

Final Proposed Filing - Coversheet

Instructions:

In accordance with Title 3 Chapter 25 of the Vermont Statutes Annotated and the “Rule on Rulemaking” adopted by the Office of the Secretary of State, this filing will be considered complete upon filing and acceptance of these forms with the Office of the Secretary of State, and the Legislative Committee on Administrative Rules.

All forms shall be submitted at the Office of the Secretary of State, no later than 3:30 pm on the last scheduled day of the work week.

The data provided in text areas of these forms will be used to generate a notice of rulemaking in the portal of “Proposed Rule Postings” online, and the newspapers of record if the rule is marked for publication. Publication of notices will be charged back to the promulgating agency.

**PLEASE REMOVE ANY COVERSHEET OR FORM NOT
REQUIRED WITH THE CURRENT FILING BEFORE DELIVERY!**

Certification Statement: As the adopting Authority of this rule (see 3 V.S.A. § 801 (b) (11) for a definition), I approve the contents of this filing entitled:

Vermont Use of Public Waters Rules

_____/s/ Julia S. Moore_____, on 1/3/2024
(signature) (date)

Printed Name and Title:

Julia S. Moore
Secretary, Agency of Natural Resources

RECEIVED BY: _____

- Coversheet
- Adopting Page
- Economic Impact Analysis
- Environmental Impact Analysis
- Strategy for Maximizing Public Input
- Scientific Information Statement (if applicable)
- Incorporated by Reference Statement (if applicable)
- Clean text of the rule (Amended text without annotation)
- Annotated text (Clearly marking changes from previous rule)
- ICAR Minutes
- Copy of Comments
- Responsiveness Summary

1. TITLE OF RULE FILING:

Vermont Use of Public Waters Rules

2. PROPOSED NUMBER ASSIGNED BY THE SECRETARY OF STATE

23P 017

3. ADOPTING AGENCY:

Agency of Natural Resources

4. PRIMARY CONTACT PERSON:

(A PERSON WHO IS ABLE TO ANSWER QUESTIONS ABOUT THE CONTENT OF THE RULE).

Name: Laura Dlugolecki

Agency: Agency of Natural Resources

Mailing Address: Davis Building, 3rd Floor, 1 National
Life Drive, Montpelier, Vermont 05620-3522

Telephone: 802-490-6133 Fax: 802-828-1544

E-Mail: laura.dlugolecki@vermont.gov

Web URL *(WHERE THE RULE WILL BE POSTED)*:

<https://dec.vermont.gov/watershed/lakes-ponds/rulemaking>

5. SECONDARY CONTACT PERSON:

(A SPECIFIC PERSON FROM WHOM COPIES OF FILINGS MAY BE REQUESTED OR WHO MAY ANSWER QUESTIONS ABOUT FORMS SUBMITTED FOR FILING IF DIFFERENT FROM THE PRIMARY CONTACT PERSON).

Name: Katelyn Ellermann

Agency: Agency of Natural Resources

Mailing Address: Davis Building, 2nd Floor, 1 National
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Telephone: 802-522-7125 Fax: 802-828-1544

E-Mail: katelyn.ellerman@vermont.gov

6. RECORDS EXEMPTION INCLUDED WITHIN RULE:

(DOES THE RULE CONTAIN ANY PROVISION DESIGNATING INFORMATION AS CONFIDENTIAL; LIMITING ITS PUBLIC RELEASE; OR OTHERWISE, EXEMPTING IT FROM INSPECTION AND COPYING?) No

IF YES, CITE THE STATUTORY AUTHORITY FOR THE EXEMPTION:

N/A

PLEASE SUMMARIZE THE REASON FOR THE EXEMPTION:

N/A

7. LEGAL AUTHORITY / ENABLING LEGISLATION:

(THE SPECIFIC STATUTORY OR LEGAL CITATION FROM SESSION LAW INDICATING WHO THE ADOPTING ENTITY IS AND THUS WHO THE SIGNATORY SHOULD BE. THIS SHOULD BE A SPECIFIC CITATION NOT A CHAPTER CITATION).

10 V.S.A. § 1424(a)(1); 10 V.S.A. § 1460

8. EXPLANATION OF HOW THE RULE IS WITHIN THE AUTHORITY OF THE AGENCY:

10 V.S.A. § 1424(a)(1) authorizes the Secretary of Agency of Natural Resources to adopt rules to regulate the use of public waters of the State. The Secretary is authorized to exercise this authority by defining areas on public waters wherein certain uses may be conducted; defining the uses which may be conducted in the defined areas; regulating the conduct in these areas, including the size of motors allowed, size of boats allowed, allowable speeds for boats, and prohibiting the use of motors or houseboats; and regulating the time various uses may be conducted. 10 V.S.A. § 1460 authorizes the Secretary to adopt rules to implement the aquatic nuisance control chapter (Title 10, Ch. 50), including the prohibition on transport of aquatic invasive species, which the Secretary is exercising to implement the wakeboat Home Lake sticker and decontamination provisions proposed for Section 3.8.c.-e.

9. THE FILING HAS CHANGED SINCE THE FILING OF THE PROPOSED RULE.
10. THE AGENCY HAS INCLUDED WITH THIS FILING A LETTER EXPLAINING IN DETAIL WHAT CHANGES WERE MADE, CITING CHAPTER AND SECTION WHERE APPLICABLE.
11. SUBSTANTIAL ARGUMENTS AND CONSIDERATIONS WERE RAISED FOR OR AGAINST THE ORIGINAL PROPOSAL.
12. THE AGENCY HAS INCLUDED COPIES OF ALL WRITTEN SUBMISSIONS AND SYNOPSES OF ORAL COMMENTS RECEIVED.
13. THE AGENCY HAS INCLUDED A LETTER EXPLAINING IN DETAIL THE REASONS FOR THE AGENCY'S DECISION TO REJECT OR ADOPT THEM.
14. CONCISE SUMMARY (150 WORDS OR LESS):

The proposed rule is an amendment to Section 3 and Appendix A of the Vermont Use of Public Waters Rules (UPW), Environmental Protection Rule Chapter 32. The rule proposes to regulate "wakesports" involving a

"wakeboat" on certain lakes and ponds in Vermont. The rule would prohibit such wakesports on lakes, ponds, and reservoirs that do not have a minimum of 50 contiguous acres that are both 500 feet from shore on all sides and a minimum of 20 feet deep (eligibility rule). The rule limits such wakesports to defined areas that are 500 feet from shore, 20 feet deep, and 200 feet wide (operating rule). Finally, the rule would require a "wakeboat" to only be used in one lake per summer unless the wakeboat is decontaminated at a certified Dept. of Environmental Conservation (DEC) service provider (home lake rule). This rule is in response to a petition that was submitted to DEC in March 2022, requesting that DEC regulate wakeboats on certain Vermont lakes. A few editorial corrections are also being made.

15. EXPLANATION OF WHY THE RULE IS NECESSARY:

Wakeboats produce wakes that are significantly larger than conventional boats. These larger waves lead to increased shoreline erosion and disturbance of lake-bottom sediments and aquatic habitat, especially on smaller and shallower lakes and ponds where there is not space for the wave energy, height, and power to disseminate. Larger waves from wakeboats have also created safety issues for other water users, such as capsizing smaller vessels, and have the potential to damage shoreline infrastructure. Wakeboats also contain ballast tanks that cannot be fully drained, and would therefore violate statute (10 V.S.A. § 1454(d)(1)(A)) and can also transport aquatic invasive species from one waterbody to another, without thorough decontamination. Currently, wakesports represent a use of Vermont's public waters that is in conflict with other uses which requires regulation to resolve.

