



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
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July 3, 2007

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 Woonasquatucket River Watershed TMDL

Dear Ms. Good:

Thank you for your submission of Rhode Island's Total Maximum Daily Load (TMDL) for the Woonasquatucket River, for fecal coliform bacteria, copper, lead, and zinc. These water bodies are included on the States' 2006 303(d) list and were prioritized for TMDL development. The purpose of the eight TMDLs for Rhode Island waters are to address impairments of contact recreation and aquatic life use due to pathogens and metals from point and nonpoint source pollution.

The U.S. Environmental Protection Agency (EPA) hereby approves Rhode Island's TMDL for the Woonasquatucket River, received by EPA on April 9, 2007. EPA has determined that this 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 Stephen Silva (617-918-1561) or Steven Winnett (617-918-1687) of my staff.

Sincerely,

Stephen S. Perkins, Director
Office of Ecosystem Protection

cc Angelo Liberti, RI DEM
Elizabeth Scott, RI DEM

Brian Zalewsky, RI DEM
Stephen Silva, EPA
Steven Winnett, EPA

EPA NEW ENGLAND'S TMDL REVIEW

TMDL: **Woonasquatucket River**

Woonasquatucket River	RI0002007R-10A, Dissolved Zinc (Zn)
Woonasquatucket River	RI0002007R-10B, Pathogens
Woonasquatucket River	RI0002007R-10C, Dissolved Zinc, Pathogens
Woonasquatucket River	RI0002007R-10D, Dissolved Zinc, Dissolved Copper (Cu), Dissolved Lead (Pb)
Assapumpsett Brook	RI0002007R-01, Pathogens

Location: Towns of Smithfield, North Smithfield, Glocester, Johnston, North Providence, and Providence, Rhode Island.

STATUS: Final

IMPAIRMENT/POLLUTANT: Five water body segments of the Woonasquatucket River and its tributaries are not meeting criteria for fecal coliform bacteria, and dissolved copper, lead and zinc, and are not supporting designated uses of contact recreation, aquatic life use. The major factors are bacteria and metals impairments associated with both dry and wet weather, depending on the segment. A year-around TMDL submission is presented for fecal coliform and metals.

BACKGROUND: The Rhode Island Department of Environmental Management (DEM) submitted to EPA New England the final Total Maximum Daily Load Analysis for the *Woonasquatucket River* (the "TMDL" or "Report") with a transmittal letter dated May 4, 2007, and it was received by EPA on May 9, 2007. DEM addressed EPA's questions from a conference call in spring of 2006. The submission included:

- Final TMDL report for pathogens and metals in the Woonasquatucket River;
- Implementation plan for achieving TMDL reductions, Chapter 7, pp. 66-85;
- Water quality data (1998-2002), Appendix A;
- Public comments and response to comments, Appendix B;
- Public meeting summary, Appendix C; and
- References set out in Chapter 10, pp. 88-89.

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.*

The Woonasquatucket River is located in the Towns of Smithfield, North Smithfield, Glocester, Johnston, North Providence, and Providence, Rhode Island. The Report describes the pollutants of concern (fecal coliform bacteria, and dissolved copper, lead and zinc), which impair contact recreation and aquatic life use (TMDL pp. 14). It lists the water bodies as they appear on the State's 2004 and 2006 303(d) lists (TMDL p.11), and explains that waters are in Group 1 of the 303(d) list, which have the highest priority for TMDL development (TMDL p.13). Segment D of the Woonasquatucket River is also impaired by pathogens, but as the cause of the impairment is primarily from combined sewer overflows (CSOs), which are currently scheduled for separation and/or elimination by 2020, that impairment will be addressed through a subsequent action.

The submission includes a general description of the point and nonpoint sources that contribute to the water quality impairments (TMDL p. 9), as well as in-depth discussions of the water monitoring and data that indicate the condition of the water bodies (TMDL pp. 20-50). Bacteria and metals impairments arise both from wet and dry weather discharges. Wet weather sources are primarily CSOs and stormwater runoff. Bacteria levels increase markedly during wet weather events. Dry weather sources include CSO dry weather discharges, other miscellaneous sources, and waterfowl and wildlife. The Smithfield Waste Water Treatment Facility (WWTF), a permitted facility, is also a source of dissolved copper and zinc.

