



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

June 21, 2006

Robert W. Golledge, Jr., Commissioner
Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Re: Approval of Chatham Nutrient TMDLs

Dear Commissioner Golledge:

Thank you for submitting the Chatham embayments total nitrogen Total Maximum Daily Loads (TMDLs). This is the first of many Massachusetts Estuary Project nutrient TMDLs. We look forward to reviewing these TMDLs and believe they will be a catalyst in the restoration of these waterbodies.

The U.S. Environmental Protection Agency (EPA) has reviewed the document entitled "Stage Harbor, Sulphur Springs, Taylors Pond, Bassing Harbor and Muddy Creek Total Maximum Daily Loads Total Nitrogen (Report number: MA 96-TMDL-3 and Control number CN206.0) and it is my pleasure to approve the 14 TMDLs. EPA has determined, as set forth in the enclosed review document, that these TMDLs meet the requirements of Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 Code of Federal Regulations (CFR) part 130.

We commend your efforts to develop "pollution prevention" TMDLs on waterbody segments not currently impaired. This approach can encourage the maintenance and protection of existing water quality and help prevent further degradation to waterbodies that are downstream or linked to other waterbody segments. Although EPA does not approve pollution prevention TMDLs, EPA acknowledges the establishment of these TMDLs consistent with developing information as set forth in CWA Section 303(d)(3).

Please pass on to your staff in the Division of Watershed Management and Massachusetts Estuary Program our congratulations for their excellent work in developing these TMDLs.

Sincerely,

A handwritten signature in cursive script that reads "Linda M. Murphy".

Linda Murphy, Director
Office of Ecosystem Protection

Enclosure

cc: Glenn Haas
Rick Dunn
Russ Isaac

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Attachment 1
14 Total Nitrogen TMDLs; 3 Pollution Prevention Nitrogen TMDLs

EMBAYMENT SYSTEMS AND SUB-EMBAYMENTS	SEGMENT ID	COMMENTS	TMDL Kg/Day (Rounded Off Total See Page 24 of Document)
Stage Harbor			
Oyster Pond ¹	MA96-45_2002	Including Stetson Cove	13
Oyster Pond River ¹	MA96-46_2002	Outlet of Oyster Pd to confluence with Stage harbor, Chatham	4
Stage Harbor ¹	MA96-11_2002	From the outlet of Mill Pd (including Mitchell River) to the Confluence with Nantucket Sound at a line from the southernmost point of Harding Beach southeast to the Harding Beach Point, Chatham.	9
Mitchell River		Part of Stage Harbor segment. Separate TMDL necessary on Mitchell River to achieve target threshold nitrogen load.	3
Mill Pond ¹	MA96-52_2002		3
Little Mill Pond		Part of Mill Pond segment. Separate TMDL necessary on Little Mill Pond to achieve target threshold nitrogen load.	2
Sulphur Springs			
Sulphur Springs also known as Harding Beach Pond	MA96-43_2002	Determined to be impaired for nutrients during the development of this TMDL.	6
Bucks Cr	MA96-44_2002	Determined to be impaired for nutrients during the development of this TMDL.	4
Cockle Cove Cr		Not impaired for total nitrogen, but TMDL needed since embayments are linked. (pollution prevention TMDL)	9
Taylors Pond			
Mill Creek	MA96-41_2002	Outlet of Taylors Pond to confluence with Cockle Cove, Chatham. Not impaired for total nitrogen, but TMDL needed since embayments are linked. (pollution prevention TMDL)	3
Taylors Pond	MA96-42_2002	Determined to be impaired for nitrogen during the development of this TMDL.	3
Bassing Harbor			
Crows Pond ¹	MA96-47_2002	To Bassing Harbor, Chatham.	8
Ryder Cove ¹	MA96-50_2002	Chatham	14
Frost Fish Creek ¹	MA96-49_2002	Outlet from cranberry bog northwest of Stony Hill Road to Confluence with Ryder Cove, Chatham.	3
Bassing Harbor		Not impaired for total nitrogen, but TMDL needed since embayments are linked. (pollution prevention TMDL)	3
Muddy Creek			
	MA96-51_2002	Outlet of small unnamed pond south of Countryside Drive and north-northeast of Old Queen Anne Road to mouth at Pleasant Bay, Chatham. Determined to be impaired for nutrients during the development of this TMDL.	
Lower Muddy Creek		Muddy Creek was separated into two segments: Upper and Lower Muddy Creek for this TMDL. Determined to be impaired for nutrients during the development of this TMDL. Separate TMDL necessary on Lower Muddy Creek to achieve target threshold nitrogen load.	6
Upper Muddy Creek		Muddy Creek was separated into two segments: Upper and Lower Muddy Creek for this TMDL. Determined to be impaired for nitrogen during the development of this TMDL. Separate TMDL necessary on Upper Muddy Creek to achieve target threshold nitrogen load.	12

¹ Impaired for total nitrogen on 2002 and 2004 CWA §303(d) list.