16. EXPLANATION OF HOW THE RULE IS NOT ARBITRARY:

The rule is not arbitrary because 10 V.S.A. § 1424(a) authorizes the Secretary to adopt rules regulating the use of public waters by defining where and when various uses may be conducted and regulating conduct within defined areas of public waters. Furthermore, the proposed rule is based on an analysis of scientific literature, legal precedent, operational consideration for various types of motorized vessels, wakeboat

regulation in other states, and extensive consultation with affected entities and individuals. The proposed rule is a direct result of this analysis and is also consistent with the requirement in Section 2.6(a) of the Use of Public Waters Rules that requires use conflicts to be managed using the least restrictive approach practicable that adequately addresses the conflicts. The proposed rule has been vetted with the public and the rule, definitions, and rationale are easily understandable and derived from a factual basis and scientific information.

17. LIST OF PEOPLE, ENTERPRISES AND GOVERNMENT ENTITIES AFFECTED BY THIS RULE:

All recreational users of Vermont's public waters
Motorized and non-motorized boat owners
Wakeboarders and wakesurfers
Anglers, Swimmers, Water Skiers, and Wildlife Enthusiasts
Boat Retailers and Marinas
Outdoor Recreation Businesses and Vermont Summer Camps
Lake Associations
State Police Marine Division and Fish and Wildlife Wardens
Shoreland Property Owners

18. BRIEF SUMMARY OF ECONOMIC IMPACT (150 WORDS OR LESS):

An economic analysis of the impact of this rule considered two scenarios, with and without regulation, ten years into the future. It shows that the economic benefits of regulation outweigh the costs by ten to one. The annual benefits – estimated at \$93 million – include the preservation of water quality, the continuation of affordable small-scale recreational activities that form the core of Vermont's water-based recreation, and the protection of the tourist economy that depends on clean and safe lakes. The potential annual costs – about \$8 million – are based on limitations that this rule would place on the growth of the wakeboat industry. Wakesurfing close to shore discourages the thousands of swimmers, paddlers,

sailors, anglers, non-wakeboat water skiers and boarders, and other small-craft users who form the foundation of Vermont's lake-based economic activity. Moreover, even a few wakesurfers close to shore cause costly environmental damage, while contributing little to the state's economy.

19. A HEARING WAS HELD.

20. HEARING INFORMATION

(THE FIRST HEARING SHALL BE NO SOONER THAN 30 DAYS FOLLOWING THE POSTING OF NOTICES ONLINE).

IF THIS FORM IS INSUFFICIENT TO LIST THE INFORMATION FOR EACH HEARING, PLEASE ATTACH A SEPARATE SHEET TO COMPLETE THE HEARING INFORMATION.

Date: 8/1/2023

Time: 05:00 PM

Street Address: Richmond Free Library
201 Bridge Street
Richmond, VT

Zip Code: 05477

URL for Virtual: (Note updated location)

Date: 8/3/2023

Time: 05:00 PM

Street Address: Virtual Hearing via Microsoft Teams with call-in option

Zip Code:

URL for Virtual: <https://dec.vermont.gov/watershed/lakes-ponds/rulemaking>

Date:

Time: AM

Street Address:

Zip Code:

URL for Virtual:

Date:

Time: AM

Street Address:

Zip Code:

URL for Virtual:

21. DEADLINE FOR COMMENT (NO EARLIER THAN 7 DAYS FOLLOWING LAST HEARING):

8/10/2023

KEYWORDS (PLEASE PROVIDE AT LEAST 3 KEYWORDS OR PHRASES TO AID IN THE SEARCHABILITY OF THE RULE NOTICE ONLINE).

Wakeboats

Wakesports

Use of Public Waters Rules

UPW

Lakes

Reservoirs

Adopting Page

Instructions:

This form must accompany each filing made during the rulemaking process:

Note: To satisfy the requirement for an annotated text, an agency must submit the entire rule in annotated form with proposed and final proposed filings. Filing an annotated paragraph or page of a larger rule is not sufficient. Annotation must clearly show the changes to the rule.

When possible, the agency shall file the annotated text, using the appropriate page or pages from the Code of Vermont Rules as a basis for the annotated version. New rules need not be accompanied by an annotated text.

1. TITLE OF RULE FILING:

Vermont Use of Public Waters Rules

2. ADOPTING AGENCY:

Agency of Natural Resources

3. TYPE OF FILING (*PLEASE CHOOSE THE TYPE OF FILING FROM THE DROPDOWN MENU BASED ON THE DEFINITIONS PROVIDED BELOW*):

- **AMENDMENT** - Any change to an already existing rule, even if it is a complete rewrite of the rule, it is considered an amendment if the rule is replaced with other text.
- **NEW RULE** - A rule that did not previously exist even under a different name.
- **REPEAL** - The removal of a rule in its entirety, without replacing it with other text.

This filing is **AN AMENDMENT OF AN EXISTING RULE** .

4. LAST ADOPTED (*PLEASE PROVIDE THE SOS LOG#, TITLE AND EFFECTIVE DATE OF THE LAST ADOPTION FOR THE EXISTING RULE*):

21P-024, Vermont Use of Public Waters Rules, December 10, 2021

Economic Impact Analysis

Instructions:

In completing the economic impact analysis, an agency analyzes and evaluates the anticipated costs and benefits to be expected from adoption of the rule; estimates the costs and benefits for each category of people enterprises and government entities affected by the rule; compares alternatives to adopting the rule; and explains their analysis concluding that rulemaking is the most appropriate method of achieving the regulatory purpose. If no impacts are anticipated, please specify “No impact anticipated” in the field.

Rules affecting or regulating schools or school districts must include cost implications to local school districts and taxpayers in the impact statement, a clear statement of associated costs, and consideration of alternatives to the rule to reduce or ameliorate costs to local school districts while still achieving the objectives of the rule (see 3 V.S.A. § 832b for details).

Rules affecting small businesses (excluding impacts incidental to the purchase and payment of goods and services by the State or an agency thereof), must include ways that a business can reduce the cost or burden of compliance or an explanation of why the agency determines that such evaluation isn’t appropriate, and an evaluation of creative, innovative or flexible methods of compliance that would not significantly impair the effectiveness of the rule or increase the risk to the health, safety, or welfare of the public or those affected by the rule.

1. TITLE OF RULE FILING:

Vermont Use of Public Waters Rules

2. ADOPTING AGENCY:

Agency of Natural Resources

3. CATEGORY OF AFFECTED PARTIES:

LIST CATEGORIES OF PEOPLE, ENTERPRISES, AND GOVERNMENTAL ENTITIES POTENTIALLY AFFECTED BY THE ADOPTION OF THIS RULE AND THE ESTIMATED COSTS AND BENEFITS ANTICIPATED:

Categories of affected parties:

All recreational users of Vermont's public waters

Motorized and non-motorized boat owners

Wakeboarders and wakesurfers

Anglers, Swimmers, Water Skiers, and Wildlife

Enthusiasts

Boat Retailers and Marinas

Outdoor Recreation Businesses and Vermont Summer Camps

Lake Associations

State Police Marine Division and Fish and Wildlife
Wardens

Shoreland Property Owners

Discussion (note that the "costs" and "benefits" may fall across multiple categories of affected parties identified above):

If the rule is adopted, wakesports would be allowed on 31 Vermont lakes and ponds, and prohibited on the remainder of lakes and ponds that are generally regulated by the Use of Public Waters Rules (the UPW Rules generally do not apply to Lake Champlain, Lake Memphremagog, or seven Connecticut River Reservoirs; this amendment proposes to require the Home Lake sticker and decontamination provisions for these waterbodies, however, to help ensure removal of aquatic invasive species and compliance with the transport prohibition at 10 V.S.A. 1454).

