

Vermont Department of Environmental Conservation
Water Quality Division
Ticklenaked Pond Phosphorus TMDL
Fact Sheet
September, 2009

A TMDL addressing phosphorus pollution in Ticklenaked Pond, Ryegate, VT has been prepared and VTDEC is requesting public comment on the document.

Background

Ticklenaked Pond (waterbody VT14-07L02) is a 54 acre lake determined to be impaired by excessive phosphorus. Considerable monitoring and assessment attention has been directed towards the lake in two phases since 1999. Water quality deteriorated considerably from 1999 to 2005.

Numeric WQ Criteria

During 2007 and 2008, VTDEC carried out a comprehensive series of analyses aimed at deriving numeric phosphorus criteria for lakes and ponds. This was part of VTDEC's Nutrient Criteria initiative, which is reported in detail by VTDEC (2008). The criterion proposed for total phosphorus in Class B waters to protect aesthetic and aquatic life uses is 24 ppb. This criterion is adopted for the present TMDL. The current phosphorus concentration is 34 ppb as a summer annual long-term mean, and 41 ppb as a spring overturn (e.g., annual long-term) mean.

Total Loading Capacity

Loading capacity was determined using a published lake-specific modeling software that provides backcalculation of loads necessary to attain in-lake target concentrations, using a site-specific parameterized model of current loading and in-lake response. Using this approach the Total Loading Capacity was determined to be **104 kg P/yr**. The current load is 144 kg/yr.

Margin of Safety

The margin of safety in this TMDL is intended to ensure attainment of water quality standards. The margin is established at 10 kg/yr as an explicit additional load reduction goal.

Wasteload Allocation

No WLA is established under this TMDL since there are currently no existing permitted point source discharges to Ticklenaked Pond.

NPS Load Allocation

Since the WLA is zero, the non-point load allocation for phosphorus is established as the total loading capacity, minus the margin of safety. The total loading capacity is sub-allocated to watershed and internal components:

$$\text{External allocation} + \text{Internal Allocation} - \text{Margin of Safety} = \text{Total Load Allocation} \\ 104 \text{ kg/yr} + 0 \text{ kg/yr} - 10 \text{ kg/yr} = 94 \text{ kg/yr}$$

TMDL Summary

The TMDL is expressed as an annual load, consistent with other TMDL plans issued by WQD. The summary is shown as:

TMDL Category	Kg	%
Current Load	144	
Wasteload Allocation	0	
Load Allocation-External	94	
Load Allocation-Internal	0	
Margin of Safety	10	
Total Loading Capacity	104	
Load Reduction Required	40	28

Annual and Seasonal Variation

Such variation is expected in a lake system responding to NPS controls. The TMDL language indicates that monitoring data will be used to ensure that phosphorus concentrations in the lake decline to a level at or below the target.

Reasonable Assurances

Since no WLA is provided, no reasonable assurances are required. A companion implementation plan provides a listing of ANR, AAFM, and other programs that will be leveraged to implement the TMDL and “assure” compliance with the target.

Associated Implementation Plan

The Ticklenaked Pond Phosphorus Action Plan is drafted as a menu of prioritized actions, specific to the lake and outlet, the lakeshore, and the watershed. The plan identifies actions that will be taken to attain the target. A major component of these actions is in-lake treatment to inactivate internally-recycled phosphorus from the lake sediments. In order for such a treatment to be successful, it must be preceded by watershed non-point phosphorus controls. The Action Plan is not a component of the TMDL, but is being published simultaneous to the issuance of the TMDL.

A copy of the draft TMDL is available online at www.vtwaterquality.org, or by request from the Water Quality Division. Comments are being accepted until October 9, 2009. Comments will be accepted in electronic or paper form.

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