

RESPONSE TO PUBLIC COMMENTS FOR
DRAFT NPDES PERMIT MA0100439

Town of Webster
Webster, MA

On October 4, 2005, the U.S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection (MADEP) released for public notice and comment a draft National Pollutant Discharge Elimination System (NPDES) permit for the Webster wastewater treatment plant. The public comment period for this draft permit expired on November 3, 2005.

The following comments were received from the Town of Webster:

Phosphorus Limit of 0.2 mg/L

Comment 1

The draft permit limit of 0.2 mg/L total phosphorus April 1 through October 31 and 1.0 mg/L November 1 through March 31 is an arbitrary application of the States' requirement for Highest and Best Practical Treatment for waters which are prone to eutrophication and is not based on a TMDL for the French River. Indeed, the receiving water is included in the 2002 integrated water list and the draft 2004 integrated water list as a water in need of a TMDL for nutrients.

Based on the above discussion and the comments set forth below, the Town believes that EPA's conclusions are factually incorrect, and that the permit should be written with the existing limits, perhaps with some limited requirement to optimize summer removals through the existing facility, and that DEP should conduct a proper TMDL on this system, after which the permit can be rewritten to achieve the objectives of the TMDL. Otherwise, the town will be forced to make decisions about treatment plant upgrade investments, which would be subject to revision almost within the time frame of their implementation, which runs the risk of wasting time and money, even though data clearly suggest that current operations place the river system at little risk.

Response

The 0.2 mg/l total phosphorus limit is not an arbitrary application of HBPT, but is MassDEP's interpretation of its standards as documented in numerous previously issued NPDES permits which it has certified. EPA and MADEP are required to incorporate limits necessary to ensure attainment of water quality standards, whether a TMDL has been completed. Since a future TMDL or water quality analysis could result in a lower limit, the permittee should design and construct facilities that are compatible with future upgrades.

The data does not suggest that current operations place the river at little risk as discussed further below and as reflected by the state listing on 303(d) list for nutrients and low dissolved oxygen among other things.

Comment 2

The Fact Sheet makes factually incorrect and misleading statements concerning the impact of the Webster discharge on the quality of the French River, and reaches conclusions that contradict DEP's conclusions with respect to the impact of the discharge on receiving water.

Page 7 of the Fact Sheet presents excerpts from the DEP's "French and Quinebaug River Watersheds 2001 Water Quality Report" (the 2001 report). These excerpts describe the lower river as suffering from:

"Critically low concentrations of dissolved oxygen, high concentrations of nutrient and bacteria, and chronic toxicity, as well as heavy metal contamination in the sediment" 5th line of 2nd paragraph. (This is an excerpt from page 54 of the 2001 report, which is a discussion of the section of river from the wastewater treatment plant discharge to the State line.)

However, the Fact Sheet ignores the fact that this characterization is from an outdated 1986 report and the conditions noted therein predate the construction of the existing plant, the EPA fully understood or should have understood the inapplicability of this characterization, since the Fact Sheet indicates that the current plant was put into operation in 1991. According to Table B-1 of Appendix B to the 2001 report, there are no dissolved oxygen (DO) data to support the conclusion that the River suffers from critically low concentrations of DO downstream of the discharge. Neither are there chemical data taken downstream of the discharge which reflect high levels of nutrients.

Based on the above discussion, the Town believes that EPA's conclusions are factually incorrect, and that the permit should be written with the existing limits, although perhaps with some requirement to optimize summer removals through the existing facility, and that DEP should conduct a proper TMDL on this system, after which the permit can be rewritten to achieve the objectives of the TMDL. There can be little doubt that basing substantially more stringent permit terms on outdated and inapplicable evidence fails to conform with acceptable standards and is otherwise arbitrary and capricious.

Response

While water quality in Perryville Impoundment is influenced by the discharge, it is also significantly influenced by sedimentation. Sediment oxygen demand and recycling of phosphorus from the sediments contributes to ongoing impairment.

While treatment upgrades would have decreased the discharge impact, even with inconsistent compliance, in-place sediments were not remediated. Furthermore, even if zero phosphorus is assumed from the sediments, as

documented in the fact sheet, the discharge alone contributes excessive total phosphorus.

Comment 3

By incorporating the above referenced excerpt, the Fact Sheet implicates the plant as the source of the bacteria, heavy metals in the sediment and chronic toxicity. However, the 2001 report and the actual facts indicate that the past practices of certain upstream industrial dischargers are the true cause of the heavy metal in the sediments (see page 49 of the 2001 report). Moreover, in the past five years the Webster plant has rarely violated its permit limits for bacteria or metals, and has never violated its permit limits for chronic toxicity. The use of this old, out of date characterization of the receiving water is not only factually incorrect and arbitrary, but impugns the otherwise exemplary performance of the Webster plant.

Based on the above discussion, the Town believes that EPA's conclusions, again, fail to adhere to accepted standards and are otherwise arbitrary and capricious. Without applicable factual support, the EPA should not implement more stringent permit terms, especially where, as here, there is no evidence that the existing permit terms have resulted in increased risk to the river system.

Response

Neither the bacteria limits, metals limits or WET limits are based on Perryville Impoundment conditions. There are many sources of metals upstream of Perryville Impoundment. The fact that page 49 of the 2001 report discusses one significant source, does not in any way lead to a conclusion that it is the only source. Past discharges containing significant amounts of metals are well documented.

Comment 4

The Fact Sheet further states that:

“aquatic vegetation and filamentous green algae were abundant. The benthic community remained hyper-dominated by filter feeding hydropsychids. Algal cover in this partial-canopy sampling reach was approximately 25%. Microscopic examination showed that the green algae *Hydrodictyon* spp was very abundant in the substrate sample.” (This is an excerpt from page 55 of the 2001 Report, which is a discussion of the results of river sampling in 1999 taken downstream from the wastewater treatment plant discharge to the State line.)

This excerpt omits any discussion from the 2001 report of the reach upstream of the plant discharge. In that reach, which is not impacted by the Webster plant discharge, the algal coverage is more extensive, (50 to 60% as compared to 25% for the downstream reach), and the benthic community shows the same disturbances as the section below the plant discharge. It is thus clear that the biological systems show evidence of nutrient stress

above the point of discharge, and based on the information presented in the 2001 report, that stress is somewhat less downstream of the discharge, as measured by a lower level of algal cover.

Accordingly, because of the omission of material evidence, the Fact Sheets implication that the Webster Plant's discharge is the cause of this problem is misleading and factually inaccurate. As noted in the prior two comments, the lack of applicable factual support renders the draft permit terms arbitrary and capricious. Should the EPA seek to implement more stringent criteria it should, as stated above, base its analysis on a proper TMDL. Until that time, the draft permit lacks the necessary factual support.

Response

The commenter is correct in the assessment of significant impairment upstream. This is further indication of the potential to cause or contribute to standards violations and the need for reductions in loadings. Also upstream sources have recently been reduced to 0.2 mg/l. We note that this assessment of impairment was post upgrade.

Comment 5

The Fact Sheet also claims that "Historically, blooms of green and blue-green algae recurred during summer months in the Perryville impoundments". But the source for this reference also appears to be the 1986-era studies conducted by EPA. The other reference cited by the Agency is simply the results of a personal communication between the authors of the 2001 report and a DEP employee, with no data being presented or mentioned to support a more recent occurrence of these blooms. Accordingly, any use of this information is factually unsupported.

Based on the above discussion, the Town believes that EPA's conclusions are factually incorrect, and until the EPA can provide data to support its conclusions, the permit should be written with the existing limits.

Response

See response to comment # 2. The observations of MADEP employee confirm our analysis that excessive phosphorus loads, in conjunction sediment source of phosphorus, are continuing to contribute to the impairment of Perryville Impoundment.

Comment 6

The Fact Sheet claims that the observed values for total phosphorus above the treatment plant discharge are in the range of 0.016mg/l and 0.05 mg/l, and thus within the suggested range of 0.02 to 0.22 suggested in the draft New England wide document. Use of this non-site specific generalization is inappropriate for the following reasons:

The use of water column total phosphorus concentrations is inappropriate in this system because the system is dominated by rooted and attached algae which strip the phosphorus out of the water column. From the 2001 report it is very clear that a large portion of the French River watershed above the Webster discharge is eutrophic, and that rooted and attached aquatic plants such as water milfoil are extremely abundant. These plants can serve as sinks for phosphorus, creating low phosphorus concentrations in the water column, but resulting in objectionable levels of algae. These site-specific facts render mere statistical analysis less reliable. Moreover, without consideration of these site-specific facts, the permit writers have failed to properly ascribe adverse phosphorus impacts to upstream discharges. Additionally, the Fact Sheet should have specified whether the samples were filtered prior to analysis.

There is no synoptic phosphorus data taken downstream of the discharge to show that the plant discharge increases water column phosphorus. As aforementioned, until such time as adequate data is available to support the draft permit terms and until such time as existing permit terms can be shown to cause adverse impacts on the river system, the EPA should not implement the more stringent terms.

Response

We concur with the analysis of upstream condition and specifically the fact that phosphorus concentration alone is not a good indicator of eutrophication. See RTC # 4 relative to role of upstream in setting limits and # 5 relative to the basis, for the limits.

Comment 7

The Fact Sheet quotes the 2001 report when it says “Impairment is most likely the results of organic enrichment from a combination of upstream impoundments, urban run-off and the municipal treatment plant”. However, the Fact Sheet fails to mention the conclusion of the 2001 report that “results of the upstream/downstream community comparisons suggests that water quality conditions, especially those relating to impoundment effects and/or urban runoff associated with downtown Webster upstream of the discharge, rather than the discharge itself probably exert the most influence on the biological integrity at FR18” (the downstream sampling site) See 2001 Report, page 55.

In this manner, the permit writer has simply chosen to ignore vital information from the report that supports the conclusion that sources other than the plant are the prime cause of this impairment. Therefore, the draft permit terms are arbitrary and capricious.

Response

Both upstream and downstream biological assessment concluded that there was no significant difference relative to the reference site. However, the report notes that all sites

(reference included) reflect on imbalanced community that is hyper-dominated by filter feeding macroinvertebrates due to the eutrophic status of the entire system.

Comment 8

As part of the Fact Sheet, the Agency presents calculations that show that under conditions of extreme low flow, the discharge of effluent with a quality of 0.2 mg/l total phosphorus results in a receiving water quality generally in accordance with Gold book criteria. If, however, the Agency had used actual river flow data, and actual plant effluent phosphorus data, it would have reached the conclusion that the current plant performance achieves the same objective without the necessity for implementation of more stringent permit terms. Using plant data from October 2002 to September 2005, and available average monthly river flow data from the French River gauging station 0112500 (1948-1981), the increment in phosphorus associated with the plant discharge averaged 0.045 mg/l, which when added to the 0.05 mg/l background concentration assumed by EPA, results in a total of 0.095 mg/l which is below the concentration of 0.1 mg/l used as a benchmark by EPA.

As noted in the previous comments, all of the existing data support no necessity for modification of the existing permit limits. Without countervailing factual support, a decision to utilize more stringent permit terms is purely arbitrary. As a consequence the Town would be compelled to expend significant resources to meet unnecessary standards imposed by the draft permit.

Response

Water quality standards are required to be met under 7Q10 conditions. The use of a monthly average flow in this analysis is inappropriate.

Comment 9

Dilution Factor

Page 4 of the Fact Sheet presents the calculation of the dilution factor in the French River and assumes that the wastewater treatment facility is discharging the design annual average flow of 6.0 mgd when the river is at 7Q10. However, this is clearly not an accurate representation of existing conditions. Current average annual flow is approximately 3.3 mgd. As presented on the attached Figure 1, actual dilution factors calculated from monthly average plant effluent flow between October 2002 and September 2005 and average historic monthly river flow at the French River gage in Webster, indicate actual dilution on a monthly average basis, is not less than 13.5. In addition, as depicted on Figure 2, treatment plant flow tends to mirror river flow, that is low flow in the river corresponds to low flow at the treatment plant. In the summer months, when the French River is most likely to approach 7Q10, the treatment plant discharge is about 85% of the average annual flow. Therefore, at a minimum, the dilution factor should be revised as follows to use the current summer conditions of wastewater flow when establishing permit limits for the next five years:

$$\text{Dilution Factor} = (10.34 + (0.85*3.3))/(0.85*3.3) = 4.7$$

Only by employing correct methodology can the EPA arrive at factually and legally supportable permit terms. The draft permit fails to do so.

Response

Effluent limits are based on the permitted flow of the treatment facility. A permit based on a dilution factor of 4.7 would also include a flow limit of 2.8 mgd.

Comment 10

Compliance Schedule

While the Town steadfastly disagrees with the phosphorus limits proposed by the draft permit, the compliance schedule on Page 12 of 14 of the permit would require the Town to achieve the 0.2 mg/L seasonal permit limit within 42 months of the issuance date of the permit. This schedule is neither logical nor equitable. Based on our experience in the planning design and construction of numerous wastewater treatment facility upgrades in Massachusetts, as presented on the attached table, we feel it would be unlikely that the Town could get funding in place, select a consultant, prepare a facilities plan, design, advertise for bids, award a construction contract, permit the project, complete construction and initiate operation of the facility improvements to achieve the total phosphorus limits in 42 months. A more reasonable, yet aggressive schedule would be 60 months, as follows:

1. Within six (6) months submit status report relative to the planning of the facilities necessary to achieve the permit limits
2. Within (18) months finalize planning and commence design of the facility improvements
3. Within (36) months complete design of the facility improvements
4. Within (42) months commence construction of the facility improvements
5. Within (60) months complete construction and initiate operation of the facility improvements.

Allowing adequate time for planning, design, bidding and construction of a facility helps to ensure that the most cost-effective treatment process is selected, serves to minimize change orders during construction and eliminates premium prices for expedited schedules. Based on the foregoing discussion, any compliance should be required to be achieved no sooner than sixty (60) months after issuance of the permit.

Response

The regulation requires as soon as possible. Other similar facilities like Gardner and Middleborough have a schedule of 36 months and 18 months respectively. Both of them have a phosphorus limit of 0.2 mg/l. EPA believes that a schedule of 42 months is reasonable.

Comment 11

Total Residual Chlorine

The current permit requires the Town to take grab samples for total residual chlorine three times per day to meet the average monthly and maximum daily TRC limits of 29.7 and 51.3 ug/L, respectively. In addition to this, the draft permit requires that the town purchase and install a continuous chlorine residual analyzer and to submit continuous recording charts with the monthly DMRs, including a comparison of results with the grab samples taken. Requiring both grab sampling and continuous monitoring is excessive and unnecessary. Requiring either grab sampling or continuous monitoring should suffice. In addition, the total residual chlorine limit is a function of dilution. See the discussion above regarding dilution.

Response

Continuous monitoring data are not used in the Discharge Monitoring Reports (DMRs); only grabs are. However, with continuous monitoring, less frequent grabs are allowed and the permit is changed from 3/day to 1/day.

Comment 12

Ammonia-Nitrogen

Although the limits have not changed for ammonia-nitrogen the beginning of the winter month period has been changed from October 1 to November 1 in the draft permit. This requires the plant to maintain nitrification through October 31 at great cost to the Town. Although this is likely not technically problematic for the treatment plant operators, assuming wastewater temperatures do not decrease significantly in October, the Fact Sheet does not justify the need for this modification. The Town requests that this arbitrary modification be stricken from the permit.

Response

EPA agrees and the permit is changed accordingly.

Comment 13

Copper and Lead

The derivation of permit limits for copper and lead are based on the National Recommended Water Quality Criteria with a hardness of 45 mg/L as CaCO₃ and a dilution factor of 2.7. Based on hardness data in the French River obtained during Whole Effluent Toxicity Testing over recent years, a more representative value for hardness in

the receiving stream is 76 mg/L as CaCO₃. The values used in setting the permit limits were based on upstream hardness values, and do not reflect the actual conditions at the point of discharge. Based on this, using the 2.7 dilution factor, acute and chronic criteria should be recalculated with the resulting limits:

The revised river dilution should, as discussed above, also be applied to these parameters, further increasing the effluent limits. Again, the Town's recommendations in this regard arise from a regulatory standard to use available site specific criteria rather than over generalized national or regional criteria.

	<u>Copper</u>	<u>Lead</u>
Acute	29 ug/l	n/a
Chronic	20 ug/l	6.1 ug/l

Response

The existing permit used a hardness of 45 mg/l and continues the same in the draft permit. A review of the toxicity test results from September 2001 to March 2005 reveal that the receiving water hardness varies between 27 mg/l to 120 mg/l with an average value of 61 mg/l. The hardness is calculated based on the following formula :

$$\begin{aligned}
 H &= \text{Design flow of plant} \times \text{Ave. plant hardness} + 7Q_{10} \times \text{Ave. rec. wat.} \\
 &\quad \text{hardness} / \text{Design flow of plant} + 7Q_{10} \\
 &= 6.0 \text{ mgd} \times 76 + 10.34 \text{ mgd} \times 61 \text{ mg/l} / 6.0 \text{ mgd} + 10.34 \text{ mgd} \\
 &= 66.5 \text{ mg/l}
 \end{aligned}$$

Therefore, a hardness of 66.5 mg/l is used to calculate the metals criteria and the permit is changed accordingly as follows :

	<u>Copper</u>	<u>Lead</u>
Acute	25.7 ug/l	n/a
Chronic	17.8 ug/l	5.1 ug/l

Comment 14

Sampling Location

The note on page 3 of 14 of the draft permit requires that the plant develop a routine sampling program in which samples are taken at the same location, same time and same days of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the DMR. Sampling on the same days at the same time each month is not always practical given the non-routine operational constraints, holidays, etc. Based on the foregoing discussion, this requirement should be deleted from the permit.

Response

The condition anticipates that there will be infrequent times when there will be changes timing of the sampling and merely requires that this be documented.

Comment 15

Re-opener Clause

Page 6 of 14, footnote 13, indicates that this permit may be re-opened and modified to account for a more stringent (phosphorus) limit or new state criteria. The term of the NPDES permit is five years. The town would be unable to effectively plan for wastewater treatment improvements to meet proposed permit limits presented in the draft permit, knowing that these limits could be changed in less than a five year period. Even the five year renewal period makes it difficult to plan for treatment facility improvements. Based on the foregoing discussion, the Re-opener Clause should be deleted from the permit. The Town is also concerned such permit term could be used to circumvent the public process that is required to effectuate modification of the material terms of the permit.

Response

The town should design and construct a system that is compatible with adding additional TP treatment if necessary. Any change will be subject to P.N.