

May 15, 2002

Ms. Alicia Good
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, RI 02908-5767

Dear Ms. Good:

Thank you for your final submittal of the Palmer River Total Maximum Daily Load (TMDL) for fecal coliform bacteria. The U.S Environmental Protection Agency (EPA) hereby approves the Palmer River TMDL for fecal coliform bacteria, received by EPA on March 28, 2002. Enclosed is a copy of EPA's review document.

EPA considers this TMDL to be a first step that will enable the State to move forward with on-the-ground measures to improve water quality. Additional information should be collected in the future to evaluate the effectiveness of management actions and to determine attainment of water quality standards throughout the entire waterbody. EPA believes that additional information that reflects localized impacts will be necessary to make future attainment decisions.

My staff and I look forward to continued cooperation with the RIDEM in exercising our shared responsibility of implementing the requirements under Section 303(d) of the CWA. Please feel free to contact me or my staff if you have any questions or comments on our review.

Sincerely,

Linda M. Murphy, Director
Office of Ecosystem Protection

Enclosure

cc: Jan Reitsma, RIDEM
Elizabeth Scott, RIDEM
Angelo Liberti, RIDEM
Chris Turner, RIDEM

TMDL: Palmer River, Rhode Island (Fecal Coliform) **FINAL**

TMDL Authors: Veronica Masson (Rhode Island DEM)
Chris Turner (Rhode Island DEM)

Date: May 15, 2002

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.

Comment: The TMDL document identifies the waterbody as it appears on the 303(d) list (page viii), the pollutant of concern (fecal coliform - page xii), and the priority ranking (page xii). The TMDL document includes a description of the point and nonpoint sources contributing to the water quality impairments (page xii-xv and page 20-33). According to the TMDL report (page xv), it was not possible to separate natural background from the total nonpoint source load due to a lack of site specific data on fecal coliform contributions from wildlife in the watershed.

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.

Comment: The TMDL document includes a description of the applicable water quality standards (page viii), designated uses (page x), the numeric water quality criterion (page x), and the antidegradation policy (page x).

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.

Comment: As described in EPA guidance, 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 loading capacity for this TMDL is expressed as a concentration set equal to the state water quality standard for fecal coliform bacteria. It is appropriate to express bacteria in terms of concentration for the following reasons:

- 1) *Expressing a bacteria TMDL in terms of concentration provides a direct link between existing water quality and the numeric water quality target;*
- 2) *Using concentration in a bacteria TMDL is more relevant and consistent with the water quality standards, which apply for a range of flow and environmental conditions;*
- 3) *Bacteria TMDLs expressed in terms of daily loads are typically more confusing and more difficult to interpret, since they are dependent on flow conditions, which are often difficult to determine; and*
- 3) *Follow-up monitoring will compare concentrations, not loadings, to water quality standards.*

Extensive field surveys, water quality monitoring, and review of aerial photos/topographic maps were used to establish the link between pollutant sources and instream concentrations (page xv). Supporting documentation is either referenced (page xv) or included in the TMDL report. Strengths and weaknesses in the analytical process are presented on Page xvi. The Critical condition for this TMDL was wet weather during the summer season (page xvi).

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.

Comment:

Storm sewer outfalls were included in the LA because they are not currently subject to NPDES permits. The required fecal coliform reductions for the Palmer River were calculated from observed concentrations at in-stream stations. Allocations are presented by river segment as the percent reduction required to go from existing conditions to the water quality standard (page xviii). They represent an overall reduction goal that is applicable to the composite of all sources contributing to the water quality impairment.

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to evaluate the effectiveness of management actions and to determine attainment of water quality standards throughout the entire waterbody. EPA believes that additional information that reflects localized impacts will be necessary to make future attainment decisions.

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.

Comment: Other than stormwater pipes, the only point source in the Palmer River watershed is the Lloyd Manufacturing company. This company makes rubber sheeting and thread, and discharges cooling water into Belcher Cove via Belcher Stream West. The WLA for this facility is 0/100 mL, which according to RIDEM (page xvi-xvii) is consistent with the RIPDES permit.

Other point sources that have the potential to impact the Palmer River include Blount Seafood and the Warren Wastewater Treatment Facility. Both facilities discharge to the Warren River, which lies just downstream of the Palmer River. As this is a tidal system, sources that impact the Warren River could potentially impact the Palmer River under flood tide conditions. Wasteload allocations for both facilities are consistent with the current permit limits (page xvi-xvii). RIDEM has concluded that the discharges from both facilities have an insignificant impact on concentrations in the Palmer River (page 35-37).

Approval of the WLA's in this TMDL is based solely on how the point sources impact the Palmer River; this should not be viewed as an approval or endorsement of mixing zones for Blount Seafood and the Warren Wastewater Treatment Facility; both facilities have permit limits that are set above the receiving water quality standard.

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.

Comment: As reported on page 60 of the TMDL report — An implicit MOS was built into the weighted average and the loading allocation prior to the final TMDL calculations. Throughout the TMDL process conservative assumptions were made and are described below:

- *Conservative estimates of both the amount of rainfall needed to produce runoff and recovery time were used in the weighted average geometric calculations; and*
- *The weighted average calculation emphasizes wet conditions because the wet weather period was determined using the 90th percentile value of ten years of weather data.*

EPA has determined that the implicit MOS in this TMDL is sufficient.

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)).

Comment: The Palmer River TMDL is protective of all seasons because the majority of data used in the TMDL was collected during the critical time period or summer season when bacteria levels are highest (Page xviii).

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.

Comment: Future monitoring was discussed in the report, but a detailed monitoring plan was not provided.

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.

Comment: An implementation plan is provided in the TMDL report.

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."

Comment: In this TMDL, no point sources are given less stringent WLA's based on an assumption that nonpoint source load reductions will occur. Therefore, reasonable assurance is not a necessary element of the TMDL approval.

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.

Comment: According to the TMDL report, the first element of public involvement was the establishment of a steering committee in 1993 comprised of members of local municipalities, state agencies, EPA, and the Pokanoket Watershed Alliance. The Pokanoket Watershed Alliance holds bi-monthly meetings that are open to the public; the watershed Alliance focuses efforts on several rivers in the area.

According to the TMDL report, the second element of public involvement was the presentation of this plan at two public meetings during January of 2002; January 9, 2002 at the Barrington Public Library in Barrington, RI, and January 10, 2002 at the Beckwith School in Rehoboth, MA. During these public meetings, RIDEM solicited public comments on the content and recommendations of the TMDL. The public comment period was from January 9, 2002 through February 10, 2002. RIDEM prepared responses to all 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 waterbody, the pollutant(s) of concern, and the priority ranking of the waterbody.

Comment: A submittal letter was included with the TMDL document.

13. Other Comments: