

Total loading to Narragansett Bay greatly exceeds that water body's capacity to assimilate nitrogen. All discharges of nitrogen from the UBWPAD, those occurring during dry and wet weather, are contributing to substantial water quality impairments in the Bay. It is essential, therefore, that the Permit limit these discharges. There are uncertainties in the physical model for the Bay, and it is not yet feasible to precisely identify limits for all dischargers that may ultimately be necessary for standards to be met at all times. The Region has concluded, however, that a nitrogen limit at least as stringent as 5.0 mg/l for the UBWPAD is necessary to prevent further degradation of the Bay. In accordance with the Clean Water Act's mandate, the Region has included that limit in the UBWPAD's permit.

Rhode Island has a strategy for addressing wet weather impacts from point source dischargers that will achieve a substantial amount of reduction in the frequency and volume of overflows. CSO remediation for the NBC facilities includes extensive tunnel storage and maximization of the amount of flows receiving full treatment. Discharges not receiving full treatment will be very infrequent. In contrast, UBWPAD has no significant storage capability and the frequency and volume of wastewater not receiving full treatment will be much greater than NBC.

Additional upgrades evaluated for achieving the new nutrient limits at the UBWPAD facility should carefully consider the amount of storm water in the system (infiltration/inflow in separate sewers as well as remaining CSO contributions to the plant). Controlling the excessive amount of rainwater and groundwater in the system will not only reduce the size of the facilities necessary to comply with the permit limits but will also reduce operation and maintenance cost, in particular chemical and energy cost.

Comment #F23: Footnote 3 on page 5 of 19 (pertaining to CBOD₅, TSS, ammonia, total nitrogen, phosphorus, metals and whole effluent toxicity testing) indicates, "For each day that there is a discharge from outfall 001A, 24-hour composite samples will consist of hourly grab samples taken from outfall 001A for the duration of the discharge." An automatic sampler exists at this outfall and should be allowed for use in obtaining a composite sample from outfall 001A for the duration of the event.

Footnote 5 on page 5 of 19 (pertaining to fecal coliform, total residual chlorine and dissolved oxygen) indicates, "For each day that there is a discharge from outfall 001A, a grab sample will be taken from outfall 001A within the first hour of the discharge, and every three hours thereafter for the duration of the discharge, and combined proportional to flow with a grab sample taken concurrently from outfall 001" Fecal coliform, MC and DO need not be a blended sample – each discharge will be monitored independently and meet the requirements of the permit. In addition, grab samples every three hours for the duration of the discharge from outfall 001A is excessive, inconsistent with other permits in the watershed and would require "round-the-clock" staffing of trained laboratory personnel during and after a discharge event. The District has established dosing rates during a storm event which is flow paced and has shown to achieve the required fecal coliform kill. The SCADA system tracks chemical dosing which will confirm adequate

chemical dosing during the event. If there is a need for supplemental coliform monitoring, use of the "Coliert" method should provide the efficacy of disinfection without the need to staff with trained lab personnel "round-the-clock."

Response #F23: Footnote #3 in the draft permit allows for use of a composite sampler for outfall 001A.

Maintaining adequate chlorine dosing to achieve bacteria limits, and then ensuring adequate dosing of dechlorination chemicals to ensure that toxicity based TRC limits are not exceeded, is a difficult task during dry flow conditions due to changing flows rates and chemical constituents, and is made even more difficult during high flow events. A once per day grab sample, in particular during high flow events, is inadequate for ensuring compliance with the permit limits. It is reasonable and appropriate to require more frequent sampling during high flow events. However, we do not believe that these concerns are as significant for dissolved oxygen. Consequently, the final permit has reduced the frequency of dissolved oxygen monitoring to once per day.

The permit limits for dissolved oxygen, TRC and fecal coliform apply to the combined discharge. It is, therefore, appropriate for the permit to require compliance sampling results for the combined discharge. However, we agree it is sufficient for the permittee to monitor for these permit limits at each outfall separately provided that effluent limits are met at each separate outfall. The final permit reflects this change.

Comment #F24: Footnote 13 on page 7 of 19 requires whole effluent toxicity testing on discharge 001A two times per year. This requirement is also excessive and inconsistent with other permitted wet weather discharges. Also, since this is an intermittent discharge chronic testing is illogical. Typically chronic tests are renewed with discrete samples beginning on days 0, 3 and 5 (as outlined in Attachment A of the permit). It may not be possible to acquire the required samples from outfall 001A on subsequent days after the test is started (since we cannot predict that weather) or it may not be possible to obtain sufficient volume of effluent for chronic tests which are renewed daily. If a single grab sample is collected for chronic testing, it would be used throughout the 7-day period (exceeding the sample hold time of 72 hours). It is suggested that chronic testing on outfall 001A be stricken from the permit.

