

## **PART SIX: SUMMARY OF IMPAIRED WATERS**

### ***Total Maximum Daily Load (TMDL) Program***

Under Section 303d of the Clean Water Act, all states are required to develop lists of impaired surface waters. These impaired waters are lakes, ponds, rivers and streams that do not meet the water quality standards developed by each individual state. In Vermont, these waters are described on the state's Part A 303d List of Impaired Waters in Need of a TMDL. The Clean Water Act requires that a Total Maximum Daily Load (TMDL) be developed for impaired waters on Part A of the list and the list provides a schedule as to when TMDLs will be completed.

A TMDL is the calculation of the maximum amount of a pollutant that a waterbody can receive and still meet the water quality standards. A TMDL serves as a plan that identifies the pollutant reductions a waterbody needs to meet Vermont's Water Quality Standards and develops a means to implement those reductions. TMDL determinations are unique to each individual waterbody but the general process by which they are developed can be summarized in the following manner:

Problem Identification – the pollutant for which the TMDL is developed must first be identified. Examples might include sediment that impacts habitat for aquatic organisms, nutrients that cause excessive algal growth, or bacteria that creates an unsafe environment for swimming.

Identification of Target Values – this establishes water quality goals for the TMDL. These may be given directly in the Water Quality Standards or may need to be interpreted.

Source Assessment – all significant sources of the pollutant in question must be identified in the watershed. This often requires additional water quality monitoring.

Linkage Between Targets and Sources – this process establishes how much pollutant loading can occur while still meeting the water quality standards. This step can vary in complexity from simple calculations to development of complex watershed models.

Allocations – once the maximum pollutant loading is established, the needed reductions must be divided among the various sources. This is done for both point sources and nonpoint sources.

Public Participation – stakeholder involvement is critical for the successful outcome of TMDLs. Draft TMDLs are also released for public comment prior to their completion.

EPA Approval – EPA approval is needed for all TMDLs as required by the Clean Water Act.

Follow-up Monitoring – additional monitoring may be needed to ensure the TMDL is effective in restoring the waters.

Table 6.1 on the following page is provided as a summary update of overall TMDL progress and an expression of future TMDL direction for Vermont. Immediately after Table 6.1 is a brief summary of two significant developments regarding approved TMDLs that occurred during the 2004 305b reporting period.

**Table 6.1. Update on Vermont TMDL Projects.**

<b>Segment</b>	<b>Pollutant &amp; Waterbody ID number</b>	<b>Project Status</b>	<b>Projected TMDL Submittal</b>
Acid Impaired Waterbodies	pH 30 ponds	TMDLs complete. 7 acid impaired ponds remain for TMDL development pending data collection	EPA Approved (9/03)
Lake Champlain	Phosphorus 9 segments	TMDL Complete	EPA Approved (11/02)
Styles Brook (Stratton)	Sediment 11-15	TMDL Complete	EPA Approved (6/02)
Trib #1, N. Branch Ball Mtn. Brook (Stratton)	Sediment 11-15	TMDL Complete	EPA Approved (6/02)
Black River (Ludlow)	Phosphorus 10-14	TMDL Complete	EPA Approved (5/01)
Winooski River (Cabot)	Pathogens 08-09	TMDL Complete	EPA Approved (3/01)
Stormwater Impaired Waters	Approx. 20 segments	Developing TMDL protocols based on setting hydrological targets vs. relying solely on pollutant loading targets	Initial submittals expected during 2004

**Lake Champlain Phosphorus TMDL**

The Lake Champlain Phosphorus TMDL, developed by DEC, was approved by EPA Region 1 on November 4, 2002. This document sets forth the phosphorus allocations for Vermont (and for New York) in order to meet the numeric water quality criteria. Allocations were made to both point sources (includes developed land stormwater and treatment facilities) and broad nonpoint source categories (agricultural and forested). The implementation plan associated with the TMDL identifies extensive and specific actions deemed necessary for the achievement of the phosphorus allocations and ultimately the water quality criteria in the lake. Implementation is underway within Vermont on a variety of point source and nonpoint source fronts.

