



FOR THE ASSABET SUDBURY & CONCORD RIVERS

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Ken Moraff, Director
Office of Ecosystem Protection
U.S. EPA-Region 1
5 Post Office Square, Suite 1100
Boston MA 02109

Submitted via: Lewis.Evan@epa.gov

Re: Comments on draft NPDES Permit No. MA0100480 issued to the City of Marlborough, Massachusetts authorizing wastewater discharges into the Assabet River from the Marlborough Westerly Wastewater Treatment Plant

Dear Mr. Moraff:

Thank you for the opportunity to submit the following comments on the above-referenced draft 5-year permit for the Town of Marlborough's municipal wastewater treatment plant discharge to the Assabet River under the NPDES program, with the Town of Northborough as co-permittee. In our opinion the draft permit has several good provisions, while others need to be strengthened. Most importantly, this draft permit, when implemented, will not achieve the Assabet's designated Class B water quality standards as required by its TMDL for phosphorus and federal law.

Below we provide some background on our organization and the Assabet River and downstream Concord River. We then provide a detailed discussion of the draft permit's provisions.

OARS is a non-profit watershed organization established in 1986 to protect, preserve and enhance the natural and recreational features of the Assabet River, its tributaries and watershed. In 2011 the Sudbury and Concord Rivers were added to our mission.

OARS has some 900 members and has operated a successful quality-controlled, water quality monitoring program with an EPA and MassDEP-approved QAPP since 2000, a biomass monitoring program, a large-scale volunteer annual river clean-up, and a variety of educational workshops, canoe trips and other activities designed to foster enjoyment and good stewardship of the rivers. OARS provides detailed annual Water Quality Reports to the local municipalities, the public and regulators (see: www.oars3rivers.org/river/waterquality). OARS' *Water Quality Monitoring Program Final Report: 2018-19 Field Season* is available at this site and has been provided to EPA Region 1 and MassDEP. The Assabet and Concord Rivers are part of the federally-designated Sudbury-Assabet-Concord Wild and Scenic River in segments flowing through the town of Concord and downstream through Billerica.

As discussed in the Comments section below, there are several positive aspects of the draft permit. However, the permit does not prevent with any certainty the discharge from contributing to an existing impairment of the water quality of the Assabet and Concord Rivers.

The Assabet and Concord Rivers

The Assabet River, once dubbed “the Cesspool of Massachusetts,” is now enjoyed by boaters, anglers, hikers and birdwatchers, and hosts many town conservation areas and the Assabet River National Wildlife Refuge on its banks. Yet major sections of the Assabet still suffer each summer and early fall from excessive nuisance aquatic plant growth that degrades recreation, aesthetics and wildlife habitat.

The Assabet River originates in Westborough and flows north through Marlborough, Northborough, Hudson, Stow, Maynard and Acton to its confluence with the Sudbury River in Concord. The Assabet contributes about half the flow of the Concord River, which then continues northward for 15.5 miles through the towns of Concord, Carlisle, Bedford, Billerica and Chelmsford before emptying into the Merrimack River in Lowell. The Merrimack River discharges to the Atlantic Ocean in Newburyport, Mass. As shown on the draft permit’s Fact Sheet, the Assabet River is classified as Class B – Warm Water, and the Concord River is classified as Class B – Warm Water, Treated Water Supply. The Concord River is the sole public drinking water source of the Town of Billerica.

The Concord River has had a notable history of recreational use, particularly fishing, swimming and boating, stretching back several centuries. Despite water quality impairments, Recreation, Scenery and Ecology were recognized as Outstandingly Remarkable Values of sections of the Assabet, Sudbury and Concord Rivers by Congress when these segments, collectively, were designated a Wild and Scenic River in 1999. RiverFest, an annual celebration of the three rivers, holds some 40 river-based events each year, from canoe trips to fishing classes. As the rivers’ popularity as a recreational resource has grown, area residents have become increasingly active in river stewardship.

