

August 12, 2014

Alicia Good, Assistant Director of Water Resources
Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02908

SUBJECT: Approval of the Scott Pond TMDL

Dear Ms. Good:

Thank you for your submission of Rhode Island's Total Maximum Daily Load (TMDL) for Scott Pond, for phosphorus. Scott Pond was included on the State's 2012 303(d) list and was prioritized for TMDL development. The purpose of this TMDL is to address nutrient-related impairments to aquatic life use and recreation from point and nonpoint source pollution.

The U.S. Environmental Protection Agency (EPA) hereby approves Rhode Island's TMDL for Scott Pond, received by EPA on May 15, 2014. EPA has determined that the TMDL meets the requirements of §303(d) of the Clean Water Act (CWA), and of EPA's implementing regulations (40 CFR Part 130). Attached is a copy of our approval documentation.

My staff and I look forward to continued cooperation with the RI DEM in exercising our shared responsibility of implementing the requirements under Section 303(d) of the CWA.

If you have any questions, please contact Steven Winnett (617-918-1687) of my staff.

Sincerely,

/s/

Ken Moraff, Director
Office of Ecosystem Protection

cc Angelo Liberti, RI DEM
Elizabeth Scott, RI DEM
Scott Ribas, RI DEM
Ralph Abele, EPA
Steven Winnett, EPA

EPA NEW ENGLAND'S TMDL REVIEW

TMDL: Scott Pond

RI0001003L-01

Location: Lincoln, Rhode Island.

STATUS: Final

IMPAIRMENT/POLLUTANT: Scott Pond is not meeting criteria for phosphorus and is not supporting the designated uses of Aquatic Life and Recreation Use. A year-around TMDL submission is presented for total phosphorus.

BACKGROUND: The Rhode Island Department of Environmental Management (DEM) submitted to EPA New England the final Total Maximum Daily Load Analysis for *Scott Pond* (the "TMDL," "submission," or "Report") with a transmittal letter dated May 12, 2014. DEM sent EPA a draft report in April, 2014, and EPA responded with comments on April 17, 2014. DEM addressed EPA's comments in the final TMDL document.

The submission included:

- Final TMDL report for phosphorus in Scott Pond;
- Implementation plan for achieving TMDL reductions, Chapter 6, pp. 26-33;
- References, p. 35;
- Scott Pond water quality data, Appendix B-C, pp. 42-43; and
- Response to Comments, Appendix F, p. 49.

The following review explains how the TMDL submission meets the statutory and regulatory requirements of TMDLs in accordance with § 303(d) of the Clean Water Act and EPA's implementing regulations in 40 CFR Part 130.

REVIEWERS: Steven Winnett (617-918-1687) E-mail: winnett.steven@epa.gov

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 Water Body, Pollutant of Concern, Pollutant Sources and Priority Ranking

The TMDL analytical document must identify the water body as it appears on the State/Tribe's 303(d) list, the pollutant of concern and the priority ranking of the water body. 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.

Scott Pond is located in Lincoln, RI, in the Blackstone River watershed. The Report describes the pollutant of concern, total phosphorus. The Report lists the water body as it appears on the State's 2010 303(d) list (TMDL pp.1-2), and explains that it is a high priority for TMDL development (TMDL p.3). The document also describes the TMDL study area and its land uses (TMDL pp. 4-6).

The submission includes a discussion of the point and nonpoint sources that contribute to the water quality impairment, as well as a discussion of the water monitoring and data that indicate the condition of the water body (TMDL pp. 7-14). The major sources of pollution to the pond include inflow from the Blackstone Canal and upstream sources, both wet and dry, to the Blackstone River, urban runoff from stormwater outfalls, and internal loading and cycling from sediments. The major sources of phosphorus to the Blackstone River are the five waste water treatment plants (WWTFs) in Rhode Island and Massachusetts (TMDL pp. 15-20).

Assessment: RI DEM has adequately identified the water body, the pollutant of concern, and the magnitude and location of the sources of pollution.

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 water body, 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.

Scott Pond is impaired by phosphorus (TMDL, page 1). RI DEM's goals for the TMDL are to:

- Reduce total phosphorus levels in the pond to an average level of 0.025 mg/l;
- Reduce algal abundance to a level consistent with designated uses, by reducing the frequency and duration of chlorophyll-a levels exceeding 0.010 mg/l;;
- Attain dissolved oxygen content of not less than 60% saturation, based on a daily average, and an instantaneous minimum dissolved oxygen concentration of at least 5.0 mg/l, except as naturally occurs. The 7-day mean water column dissolved oxygen concentration shall not be less than 6 mg/l.

The numeric water quality target is set at the appropriate numeric water quality standard for phosphorus for ponds (TMDL pp. 21-22). The water body is classified Class B (TMDL, page 1).

Rhode Island has both a numeric and narrative standard for phosphorus in ponds, which includes that average total phosphorus shall not exceed 0.025 mg/l (25.0 ug/l), and allows for lower levels as determined by the Director of RI DEM as necessary to prevent cultural eutrophication (TMDL pp. 2-3).

Assessment: EPA New England concludes that RI DEM has properly presented its water quality standard when setting a numeric water quality target.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

As described in EPA guidance, a TMDL identifies the loading capacity of a water body 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 water body'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 water body 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 water body 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.

DEM set the numeric water quality target at the applicable water quality criteria as outlined in the TMDL report (TMDL pp. 21-22).

