

Assabet River NPDES Permits - Response to Comments

On June 11, 2004, the United States Environmental Protection Agency (“EPA”) and the Massachusetts Department of Environmental Protection (“DEP”) (together, the “Agencies”) released for public comment draft permits for the Hudson Wastewater Treatment Facility (“Hudson WWTF”), Marlborough Westerly Waste Treatment Works (“Marlborough WWTW”), Westborough Wastewater Treatment Plant (“Westborough WWTP”) and the Maynard Water Pollution Control Facility (“Maynard WPCF”) (collectively, “Permittees” or “POTWs”). The draft permits were subject to a public comment period from June 11, 2004 to July 28, 2004. During the comment period, public hearings were held on July 13, 2004 in Hudson, Massachusetts and July 14, 2004 in Westborough, Massachusetts. The Response to Comments below encompass written comments submitted to EPA and DEP during the public comment period and comments made during the public hearings.

Comments were received from the Town of Hudson (“Town” or “Hudson”) in letters dated June 28, 2004 and July 14, 2004:

Comment No. 1: The Board of Selectmen’s address should be 78 Main Street.

Response No. 1: This correction is made for the Final Permit.

Comment No. 2: The Town of Hudson has a significant problem with the requirement that the permittee complete an evaluation of dam removal/sediment remediation by March 2007. The Town of Hudson is opposed to including this requirement as part of the permit or as an obligation of the communities absent the financial participation of the Army Corps of Engineers, and the project management participation of DEP and/or EPA. No single government or organizational entity at the local level is capable of conducting the study. The role of the Assabet River Consortium was to complete the Comprehensive Wastewater Management Planning (CWMP) process only. The MADEP has the authority and capability and should conduct the study.

Response No. 2: The sediment remediation study (“Remediation Study”) is important to meet the objectives outlined in the recently approved Total Maximum Daily Load for the Assabet River (“TMDL”). The TMDL requires the “removal of total phosphorus from POTW effluents to 0.1 mg/l during the growing season and a 90% reduction of phosphorus sediment flux” in order to meet water quality objectives for the Assabet River. TMDL at p. 7. However, the Agencies agree that DEP is better suited to coordinate the Remediation Study. Unlike the Assabet River Consortium (“Consortium”), which is an informal association representing the interests of impacted communities, DEP is positioned to solicit and evaluate input from all active stakeholders in the permitting process. Also in contrast to the Consortium, DEP will provide the institutional stability and resources necessary to guide the study to completion. The Agencies, therefore, have decided not to require in the Final Permit that the Consortium complete the Remediation Study.

Although the Remediation Study is no longer a permit requirement, the Agencies believe that it is important for the communities to participate in the study. The TMDL's waste load allocations for the POTWs are based on the reasonable assurance that significant (90%) sediment phosphorus reductions will occur. If it becomes evident that substantial sediment phosphorus reductions will not occur, then the Agencies will likely be obligated to pursue more stringent effluent limitations on the POTWs at the next permit issuance. To account for this potential, it is strongly recommended that future facility upgrades allow for the addition of technology if further reductions in the phosphorus effluent limits are necessary. In any case, there is strong incentive for the communities to work with MADEP and others to advance efforts to reduce the sediment phosphorus flux.

Significant state and federal funds will be contributed to the cost of the Remediation Study. The Towns of Hudson, Maynard, Westborough, Northborough, Shrewsbury and Marlborough have entered into a binding Memorandum of Understanding (“**MOU**”) to assure that the study is funded to completion. The MOU outlines funding responsibilities as well as a procedure for managing the Remediation Study, which will be completed pursuant to a contract to be entered into with the Army Corp of Engineers. EPA and the Organization for the Assabet River (“**OAR**”) are both members of the formal Study Coordination Team. Expected state and federal contributions combined with the MOU enhance the likelihood that the Remediation Study will be completed in a timely manner. A major step in understanding the sediment problem is already underway through a \$200,000 cooperative effort with the US Geological Survey to inventory the amount and quality of the sediment behind the major dams on the Assabet River. In addition, \$500,000 was recently secured through special State legislation for evaluating sediment remediation options.

Comment No. 3: Hudson requests that the Agencies reduce the lower limit of the pH range from 6.5 to 6.0, because performance history indicates that a limit of 6.5 will be difficult to consistently achieve. In addition, the change in the lower limit of the pH range from 6.0 to 6.5 conflicts with the phosphorus limits. Due to the imposition of an aluminum limit, alum cannot be used for phosphorus removal. The alternative of using ferric chloride results in a lowering of pH which will make it difficult to achieve the increased pH limit.

Response No. 3: The Agencies understand the conflict between these limits but believe that the 6.5 s.u. limit on the lower end of the pH range is necessary to ensure that pH levels in the receiving water meet the MAWQS minimum pH criterion of 6.5 s.u. Since at design discharge flows the percentage of the 7Q10 flow that is comprised of wastewater effluent is expected to approach 100% (see Consortium Response No. 25 below), there is insufficient base flow to buffer a low pH discharge. If wastewater is being discharged at a pH of 6.0 s.u. during low flow conditions, there is a reasonable potential that the minimum criterion value of 6.5 s.u. will not be met.

Alternatives for addressing the conflict include using poly-aluminum chloride, which has proven effective for other wastewater discharges with similar conflicts or pursuing site specific criteria for aluminum, which might provide some relief from the state wide criteria. Please also see Hudson Response No. 6 below.

Comment No. 4: We cannot comply with the alarm requirements and the respective reporting conditions for chlorine without significant modifications to the existing facilities. Since the long-term plan for treatment plant improvements may include an alternate disinfection system, we request that this requirement be removed.

Response No. 4: As noted in the Fact Sheet, chlorine and chlorine compounds can be extremely toxic to aquatic life. The Total Residual Chlorine (“**TRC**”) limit is based on national criteria recommendations promulgated by EPA and adopted by Massachusetts as a part of its water quality standards. See EPA National Recommended Water Quality Criteria (2002) and 314 C.M.R. § 4.05(5)(e). There was one violation of the TRC limit between May 2001 and December 2003. Because the Agencies have concluded that there is a reasonable potential for the Hudson WWTF to exceed MAWQS relative to chlorine, the Agencies are required to include a limit in the Final Permit, as well as reasonable reporting and monitoring requirements.

The alarm and reporting requirements for TRC are intended to timely warn the Town of system interruptions or malfunctions and to notify the Agencies of such incidents. Given the daily variability of flow in the Hudson WWTF as well as the variability of chlorine demand of wastewater, periodic grab samples alone cannot sufficiently determine whether effluent chlorine and bacteria levels are in compliance with limits.

We have included a schedule in the Final Permit that allows for necessary modifications to be completed as part of the overall treatment plant improvements. If the treatment plant improvements eliminate the need for the use of chlorine, the need to alarm the chlorination and dechlorination system is obviously negated. The Agencies cannot, however, eliminate the alarm and reporting requirements for chlorine based on the mere possibility that the Town will in the future adopt a disinfection system that does not utilize the chemical. In evaluating disinfection options, the Town should note that future permit requirements for monitoring chlorination and dechlorination systems will likely require continuous monitoring.

Comment No. 5: The 0.1 mg/l phosphorus limit for total phosphorus as defined in the permit is unacceptable. Even with a 60-day rolling average, any single major deviation could cause a permit violation. We request that a median average or an alternative method which would exclude extreme excursions be established for calculating the rolling average.

Response No. 5: Water quality-based limits that are developed to protect against chronic impacts such as eutrophication are typically established as monthly average limits. The 60-day rolling average limit for phosphorus possesses advantages over monthly averaging because it provides the permittee with flexibility to deal with occasional, perhaps unavoidable excursions above limits, while at the same time necessitating that such exceedences are short-term and that low levels of effluent discharges are maintained overall. Short-term exceedences of the phosphorus limit are unlikely to result in a significant response in the receiving water relative to aquatic plant growth. Longer term exceedences capable of eliciting a response in plant growth would likely result in a violation of the rolling average limit. The rolling average also ensures that any reduction in treatment efficiency is responded to quickly. A median limit would allow for up to 50% of the sampling results to exceed the 0.1 mg/l limit. This frequency of excursions would not ensure that water quality criteria are met in the peak growing season. See Maynard

Response No. 7 for the Agencies' rationale regarding the imposition of a monthly median limit for the transitional month of April.

Comment No. 6: The Town requests that the aluminum limit be removed from the permit until more data is obtained to substantiate the basis for the limit and determine the ability of the facility to achieve the expected removal.

Response No. 6: The basis for the aluminum limit is found in the MAWQS, which requires an ambient chronic criterion of 87 µg/l for the pollutant. Over the past two years, the average monthly aluminum discharge from the Hudson WWTF has ranged from 143 µg/l to 575 µg/l, which constitutes a reasonable potential to cause or contribute to an excursion above MAWQS. Accounting for dilution, the Agencies determined that a monthly average aluminum limit of 278 µg/l would be sufficient to comply with MAWQS.

The establishment of water quality-based limits, unlike technology-based limits, are not based on treatment capabilities. The Permittee may wish to pursue development of a site specific aluminum criterion, although other municipal treatment facilities, e.g. Milford, MA, have demonstrated the ability to achieve both low phosphorus limits and low aluminum limits. The Agencies also note that the elimination of the aluminum limit, an existing permit condition, would violate the anti-backsliding provisions of the Clean Water Act ("CWA") and the applicable NDPEs regulations.

Comment No. 7: The Town objects to the reduction of the total copper limit to 17 µg/l and notes that meeting the current limit of 50 µg/l has been difficult and inconsistent. The current interim limit imposed by EPA should remain in effect until such time as the treatment facility upgrade is completed.

Response No. 7: MAWQS require that EPA criteria established pursuant to Section 304(a) of the CWA be used for toxic constituents, including copper, unless site specific criteria have been established. Discharge Monitoring Reports ("DMRs") for the Hudson WWTF from May 2001 to December 2003 indicate a monthly average copper value of 40 µg/l and highest daily maximum values of 57 µg/l and 220 µg/l, which constitute a reasonable potential of the Hudson WWTF discharge to cause or contribute to an exceedance of the water quality-based chronic copper criterion of 17 µg/l. The Agencies are therefore obligated to include the limit. Water quality-based limits are established on the basis of achieving water quality standards and not on treatment capabilities. As indicated at Attachment C to the Draft Permit, the copper limit is based on ambient, hardness dependant chronic criteria. Please also see Westborough Response No. 7.

The same copper limit was contained in the permit issued on December 14, 2000. The interim limit of 50 ug/l referenced above was imposed through an administrative compliance order in connection with the existing permit for the Hudson WWTF. It is not stringent enough to meet applicable MAWQS, and it is therefore not appropriate for inclusion in the Final Permit.

Comment No. 8: The Town objects to the November 1 to May 31 ammonia limit of 10 mg/l and requests ammonia be a report only requirement.

Response No. 8: The MAWQS incorporate by reference EPA's national recommended water quality criteria for toxics, including ammonia. Please see Hudson Response No. 7 above. Current EPA criteria guidance for ammonia emphasizes the toxicity of ammonia during the colder periods of the year and the need to ensure that limits necessary to achieve applicable ambient criteria are established. The ambient chronic criterion for November through March is 7.9 mg/l and for April and May is 5.9 mg/l. The ammonia limit of 10 mg/l for November through May in the Draft Permit reflects an adjustment for flow dilution. The previous permits did not require the POTWs to nitrify (convert ammonia to nitrate) during the winter period. Permit limits are necessary to ensure that nitrification required in the summer period is continued in the winter period in order to achieve the ambient criteria levels. In the absence of nitrification, municipal wastewater effluent after secondary treatment is generally in the range of 15-20 mg/l of ammonia, which would constitute a reasonable potential to cause or contribute to an exceedance of the water quality criterion for ammonia toxicity. A monitor only requirement would not ensure that the ambient criteria are met.

Comment No. 9: The Town objects to the increase in sampling frequency and the associated financial burden.

Response No. 9: Of the eleven parameters included in both this permit and the previous permit, the sampling frequency was increased only for two, specifically phosphorus and ammonia.

The summer period sampling frequency for phosphorus was increased from twice per week to three times per week. The increase in frequency is appropriate given the significance of the phosphorus-driven water quality impairment of the Assabet River. However, phosphorus concentrations are not expected to change significantly prior to the upgrade of the treatment facility. Prior to that time, increased sampling frequency is likely to be of limited utility. The final permit therefore retains the two per week phosphorus sampling frequency until completion of the treatment facility upgrade.

The Agencies acknowledge that the Town will incur costs in order to comply with the ammonia sampling requirements proposed in the Draft Permit. Nevertheless, because of the potential for ammonia-related toxicity in the receiving waters, the Agencies have retained both the winter and summer period sampling frequencies for ammonia in the Final Permit. Please see Hudson Response No. 8. Given the extreme toxicity of ammonia to aquatic life as well as the variability of ammonia levels in Hudson's effluent, the Agencies believe that the sampling frequency will provide a timely and representative picture of the discharge with respect to the pollutant. As mentioned, increased sampling frequency for the winter period is consistent with the new national emphasis on preventing ammonia toxicity during colder periods. Finally, the Agencies note that the other three Permittees will also be monitoring twice per week in the summer period and once per week in the winter period. Uniformity in sampling frequency will allow the Agencies to develop a representative picture of ammonia impacts on the river as whole.

Please also see Responses to Environmentalist Comments Nos. 11 and 19 below with respect to increases in sampling requirements from the Draft Permit to the Final Permit.

Comment No. 10: The specific compliance dates identified in the permit (items 3, 5 and 6) should be modified to reflect a time limit from the issuance date of the permit.

Response No. 10: Compliance schedules are permitted under federal and state law, but must require compliance “as soon as possible.” See 40 C.F.R. § 122.47(a)(1). The Agencies included a compliance schedule in order to account for the planning and construction of plant upgrades necessary to comply with the new phosphorus limitations.

While the Town has not articulated any specific impediments or detailed alternatives to meeting the compliance milestones in the Draft Permit, the Assabet River Consortium has endeavored to do so. See Assabet River Consortium Comment No. 22. In light of the lag between the issuance of the Draft Permit and Final Permit, the Agencies believe that it is appropriate to modify the final compliance date to reflect a time limit (54 months) from the issuance date of the Final Permit. This revised schedule gives the Town 30 months to finish construction after design is completed. The interim milestones have also been modified in order to clarify the requirements with respect to planning, design and construction. The interim milestones are also required to ensure consistency with federal regulations concerning schedules in permits. See 40 C.F.R. § 122.47(a)(3)(ii). The Town’s ability to complete construction prior to the deadline is enhanced by the generous schedule included in the Final Permit for completing design. In the Agencies’ experience, the planning, design and construction of treatment plant upgrades are typically completed in approximately 48 months. In light of that fact, the Agencies believe that the schedule contained in the Final Permits is reasonable.

The compliance milestone and date identified in item #3 has been removed from the Final Permit.

Comment No. 11: On page 5 of the Fact Sheet there is reference to the permittee conducting an analysis of phosphorus accumulation in the impoundments. The Town takes exception to the inclusion of such studies in the permit requirements and request that these references be deleted.

Response No. 11: The language in the Fact Sheet refers to potential future requirements and not to a specific requirement of the Final Permit. The statement in the Fact Sheet addresses an issue where there is a significant level of uncertainty and where additional data may be useful. Section 308 of the CWA may be an appropriate mechanism for obtaining additional data.

Comments were received from the Town of Maynard in letters dated July 9, 2004 and July 26, 2004:

Comment No. 1: We are currently not using any aluminum-based coagulants. There are cost implications associated with this increased testing and we are not aware of any problems with our discharge of this constituent.

Response No. 1: A footnote has been added to the permit indicating that sampling for aluminum is only required if aluminum-based coagulants are being utilized. If no aluminum-based coagulants are being utilized, the discharge monitoring values for aluminum should be reported as “no discharge.”

Comment No. 2: Ammonia monitoring has been increased from once monthly to once per week (November 1 to May 31). There are cost implications associated with the increased testing and we are not aware of any problems with our discharges of this constituent. Maynard has historically reported concentrations of ammonia well below our current limit as a result of the large quantity of RBC media relative to ammonia load. Historically, the ammonia has averaged 2 - 4 mg/l over the long term indicating a very stable effluent quality.

Response No. 2: Although Maynard WPCF effluent may currently be discharging below permitted limits, an ammonia limit and attendant monitoring are necessary to ensure that that Maynard continues to nitrify in the winter period, which it is currently not required to do. In the absence of nitrification, municipal wastewater effluent after secondary treatment is generally in the range of 15-20 mg/l of ammonia, a level which has the reasonable potential to cause or contribute to an exceedance of the water quality criterion for ammonia toxicity. Please see Hudson Response No. 9 for further discussion of the Agencies' rationale for increased ammonia monitoring.

Comment No. 3: A phosphorus limit of 0.1 mg/l is extremely stringent and EPA has not presented compelling evidence demonstrating the need or benefits associated with achieving this low level. What funding mechanisms or priorities will EPA be providing to assist with the cost?

Response No. 3: In addition to technology-based controls, permits must contain any more stringent limitations for particular pollutants that are necessary to meet MAWQS. A water quality-based effluent limitation must be calculated at levels to ensure achievement of MAWQS, regardless of the availability or effectiveness of technologies or the costs dischargers would incur to meet those limits. A water quality-based effluent limitation for a pollutant also must be consistent with any available waste load allocation approved by EPA in connection with a TMDL for that pollutant and receiving water. 40 C.F.R. § 122.44(d)(1)(vii)(B).

The Assabet River suffers from eutrophication, which is a process of nutrient accumulation and ecosystem change that can occur in aquatic ecosystems. In the Assabet River, cultural, or man-made, eutrophication has occurred in the presence of excessive nutrient loadings and impoundments. As a result of water quality problems associated with eutrophication, the Assabet River was placed on a list of impaired waterbodies requiring water quality improvement, known as a Section 303(d) list. Specifically, the Assabet River, designated as a Class B waterbody, has been observed to frequently fail to meet applicable numerical MAWQS, including dissolved oxygen concentration, and applicable narrative criteria, including aesthetics, bottom pollutants and alterations and nutrients. Under the CWA, Massachusetts is required to develop a Total Maximum Daily Load ("TMDL") allocation plan for all priority waterbodies on the Section 303(d) list.