Environmental and structural damage costs from wake surfing would be avoided. This would, as explained above, save the State and lake associations \$3.2 million annually in environmental damage repair.

Small-craft-based recreation would continue to grow at its current 15% rate. Many Vermont lakes would become more amenable to other forms of recreation. Thousands of Vermonters as well as tourists will be able to enjoy these affordable, low impact, non-damaging forms of recreation. Small-craft sales and rentals will continue to grow at their current pace, benefitting at least 50 Vermont small businesses with an annual increase of \$500,000.

Lake-dependent tourism would continue to grow at its current pace. As explained above, small-craft tourism accounts for 16% of Vermont visitors; preserving this tourism will avoid the \$72 million loss in annual revenue to Vermont businesses, and \$6 million in rooms and meals taxes to the State.

Lakefront property and lake town tax bases would remain steady, thus avoiding the \$11.5 million potential annual decrease in property values caused by wake surfing, and the concomitant \$180,000 loss of annual property tax revenue to lake towns.

However, wakeboat sales would diminish, to the detriment of manufacturers and sellers of wakeboats. Instead of selling about 50 boats per year, as projected above, Vermont dealers might sell 20 wakeboats per year, thus losing potential annual revenue of \$7.5 million.

The State would see sales tax revenue decrease annually by \$600,000.

The 100 existing wakeboats would depreciate more quickly in a regulated environment, by perhaps 5% annually. DEC estimates this would cost \$20,000 per boat, totaling a value loss of \$2.0 million, or \$200,000 annually.

Therefore, if the rule is adopted, DEC estimates eventual annual benefits to Vermont citizens, businesses, and the state government to total \$93 million, while the costs to wakeboat dealers and owners will total \$8.3 million.

Finally, enforcement costs associated with this rule are expected to be minimal, as enforcement will be carried out by existing staff capacity as described below:

- DEC Lakes and Ponds Program Staff will administer the Home Lake Stickers and Decontamination Certificates, identify the Decontamination Service Providers, and lead outreach efforts to inform the public about the new rule.
- Existing Aquatic nuisance species inspection station employees will verify that wakeboats are only entering waters with defined wakesports zones, and will check whether these boats have either Home Lake Stickers or Decontamination Certificates.
- Game Wardens and State Police Marine Division employees will respond to potential violations of this

rule in line with existing responsibilities to enforce other elements of the Use of Public Waters Rule and 23 V.S.A. § 3311. There may be additional calls to these law enforcement officers as the public gets used to this new rule, but DEC does not expect substantial cost associated with responding to those calls.

In conclusion, the economic benefits of adopting the rule outweigh the costs by ten to one. The rule will preserve the low-impact, affordable, waterbased recreational activity and tourism that has been a key factor in Vermont's economic growth. Failure to adopt the rule will lead to a degradation of lake water quality and safety that will suppress this economic growth and require substantial expense to repair. This analysis demonstrates the clear net economic benefit of regulating wake surfing, and preventing Vermont's lakes and ponds from becoming damaged and overwhelmed by wake surfing activity in shallow and nearshore water. Our lakes' water quality, quiet, safety, and beauty support many businesses, provide value to thousands of our citizens, and draw tourists from near and far. Keeping wakesports activity in deep water far from shore will make many vulnerable lakes more valuable to current and future users.

4. IMPACT ON SCHOOLS:

INDICATE ANY IMPACT THAT THE RULE WILL HAVE ON PUBLIC EDUCATION, PUBLIC SCHOOLS, LOCAL SCHOOL DISTRICTS AND/OR TAXPAYERS CLEARLY STATING ANY ASSOCIATED COSTS:

The proposed rule is not anticipated to have any impact on public education, public schools or school districts, or taxpayers.

5. ALTERNATIVES: *CONSIDERATION OF ALTERNATIVES TO THE RULE TO REDUCE OR AMELIORATE COSTS TO LOCAL SCHOOL DISTRICTS WHILE STILL ACHIEVING THE OBJECTIVE OF THE RULE.*

The proposed rule is not anticipated to have an economic impact on local school districts.

6. IMPACT ON SMALL BUSINESSES:

INDICATE ANY IMPACT THAT THE RULE WILL HAVE ON SMALL BUSINESSES (EXCLUDING IMPACTS INCIDENTAL TO THE PURCHASE AND PAYMENT OF GOODS AND SERVICES BY THE STATE OR AN AGENCY THEREOF):

Regulating wakeboats by prohibiting their use to a defined number of larger lakes and ponds may decrease the sale of these vessels as mentioned in point three above. Wakeboats represent less than 5% of the current market for motorized vessels in Vermont, but their sales are growing. Boat dealers and marinas will still be able to sell and service wakeboats for use on the 31 lakes and ponds where wakesports are allowed and the 9 other waterbodies not generally regulated under the Use of Public Waters Rules (Champlain, Memphremagog, and the seven Connecticut River Reservoirs). This rule has no impact on any other form of vessel, motorized or non-motorized, which represent the vast majority of boat sales and service in Vermont. Furthermore and as mentioned above, the rule will have a positive impact on outdoor retailers and boat dealers selling smaller motorized vessels and non-motorized vessels, as the rule will improve the conditions for use of these vessels on the vast majority of Vermont's public waters. Additionally, small businesses involved in outdoor recreational activities will benefit from this rule as it maintains water quality and manages use conflicts on Vermont's lakes and ponds, creating a more favorable environment for outdoor recreation. Finally, this rule will create a new revenue stream for marinas and car washes that serve as certified boat decontamination service providers for wakeboat owners that want to move their wakeboats from one waterbody to another.

7. SMALL BUSINESS COMPLIANCE: *EXPLAIN WAYS A BUSINESS CAN REDUCE THE COST/BURDEN OF COMPLIANCE OR AN EXPLANATION OF WHY THE AGENCY DETERMINES THAT SUCH EVALUATION ISN'T APPROPRIATE.*

Compliance with this rule will not impact the small businesses affected by it, as compliance and enforcement take place on the public waters themselves and not at the point of sale of motorized vessels or at the location where outdoor recreational excursions are booked. If the rule is passed, the Agency will implement a significant public outreach campaign to inform the public and relevant private sector entities about the new rule and will also provide tools to

promote compliance with the rule (digital maps of authorized wakesports zones to use with a smartphone, maps at access areas, etc).

8. COMPARISON:

COMPARE THE IMPACT OF THE RULE WITH THE ECONOMIC IMPACT OF OTHER ALTERNATIVES TO THE RULE, INCLUDING NO RULE ON THE SUBJECT OR A RULE HAVING SEPARATE REQUIREMENTS FOR SMALL BUSINESS:

If the rule is not adopted, the Agency estimates eventual annual costs to Vermont citizens, businesses, and the state government to amount to \$97.8 million, while the benefits to wakeboat dealers and state sales tax would total \$7.9 million. The annual costs to Vermont citizens, businesses, and the state government if the rule is not adopted are derived as follows: \$3.2 million in environmental damage, \$3.9 million in damage to small craft owners and businesses that operate or sell small crafts, reductions in small-craft related tourism revenue and related tax revenue of \$79 million, and reductions in lakefront property value of \$11.7 million.

Please note that these figures are slightly different from the calculated costs and benefit to Vermonters if the rule is adopted. As explained earlier, the costs and benefits if the rule is adopted are as follows (in millions of dollars):

Annual Costs:

Losing Potential Revenue from Wake Boat Sales + 6% Tax and Faster Depreciation of Existing Boats: \$8.3

Annual Benefits:

Avoidance of Environmental Damage: \$3.2

Growth of Sales of Small-Craft to Businesses: \$0.5

Avoiding losses in Lake-Related Tourism + 9% Tax: \$78.0

Avoiding losses Lakefront Property Values + 1.6% Tax
\$11.7

Total \$93.4

Please also note that the significant difference between the two scenarios is a figure for the benefit of the rule being passed on small-craft businesses

which is different from the figure for the cost of the rule not being passed on small craft businesses.

