



November 26, 2007

Ian Bowles, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge St., Suite 900
Boston MA 02114

Attn. Nicholas Zavalas, MEPA Office

**Subject: OAR Comments EOEEA #12348
Assabet River Consortium Final CWMP/Final EIR
Phase IV—Recommended Plans**

Dear Secretary Bowles,

Thank you for the opportunity to review and comment on the Assabet River Consortium's Final Comprehensive Wastewater Management Plans (CWMPs) and Final Environmental Impact Reports (FEIRs). This is Phase IV of a comprehensive planning process designed to identify how the six Assabet Consortium communities will meet future wastewater disposal needs. Among other requirements, these wastewater management plans must comply with the federal Clean Water Act and Massachusetts Surface Water Quality Standards.

OAR supports the work of those Consortium municipalities who are making substantial contributions to the restoration of the Assabet River by satisfying the requirements of DEP's Assabet River Phosphorus Total Maximum Daily Load (TMDL) and their current NPDES wastewater discharged permits. However, OAR strongly opposes the City of Marlborough and Town of Northborough's proposed expansion of the Marlborough Westerly WWTF, which would increase the quantity of phosphorus and wastewater effluent discharged to the Assabet River in violation of the load and flow limits established in DEP's phosphorus TMDL. The increased phosphorus load would undermine significant work and investments by other Consortium communities as well as the state and federal government. The extensive sewerage proposed in Northborough would also reduce streamflows in Cold Harbor Brook and Howard Brook. These tributaries provide critical base flow to the Assabet River and support trout habitat in the upper watershed.

Both Marlborough and Northborough failed to address these impacts in their respective FEIRs. For this reason, we request that the Secretary's Certificate require these communities to submit separate Notice of Change documents or Supplemental FEIRs that provide detailed analysis and evaluation of the potential environmental impacts associated with Northborough's future sewer expansion and Marlborough's proposal to increase wastewater and phosphorus discharges from the Marlborough Westerly WWTF. Alternatively, the Secretary's Certificate could eliminate further consideration of Option 1A, discharge of 4.15 mgd of effluent to the Assabet River.

OAR's detailed comments on Marlborough's and Northborough's FEIR Recommended Plans are provided below.

Increased effluent flows from the Marlborough Westerly WWTF will have a negative environmental impact. Camp, Dresser & McKee (CDM), Marlborough's wastewater consultants, state in the FEIR (Appendix B, p. 1) that increasing the effluent discharge to the river from 2.89 mgd to 4.15 mgd is the "economically and environmentally preferred solution." CDM further asserts that it will have "no detrimental effect on the Assabet River or Concord River." These assertions are based on scant and faulty analysis. Discharging effluent to the river is the least costly alternative, which is not surprising given that centralized wastewater treatment is often the least costly alternative. For the Assabet River, it is the root cause of water quality degradation. The Marlborough and Northborough FEIRs provide no new information that responds to the concerns raised in OAR's previous DEIR comments. Figure 2 (App. A, p. 1-9) illustrates the fact that if the Marlborough Westerly plant flow is increased, the trend of reducing phosphorus loads to the river during the growing season (April-Oct.) would be reversed. The result would be worse for winter phosphorus loads, which CDM's Draft Dam and Sediment Study¹ indicates have a significant effect on summer eutrophication. Under the FEIR Recommended Plan for Marlborough and Northborough, winter time phosphorus loads would increase 1,586 pounds, or 43% above currently permitted loads.

The claim that increased wastewater discharge is beneficial to river water quality is false. CDM states in the Marlborough FEIR that "subsequent to the implementation of wastewater treatment plant improvements at the four POTWs in the basin, *the water quality criteria in the River will be attained* and the incremental increase in the discharge from the Westerly WWTF will be insignificant and perhaps beneficial to maintaining and protecting the water quality in the Assabet River" (Appendix A, p. 1-12, emphasis added). This is untrue. According to the TMDL, to attain water quality standards in the Assabet, sediment phosphorus flux must be reduced 90%, *in addition to meeting current discharge permit limits*. In order to achieve the 90% sediment phosphorus flux reduction, EPA and DEP may require more stringent phosphorus limits at the Marlborough Westerly and other Assabet River treatment plants. (See attached April 2005 DEP/EPA letter to Assabet Consortium communities).

