2) **Prohibited Operation.** No person may operate a boat in an artificially bow-high manner having the effect of increasing the boat's wake. Such prohibited operation shall include wake enhancement by use of ballast tanks, ballast bags, mechanical fins, uneven loading, or continuous operation at transition speed (the speed below planing speed in which a

boat is operating in plowing mode).

(3) Certain Operations Excluded. In no event shall any of the following operations be deemed a violation of this Ordinance, provided such operations do not use or employ ballast tanks, water sacks, or wake enhancing fins: i) water skiing, ii) tubing, iii) boarding employing a tow rope, iv) brief transition operation to empty a boat of bilge water, or v) brief transition operation of a boat accelerating into a planing condition.

Penalty.

(1) Wisconsin state boating penalties as found in s. 30.80, Wis. Stats., and deposits established in the Uniform Deposit and Bail Schedule established by the Wisconsin Judicial Conferences, are hereby adopted by reference, except all references to fines are amended to forfeitures and all references to imprisonment are deleted.

(2) To the extent that the penalty for any violation of this Ordinance is not provided under Wisconsin state boating penalties as found in s. 30.80, Wis. Stats., any person violating this Ordinance shall forfeit not less than \$10.00, nor more than \$500.00 for the first offense, plus the costs of prosecution, and shall forfeit not less than \$25.00, nor more than \$1000.00, plus the costs of prosecution for the second or subsequent offense within one year. Deposits established in the WISCONSIN CIRCUIT COURT FEE, FORFEITURE, FINE AND SURCHARGE TABLES shall also apply to any violation.

SECTION 2. Severability. Should any portion of this Ordinance or the affected Code Section(s) be held invalid by a court of competent jurisdiction, the remainder shall not be affected.

SECTION 3. Effective Date. Upon adoption, this Ordinance shall take effect the day after publication or posting.

Enacted: April 14, 2025

TOWN OF OTTAWA

By Cheryl D. Bypp, Town Chair

CLERK'S CERTIFICATE OF ENACTMENT

I hereby certify that the foregoing Ordinance was duly enacted by the Town of Ottawa Board of Supervisors on the date indicated above.

Dated: April 14, 2025

(signature here) Kari W. Surman, Town Clerk