The detailed economic analysis is available here:
<http://responsiblewakes.org/wp-content/uploads/2023/02/Economic-Impact-Analysis.pdf>

9. **SUFFICIENCY:** *DESCRIBE HOW THE ANALYSIS WAS CONDUCTED, IDENTIFYING RELEVANT INTERNAL AND/OR EXTERNAL SOURCES OF INFORMATION USED.*

DEC worked with the petitioners, economists, and individuals experienced in law, business, environment, and government to develop this economic analysis. Multiple drafts were peer reviewed and significant research was done to conduct this analysis. The full analysis with the list of sources and documentation in over 40 footnotes can be found here:
<http://responsiblewakes.org/wp-content/uploads/2023/02/Economic-Impact-Analysis.pdf>.
DEC will also provide hard copy if requested.

Environmental Impact Analysis

Instructions:

In completing the environmental impact analysis, an agency analyzes and evaluates the anticipated environmental impacts (positive or negative) to be expected from adoption of the rule; compares alternatives to adopting the rule; explains the sufficiency of the environmental impact analysis. If no impacts are anticipated, please specify “No impact anticipated” in the field.

Examples of Environmental Impacts include but are not limited to:

- Impacts on the emission of greenhouse gases
- Impacts on the discharge of pollutants to water
- Impacts on the arability of land
- Impacts on the climate
- Impacts on the flow of water
- Impacts on recreation
- Or other environmental impacts

1. TITLE OF RULE FILING:

Vermont Use of Public Waters Rules

2. ADOPTING AGENCY:

Agency of Natural Resources

3. GREENHOUSE GAS: *EXPLAIN HOW THE RULE IMPACTS THE EMISSION OF GREENHOUSE GASES (E.G. TRANSPORTATION OF PEOPLE OR GOODS; BUILDING INFRASTRUCTURE; LAND USE AND DEVELOPMENT, WASTE GENERATION, ETC.):*

Overall, this rule is not anticipated to have a significant impact on greenhouse gas emissions. This rule will regulate use of a certain type of motorized vessel (wakeboats) that emit greenhouse gases by prohibiting their use on many small to medium lakes and ponds in Vermont. Greenhouse gas emissions on these lakes where wakeboats are prohibited could decrease slightly, and greenhouse gas emissions on lakes where wakeboats are allowed will either remain constant or increase slightly if more wakesports take place on those lakes.

4. **WATER:** *EXPLAIN HOW THE RULE IMPACTS WATER (E.G. DISCHARGE / ELIMINATION OF POLLUTION INTO VERMONT WATERS, THE FLOW OF WATER IN THE STATE, WATER QUALITY ETC.):*

This rule is expected to have a net positive impact on water quality in Vermont. Significant research has been done on the water quality impacts of wakeboats, some of which is summarized in the original petition to DEC on this subject, and they can be summarized as follows: 1. Wakeboats have been shown to increase shoreline erosion, which can result in increased sediment and nutrient loading to our waters, increased turbidity, and damage to infrastructure. 2. The downward directed propellor wash from wakeboats can stir-up bottom sediments creating turbidity, disrupting micro-organism, plant, & fish habitat, and releasing nutrients contributing to toxic algae blooms. This propellor wash and propellor movement through lakes and ponds can also shred and uproot plants, thereby spreading aquatic invasive species, such as Eurasian Watermilfoil. 3. Wakeboats can also spread aquatic invasive species as their ballast tanks cannot be drained fully, leaving 3-10 gallons of water after draining, which has been shown to provide a viable habitat for aquatic invasive species (AIS) like zebra mussels. Zebra mussels can survive for up to five days in ballast tanks and be transported from one water body to another by wakeboats. The spread of AIS can lead to negative water quality outcomes and existing statute allows for control of aquatic nuisances in Vermont that recognizes the negative impact on water quality of these species. The proposed rule has specific elements to ensure that wakesports are only conducted on lakes and ponds large enough and deep enough so that the problems associated with points 1 and 2 are mitigated to a level similar to motorboat waves from conventional motorboats (whose operation is regulated under the Use of Public Waters Rules) and has the "home lake rule" provision to mitigate the spread of AIS. See the scientific information statement below for more information on the analyses that went into ensuring that this draft rule regulates wakesports in a manner that protects and enhances water quality in Vermont.

5. **LAND:** *EXPLAIN HOW THE RULE IMPACTS LAND (E.G. IMPACTS ON FORESTRY, AGRICULTURE ETC.):*

The proposed rule is not expected to have any impact on land use.

6. **RECREATION:** *EXPLAIN HOW THE RULE IMPACTS RECREATION IN THE STATE:*

This rule will regulate one form of recreation, wakesports, in a manner that 1) provides statewide opportunities for this form of recreation on water bodies that are large enough to accommodate wakesports without negatively impacting other forms of recreation on those same water bodies, and 2) prohibits wakesports where they would both negatively impact water quality and have the potential to be incompatible with other forms of recreation due to the smaller size of these lakes and ponds. On smaller lakes and ponds, wake energy, wake height, and wake power does not have adequate space to dissipate before impacting other users, creating potential safety hazards (and significant anecdotal evidence has been submitted to DEC providing support for this claim). By limiting wakesports to larger lakes and ponds, there is adequate space for individuals using smaller vessels or swimmers to keep sufficient distance between themselves and wakeboats conducting wakesports so that the larger wakes do not disturb their vessels or make swimming difficult or unsafe. Vermont will still have 31 inland lakes and ponds where wakesports are allowed as well as the 9 other waterbodies that are not affected by the wakesport zone limitation, enabling individuals who enjoy wakesports to continue to practice this form of recreation without negatively impacting other users of Vermont's public waters and without negatively impacting water quality. The Agency believes that this rule will adequately address the water use conflict that currently exists between individuals involved in wakesports and individuals involved in other forms of recreation on Vermont's public waters.

It is worth noting that the minimum area required for safe wakeboat use in the proposed rule (50 contiguous acres) is based on operational considerations for safe and enjoyable use of this type of motorized vessel. The

current Use of Public Waters Rules states that High speed boating requires lakes to be a minimum of 75 acres in size with a minimum of 30 contiguous acres outside of the shoreline safety zone. The petition to DEC proposed a minimum zone of 60 contiguous acres for wakesports, which appeared to be arbitrary and did not have clear justification for the increase from 30 to 60 contiguous acres. However, wakeboats generate larger wakes in wakesurfing mode (10-12 mph) or in wakeboarding mode (20-25 mph) than conventional motorboats, so a zone larger than 30 contiguous acres may be needed to allow wakeboats and other types of vessels to operate together safely. Furthermore, wakesports are conducted in a linear manner, suggesting a new take is needed on the 30 contiguous acres, which was generated by the needs of water skiing and other conventional motorboat use more than 20 years ago when the current version of the rules were promulgated. Wakeboats operate in a straight line typically, and their "run" lengths are usually 2,000 - 4,000 feet. For the purposes of this regulation, the Agency tried to identify what minimum zone is needed to allow for a 3,000 ft run and allow the wakeboat to maintain a 200 foot distance from other boaters / swimmers / docks as required by law (23 V.S.A. § 3311(c)) and still be within the wakesports zone. Based on actual VT Lake geomorphology, a 50-acre zone will allow for a minimum wakeboarding run of 3,000 feet, which allows for a 3 minute run at 11.5 miles per hour (16.7 feet / second) before leaving the area eligible for wakesports and allows for the wakeboat to be 200 feet from other vessels / swimmers without leaving wake-eligible area.