Response #F24: Facilities subject to high flow events can experience a significant reduction in removal efficiencies for toxic parameters. The Brockton, MA permit is an example of a facility receiving very high flows and experiencing significant toxicity during high flow events. The Brockton permit also requires additional toxicity testing during high flow events. It is necessary to ensure that a facility designed to receive very high peak flows does not result in a toxic discharge during these peak flow periods. However, we concur that acute testing under high flow conditions is more appropriate than chronic testing and have removed the requirement for chronic testing from the permit.

Comment #F25: The draft permit requires year-round disinfection to achieve the fecal coliform limits. In the past, as has been common in Massachusetts, disinfection has been limited to the seasons when people might swim, and the District does disinfect in the swimming season (April 1 through October 31). The Fact Sheet states that the new requirement is based on Rhode Island Water Quality Requirements, however, the Rhode Island requirements are designed to protect bathing waters from bacterial contamination and Rhode Island's Department of Health stops testing bathing beaches in September for bacterial contamination. Lastly, there are no designated bathing beaches on the Blackstone River in Rhode Island. Therefore, we question the need for year-round disinfection of outfalls 001 and 001A since it serves to protect a use that doesn't exist. This requirement will increase chemical use of sodium hypochlorite and sodium bisulfite by about 50%, resulting in commensurate increase in cost and truck traffic associated with the chemical deliveries.

It is also important to understand the fate and transport of fecal coliform bacteria discharged from the Upper Blackstone WWTF to the Rhode Island border. Depending on flow in the river, the travel time from the Upper Blackstone WWTF to the Rhode Island border is estimated to range from about 22 hours to 36 hours. Assuming a decay coefficient of between 1.0 to 1.5/day, and a one day travel time, the concentration of fecal coliform at the border is expected to be only 20 to 35% of that discharged from the plant. Finally, dilution of the Upper Blackstone WWTF discharge in the Blackstone River at the Rhode Island border [ranges] from 13:1 to 23:1. Assuming the most conservative decay coefficient of 1.0/day, a one day travel time, and a 13:1 dilution, Rhode Island water quality requirements could be met at the border if fecal coliform discharged from the Upper Blackstone facility was 7500 MPN/100 ml.

It is our understanding that RIDEM is doing a TMDL for bacteria on the Blackstone River. The results of that TMDL should be reviewed to determine, how much, if any, reduction in fecal coliform is necessary at the Upper Blackstone facility in the winter months.

Response #F25: Rhode Island water quality criteria for fecal coliform bacteria apply year round, and RIDEM implements this requirement by establishing year round bacteria limits in Rhode Island permits. We do concur that bacteria die off during the travel time to the state line should be considered since the criteria apply at the state line. The applicable (EPA-approved) Rhode Island water quality criteria for fecal coliform bacteria are a geometric mean value not to exceed 200 MPN/100 ml and that 20% of values are not to exceed 500 MPN/100 ml. We do not believe that we can establish limits that account for dilution because of the multitude of other sources of bacteria in the river that effectively eliminates the dilution benefit of higher flows. For example, as part of the Blackstone River Initiative, wet weather sampling¹⁴ that was conducted during three fall storm events, (September 1992, November 1992, and October 1993) each showed event mean fecal coliform concentrations exceeding the MA and RI water quality criteria

¹⁴ EPA-New England "Blackstone River Initiative", May 2001, pp.7-16 to 7-18.

(geometric mean of 200 cfu/100 ml) at all river stations from Northbridge to the state line in Blackstone, Massachusetts, for all three storm events, with the exception of one station where the criteria was exceeded for two of the three storm events. During the September and October sampling events, the Massachusetts POTWs would have been disinfecting, indicating significant wet weather sources of bacteria. Data collected during the November storm, which was sampled during the period of November 2-5 of 1992, when the Massachusetts POTWs would not have been disinfecting, showed a mean fecal coliform concentration of 764 colonies/100 ml at the state line.