Assessment: DEM has adequately identified the water bodies, the pollutant of concern, the magnitude and location of the sources of pollution. The TMDL also includes an adequate description of important assumptions made in developing the TMDL.

2. Description of the Applicable Water Quality Standards (WQSs) 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.

The numeric water quality target is set for all waters at the appropriate numeric water quality standard for the pollutants. For bacteria, the standard is a combination of Class B, B1, and B1{a}, depending on the segment (TMDL p. 14). Rhode Island's fecal coliform water quality standard for Class B, B1, and B1a waters state the bacteria concentrations are not to exceed a geometric mean value of 200 fc/100 ml, and not more than 10% of the samples can exceed a value of 400 fc/100 ml. For metals, the numeric water quality target is set at the appropriate water quality criteria, which is calculated based on the water's hardness value (TMDL Table 1.3, p. 15, and below). The lowest measured mean hardness value, between the wet and dry weather measures, for each water body segment, was used to calculate its metals criteria. As the criteria vary directly with hardness (the lower the hardness, the more strict the criteria), this is a conservative assumption in the calculation.

WATERBODY ID NUMBER					
ACUTE CRITERIA (calculated using lowest of dry or wet weather mean hardness value for each segment)					
Paramter	RI0002007R-10A	RI0002007R-10B	RI0002007R-10C	RI0002007R-10D	RI0002007R-01
Hardness (mg/CaCO ₃)	21.8	24.3	30.0	37.4	44.9
Cd (ug/l)	0.46	0.51	0.62	0.77	0.92
Cu (ug/l)	3.2	3.54	4.32	5.32	6.32
Pb (ug/l)	11.9	13.45	17.04	21.81	26.74
Zn (ug/l)	32.24	35.34	42.25	50.93	59.46
WATERBODY ID NUMBER					
CHRONIC CRITERIA (calculated using lowest of dry or wet weather mean hardness value for each segment)					
Paramter	RI0002007R-10A	RI0002007R-10B	RI0002007R-10C	RI0002007R-10D	RI0002007R-01
Hardness (mg/CaCO ₃)	21.8	24.3	30.0	37.4	44.9
Cd (ug/l)	0.09	0.09	0.11	0.12	0.14
Cu (ug/l)	2.44	2.67	3.2	3.86	4.52
Pb (ug/l)	0.46	0.52	0.66	0.85	1.04
Zn (ug/l)	32.5	35.63	42.59	51.34	59.94

Reproduced from the RI DEM Woonasquatucket River TMDL, April 2007.

Assessment: EPA New England concludes that DEM has properly presented its water quality standards 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.

In the Woonasquatucket River watershed, wet weather sources are a significant cause of bacteria and metals criteria water quality impairment. TMDL targets are expressed two ways, as instream concentrations at criteria levels, and as percent reductions necessary to achieve criteria levels based on ambient data for each segment.

The one wastewater treatment plant discharge to the river (Smithfield WWTF) has coliform TMDL targets of criteria at the point of discharge and metals limits calculated to assure water quality criteria are met in the receiving water (see Section 5 WLA discussion).

The most downstream segment of the river (RI0002007R-10D) has 14 Narragansett Bay Commission (NBC) combined sewer overflows. The NBC is currently implementing a CSO abatement plan designed to eliminate or achieve 98% reduction in CSO overflow volume by 2020. Implementation of the Phase II Storm Water Management Project Plan (SWMPP) by NBC, Smithfield, Johnston, North Providence, Providence, RIDOT, and industrial facilities which require reduction in stormwater volume by groundwater recharge to the maximum extent possible for existing and new development also reduces CSO flow.

CSO construction began in 2002. It is too early to project what, if any, CSO discharges to the Woonasquatucket River will remain and their water quality impact by project completion in 2020. The TMDL establishes aggregate metals percent reductions for this segment (TMDL pp. 64, and 67).

For the wet weather sources, rather than loadings and allocations being calculated for individual sources, pollutant measurements at ambient locations are used to calculate the reductions necessary to meet the applicable water quality criteria. DEM sets the numeric instream water quality targets at the applicable water quality criteria or standard for each segment of the

Woonasquatucket River and its tributary. The TMDL targets or loading capacities are expressed as the appropriate fecal coliform or metals percent reductions necessary to restore designated uses, depending on each water segment's current condition (as measured) and its target water quality criteria, as outlined in the TMDL report for bacteria and metals (Table 5.1 and 6.9, pp. 53 and 63, respectively).