7. **CLIMATE:** *EXPLAIN HOW THE RULE IMPACTS THE CLIMATE IN THE STATE:*

The proposed rule is not expected to have any impact on Vermont's climate.

8. **OTHER:** *EXPLAIN HOW THE RULE IMPACT OTHER ASPECTS OF VERMONT'S ENVIRONMENT:*

The proposed rule is not expected to impact other aspects of Vermont's environment.

9. **SUFFICIENCY:** *DESCRIBE HOW THE ANALYSIS WAS CONDUCTED, IDENTIFYING RELEVANT INTERNAL AND/OR EXTERNAL SOURCES OF INFORMATION USED.*

The proposed rule is based on an extensive review of scientific literature, meetings with affected recreational user groups, conservation organizations, industry groups, and small businesses to obtain their input, multiple public consultation opportunities, field trials comparing wakeboat waves with conventional motorboat waves, review of legal precedent, and analysis of operational considerations associated with wakesports. The proposed rule also draws from the petition and supporting documents, which provides an exhaustive review of the impacts of wakesports on water quality, aquatic habitat, recreational opportunities, economic impacts, and other considerations. The Agency believes that the analysis and thought that has gone into this rule over the 11 months prior to rulemaking, plus an additional 7 months during formal rulemaking, exceeds the standards for sufficiency in the APA.

Public Input Maximization Plan

Instructions:

Agencies are encouraged to hold hearings as part of their strategy to maximize the involvement of the public in the development of rules. Please complete the form below by describing the agency's strategy for maximizing public input (what it did do, or will do to maximize the involvement of the public).

This form must accompany each filing made during the rulemaking process:

1. TITLE OF RULE FILING:

Vermont Use of Public Waters Rules

2. ADOPTING AGENCY:

Agency of Natural Resources

3. PLEASE DESCRIBE THE AGENCY'S STRATEGY TO MAXIMIZE PUBLIC INVOLVEMENT IN THE DEVELOPMENT OF THE PROPOSED RULE, LISTING THE STEPS THAT HAVE BEEN OR WILL BE TAKEN TO COMPLY WITH THAT STRATEGY:

DEC received a petition from the "Responsible Wakes for Vermont Lakes" Group in March 2022 and placed it on the Lakes and Ponds Rulemaking Page in April 2022, once it was marked administratively complete. To obtain public input on the petition, DEC held two public meetings in July 2022 (one in Richmond and the other in Manchester Center). There were hybrid meetings and over 80 people provided comment over the two meetings; around 65% of the comments were in favor of some sort of regulation. After the meetings, DEC also solicited written comments from the public and received over 300 comments during that period. Once again, 54% of the comments favored some form of regulation for wakeboats.

DEC then held 10 meetings with affected recreational user groups, private sector entities, industry groups, and conservation organizations with interest in this subject. DEC also consulted with our law enforcement partners regarding enforcement of any new rule focused on wakesports, including multiple meetings with Fish &

Public Input

Wildlife Game Wardens and the State Police Marine Division.

Finally, in February 2023, DEC held a third public meeting to solicit feedback on the draft rule, as it is different from what was in the petition. The petition called for wakeboats to be limited to zones that are 1,000 feet from shore, 20 feet deep, and a minimum of 60 contiguous acres. DEC's proposed rule would limit wakesports to areas that are 500 feet from shore, 20 feet deep, and a minimum of 50 contiguous acres. Over 100 people signed up to provide feedback during this meeting, and DEC invited 60 of them to speak for two minutes each and asked the others to submit written feedback (speakers were selected randomly).

DEC advertised all meetings via social media and press releases, and the meetings were well attended (250 people attended the February 2023 meeting) and were well-covered by the media.

With Secretary of State notice, DEC held two formal public hearings and also invited formal written comment on the rule. DEC received 759 comments. Collectively, DEC believes this strategy has maximized public input.

4. BEYOND GENERAL ADVERTISEMENTS, PLEASE LIST THE PEOPLE AND ORGANIZATIONS THAT HAVE BEEN OR WILL BE INVOLVED IN THE DEVELOPMENT OF THE PROPOSED RULE:

The Responsible Wakes for Vermont Lakes group (<http://responsiblewakes.org/>) submitted the petition to DEC that initiated this rulemaking process. Since then, DEC has consulted many organizations for their input on this proposed rule, including:

- Green Mountain Water Skiers
- VT Boat Retailers & Marinas
- Wakeboat Industry Groups (NMMA, WSIA, MRAA)
- VT Summer Camps
- Federation of Vermont Lakes and Ponds
- Pristine Lakes Group (NEK)
- VT Center for Ecosystem Studies
- VT Audubon

Public Input

- F&W Game Wardens & State Police Marine Division
- Angling Organizations such as Trout Unlimited
- Non-Motorized Boater organizations such as Northern Forest Canoe Trail
- Researchers who have published studies on Wakeboat Usage such as University of Minnesota St Anthony Falls Laboratory staff

Scientific Information Statement

THIS FORM IS ONLY REQUIRED IF THE RULE RELIES ON SCIENTIFIC INFORMATION FOR ITS VALIDITY.

PLEASE REMOVE THIS FORM PRIOR TO DELIVERY IF IT DOES NOT APPLY TO THIS RULE FILING:

Instructions:

In completing the Scientific Information Statement, an agency shall provide a summary of the scientific information including reference to any scientific studies upon which the proposed rule is based, for the purpose of validity.

1. TITLE OF RULE FILING:

Vermont Use of Public Waters Rules

2. ADOPTING AGENCY:

Agency of Natural Resources

3. BRIEF EXPLANATION OF SCIENTIFIC INFORMATION:

Staff from the DEC Lakes and Ponds Program conducted a review of peer reviewed literature and federal and state agency studies on the subjects of wakeboat and wakesports impacts on 1) shoreline erosion; 2) lake bottom sediment disturbance; and 3) transport of aquatic invasive species. The three separate analyses DEC performed are presented below, along with their conclusions which led to the proposed rule.

1. Justification for a distance from shore requirement for wakeboats.

In the petition to amend the Use of Public Waters Rules submitted to the Agency of Natural Resources by the Responsible Wakes for Vermont Lakes, the petitioners propose that the use of wakeboats for wakeboarding and wake surfing shall only occur in water at least 1000 feet from shore in Vermont's lakes that are jurisdictional to 10 V.S.A. § 1424.

The operation of wakeboats operating in wakesports mode has been shown to result in waves with substantially greater height and energy than "conventional" motorized boats. Wave energy increases exponentially with wave height, and these larger waves have substantially greater potential to cause shoreline erosion, which can result in increased phosphorus loading to lakes and damage littoral habitats for a variety of species (Asplund, 2000), including the common loon (Paugh, 2006). Additionally, larger waves have the potential to create dangerous conditions for small watercrafts or swimmers and to damage property of lakeshore residents.

The State has an interest in preservation of lake shorelines and associated littoral habitats, which has been codified in the Shoreland Protection Act (10 V.S.A. § 1441). The state also has an interest in maintaining safe conditions for shared uses with the existing 200-foot Shoreline Safety Zone established in Vermont's Use of Public Waters Rules (10 V.S.A. § 1424; Environmental Protection Rule Ch. 32). Finally, the State has an interest in preventing increased phosphorus loading from lake sediments and sediment resuspension resulting from high-energy waves, which could lead to violations of the Vermont Water Quality Standards. To maintain the level of wave disturbance permitted under these existing rules and to prevent additional shoreline degradation and sediment nutrient loadign, DEC has reviewed the available literature to establish guidelines for the operation of wakeboats.