The *Massachusetts Year 2016 Integrated List of Waters* lists the Assabet and Concord Rivers under Category 5 (Waters Requiring a TMDL; pp. 181-187). The segment MA82B-04, starting at the City of Marlborough discharge and ending at the Hudson discharge, is listed as impaired for Aquatic Plants (Macrophytes), Algae, Benthic Macroinvertebrates, *E. coli*, Fecal Coliform, Dissolved Oxygen, Total Phosphorus, and Fish Bioassessments. Downstream segments are also similarly impaired. There is a TMDL for phosphorus for the Assabet River, which is cited for the Aquatic Plants (Macrophytes), Algae, Dissolved Oxygen, and Total Phosphorus impairments for Segment MA82B-04.¹

The Assabet River does not meet its designated “Class B – Warm Water” water quality standard. In 2004 MassDEP published the Total Maximum Daily Load (TMDL) study for phosphorus for the Assabet River. In 2005 the agencies adopted a 2-step “adaptive management” approach to meeting the terms of the TMDL in which MassDEP and EPA were to jointly issue NPDES discharge permits to all four municipal wastewater treatment plants (WWTPs) discharging to the Assabet River in 2005 with phosphorus limits designed to be the initial step toward meeting water quality standards. The second step was to be the next 5-year permit, to be issued in 2010, which was to complete the process and contain discharge limits that would enable the Assabet River to meet its water quality standard. Between issuance of these two permits, a study of the role of the stored phosphorus in the sediments in the river was to be conducted, with recommendations on how to achieve a 90% reduction in phosphorus flux from the sediments. This study was completed by the Army Corps of Engineers in 2010, and it recommended removing several of the old mill dams on the Assabet River as the most effective way to reduce phosphorus recycling by the sediments. Since then, there has been no visible action, or even interest exhibited, towards the removal of any of the river’s main dams; the 2005 permit (which expired on November 25, 2010) has been administratively continued until now; and the draft Permit that is the subject of these comments is currently almost 10 years late. This 2005 permit for the Marlborough

¹ *Assabet River Total Maximum Daily Load for Phosphorus, Report No: MA82B-01-2004-01, 2004.*

Westerly plant, still in effect, has discharge limits of 0.1 mg/L Total Phosphorus (TP) during the growing season and ten times this concentration (1.0 mg/L TP) during the winter.

The Assabet municipalities have made large investments in improving effluent quality and reducing the nutrient pollution by phosphorus. Since 2005, all four municipal wastewater treatment plants on the Assabet have had Phase 1 NPDES permit limits for phosphorus of 0.1 mg/L TP seasonal and 1.0 mg/L TP winter. As of 2012, all four plants had completed upgrades to meet these effluent limits. New discharge permits were issued in 2019 for Hudson's and Maynard's treatment plants. These new permits contain the more stringent winter seasonal limits of 0.2 mg/L average monthly Total Phosphorus.

OARS' water quality monitoring results show the impact of improved phosphorus removal mandated by the 2005 permits: significantly lower in-stream water column phosphorus concentrations. However, our biomass monitoring² shows that while there has been a shift in biomass type, generally from duckweed to filamentous green algae, there has not been an adequate *reduction* in biomass in the Assabet River to meet the requirements of TMDL or Water Quality Standards for a Class B river. Far from it, there is continues to be significant aquatic biomass in the impoundments in Hudson, Stow and Maynard. According to the TMDL (p. 26), "a substantial reduction in total biomass of at least 50% from July 1999 values is considered a minimum target for achieving designated uses."

We also observe that changes in temperature, precipitation and other environmental shifts due to climate change can affect the receiving waters in various ways. It will be important in future permitting efforts to evaluate any climatic shifts that may affect the length of the growing season, in particular, if seasonal limits are still in place for nutrients.

