

Answers to some frequently asked questions about the Town of Maidstone's petition to reclassify Maidstone Lake

August 25, 2021

Overview:

This document addresses some questions that have been raised in the community concerning the development of the petition to reclassify Maidstone Lake. The answers were developed with input and final review by Oliver Pierson, DEC Lakes and Ponds Program Manager, and Ben Copans, DEC Watershed Coordinator - St Johnsbury.

Maidstone Lake is currently recognized as one of the cleanest lakes in Vermont. This beautiful lake is enjoyed by many for swimming, fishing, and boating, and is a prized location for a camp or a home. However, water quality measurements taken since 1994 show a 25 year trend of increasing phosphorus concentration, resulting in a State report card trend score of "poor", with a corresponding water quality standard status of "stressed". This increasing phosphorous is an early indicator of the degradation of the water quality and ecosystem. We are fortunate, unlike people at many of Vermont's other lakes and streams, to have the opportunity to take actions now that will help preserve our lake and surrounding ecosystem. Reclassification enables us to access greater resources and focus on preserving our lake.

The development of this petition is a collaborative effort sponsored by the Town of Maidstone and co-sponsored by the Maidstone Lake Association and the Essex County Natural Resource Conservation District. The petition seeks to reclassify Maidstone Lake from its current classification as a B(2) lake for all uses to an A(1) lake for aesthetics, because the aesthetic use criteria are the drivers of water quality degradation. During the preparation of the petition, we have reached out to the logging community in the Maidstone Lake watershed, Vermont Department of Forrester and Parks, Vermont Department of Fish and Wildlife, residents of the Town of Maidstone, shoreland owners, abutting towns, and our regional planning and conservation organizations, all of whom are considered to be essential parts of our local community and must be notified of our intent to submit this petition. Most have already commented in letters of support that they feel the reclassification will be in the best interests of the general public and the abutting municipalities.

The petition will be submitted to Vermont's Department of Environmental Conservation (DEC) Watershed Management Division, and has the support of the Lakes and Ponds Program Manager. Final approval by the State is a complex and lengthy process which may take a few years. DEC views the logging community in the Maidstone Lake watershed as an essential part of Vermont's economic fabric and wants that community to be part of any solution that addresses the significantly increasing total phosphorus trends that Maidstone Lake is experiencing. DEC also seeks to work with shoreland property owners, the Town Road Commissioner and Selectboard, Weyerhaeuser, farmers, and any other businesses in the Lake's watershed to try to reverse the deteriorating water quality trends. Important opportunities to do this include reclassification, the development of a Maidstone Lake Watershed Action Plan which DEC has just funded, and

voluntary projects, funded by DEC or other actors, that will address any identified water quality stressors.

There is no connection between reclassification and the access to or use of public waters. The existing boating rules for Maidstone Lake will **not** change as a result of reclassification. Furthermore, access to the campground or the public beach will not change as a result of reclassification. Concerned members of the community, the organizations sponsoring this petition, and DEC hope to get funding to implement **voluntary** stormwater abatement projects that are linked to water quality improvements. The success of this reclassification petition will increase the likelihood of Maidstone-related projects being selected for funding.

Questions:

Have there been any public meetings during which the petition was discussed?

The following public meetings have been held:

- **May 3, 2021 Maidstone Selectboard meeting, open to the public**

The following is quoted from the Minutes for that meeting:

RECLASSIFYING OF MAIDSTONE LAKE:

The possibility of seeking a reclassification of Maidstone Lake from its current B(2) classification to A(1) classification was addressed and discussed. Oliver Pierson, Lakes and Ponds Program Manager, Vermont Department of Environmental Conservation, gave a presentation entitled “Reclassification of Maidstone Lake: Using Nutrient Criteria to Increase Protections for High Quality Waters Under VT’s Water Quality Standards”. The process of reclassification will involve discussions with all stakeholders, i.e., Maidstone citizens and owners of land abutting the lake or in the lake’s watershed. All agree that community support is very important. When the presentation and the following discussion period concluded, Bob Snowman made a motion that the Town will support the reclassification of Maidstone Lake to A(1). Brad seconded the motion. All voted in favor.