Furthermore, in the TMDL "Response to Comments," DEP has already addressed Marlborough's claim that increased WWTP flows will benefit the river: "It should be also noted that the beneficial impact you refer to from using projected flows is still based on the ability to significantly reduce sediment phosphorus flux. Since the ability to reach these levels remains uncertain so do the potential beneficial results that you have cited." (Comment #14, p. 73).

As described in detail in OAR's DEIR comment letter, the TMDL models show that increased phosphorus loading by Marlborough would indeed have a *detrimental* effect on water quality in all impoundments if sediment phosphorus flux is reduced less than 90%. For example, the TMDL model showed that if sediment phosphorus flux was reduced 75% instead of 90%, Marlborough's and Northborough's proposed flow increase to 4.4 mgd, along with an additional 1.27 lbs/day of phosphorus, would increase biomass in the Ben Smith impoundment in Stow and Maynard by 32% and the Gleasondale impoundment in Stow by 180%. Under this scenario, the 0.1 mg/L discharge limits at the treatment plants achieved a total biomass reduction of only 41%,

¹ CDM, Draft Modeling Report. Assabet River Sediment and Dam Removal Study. Prepared for U.S. Army Corps of Engineers, New England District, September 2007.

down from the TMDL's predicted 55% reduction.² Because DEP's TMDL specifies that biomass on the river must be reduced at least 50% for the river to meet water quality standards, a sediment flux reduction of 75% or less would not meet water quality standards.

In contrast, the model runs cited by CDM in Marlborough's FEIR (Runs 8, 10 and 14) assume fully 90% sediment phosphorus flux remediation, although there is no certainty that this will be achieved. Preliminary results from the CDM's Draft Dam and Sediment Study show that not only will dredging not achieve this objective (and is unlikely to be recommended), but that removing all the dams would also fail to meet the 90% sediment phosphorus flux reduction goal. Were dam removal recommended, it is clear that this would be a multi-year process and would encounter considerable resistance among some members of the public. The CDM Draft Dam and Sediment Study may conclude that the best way to reduce sediment phosphorus loads to the river is to further reduce phosphorus loads from the WWTPs. Thus, increasing wastewater discharges and phosphorus loads to the Assabet at this time would contribute to existing water quality impairments and violate state water quality regulations. In addition, these increases could preclude the ability of the Marlborough Westerly Plant to meet reduced (Phase 2) TMDL phosphorus allocations in the future.

The TMDL Margin of Safety cannot be used to justify additional flow. The Marlborough FEIR argues that the margin of safety for phosphorus loading used in the TMDL can be reduced to accommodate additional phosphorus loading from the Westerly WWTP (App. B, pp. 8-9). The TMDL's margin of safety of 6.1 lbs/day of total phosphorus (TP) was established by DEP to account for the significant uncertainties associated with achieving a 90% reduction in sediment phosphorus flux. In the TMDL "Response to Comments," DEP wrote, "DEP considers the reduction in sediment flux by 90% as the biggest challenge with the largest uncertainty. This uncertainty has led the Department to incorporate a combination of conservative assumptions and larger than usual explicit margin of safety as part of this TMDL." (p. 81) The Assabet River is still impaired by excess phosphorus and the uncertainty of the 90% sediment phosphorus reduction remains.

In addition, DEP's baseline scenario used to calculate the 6.1 lbs/day TP margin of safety (i.e., the TMDL allocation without the margin of safety (Run #10)), did not meet the state's goals for biomass (a 50% reduction) or periods of supersaturated DO (a 30% reduction). This baseline TMDL (Run #10) also assumed that the municipal wastewater treatment plants discharged *at 1999 flows*, not the higher permitted design flows. In the TMDL Report, DEP acknowledged, "...Run (10) was close to meeting standards, but did not meet all of the goals and therefore is not considered to meet the TMDL." (p. 41) Similarly, EPA wrote in its September 2004 TMDL approval letter to DEP, "EPA notes that using Run 10 as an upper limit for the margin of safety does not constitute a margin of safety for meeting the narrative criteria for aesthetics and nutrients because not all of the chosen targets predict attainment." (p. 6, Sept. 23, 2004). For these reasons, the 6.1 lbs/day TP margin of safety is not conservative, but in fact, inadequate.