DEM describes the rationale for the methods used to establish the cause-and-effect relationship between the numeric target (WQS) and the identified pollutant sources. Current yearly phosphorus loads (in kg/yr) to the pond were established using the Reckhow model (TMDL pp. 22-24). DEM also used that AVGWLF model to characterize nonpoint source nutrient sources to the pond. The allowable loading was then back-calculated from the model using the numeric water quality target (0.025 mg/l) and a 10% margin of safety was subtracted to determine the target load. The required load reduction was calculated from the current load and the TMDL (target load), and the percent loading reduction was also calculated.

The daily load is the annual load divided by 365.

Assessment: EPA New England concludes that the loading capacity, having been calculated using water quality models well-known to EPA, and using observed concentration data and water quality targets consistent with numeric water quality criteria, has been appropriately set at a level necessary to attain and maintain the applicable water quality standard. The TMDL is based on a reasonable approach for establishing the relationship between pollutant loading and water quality.

4. Load Allocation (LA)

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.

Because information to support the development of separate allocations for load and wasteload allocations for regulated and unregulated stormwater discharges do not exist, the LA is included in the WLA (TMDL p. 25).

Assessment: EPA New England concludes that it is unnecessary to include a specific load allocation for phosphorus as the information to support separate load and wasteload allocations do not exist. Consequently, the load allocation is included in the wasteload, below.

5. Wasteload Allocation (WLA)

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.

The submission contains a waste load allocation (WLA) that is expressed as a target load and corresponding load reduction required to meet the applicable water quality criteria (TMDL pp. 24-25). Loads from the Blackstone Canal (stemming from the Blackstone River as its source) and internal loading in the Pond itself are the most important sources that will need to be reduced. DEM says that the permit limits for phosphorus now in place at the Woonsocket WWTF in Rhode Island and the four WWTFs in Massachusetts should lead to sufficiently reduced phosphorus levels in the Blackstone River at the inflow point to the Blackstone Canal, although DEM also points to potential wet and dry weather sources to the River between the Massachusetts state border and inflow to the Canal that may need to be identified and controlled.

Assessment: EPA concludes that the WLA has been appropriately set to attain WQS in the pond. In the absence of specific information to determine the relative contributions of regulated and unregulated sources of stormwater runoff to the water body, EPA has allowed states to combine the total stormwater load in the waste load allocation. DEM has used this approach and EPA New England concludes that the WLA for this submission is acceptable and reasonable.

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.

An explicit MOS of 10% is included in the TMDL for phosphorus loads to the Pond (TMDL p. 21).

Assessment: EPA New England concurs that an adequate MOS is provided by the explicit 10% MOS for phosphorus.

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).

This TMDL addresses seasonal variation because the required reduction in phosphorus was calculated for the conditions during the critical, growing season, May to October, when occurrence of nuisance algal blooms, low dissolved oxygen, and macrophyte growth are greatest. Therefore, the TMDL allocation protects designated uses during the entire year (TMDL p. 21).

Assessment: EPA New England concludes that seasonal variations have been adequately accounted for as the TMDL was developed to be protective during the critical period for phosphorus, and will therefore be more than adequately protective during the other seasons.

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.

The TMDL proposes continuing monitoring to ensure that water quality improvement activities are adjusted as monitoring indicates changes in the water quality of the pond and the Blackstone Canal. The State briefly discusses their monitoring plans in the TMDL report (TMDL p. 34).

Assessment: Addressed, though not required.

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.

A detailed implementation plan is provided in the submission (TMDL pp. 26-33) which specifically addresses the major identified sources of pollution and gives specific recommendations for abating them. The plan contains specific recommendations with regard to the six minimum measures that comprise the Stormwater Phase II permit program, and discusses several types of specific corrective actions, including measures to reduce stormwater runoff and reduction of internal phosphorus loadings.

Assessment: Addressed, though not required.

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 body 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."

Reasonable assurance is not required because point sources are not given less stringent wasteload allocations based on the assumption of future nonpoint source load reductions.

Assessment: Not required.

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.

DEM summarizes its public participation in the TMDL report (TMDL p. 34). DEM presented the draft TMDL to the public at a meeting on February 27, 2014. The meeting was well publicized in the press and letters were sent to key stakeholders well in advance. Copies of the TMDL were made available to the public two weeks before the meeting. The meeting began the comment period, which ended on March 31, 2014. The agency received a comment letter from EPA. The TMDL submission includes a copy of the submitted comments and the Department's responses.

Assessment: EPA New England has reviewed all comments and the agencies' responses to comments. EPA concludes that DEM involved the public during the development of the *Scott Pond TMDL*, has provided adequate opportunities for the public to comment on the TMDL, and has provided reasonable responses to the comments received.

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 water body, the pollutant(s) of concern, and the priority ranking of the water body.

Comment: A letter with appropriate information was included with the final submission.

Data for entry in EPA's National TMDL Tracking System							
TMDL (Water body) Name *		Scott Pond					
Number of TMDLs*		1					
Type of TMDLs (Pollutant)*		Nutrients					
Number of listed causes (from 303(d) list)		2					
Lead State		Rhode Island (RI)					
TMDL Status		Final					
Individual TMDLs listed below							
TMDL Segment name	TMDL Segment ID #	TMDL Pollutant ID# & name	TMDL Impairment Cause(s)	Pollutant endpoint	Unlisted ?	RIPDES Point Source & ID#	Listed for something else?
Scott Pond	RI0001003L-01	903 (Total Phosphorus)	Phosphorus (903) Low Dissolved Oxygen (449)	0.025 mg/l phosphorus		RIPDES Lincoln MS4 stormwater permit RIR040021, RIDOT permit RIR040036	Copper
TMDL Type		Point & Nonpoint Source					
Cycle (list date)		2014					
Establishment Date (approval)*		Aug 12, 2014					
EPA Developed		No					
Towns affected*		Lincoln, RI					