- **July 10, 2021 Maidstone Lake Association Annual Meeting, open to the public; all lakeshore property owners invited**

Presentation made at the Annual Maidstone Lake Association (MLA) Meeting to which all lakeshore property owners are invited. Subject discussed in detail and over 40 signatures were collected during the meeting.

The following is quoted from the MLA annual report that was distributed at the meeting:

Reclassification of Maidstone Lake: With the support of The Town of Maidstone, the Maidstone Lake Association, and the Essex County Natural Resource Conservation District, a petition is being prepared for submission to the Vermont Department of Environmental Conservation to reclassify Maidstone Lake from its current designation as a B(2) Lake for a number of uses to an A(1) Lake for a number of uses. The petition process requires the petitioners to reach out to the surrounding municipalities and

stakeholders to inform them that we are submitting the petition, to explain why we are submitting the petition, and to establish if the abutting municipalities and stakeholders support the petition.

- **July 12, 2021 Maidstone Selectboard meeting, open to the public**

The following is quoted from the Minutes for that meeting:

MAIDSTONE LAKE RECLASSIFICATION:

Chris von Alt is seeking approval from the Selectboard for the Town of Maidstone to be a primary sponsor of the petition for the Reclassification of Maidstone Lake. Chris and Amy will work together to schedule a Zoom meeting regarding the Reclassification Petition to which all citizens of Maidstone will be invited. Bob Snowman made a motion that the Selectboard sponsor the petition for Maidstone Lake Reclassification. Doug seconded the motion. The motion carried.

- **August 4, 2021 Maidstone Public Meeting via Zoom**

The Town of Maidstone held a public Zoom meeting, which was properly warned, to discuss the Reclassification of Maidstone Lake. Chris von Alt made a presentation that explained all aspects of the proposed reclassification. A question and answer discussion period followed the presentation. The recording of the 42 minute long Zoom meeting is currently available on the Maidstone Website:

<http://www.maidstone-vt.org/meetings>

Will the name of the Maidstone Lake be changed if the petition is approved?

No. The Petition that the Town of Maidstone is submitting does not request a name change.

What exactly is the reclassification?

This question does not have a short answer. Some background information is presented first so the question can be answered.

In 1972, the United States Clean Water Act was established. Among other things, it required each state and territory to adopt Water Quality Standards (WQS) for all intrastate waters and to provide those WQS to the EPA for review and approval. WQS describe the desired condition of a water body and the criteria with which that will be measured. Water Quality Standards consist of 3 core components for each classification: designated uses, the criteria that will be evaluated in order to protect those uses, and anti-degradation requirements. The Vermont Water Quality Standards (VWQS) that have been approved by the EPA may be found at:

[VWQS Approved by the EPA](#)

Vermont Statute 10 V.S.A. Chapter 47 established water body classifications in Section 1252 and assigned these classifications to lakes in Vermont in Section 1253. The VWQS established uses, criteria, and anti-degradation requirements for each of these classifications. The VWQS further

established that Maidstone Lake is classified as a B(2) lake for all uses as well as a cold water fish habitat.¹ (See VWQS Appendix F (c)).

As shown in Table 1 below, the water quality criteria for aesthetic uses under Maidstone Lake’s current classification as a B(2) lake represent a severe degradation from the Lake’s documented natural condition. The B(2) classification is therefore inconsistent with the VWQS Anti-degradation Policy (Section 29A-105) (c) (1). DEC lawyers contend that the State of Vermont is not required to take any action to stem the degradation of a lake’s water quality until it falls below the criteria established for its specified classification.

Allowing the quality of water in Maidstone Lake to degrade to below the criteria for a B(2) lake will increase the likelihood of summer algae blooms, will increase the possibility of the Lake's waters being closed to swimming, and will make the Lake more inviting to invasive species, therefore reducing the value of lakeshore properties. To be specific, if Maidstone Lake remains classified as a B(2) lake, the increase in the concentration of phosphorus that is allowed will accelerate its deterioration, which will significantly damage the enjoyment of uses such as boating, fishing, and swimming.

Reclassification of a lake changes the criteria for its uses as well as the anti-degradation requirements. A body of water may be assigned different classifications for different uses. The petition being prepared requests the reclassification of Maidstone Lake from a B(2) lake for aesthetic uses to an A(1) lake for aesthetic uses because the aesthetic use criteria are the drivers of water quality degradation. The changes in the criteria associated with this reclassification are shown in Table 1.

TABLE 1

	Maidstone Lake Natural Condition	Class A(1) Criteria	Classes A(2) and B(1) Criteria	Class B(2) Criteria
Nutrient Concentrations				
Total Phosphorus ³ (µg/L)	6.8	< 12	17	< 18
Nutrient Response Conditions				
Secchi Disk Depth (meters) ⁴	8.9	> 5	3.2	> 2.6
Chlorophyll-a (µg/L) ³	1.6	< 2.6	3.8	< 7
pH	Not available	Not to exceed 8.5 standard units.		
Turbidity	Not available	Consistent with the criteria in § 29A-302(4) of these rules. < 10 NTU for A(1), < 25 NTU for B(2)		
Dissolved Oxygen	10.9 - 13 depth dependent	Consistent with the criteria in § 29A-302(5) of these rules. (B) Warm Water Fish Habitat. Not less than 5 mg/l and 60% saturation at all times.		

¹ Vermont Agency of Natural Resources, Department of Environmental Conservation, Watershed Management Division, 2017, Vermont Water Quality Standards Environmental Protection Rule Chapter 29A, Appendix F (c) pp. 66, 40.

1. Compliance with nutrient criteria shall be achieved either by compliance with the nutrient concentration values specified above or by compliance with all nutrient response conditions. In situations where the applicable nutrient concentrations are achieved but the nutrient response conditions are not met as a result of nutrient enrichment, the Secretary may establish alternate nutrient concentration values on a site-specific basis, as necessary, to achieve compliance with the nutrient response conditions. All waters shall maintain a level of water quality that provides for the attainment and maintenance of the water quality standards of downstream waters.
2. Applies to lakes and reservoirs greater than 20 acres in surface area with a drainage area to surface area ratio less than 500:1, excluding Lake Champlain and Lake Memphremagog.
3. June through September mean not to be exceeded in the photosynthetic depth (euphotic) zone at a central location in the lake.
4. June through September mean not to be less at a central location in the lake.

The differences in criteria between a B(2) classification and an A(1) classification for all uses are included in Table 2 below.

TABLE 2

Uses	Criteria A(1)	Criteria B(2)
(a) Aquatic Biota	<p>A) Management Objectives. Waters shall be managed to achieve and maintain excellent biological integrity and aquatic biota and wildlife consistent with waters in their natural condition.</p> <p>(B) Biological Criteria. Measures of biological integrity for aquatic macroinvertebrate and fish assemblages consistent with waters in their natural condition.</p> <p>(C) Nutrient Criteria. The nutrient criteria are in Table 2 (Note: Table 2 only provides criteria for Rivers and Streams)</p>	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain good biological integrity.</p> <p>(B) Biological Criteria. Change from the natural condition for aquatic macroinvertebrate and fish assemblages not exceeding moderate changes in the relative proportions of taxonomic, functional, tolerant, and intolerant aquatic organisms.</p> <p>(C) Nutrient Criteria. The nutrient criteria are in Table 2. (Note: Table 2 only provides criteria for Rivers and Streams)</p>
(b) Aquatic Habitate	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain excellent quality aquatic habitat. The physical habitat structure, stream processes, and flow characteristics of rivers and streams and the physical character and water level of lakes and ponds shall be managed consistent with waters in their natural condition.</p> <p>(B) Criteria.</p> <p>(ii) Lakes, Ponds, and Reservoirs. No change in aquatic habitat measures outside the range of the natural condition.</p> <p>(iii) Hydrology Criteria. Waters shall comply with the Hydrology Criteria in § 29A-304 of these rules.</p>	<p>Management Objectives. Waters shall be managed to achieve and maintain high quality aquatic habitat. The physical habitat structure, stream processes, and flow characteristics of rivers and streams and physical character and water level of lakes and ponds necessary to fully support all life-cycle functions of aquatic biota and wildlife, including overwintering and reproductive requirements, are maintained and protected</p> <p>(B) Criteria.</p> <p>(ii) Lakes, Ponds, and Reservoirs. Changes in aquatic habitat limited to moderate differences from the natural condition and consistent with high quality aquatic habitat. When such habitat changes are a result of water level fluctuation, compliance may be determined on the basis of aquatic habitat studies.</p>