DEC has examined the literature cited in the petition, as well as other available literature, to evaluate the dissipation of wave energy with distance from shore. There are relatively few studies addressing this topic directly in the context of wakeboats, although there are several studies that address the impacts of boat wakes more broadly. A recent study by Marr et al. (2022) measured wave energy from wakeboats and

"traditional" waterski boats operating both in maximum wake generating mode or while under normal operating conditions. The Marr et al. study found that distances from shore of 425 to more than 600 feet were needed to let waves from wakeboats in wake surfing mode dissipate to energies comparable with the reference condition, depending on whether the ski boats were producing maximum possible wake (plowing) or driving under normal operating conditions (planing). Of note is that for wave power and wave energy from wakeboats to dissipate to similar levels from conventional motorboats 200 feet from shore, 600 ft and 575 feet were needed respectively, and wave height needed greater than 500 feet. These findings are roughly consistent with a study by MacFarlane (2018) which found that wave height took over 400 ft to reach a reference condition of other motorized craft operating at 100 feet from shore. A study by Mercier-Blais and Prairie (2014) found that distances of 300 m (984 ft) were needed to dissipate wave energy from wakeboats to the point where they were similar to wind-induced waves on Lake Memphremagog, but did not compare to other forms of motorized boats. DEC's intent is to regulate wakeboats so that their impacts are equivalent to existing uses, not to subject wakeboats to more stringent regulations than are applied to other watercraft with respect to wave height, energy and power, which is why DEC settled on a 500 ft. recommendation more consistent with Marr et al. (2022) and MacFarlane (2018). Mercier-Blais and Prairie (2014) also highlighted the role of lake bathymetry, demonstrating that lakes with steeper lakebed gradients have less wave energy attenuation as the wave approaches the shore than lakes with more gradual depth profiles, and in a second lake with more gradual slopes than Lake Memphremagog, wave energy was similar to natural wave activity at 200 m (656 ft). Mercer-Blais and Prairie also directly observed significant sediment resuspension following passage of wakeboats at all distances up to 200 m (656 ft), with the highest resuspension when operating in wake-surf mode.

Studies

Fay, E., Gunderson, A. and Anderson, A. (2022). This study used a computational fluid dynamics model to estimate the propagation of waves from wakeboats. This study concluded that wakeboats operating at 200 feet from shore should have minimal impacts on lake shores, but there was limited data collected, and raw data was not presented in a way that could be easily reviewed. There were no direct measurements of wave energy at different distances from shore, or comparisons to other watercraft. The study was sponsored by the National Marine Manufacturers Association, and the journal is not considered credible.

Goudey C., and. Girod, L. G. (2015). This study was sponsored by the Water Sports Industry association. It combines numerical modeling with measurements of wave height from wakeboats operating in different modes. The study concludes that a distance of 200 feet is sufficient to prevent negative impacts from boat wakes; however, the justification for this is based on average wave strength per unit time in comparison with wind-induced waves, rather than maximum wave power (which is more relevant when considering erosive impacts or sediment resuspension).

MacFarlane G. (2018). This study was performed by a professor at the University of Tasmania. Wave height and energy from several wakeboats and two benchmark boats (a ski boat and a runabout) were measured to a distance of 400 feet from shoreline. It was found that the wave energy from the wakeboats approached that of the reference condition (the reference boats at 100 feet) at around 400 feet (note that for a reference condition of 200 feet, similar to current VT guidelines, the distance would be greater and perhaps closer to 500 feet).

Marr et al. (2022). This study contained detailed measurements of wave energy from wakeboats operating

along a transect out to 600 ft. from shore. This study found that distances from 425 to greater than 600 feet were needed to allow wake energy to dissipate to the levels caused by waterski boats, depending on whether the reference boats were operated in maximum wake mode (low-speed plowing mode) or under normal operating condition (planing mode). This study also noted that wakeboats generated comparable wave energies at distances of 100 feet or greater regardless of whether the ballast tanks were filled, but that wave shaping devices had a greater impact on wave energy.

Mercier-Blais S., and Prairie H. (2014). This study measured wave energy and sediment resuspension at lake shorelines with passage of wakeboats operating in different modes (planing, wakeboarding, and wakesurfing modes). There was no comparison to non-wakeboats as a reference condition, but wave energies and sediment resuspension were significantly enhanced at all distances up to 200 m (the maximum distance measured in the study). The study recommended that wakeboats only operate in wakesport mode at distances greater than 300 m (984 feet) from shore.

Ruprecht et al. (2015). This study measured wakes produced by wakeboats in both wakeboarding and wakesurfing modes, and at different speeds. The largest wakes were observed at speeds of 10 m.p.h., which is close to normal operating speed for wake surfing, but lower than normal speed for wakeboarding or waterskiing. The study found that while wakeboarding and waterskiing the boats produced similar wakes, but wake surfing produced wakes 3.8 times more energetic than wake boarding under normal operating conditions.

Conclusion and Recommendations

Based on the evidence from field studies directly measuring the energy and height of wakeboat waves, wakeboats operating in wakesurf or wakeboarding mode require between 425 and greater than 600 feet for wave

energy to attenuate to the levels of other watercraft operating 200 feet from shore. The precise distances are contingent upon lake bathymetry (depth, lakebed slope), as well as the specific boats in question. Based on the evidence reviewed, DEC believes that current evidence does not support the 1000 foot distance from shore recommended in the petition. To prevent shoreland erosion and associated phosphorus loading, littoral habitat degradation, lake sediment resuspension, and property damage, and to maintain the current status quo established by the 200 foot Shoreland Safety Zone in 23 V.S.A. § 3311(c) and the Use of Public Waters Rules with respect to wave energy, DEC recommends requiring that wakeboats may only operate in wakesports mode (with full ballast tanks and/or other wave enhancing features engaged) at a distance of 500 feet from shore on all sides. This distance, along with other factors, will be used to define the lakes where wakesports are eligible.

2. Justification for a depth requirement for wakesports.

In the petition to amend the Use of Public Waters Rules submitted to the Agency of Natural Resources by the Responsible Wakes for Vermont Lakes, the petitioners propose that the use of wakeboats for wakeboarding and wake surfing shall only occur in water depths of 20 feet or greater in Vermont's lakes that are jurisdictional to 10 V.S.A. § 1424.

The operation of wake-generating boats in wakesport-mode in shallow waters has been shown to have impacts on wake energy and lakebed sediments. Boat wake energy from all types of motorized watercraft, not just wake sports boats, is reduced as the depth of a waterbody increases. Recreation in deeper waters generates lower energy waves from wake producing vessels. Additionally, the operation of wakeboats in shallow waterbodies can cause the suspension of nutrient rich lakebed sediments, and cause scouring and erosion on the lakebed due to the creation of a slipstream, the powerful jet of water driven by the propeller towards the lakebed. (Ellis et al. 2002). Wakes are most

destructive in shallow and narrow waterways because wake energy does not have the opportunity to dissipate over distance (FitzGerald et al. 2011).

With anecdotal and observed evidence of increased turbidity, suspension of nutrient-rich sediments, and the generation of high-energy wakes caused from wakesports in shallow waters, DEC looks to management decisions/recommendations to minimize the water quality impacts of these recreational activities. Since depth typically increases with distance from shore, by implementing a rule that prevents the operation of wakeboats in wakesport mode at a specific setback from the shoreline, wave energy can dissipate prior to meeting the shoreline. Many lakes are deep enough that this setback from the shoreline will also prevent impacts to the lakebed. However, there are shallow lakes where even with a setback from shoreline, significant lakebed impacts could occur.