OARS' COMMENTS ON THE DRAFT NPDES PERMIT:

1. We strongly support reporting on PFAS and regulation when possible

Studies indicate that PFOA and PFOS can cause reproductive and developmental, liver and kidney, and immunological effects in laboratory animals. Both chemicals have caused tumors in animals.³ The Clean Water Act protects both public drinking water supplies (e.g., Billerica) and a healthy aquatic community: "Water quality should be such that it results in no mortality and no significant growth or reproductive impairment of resident species. Any lowering of water quality below this full level of protection is not allowed."⁴ The Massachusetts regulations defining Class B waters state as follows: "These waters are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions."⁵ Since PFAS bioaccumulates, the impacts on other wildlife up the food chain could be significant, including on locally-important fish-eating birds (bald eagle, osprey, kingfisher, heron) and riverine mammals.

As soon as state surface water quality criteria for PFAS compounds are promulgated, if the applicant's reporting on the six PFAS compounds shows concentrations above state-established thresholds, we ask that a permit modification be developed as soon as possible to ensure that the levels are brought below those thresholds prior to discharge. This is particularly important if the 5-year permit extends beyond that period, as has happened with the 2005 permit. Once known and with the necessary state criteria in place,

² OARS Water Quality Monitoring Program Final Report: 2018-19 Field Season, March 2020, pp. 57-63.

³ EPA website accessed 8/17/20: <https://www.epa.gov/pfas/basic-information-pfas>

⁴ Water Quality Standard Handbook, Ch. 4: Antidegradation, EPA-823-B-12-002, 2012.

⁵ 314 CMR 4.05(b).

there should be no delay in reducing PFAS contamination in the Marlborough Westerly's WWTP discharge.

2. Screening Priority Pollutants and Contaminants of Emerging Concern

Due to the rapidly changing science on contaminants of emerging concern (CECs) and advances in detection levels, we ask that the applicant conduct a Priority Pollutant Screening every five years (in the event this Phase 2 permit is extended as was the Phase 1 permit) using the most current Priority Pollutant list. Where there are CECs that may reasonably be considered to be possible contaminants of the Marlborough effluent, such as PFAS, they should be included.

3. We support the 85% minimum efficiency of TSS and BOD removal

The addition of the 85% removal efficiency provides an important backstop to protect the rivers. This is consistent with the other recently-issued Assabet River permits (Hudson and Maynard).

4. We support the new lower summertime limit for Ammonia Nitrogen

Ammonia is a form of nitrogen that can be toxic to aquatic wildlife. Its toxicity is highly dependent on temperature and pH. We support this change in particular due to increasing ambient air and water temperatures in the summer when aquatic life, particularly fish, is most stressed.

5. Flow

We strongly support maintaining the discharge flow average monthly rate of 2.89 MGD as in the 2005 permit. This is supported by the data submitted by the applicant and the application.

6. The 7Q10 value should be recalculated at 5-year intervals no matter the actual interval of permit re-issuance.

Massachusetts Water Quality Standards require the use of the 7Q10 flow in pollutant loading calculations for determining dilution.⁶ The 7Q10 calculation is thus critical to the accurate determination of appropriate discharge limits. The drought and extreme low flows of 2016 were appropriately reflected in the recalculated 7Q10 in this draft permit. Given that climate change predictions consistently predict more frequent low flow periods for our rivers and streams, it is important that the 7Q10 calculation keep up with the changing conditions in the river. We strongly recommend that the 7Q10 be recalculated every 5 years. While this would be within the normal five-year permit reissuance process, it has been 15 years since the last permit was issued. Based on that fact, we strongly recommend a clause requiring the recalculation of the 7Q10 every 5 years whether or not the permit is being reissued. If the 7Q10 changes due to the recalculation, some of the permit limits could also change. Those newly calculated limits should take effect at that point, with a Permit Modification being issued if needed. We see this as an important measure to adapt to climate change.

⁶ 314 CMR 4.03(3)(a).

7. More information is needed on collection system mapping and efforts to maximize I/I removal.

We would like more information on the status of the collection system mapping required under the previous permit. We would also like more information on the impact of infiltration and inflow (I/I) on the treatment plant influent flows in order to understand the magnitude of the problem and progress made so far. Marlborough and co-permittee Northborough should be encouraged to commit to significant progress on reducing I/I as appropriate.

8. Public notification of Sanitary Sewer Overflows (SSO) and treatment bypasses

Section I.B.2 of the draft permit requires the Permittee to notify the public within 24 hours of becoming aware of any unauthorized discharge. While we strongly support notification of the public of SSOs and treatment bypasses, allowing 24 hours for this public notification is wholly inadequate. Although occurring infrequently, when there is a sanitary sewer overflow or release for any reason, or a bypass of untreated or partially treated sewage, the City of Marlborough should also notify the municipalities downstream, including Billerica, and post a notice on their website within 2 hours to alert the public that they and their pets should avoid being in contact with the water for a specified time interval. Posting on the city's website is important but not sufficient notification of the public, as an average river user would have no reason to check the website prior to using the river. We highly encourage the establishment of a notification system by email or text message whereby river users can request direct *timely* notification. This is what a bill just passed by the Massachusetts House would do.⁷ Due to the river's flow, public notification after the contamination has flowed significantly downstream is not useful and does not protect public health. Such notifications are common practice for Combined Sewer Overflows in other communities.

9. The draft permit does not fully comply with the federal and Massachusetts Clean Water Acts because the total phosphorus discharge concentration limits do not ensure the attainment of the water quality standards established for Class B waters, as required by Section 301(b)(1)(C) of the Clean Water Act and 40 CFR § 122.4(d).

We support the reduction in winter Total Phosphorus (TP) limits and ask that a year-round limit of 0.1 mg/L TP be mandated in this permit and that the reporting requirement be restored.

The draft permit reduces the winter "seasonal" concentration from 1.0 mg/L to 0.2 mg/L with a one-year compliance schedule. This is a significant reduction and is a logical step in line with the study by the Army Corps of Engineers on the contribution of sediments impounded by dams on the Assabet River to water quality impairment due to phosphorus recycling.⁸ This study showed that phosphorus discharged from wastewater treatment plants during the winter was likely to be taken up by sediments and subsequently released to fuel aquatic plant growth in the next growing season. OARS' annual biomass survey of the three impoundments downstream of the Marlborough discharge (Hudson, Gleasondale, and Ben Smith) clearly shows that duckweed has not been a sufficient proxy for all biomass. Excess biomass growth, particularly filamentous green algae (commonly called "pond scum"), has continued, and expanded in some areas, despite reduced water column concentrations of phosphorus. This plant, as well as rooted nuisance aquatic plants, derives its nutrients from the sediment. With increasingly hot summers and drought impacting flows in the river, this problem has been magnified, causing particular concern this August, 2020, as shown in these photos of the Assabet in Stow:

⁷ <https://malegislature.gov/Bills/191/H4921> This bill has now been forwarded to the Senate and has strong support.

⁸ *Assabet River Massachusetts: Sediment and Dam Removal Feasibility Study*, US Army Corps of Engineers, September 2010.



Since there has been no progress in remediating the sediment impacts through dam removal or other methods, the only tool available through this permit is to significantly reduce the new phosphorus being added to the river and its impoundments. The new winter TP concentration in this permit, however, is still twice the growing season concentration of 0.1 mg/L. The phosphorus loading can also be expected to be higher in the winter due to a larger volume of wastewater discharged. We recognize the effort made by the treatment plant operator to keep TP concentrations well below the 2005 permit limit of 1.0 mg/L. However, since this reduced winter TP limit is the only attempt made in this permit at meeting the TMDL target of 90% reduction in sediment phosphorus flux, we ask that a year-round limit of 0.1 mg/L TP be instituted.