DEM describes the rationale for the methods used to establish the cause-and-effect relationship between the numeric targets (WQSs) and the identified pollutant sources. DEM sets a reduction goal for each impaired water body area or segment (as a whole) by comparing current fecal coliform and metals concentrations to the applicable water quality target, then calculating the percent reduction required to reach that target (TMDL p. 53, Table 5.1 for bacteria, and pp. 60-63, Tables 6.4-6.9 for metals). Since the water quality standards specify both geometric mean and 90th percentile criteria for bacteria and chronic and acute criteria for metals, the higher percent reduction is used to set each segment's necessary percent reduction. DEM explains the process for calculating the reduction goals (TMDL pp. 52-53 for bacteria, and 58-63 for metals) and provides a discussion of the strengths and weakness in the analytical process for linking water quality to sources of pollutants (TMDL pp. 55 and 65).

DEM has said that it considers the pollutant concentrations and percent reduction targets in these TMDLs to apply daily. The allowable daily load is the criteria concentration times the daily flow in the receiving water.

Assessment: EPA New England concludes that the loading capacities, having been set equal to the water quality criteria levels calculated to achieve water quality criteria and for wet weather discharge reductions needed to achieve criteria, have been appropriately set at levels necessary to attain and maintain applicable water quality standards. The TMDL is based on a reasonable approach for establishing the relationship between pollutant loading and water quality in the river and its tributary.

EPA's regulations at 40 C.F.R. §130.7(c)(1) require that TMDLs identify water quality targets that are consistent with all applicable water quality standards. EPA New England has accepted the percent reduction approach for TMDLs in some rivers and streams under an assumption that the reductions needed to meet applicable water quality standards at ambient stations are representative of the reductions needed to meet the applicable standards throughout the water body segment. The small segment sizes and large number of sample locations per segment (see Figure 1.1) make this a valid assumption.

There is nothing in EPA's regulations that forbids expression of a TMDL in terms of multiple TMDL targets. TMDLs can be expressed in various ways, including in terms of toxicity, which is a characteristic of one or more pollutants, or by some "other appropriate measure." 40 C.F.R. § 130.2(i). The target loading capacities expressed in the TMDL document are set at levels which assure WQS will be met (criteria at point of discharge and percent reductions based on meeting ambient water quality criteria). The bacteria concentration loading capacity for the Smithfield WWTF is based on the concentration criteria for the water body. If a source of

pathogens is below the water quality criteria then it follows that the receiving water will meet the WQS for bacteria.

The percent reduction loading capacity targets provided for the non-WWTF sources is based on a reasonable calculation comparing the ambient bacteria data to the criteria using a geometric mean weighted toward wet weather (worst case) and a 10% margin of safety. For metals, the highest dry weather value compared to the chronic criterion, and highest wet weather value compared to acute criterion and average storm event values to chronic criterion were used.

RI DEM states that the daily maximum load may be calculated by multiplying the concentration criterion by stream flow to calculate a daily mass loading. The loading capacity expressed in this way is mathematically derived to assure that the sum of the loads to the receiving water diluted by the stream flow will result in a concentration at the water quality standard.

All of the above loading capacity targets are directly linked to the State's WQS' bacteria and metals criteria and the pollutant levels that must be reduced to achieve full primary contact recreation use (or other designated uses) of the water bodies covered by this TMDL.

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.

Because information to support the development of separate allocations for load and wasteload allocations for wet weather discharges do not exist, the LA is included in the WLA for each segment.

Note that this approach does not affect the regulation of storm water that is subject to Phases I or II of EPA's storm water program.

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

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.

The submission contains a wasteload allocation for each segment (or tributary station) that is expressed as the percent reduction for both bacteria and metals required to meet the water quality standards. As mentioned in the LA review (section 4 above) because information to support the development of separate allocations for load and wasteload allocations do not exist, the LA is included in the WLA for each segment.

For the Smithfield WWTF (RIPDES permit RI0100251), its newly proposed permit contains limits for Cu, Pb, and Zn that are in line with the TMDL for segment C (bacteria criteria limits at point of discharge and metals limits calculated to ensure criteria are met), into which its effluent flows (TMDL p. 64, Table 6.10). Its permit limits for bacteria are in line with the TMDL for segment C (TMDL p. 54, Table 5.2) and its discharge currently meets water quality standards. For the other major permitted discharge, Metals Recycling LLC (RIPDES permit RI0023485), DEM has proposed no WLA as its receiving stream shows no exceedances for metals, and it has no dry weather discharges, and there appears to be no reasonable potential for it to contribute to a violation of WQS. There is no bacteria impairment associated with its discharge. Likewise, the five minor permitted discharges (TMDL p. 46, Table 4.9) in the Woonasquatucket River have no water quality impairments associated with their discharges, and DEM has proposed no WLAs for them in these TMDLs.

As discussed in Section 3, above, NBC has 14 CSOs which discharge to segment RI0002007R-10D. Construction on CSO abatement began in 2002 and is scheduled for completion in 2020. It is too early to determine what, if any, CSOs may remain and the water quality impact of individual sources given current CSO discharges. Therefore, aggregate percent reductions for metals are established for this segment.

Assessment: RI DEM established concentration-based WLAs for the Smithfield WWTF. Aggregate percent reduction WLAs were established by segment for wet weather sources because it is impossible to determine with any precision or certainty the actual and projected loadings for individual discharges or groups of discharges. EPA's November 22, 2002 TMDL guidance suggests that it is acceptable in such cases to allocate storm water by gross allotments.

EPA New England concludes that the WLAs for this submission are acceptable and reasonable, and have sufficiently addressed both permitted and unpermitted sources of pollution.

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.

DEM has provided an explicit margin of safety of 10% for the bacteria TMDLs, which is entirely sufficient. For metals, DEM identifies several assumptions as providing an implicit margin of safety. The following assumptions support the implicit metals margin of safety:

- Metals criteria in the tidally-impacted reach of the Woonasquatucket were based on a mean hardness value of 37.4 mg/l CaCO₃, and were calculated from data collected during periods of low or ebb tide when flow was dominated by fresh water. A mean hardness value of 600 mg/l CaCO₃ was calculated for the river under periods of flood and/or high tide. Metals toxicity decreases with increasing hardness, therefore use of the lower hardness value of 37.4 mg/l CaCO₃ to calculate water quality criteria under all tidal conditions is fully protective under periods of flood and/or high tide.
- The most protective numeric standard (the chronic aquatic life support standard) is used to set TMDL targets. In the case of zinc, the acute criteria are slightly lower than the chronic criteria, therefore the most protective numeric standard for zinc is the acute aquatic life support standard.

Assessment: For the reasons explained above, EPA New England concurs that an adequate MOS is provided by the conservative assumptions made in setting the TMDL target and in assigning wasteload allocations.

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).

DEM is establishing year-round bacteria TMDLs based on the observation that elevated bacteria levels occur in all seasons and all flow regimes, although standards violations occur with greater frequency during wet weather. The TMDL analysis contains reduction targets for all seasons and weather conditions, and therefore, seasonality is not an issue. For metals, there is no seasonal variation in pollutant levels in the River's mainstem. Critical conditions occur during wet weather, although there are exceedances of both chronic and acute standards during both high and low flow conditions. The year-round allocations for metals account for all seasonality concerns because they are based on the more stringent of wet or dry weather calculated targets.

Assessment: EPA New England concludes that seasonal variations are not a concern as flow regime and weather, rather than seasonality, are the important conditions, and have been adequately accounted for in the TMDLs. In addition, pollutant controls are expected to be in place through the year so that these controls will reduce pollution whenever sources are active.

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), and EPA's 2006 guidance, Clarification Regarding "Phased" Total Maximum Daily Loads, recommend a monitoring plan when a TMDL is developed using the phased approach. The guidance indicates that a State may use the phased approach for situations where TMDLs need to be developed despite significant data uncertainty and where the State expects that the loading capacity and allocation scheme will be revised in the near future. EPA's guidance provides that a TMDL developed under the phased approach should include, in addition to the other TMDL elements, a monitoring plan that describes the additional data to be collected and a scheduled timeframe for revision of the TMDL.