Stormwater TP contributions are not equivalent to effluent discharges.

The Marlborough FEIR notes that phosphorus discharged to the river in storm events can exceed WWTP discharges. Stormwater phosphorus contributions will become more important once municipal WWTP phosphorus loads are reduced. In the meantime, it is important to remember that approximately 90% or more of the phosphorus discharged from the WWTPs is in the

² TMDL Supporting Documents, ENSR Memorandum from Ken Hickey to Russ Isaac, DEP, "Assabet River Nutrient TMDL: Water Quality Modeling Results for 2 Alternative Management Scenarios", 8 October 2003, Tables 4 & 5.

dissolved, i.e. biologically available, form. The phosphorus contributed from non-point sources is mostly in the particulate form and is not available for immediate uptake by plants and algae.

Well reactivation in Northborough will exacerbate the water imbalance. The Marlborough FEIR (App. A, p. 1-18) states that “100% of Northborough’s water use is obtained from the MWRA system.” This is misleading, as the Town of Northborough has already commenced the process of reactivating its registered water supply wells which have been dormant for several years. USGS has documented that well pumping combined with expanded sewerage is likely to have major impacts on stream flow in the tributaries in Northborough, as water is transferred from the tributaries to the Assabet mainstem. Specifically, the USGS model shows a 0.2 mgd decrease in September (the critical low-flow month) of non-storm tributary streamflows in Cold Harbor and Howard brooks (Fig. 36), a 49% decrease in streamflow (see Attachment A). Hop Brook would experience a 23% decrease in September streamflow.³ Northborough’s Howard and Hop brooks both support brook trout populations.

The impact of well reactivation, combined with loss of groundwater recharge due to sewer expansion and suburban sprawl, is ignored in the environmental analysis of both Northborough and Marlborough. In terms of loss of water supply recharge due to sewer extension, Northborough’s FEIR states that the industrial areas where sewers are planned “are, for the most part, outside of the limits of the Groundwater Overlay Protection District.” (p. 4-5) However, examination of the maps (p. 5-9) show at least 50% overlap of new sewer extensions with areas designated as “Primary Recharge Areas”.

Scalable phosphorus-removal technology is essential. The Assabet Consortium communities were notified by DEP and EPA that further reductions in phosphorus limits in future NPDES discharge permits may be necessary (See attached April 2005 DEP/EPA letter to Assabet Consortium communities). The data presented on BluePro, the technology selected by Marlborough, do not clearly show what level of phosphorus removal may be achieved. The BluePro phosphorus-removal technology met the 0.1 permit limit with one stage of filter. “A second stage could be added in the future to reduce effluent phosphorus concentration further if required.” (P. 6-2) We hope that the selection process insured that technology was selected that will be able to meet future NPDES limits.

Permit modification would set a dangerous and illegal precedent. All the Assabet Consortium communities other than Northborough and Marlborough have made tough decisions to ensure that they live within their wastewater budgets. If Marlborough is granted a flow increase, it is more than likely that the other communities will follow suit. In the words of Shrewsbury (FEIR, p. 2-15): “The Town of Shrewsbury reserves its right to conduct a similar [antidegradation] study in the future concerning the impact of adding flows beyond the current flow limit of 7.68 mgd at the Westborough WWTP. Indeed, the Town of Shrewsbury might have undertaken such a study during the previous phase of this CWMP/EIR (Phase III) had it known that this option was available at the outset...” The implications couldn’t be clearer.

Opportunities to minimize wastewater flow—and maximize economic use of water resources—are being missed. Below we list several areas where wastewater flow may be reduced, and water resources used more efficiently. It should be noted that under the Clean Water Act an effluent discharge increase can only be granted if there is no feasible alternative. The

³ USGS, 2004, *Simulation of Ground-Water Flow and Evaluation of Water-Management Alternatives in the Assabet River Basin, Eastern Massachusetts*. USGS, Scientific Investigations Report 204-5114, 2004, p. 69.

Marlborough and Northborough FEIRs have failed to demonstrate that there are no feasible alternatives.