EPA NEW ENGLAND'S TMDL REVIEW

DATE: June 19, 2006

TMDL: Stage Harbor, Sulphur Springs, Taylors Pond, Bassing Harbor and Muddy Creek (Chatham) TMDLs for Total Nitrogen

STATUS: Final

IMPAIRMENT/POLLUTANT: 14 TMDLs for Total Nitrogen; 7 segments on the 2002 and 2004 CWA § 303(d) list; 7 segments not currently listed, but determined to be impaired and to be placed on the 2006 CWA § 303(d) list; 3 segments not impaired, but a pollution prevention TMDL was developed consistent with CWA §303(d)(3) (See Attachment 1)

BACKGROUND: Stage Harbor, Sulphur Springs, Taylors Pond, Bassing Harbor and Muddy Creek TMDLs for Total Nitrogen (Report # MA96-TMDL-3, Control # CN206.0)

REVIEWER: Mike Hill, telephone number: (617) 918-1398

REVIEW ELEMENTS OF TMDLs

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. § 130 describe the statutory and regulatory requirements for approvable TMDLs. The following information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.

1. **Description of Waterbody, Pollutant of Concern, Pollutant Sources and Priority Ranking**

*The TMDL analytical document must identify the waterbody as it appears on the State/Tribe's 303(d) list, the pollutant of concern and the priority ranking of the waterbody. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and, (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments, or chlorophyll *a* and phosphorus loadings for excess algae.*

Assessment:

The document for the Stage Harbor, Sulphur Springs, Taylors Pond, Bassing Harbor and Muddy Creek (Chatham) TMDLs for total nitrogen adequately describes the water body segments, nature and cause or threat of the impairments. Impairments include loss of eelgrass beds, increased algae and algae blooms, low dissolved oxygen levels and reduced benthic animal diversity. The TMDLs identify excess nitrogen as the cause of the impairments. The document identifies a total of 14 segments needing a TMDL for nitrogen. Seven of the impaired segments for total nitrogen are included on Massachusetts' 2002 and 2004 Clean Water Act (CWA) §303(d) list (List) also known as Category 5 of the 2002 and 2004 CWA §§303(d) and 305(b) lists (Integrated List). The waters are also impaired for pathogens, with the exception of Mill Pond and Crows Pond, but these TMDLs address only nitrogen; the waters impaired for pathogens will remain on the List. Seven segments not included on the Massachusetts' 2002 and 2004 Lists were determined to be impaired for nitrogen during the development of the nitrogen Chatham TMDLs and will be placed on 2006 List (See Attachment 1). Three of these segments (Stage Harbor, Mill Pond and Muddy Creek) were subsequently split into two segments each in order to meet the threshold nitrogen load in that area.

Three segments, Cockle Cove Creek, Mill Creek and Bassing Harbor were not impaired for nutrients, but the Commonwealth determined that a "pollution prevention" TMDL for nitrogen was needed since these water body segments are linked to the larger embayment system and impairment of these three segments could further contribute to impairment of the segments at issue in this TMDL (See Attachment 1). "Pollution prevention" TMDLs on these three waterbody segments will encourage the maintenance and protection of existing water quality and help prevent further degradation to waterbodies that are downstream or linked. These pollution prevention TMDLs will serve as a guide to the public and help ensure that these waterbodies do not become impaired for nitrogen. The technical basis for these TMDLs is described in the Technical Report and the TMDL document. While MA DEP did not clearly identify which segments were subject to a pollution prevention TMDL, the TMDL document makes clear that nitrogen loading limits are necessary to preserve water quality of these three segments. Although EPA does not approve "pollution prevention" TMDLs, EPA acknowledges the establishment of these TMDLs for the specific purpose of developing information pursuant to CWA §303(d)(3). Therefore, EPA's approval of the TMDLs submitted by MA DEP applies only to the 14 TMDLs for impaired segments referred to above.

Pages 1 to 9 of the Chatham TMDL for total nitrogen provide a good overview of the description and priority ranking of the waterbodies, pollutant of concern and pollutant sources.

EPA concludes that the description, pollutants of concern and the priority ranking of the waterbodies are reasonable and consistent with accepted methods used in establishing nutrient TMDLs.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribe water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy. Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable water quality standard is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.