Uses	Criteria A(1)	Criteria B(2)
(c) Aesthetic Conditions	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain excellent aesthetic quality.</p> <p>(B) Criteria.</p> <p>(i) Rivers and Streams. Water character, flows, water level, bed and channel characteristics, and flowing and falling waters in their natural condition.</p> <p>(ii) Lakes, Ponds, and Reservoirs. Refer to Table 3.</p>	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain good aesthetic quality.</p> <p>(B) Criteria.</p> <p>(i) Rivers and Streams. Water character, flows, water level, bed and channel characteristics, and flowing and falling water of good aesthetic value.</p> <p>(ii) Lakes, Ponds, and Reservoirs. Refer to Tables 1 and 3</p>
(d) Boating and related recreational uses	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain excellent quality boating as compatible with the natural condition.</p> <p>(B) Criteria. Boating to the full extent naturally feasible without degradation due to artificial flow and water level management or artificial physical impediments.</p>	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain a level of water quality compatible with good quality boating.</p> <p>(B) Criteria. Waters shall comply with the Hydrology Criteria in § 29A-304 of these rules.</p>
(e) Fishing and related recreational uses	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain excellent quality fishing consistent with the natural condition.</p> <p>(B) Criteria.</p> <p>(i) Measures of wild salmonid densities, biomass, and age composition consistent with those expected in waters in their natural condition.</p> <p>(ii) Waters that are designated cold water fish habitat shall comply with the Temperature Criteria in §29A-302(B) of these rules, which states: No increase in ambient temperature from the natural condition.</p>	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain a level of water quality compatible with good quality fishing.</p> <p>(B) Criteria.</p> <p>(i) Measures of wild salmonid densities, biomass, and age composition indicative of good population levels.</p> <p>(ii) Waters that are designated cold water fish habitat shall comply with the Temperature Criteria in § 29A-302(B) of these rules.</p>
(f) Swimming and primary contact recreation	<p>(A) Management Objectives. Waters shall be managed to achieve and maintain a level of water quality compatible with excellent quality swimming and other primary contact recreation with negligible risk of illness or injury from conditions that are a result of human activities.</p> <p>(B) Criteria. Escherichia coli – Not to exceed a geometric mean of 126 organisms/100ml obtained over a representative period of 60 days, and no more than 10% of samples above 235 organisms/100ml. None attributable to the discharge of wastes.</p>	<p>(A) Management Objectives. Where sustained direct contact with the water occurs, waters shall be managed to achieve and maintain a level of water quality compatible with good quality swimming and other primary contact recreation with very little risk of illness or injury from conditions that are a result of human activities.</p> <p>(B) Criteria. Escherichia coli - Not to exceed a geometric mean of 126 organisms/100ml obtained over a representative period of 60 days, and no more than 10% of samples above 235 organisms/ 100 ml. In waters receiving combined sewer overflows, the representative period shall be 30 days. The Secretary may, by permit condition, waive compliance with this criterion during all or any portion of the period between October 31 and April 1, provided that a health hazard is not created. The Secretary shall provide written notice to the Vermont Department of Health prior to issuing a permit waiving compliance with this criterion.</p>

Uses	Criteria A(1)	Criteria B(2)
(g) Public Water Source	(A) Management Objectives. Waters shall be managed to achieve and maintain a uniformly excellent character and a level of water quality highly suitable for use as a public water source with filtration and disinfection or other required treatment. (B) Criteria. Waters shall comply with the Escherichia coli Criteria in subsection (f)(1)(B) of this section.	(A) Management Objectives. Waters shall be managed to achieve and maintain a level of quality that is suitable for use as a public water source with filtration and disinfection or other required treatment. (B) Criteria. Waters shall comply with the Escherichia coli Criteria in subsection (f)(2)(B) of this section.
(h) Agricultural		Management Objectives. Waters shall be managed to achieve and maintain a level of quality that is suitable, without treatment, for irrigation of crops used for human consumption without cooking and suitable for other agricultural uses.