No justification has been offered for why the winter limit should be twice the summer limit in this permit. The Fact Sheet (at p. 28 of 42) states only that a reduced winter limit of 0.2 mg/L “is consistent with the technology based Highest and Best Practical Treatment requirement in the MA SWQS at 314 CMR 4.05(c) [*sic*].” (see 314 CMR 4.05(5)(c).) But no explanation or data are provided to explain or justify why a winter limit of 0.1 mg/L would not be “consistent with” the technology used at the Marlborough treatment plant. Furthermore, this MassDEP regulation, appropriately, does not use the loose, nearly meaningless, and therefore arbitrary “consistent with” language. Here is what the regulation states:

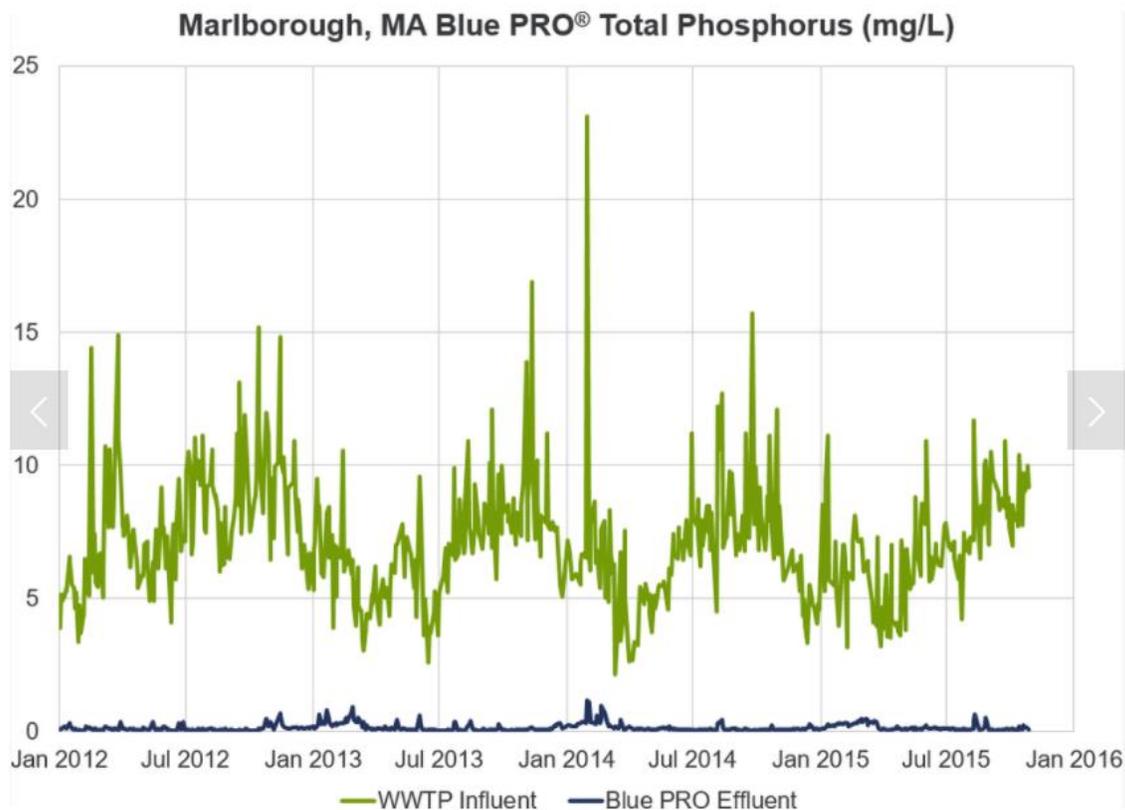
“Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses.”