DEC reviewed literature submitted by the petitioners and other available scientific literature sources to determine whether there was a scientific justification to recommend a depth threshold for the operation of wakeboats in wakesport mode. There are many factors that influence how a wake behaves, including the boat size, boat speed, water depth, type of lake-bottom sediments (geology), and lake size (FitzGerald et al. 2011). In field studies, boat speed, size, and water depth were the critical factors affecting resuspension with a specific lakebed (Beachler and Hill 2003). According to a recent study that included an examination of propeller wash on vertical mixing, sediment scour/suspension, and aquatic organisms, "boats of all sizes produce propeller wash and, at a certain depth the wash begins to interact with the thermocline, lake bottom, vegetation, and aquatic habitats. These complex interactions are not well-studied, and . . . are a priority area for future research." (Marr et al. 2022). Due to the presence of many interacting factors, determining a depth for the operation of a wakeboat in wakesport mode, there is not one number for feet of depth that stands out in the

literature, however, DEC examined several studies in this area to determine an appropriate depth that is protective of Vermont's lakes.

Studies

Raymond and Galvez-Cloutier (2015) The effects of propeller wash appeared to have penetrated up to 16 ft (5 meters) deep for the condition associated with 10 mph and biased ballasting (i.e., wakesurfing).

Fay, E., Gunderson, A. and Anderson, A. (2022) The authors used a computational fluid dynamics (CFD) simulation that shows that if a wake surf boat is operated 200 ft from shore and in at least 10 ft of water, the environmental impact is minimal. CFD utilizes high performance computing to numerically solve the equations governing fluid flow.

Beachler, M.M. and D.F. Hill. (2003) As water depths increase, the band of boat speed that induces near bed velocities greater than 25 cm/s (velocity required to disturb .3mm sand), is steadily shrinking. Beyond a depth of 2.75 meters (9.0 ft), the near bed velocity never exceeds this critical value, and therefore causes minimal potential for impact. The minimum depth is a function of boat size, power, and sediment grain size. For 50 micrometer silt, minimum depth for disturbance is 4.6 m (15.1 ft), for coarser bed material 1.0 mm, 1.8 meters (5.9 ft) depth. These are conservative estimates meant to prevent bottom stirring for all boat speeds.

[Unpublished] Wisconsin Department of Natural Resources and TerraVigilis (2022) Direct measurements of wakeboats' propeller wash were made while wakeboats were operated in wake surf mode were obtained demonstrating downwash energy effects to a depth 20 ft of water. Other typical motorized lake vessels (pontoon boats, inboard jet drive [PWC], and fishing boats) tested under identical conditions demonstrated downwash energy effects to only 3 to 5 ft of water. In conclusion, these researchers found that:

- Propeller downwash characteristics have been measured showing significant bottom effects from Wakeboard boats

in "surf mode" at depths up to 20 feet. This depth effect is not observed from the other three categories of vessels owing to reduced engine power, propeller angles, hull design, lack of ballasting, and the mode of operation ("planing")

- Bottom impacts from wakeboard boats in surf mode have a significant impact on sediment redistribution and nutrient release into the water column after periods of less than 30 minutes (25% increase in phosphorous). This effect was measured in depths of 5-8'. The wakeboard survey course was in 15' to 25' of water at 200' from shore.

Ray (2020) : According to modeling results, wakeboat slip-streams have the potential to affect bed sediments at 33 feet of depth (the slipstream, the powerful jet of water driven by the propeller towards the lakebed). Lakebed sediments at depths of up to 7 feet to 12 feet are likely to be disturbed by boat propagated waves, while wind waves are likely only to regularly disturb sediments at depths up to 5 feet.

Conclusion and Recommendations:

Based on both modeled and empirical data, the downstream jet (lakebed) impacts of wakeboat use in wakesport mode can be seen in up to 33 feet of depth with a minimum protective depth identified as 5.9 feet, for some lake types. The lower end of 5.9 feet of depth was specifically identified for a coarse grain sand, and not protective of finer sediment lakebeds. Based on the above information, a minimum of 10 feet of depth does not appear sufficient to reasonably prevent harmful water quality impacts from the use of a wakeboat in wakesport mode. DEC recommends requiring a minimum depth of 20 feet for the operation of wakeboats in wakesport mode to prevent the suspension of finer-grained sediments on the lake bottom and to prevent turbidity.

3. Justification for a Home Lake Rule.

Wakeboats and AIS - Draft - October 21, 2022

Proposed Rule: In order to comply with Act 67 of 2017 (10 V.S.A. § 1454), a wakeboat must have one "home

lake" for a given calendar year and display a current Agency-issued decal identifying the wakeboat's "home lake" for the calendar year. A wakeboat's "home lake" is the only lake, pond, or reservoir at which that wakeboat will be used for the calendar year, except when the decontamination requirement of Section 3.8(d) has been satisfied. 3.8(d): Prior to entering a Vermont waterbody other than the wakeboat's home lake, and prior to re-entering the waters of the home lake after use of the wakeboat at any other waterbody, the wakeboat must be decontaminated at an Agency-approved decontamination service provider. A wakeboat user may be requested to provide proof of decontamination at public access areas. All provisions of 10 V.S.A. § 1454 regarding aquatic nuisance species inspection apply, and wakeboat users shall drain the ballast tanks of their boats to the fullest extent practicable after leaving waters of the state.

Justification: Aquatic invasive species (AIS) are non-native organisms that cause significant negative effects when introduced to inland lakes and other aquatic ecosystems; the primary mechanism whereby invasive species are introduced into waterbodies is through boating. Vermont statute (10 V.S.A. § 1454 (d)(1)(A)) states, "When leaving a water of the State and prior to transport away from the area where the vessel left the water, a person operating a vessel shall drain the vessel, trailer, and other equipment of water, including water in live wells, ballast tanks, and bilge areas." Furthermore, the Lake Champlain Basin Aquatic Nuisance Species Management Plan (2005), which serves as a proxy plan for the entire State of Vermont, prioritizes the need for preventing accidental AIS introductions, which may be greatly increased by wakeboats due to the presence of large ballast tanks that can be filled from or emptied directly into the water body they are operating on.

Peer-reviewed scientific research (Campbell et al 2016) has found that due to the presence of ballast systems, which are difficult or impossible for a boater to completely drain, wakeboats maintain and transport

relatively large volumes of residual water (mean water volume 31.7 L) even after drain pumps run dry and that live organisms can be found in residual water for at least a week after use. Additional research has shown that ballast tanks from wakeboats operated on a lake infested with the Zebra Mussel (*Dreissena polymorpha*) typically carried 247 Zebra Mussel veligers per sample (Doll 2018), which was much greater than stern drive motor compartments (13 veligers per sample), outboard motor lower units (1 veliger per sample), live wells, or bilges (in other words, zebra mussels can hitch a ride in all sorts of boats, but because wakeboats generally take on the most water, they have the greatest chances to transport the greatest numbers of invaders). Although wakeboat ballast tanks are typically drained before trailering, they are rarely ever completely dry which increases the survival time for any invasive species trapped inside. Doll (2018) found that 5% of zebra mussel veligers remained alive in ballast tanks after 48 hours. Transportation of other invasive species and fish pathogens is also possible, and the greater propeller turbulence and increased scouring caused by wakeboats may result in fragmentation and proliferation of aquatic invasive plants (Keller 2017). Finally, Dalton and Cottrell (2013) found that recreational boats, including wakeboats, circulate large amounts of raw water when in use, and if not drained and dried correctly can transport zebra mussel larvae, and transported veligers can be a serious risk to non-infested bodies of water, especially if multiple boats are involved.

