

Town of Windham
Env. & Sustainability Department

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MEMO

DATE: July 1, 2021

TO: Windham Planning Board
FROM: Gretchen Anderson, Environmental & Sustainability Coordinator
CC: Natural Resources Advisory Committee
Amanda Lessard, Planning Director
Steve Puleo, Planner

RE: Proposed Windham Shoreland Zoning and Land Use Map Amendments

In an April 6, 2021, memo to Town Council, the Natural Resources Advisory Committee (NRAC) outlined their recommendations to comply with the Maine Department of Environmental Protection (DEP)'s minimum shoreland zoning guidelines and to provide greater protection of the Town's impaired waterbodies by increasing the shoreland zones of the Pleasant River and the tributaries of all waterbodies.

The basis of these recommendations stemmed from language within the [State's 303\(d\) List of Impaired Waters](#) and corresponding Total Maximum Daily Loads (TMDL). As explained in the [Windham Watershed Prioritization Memo](#) from Cumberland County Soil and Water Conservation District (CCSWCD), a TMDL is developed for any waterbodies in the state that do not meet their designated classification and are classified as impaired on the 303(d) list. There are 5 impaired waterbodies in Windham: Black Brook, Colley Wright Brook, Inkhorn Brook, Otter Brook, and Pleasant River. These waterbodies fall under one of the following criteria to be considered impaired:

1. Current data (collected within five years) for a standard indicates either impaired use or a trend toward expected impairment within the listing period, and quantitative or qualitative data/information from professional sources indicates that the cause of impaired use is from a pollutant(s).
2. Water quality models predict impaired use for a standard under current loading, and quantitative or qualitative data/information from professional sources indicates that the cause of impaired use is from a pollutant(s); or,
3. Waters that were previously listed on the State's 303(d) list of impaired waters, based on current or old data that indicated the involvement of a pollutant(s), and where there has been no change in management or conditions that would indicate attainment of use.

Black Brook, Colley Wright Brook, Inkhorn Brook, Otter Brook, and Pleasant River are impaired for low dissolved oxygen (D.O.) and high Bacteria (E. coli). The [Maine Statewide Bacterial TMDL](#) (2009) "is designed to support action to reduce public health from waterborne disease-causing organisms" (p. 4). Bacteria Sources can be broken into two groups:

point sources and non-point sources (NPS). Bacteria sources categorized as point sources (wastewater discharges, etc.) are subject to permitting requirements under the Clean Water Act. “Non-point source bacteria discharges are diffuse and result from the transport of pollutants to receiving waters by rainfall or snow melt” (p. 8). Bacteria NPS include stormwater, septic systems, pet waste, wildlife waste, agriculture, and recreation. The following language is included in the TMDL:

Most of the bacterial sources identified in this TMDL are associated with stormwater, so in general, BMPs that are designed to address stormwater sources can be adapted to control bacteria laden runoff...BMPs are typically designed to remove sediment and other pollutants, but perhaps the most effective means of reducing stormwater pollutions to bacteria impairment is to reduce the volume of runoff. Therefore, treatment systems and BMPs that remove sediment may also provide reductions in bacteria concentrations” (p. 29).

Dissolved Oxygen (D.O) is included in the [Nonpoint Source \(NPS\) Pollution TMDL](#). The following language explains the reasoning for such impairment:

NPS pollution, also known as stormwater runoff, cannot be traced back to a specific source; rather it often comes from a number of diffuse sources within a watershed. Stormwater runoff is water that doesn't soak into the ground during a rainstorm and instead flows over the surface of the ground until it reaches a stream, lake, estuary, or the ocean, picking up pollutants such as soil, fertilizers, pesticides, manure, and petroleum products along the way. One of the major constituents of NPS pollution is sediment, which contains a mixture of nutrients (such as phosphorus and nitrogen), inorganic and organic material that stimulate algal growth. Excess algal growth consumes oxygen during respiration and leads to a decrease in levels of dissolved oxygen (DO) in a stream. Phosphorus and nitrogen are the limiting nutrients for algal growth and sediment-laden runoff carries these nutrients into streams. (Maine DEP, 2016)

Based on the impairments and suggested recommendations from the TMDLs, the inclusion of tributary streams that flow to impaired streams in the Stream Protection (SP) District could reduce sedimentation and excess nutrients from entering the waterbody and potential further degradation of the resource. Although these tributary streams can be small and intermittent, they can still transport pollutants that affect downstream water quality. Additionally, the limitation of clearing or removal of vegetation using buffer strips along these streams “are a long-term, low maintenance form of treatment for the non-point source pollution that we create everyday” (Maine State Planning Office, ‘[Buffers for Water Quality Protection](#)’, 2000).

As the cause of these impairments is not from one source, resolving these water quality impairments will require multiple solutions. The Town has begun the process of implementing recommendations identified in the CCSWCD Watershed Prioritization memo, including providing matching funds for remediation grants from DEP to fund projects in the Pleasant River, Highland Lake and Forest Lake watersheds, applying for and successfully received funding to create a watershed management plan for Black Brook, as well as annually funding projects as part of its Watershed Protection Grant Program. Additionally, the Town is designated as a small Municipal Separate Storm Sewer System (MS4). This designation requires a permit from DEP to implement BMPs to reduce pollution from the Town’s stormwater runoff that

discharges into waters of the state. Some of these requirements include conducting routine inspections of stormwater systems (catch basins, ditches, piped infrastructure) to eliminate illicit pollutant discharges, implementing an inspection program to minimize sediment transport from construction activities, implementing an annual stormwater infrastructure inspection program for qualifying development and redevelopment project, as well as implementing a training program to minimize stormwater pollution from municipal activities.