Assessment:

The TMDL document identifies several provisions of the Commonwealth's water quality standards that are relevant to the cultural eutrophication in these waters, including numeric criteria for dissolved oxygen and narrative criteria for aesthetics and nutrients. EPA concludes that Massachusetts has properly presented its numeric water quality standards and has made a reasonable and appropriate interpretation of its narrative water quality criteria for the designated uses of the Chatham embayments and sub-embayments. As stated on pages 9 and 10 of the TMDL document and EPA guidance, individual estuarine and coastal marine waters tend to have unique characteristics and therefore, individual waterbody criteria are typically required. For example, the loading of nitrogen that a specific waterbody can handle without becoming impaired varies. Factors that influence the effect of nitrogen include: flow velocity, tidal hydraulics, dissolved oxygen and sediment adsorption and desorption of nitrogen. The Massachusetts Estuaries Project analytical method is the Linked Watershed-Embayment Management Model (Linked Model). It links watershed inputs with embayment circulation and nitrogen characteristics, and:

- requires site-specific measurements within each watershed and embayment;
- uses realistic "best-estimates" of N loads from each specific type of land-use;
- spatially distributes the watershed nitrogen loading to the embayment;
- accounts for nitrogen attenuation during transport to the embayment;
- includes a 2D or 3D embayment circulation model depending on embayment structure;
- accounts for basin structure, tidal variations, and dispersion within the embayment;
- includes nitrogen regenerated within the embayment;
- is validated by both independent hydrodynamic, nitrogen concentration, and ecological data; and
- is calibrated and validated with field data prior to generation of additional scenarios.

In summary, the use of the Linked Model, the description of the process in the TMDL document and the companion Technical Report to this TMDL document adequately demonstrate the basis for deriving the target nitrogen loads and demonstrating that the targets will achieve water quality standards.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

As described in EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating water quality standards (40 C.F.R. § 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. § 130.2(i)). The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for EPA's review of the load and wasteload allocations which are required by regulation.

In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 C.F.R. § 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet water quality standards. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards.

Assessment:

The Linked Model, as stated in the TMDL document, is a robust and fairly complicated model that determines an embayment's nitrogen sensitivity, nitrogen threshold loading levels (TMDL) and response to changes in the loading rate. A key feature of the approach involves the selection of sentinel sub-embayments that have the poorest water quality in the embayment system. If these degraded areas come into compliance with the TMDL, other areas will also achieve water quality standards for nitrogen in the system. This approach captures the critical targets needed to address the impaired segments. EPA believes that this approach is reasonable because the factors influencing and controlling nutrient impairment were well justified.

The TMDL document explains and EPA concurs with the approach for applying the Linked Model to specific embayments for the purpose of developing target nitrogen loading rates and in identifying sources of needed nitrogen load reduction.

4. Load Allocations (LAs)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 C.F.R. § 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. § 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.

If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable water quality standard, and all nonpoint and background sources will be removed.

Assessment:

Using the Linked Model, MA DEP has identified the portion of the loading capacity allocated to existing and future non-point sources necessary to meet water quality standards. These non-point sources are primarily septic systems, natural background, non-regulated storm water runoff (including nitrogen from fertilizers), a waste water treatment facility that discharges to groundwater, atmospheric deposition and nutrient-rich sediments.

MA DEP adequately describes and sets forth the load allocations for cultural and natural background sources (See pages 15 to 21 of the TMDL document). EPA concludes that the load allocations are adequately specified for the TMDLs at levels necessary to attain water quality standards.

The TMDL and DEP's responses to comments suggest that the load allocations represent one loading alternative, and that other alternatives may be possible that could reduce nitrogen concentrations in both the sentinel systems and sub-embayments presented. The TMDL also indicates that the 3kg/day target established for the waste water treatment facility could increase under certain circumstances (as envisioned in footnote 2, Table 4 and footnote 4, Table 5 of the TMDL document). These adjustments would not require submission to EPA for review and approval of a revised TMDL, provided that such adjustments remain fully protective of all impaired segments, the sum of any adjusted LAs is less than or equal to the approved TMDL, and there is an opportunity for public review and comment. Any reallocations from LAs to WLAs (based on additional assumed reductions in LAs) must be reflected in a revised TMDL, submitted to EPA for review and approval, to ensure that there is a reasonable assurance that the modified LAs could be achieved.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 C.F.R. § 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable water quality standard, and all point sources will be removed.

In preparing the wasteload allocations, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. But it is necessary to allocate the loading capacity among individual point sources as necessary to meet the water quality standard.