In December 2003, Governor Douglas announced plans to request over \$6 million in state funds and over \$8 million in federal funding to support his Clean and Clear Water Action Plan to improve statewide water quality in lakes, ponds, rivers and streams. The initiative will also accelerate implementation to clean up polluted areas of Lake Champlain. Nine funding items specific to the Lake Champlain TMDL Clean and Clear effort include:

- Phosphorus removal from certain wastewater treatment plant discharges
- Watershed planning coordinators
- Stream stability in the basin, with emphasis to Missisquoi and St. Albans Bay watersheds

- Sediment and erosion control from unpaved backroads in the basin, with emphasis to Missiquoi and St. Albans Bay watersheds
- Erosion control at construction sites
- Technical assistance for municipal actions
- Wetland protection and restoration
- Monitoring
- Program administration

### **Acid Lakes TMDL**

On September 30, 2003, EPA Region 1 approved a TMDL prepared by DEC that determined annual acid loading limits for 30 of the 37 acid impaired lakes identified on the 2002 303d List. Because the source and type of the problematic loading was similar for all the lakes, a single analytical approach was used to determine each lake's acid loading capacity, or critical load. This approach allowed the packaging of all the lake loading determinations into a single document.

The critical loads establish the necessary levels of acidic deposition to each watershed to allow recovery, however, more needs to be known about distant sources and transport in order to initiate proper controls. The critical loads provide a framework from which to "backtrack" and trace the origin and magnitude of the acidity sources to the atmosphere and their transport to Vermont. Combined with atmospheric transport and deposition modeling, they will provide a basis for evaluating the environmental effectiveness of alternative national or regional emissions control programs, or of quantifying the adverse contributions from specific emission sources if effective national legislation is not forthcoming. They also provide an environmental "benchmark" from which the effects of future changes in emissions and deposition can be quantitatively evaluated.

### ***Overview of the Vermont 2004 Priority Waters List - including Section 303d List of Waters***

Development of the 2004 Section 303d List of Impaired Waters is a process that is ongoing and concurrent to the development of the 2004 305b report. Consequently, the final 2004 303d list has not been included in this report. The 2004 303d List of Impaired Waters will be finalized and made available separately. Appendix C describes Vermont's 2004 Listing Methodology.

A brief summary of the Vermont Priority Waters List, which identifies and tracks both impaired and non-impaired waters is given in Table 6.2 below. It should be noted that the Section 303d List of Impaired Waters is only a portion of the overall Vermont Priority Waters List. Much of the Priority Waters List process occurs outside the scope of Section 303d. It is important to be aware of the overall listing process because it is indirectly involved with and directly referred to in the 303d listing process. Table 6.2 below gives an overview of all the sections of the Priority Waters List. Part A, the single component of the 303d List of Impaired Waters, has been highlighted.

**Table 6.2. Overview of Vermont Priority Waters List.**

<b>Vermont Priority List Section</b>	<b>Description</b>	<b>Included as Part of 303d Listing?</b>
<i>Part A</i>	Impaired Waters in Need of a TMDL	<i>Yes</i>
Interim List	Candidate Waters for Section 303d De-listing	Yes, until EPA approval; after approval these waters are removed from 303d; EPA approved 303d list does not include de-listed waters
Part B	Impaired Waters - No TMDL Required or Needed	No
Part C	Surface Waters in Need of Further Assessment	No
Part D	Waters with Completed and EPA Approved TMDL	No
Part E	Surface Waters Altered by Exotic Species	No
Part F	Surface Waters Altered by Flow Regulation	No
Part G	Surface Waters Altered by Physical Channel Changes/Adjustments	No

A summary of the number of waterbody segments listed as impaired on year 2002 listings is given in Table 6.3. The Vermont Year 2002 303d List of Impaired Waters was approved by EPA on July 28, 2003.

**Table 6.3. Number of Impaired Segments (from Year 2002 listings).**

<b>Impaired Segments</b>	<b>Lakes &amp; Ponds</b>	<b>Streams &amp; Rivers</b>	<b>Total</b>
Listed in Part A – impaired waters needing a TMDL (newly listed waters in 2002 are given in parentheses)	71 (5)	111 (3)	182 (8)
Listed in Part B – impaired waters not needing a TMDL (newly listed waters in 2002 are given in parentheses)	0	11 (3)	11 (3)
Total number of impaired segments	71 (5)	122 (6)	193 (11)