1. Groundwater discharge is feasible: The FEIR shows that land has been purchased next to the wastewater treatment plant for this purpose, and that a groundwater discharge is technically feasible. While it was rejected for financial reasons, it should be no surprise that groundwater discharge is more costly than discharge to the river. Since this alternative was rejected based on cost, the cost analysis should have been recalculated using the revised flow of 4.15 mgd flow figure. This site is not optimal, for reasons outlined in the Marlborough FEIR. OAR would prefer that Northborough revisit the groundwater discharge sites in its tributary basins.
2. Projected flows have not been reduced from the 2001 Needs Analysis (CWMP, Phase I), despite changes in technology and successful efforts to conserve water.
 - a. Northborough's 0.25 mgd reduction in projected wastewater flow to be directed to the Marlborough Westerly plant was achieved by simply moving some sewer extension projects beyond the 2030 time horizon. Northborough has not reevaluated any of the wastewater projections of the Phase I 2001 study in light of new technologies or land use objectives.
 - b. Residential water conservation. According to Marlborough's FEIR, the city has been quite successful in reducing its current wastewater flow by reducing residential per capita water use from 80 gpcd to 70.8 gpcd, and reducing its infiltration and inflow (I/I) rate from 32% to 26%. This results in a major reduction of wastewater flow: meeting the State's water conservation standard (65 gpcd) would reduce wastewater by 1.0 mgd from the 80 gpcd level used in the Phase I Needs Analysis (Secretary's Certificate, p. 9). However, it appears that all reductions in wastewater flow are being used for additional economic development *beyond* that envisioned in the Phase I Needs Analysis: "Given the continued interest in commercial and industrial development in Marlborough and understanding the pending development projects, the updated analysis revealed that the high flow projection for industrial and commercial development established in the 2001 Needs Analysis remains the most appropriate estimate." (Marlborough FEIR, App. B, p. 2). Hence the gains made by conservation have not been used to reduce effluent flows. The same can be said for Northborough, which has achieved a commendable 56.5 residential gpcd water use, down from 80 rgpcd in the Phase I analysis. With over 84% of the town's wastewater flow being residential, and calculated at 90% of drinking water use, this amounts to a sizeable savings that does not appear to reduce projected wastewater flows. (Phase I, p. 3-30)
 - c. Infiltration and Inflow (I/I). Northborough's FEIR shows a high level of I/I into its sewer system in industrial area A. Average wet weather flow was approx. 150% of average dry weather flow. "During this period of seasonal groundwater elevation, infiltration represents more than half of the total wastewater flow from Northborough." (Ph. I Report, p. 2-44) In addition to work performed by the town, Northborough should *require* developers to perform or fund I/I removal. Currently Marlborough requires developers to "identify, fund and remove I/I at a 3:1 ratio prior to connecting" (Marlborough FEIR, App. A, p 1-11). Burlington uses a 5:1 offset ratio, and MWRA uses 4:1. However this is not enough to cover the actual cost of I/I removal. A 2007 study prepared for EOEEA shows that in

Massachusetts DEP sets ratios from 4:1 to 10:1.⁴ Both communities would benefit from requiring I/I offset ratios well over 3:1.

- d. Requirements for industrial and commercial enterprises. Future industrial wastewater is the lion's share of Northborough's anticipated new wastewater flows—79%. These flow projections assume no success in water reuse. The town provides no evidence that current or future industries will be required to conserve water or reduce wastewater flows beyond basic state requirements, e.g., require water reuse, meet LEED standards for water efficiency, etc. If the municipalities take water reuse seriously, then it should be factored into flow estimates over the 20-year time horizon.
- e. Institutional controls: The Secretary's Certificate required the FEIRs to "include a description of those legal and institutional mechanisms that each Consortium community proposes to employ to control sewer connections and extensions..." (p. 10) Neither Marlborough nor Northborough have proposed or implemented bylaws to limit sewer connections in accordance with municipal plans and capacity. In contrast, Westborough and Shrewsbury have taken concrete steps to preserve the integrity of their flow allocation by obtaining Town Meeting approval to petition the State for Special Legislation to enact flow limiting by-laws which enable the towns to deny sewer connections and enforce flow allocations to needs areas.
- f. Innovative/Alternative Systems have the potential to reduce sewer connection needs. There are around 17 I/A technologies approved by DEP to replace failing septic systems. Northborough should show that these alternatives have been fully examined in its sewer needs areas.