Table 2

What is Phosphorus and why should I care about the amount of it in Maidstone Lake?

Phosphorus is an essential nutrient for plants, animals, and humans. Under natural conditions phosphorus is typically scarce in water. Human activities, however, have resulted in excessive loading of phosphorus into many freshwater systems. This can cause water pollution by promoting excessive algae growth, particularly in lakes. Lakes that appear relatively clear in spring can resemble green soup in late summer due to algae blooms fueled by phosphorus. Water quality can be further impaired when bacteria consume dead algae and use up dissolved oxygen, suffocating fish and other aquatic life.

In some water bodies, the concentration of phosphorus is low enough to limit the growth of algae and/or aquatic plants. In this case, scientists say phosphorus is the limiting nutrient. For example, in water bodies having total phosphorus concentrations less than 10 parts per billion (ppb) (1 ppb equals about one drop in a railroad tank car), waters will be nutrient-poor and will not support large quantities of algae and aquatic plants. Today Maidstone Lake has a phosphorus concentration of 6.8 ppb (1 ug/liter = 1 ppb), so we do not typically have algae blooms. The problem is that the concentration of phosphorus in Maidstone Lake has been steadily increasing for the past 25 years. If we do nothing, the phosphorus will continue to rise and summer algae blooms and their associated fish kills can be expected.

If the concentration of Phosphorus is low now, what is the hurry - why can't we wait?

Maidstone Lake is considered to be an oligotrophic lake, i.e., low nutrient. There are compelling arguments to increase protections for oligotrophic lakes that have excellent water quality but have increasing levels of summer total phosphorus concentrations documented by ongoing water quality monitoring programs. The concern is that the water quality deterioration trend could lead to algae blooms and fish kills, resulting in beach closures and making the Lake an unhealthy place to fish or boat. Matthews, Merrell, and Thomas² established through their long-term

² Matthews, L., Merrell, K., Thomas, P., (2018). Is Vermont Losing its Oligotrophic Lakes?, NALMS Lakeline, Summer 2018 pp 16-18.

monitoring program that “Vermont’s Oligotrophic Lakes could be starting down a path of extinction” and no one is sure why. What we do know is that at some point, as the phosphorus concentration increases to around the level of a B(2) lake, a clear clean lake reaches a tipping point and suddenly it is no longer clear and clean during the summer months. Algae blooms start to occur, invasive plants move in, and the value of the lake decreases as beach closures and fish kills start to occur. Today, no one knows for sure when this tipping point will be reached. What we do know is that once that tipping point is reached, it becomes very expensive and perhaps impossible to turn the lake around and return it to the oligotrophic state. If we do not want Maidstone Lake to go down this path of extinction, we need to act now.

What changes for me if the lake is reclassified?

Nothing, unless you are interested in helping to protect the Lake. If you are interested in protecting the Lake, then additional resources may become available that, if you choose to participate, will help protect the Lake. The only change attributable to reclassifying to an A(1) lake is :

Existing Prohibitions in Class A waters:

- A direct discharge of any wastes that contained organisms pathogenic to human beings
- Indirect discharge systems (septic systems) with a design flow greater than 1,000 gallons per day
- Solid waste management facilities and application of biosolids or septage

Vermont laws that govern what can be done on Vermont lands that surround our lakes include but may not be limited to the Shoreland Protection Act and the Statute regarding the application of phosphorus fertilizer, both of which are discussed below:

Shoreland Protection Act: “The Vermont Legislature passed the Shoreland Protection Act, effective July 1, 2014, that regulates activities within 250 feet of the mean water level of lakes greater than 10 acres in size. The intent of the Shoreland Protection Act is to allow reasonable development along the shorelands of lakes and ponds while protecting aquatic habitat, water quality, and maintaining the natural stability of shorelines.”