As discussed, DEP developed a TMDL for the Assabet River that established maximum load (for non-point sources) and waste load (for point sources) allocations the waterbody can receive and still meet MAWQS relating to eutrophication. EPA approved the TMDL on September 23, 2004. The TMDL and the supporting water quality data demonstrate the need for the 0.1 mg/l phosphorus limit.

The TMDL establishes a target of reducing biomass by at least 50% based on 1999 conditions, meeting the minimum criterion for dissolved oxygen of 5.0 mg/l throughout the Assabet River, and reducing the duration of dissolved oxygen super-saturation by approximately 30%. As discussed in Hudson Response No. 2, the TMDL identifies a combination of point source phosphorus reduction and sediment remediation as the preferred scenario. Specifically, the TMDL calls for a reduction in point source discharges of total phosphorus to 0.1 mg/l during the growing season in combination with a 90% reduction in the phosphorus loading from the sediments in the impoundments. As the TMDL states:

Reduction in phosphorus in the sediments may occur naturally over a long period of time once the phosphorus levels in the effluent from the POTWs are reduced to 0.1 mg/l or lower. The reduction in sediment phosphorus flux can likely be expedited with measures such as dredging, encapsulating and/or dam removal. Given this and the importance of sediment remediation, a phased approach is recommended to allow the communities an opportunity to investigate sediment remediation and/or dam removal options which could result in achieving water quality standards and designated uses in a more cost effective manner than solely reducing point source phosphorus sources. See TMDL at p. 43.

The Final Permits reflect the TMDL's waste load allocation and recommended phosphorus effluent limitation of 0.1 mg/l.

The Agencies have adopted the 0.1 mg/l phosphorus effluent limit proposed by the TMDL, but have not mandated sediment remediation at this point. While there is nothing in the Final Permits that guarantees a reduction in non-point source loadings, there is a basis for the Agencies to reasonably conclude that sediment remediation efforts will be pursued. Please see Hudson Response No. 2.

If the sediment flux issue is not adequately addressed through remediation efforts as contemplated by the TMDL, the Agencies will likely be obligated to pursue more stringent point source phosphorus load reductions at the next permit issuance. At present, the Agencies believe that a 0.1 mg/l phosphorus limitation along with a 90% reduction in the sediment flux presents an opportunity to achieve uses more quickly and cost-effectively, while potentially offering additional ecosystem restoration benefits such as habitat improvement associated with dredging and/or dam removal.

The TMDL also calls for year round monitoring and reporting of effluent data for total and dissolved phosphorus. See TMDL at p. 7. The Agencies have adopted Final Permit limits consistent with TMDL recommendations.

The major funding mechanism available to the Town is the State Revolving Fund (SRF), which provides low interest loans to fund treatment facility upgrades.

Comment No. 4: We assume that only technologies that have demonstrated success under similar conditions will be considered applicable for implementation. If the town implements best

available practice and makes every effort in proper operations and still can not meet the 0.1 mg/l limit, will the EPA consider revising the limit based on full-scale operational data?

Response No. 4: The Town is not required to use any specific pollution control technologies to meet the phosphorus effluent limitation. It is up to the Town to evaluate technologies and choose a technology that is appropriate for achieving the permit limit.

Since the 0.1 mg/l limit is a water quality-based limit, it cannot be revised based on operational data. A water quality-based limit can be revised if new water quality information supports a different limit or if a Use Attainability Analysis (“UAA”) justifies a downgrading of the use classification of the Assabet River.

Comment No. 5: Regarding the summer period interim limit for total phosphorus, it is assumed that this limit will replace the 0.1 mg/l requirement for April 1 through October 31 and that a limit of 1.0 will apply for the rest of the year. It is our understanding that these limits are to be determined based on a 60-day rolling average.

Response No. 5: Only the final summer period limit of 0.1 mg/l is defined as a 60-day rolling average.

The summer period interim limit of 0.75 mg/l is a monthly average limit that is in effect until compliance with the final summer period limit is required. The final winter period limit of 1.0 mg/l is also a monthly average limit but is not in effect until one year after the issuance date of the permit. Please see Maynard Response No. 8.

Comment No. 6: While the 60-day rolling average is a statistically better method than the monthly average, we propose to use a 60-day rolling median value for reporting. Use of the median eliminates the wide swing due to one data point as compared to an average value and more closely reflects actual conditions as received by the river.

Response No. 6: The Agencies believe that the 60-day rolling average is a more appropriate requirement relative to the 0.1 mg/l phosphorus effluent limit than either the monthly average or the 60-day rolling median value. As discussed in Hudson Response No. 5 above, the longer averaging period significantly reduces the effect of a single high data point while minimizing the potential for long term exceedances that could adversely impact aquatic life in the receiving waters. A median value increases the potential for discharges of phosphorus of a frequency, duration and magnitude that would cause or contribute to violations of criteria related to eutrophication. For instance, a median value approach would allow the Town to exceed the phosphorus effluent limitation of 0.1 mg/l for thirty consecutive days, an outcome which is inconsistent with MAWQS and the TMDL. The Agencies believe that a capped median value can be appropriate for limited periods given the presence of certain flow and temperature conditions. See Maynard Response No. 7 below.

Comment No. 7: The phosphorus limit should provide for a higher limit during April and May when river flows are very high relative to the 7Q10 flow. With spring flows being 20 to 40 times the 7Q10 flow, a limit of 0.75 mg/l is reasonable for these two months. The cold wastewater

temperatures in April means that side stream reactions in the process will need time to stabilize before the change in chemical addition yields a consistent effluent quality. We propose that an incremental or sliding limit be used for April and May before the 0.1 mg/l is required.

Response No. 7: The Agencies acknowledge that spring flows can significantly exceed 7Q10, but note that under MAWQS effluent limitations must be designed to meet criteria under the most severe hydrological conditions. For rivers and streams, the lowest flow condition at and above which criteria must be met is 7Q10. In addition, effluent limits developed to protect water quality criteria must be consistent with the assumptions and requirements of any available wasteload allocation for the discharge contained in the TMDL. In the case of the Assabet River, the TMDL requires that the 0.1 mg/l limit be met during the growing season, which has been identified as April 1 through October 31. A significant relaxation of the phosphorus limit for April and May would not be appropriate because phosphorus discharged during April and May can be retained in the system as a result of biological uptake by aquatic plants. Phosphorus that is retained in the system may be released back into the water column and further contribute to eutrophication or other excursions of water quality criteria. Higher spring flows may also disproportionately contribute to non-point source phosphorus loading, thereby reducing or eliminating the dilution effect of the higher flow. Allowing phosphorus effluent discharges at existing permit levels during April and May, even after the completion of facility upgrades, is not justified given the current severe impairment of the Assabet River.

The Agencies do however recognize the challenges associated with transitioning from the winter period phosphorus limit to the summer period phosphorus limit, in particular during the month of April, which can be subject to high flows and cool temperatures. Accordingly, the Final Permit defines the 0.1 mg/l total phosphorus limit for the month of April as a monthly median limit. The Agencies have imposed a daily maximum of 0.2 mg/l for the month of April in order to ensure that phosphorus effluent levels remain consistent with the goals of the TMDL. It is the Agencies' position that this change will have an insignificant effect on water quality given the high instream flows in April and the fact that April is not a peak growth period for aquatic plants.

Comment No. 8: Footnote #14 regarding meeting a 1.0 mg/l monthly average limit seems to conflict with Footnote #12, which sets an interim goal of 0.75 mg/l. What do EPA and MADEP consider optimized? Is optimization just considered to be operational changes or will EPA require capital improvements to lower the effluent values?

Response No. 8: Footnote #14 applies to the winter period and Footnote #12 applies to the summer period.

Several commenters raised concerns with the lack of definition relative to the interim phosphorus requirements for the winter period. The agencies concur that the optimization requirement as articulated in the draft permits is vague. The Final Permits have been clarified to require that the 1.0 mg/l winter phosphorus limit be met within 1 year of the issuance date of the Final Permit. It is the Agencies' expectations that achieving this limit will require minor modifications to chemical dosing systems. If sufficient justification for an extension of this schedule is provided to the Agencies, a longer schedule may be authorized through an administrative order.

Comment No. 9: What is the justification for raising the pH limit from 6.0 to 6.5. Maynard has not violated its discharge limit and is not aware of any problems. For most of the year, the river flow exceeds the 7Q10 flow, providing dilution to the effluent.

Response No. 9: Please see Hudson Response No. 3 above. MAWQS require that pH levels in Class B waters be in the range of 6.5 through 8.3. As mentioned, MAWQS further provide that water quality criteria for rivers and streams must be met at 7Q10 flow. Due to lack of any significant dilution flow in the Assabet River during low flow conditions, pH limits of 6.0 would not ensure compliance with the minimum State water quality criteria. While improvements in water quality as a result of less severe hydrologic conditions are both anticipated and necessary in order to provide relief from the stress to the aquatic community that occurs when water quality is at or near criteria levels, they do not provide a basis for weakening the water quality-based effluent limitations in the Final Permit.

Comment No. 10: The issue of developing dam removal/sediment remediation options should not be a permit item.

Response No. 10: The requirement has been removed from the Final Permit.

Comment No. 11: We disagree with inclusion of set dates in the compliance schedule. The Town of Maynard will begin working on compliance items once the final permit is issued and can not be expected to meet a fixed date when related items are still under discussion and resolution will determine how to proceed.

Response No. 11: Please see Hudson Response No. 10 above.

Comment No. 12: We can not meet the six month requirement for completing an Infiltration/Inflow Control Plan (I/I Plan) due to the need to obtain town meeting funding, logistics of scheduling a wet weather evaluation program and the time required to analyze the data and to develop a meaningful control plan. The Town would require a minimum of 18 months to accomplish this requirement.

Response No. 12: The Agencies believe that six months is adequate time to complete a plan to address the four discrete items required by Part I.C.3 of the Permit to be included in the I/I Plan. The Agencies note that the permit condition only requires development and not implementation of the plan within that period. The Town has been on notice since the distribution of the Draft Permit in June 2004 that the Final Permit would likely include an I/I Plan and has had time to lay preliminary groundwork for its completion (the Town in fact has not objected to any of the substantive requirements of the I/I Plan, only to its submission date).

Plans for conducting wet weather evaluations and data analysis should be included in the I/I Plan along with a reasonable schedule for completing these efforts.

Comment No. 13: The FY2005 budget has been voted on for Maynard. Instead of requiring the new testing frequencies to begin when the permit becomes effective, we propose that the start

date be postponed until the citizens of Maynard have a chance to vote the needed funding. The earliest this could go into effect would be November of 2004, after our October Town meeting.

Response No. 13: The Final Permit retains the twice per week phosphorus sampling frequency until completion of the treatment facility upgrade, leaving ammonia as the sole parameter subject to increased testing frequency. The Agencies believe that there is adequate time between the issuance date and the effective date of the Final Permit to enable Maynard to obtain any necessary funding to comply with the new testing requirement (following issuance of the Final Permit, the Town will have sixty (60) days to comply with the requirement). The earliest potential effective date for the Final Permit is mid-fiscal year 2005. The Agencies do not believe that the foreseeable scheduling and logistical implications pertaining to the budgetary process warrant a delay in the effective date of the requirements.

Comments were received from the Town of Northborough in a letter dated July 19, 2004:

Comment No. 1: On page 1 of the permit, Part 1.F. under the co-permittee's responsibilities should be deleted. The City of Marlborough is responsible for providing the alternate power source at the treatment works and wastewater pumping stations within Northborough have been constructed in accordance with Sewer Extension Permits issued through the MADEP.

Response No. 1: The City of Marlborough is responsible for providing the alternate power source at the Marlborough WWTW but the Town of Northborough is responsible for providing the alternate power source at pumping stations within the Town of Northborough. Language has been added to Part 1.F. of the permit to clarify responsibilities.

Comments were received from the Town of Westborough in letters dated July 14, 2004 and July 28, 2004. The Town of Westborough ("Town" or "Westborough") also incorporated by reference comments from the Assabet River Consortium, dated July 14, 2004. The Consortium comments are addressed separately below:

Comment No. 1: The minimum value for pH is 6.5, the same value that was contained in the 1993 permit. In 1993, we appealed this aspect of the permit. The minimum value decreased to 6.0 in the 2000 permit. In the Fact Sheet (page 6) issued with the 2000 draft permit, it was noted that the low end of the pH range was dropped from 6.5 to 6.0 "in order to accommodate treatment for phosphorous which tends to depress effluent pH levels. This change is consistent with Massachusetts WQS." Inexplicably, the 2004 draft permit increases the lower range to 6.5 allegedly to be "consistent with MASWQS" but without adequate explanation for the reductions.

As was recognized in connection with the 2000 permit, phosphorous limits and the pH limit are conflicting parameters. Achieving one limit can cause a violation of the other limit. Currently, ferric chloride is used for treatment of phosphorous. Iron salt tends to decrease the pH of the wastewater stream. An option to utilizing ferric chloride is the use of Alum. Alum will increase the pH, at a higher cost, but will also increase the level of aluminum in the discharge. Given the uncertain benefit to lowering the pH level, there is no legitimate basis to require it.

Moreover, MAWQS are in-stream requirements, not end-of-pipe requirements. MAWQS allow the use of mixing zones and in this case use of such concepts would allow compliance with effluent limits less stringent than those imposed.

Response No. 1: As noted in Hudson Response No. 3, the Agencies are aware and have considered the conflict between these limits but believe that a higher limit on the lower end of the pH range is necessary to ensure that receiving water levels of pH are not lowered below the minimum criterion in the MAWQS of 6.5. The determination in the 2000 permit that an effluent limit of 6.0 is consistent with MAWQS did not adequately account for the lack of base flow for dilution during low flow conditions. Effluent discharges from the POTWs can amount to 80% of the Assabet River's flow during low flow periods and when operating at design flow are expected to amount to as much as 100% of flow. The lack of base flow is compounded in the case of the Westborough WWTP by the presence of a nearby upstream dam. If all of the Assabet River dischargers were discharging effluent at a pH of 6.0 during low flow conditions when the river is dominated by effluent, there is a reasonable potential to violate the minimum criterion value of 6.5.

The formal establishment of a mixing zone would not necessarily result in a less stringent limit where the receiving water consists primarily of treated effluent with a low pH. The establishment of a mixing zone is also complicated by the fact that there is little dilution of Westborough WWTP effluent for a significant distance downstream.

Comment No. 2: The toxicity levels may be due to metals such as lead, silver, etc. in the effluent. However, the toxicity level has often been outside of the proposed limits when the lead concentration in the effluent is low. Conversely, when the lead concentration has been above the proposed limit, the toxicity levels have generally been within the proposed limits. One of the conditions of the permit (Part I.B) requires the Board to evaluate local limits. Metals which potentially cause toxicity will be analyzed as necessary in this evaluation. Furthermore, the evaluation to investigate the cause and analyze potential treatment will be added to Phase 3 of the ongoing CWMP. At this time, the method to maintain toxicity within the proposed limits is unclear. Therefore, until the Board determines the cause and effect, we respectfully request that these limits be modified to 75%. The Board also would appreciate help from EPA and MADEP as to the cause and solution to the toxicity issue.

Response No. 2: The toxicity requirement in the permit is a water quality-based limit and was determined in accordance with EPA criteria and MAWQS, which require that all surface waters be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife. WET testing is reasonable given Westborough's continuing difficulty in complying with toxicity limits, the evidence of multiple excursions above MAWQS and the presence of industrial input from indirect dischargers to the Westborough WWTP. See EPA Technical Support Document for Water Quality-based Toxics Control (March 1991) at pp. 53-55; see also "Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters" (February 1990). Westborough has not identified a water quality-based rationale for weakening the toxicity requirements in the Final Permit; the inability of the Town to determine the source of toxicity in its effluent does not justify weakening the limit. Additionally, since the limit is not a new or revised limit, a schedule of compliance and an

interim limit cannot be included in the permit. For EPA assistance with conducting Toxicity Identification Evaluations and Toxicity Reduction Evaluations, please contact Joy Hilton at (617) 918-1877. The Board may also contact EOEAs Office of Technical Assistance for further assistance on how to address the toxicity issue.

Continued non-compliance could be addressed through a state compliance action or a federal compliance action such as an administrative order. Any such action would likely include requirements to continue to pursue source reduction efforts while upgrading the treatment facilities.

Comment No. 3: As previously discussed, the comments made by the Consortium are incorporated by reference. As noted in those comments, the draft permit has a limit of 0.1 mg/l on a 60-day rolling average. The draft permit does not address the potential for an aberrant level due to natural causes or treatment upsets during the period. The degree of treatment will need to be significantly lower than 0.1 mg/l in order to ensure a 0.1 mg/l average. Moreover, the TMDL does not justify this limit. This is unacceptable. The Board would consider alternatives such as a median value with an agreed upon upper limit.

Response No. 3: Please see Hudson Response No. 5 and Maynard Response No. 6 above, which discuss the Agencies' rationale for adopting the 60-day rolling average as opposed to a monthly average or a median value, and Maynard Response No. 7 above, which discusses the limited use of a median average for the transitional month of April. A median value with a cap would address the magnitude of excursions above water quality criteria, but would not adequately address the frequency and duration of those excursions. In the peak growing season, such a mechanism would not be appropriate for a waterbody as severely impaired as the Assabet River. The 60-day rolling average will accommodate increased levels of phosphorus of the type referenced by Westborough, so long as such exceedences are relatively short-term. In this way, the Agencies have provided a measure of flexibility to Westborough, while at the same time ensuring compliance with applicable water quality criteria relating to eutrophication.

The phosphorus effluent limitation of 0.1 mg/l as well as the 60-day averaging period are both consistent with the conclusions of the TMDL. Please see Hudson Response Nos. 2 and 5, Maynard Response No. 3 and Consortium Comments Nos. 8, 10, 11 and 13.