Considering the statutory framework, the clearly demonstrated difficulties for ballasted boats to fully comply with the AIS spread prevention requirements and guidelines that require draining, and the demonstrated presence of AIS in residual wakeboat waters, DEC believes that without additional specific regulation and practical methods, wakeboats are likely to violate statute and present an unacceptable risk of AIS spread. Potential spread of AIS also creates a use conflict, which must, as per Section 2.6 of the Use of Public Waters Rules, be managed using the least restrictive

approach practicable that adequately addresses the conflicts. The home lake rule, when combined with the decontamination requirements for inter-lake use of wakeboats, is a solution that significantly reduces the risk of AIS spread while not restricting use of wakeboats on wakesports-eligible lakes.

Finally, there is anecdotal information in Vermont suggesting that most wakeboat owners do not trailer their boats to more than one waterbody, or keep their boat moored at the same waterbody year-round, and therefore, DEC expects that this rule would impact only a very small number of boaters. It is worth having the requirement in place, however, as all it takes is one boat to start a costly AIS infestation.

Other Jurisdiction Practice / Precedent: Other states are grappling with this issue as well, and some have taken similar steps to what Vermont is proposing or even have stricter watercraft AIS inspection regimes already in place that partially or fully address these concerns. For example:

- Wyoming has produced standard watercraft inspection and decontamination procedures to be followed by authorized AIS inspectors to prevent the spread of AIS into and within Wyoming. Wakeboard boats are considered high-risk and must undergo an inspection to verify that no zebra mussels or other AIS can be found on hull, engine, or trailer and that ballast, bilge, and live-wells are drained. To decontaminate internal ballast tanks, hot water of no greater than 120°F must be flushed through the intake and into the ballast tank and drained.
- The Lake George Commission operates a rigorous and mandatory boat inspection and decontamination program at all public access areas around the lake. All trailered boats must be inspected and "sealed" at a regional inspection facility before launching into Lake George. Once inspected (and decontaminated if not clean, drained and dry), boaters can launch at that site or go to their favorite launch on Lake George (public or private).

- Montana passed a law, HB 608, in 2019 that requires wakeboarding boats to undergo a mandatory decontamination process to curb the threat of aquatic invasive species, and it establishes a \$50 fee for boats with ballasts or bladders entering the state. According to estimates by legislative staff, the fee could generate \$100,000 annually. Ballast boats that arrive at an inspection station that isn't set up to handle them will be padlocked to ensure they can't launch in a body of water and diverted to a regional office for inspection. Other Western states also charge decontamination fees for ballast boats. The act makes an exception for boat owners who can prove they haven't launched in any water body for the previous 30 days.
- In South Dakota, the South Dakota Game, Fish and Parks Commission created a new rule that requires boat owners whose boats have been removed from a containment water and are holding one or more gallons of water to decontaminate those boats before they can be launched again. Further, South Dakota created "containment zones" for waters already infested with AIS, where boats used in these waters must be registered, and any boats included in the registry may not launch into any other water body or be transported outside the transportation zone without being decontaminated.
- New Hampshire: To reduce the spread of AIS, NH operates the Lake Host Program, which is run by the New Hampshire Lakes Association (NH LAKES) and funded in part by grants from NHDES and supported by volunteers. The Lake Host Program is an outreach and inspection program that puts staff at 100 of the highest-use boat launch sites in the state. Lake Hosts are trained by NHDES and NH LAKES to educate boaters about AIS and their impacts and spread, and they also conduct courtesy boat inspections to spot and remove AIS before the boater launches and after they pull out of a waterbody. NHDES awards over \$260,000 a year for these efforts, and those grants in turn leverage several hundreds of thousands of dollars from other sources to support this important program. Additionally, an out-of-state boater decal program recently went into

effect, requiring boaters with vessels registered in a state other than New Hampshire to purchase an invasive species decal. An online vendor site was established with information about AIS and a portal to purchase a \$20 decal, which they affix to their vessel; proceeds from decal sales will be used for prevention and control efforts for AIS infestations in New Hampshire.

Weaknesses: The home lake rule concept is not without certain weaknesses that will be explored here, as well as opportunities to mitigate those weaknesses:

- **Enforceability:** To provide some context for a discussion on enforceability, some background about the current situation is required. While DEC administers the Use of Public Waters Rules, enforcement of these rules is carried out by Fish and Wildlife Department Game Wardens, State Police Marine Division, and to a lesser extent, local law enforcement. 10 V.S.A. § 1454 introduces the principles of no-cost boat wash and aquatic nuisance species inspection stations, that require vessel inspection and decontamination under certain circumstances. The inspection stations are staffed at inland lakes via the Vermont Public Boat Access Greeter Program run by the DEC and via the Boat Launch Steward Program at Lake Champlain by the Lake Champlain Basin Program.

Under 10 V.S.A. § 1454(c), staff at aquatic nuisance control inspection stations (Greeters and Boat Launch Stewards) have authorities to identify vessels for inspection and decontamination and to inform a person transporting a vessel if they observe a violation of 10 V.S.A. § 50 or 10 V.S.A. § 1424 or the Use of Public Waters Rules. Staff at the inspection stations can also report violations to law enforcement officials. If a wakeboat arrives at an access area without a "home lake" sticker or a sticker from another home lake and no evidence of decontamination, and the owner insists on launching, all the greeters can do is inform them they are violating the Use of Public Waters Rule and report them to law enforcement. If there are no greeters present, concerned residents or other public waters users can only inform relevant law enforcement

officials. There is also no way to prevent someone from a given home lake, with a sticker, from taking their wakeboat to a waterbody outside the state and then returning to the home lake without decontamination. These challenges are not unique to a potential wakeboat rule, however, and would be addressed via an accompanying educational and outreach program to inform boaters about the purpose and requirements of this new rule. Furthermore, Vermont Fish and Wildlife Department Game Wardens who are the primary law enforcement officials charged with enforcing the Use of Public Waters Rules have been consulted about this regulation and are supportive.

- Home Lake Sticker Production and Distribution: DEC will need to develop and implement a system to receive applications from the public for home lake stickers and produce / deliver the stickers, and the stickers must be robust enough to withstand one season worth of use.

- Decontamination Stations: DEC will identify and publish the names and addresses of marinas and boat retailers that are willing to provide decontamination services to allow for inter-lake boat use.

- General Situation around Vermont Funding for AIS Prevention: The more restrictive inspection regimes in other states, such as those in certain parts of New York that make inspection and decontamination mandatory upon entry and exit to a public water, are not feasible in Vermont as statute (10 V.S.A. § 1454) does not provide for them and the Vermont DEC Lakes and Ponds Program does not have the financial or staff capacity to administer these types of control measures.

Therefore, the approach to regulation takes the current realities of boat operation and regulation in Vermont into consideration. For example, while some jurisdictions such as Colorado require that an expensive pressure washer be used to fully decontaminate wakeboats, such as a CD3 cleaning vacuum, Vermont DEC does not have the financial capacity to purchase these units for our access areas and does not have the staff to operate them.

- **Residual Water Transport in Vessels:** In addition to ballast tanks, live wells (a.k.a. bait boxes) and bilge pumps can also carry residual water after leaving a waterbody. However, there is legislative exception which states that boaters are not required to drain bait boxes (10 V.S.A. § 1454 (d)(1)(a)(i)) and bilge pumps can be drained easily; the fact that boaters often choose not to do this and this statutory provision is difficult to enforce does not equate to the situation with most ballast tanks, which have been shown to be, for many tanks, impossible to fully drain while on a flat surface at an access area. Therefore, a specific rule for boats with ballast tanks is necessary.

- **Fairness:** Rule is less impactful on wakeboat owners who use their wakeboat in only one waterbody per year, through use of a mooring / marina or ownership of lake front property there may be the appearance of favorable treatment to those who own lakefront property

Conclusion: In order to reduce the risk of spreading aquatic invasive species through use of wakeboats, DEC recommends including the home lake rule provision in the wakeboat rule and making it applicable to all waters.

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