If MassDEP has determined that the Blue PRO system used by Marlborough cannot achieve 0.1 mg/L TP during the winter season, that determination needs to be provided in the Response to Comments and should have been stated in the Fact Sheet. We note that the website for Blue PRO’s manufacturer cites the remarkable efficacy of this technology to “meet ultra-low phosphorus limits.” (See: <https://nexom.com/blue-pro#performance-blue-pro-1>) It states:

Blue PRO® technology installed at your plant allows you to:

- Meet 20 µg/L (0.02 mg/L) Total Phosphorus limits

Nowhere on this website is there any mention that meeting these ultra-low limits cannot be achieved during cold months of the year. To the contrary, this graph provided on the website shows the limits achieved year round at the Marlborough treatment plant:



By January 2015 this graph indicates no apparent significant difference in the summer and winter TP concentrations achieved using the Blue PRO technology at the Marlborough plant. Therefore, a TP limit of 0.1 mg/L, or less, should be achievable year round. The final permit limit needs to reflect this reality, and the mandated winter TP limit should be 0.1 mg/L.

Additionally, no justification has been offered for the one-year schedule for compliance with the new 0.2 mg/L concentration limit when other wastewater treatment plants in the watershed (Hudson and Maynard, 2019) did not receive an interim limit or time to put this requirement into place. The Fact Sheet (p. 28) simply states: Since the Facility will be unable to achieve the cold weather effluent limit of 0.2 mg/L without changes to the treatment process . . ." but provides no evidence to this effect. We would be grateful for an explanation, as any unwarranted delay in reducing the winter season phosphorus release is of concern. If there is not sufficient justification for this, granting this compliance year becomes arbitrary and capricious, and this compliance year should be eliminated in the final permit.

Further, the requirement to Report TP Maximum Daily discharge values that was in the 2005 permit has been removed and should be restored. This requirement from the 2005 permit provides valuable data on which to base new discharge limits and assess their feasibility, as shown in the Fact Sheet (p. 28 of 42, and Appendix A). These data may also point to treatment plant functions or opportunities for optimization that may warrant attention. This is also a deviation from the 2019 Hudson and Maynard permits which has not been explained.

10. We support the addition of total Kjeldahl Nitrogen, Total Nitrate/Nitrite, and Total Nitrogen reporting, but an expectation should be set for optimization of nitrogen removal.

Since nitrogen is the controlling nutrient in estuarine systems, and nitrogen has been found to pose a threat to the Merrimack estuary (Fact Sheet, p. 24-25), we need to consider the downstream effects. As the Fact Sheet narrative discusses, nitrogen levels in the Merrimack River estuary are a concern for the health of this near-shore coastal system. This permit requires only sampling and reporting of most forms of nitrogen (limit only for ammonia) arguing more study is needed. In the meantime the estuary is, at best, stressed and the Gulf of Maine experiences increasingly worrisome conditions including increasing geographical and spatial extent of red tide blooms. We recommend that the permit require the WWTP to reduce nitrogen in its effluent to the maximum extent possible with its current treatment process year-round, and to report on its efforts to reduce nitrogen in the effluent. While this would not be a permit limit or a requirement to add more treatment processes, we think it is important to encourage the facility to investigate source reduction and process optimization at this point.

CONCLUSIONS

While the proposed draft permit has several good and important components, we have recommended restoration of some of the 2005 requirements and some additional requirements. Some of these additional requirements are mandated by the federal and/or state Clean Water Acts. Clearly, compliance with the 2005 permit discharge permit has had a beneficial impact; public health and environmental health both benefit from this investment of money and effort.

Thank you for your work to restore the health of our rivers and watershed. We hope that these comments are useful.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'A. Juma', with a long horizontal flourish extending to the left.

Alison Field-Juma
Executive Director

CC: Martin Suuberg, Commissioner, MassDEP
Christopher LaFreniere, Assistant Commissioner of Utilities, Marlborough
Scott Charpentier, Director, Department of Public Works, Northborough