The carbon impacts of sprawl. The Marlborough and Northborough FEIRs compared the carbon dioxide (CO₂) emissions of the disposal alternatives for the increased effluent flow of 4.15 mgd. However there was no comparison with the CO₂ emissions from the *permitted* effluent flow of 2.89 mgd. What is the impact of sewer expansion and the attendant development, traffic and impervious surface on CO₂ emissions? One can assume that far more than 22 acres of forest will be felled. The greenhouse gas emissions analysis is incomplete if the impact on land use is not taken into consideration.

In conclusion, the Comprehensive Wastewater Management Plans show a good faith effort by the majority of the Assabet Consortium communities to identify technologies and plan WWTP upgrades to meet NPDES permit requirements. We applaud those communities—Shrewsbury, Westborough, Maynard and Hudson—that took MEPA requirements to heart and adjusted their plans to stay within their effluent discharge limits or provide for discharge to groundwater. These plans are not only good for the Assabet River, but also make financial sense for the communities by using water—an increasingly valuable and scarce resource—efficiently, limiting wastewater flows requiring treatment, and protecting drinking water supplies.

Regarding the Marlborough and Northborough FEIRs, we again request that the Secretary's Certificate require these communities to submit separate Notice of Change documents or Supplemental FEIRs that provide detailed analysis and evaluation of the potential environmental impacts associated with Northborough's future sewer expansion and Marlborough's proposal to

⁴ In Saugus a 10:1 ratio was reduced to 6:1 once 250,000 GPD of inflow had been removed, and the ratio will go to 4:1 once 500,000 GPD removal is reached. "Minimizing Municipal Costs for Infiltration & Inflow Remediation: A Handbook for Municipal Officials", June 30, 2007, Prepared for EOEA, Watershed Improvement Program by Steven Perlman, NPRWA. p. 29.

increase wastewater and phosphorus discharges from the Marlborough Westerly WWTF. Alternatively, the Secretary's Certificate could eliminate further consideration of Option 1A, discharge of 4.15 mgd of effluent to the Assabet River.

Thank you for considering our comments. Please call me or Alison Field-Juma, OAR's Policy Director, if we can assist you in this matter.

Sincerely,



Susan F. Beede
Acting Executive Director

Cc: Paul Blazar, Town of Hudson
Nancy Stevens, City of Marlborough
John Curran, Town of Maynard
Barry Brenner, Town of Northborough
Dan Morgado, Town of Shrewsbury
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Paul Hogan, MA DEP
US Representative James McGovern
US Representative Niki Tsongas
Senator Pamela Resor
Representative Cory Atkins
Representative Stephen LeDuke
Representative James Eldridge
Representative Patricia Walrath

Attachments:

- A. Impact of water withdrawals, sewerage and wastewater discharge on streamflow
- B. DEP/EPA letter

Attachment A. Impact of water withdrawals, sewerage and wastewater discharge on streamflow

| Current vs. Future Non-storm Streamflows in September | | |
|---|---------------------------------|---|
| Assabet Subbasin | % Decrease in Streamflow | Municipalities |
| Fort Meadow Brook | 98% | Hudson, Marlborough |
| Cold Harbor & Howard Brooks | 49% | Northborough, Shrewsbury, Boylston |
| Hop Brook | 23% | Northborough, Shrewsbury, Westborough |
| Stirrup Brook | 10% | Westborough, Marlborough |
| Taylor Brook | 9% | Maynard, Stow, Sudbury |
| Fort Pond Brook | 4% | Littleton, Boxborough, Acton, Maynard, Stow |
| North Brook | 4% | Clinton, Boylston, Berlin, Northborough, Bolton |
| Danforth Brook | 2% | Hudson, Bolton |
| Nashoba Brook | 1% | Acton, Concord, Carlisle, Littleton, Westford |
| Elizabeth Brook | 0% | Stow, Bolton, Harvard, Boxborough |
| Spencer Brook | 0% | Concord, Carlisle, Acton |
| <p>Source: USGS, <i>Simulation of Ground-Water Flow and Evaluation of Water-Management Alternatives in the Assabet River Basin, Eastern Massachusetts</i>. Scientific Investigations Report 2004-5114. Future flows based on currently permitted water withdrawals and wastewater discharges, with extension of Northborough sewer system to all developed areas.</p> | | |