The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the State/Tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.

Assessment:

EPA interprets 40 CFR 130.2(h) to require that allocations for NPDES regulated discharges of storm water be included in the waste load component of the TMDL. On Cape Cod the vast majority of storm water percolates into the ground and aquifer and proceeds into the embayment systems through groundwater migration. The Linked Model used in the development of the TMDLs accounts for storm water loadings and groundwater loading in one aggregate load as a non-point source – combining the assessments of wastewater and storm water (including storm water that infiltrates into the soil and direct discharge pipes into water bodies) for the purpose of developing control strategies. Although the vast majority of storm water percolates into the ground in Chatham, there are some storm water pipes or other conveyances that discharge directly to waterbodies and are subject to the requirements of the Phase II Storm Water NPDES Program. The loadings allocated to such storm water discharges must be treated as a waste load allocation. Since the majority of the nitrogen loading comes from septic systems, fertilizer and storm water that infiltrates the ground into the groundwater, the allocation of nitrogen for any storm water point sources that discharge directly to any of the embayments is insignificant as compared to the overall groundwater load.

Based on land use, the Linked Model accounts for loading of storm water, but does not explicitly breakout storm water into a load and waste load allocation. The draft TMDLs had lumped all storm water into the LA. EPA alerted MA DEP that any storm water subject to the Phase II Storm Water NPDES requirements must be considered as a WLA. Consequently, MA DEP evaluated the likely contribution of the this load to the WLA. Based on the fact that there are some storm water discharge pipes or other conveyances within NPDES Phase II area that discharge directly to embayments or waters that are connected to the embayments, the waste load allocation for these sources was determined for each sub-embayment and ranges from 0.09% to 0.53% (compared to the total nitrogen load to each sub-embayment). The WLA is derived from the percent of impervious surface within 200 feet of the waterbodies and the relative load from this area compared to the overall load within each sub-embayment. Although most storm water infiltrates into the ground on Cape Cod, some impervious areas within approximately 200 feet of the shoreline may discharge storm water via pipes or other conveyances directly to the waterbody. For the purposes of waste load allocation, it was assumed that all impervious surfaces within 200 feet of the shoreline discharge directly to the waterbody whether or not they actually do so. In the absence of site specific information on direct discharge sources, EPA believes the approach set out in the TMDL for the WLAs is reasonable. The specific WLA are set forth in Appendix C and on pages 16 and 17 of the TMDL document.

Although the loading contribution from the point source discharges is insignificant (less than 1%) compared to the non-point sources, the point source discharges are subject to the Phase II Storm Water NPDES Program and their collective load is to be treated as a WLA.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)). EPA guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL

through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

Assessment:

The implicit margin of safety is set out in the TMDL document on pages 21 to 23. There are several factors that contribute to the margin of safety inherent in the approach used to develop these TMDLs including: 1) The Linked Model uses attenuation factors that are lower than those that were actually measured; 2) The selection of the threshold sites and nitrogen concentrations was based on stable eel grass beds or benthic (infaunal) communities, not those starting to show impairment which would have resulted in higher nitrogen concentrations; 3) Using sentinel stations that are the furthest inland to set the nitrogen load is conservative because the rest of the embayment is closer to the mouth of the estuary and will have lower nitrogen concentrations because of a greater tidal flux; 4) The future nitrogen fluxing from sediments is overestimated; and 5) The target loads were based on averaged nitrogen concentrations on the outgoing tide. This is the worst case scenario because this is when the nitrogen concentrations are highest. Nitrogen concentrations will be lower on the flood tides, due to dilution from the incoming tide.

EPA concludes that the margin of safety for the TMDL is acceptable.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA § 303(d)(1)(C), 40 C.F.R. § 130.7(c)(1)).

Assessment:

The TMDLs for the waterbody segments identified in the document are based on achieving the nitrogen loads during the most critical time period, i.e. the summer growing season. Since the other seasons are less sensitive to nitrogen loading, the TMDL is protective of all seasons throughout the year.

8. Monitoring Plan for TMDLs Developed Under the Phased Approach

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), recommends a monitoring plan when a TMDL is developed under the phased approach. The guidance recommends that a TMDL developed under the phased approach also should provide assurances that nonpoint source controls will achieve expected load reductions. The phased approach is appropriate when a TMDL involves both point and nonpoint sources and the point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. EPA's guidance provides that a TMDL developed under the phased approach should include a monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of water quality standards.