[Link to the Shoreland Protection Act](#)

[Link to Shoreland Project Worksheet](#)

Application of Phosphorus fertilizer:

(1) “No person shall apply phosphorus fertilizer to turf except for:

(A) phosphorus fertilizer necessary for application to turf that is deficient in phosphorus as shown by a soil test performed no more than 18 months before the application of the fertilizer; or

(B) phosphorus fertilizer that is labeled as starter fertilizer and that is intended for application to turf when a property owner or an agent of a property owner is first establishing grass in turf via seed or sod procedures and the application of starter fertilizer is limited to the first growing season.”

[Link to 10 V.S.A. § 1266b Application of Phosphorous Fertilizer](#)

The reclassification of Maidstone Lake will not change the way these regulations are currently enforced.

Can I still maintain a lawn?

Yes, nothing in the petition or in reclassification will prevent you from maintaining your lawn in accordance with:

[Link to the Shoreland Protection Act](#)

[Link to 10 V.S.A. § 1266b Application of Phosphorous Fertilizer](#)

Reclassification of Maidstone Lake will not change how these Acts/Statutes are enforced.

Will the use of boats and other watercraft ever be limited or changed?

No, in fact, as discussed above, one of the uses the VWQS establishes is for boating and related recreational uses. The current petition does not seek to change the B(2) criteria for boating and related recreational uses. It will remain:

(A) Management Objectives. Waters shall be managed to achieve and maintain a **level of water quality** compatible with good quality boating.

(B) Criteria. Waters shall comply with the Hydrology Criteria in § 29A-304 of these rules.

What happens when the water quality standards are not met? Are there going to be regulations like on farms where inspectors come to the Lake and point out areas to be addressed and force landowners to comply with new regulations?

No, aside from a limitation on new huge hotel-size septic systems above 1,000 gallons of flow per day, the regulatory programs are pretty much the same as elsewhere. If there is a complaint about a failed septic system, the State will respond the same way whether the Lake is classified as an A(1) or a B(2).

Will any activities in the surrounding lands be limited (if the petition is approved)?

Reclassification does not control activities in lands around the Lake. There will not be any changes to Required Agricultural Practices already in place or Accepted Management Practices for logging activities; what is already on the books remains on the books and will be enforced in the usual manner.

Will there be enforcement and who will it be? If lawns are mowed up to the water's edge and deemed to be bad for water quality, will there be penalties? Or if there is not the ideal buffer?

Reclassification does not control activities in lands around the Lake, nor does reclassification involve regulations or enforcement of what property owners do on their land. The Shoreland Protection Act, a totally separate Vermont law, governs what property owners can do, and that Act's regulations do not change between an A(1) lake classification and a B(2) classification. Lawns are allowed to be maintained. The DEC encourages **voluntary** restoration of natural buffers where possible. The A(1) designation may help increase the availability of funding for shoreline restoration efforts where landowners are supportive.

Will permits be harder to get or revoked for camp/house improvements that were once approved?

No.

Are motors going to be regulated/banned?

No. Use of motorboats is not regulated by water classification.

Would the campground or beach possibly be affected if the water quality deteriorates?

Reclassification will not affect the campground or the beaches. However, if Maidstone Lake's water quality deteriorates to the point where algae blooms occur and the water is deemed unsafe for swimming, that would include the water at the campground and beaches. There are several lakes and ponds in Vermont that are considered impaired by phosphorus and have cleanup plans. These include Lake Memphremagog, Lake Champlain, Lake Carmi, and Ticklenaked Pond. Lake Carmi and Ticklenaked Pond are probably more similar to Maidstone Lake because they have smaller watersheds than Lake Champlain or Lake Memphremagog. There is a state park at Carmi and a Town Beach at Ticklenaked Pond, and no restrictions were considered as part of these cleanup plans or Total Maximum Daily Loads (TMDL's). As part of a cleanup plan, if Maidstone became impaired and required cleanup, some additional stormwater and shoreline restoration at the campground may be considered, but not limiting campers or beachgoers.