Comment No. 4: In addition to the Consortium comments, the Board objects to the issue of optimizing for winter treatment before fiscal year 2006. The fiscal year 2005 budget has been finalized. Given the budgeting impact of this requirement, it should not be imposed until July 1, 2005.

Response No. 4: The issuance date of the Final Permit results in the interim winter phosphorus requirement taking effect during fiscal year 2006, as the limitation is subject to a one year compliance schedule.

Comment No. 5: The lead limit is a new limit that the Board did not anticipate. The Board proposes to have the lead concentration evaluated under local limits. Also, the Board is willing to add the evaluation of treatment alternatives to the CWMP. However, at this time, the Board is

unaware of a process for lead treatment that is compatible with the facility. Consequently, the Board is opposed to the limit.

Response No. 5: MAWQS include requirements for the regulation and control of toxic constituents. Unless site specific criteria are established, the Agencies are required to use EPA criteria established pursuant to Section 304(a) of the CWA. The Administrative Record indicates that the lead concentrations in the Westborough WWTP's effluent discharges have a reasonable potential to exceed the ambient chronic criterion of 3.2 ug/l. As noted in the Fact Sheet, effluent discharge levels for lead have ranged from below the detection limit to 20 ug/l. In order to comply with the limit, the Board should evaluate local pretreatment limits, corrosion controls and continue to search for compatible treatment processes using existing plant facilities and if necessary implement new lead treatment technologies. The Town should also evaluate steps to be taken to revise local lead limits in accordance with Attachment B ("Reassessment of Technically Based Industrial Discharge Limits") of the Final Permit.

Non-compliance could be addressed through a state compliance action or a federal compliance action such as an administrative order. Any such action would likely include requirements to continue to pursue source reduction through local limits and/or other means while upgrading the treatment facilities and would include a schedule for compliance. Such a schedule would take into account the schedule for the treatment facility upgrade and the potential for improved treatment relative to phosphorus to also improve the removal efficiency for lead.

Comment No. 6: The use of Alum or another aluminum-based chemical may be the solution or part of the solution to treating for phosphorous and pH. However, use of such chemicals will increase the concentration of aluminum in our effluent. Will the requirement to report aluminum concentration lead to a limit in future permits? If so, will the Board then need to revise the treatment process for phosphorous? The Board does not want to make repeated and potentially unnecessary changes to the methods of treatment, and consequently incur unnecessary and redundant capital improvements.

Response No. 6: An aluminum limit may be imposed in future permits if the Agencies determine that it is required under MAWQS. Due to the lack of any significant dilution of the Westborough discharge, this limit could be as low as the current ambient chronic criterion of 87 ug/l. While other municipal treatment facilities, e.g. Milford, MA, have demonstrated the ability to achieve both low phosphorus limits and low aluminum limits, there is some evidence that a site specific aluminum criterion development effort might provide some relief from the current criterion value and the permittee(s) may wish to pursue such an effort.

Comment No. 7: The copper limit does not reflect site-specific water quality conditions. Further, the potential for causing toxicity may not materialize. Therefore, a stay of this parameter is requested until these issues are addressed. At a minimum, the limit should be put into effect in accordance with the compliance schedule for phosphorous treatment. It appears that copper removal is enhanced during and under the current treatment process for phosphorous (to limits of 0.75 mg/l). However, winter treatment of phosphorous will not be possible until the improvements are made as recommended in the CWMP.

Response No. 7: The Agencies do not believe that a schedule of compliance for the copper limit is justified. While the Town has indicated that it believes copper removal may be enhanced during the phosphorus removal process currently employed by the Westborough WWTP, the Town has not demonstrated any reason why the compliance with the copper limit would be infeasible. Compliance with MAWQS is required as soon as possible. 40 C.F.R. § 122.47(a)(1). NPDES regulations only require a reasonable potential for a pollutant to cause an excursion above state water quality criteria prior to imposing an effluent limitation; the potential need not materialize into an actual excursion. 40 C.F.R. § 122.44(d)(1)(i). In this circumstance, the copper limit of 9.0 ug/l is a water quality-based limit that is based on the ambient hardness dependant chronic criterion contained in MAWQS. DMRs for Westborough WWTF from April 2001 to September 2003 ranged from non-detect to 15.6 ug/l, data which supports the immediate imposition of a copper limit given the small amount of dilution available at 7Q10 flow.

Westborough may at any time choose to pursue development of a site specific criterion for copper. In the meantime, non-compliance could be subject to a state compliance action or a federal compliance action such as an administrative order. Any such action would likely include requirements to continue to pursue source reduction through local limits and/or other means while upgrading the treatment facilities and would include a schedule for compliance. Such a schedule would take into account the schedule for the treatment facility upgrade and the potential for improved treatment relative to phosphorus to also improve the removal efficiency for copper. The Final Permit requirement for phosphorus removal in the winter period is not in any manner contingent on the CWMP. Please see Maynard Response No. 8 above.

Comment No. 8: The parameters in the Part I.A.I table should concur with footnotes so that the DMR reflects the correct parameters. Typically, the DMR is based upon the table. The table does not have the minimum daily flow (as an example).

Response No. 8: The table and the footnote have been modified to clarify reporting requirements and to be more compatible with DMR forms.

Comment No. 9: The work to be performed under the requirement Limitations for Industrial Users, will require the appropriation of additional funds not contained within the fiscal year 2005 budget. Therefore, the timing within which a written technical evaluation be submitted to the EPA, including Attachments A and B to the draft permit should not be due until December 31, 2005. This would be within 180 days of the start of fiscal year 2006. In the event that EPA requires a revision of local limits, such revisions would not be due until fiscal year 2007. In addition, please note that the draft permit is inconsistent with the Fact Sheet. The Fact Sheet provides the Board with 180 days from the permit's effective date to submit to EPA a description of proposed changes to the Board's pretreatment program deemed necessary to ensure conformity with current federal pretreatment regulations. (Page 9 of 16)

Response No. 9: The Draft Permit requires that the written technical evaluation be submitted within 120 days. The Final Permit has been changed to allow this evaluation to be submitted by December 31, 2005. There is a separate permit requirement to propose any necessary changes to the Industrial Pretreatment Program, i.e., to assure conformity with current federal pretreatment regulations (other than local limits).

Comment No. 10: The schedule proposed in the draft permit is extremely problematic. For instance, the permit requires the Board to complete an evaluation of dam removal/sediment remediation alternatives for the five impoundments identified in the Assabet River TDML. This is not an option for the Board. The Board's legal jurisdictional boundary is the property that the wastewater treatment plant is situated on. None of the dams or sediments are located within the property under jurisdiction of the Board. In fact, none of the dams or sediment are within the boundaries of its signatory towns. Therefore, the Board does not have any legal right to perform analysis on property(s) not under its jurisdiction. In addition, this schedule is inconsistent with the rationale behind the CWMP and the practicalities of financing the work to be performed under the schedule. Therefore, as previously stated, the Board adopts in whole the proposed compliance schedule set forth in the Consortium's letter dated July 14, 2004.

Response No. 10: The sediment remediation study requirement has been removed from the Final Permit. Please see Hudson Response No. 10 above.

Comment No. 11: The fiscal year 2005 budget has been authorized by town meeting. The Board anticipates that the permit will become effective during fiscal year 2005. The draft permit has items that will significantly affect the Board's budget. Therefore, the Board requests that such items become effective July 1, 2005. The items include but are not limited to the following:

- Ammonia - Nitrogen (June 1 - October 31)
- Ammonia - Nitrogen (November 1 - May 31)
- Total Phosphorous (Winter Optimizing)
- Ortho Phosphorous (November 1 - March 31)
- Total Lead
- Total Aluminum
- Alarm System for Chlorination and Dechlorination Systems.

Response No. 11: Given the changes made in the Draft Permit (see Hudson Response Nos. 4 and 10) and the fact that the earliest potential effective date for the Final Permit is mid-fiscal year 2005, the Agencies do not believe that foreseeable scheduling and logistical implications pertaining to the budgetary process warrant a delay in the effective date of the requirements.

Comment No. 12: The TSS mass limits are not justified by water quality criteria. For instance, stream flows in April are substantially higher than critically low stream flow conditions that are used to develop the discharge limits. The weekly maximum TSS mass limits are particularly a concern during elevated wet weather flow events that are likely to occur in spring, especially in April. For example, if peak weekly flow were two to three times the annual average flow, which can occur without having excess I/I, the facility will have to meet a 5 mg/l to 7.5 mg/l TSS concentration to comply with the permit's effluent TSS mass loading limits. Such performance may not be consistently achieved at the facility, especially under acceptable wet weather flows. While the Board concurs with the comments of the Consortium that the limits be removed or, if they are to remain, that there be a 12-month rolling average, the Board also requests that the seasonal tiers be shifted by one month, i.e. May 1 - November 30 and December 1 - April 30 to recognize the significantly higher flows in April.

Response No. 12: The removal of TSS mass limits, adoption of a 12-month rolling average and adjustment of the seasonal period to account for higher stream flows will not meet MAWQS.

Effluent limitations for TSS and CBOD₅/BOD₅ for November through March are based on secondary treatment requirements. The calculation of the TSS limit is included as Attachment A to the Fact Sheet. A similar calculation was used to derive CBOD₅/BOD₅ limits.

TSS and CBOD₅/BOD₅ limitations for April through October are water quality-based limits. Traditionally, DEP evaluated flow in NPDES permits by applying design flow (the average annual flow) as a monthly average flow limit. As part of a policy change requested by DEP, flow limits in NPDES permits are now expressed as a 12-month rolling average, rather than a monthly average based on average annual flow. See June 12, 2000, "MADEP-DWM NPDES Permit Program Policies Related to Flow and Nutrients in NPDES Permits" ("DEP Flow Policy"). The purpose of the change was to allow some variation in WWTF flows in response to wet weather, and in recognition that the flow rate used as a monthly average is in most cases presented in the treatment plant planning documents as an annual monthly average. Agreeing to revise the flow limit from a monthly average based on average annual flow to a 12-month rolling average caused concern that there could be a significant net increase of pollutants discharged to the receiving water, particularly during higher flow months when the monthly average discharge flow exceeds the annual average flow. To prevent further degradation of the receiving water, the Agencies agreed to add mass limits based on the then current average annual design flow of the facility for both BOD₅ and TSS as a permit condition to ensure that existing controls on mass discharges are maintained.

NPDES regulations allow for the exercise of best professional judgment on the part of the permit writer to establish mass limits. See e.g. *In re City of Port St. Joe*, 7 E.A.D. 275, 293-93 (EAB 1997) (observing that "The NPDES regulations do not provide guidance to the Regions on how to establish appropriate mass limits for a POTW, except for the general direction that "in the case of POTWs, permit effluent limitations, standards, or prohibitions shall be based on design flow"); "Training Manual for NPDES Permit Writers" at 26 (EPA May 1987). Here, the Agencies concluded that mass limits are necessary in light of the continuing severe impairment of the receiving waters caused by the POTW effluent discharges. The receiving waters are listed under Category 5 on the Massachusetts Year 2002 List of Impaired Waters ("Section 303(d) List"), a ranking reserved for the most severely impaired waters in the state. Segments of the receiving water show impairment for suspended solids, nutrients, organic enrichment and low dissolved oxygen, among others. The Agencies believe that removing the mass limits for CBOD₅/BOD₅ and TSS has a reasonable potential to cause or contribute to further violations of standards with respect to the listed pollutants and has a potential to result in further degradation of the receiving waters. See 314 C.M.R. § 4.04. The Permittee has not offered evidence to satisfy the antidegradation review procedures necessary to justify such an outcome in non-attainment waters such as the Assabet River. See "Massachusetts Antidegradation Review Procedure for Discharge Requiring a Permit Under 314 CMR 3.03" (1993). The Agencies have also considered and rejected the alternative of using a 12-month rolling average to calculate mass loadings. Use of the average annual flow furthers the objective of the permit requirement, which is to maintain not only the overall magnitude of pollutant loadings, but also the frequency and

duration of such loadings, subsequent to the change in flow policy. As the Agencies are obligated to include reasonable limitations and conditions that are necessary to ensure compliance with MAWQS, the mass limits, as well as the measuring period, have been retained. See 33 USC § 301(b)(1)(C); 40 CFR § 122.44(d)(1)(i). It should also be noted that the DEP Flow Policy itself contemplates the imposition of mass limits in conjunction with the revised flow designation. See DEP Flow Policy at p. 1.

In addition, the mass limits for BOD₅/CBOD₅ cannot be made less stringent without violating applicable anti-backsliding provisions.

Finally, the Agencies note that permits must include limits as stringent as necessary to meet Massachusetts WQS irrespective of technological feasibility.

Comment No. 13: The proposed 0.1 mg/l total phosphorus limit may not be consistently achieved even if the best available process technology were installed. Therefore, the permit requirements should be modified to 0.2 mg/l, until a technology demonstration-testing program is performed. At that time, the permit's total phosphorus limit could be modified to reflect best documented performance. It is also recommended that seasonally-tiered limits for phosphorus be provided in the spring and fall, and the lowest limit of 0.2 mg/l apply only in the warmer summer months (that is July and August).

Response No. 13: Please see Maynard Response Nos. 3, 4 and 7 above.

Comments were received from the Assabet River Consortium in a letter dated July 14, 2004:

Comment No. 1: The Draft NPDES Permits cap wastewater treatment plant flow based on a 12-month rolling average basis, when the regulators clearly understand the design year flow projection for the service areas are expected to exceed their current permit limits. As was presented in the CWMP Phase II Documents, a multi-million-dollar premium is required to discharge flow in excess of the permitted capacity to a local groundwater discharge site. The cost-benefit of this requirement is not supported by the CWMP or the TMDL.

Three of the WWTFs would be over their allotted flow based on build out projections in the approved CWMP Phase I Document and approved CWMP Phase II Document, preventing economic development in these areas of the communities. Given the Commonwealth's current position on sustainable/smart growth we would expect the regulatory agencies to be promoting growth in this primarily commercial and industrial areas of the Consortium communities, located along major transportation corridors, some of which currently have water and sewer infrastructure in place. The proposed cap in WWTF flows is counter to the sustainable/smart growth initiative.

Use attainability, minimal impacts of an increased discharge, economic development, and the non-existence of less environmentally damaging feasible alternatives are all points to be expanded upon and presented in the CWMP Phase III Document and CWMP Phase IV Document to meet the requirements of 314 C.M.R. 4.00. A re-opener clause should be included

in the Draft NPDES Permit(s) that allows an increase in the WWTF capacity while holding the effluent concentration limits (e.g. not mass loading limits), pending the results of the CWMP Phase III Document and CWMP Phase IV Document.

Response No. 1: The TMDL was calculated using current permitted design flows and further states that, “[A]ny request to increase a discharge beyond currently permitted volumes would require supporting documentation satisfying DEP’s Antidegradation Policy that no other feasible alternative exists including, but not limited to, the discharge of additional treated effluent to groundwater to help restore tributary flows.” TMDL at p. 8. The Consortium has not provided documentation that adequately demonstrates the lack of feasible alternatives and therefore at present has not satisfied the antidegradation review policy in order to support a flow increase. Please also see Consortium Response No. 25.

Consistent with the TMDL, the flow limits in the Final Permits reflect current design flows. The Assabet River is already dominated by effluents (approximately 80% of the river flow during low flow periods currently is wastewater and this is expected to approach 100% at future design flows) and suffers from severe impairment of uses due in large part to point source loading. Increasing the flow limitation would increase the frequency and duration of periods in which the river is comprised entirely, or almost entirely, of wastewater effluent, resulting in further potential for excursions above water quality criteria.

The Agencies believe that the cost of achieving uses, in particular, the cost of updating the POTWs to meet a 0.1 mg/l phosphorus limit, is within EPA’s affordability guidelines. Restoring uses, however, is not dependent on a cost-benefit analysis but is required under the CWA, unless a UAA is conducted that demonstrates that achieving uses is not feasible or would cause widespread social and economic impacts (see also Maynard Response No. 4). The Permittees should be aware that a UAA that justifies a lowering of designated uses does not necessarily justify an increase in the permitted pollutant loadings. Additionally, a UAA may not be used to justify the removal of existing uses. The scope of work for the ongoing state planning process does not include all of the necessary components of a UAA or a reevaluation of the TMDL.

In light of the foregoing, a specific re-opener clause pending the results of the CWMP Phase III Document and CWMP Phase IV Document would not be appropriate in this circumstance. The Agencies note that a general re-opener clause is included in Part II of the Final Permits.

The Agencies support sustainable/smart growth, which entails development in a manner that is consistent with protecting public resources. The Assabet River was identified by Massachusetts in December 2001 as a stressed watershed relative to flow quantity. As the TMDL Response to Comment states, “[P]otential impacts associated with increased flows go beyond nutrient related impacts. There are also secondary impacts that need to be considered and evaluated such as where the additional water is coming from and what the potential impacts may be on the smaller tributaries where withdrawals may occur.” See TMDL at p. 75.

Comment No. 2: The Draft NPDES Permits for Marlborough and Westborough contains mass limits for CBOD₅, BOD₅ and TSS. These were determined by multiplying the 12-month rolling average flow limit by the monthly and weekly concentration limit. The Consortium requests that

these limits be removed from the permit. No justification for mass limits is presented in the Fact Sheet, and the mass limits have no technical or water quality merit. If the monthly mass limits are to remain, they should be a 12-month rolling average to be consistent with the flow used to determine it.

Response No. 2: Please see Westborough Response No. 12 above. Effluent limitations for TSS and CBOD₅/BOD₅ for November through March are based on secondary treatment requirements. The calculation of the TSS limit is included as Attachment A to the Final Permit. A similar calculation was used to derive CBOD₅/BOD₅ limits. TSS and CBOD₅/BOD₅ limitations for April through October are water quality-based limits. Removing TSS and CBOD₅/BOD₅ limits will result in lowering of water quality in violation of Massachusetts antidegradation requirements. 314 C.M.R. § 4.04. In addition, the mass limits for BOD/CBOD cannot be made less stringent without violating applicable anti-backsliding provisions.