Assessment:

Because these TMDLs are not “phased” TMDLs, a monitoring plan is not required in order to assure that nonpoint source reductions are necessary. Nevertheless, in order to assess the progress in obtaining the TMDLs’ water quality goals, MA DEP has recommended that Chatham establish a detailed post-TMDL monitoring plan, as set out on page 26 of the TMDL document. EPA recommends that MA DEP and the town work together to develop and implement such a plan. In addition, MA DEP is committed to monitoring the Chatham estuaries every five years as part of conducting its ongoing water quality assessments in each watershed in Massachusetts.

EPA concludes that monitoring plan and phased approach of achieving the TMDL is appropriate.

9. Implementation Plans

On August 8, 1997, Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, “New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs),” that directs Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist States/Tribes in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by EPA, they help establish the basis for EPA’s approval of TMDLs.

Assessment:

The implementation plan for Chatham estuaries total nitrogen TMDLs is described on pages 25 and 26 of the TMDL document. EPA concludes that the approach taken by MA DEP is reasonable because of the resources available to the town to address nitrogen such as the Comprehensive Wastewater Management Plan, land use planning and controls, water conservation and water reuse and storm water control and treatment.

10. Reasonable Assurances

EPA guidance calls for reasonable assurances when TMDLs are developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for EPA to determine that the load and wasteload allocations will achieve water quality standards.

In a water impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, States/Tribes are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in State/Tribe implementation plans and “may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs.”

Assessment:

Reasonable assurance is not necessary for these TMDLs to be approvable, since the point sources are not given less stringent wasteload allocations based on projected nonpoint source load reductions. However, the Commonwealth has statutory and regulatory authority to encourage implementation of these TMDLs. In addition, Chatham has demonstrated its commitment to implement these TMDLs through the comprehensive wastewater planning that it initiated well before the generation of these TMDLs. The town expects to use the information in these TMDLs to generate support from its citizens to take the necessary steps to remedy existing problems related to nitrogen loading from septic systems, storm water, and runoff (including fertilizers), and to prevent any future degradation of these valuable resources.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each State/Tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 C.F.R. § 130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval must describe the State/Tribe's public participation process, including a summary of significant comments and the State/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. § 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

Assessment:

DEP publicly announced the development of the draft TMDL on June 9, 2004. A public meeting was held on June 23, 2004 for public review and solicitation of comments. The public comment period closed on July, 9, 2004. DEP has done a commendable job involving the public during the development of the TMDLs and has provided ample opportunities for the public to comment. Finally, MA DEP has provided a clear record of the comments received and provided clear responses to those comments. EPA has reviewed the comments and responses and concurs with the conclusions set forth by MA DEP. Therefore, EPA concludes that MA DEP has adequately responded to the comments raised during the public participation process.

12. Submittal Letter

A submittal letter should be included with the TMDL analytical document, and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody, the pollutant(s) of concern, and the priority ranking of the waterbody.

Assessment:

On December, 14, 2004, DEP submitted a final TMDL for total nitrogen on the Chatham estuaries for EPA approval and a revised TMDL based on EPA's comments on December 1, 2005. The latest document contained all of the elements necessary to approve the TMDL.

**Data for entry in EPA's National TMDL Tracking System & Region 1 TMDL Webpage
Version (6/27/05)**

TMDL Name *	Chatham Total Nitrogen TMDLs
7 Water body segment names and List ID(s)	Oyster Pond - MA96-45_2002; Oyster Pond River - MA96-46_2002; Stage Harbor - MA96-11_2002; Mill Pond - MA96-52_2002; Crows Pond - MA96-47_2002; Ryder Cove - MA96-50_2002; Frost Fish Creek - MA96-49_2002
7 Water body segment names with TMDL completed, but not on current list (use unlisted water and/or unlisted impairment code)	Mitchell River; Little Mill Pond; Sulphur Springs (Harding Beach Pond) – MA96-43-2002; Bucks Creek – MA96-44_2002; Taylors Pond – MA96-42_2002; Lower Muddy Creek; Upper Muddy Creek
Number of TMDLs *	14
Lead State	Massachusetts
TMDL Status	Final
Pollutant ID(s)	Total Nitrogen
TMDL End Point	See TMDL
TMDL Type	Point and Nonpoint Source
Point source ID (permit) #s	--
Impairment ID(s) (from system)	Total Nitrogen
Cycle (list date)	2002
Establishment Date (approval) *	June 21, 2006
EPA Developed	No
Towns affected *	Chatham, MA
3 Pollution Prevention TMDLs (Put in note Field and codes for unlisted water and/or unlisted impairments)	Cockle Cove; Mill Creek - MA96-41_2002; Bassing Harbor

* = data needed for Region 1 "Approved TMDLs" web page