This is not a phased TMDL. The document includes a description of monitoring to ensure that plans for implementing water quality improvement activities are adjusted as monitoring indicates changes in the water quality of the impaired segments. The State discusses its plans for monitoring as and after the TMDL is implemented (TMDL p. 87).

Assessment: EPA concludes that the anticipated monitoring by and in cooperation with RI DEM is sufficient to evaluate the adequacy of progress toward attainment of WQS, although not a required element of EPA's TMDL approval process.

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. 66-85) which specifically addresses the major identified sources of pollution. The plan discusses MS4 stormwater management in detail, and measures to reduce stormwater runoff to the area from identifiable (regulated) point and nonpoint sources, and the control of other nonpoint source runoff, especially that from wildlife, waterfowl, and pets.

It also discusses the CSO plans, specific MS4 projects and needs in the towns and cities, other permitted facilities and industrial sources of runoff, and RI Department of Transportation projects.

Assessment: RI DEM has included an outline of implementation plans, priorities and authorities, although not a required element of the TMDL approval. EPA is taking no action on the implementation plan.

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. However, DEM addresses reasonable assurances that storm water runoff reductions will occur by providing information about past and current surveys, and work in the watershed which point to a long term commitment to improving water quality (TMDL pp. 20-50). In addition, Chapter seven contains a detailed implementation plan, which demonstrates a strong commitment, and existing investment, in improving water quality in the river (TMDL pp. 66-85).

Assessment: Although not required because RI DEM did not increase WLAs based on expected LA reductions, RI DEM has provided reasonable assurance that WQS will be met.

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 provided a comment period from January 4, 2007 to February 5, 2007. Notice of this comment period and a public meeting on January 4, 2007 was sent via faxes and letters to the affected communities, key stakeholders, and others. DEM also publicized the meeting through a press release, and by posting its notice in public facilities and on its web site. The public meeting was sparsely attended (approximately 12 individuals, not counting DEM staff), but DEM received several comments during the comment period. DEM has provided EPA with copies of all submitted comments and the Department's responses as an attachment to the final TMDL submission.

Assessment: EPA New England concludes that DEM involved the public during the development of the TMDL for the *Woonasquatucket River*, has provided adequate opportunities for the public to comment on the TMDL, and has provided reasonable responses to the public comments.

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.

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

Data for entry in EPA's National TMDL Tracking System						
TMDL Name		Woonasquatucket River (5 segments)*				
Number of TMDLs*		8				
Type of TMDLs*		Bacteria, Cu, Pb, Zn ⁺				
Number of listed causes (from 303(d) list)		8				
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#
Woonasquatucket River - A	RI0002007R-10A	21 (Dissolved Zinc)	Zinc	Acute criteria: 32.24 mg/l		
Woonasquatucket River - B	RI0002007R-10B	259 (Fecal coliform bacteria)	Pathogens	200 fecal coliform/100 ml: 400 fecal coliform/100 ml		
Woonasquatucket River - C	RI0002007R-10C	21 (Dissolved Zinc)	Zinc	Acute criteria: 42.3 mg/l		Smithfield WWTF - RI0100251
Woonasquatucket River - C	RI0002007R-10C	259 (Fecal coliform bacteria)	Pathogens	200 fecal coliform/100 ml: 400 fecal coliform/100 ml		Smithfield WWTF - RI0100251
Woonasquatucket River - D	RI0002007R-10D	16 (Dissolved Copper)	Copper	Chronic criteria: 3.86 mg/l		
Woonasquatucket River - D	RI0002007R-10D	18 (Dissolved Lead)	Lead	Chronic criteria: 0.85 mg./l		
Woonasquatucket River - D	RI0002007R-10D	21 (Dissolved Zinc)	Zinc	Acute criteria: 50.9 mg/l		
Assapumpsett Brook	RI0002007R-01	259 (Fecal coliform bacteria)	Pathogens	200 fecal coliform/100 ml: 400 fecal coliform/100 ml		
TMDL Type		Point & Nonpoint Source				
Establishment Date (approval)*		July 3, 2007				
EPA Developed		No				
Towns affected*		Smithfield, North Smithfield, Glocester, Johnston, North Providence, and Providence, RI				