Comment No. 3: The Draft NPDES Permits for Marlborough and Westborough increase the frequency of sampling of CBOD₅, BOD₅ and TSS from 2/week to 3/week. These facilities have not had an issue with meeting the permit values. For example, Marlborough's facility had no violations for CBOD₅, BOD₅ and TSS during the period May 2001 through December 2003. Therefore, we see no reason to increase the sampling frequency and burden the Consortium communities with additional operational costs.

Response No. 3: The Agencies consider the frequency of monitoring to be appropriate given the ongoing impairment of the Assabet River. Westborough's previous permit requires sampling three times per week and has not been increased in the Final Permit. Given that Marlborough's effluent is not very variable, a twice per week sampling frequency consistent with Marlborough's previous permit has been maintained in the Final Permit. The sampling frequency in the Final Permit allows the Agencies to determine whether Westborough and Marlborough treatment facilities are meeting the permit requirements and to determine whether expected water quality improvements are being achieved and maintained.

Comment No. 4: The interim permit limit allowed a pH range of 6.0 to 8.3 "to accommodate treatment for phosphorus which tends to depress effluent pH levels." The draft permit has modified the pH range to 6.5 to 8.3, stating that the pH range has been modified due to the lack of dilution in the receiving waters. The phosphorus limit and the pH limit are conflicting parameters: achieving one limit could cause the violation of the other limit. The Consortium requests that the pH range of 6.0 to 8.3 be maintained in the new permit.

Response No. 4: Please see Hudson Response No. 3, Maynard Response No. 9 and Westborough Response No. 1 above.

Comment No. 5: The Draft NPDES Permit increases the frequency of sampling for ammonia-nitrogen (June 1 – October 31) from 1/week to 2/week. The facilities have not had an issue with meeting the permit values. For example, Marlborough's facility had no violations for ammonia-nitrogen during the period May 2001 through December 2003. Therefore, we see no reason to increase the sampling frequency and burden the Consortium communities with additional operational costs.

Response No. 5: Ammonia-nitrogen values have been within permit limits in the past because of the nitrification process employed by the facilities. DMRs for the Marlborough WWTW indicate violations of ammonia limits in 2001 and 2002. The Agencies acknowledge that the City will incur costs in order to comply with the ammonia sampling requirements proposed in the Draft Permit. Nevertheless, because of the potential for ammonia-related toxicity in the receiving waters, the Agencies have retained both the winter and summer period sampling frequencies for ammonia in the Final Permit. Please also see Hudson Response No. 9 above.

Comment No. 6: The Draft NPDES Permit includes a wintertime ammonia-nitrogen limit based on water quality criteria for ammonia toxicity. There is no technical basis for the wintertime ammonia-nitrogen limit and it should be removed from the permit.

Response No. 6: Please see Hudson Response No. 8 above regarding the Agencies' rationale for imposing a winter ammonia limit.

Comment No. 7: The 0.1 mg/l total phosphorus limit as defined in the Draft NPDES Permits is unacceptable. Even with a 60-day rolling average, any single major deviation could cause a permit violation. The 60-day rolling average limit does not take into account high river flow during months such as April when the value greatly exceeds the 7Q10 flow.

Response No. 7: Please see Hudson Response No. 5 and Maynard Responses No. 6 regarding the capacity of the 60-day rolling average to accommodate short-term exceedances. The Agencies acknowledge that flow during April will exceed 7Q10. However, under MAWQS, water quality criteria must be met at 7Q10. Maynard Response No. 7 discusses flow related adjustments to the phosphorus limitation as well as the limited use of a median limit for the month of April.

Comment No. 8: As previously discussed, the Consortium communities have indicated that the TMDL Study does not support the 0.1 mg/l total phosphorus limit. The TMDL, using a dynamic model, focused on the 7Q10 event, and not the whole summer season. Although the WWTFs dominate the loadings under low flow conditions, river systems with long travel times, such as the Assabet River, are responding to the pulse load of phosphorus from the last rain event. The biomass reduction in the river may be very small during an average summer, regardless of whether the WWTFs discharge 0.1 mg/l or 0.2 mg/l total phosphorus, if the total phosphorus associated with the non-point sources can still support a large amount of aquatic plant growth.

Response No. 8: EPA's HSPF model was employed to analyze the data collected in the TMDL field study and to develop a watershed and water quality model of the Assabet River. Because the HSPF water quality model is a continuous model, the results of model runs include the influence of prior flows and loads.

As the Consortium acknowledges, the dominant source of phosphorus loading to the Assabet River is from the POTWs. The TMDL field study determined that point sources represented 88% to 98% of the overall available phosphorus load in the Assabet River and that approximately 90% of the point source loading is in the dissolved form that is available for direct

uptake by the plant community. It further concluded that during the growing season non-point source contributions of phosphorus (with the exception of the phosphorus sediment flux) are generally minor. The 0.1 mg/l phosphorus limitation is further justified in light of the uncertainty and complexity of nutrient impacts on rivers in general and the Assabet River in particular, specifically concerning biomass response and the feasibility of sediment remediation. Please see TMDL at p. 41 regarding phosphorus limits, the margin of safety and biomass reductions.

While storm events can deliver substantial amounts of total phosphorus, much of it is in particulate form, which is not as bioavailable for uptake by aquatic plant growth as the dissolved form discharged by the POTWs. The Agencies do agree that storm water has the potential to elevate available phosphorus somewhat. To address the problem, the Permittees are encouraged to implement storm water controls in compliance with the requirements of the storm water Phase II general permits. Specifically, Part I.C.1 of the general permit requires the permittee to determine whether storm water discharges from any part of the municipal system contribute directly or indirectly to an impaired waterbody. Part I.C.2 requires that the storm water management plan identify control measures and best management practices (BMPs) that will control the discharge of the pollutant(s) of concern.

Comment No. 9: The cost differential between achieving a 0.2 mg/l vs. 0.1 mg/l limit seasonally was not evaluated in the approved CWMP Phase II Documents, but is expected to be on the order of millions of dollars (this is to be confirmed in the CWMP Phase III Documents). The cost-benefit of the 0.1 mg/l phosphorus limit needs to be evaluated before such a significant investment is made. Requiring a phosphorus limit of 0.1 mg/l without the completion of the CWMPs is arbitrary, especially since the TMDL Study was only recently completed versus the scheduled completion of July 2001. The Consortium communities were put on hold until the TMDL Study was complete, and can not proceed with the completion of the CWMP Phase III Document and CWMP Phase IV Document until the issues relating to phosphorous limits have been resolved.

Response No. 9: Permits must include limits as stringent as necessary to meet MAWQS irrespective of cost considerations. As discussed above, the Agencies have determined that imposition of a phosphorus effluent limitation of 0.1 mg/l is necessary to achieve compliance with MAWQS. The proposed limitation is also consistent with the water quality-based effluent limitations contained in the TMDL Study. Please see Hudson Response No. 2 and Maynard Response Nos. 3 and 7 above.

The issuance of a final permit is not contingent on the resolution of matters relating to the CWMP. The Agencies outlined expectations and a schedule for completion of the CWMP in an August 2003 letter to the Assabet River Consortium. Please see Consortium Responses Nos. 1, 22 and 26.

Comment No. 10: Studies have shown at the low levels of total phosphorus being considered there is a component of non-reactive phosphorus that will have no detrimental effect on the environment if discharged. At a level of 0.1 mg/l total phosphorus, the non-reactive phosphorus could be as high as 10 to 20 percent of the total phosphorus discharged. The total phosphorus

limit should be increased by this percentage to account for the non-reactive phosphorus. In addition, back-up data from the TMDL study reflects WWTF discharges in terms of ortho-phosphorus concentrations, which is a fraction of the total phosphorus. The TMDL Study and the Draft NPDES Permit limits are based on total phosphorus. This is inconsistent and should be rectified.

Response No. 10: The TMDL is based on the relationship between the measured ambient levels of phosphorus and the measured response of aquatic plant biomass. Much of this data was collected during low flow dry weather conditions when the wastewater effluent discharges dominated the flow in the system. Any “non-reactive” phosphorus would have been reflected in the data and, consequently, in the relationship determined between ambient concentrations and the magnitude of biomass growth resulting from these concentrations. In addition, “non-reactive” phosphorus that accumulates in the system may not remain non-reactive indefinitely. In light of the above, the Agencies do not believe that adjusting the total phosphorus limit to account for a “non-reactive” portion is warranted.

Setting limits based on total phosphorus is consistent with national guidance and is appropriate in this circumstance. EPA Nutrient Technical Guidance Manual, Rivers and Streams (July 2000) at pp. 31 and 100. With total phosphorus concentrations as low as 0.1 mg/l in the final effluent, almost all of the phosphorus will be in a dissolved form readily available for use by plants (the particulate fraction will have been removed in the course of the multiple treatment processes). It is appropriate for such potentially bioavailable phosphorus to be factored into the effluent limitation, because various forms of phosphorus can transform into more reactive forms relatively quickly.

Comment No. 11: Sediment accumulation, caused by impoundments on the river, has been identified as having a significant impact on the river quality. The TMDL presents the sediment phosphorus flux as an independent source of phosphorus, unaffected by reductions in phosphorus loads from the POTWs. Given the 64 percent reduction in phosphorus discharged from the four POTWs from 1998 to 2002, it would seem prudent to undertake additional sampling to validate the model and the current sediment flux prior to implementing a reduced phosphorus limit.

Response No. 11: Since the TMDL requires point source limits of 0.1 mg/l plus control of 90% of the sediment flux, any incremental improvement in sediment flux rates that may have occurred would not preclude the need for the 0.1 mg/l phosphorus effluent limits. As the TMDL observes, “While non-point sources must be considered, the seasonality of the eutrophication problem, as manifested by nuisance aquatic plant growth, is most directly related to the presently high loadings of phosphorus from the POTWs,” and “[t]he reduction of sediment phosphorus flux becomes a significant factor in meeting the TMDL goals only after significant reductions in total phosphorus at POTWs are achieved.” TMDL at pp. 19 and 22.

Comment No. 12: Indirect environmental impacts of achieving the 0.1 mg/l permit limit have also not been considered by the regulators. These include increased chemical use at the WWTFs; increased sludge production at the facility and decrease in sludge quality (in terms of dewaterability and percent inorganic materials); and increased power use to process the

wastewater to this level. All of these factors will be detrimental to the environment in their own way: be it truck traffic, sludge disposal issues, air pollution, etc. and cannot be overlooked.

Response No. 12: The Agencies concur that these are issues to be considered in selecting a treatment method. Permittees are encouraged to incorporate energy efficiency into the treatment plant upgrade, incorporate measures for reusing sludge and incorporate biological nutrient removal processes in order to reduce chemical use. A more detailed analysis of the indirect environmental impacts would be an appropriate component of a UAA if the Permittee believed that more environmental damage would be done by correcting the water quality violation than by leaving it in place. 40 C.F.R. § 131.10(g)(3).

Comment No. 13: Predicted in-stream phosphorus limits, predicted biomass (floating and rooted), and predicted duration of dissolved oxygen supersaturation are not governed by MAWQS. The one criterion that is governed by MAWQS is dissolved oxygen. Modeling has shown that when the Marlborough Westerly treatment facility discharges 0.2 mg/l total phosphorus, the in-stream dissolved oxygen concentration of 5.0 mg/l is met.

Response No. 13: Ambient phosphorus concentrations, biomass and dissolved oxygen supersaturation are governed by narrative criteria in the MAWQS addressing nutrients and cultural eutrophication. Consideration of those parameters as indicators of cultural eutrophication is consistent with recommendations in national nutrient criteria guidance. In addition, these parameters are relevant to ensuring that designated uses are attained. Please also see TMDL at p. 27 with respect to relevance of indicators.

Comment No. 14: The Consortium communities will only consider implementing technologies that have demonstrated success under similar conditions. If the communities implement best available practices and make every effort in proper operations and still can not meet the 0.1 mg/l limit, we expect that the NPDES Permit limits for phosphorous would be adjusted based on full-scale operational data.

Response No. 14: Please see Maynard Response No. 4 above.

Comment No. 15: The Consortium communities believe that a tiered approach for total phosphorus limits, based on river flow, would protect the river under 7Q10 events while providing a more reasonable, attainable permit limits throughout the season. Alternatively, an annual 60-day rolling average of total phosphorus of 0.2 mg/L could be accepted, which many view as having more benefit to the river system than the proposed permit since the annual mass loading to the river would be less than the proposed permit suggests

Response No. 15: Please see Maynard Response No. 7 above for a discussion of flow-related adjustments to phosphorus loading. A total phosphorus limit of 0.2 mg/l during the active growing season is not consistent with the TMDL and would not be expected to achieve MAWQS. The TMDL is based on 0.1 mg/l phosphorus effluent limitation and a 90% reduction in the phosphorus sediment. As DEP explained in its Response to Comments to the TMDL, “[Reduction in sediment flux] is the most uncertain goal in the TMDL and therefore DEP considers the 0.1 mg/l limit for [total phosphorus] during the growing season, combined with a

conservative margin of safety, a prudent and achievable goal with substantial water quality benefits.” TMDL at p. 67. The Agencies also note that the lower winter period loading may not provide a significant benefit to the river due to the lack of plant growth during that time.

Comment No. 16: The Consortium communities are requesting that the EPA and DEP provide funding mechanisms and incentives to assist with the cost of WWTF improvements, as these improvements will enhance the environment throughout the region, and not just within the Consortium communities.

Response No. 16: The major funding mechanism available to the Consortium communities for the planning, design and construction of treatment plant upgrades is the State Revolving Fund (SRF), which has in the past provided the communities with low interest planning loans.

Significant funds in the form of federal grants and special appropriations have already been contributed to address the water quality impairment of the Assabet River. In addition, future financial assistance from the Army Corp of Engineers is anticipated.

Comment No. 17: What do the EPA and DEP consider “optimized”? Is this optimization just considered to be operational changes or will the regulatory agencies require capital improvements to lower the effluent values? Footnote 14 states, “Upon the effective date of the permit...the Permittee shall optimize phosphorus removal with a goal of achieving a discharge total phosphorus concentration of 1.0 mg/l or less.” The words “or less” need to be deleted from the sentence. The WWTF licensed operators will adjust chemical addition and associated operational costs to achieve this limit. However this wording implies that the operators who make an effort to barely achieve this limit thereby risk violation of the permit or that this phosphorus limit has a higher standard than the other limits since the other limits do not contain the words “or less”. The footnote also states “Within 60 days of the effective date...for review and approval.” It is anticipated that the existing operations would be maintained until the CWMP process has been completed and approved by the regulatory agencies. To require additional planning documents is not fiscally responsible and is not acceptable to the Consortium communities.

Response No. 17: Please see Maynard Response No. 8 above.

Comment No. 18: Although the Consortium understands the need for the regulators to establish the relationship between ortho-phosphorus and total phosphorus, the Consortium communities should not be burdened with the additional operational costs for this research. Therefore, ortho-phosphorus as a reportable limit should be deleted from the Draft NPDES Permit.

Response No. 18: The winter period phosphorus limit and monitoring requirements were established as an alternative to implementing the 0.1 mg/l total phosphorus limit year round. The adoption of the winter period limit is necessary to ensure that the higher levels of phosphorus discharged in the winter period do not result in accumulation of particulate phosphorus in the sediments. The total phosphorus loadings (four facilities combined) for 1999 were 90% dissolved and for 2000 were 86% dissolved. With improved treatment the Agencies anticipate that these percentages of phosphorus that are dissolved will increase. However, ongoing

monitoring for ortho-phosphorus is necessary to confirm that the particulate fraction in fact remains low and to further understand the physical dynamics of phosphorus in the non-growing season. Without the monitoring requirement, the Agencies cannot ensure that the higher loads authorized in the winter period are sufficiently protective of standards, specifically that the higher loads will not cause or contribute to instream eutrophication. The monitoring requirement has been clarified in the Final Permit to indicate that the sample results should reflect the dissolved ortho-phosphorus (P) concentration in the discharge.

Comment No. 19: The Draft NPDES Permit includes an average monthly limit for total aluminum. Aluminum sulfate (Alum) is currently added to the treatment process to assist in phosphorus removal. As with pH, the aluminum limit conflicts with the phosphorus limit. A reduction in alum addition would result in an increase in phosphorus discharged. Total aluminum as a reportable limit should be deleted from the Draft NPDES Permit.

Response No. 19: Please see Hudson Response Nos. 3 and 6 and Westborough Response No. 6 above.

Comment No. 20: The compliance schedule includes a deadline for the Permittee to complete an evaluation of dam removal/sediment remediation alternatives in the Assabet River. The requirement that the Consortium communities be responsible for completing the dam removal/sediment remediation study is unacceptable and must be eliminated from the permit. This issue was previously discussed with the EPA and DEP and it was agreed that it would not be included in NPDES Permits. Furthermore, it was also understood that the EPA and DEP would manage this project with financial participation from the Army Corps of Engineers. As you are aware, there is not a single governmental or organizational entity in existence at the local level with the authority, administrative capacity, financial resources, or mandate to conduct such a study as the Draft NPDES Permits describe. Furthermore, the proposed study involves work in areas not covered.

Response No. 20: Please Hudson Response No. 2.

Comment No. 21: The specific compliance dates identified should be modified to reflect a time limit from the issuance date of the permit.

Response No. 21: Please see Hudson Response No. 10.

Comment No. 22: It will be impossible to appropriate funding, complete design, advertise for bids, complete construction and initiate operation of the facility improvements required to achieve the total phosphorus limits by June 30, 2008, essentially four years from today, when the means to achieve these limits are still under investigation. Between now and then the following activities need to be performed: (1) complete the Comprehensive Wastewater Management Plan Phase III and Phase IV Documents including review and approval by the regulatory agencies; (2) secure funding for the design phase of the WWTF improvements; (3) engage the services of a consultant to complete design documents and then have these documents approved by the regulators; (4) secure funding for the construction phase; (5) bid the projects under Massachusetts General Laws, which requires both filed sub-bids and general bids; (6) award the

construction contract, start and complete construction. Based on the above, a more reasonable and acceptable compliance schedule would be as follows:

- * Within 6 months of the issuance date of the permit, the Permittee shall submit to the regulatory agencies the CWMP/EIR Phase III Document.
- * Within 12 months of the issuance date of the permit, the Permittee shall submit to the regulatory agencies the CWMP/EIR Phase IV Document. This assumes a 2-month review period for the regulatory agencies on the CWMP/EIR Phase III Document.
- * Within 30 months of the issuance date of the permit, the Permittee shall obtain funding and complete the design of the WWTF improvements required to achieve the total phosphorus limits.
- * Within 36 months of the issuance date of the permit, the Permittee shall commence construction of the WWTF improvements required to achieve the total phosphorus limits.
- * Within 66 months of the issuance date of the permit, the Permittee shall complete construction of the WWTF improvements required to achieve the total phosphorus limits

Response No. 22: See Hudson Response No. 10 above. The schedule in the Final Permits has been changed to allow an additional 6 months to complete construction. The schedule allows for two years to complete the facility designs of any necessary treatment upgrades and now allows for a total of four and one half years to complete construction. In the Agencies' experience, one year is typically sufficient to complete the design of upgrades. The Agencies outlined expectations and a schedule for completion of the CWMP approximately a year and a half ago. Since completion of the Phase II CWMP and issuance of the Secretary's Certificate, DEP and the consortium have resolved numerous planning issues that will significantly reduce the level of effort for Phases III and IV. Therefore, the agencies believe that 24 months for completing planning and design is reasonable. Please also see Consortium Response # 26 below.

Comment No. 23: The second paragraph in the fact sheet under Conventional Pollutants indicates "Mass limits for BOD and TSS have been added, which reflect the concentration limits." Mass limits were included in the interim permit.

Response No. 23: The language in the Fact Sheet for three of the permits correctly indicates that mass limits are the same as in the previous permit. We acknowledge the error in the Marlborough West permit, which incorrectly indicates that these mass limits were added.

Comment No. 24: The paragraph on 7Q10 flow is nearly verbatim from the interim permit language issued in June 2000. Was more recent data from the Maynard gauge and from the POTWs evaluated for this permit renewal? If not, why not?

Response No. 24: More recent data from the Maynard gauge and from the POTWs were not used to recalculate the 7Q10 flows. The 7Q10 calculation for the 2000 permits was based on a 30 year period of record. Adding a few more years to that record, in particular given that these years experienced summertime low flows that were typical of the range of low flows for the 30 year period of record, would have minimal effect on the 7Q10 calculation.

Comment No. 25: The third paragraph in the fact sheet under Phosphorus states, “There are times when the Assabet River is composed almost entirely of wastewater effluent.” This sentence is inaccurate and should be deleted. A more accurate representation, as presented in the TMDL report is, “During low flow periods, approximately 80% of the flow at the USGS gage in Maynard is effluent from the POTWs.”

Response No. 25: The Agencies concur that the proposed language more accurately represents the current effluent dominance of the Assabet River under 7Q10 conditions. However, as the POTWs approach design flows, the percent of the 7Q10 flow that is comprised of wastewater effluent is expected to approach 100%.

Comment No. 26: We trust that the Consortium’s comments presented will be addressed in the issuance of revised Draft NPDES Permits. It should be noted that the Consortium communities have not and will not proceed with the completion of the CWMP Phase III Document and CWMP Phase IV Document until these issues have been addressed and are acceptable to the communities.

Response No. 26: We note the Consortium’s position on completing the CWMP but also note that none of the requirements or schedules contained in the Final Permit are contingent upon the communities completing this process.

Comments were received from Camp Dresser & McKee Inc. (“CDM”) on behalf of the City of Marlborough in a letter dated July 23, 2004:

Comment No. 1: The draft permit caps wastewater treatment plant flow from outfall 001 at 2.89 MGD on a 12-month rolling average basis, when the regulators clearly understand the design year flow projection for the service area is expected to range from 3.4 to 4.4 MGD. As was presented in the Phase II - Comprehensive Wastewater Management Plan - Development and Screening of Alternatives, at least a \$10 million premium is required to discharge flow in excess of the permitted capacity to a local groundwater discharge site. The cost-benefit of this requirement is not supported by the CWMP nor the TMDL. Both Marlborough and Northborough are net importers of water into the Assabet River watershed thus growth in these communities would not increase the water deficit in subbasins of the watershed. In Marlborough's case, seventy to seventy-five percent of its water supply is obtained from the MWRA (Quabbin and Wachusett reservoirs). In addition, the most appropriate site for groundwater recharge identified in the Phase II CWMP is located along the banks of the river which minimizes its effectiveness in terms of treatment and subbasin recharge. Finally, and most importantly, the TMDL indicates improvement in the water quality in the river, in terms of total biomass and dissolved oxygen, with increased discharge from the Marlborough Westerly treatment facility.

At this point, the City of Marlborough is essentially at its allotted flow capacity at the Westerly treatment facility, preventing economic development in this area of the community. Given the Commonwealth's current position on sustainable/smart growth we would expect the regulatory agencies to be promoting growth in this primarily commercial and industrial area of Marlborough, located along a major transportation corridor, which currently has water and sewer

infrastructure in place. The proposed cap in wastewater treatment plant flows at the Westerly facility is counter to the sustainable/smart growth initiative.

Use attainability, minimal impacts of an increased discharge, economic development, and the non-existence of less environmentally damaging feasible alternatives are all points to be expanded upon and presented in the Phase III/IV CWMP to meet the requirements of 314 C.M.R. § 4.00. A re-opener clause should be included in the permit that allows an increase in the treatment plant capacity while holding the effluent concentration limits (e.g. not mass loading limits) pending the results of the Phase III/IV CWMP.

Response No. 1: The Agencies acknowledge the potential for increased growth in the service area. NPDES permit limitations and conditions are not based on service area projections, but instead on requirements set forth in the CWA, NPDES regulations and MAWQS. 40 C.F.R. § 122.45(b)(i) requires that permits be based on the design flow of the treatment plant. In addition, Final Permit limits must be consistent with the conclusions and assumptions of the TMDL. 40 C.F.R. § 122.44(d)(1)(vii)(B). As mentioned, the TMDL assumes design flow in determining its load and waste load allocations and furthermore states that any increase in design flow would first have to comply with Massachusetts antidegradation policy by demonstrating that no other feasible alternative to increased sewerage exists. Marlborough has not provided documentation that demonstrates the lack of feasible alternatives and therefore at present has not satisfied the antidegradation policy in order to support a flow increase. Marlborough has the right to try to demonstrate that a flow increase would comply with antidegradation requirements and other applicable water quality requirements. The Agencies encourage Marlborough to explore other alternatives to address increased flow projections. Any groundwater recharge of wastewater would be an improvement over direct discharges of wastewater. Groundwater recharge provides additional treatment and attenuation of phosphorus in the effluent. It also results in moderating base flow dilution into the system. See TMDL at p. 8.

The Agencies are aware that the TMDL indicates marginal improvements in water quality in terms of total biomass and dissolved oxygen with increased discharge from the Marlborough Westerly treatment facility. Relative to eutrophication, however, the benefits are minor. In setting water quality-based effluent limitations, the Agencies must consider the frequency and duration components of water quality criteria in addition to magnitude. The relatively minor improvement in terms of biomass reduction and dissolved oxygen resulting from a marginal increase in stream velocity do not warrant increasing the frequency and duration at which effluent flows dominate the flow. The Assabet River is already dominated by effluents (approximately 80% of the river flow during low flow periods is wastewater). At design discharge flows the percentage of the 7Q10 flow that is comprised of wastewater effluent is expected to approach 100%. Increasing flow still more would increase the frequency and duration of conditions in which the river is comprised almost entirely of wastewater effluent and could further degrade the health of the waterway. As the TMDL Response to Comments also notes, effluent dominated flows are of concern in terms of public health (the Assabet River is the sole source of the Town of Billerica's public drinking water supply) as well as the health of fish populations.

Please see Consortium Response No. 1 for the Region's position on smart growth and sustainability.

Please see Consortium Response No. 1 for the Agencies position on re-opener clauses.

Comment No. 2: The permit contains mass limits for CBOD, BOD, and TSS. These were determined by multiplying the 12-month rolling average flow limit by the monthly and weekly concentration limit. The City should request that these limits be removed from the permit. No justification for mass limits is presented in the Fact Sheet, and the mass limits have no technical or water quality merit. If the monthly mass limits remain, they should be a 12-month rolling average to be consistent with flow used to determine it.

Response No. 2: Please see Westborough Response No. 12 above.

Comment No. 3: The draft permit increases the frequency of sampling of CBOD, BOD and TSS from 2/week to 3/week. Meeting the permit values has not been a problem - there were no violations for CBOD, BOD and TSS during the period 5/01 through 12/03, thus we see no reason to increase the sampling frequency and burden the City with additional operational costs.

Response No. 3: Given that Marlborough's effluent is not very variable, a twice per week sampling frequency consistent with Marlborough's previous permit has been maintained in the Final Permit. The requested change has been made in the final permit.

Comment No. 4: The BOD₅ limits (November 1 - March 31) for effluent should be changed to CBOD to be consistent with Standard Methods which states that the CBOD is the correct parameter for secondary effluent, understanding that the limits will be reduced by 5 mg/L accordingly.

Response No. 4: The requested change has been made to the final permit.

Comment No. 5: The interim permit limit allowed a pH range of 6.0 - 8.3 "to accommodate treatment for phosphorus which tends to depress effluent pH levels." The draft permit has modified the pH range to 6.5 to 8.3, stating that the pH range has been modified due to the lack of dilution in the receiving waters. The phosphorus limit and the pH limit are conflicting parameters, achieving one limit could cause the violation of the other limit. The pH range of 6.0 - 8.3 should be maintained in the new permit.

Response No. 5: Please see Hudson Response No. 3, Maynard Response No. 9 and Westborough Response No. 1 above.

Comment No. 6: The draft permit increases the frequency of sampling of total residual chlorine from 1/day to 2/day. Effluent TRC limits have generally been less than the detection level of 50 ug/l, except for one reading during the period of 5/01 through 12/03, thus we see no reason to increase the sampling frequency. The operational cost associated with this requirement is excessive and unjustified.

Response No. 6: The frequency of sampling of total residual chlorine of twice per day is the same as in the previous permit. The sampling frequency is reasonable given the extreme toxicity of chlorine and related compounds to aquatic life. The Agencies require a representative picture of the pollutant in the discharge in order to respond expeditiously to violations. Please also see Hudson Response No. 4 above.

Comment No. 7: The draft permit increases the frequency of sampling of ammonia nitrogen (June 1 - October 31) from 1/week to 2/week. Meeting the permit values has not been a problem – there were no violations for ammonia nitrogen limits during the period 5/01 through 12/03, thus we see no reason to increase the sampling frequency and burden the City with additional operational costs.

Response No. 7: Please see Hudson Response No. 9 above.

Comment No. 8: The draft permit includes a winter time ammonia limit of 10 mg/l based on water quality criteria for ammonia toxicity. There is no technical basis for the wintertime ammonia-nitrogen limit and it should be removed from the permit. The Fact sheet indicates applicable ambient criteria are 5.9 mg/l for April and May, and 7.9 mg/l for November through March. The Fact Sheet also indicates that the lowest monthly average flow during this period recorded at the Maynard gauge is 35.4 cfs which is 2.5 times 7Q10. Lastly, the Fact Sheet states that this indicates "minimal base flow dilution at the point of discharge..." We would disagree with this last comment. If the same methodology is applied here as was used to calculate 7Q10 flows, the design flow dilution in the winter season would be 4.0. We have conservatively estimated treatment plant discharge flow in November 2001 to be 15.0 cfs. Therefore, the base flow (excluding point source flows) would be 20.4 cfs, (35.4 cfs - 15.0 cfs) or 0.19 cfs per square mile (20.4 cfs/109 square miles). At Marlborough, therefore, the upstream base flow would be 5.4 cfs (0.19 cfs/sq.mi x 29 square miles). The upstream flow from Westborough-Shrewsbury is estimated at 8.2 cfs. This yields an estimated low wintertime flow upstream of the Marlborough Westerly facility of 13.6 cfs (8.77 MGD). The design flow dilution under these conditions would then be $(2.89+8.77)/2.89 = 4.0$. So Marlborough could discharge up to 23.6 mg/l ammonia-nitrogen without creating a toxicity problem (4.0×5.9 mg/l). Since the nitrification process is typically an "all or nothing" process, a wintertime limit of 10 mg/l would require a significant investment with no environmental benefit. In addition, historic records indicate the Westerly treatment facility often continues to nitrify in the late fall and early winter months, and rarely discharges greater than 15 mg/l ammonia-nitrogen when the plant is not nitrifying. Since ammonia toxicity is likely more of a concern upstream of the Marlborough Westerly facility discharge, reducing the ammonia limit at the Westborough-Shrewsbury facility is a more economical approach. The draft permit indicates Westborough-Shrewsbury has a wintertime ammonia limit of 8 mg/l. Again, since once a facility invests in the process tankage to nitrify, the difference in capital and operating costs between an 8 mg/l ammonia-nitrogen limit and a lower concentration, say 4 mg/l, is insignificant.

In addition, no interim limit for winter-time ammonia-nitrogen limit has been established. The Westerly facility does not have process tankage or chemical storage and feed systems in-place to achieve the winter-time ammonia-nitrogen limit and therefore could not achieve this limit prior to plant upgrades.

Response No. 8: The above calculation assumes that there will be no ammonia in the upstream dilution flow. Since most of the upstream flow will actually be Westborough effluent with up to

8 mg/l of ammonia, limited dilution is available for the Marlborough discharge and the draft permit limit appropriately reflects this. If Marlborough, in conjunction with Westborough/Shrewsbury, proposes an approvable plan for ammonia trading that ensures compliance with the ambient criteria, the Agencies will modify the permits to reflect the trading plan.

The Final Permits have been modified to allow a schedule for compliance with the winter ammonia limits that reflects the upgrade schedule and to include language requiring that, in the interim, the facilities be operated in order to maintain nitrification through the winter whenever feasible.

Comment No. 9: As presented in our comments dated April 13, 2004, on the draft TMDL study, we feel the TMDL study does not support 0.1 mg/l total phosphorus limit at the Marlborough Westerly treatment facility. The TMDL indicated that if the Westborough-Shrewsbury plant discharges 0.1 mg/l total phosphorus and the remaining three POTWs discharge 0.2 mg/l total phosphorus, there is no recognizable difference in water quality as compared to all four POTWs discharging 0.1 mg/L total phosphorus. In addition, the TMDL, a dynamic model, focused on the 7Q10 event, and not the summer season. Although the POTWs dominate the loadings under low flow conditions, river systems with long travel times, such as the Assabet River, are responding to the pulse load of phosphorus from the last rain event. The biomass reduction in the river may be very small during an average summer, regardless of whether the POTWs discharge 0.1 or 0.2 mg/l total phosphorus, if the total phosphorus associated with the non-point sources can still support a large amount of aquatic plant growth.

The cost differential between achieving a 0.2 mg/l vs. 0.1 mg/l limit seasonally was not evaluated in the Phase II CWMP but is expected to be on the order of millions of dollars (this is to be confirmed in the Phase II CWMP). The cost-benefit of the 0.1 mg/l phosphorus limit needs to be evaluated before such a significant investment is made.

Studies have shown at the low levels of total phosphorus being considered there is a component of non-reactive phosphorus that will have no detrimental effect on the environment if discharged. At a level of 0.1 mg/l total phosphorus, the non-reactive P could be as high as 10 to 20 percent of the total P discharged. The total phosphorus limit should be increased by this percentage to account for the non-reactive phosphorus. In addition, back-up data from the TMDL study reflects POTW discharges in terms of orthophosphorus concentrations, which is a fraction of the total phosphorus. The TMDL report and the draft NPDES permit limits are based on total phosphorus. This is inconsistent and should be rectified.

Sediment accumulation, caused by impoundments on the river, has been identified as having a significant impact on the river quality. The TMDL presents the sediment phosphorus flux as an independent source of phosphorus, unaffected by reductions in phosphorus loads from the POTWs. Given the 64% reduction in phosphorus discharged from the four POTWs from 1998 to 2002, it would seem prudent to undertake additional sampling to validate the model and the current sediment flux prior to implementing a 0.1 mg/l phosphorus limit. In addition, subsequent to the implementation of the more stringent limits proposed in this permit, additional river monitoring should be performed to assess the improvements to water quality.

Indirect environmental impacts of achieving the 0.1 mg/l permit limit have also not been considered by the regulators. These include increased chemical use at the plant; increased sludge production at the facility and decrease in sludge quality (in terms of dewaterability and percent inerts); and increased power use to process the wastewater to this level. All of these factors will be detrimental to the environment in their own way, be it truck traffic, sludge disposal issues, air pollution, etc. and cannot be overlooked.

Lastly, predicted in-stream phosphorus limits, predicted biomass (floating and rooted), and predicted duration of dissolved oxygen supersaturation are not governed by water quality standards. The one criterion that is governed by water quality standards is dissolved oxygen. Modeling has shown that when the Westerly treatment facility discharges 0.2 mg/l total phosphorus, in-stream dissolved oxygen concentration of 5.0 mg/l are met.

However, in the interest of moving forward with the planning and design of treatment facilities to improve water quality in the Assabet River, the City may be willing to agree to drastically limiting the time period when the 0.1 mg/l permit limit is required as follows:

- | | |
|--|-----------|
| a. Total Phosphorus (April 1 - May 31) | 0.5 mg/l |
| b. Total Phosphorus (June 1 - July 31) | 0.2 mg/l |
| c. Total Phosphorus (August 1 - August 31) | 0.12 mg/l |
| d. Total Phosphorus (September 1 - October 31) | 0.5 mg/l |

This tiered approach, based on river flow, would protect the river under 7Q10 events while providing a more reasonable, attainable permit limits throughout the season. The feasibility of crafting a flow based permit limit, matching effluent phosphorus concentrations with river flow should not be discounted.

Alternatively, an annual 60-day rolling average of total phosphorus of 0.2 mg/l could be accepted, which many view as having more benefit to the river system than the proposed permit since the annual mass loading to the river would be less than the proposed permit suggests.

Lastly, the draft permit increases the frequency of sampling of phosphorus from 2/week to 3/week, as with other constituents we see no reasons to increase the sampling frequency.

Response No. 9: Please see Maynard Responses Nos. 3 (discussion of the TMDL and the 0.1 mg/l phosphorus limitation) and 7 (discussion of role of 7Q10 in design of permit limits and tiered approach), Consortium Response Nos. 8 (for a discussion of TMDL water quality model and pulse loading of phosphorus), 9 (discussion of cost differential between achieving 0.1 mg/l and 0.2 mg/l), 10 (discussion of total phosphorus limitation and ortho-phosphorus monitoring), 11 (discussion of phosphorus sediment flux), 12 (discussion of indirect environmental impacts), 13 (regarding narrative criteria relating to eutrophication) and 15 (rationale for not adopting 0.2 mg/l phosphorus limitation) and Hudson Responses No. 9 (discussion of phosphorus sampling frequency). Consistent with the express conclusions of the TMDL, the Agencies have concluded that the imposition of a 0.1 mg/l phosphorus effluent limitation on Westborough alone will not meet MAWQS. See TMDL at p.41.

Comment No. 10: For total phosphorus (November 1 - March 31), Footnote #14 on page 6 of 13 states, "Upon the effective date of the permit... ..the Permittee shall optimize phosphorus removal with a goal of achieving a discharge total phosphorus concentration of 1.0 mg/l or less." To minimize the chemical addition and associated operational costs to achieve this, "or less" should be deleted from the statement.

Response No. 10: Please see Maynard Response No. 8 and Consortium Response No. 17 above.

Comment No. 11: Although we understand the need to establish the relationship between ortho phosphorus and total phosphorus, we don't believe that this data needs to be included as a reportable NPDES permit limit. Ortho phosphorus should be deleted from the permit.

Response No. 11: Please see Consortium Response No. 18 above.

Comment No. 12: The draft permit includes an average monthly limit of 218 ug/l for total aluminum. Alum is currently added to the treatment processes to assist in phosphorus removal. As with pH, the aluminum limit conflicts with the phosphorus limit. A reduction in alum addition would result in an increase in phosphorus discharged. Total aluminum should be deleted from the permit.

Response No. 12: Please see Hudson Responses Nos. 3 and 6 above.

Comment No. 13: The note on Page 3 of 13 states, "A routine sampling program shall be developed 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 on correspondence appended to the applicable discharge monitoring report that is submitted to EPA." This requirement puts an added unnecessary burden on the City in reporting requirements. A routine program could be developed but deviations would be regular. Deviations in the sampling program result from holidays, vacation time, operator sick time, etc., and should be expected.

Response No. 13: Limited deviations are expected and should result in a minimal reporting burden. The requirement is necessary to ensure that discharge compliance sampling is representative.

Comment No. 14: On Page 6 of 13, Part I.A.1.f. should be deleted. The permit has specific and very low chlorine residual limits.

Response No. 14: The Agencies agree and have deleted the referenced language.

Comment No. 15: On Page 9 of 13, the draft permit states, "The permittee must modify its pretreatment program to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program" The City should be required to conform to current regulations under this permit. Revisions to the regulations would be picked up in subsequent permit revisions.

Response No. 15: The Permittee is required to maintain a program that reflects all pre-treatment regulations in effect during the term of the permit. Future changes to the regulations, as a consequence, may require modifications to the pre-treatment program.

Comment No. 16: It will be impossible to complete design, advertise for bids, complete construction and initiate operation of the facility improvements required to achieve the total phosphorus limits by June 30, 2008, essentially four years from today, when the means to achieve these limits are still under investigation. Between now and then the following activities need to be performed: (1) the Comprehensive Wastewater Management Plan Phase III/IV needs to be completed, reviewed and approved by the DEP, (2) the City needs to engage the services of a consultant to complete design documents, and these documents need to be approved by the regulators, (3) the City needs to secure funding for construction, (4) design documents need to be bid under Massachusetts General Laws which will include both filed sub-bids and general bids, (5) the construction contract would then need to be awarded and construction completed. A more reasonable compliance schedule would be as follows:

Within 6 months of the issuance date of the permit, the Permittee shall submit to EPA and DEP the draft Phase III/IV CWMP.

Within 12 months of the issuance date of the permit, the Permittee shall submit to EPA and DEP the final *Phase III/IV CWMP*. This assumes a three-month review period for the regulatory agencies on the draft *Phase III/IV CWMP*.

Within 30 months of the issuance date of the permit, the Permittee shall complete design of the Facility improvements required to achieve the total phosphorus limits.

Within 36 months of the issuance date of the permit, the Permittee shall commence construction of the Facility improvements required to achieve the total phosphorus limits.

Within 66 months of the issuance date of the permit, the Permittee shall complete construction of the Facility improvements required to achieve the total phosphorus limits.

The Compliance Schedule also includes a deadline for the permittee to complete an evaluation of dam removal/sediment remediation alternatives in the Assabet River. This should be removed from the NPDES permitting process. Marlborough and Northborough do not consider the NPDES permitting process and the sediment study to be tied together, and still have reservations about the Consortium's involvement in the sediment study.

Response No. 16: Please see Hudson Response Nos. 2 and 10, and Consortium Response Nos. 22 and 26.

Comment No. 17: The Fact Sheet, Page 1 of 15, lists the Town of Northborough as a co-permittee for Unauthorized Discharges, Operation and Maintenance of the Sewer System and Alternate Power Source. How is this administered? For instance, if the Town of Northborough is in violation of a requirement, is the City of Marlborough also liable, and vice-versa? The permit needs to more clearly describe this process. In addition, why is Northborough responsible for the alternate power source at the POTW, or is the intent for Northborough to be responsible for the alternate power source at their pump stations? The permit should be clarified.

Response No. 17: The Town of Northborough is responsible for maintaining the Northborough sewer system to ensure that I/I in the Northborough sewer system does not result in an unpermitted discharge or cause exceedances of permit limits for the Marlborough permitted discharge.

Marlborough is responsible for maintaining the Marlborough sewer system to ensure that I/I in the Marlborough sewer system does not result in unpermitted discharges or cause exceedances of permit limits for the Marlborough permitted discharge. Please see Northborough Response No. 1 relative to alternative power requirements.

Comment No. 18: The Fact Sheet, Page 2 of 15, information on service population for the Marlborough Westerly Wastewater Treatment Plant is incorrect. The Phase I CWMP indicated the Westerly plant serviced 4,121 individuals in Marlborough. Northborough estimates 3,250 individuals serviced today for a total of 7,371, say 7,400.

Response No. 18: This correction is acknowledged.

Comment No. 19: The Fact Sheet paragraph on 7Q10 flow, Page 3 of 15, is nearly verbatim from the interim permit language issued in June 2000. Was more recent data from the Maynard gauge and from the POTWs evaluated for this permit renewal? If not, why not.

Response No. 19: Please see Consortium Response No. 24 above.

Comment No. 20: In Attachment C of the Fact Sheet, metal limits derivation is based on the bioassays performed quarterly from 12/02 through 6/04. The average hardness in the River has been measured at 87 mg/l as CaCO₃, versus the default value of 50 mg/l as CaCO₃ included in the permit. Effluent limitations for copper should be adjusted accordingly based on actual data.

Response No. 20: The Agencies have not credited the POTWs with any increases in hardness that result from their own municipal discharges, except in the case of Westborough WWTP, which has zero dilution flow under 7Q10 conditions. Hardness is used in calculating the metal discharge limits. An increase in the hardness value will lead to an increase in the metals limits. In light of the Agencies' calculation of metal limits, which does not factor in background metal concentrations, a discretionary increase in hardness would not be appropriate. Please see OAR Response No. 10 below.

Comment No. 21: In Attachment B of the Fact Sheet, using plant design flow with in-stream 7Q10 flow is not an accurate representation of actual conditions as treatment facilities will never

discharge at design capacity under 7Q10 conditions. A regression analysis of effluent flow from the Marlborough Westerly Treatment Facility and river flow (expressed as cfs/square mile) was prepared and, as expected, the chart shows the influence of elevated groundwater and precipitation on both plant flow and river flow. Under low river flow conditions, the Marlborough Westerly treatment facility is discharging at about 85% of the average annual flow. Therefore, we would suggest a design flow dilution of $(0.85*2.89 + 4.3) / (0.85*2.89) = 2.75$. This would increase the total residual chlorine limits well as the metals limits.

Response No. 21: 40 C.F.R. § 122.45(b)(i) requires that permits be based on the design flow of the treatment plant. The recent change that defines the design flow as annual average flow instead of a monthly average has the potential to narrow any gap between the permitted flow and discharge flows during summer low flow conditions. Both new sewer connections and reductions in I/I over the life of the permit will reduce the gap between the design flow and summer discharge flows but are not quantifiable at this time. Consequently, the permit is based on the design flow and 7Q10 to ensure that water quality criteria are met over the life of the permit.

Comments were received from Testa, Hurwitz & Thibeault on behalf of the City of Marlborough in a letter dated July 27, 2004:

Comment No. 1: The draft permit and fact sheet contain no discussion of the very adverse financial impacts associated with requiring treatment to a level of 0.1 mg/l of phosphorus. Please explain, with specific reference to the narrative language in the state water quality regulation governing nutrients and eutrophication, exactly how DEP and EPA analyzed the financial impacts of a 0.1 mg/l standard versus a 0.2 mg/l standard.

Response No. 1: Please see Consortium Response No. 1. The applicable water quality standard can be found at 314 C.M.R. 4.05(5)(c), which provides that nutrients shall not exceed the site-specific limits necessary to control accelerated or cultural eutrophication. In addition, 314 C.M.R. 4.04(5) provides that any existing point source discharge containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practical treatment to remove such nutrients. As demonstrated by the TMDL, a phosphorus effluent limitation of 0.2 mg/l would be insufficient to achieve uses. Consistent with the TMDL and in accordance with Section 301(b)(1)(C) of the CWA, the Final Permit contains a water quality-based phosphorus effluent limitation of 0.1 mg/l. Section 301(b)(1)(C) and the regulations promulgated thereunder require compliance with applicable water quality standards and do not make any exceptions for cost or technological feasibility.

Comment No. 2: Please explain the legal authority for the inclusion, in the Compliance Schedule, of the dam removal evaluation and the requirement to identify recommended options for achieving the goals of the TMDL. EPA has repeatedly stated in prior meetings that it has no legal authority to include such an evaluation in an NPDES permit. Those requirements should be removed from the permit.

Response No. 2: This requirement has been removed from the permit.

Comment No. 3: Please provide an index of all documents and materials considered by EPA and DEP to constitute the administrative record on the draft permit. Are the EPA and DEP administrative records exactly the same? If not, please provide a separate index for each agency's administrative record.

Response No. 3: EPA Administrative Record for the Final Permit is not identical with DEP's administrative record. EPA is subject to the requirements of 40 C.F.R. § 124.18 ("Administrative record for final permit when EPA is the permitting authority"). As discussed below, DEP issues its permit under separate state authority and is accordingly not subject to the specific § 124.18 requirements. A copy of the Administrative Record is available for review at the Boston offices of the U.S. Environmental Protection Agency.

Comment No. 4: Is the draft permit a "joint permit" issued by DEP and EPA together, two separate permits, or something else? The permitting and appeals procedures cited in the draft permit package seem to cite primarily federal regulations. Please explain in writing, all of the appeals procedures applicable to the draft permit(s), any final permit(s), and accompanying documents. With respect to water quality certification, please explain exactly how the procedures in 40 C.F.R. 124.53 and 124.55 (and related federal regulations) interact with state water quality certification appeals under Massachusetts state law, especially the Massachusetts Administrative Procedures Act. How do the recent changes to DEP administrative appeals procedures (including so-called "pre-screening" procedures) and the transfer of DEP's administrative law judges to the Division of Administrative Law Appeals impact the permit appeal and water quality certification appeal procedures governing the issuance of the permit(s).

Response No. 4: The Region operates the NPDES permit program in Massachusetts because it has not approved program assumption by the State. Massachusetts maintains a separate water permitting authority under State law. See Massachusetts General Laws Chap. 21 §§ 26-53. When the Region issues an NPDES permit in Massachusetts, DEP jointly issues the permit under State law. Although the permit is a single document signed by both Agencies, legally each agency has issued a permit under its respective authorities.

Any condition of the final EPA permit decision may be appealed to the Environmental Appeals Board ("EAB"). The Draft Permit and "accompanying documents" are not subject to appeal.

A permit decision must be appealed, if at all, within thirty (30) days of notice of the Regional Administrator's action unless a later date is specified in that notice. Any person who filed comments on the draft permit or who participated in any public hearing on the draft permit may petition the EAB for review. Any person who failed to file comments or failed to participate in any public hearing on the draft permit may petition for administrative review only to the extent of the changes from the draft to the final permit decision. The regulations governing NPDES appeals are set forth at 40 C.F.R. §124.19. In the event a permit condition is "attributable to State certification" within the meaning of C.F.R. § 124.55(e) and if the petitioner seeks to make the permit condition less stringent, the appeal must be made through applicable State procedures.

Judicial review of final agency action by EPA may be sought pursuant to Section 509(b)(1) of the CWA.

Any person aggrieved by the final permit or the water quality certification issued by the Commissioner of the DEP (“**Commissioner**”) may also file a request for an adjudicatory hearing with the DEP within thirty (30) days following issuance of the final permit. The procedures governing adjudicatory hearings are set forth at 310 C.M.R. § 1.00. Adjudicatory hearings are heard before an Administrative Magistrate from the Division of Administrative Law Appeals (“**DALA**”) pursuant to the Massachusetts Administrative Procedures Act (“**MAPA**”). See M.G.L. c. 30A. (In 2004, the Office of Administrative Appeals within the Executive Office of Environmental Affairs moved to DALA, and the Administrative Law Judges who had been hearing appeals for the DEP became Administrative Magistrates at DALA. Consequently, adjudicatory hearings filed pursuant to 310 C.M.R. § 1.00 in connection with any final permit or water quality certification issued by DEP will be heard by an Administrative Magistrate from DALA.)

Final action resulting from the adjudicatory proceedings is subject to judicial review in the appropriate Superior Court pursuant to M.G.L. c. 30A, Section 14 (“**Judicial Review**”).

40 C.F.R. § 124.53 describes the process of obtaining, as well as the form and content of, state certification. 40 C.F.R. § 124.55 describes the effect of such certification on the issuance of the final permit.

Under MAPA, the Commissioner and/or the Administrative Magistrate make the initial administrative determination to vacate, stay or remand the certification upon appeal. The effect of state certification appeal determinations depends on whether EPA has issued the final permit. Prior to issuance, EPA must make its permit consistent with any more stringent state law requirements that are identified by the court or state agency as a result of the appeal. See 40 C.F.R. § 124.55(b). After issuance, EPA may modify the permit “on the request of the permittee only to the extent necessary to delete any conditions based on a condition in a certification invalidated by a court or state agency.” Id.

Comment No. 5: How does the recently finalized TMDL for the Assabet River relate to the issuance of the draft permit(s)? We believe the TMDL study does not, in fact, support the requirement for a 0.1 mg/l phosphorus limit.

Response No. 5: The TMDL is the technical basis for the water quality-based phosphorus limits and the adaptive management approach adopted in the permits. The Agencies believe that the TMDL does support the permit limits for the reasons outlined in the TMDL report, including the TMDL response to comments. Please see Hudson Response No. 2, Maynard Response No. 3 and Consortium Response No. 13.

Comment No. 6: The draft permit language contains a number of unfunded mandates, and requirements that offend principals of federalism and home rule. For example, the requirement that the City provide an adequate staff to carry out the operation, maintenance, repair and testing functions required to ensure compliance encroaches on the City’s prerogative to run its fiscal affairs. Likewise, the requirement that the infiltration/inflow plan include the necessary funding level and the source(s) of funding “insinuates EPA and DEP in municipal budgeting

deliberations to an inappropriate degree. This is also the case with respect to the requirement to identify and prioritize areas that will provide increased aquifer recharge as a result of reduction/elimination of I/I to the system.” What is the legal authority for imposing this requirement, especially in the context of an NPDES permit? The foregoing provisions are also impermissibly vague.

Response No. 6: EPA interprets the reference to “unfunded mandates” as a reference to the requirements of the Unfunded Mandate Reform Act of 1995 (UMRA). However, the UMRA is inapplicable to this permitting action. The UMRA applies to rulemaking, and not individual NPDES permit decisions. For example, in In re City of Blackfoot Wastewater Treatment Facility, NPDES Appeal No. 00-32 (EAB 2001), the Environmental Appeals Board denied a petition for review of compliance with UMRA on grounds that UMRA applies only to regulations, not to individual NPDES permits, which are more akin to licenses than a regulation.

The Clean Water Act is a valid exercise of the Commerce Clause power delegated to the United States by the Constitution. United States v. Riverside Bayview Homes, Inc., et al., 474 U.S. 121, 133 (1985). Under the CWA and federal regulations, EPA is obligated to prescribe permit conditions and “such other requirements as [it] deems appropriate” to assure compliance with applicable water quality standards. See Section 402(a)(2) of the CWA; 40 C.F.R §§ 122.43 and 122.44(d). 40 C.F.R. § 122.41(e) requires the permittee “to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances)” including “adequate laboratory controls and appropriate quality assurance procedures.” That Marlborough will be required to expend funds or take other measures in order to comply with conditions of a permit issued in compliance with express statutory and regulatory authority does not run afoul of federalism or home rule. See South Carolina v. Baker, 485 U.S. 505, 514-15, 108 S. Ct. 1355 (“Any federal regulation demands compliance. That a State wishing to engage in certain activity must take administrative and sometimes legislative action to comply with federal standards regulating that activity is a commonplace that presents no constitutional defect.”). Two representative provisions cited by Marlborough—to adequately fund the infiltration plan and to identify aquifer recharge areas—fall within the Agencies’ authority to impose conditions. Each is reasonably designed to assure compliance with MAWQS by impacting the nature and quantity of effluent discharge into the impaired waters of the Assabet River. The completion and implementation of the I/I Plan, including the identification of aquifer recharge areas, will help to minimize the adverse effects of sanitary sewer overflows on water quality in the Assabet River and also positively affect dilution flow in the waterway. The Agencies note that under 40 C.F.R. § 122.41, Marlborough is under a duty to properly operate and maintain all facilities and systems of treatment which are installed or used by the permittee to achieve compliance with the conditions of the permit.

Each of the referenced provisions is sufficiently clear to apprise reasonable persons of required conduct and do not encourage arbitrary or discriminatory enforcement by the Agencies. The permit clearly prescribes conduct on the part of the permittee and a standard for evaluating the successful completion of the conduct. Specifically, Marlborough must “provide an adequate staff to carry out the operation, maintenance, repair and testing functions required to ensure compliance,” to identify the necessary level and the sources of funding to complete an infiltration/inflow plan and to identify and prioritize “areas that will provide increased aquifer

recharge as a result of reduction/elimination of I/I to the system." Marlborough has not specified why the above condition is unclear.

Sewer system maintenance is also required by DEP regulations. See 314 C.M.R. §§ 12.03(5) & 12.04.

Comment No. 7: The draft permit documents require the submission of various plans and reports for EPA and DEP approval, without specifying the review criteria that will be used. For example, Footnote 14 requires the City to submit, within 60 days of the effective date of the permit, "a plan for optimizing phosphorus removal to EPA and MADEP for review and approval." This requirement should be removed.

Response No. 7: Please see Maynard Response No. 8 above.

Comment No. 8: Are the requirements for the reports and plans referenced by the Draft Permit subject to the Paperwork Reduction Act, of state and federal administrative procedure requirements related to notice, comment, and publication of rules and regulations?

Response No. 8: The Paperwork Reduction Act requires federal agencies, including EPA, to obtain approval from the Office of Management and Budget before "obtaining, causing to be obtained, soliciting, or requiring the disclosure to third parties or the public, of facts or opinions by or for an agency, regardless of form or format," calling for answers to "identical questions posed to, or reporting or recordkeeping requirements imposed on, ten or more persons, other than agencies, instrumentalities, or employees of the United States." 44 U.S.C. § 3502(3); 5 C.F.R. Part 1320. The PRA is not applicable to the permit issued to Marlborough, as the information is being solicited from one party only, the Permittee (or, at most, the four POTWs that discharge into the Assabet River).

Furthermore, the notice, comment and publication requirements relating to the promulgation of rules and regulations are inapplicable, as the reports and plans referenced in the Draft Permit stem from permit conditions and requirements authorized under existing regulations. See e.g. 40 C.F.R. §§ 122.41, 122.43, 122.44 and 122.47(a)(ii) ("Schedules of Compliance").

Comment No. 9: We continue to believe that DEP and EPA are not following an adaptive management approach, one that would properly sequence and coordinate the various water quality efforts and studies that could benefit the Assabet River. Instead, the agencies are arbitrarily insisting on artificial discharge limits (e.g., for discharge volume and phosphorus) that have no technical justification and which will require the wasteful expenditure of millions of dollars, with no environmental benefit.

Response No. 9: The Agencies disagree for the reasons set forth in Hudson Response No. 2 and Consortium Response Nos. 8, 10, 11, 12 and 13, as well as the TMDL.

Comment No. 10: The language included in Part I.J. entitled, "State Permit Conditions" is very confusing and contains apparent misstatements of law. How can the discharge permit be "issued jointly by EPA and MADEP under federal and state law, respectively. How can each agency

purport to have the authority to enforce every term and condition included in the permit(s)? What is the legal authority for that proposition? How will EPA and MADEP ensure that the City's state law appeal rights will not be abrogated, especially with respect to water quality certification appeals?

Response No. 10: As discussed above, the Region operates the NPDES permit program in Massachusetts. Massachusetts maintains a separate water permitting authority under State law. When the Region issues a NPDES permit in Massachusetts, DEP jointly issues the permit under State law.

The City's right of appeal is not abrogated by the joint permitting process. Upon issuance of the permit, the City may file a petition for review with the EAB at the federal level and may further appeal any subsequent final agency action to the federal courts under applicable provisions of the CWA. The City may also pursue an appeal of the state permit by filing a request for an adjudicatory hearing with the appropriate state authority. The City is very familiar with this process, having filed several appeals of past permits at both the state and federal level.

Comment No. 11: What is the technical rationale, and the legal authority, for capping the Westerly plant's discharge at 2.89 MGD? The Assabet River TMDL suggests that increased flow would be beneficial, so what is the basis for this arbitrary restriction?

Response No. 11: The TMDL's statement regarding the benefits of increased flow is not unequivocal. The TMDL states that any request to increase flow beyond design capacity will have to meet the State antidegradation requirements. The TMDL Response to Comment further states, in relevant part:

DEP recognizes that an increase in flow, according to the model, may have a positive impact in-stream from a nutrient standpoint however that impact is not realized unless a significant reduction of sediment phosphorus is also achieved. In addition, potential impacts associated with increased flows go beyond nutrient related impacts. There are also secondary impacts that need to be considered and evaluated such as where the additional water is coming from and what the potential impacts may be on the smaller tributaries where withdrawals may occur. See TMDL at p. 75.

EPA concurs. Discharge of 2.89 MGD reflects the current design capacity of the Marlborough Westerly WWTW. Given the severe impairment of the Assabet River and uncertainty regarding the sediment remediation, the Agencies do not believe that increasing point source pollutant loading, with the consequent impact on phosphorus concentrations in the water column and sediment, would be consistent with achieving MAWQS. The legal authority for capping discharges can be found at Section 301(b)(1)(C) of the CWA and 40 C.F.R. § 122.44(d)(1), which require that the permit contain effluent limitations and other conditions necessary to ensure compliance with MAWQS, and § 122.44(d)(vii)(B), which requires that effluent limitations be consistent with the assumptions of the TMDL. For a discussion of the TMDL's position regarding flow increases, please see Consortium Responses Nos. 1 and 25 above and CDM Response No. 1 below.

Comments were received from Upper Blackstone Water Pollution Abatement District in a letter dated July 27, 2004:

Comment No. 1: It is our understanding that the TMDL does not support the 0.1 mg/l total phosphorus limits. Under normal summer conditions, other point and non-point sources could drive eutrophication in the river system, regardless of the POTW effluent phosphorus concentration.

Response No. 1: Please see Hudson Response No. 2, Maynard Response No. 7 and Consortium Response Nos. 1, 8, 10, 11, 13 and 15.

Comment No. 2: It is our understanding that the impoundments, associated sediment accumulation, and river flows have significant impacts on the river quality that are not reflected in the permit conditions. Alternative approaches to phosphorus reduction in the system should be investigated prior to establishing such low limits at the WWTFs.

Response No. 2: All the factors cited above were significant considerations in the development and approval of the TMDL by DEP and EPA, respectfully, and are in turn reflected in the Final Permits. Please see Consortium Response No. 1 above and Response No. 1 below.

Comment No. 3: Increased chemical addition will be required to meet the low levels of phosphorus. The increased chemical use has far-reaching impacts on sludge. The UBWPAD provides sludge disposal for many WWTFs through incineration and ash landfilling. The District may be unable to incinerate the chemical sludge produced, or if able to incinerate, the amount of fuel required to incinerate these highly inert sludges will increase, as well as the air emissions and ash production, further driving up the cost for their disposal.

Response No. 3: Please see Consortium Responses No. 12 above. The Agencies are aware that increased chemical addition could impact sludge removal in terms of cost and indirect environmental impacts. However, permits must include limits as stringent as necessary to meet MAWQS irrespective of cost considerations. As discussed above, the Agencies have determined that imposition of a phosphorus effluent limitation of 0.1 mg/l is necessary to achieve compliance with MAWQS. The Agencies also note that alternatives to sludge incineration should be investigated.

Comments were received from the Town of Sudbury (July 28, 2004), the National Park Service (July 14, 2004), the Riverways Program of the Massachusetts Department of Fish and Game (July 14, 2004), the Hop Brook Protection Association (July 11, 2004), OAR (July 28, 2004), Sudbury Valley Trustees (July 28, 2004), and Barbara Offenhartz (August 3, 2004). Where more than one commenter expressed substantively similar concerns, the Agencies summarized the comments if it was possible to do so without departing from the meaning of any individual comment. Several of the commenters discussed the severity of the Assabet River impacts, including the loss of uses and the strong odors from decaying vegetation. While many of those commenting supported moving ahead with achieving a 0.1 mg/l total phosphorus limit as soon as possible, many also expressed concerns with various permit conditions. These concerns, and the Agencies' responses to these concerns, follow.

Comment No. 1: Several commenters noted that despite the TMDL requirement for limits of 0.1 mg/l plus a 90% reduction in phosphorus released from the sediments, there is nothing in the permits that assure a reduction in the phosphorus sediment load. Many indicated that the permits should lay out a complete process for achieving water quality standards, including expanded milestones for completing the dam removal/sediment remediation study and making decisions relative to implementation of this study. The National Park Service indicated that the compliance schedule should include dates for when funding is secured and the sediment study is begun, and should outline a decision process to determine what will be done in the case that funds are not available. The Organization for the Assabet River (OAR) proposed a comprehensive alternative compliance schedule. Many commenters indicated that the compliance schedule should be extended to 2014.

Barbara Offenhartz pointed out that, relative to the dam removal/sediment remediation study, practical questions of legal authority, state policies and procedures, and financial provisions need to be worked out by the Agencies and the Permittees in order to ensure that technically sound and cost-effective options are identified. The Riverways Program indicated that EPA should consider requiring a scope of work be submitted to the permitting agencies and to interested parties for review so the specifics of what should be in the evaluation are agreed upon by the regulators, the permit holders and interested members of the public or other agencies. OAR noted that since the TMDL indicates that phosphorus resuspension comes from all segments of the river and not just the impoundments, the scope of work for the dam removal/sediment remediation study needs to cover the whole river.

The Town of Sudbury and OAR commented that if the permits contain only the 0.1 mg/l phosphorus limits, then the permits will have no possibility of achieving Standards and that any Water Quality Certification issued by MADEP for these permits would be improper. The Town of Sudbury further indicated that to meet the conditions for issuing a Water Quality Certification, the permits must require the evaluation of sediment remediation alternatives in order to identify which measures not yet defined are necessary to achieve Standards in addition to lowering phosphorus levels to 0.1 mg/l and that once the necessary measures have been identified, they must be required to be implemented in the next round of permits to be issued in 2009. OAR further indicated that, given the Permittees publicly stated opposition to conducting the dam removal/sediment remediation study, it is critically important that the final NPDES permits ensure that Standards are met independent of sediment remediation or dam removal. OAR indicated that the permits should include final (Phase 2) water quality-based phosphorus limits of no greater than 0.05 mg/l to be met by 2014 if sediment remediation is not pursued, while retaining the draft permit limits as interim (Phase 1) limits.

Response No. 1: The Assabet River TMDL establishes phosphorus waste load allocations (WLAs) for the POTWs, and load allocations (LAs) for the nonpoint sources of phosphorus (primarily sediment phosphorus). NPDES permits for the POTWs must be consistent with the waste load allocations in any applicable TMDL. See 40 C.F.R. § 122.44(d)(vii)(B). Accordingly, the final permit limit of 0.1 mg/l phosphorus reflects the WLAs. While it is extremely important that sediment phosphorus reductions occur, EPA's regulations do not require that the Permittees be required to achieve such nonpoint source reductions. On the other

hand, there should be strong incentive for the communities voluntarily to participate in the sediment remediation study and implementation activities. The TMDL established WLAs which in part, are predicated on the assumption that stringent LAs will be achieved and the POTW permit limits are consistent with the assumptions of the TMDL in accordance with 40 C.F.R. § 122.44(d)(vii)(B). If it becomes evident that substantial sediment phosphorus reductions will not occur, then the Agencies will likely be obligated to pursue more stringent effluent limitations on the POTWs at the next permit issuance. Rather than setting contingent permit conditions based on hypothetical scenarios which assume that sediment removal does not occur, the Agencies believe that it would be more effective to set permit conditions based on an evaluation of all the facts and circumstances as they exist at the time of the next permit issuance.

The Agencies considered alternatives to the compliance schedule included in the Final Permit, including the schedule proposed by OAR. The Agencies concluded that there are too many uncertainties under the adaptive management approach to identify meaningful milestones and schedules at this point. Unknowns include the extent of Army Corps of Engineering funding and the scope of work for the Remediation Study, which is yet to be determined and will require input from all stakeholders. Detailed compliance events will be identified upon the completion of the Remediation Study, which will provide the Agencies and stakeholders with additional information on optimal scenarios with respect to non-point source phosphorus remediation.

As mentioned in Hudson Response No. 2, the binding agreement entered into between DEP and the Permittees outlines funding responsibilities and defines the legal authority of the parties with respect to the completion of the Remediation Study.

The Agencies recognize the value in having input from all affected parties in the course of determining the scope of work for the Remediation Study. For that reason, DEP has been tasked with coordinating the study because it is well-positioned to balance the interests of all the parties. In addition, OAR is a member of the Study Coordination Team. Under the terms of the MOU, the Study Coordination Team will be given progress reports on the Remediation Study by DEP and the Consortium.

Comment No. 2: The Hop Brook Protection Association commented that there is no requirement or strong recommendation that “scalable technology” be used to reach the level of 0.1 mg/l in order to facilitate achieving lower limits, if necessary to achieve Standards.

Response No. 2: While it is up to the Permittees to choose the appropriate technology, the Agencies do recommend that the technology chosen be compatible with additional technology that may be necessary to achieve lower limits.

Comment No. 3: OAR commented that the permits should cap wastewater discharge volumes at current flows because there is now no reasonable assurance that the permits will comply with MAWQS. OAR further commented that allowing the POTWs to discharge up to their current design flows will further dewater the Assabet’s tributary streams, and potentially impair Standards in those streams. Specifically, the USGS study, Simulation of Ground-Water Flow and Evaluation of Water-Management Alternatives in the Assabet River Basin, Eastern Massachusetts: U.S. Geological Survey Scientific Investigations Report 2004-5114, predicts that

when wastewater discharges and water withdrawals are maximized under existing permits, and sewers are extended as proposed in the CWMPs, average annual streamflows in the tributaries would decline 1-10%. In an average September, the study predicts that streamflows would decline as much or more in several Assabet tributary streams under these same future conditions. Specifically, the following tributaries could experience potentially damaging declines in average September non-storm streamflows; Fort Meadow Brook 98% (Hudson & Marlborough), Cold Harbor & Howard Brooks 49% (Northborough, Shrewsbury, Boylston), Hop Brook 23% (Northborough, Shrewsbury, Westborough,) Stirrup Brook 10% (Marlborough, Westborough) and Taylor Brook 9% (Maynard, Stow, Sudbury). Increased flows from the MWRA would do little or nothing to ameliorate hydrological deficits in the Assabet Basin because the water would be discharged as effluent to the river, circumventing the natural hydrological cycle. Existing and any future MWRA flows would help restore the Assabet's water balance only if this water was discharged to the ground.

In addition, the Assabet is a major tributary of the Concord River, which is the town of Billerica's only public drinking water supply. Since 1970, the volume of wastewater effluent contributed by the Assabet POTWs to Billerica's drinking water source has more than doubled, increasing from 5 to 11 million gallons per day (MGD). When the Assabet municipal plants reached design flows, Billerica would receive another 4 MGD, for a total of 15 MGD of wastewater.

Response No. 3: Consistent with the TMDL, the flow limits in the Final Permits reflect current design flows. The Agencies continue to recommend that the communities pursue decentralized wastewater discharge options in order to increase base flow in the Assabet River and maximize the potential that remediation efforts will successfully restore use goals, as well as to restore minimum flows necessary to support aquatic life uses in the tributaries.

Comment No. 4: Several commenters noted that the traditional measurement for chronic permit limits has been monthly average and that the 60-day rolling average may not be protective. The Riverways Program questioned how the Permittees will determine and record the daily 60-day averages to determine the monthly average for the month of April. OAR noted that as the WWTFs increase towards design flows, the effluent dominance of the river during summer low flow conditions will worsen and may approach 100 % of the 7Q10 flow. OAR further noted that for this reason the Assabet River is vulnerable to algal blooms if POTWs do not comply with interim or final total phosphorus limits on a weekly basis.

Response No. 4: See Hudson Response No. 5, Maynard Response Nos. 6 and Maynard Response No. 7. The 60-day rolling average ensures the best possible performance on any given day since the results for that day will be averaged with the next 59 days to determine compliance. The uncertainty of future results that will be used for determining compliance dictates the best possible performance on any given day. Short-term excursions will have to be responded to quickly in order to ensure compliance. Weekly averages would be expected to exceed the 60-day rolling averages infrequently and only as a result of short term exceedances of the permit limit that may be difficult to prevent. Short term exceedances are unlikely to result in a significant response in the receiving water relative to aquatic plant growth.

With the change noted in Maynard Response No. 7, compliance with the April limit (now defined as a monthly median limit) will be able to be determined by the end of April. While compliance with the permit limit during the months of May and June cannot be determined until the end of June, compliance is dependant upon good performance throughout the period.

The Agencies believe that the 60-day rolling average adequately accounts for the vulnerability of the Assabet River to algal blooms in periods of effluent dominated flow and that a weekly measurement is not necessary. In order to comply with the 60-day rolling average, exceedences must be relatively short in duration. A week-long excursion would make compliance with the 60-day rolling average difficult.

Comment No. 5: The Riverways Program commented that one issue to consider with regard to the new phosphorus limits and the interim limits are the lack of loading limits for phosphorus. As the EPA points out, a combination of concentration limits and maximum loads of a pollutant ensures a facility will operate efficiently and effectively. For an example: the Hudson facility processed flows at the plant above the design flow with some frequency over the past two years. The phosphorus concentrations have also had elevated daily maximums. Consider the possibility of the plant meeting the concentration limit but, because of flows above design, having the nutrient load well above expected loads. In May of 2003, the maximum flow at the Hudson plant was 3.68 and the maximum phosphorus concentration during that month was 4.91 mg/l. If those two maximums overlapped, the load to the receiving water would be 150 lbs and an order of magnitude above what would be acceptable. Even if the concentration was 0.75 mg/l, the interim limit, the load from the plant would still be nearly 20% greater than at design flow. We would like to endorse the addition of load limits for phosphorus both with the interim and final phosphorus limits given the serious water quality problems in the receiving water, the presence of numerous impoundments which can accumulate excess phosphorus loads, the instances of elevated flows at some of the facilities, the lack of daily maximum flow limits and a new rolling monthly average which can obfuscate flow exceedances. With all of these factors, nutrient loads could be well above those needed to meet TMDL allocations while still meeting concentration goals.

Response No. 5: The Agencies do not believe that it is necessary to include mass limits. The primary concern with phosphorus discharges is during low flow periods. During those periods, infiltration and inflow are at their lowest and consequently wastewater volumes are at their lowest. As a result, effluent flows exceeding the permitted values would be infrequent and short term. However, phosphorus loadings during the high flow periods could also be a concern if background concentrations of phosphorus are elevated (see Maynard Response No. 7). A requirement to report mass loading values has been added to the permits.

Comment No. 6: The Town of Sudbury commented that the technology-based standard for treatment of phosphorus, the “highest and best practical treatment” (HBPT), is in fact much lower than 0.2 mg/l, i.e. much lower phosphorus discharge levels are achievable using a practical and available treatment methods. These treatment methods should be mandated by technology-based standards as well as by water quality-based justifications. The Administrative record of the Marlborough East Wastewater Treatment Plant (MEWTP) draft permit demonstrates that treatment to a standard more stringent than 0.1 mg/l for phosphorus is technically achievable and

feasible. The Town of Sudbury requests that EPA and DEP incorporate the portions of the MEWTP Administrative Record which addresses HBPT for phosphorus into the Administrative Record for the Assabet River draft permits. In particular, the comments of the Hop Brook Protection Association in the Marlborough Easterly Wastewater Treatment Plant draft permit comment period should be addressed in the Assabet River draft permits proceedings.

Response No. 6: The HBPT requirement is a State requirement that has been defined by the State based on a number of considerations, including cost, and is not intended to represent the absolute limits of technology.

There is no federal technology standard for phosphorus. The final phosphorus effluent limitation is intended to ensure compliance with applicable MAWQS relating to eutrophication, in accordance with 40 C.F.R. 122.44(d)(1)(i) and to be consistent with the waste load allocations of the TMDL, in accordance with 40 C.F.R. 122.44(d)(1)(vii)(B).

The Agencies regard mere incorporation by reference of comments from a separate permit proceeding as inappropriate, as it does not provide the Agencies with sufficient notice or specificity to respond meaningfully. Nevertheless, the basis for the 1.0 mg/l winter phosphorus limit, including a discussion of HBPT, has been dealt with in Comment No. 8 below.

Similarly, the Agencies are unclear which portions of the administrative record from the MEWTP permitting process the Town is referring to. Materials considered by the Agencies in the course of its permitting decisions, which include certain materials in the MEWTP administrative record, have been included in the Administrative Record for the Assabet River POTWs.

Comment No. 7: The Town of Sudbury commented that the Fact Sheet is unclear as to whether the proposed interim or final phosphorus discharge limits are higher than the limits required by the existing permits. To the extent that the Assabet River draft permits provide less stringent limits than the corresponding existing permits, the less stringent limits would constitute backsliding, a violation of the CWA, which should not be allowed.

Response No. 7: The only summer phosphorus limit in effect during the term of the prior permits for Marlborough, Hudson and Maynard was 0.75 mg/l, since the permits were never modified to put into effect a limit reflecting "HBPT." In the case of Westborough, the 1993 final permit limit of 1.0 mg/l is still in effect. Westborough appealed the permit issued to it in 2000 to the Environmental Appeals Board. The 2000 permit was stayed pending resolution of the appeal. The Board remanded in part. EPA has not yet re-issued a modified permit. Accordingly, the 1993 final permit remains effective.

The anti-backsliding provision does not preclude the summer limits in the new permits. The final summer limits in the new permit are more stringent than the limits in the prior permits. The interim summer period phosphorus limit of 0.75 mg/l in the new Final Permits is equal to the prior effective phosphorus limits for Marlborough, Hudson, and Maynard and more stringent than the prior phosphorus limit for Westborough. The summer period interim limit is appropriate in conjunction with an enforceable schedule for achieving the final summer period limit of 0.1

mg/l. The interim permit limits have been deemed necessary because of the inability of the POTWs to meet the limits using current treatment facilities coupled with the anticipated operational disruptions that will result from the construction upgrades to the POTWs.

The winter phosphorus requirements are more stringent than the winter period requirements in the previous permits.

Comment No. 8: Several commenters indicated that the winter period phosphorus limit may not be sufficient to ensure compliance with Standards and that a limit on particulate phosphorus should be included in the permits. The Town of Sudbury indicated that until the winter period limits are better justified, the permits should not allow winter phosphorus discharge limits, either as interim or final limits, which exceed the corresponding growing season discharge limits. The Town of Sudbury further commented that higher winter phosphorus limits violate the requirement for HBPT and cite previous correspondence from EPA indicating that phosphorus limits should be year round and should be in accordance with the Standards which require HBPT. The Riverways Program commented that the interim limit for the winter period requiring optimization is vague and unenforceable and that a definitive interim concentration and load limit should be included for the winter period.

OAR commented that the evaluation to help determine water quality-based winter period phosphorus effluent limits should be incorporated into the permit compliance schedule. Riverways commented that the permits should specify how long the agencies will have to find the resources to analyze the winter period phosphorus issue and if the Agencies cannot secure the needed resources, the communities should be tasked with undertaking this vital study.

Response No. 8: The Agencies have imposed an orthophosphorus monitoring requirement for the winter period, but do not consider a limitation to be necessary at this time. See Consortium Response No. 18.

The HBPT requirement referenced by the commenter applies to “existing point source discharges containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae,” see 314 C.M.R. § 4.04(5), but does not specify that HBPT must be applied year round in all circumstances. In the case of the Assabet permits, the Agencies believe that the implementation of the stringent seasonal phosphorus limits during the growing season in conjunction with the winter limit of 1.0 mg/l satisfies 314 C.M.R. § 4.04(5). The summer limit (0.1 mg/l) is even more stringent than what DEP has determined to represent HBPT (0.2 mg/l) and certainly satisfies the HBPT requirement. Moreover, the TMDL indicates that the winter phosphorus discharge will result in a minimal discharge of particulate phosphorus and that the dissolved phosphorus, which will not be taken up by plants in the winter, will pass through the system. Therefore, the Agencies have concluded that application of treatment reflecting HBPT is not necessary in this case in the winter months. At the same time, however, using their best professional judgment, the Agencies have determined that a winter phosphorus limitation of 1.0 mg/l combined with monitoring requirements will be required to ensure that the level of particulate phosphorus in the discharge continues to be low and that phosphorus discharged in the winter does not accumulate in the system and contribute to eutrophication in the summer. If water quality sampling or other data (see Hudson Response No. 11) indicate otherwise, more

stringent winter period phosphorus limits may be pursued. Contrary to the Town of Sudbury's claim, the winter phosphorus effluent limitation of 1.0 mg/l would not constitute backsliding, as the previous permit did not contain a winter phosphorus limit.

The Agencies are committed to pursuing an evaluation of winter phosphorus loading. In addition to technical challenges relative to scoping and conducting the study, such a study raises complex legal issues, for example with respect to jurisdiction. The timing of the study will also be impacted by when in fact the Permittees begin complying with the winter phosphorus limit. These factors impact when the study will be completed and by whom. The winter phosphorus evaluation may be best undertaken by the Agencies, which can provide a more comprehensive and coordinated approach than any individual Permittee. Given the uncertainties regarding the details of the winter phosphorus study, the Agencies do not believe that it can provide a meaningful compliance schedule at the time of issuance of the Final Permit.

Please see Maynard Response Nos. 5 and 8 relative to the definition of the interim phosphorus requirement.

See Hudson Response No. 11 relative to the funding issue.

Comment No. 9: OAR commented that the incremental cost of meeting a total phosphorus limit of 0.1 mg/l is modest compared to the baseline cost of maintaining the four POTWs at current NPDES limits and permitted flows over the next twenty years.

Response No. 9: While the incremental cost of meeting the new limit may be less than the baseline cost of maintaining current NPDES limits over the long term, the Agencies note that the cost of upgrading the plants to be borne by the communities is still substantial.

Comment No. 10: OAR commented that the effluent limits for copper in the draft permits were calculated in a manner that does not take background and upstream sources of copper into account. This could result in violations of Standards in the river. There may also be other metals that should have been limited in the permits (e.g. aluminum) but are not because background and upstream sources were not considered. Again, this could result in violations of Standards.

As explained previously, under low flow conditions the river consists almost entirely of wastewater effluent, yet the metals limits in the draft permits are calculated without taking into account any existing sources of the pollutant. For example, the Marlborough Westerly, Hudson and Maynard plants all have at least one treatment plant discharging upstream of their discharges, yet the copper in these discharges was ignored. This is contrary to the state's Standards, 314 C.M.R. 4.03(1), which require, "...In establishing water quality based effluent limitations the Department shall take into consideration background conditions and existing discharges." All Permittees should get "end-of-pipe" limits (no dilution assumed) until the Permittees or permitting agencies complete an appropriate fate and transport study. As a first step, the agencies should review the chemistry data for the Assabet River samples that the POTWs analyze and report as part of their Whole Effluent Toxicity (WET) tests.

Response No. 10: The Agencies did consider upstream and background sources of metals. The Agencies believe the permit limits are protective of aquatic life despite the presence of background levels of metals, because the limits are based both on conservative estimates of hardness and national criteria values. For instance, the national criteria values do not take into account site specific factors, e.g., total organic carbon levels that reduce the toxicity of metals. Please see CDM Response No. 20 for a discussion of the Agencies' hardness calculation.

Comment No. 11: The Riverways Program commented that the change in the permitted pH range to reflect the Standards is a welcome improvement in the permit. As the Fact Sheets for these draft permits note, the Assabet River is often dominated by treated effluent and repeated point discharges with compromised pH levels in this small river translate to stressful conditions to the ecosystem. Given the range of pH of the discharges, from a low of 4.4 (Marlborough) to a high of 10.9 (Hudson) s.u., and the frequency of violations from all but the Maynard facility it seems wise to require more frequent testing than once per day. An increase in frequency to 3 or more times a day should be considered and in the case of Marlborough and Hudson, continuous pH monitoring would be welcome since they had repeated problems with pH levels. A once a day grab does not capture the variability of flows from a facility receiving both domestic and industrial wastes or provide a complete picture of the duration of depressed or elevated pH levels. Currently the facilities are using alternative dilution water because the receiving waters are unacceptable for this use. Acidic or basic conditions could be contributing to the toxicity of the receiving water and more information on the extent of the excursions would help in efforts to rectify the pH problem.

Response No. 11: The Agencies concur with the reasoning above that a once per day grab may not adequately capture potential daily variability resulting from nitrification and chemical additions. The Final Permits require three times per day grab sampling for pH in order to provide for more representative samples. If increased monitoring frequency indicates that the discharge continues to experience significant variability, then continuous monitoring may be required in the future.

Comment No. 12: The Riverways Program commented that Marlborough and Maynard are required to maintain a dissolved oxygen concentration of 5.0 mg/l while Hudson and Westborough are charged with a 6.0 mg/l minimum. There is no explanation for the difference in requirements. Given the compromised state of the river, the severe eutrophication and the State's Standards, it seems reasonable to require a DO minimum of 6.0 mg/l for all four facilities.

Response No. 12: The dissolved oxygen limits are the same as in the previous permits in accordance with anti-backsliding and antidegradation requirements. The Agencies believe that the current limits are reasonable, because each ensures compliance with the ambient dissolved oxygen criteria of 5.0 mg/l. Rather than imposing more stringent dissolved oxygen limitations, the Agencies believe that the phosphorus restrictions and sediment remediation plan outlined in the TMDL are the primary method of addressing the eutrophication problems in the Assabet River.

Comment No. 13: The Riverways Program commented that the Hudson and Westborough permits require WET testing using only one species but Marlborough is required to use two species. Hudson and Westborough had more violations of their WET test than Marlborough. Did these facilities only have problems with daphnids and not with minnows? Since Hudson has a larger discharge now than in the past, there is little dilution to the flow, and the effluent has proven acutely or chronically toxic five times in quarterly testing over the past two and a half years; it might be beneficial to have some additional WET tests using minnows to ascertain if changes in the plants flow volume in recent years may have resulted in changes in the effluents toxicity to minnows. The Westborough's problems with chronic and acute toxicity in its effluent and the negligible dilution afforded the discharge, especially in the summer months when there is lots of biological activity is a worry. Six exceedances in just two and a half years is problematic and the discharge could be having chronic affects on the aquatic ecosystem. Additional WET testing with minnows may be warranted for this facility.

Response No. 13: Reductions in the number of species tested have been authorized, upon request, where it can be demonstrated that one species is consistently more sensitive than other species. In the case of municipal wastewater treatment facilities generally, it is the Agencies' experience that daphnids are almost always the more sensitive species. The Hudson requirement remains at one species since there is no evidence to suggest that the small increase in flow without a dramatic change in the quality of the effluent would change the relative sensitivity of the species. The Agencies agree with the concern relative to toxicity of the Westborough discharge but do not believe that additional testing with a less sensitive species is the answer. If mandated improvements in the pre-treatment program, source reduction efforts, and upgraded treatment do not eliminate the chronic toxicity of the discharge, more aggressive action may be warranted.

Comment No. 14: The Riverways Program commented that the required addition of chlorination and dechlorination alarm systems is a pro-active addition to the permits. As noted in the Fact Sheets, chlorine can be extremely toxic to aquatic life. Having an alarm systems will allow for nearly instantaneous alerts if problems with equipment arise and this will allow managers to correct problems expediently, hopefully before there can be releases that might pose a public health or toxic threat.

Response No. 14: The Agencies concur.

Comment No. 15: The Riverways Program commented that the ammonia limits for cold weather months were considered using receiving water conditions based on a pH of 7.0 s.u. and a temperature of 10⁰ Celsius. These instream conditions may not be reflective of actual river conditions and this is a concern because of the toxicity of ammonia on living organisms. The monitoring data shows there are frequently discharges from several of the plants well below 7.0 s.u. and water temperatures during the winter are likely to be considerably cooler than 10⁰ C. The EPA might want to reconsider the ammonia limits and look at in situ conditions during the colder months in the Assabet River and determine ammonia limits based on those measured conditions.

Response No. 15: The Agencies did consider in situ conditions during the colder months and determined an ambient temperature and pH that would be representative of conditions when the

lowest flow for the period would be expected. Ambient criteria are less stringent at lower temperatures and lower pHs.

Comment No. 16: The Riverways Program commented that the 24 hour composite sampling should be flow proportional. This will provide a sample representative of the effluent. An important parameter to capture if there are ebbs and floods in the discharge volume over the course of a day.

Response No. 16: The 24 hour composite samples are required to be flow proportional samples.

Comment No. 17: The Riverways Program commented that Maynard is the only facility of the four with no seasonal requirements for BOD and TSS. The Maynard discharge is a smaller volume but since there is potentially a cumulative affect and the river is already greatly impaired, it seems reasonable to require lower summer concentration and loading limits for this facility.

Response No. 17: The water quality model did not indicate a significant impact on ambient dissolved oxygen levels with secondary-based BOD limits. Secondary-based TSS limits will only result in a minor increase in the relatively low ambient TSS values measured under low flow conditions.

Comment No. 18: The Riverways Program commented that the facilities use chemical addition for phosphorus removal and all of the plants have some level of industrial influent. It is our understanding these factors may create some problems with BOD monitoring and presumably this is why CBOD monitoring is used on several of the permits during the winter but not for the Hudson plant. Why do Westborough and Marlborough sample for CBOD in the winter but Hudson does not? Also Hudson's permit has no industrial pretreatment program requirements included. Does Hudson have a negligible industrial contribution (with flows at nearly 3 MGD and a population served of 19,000 it seems likely there is either a large industrial contribution or a very large I/I component to result in a per capita contribution of around 150 gpd) resulting in no need for an Industrial Pretreatment Program and no need for CBOD monitoring?

Response No. 18: The Agencies are not aware of any evidence to suggest that BOD monitoring is compromised in the presence of chemical addition and industrial influent. Rather, permit limits were based on CBOD either because the previous permit was based on CBOD or the permittee requested the change to CBOD (see CDM Response No. 4). The CBOD measurement ensures that any nitrogenous oxygen demand is not measured as part of the carbonaceous oxygen demand that water quality-based BOD limits are designed to limit.

Hudson is not required to have a pre-treatment program because it does not meet the thresholds requiring it to have a program (40 C.F.R. § 403.8). EPA does have the discretion to require Hudson to develop a pre-treatment program upon a determination that any of several circumstances warrant such a program to prevent pass through or interference (see 40 C.F.R. § 403.8(a)). If toxicity continues to be a problem, EPA will evaluate whether a pre-treatment program is warranted. In any case, Hudson is required to meet its toxicity limits and that might necessitate limiting industrial contributions.

Comment No. 19: The Riverways Program commented that Maynard and Westborough had many violations of their copper limit (8 and 16 respectively). Given the toxicity of copper to aquatic species a more frequent monitoring schedule than once per month would provide more insight into the severity of the copper problem at these facilities. This would be particularly appropriate for the Westborough plant which has no dilution in the summer months, when flows over the upstream impoundment stop, and some problems with low pH effluent.

Response #19: The Agencies concur with the reasoning above and have increased the frequency of copper testing to once per week effective upon completion of the facility upgrades. The upgraded treatment is expected to significantly improve compliance with the copper limits. There is little benefit to increasing the frequency of testing prior to completion of the upgrades.