Accordingly, we have calculated bacteria limits based on die-off due to the travel time to the state border, assuming a first order die-off equation, as suggested in the comment. Assuming a decay rate of 1.0/day and a travel time of 1 day, both values within the range suggested in the comment, we have calculated that 35% of the bacteria discharged will be viable at the state border. We have therefore changed the cold weather bacteria limits to a monthly average of 571 organisms per 100 ml ($200/0.35$) and a daily maximum of 1429 organisms per 100 ml ($500/0.35$). We believe that these limits will ensure that the discharge does not cause or contribute to a violation of standards at the state line.

If an approved TMDL for bacteria indicates that an alternative effluent limit is appropriate, then the permit limit can be modified in a future permit action. *See also* Response #F49.

Comment #F26: During the public meeting held in advance of the public hearing on the permit, EPA offered the opinion that the project would cost significantly less than the amounts being discussed by the District, and that consequently the increase in household costs would be proportionately lower. According to senior EPA personnel the EPA based its costs on comparisons to the estimates of the cost to upgrade the Narragansett Bay Commission's Fields Point Plant, and by extrapolation of the installed costs of denitrifying filters installed for the Town of Wareham, MA. Written documentation of the former is not available; however email correspondence between the District and EPA provides insight into the extrapolation of the Wareham costs.

That documentation suggests that EPA estimated the costs of the Wareham filters at \$550,000, plus an allowance of \$55,000 for installation and \$37,000 for startup and training. The specific source of these estimates is not clear. Also, it is not clear what year dollar values are used, although it is likely that they reflect prices from the 2001-2005 time frame, as that is when the plant was bid and constructed. The Agency used its cost estimate to scale up from the 1.6 mgd plant Wareham plant size to a 45 mgd plant size for the District. A review of this suggests the following:

The way the EPA used the Wareham plant data is erroneous. Although the plant is rated at 1.6 mgd average day flow capacity, equalization basins have been installed ahead of the treatment system to dampen out peak system flows. The peak design flow is only 2.0 mgd, whereas normally this would have in the range of 3.5 to 4.5 mgd (peak factors of approximately 2:1 to 3:1).

It is not clear where the \$550,000 cost for the filters came from. The overall cost of this project approached \$20 million.

The fit-up estimate of \$55,000 is significantly low, as this typically approaches the cost of the equipment itself.

There seems to be no allowance for any ancillary facilities and equipment necessary to house and support the operation of the filters. Nor does it appear to include any allowance for contractors overhead, bonding, profit or engineering.

There are no costs associated with installation of facilities for phosphorus removal, there are no costs associated with an expanded chlorine contact tank. This is necessary because the full 160 mgd must meet both the N and P limits contained in the permit, and thus split treatment of high flows is not possible.

Because of the equalization basins, it would be more appropriate to calculate a cost per mgd of peak capacity, and then multiply that by 160, the peak flow rate at which the District must meet the proposed permit limits. This factor alone suggests that EPA has underestimated its costs by about a factor of 4, as they appear to have used a 45 mgd design flow for estimating costs.

Costs should be adjusted to reflect the midpoint of construction.

Taken altogether, this suggests to us that EPA's cost estimates were significantly in error, and should be discounted. As a first order estimate of the costs of compliance, the District believes a value of approximately \$150 million in present day costs, and greater in constructed dollar costs, are a more appropriate estimate of the costs of compliance with the nitrogen and phosphorus limits in this permit.

Response #F26: Through their water quality standards, states determine the level of protection needed for receiving waters. Where EPA (or other permitting authorities) conclude there is a reasonable potential that a discharge will cause or contribute to a violation of the standards, EPA then must set an effluent limit necessary to ensure the standards are met. *See* 40 CFR §122.44(d)(1)(i). Costs are not considered at this point in the process of establishing water quality-based effluent limits. Once these limits are established and set forth in a final permit, however, the regulations include a mechanism to allow relief from meeting the limits where they are demonstrated to be unaffordable. *See* Response #F1.

EPA held an informal, public meeting in advance of the public hearing in light of the substantial public interest in this permit issuance. At that time, we made available the staff working on the permit to answer questions about this permit and the permitting process in general. While not relevant to setting water quality-based limits, we fully appreciate that the cost of treatment is a critical concern for ratepayers, public officials and others in the UBWPAD service area. At the public meeting, we offered estimates of costs of nutrient treatment based on estimates of other facilities' planning efforts (e.g., NBC Fields Point).

UBWPAD has offered estimates in oral and written comments ranging from \$100 to \$200 million to construct upgrades necessary to meet the new nutrient limits. EPA cannot evaluate the accuracy of nor agree with these figures as we do not know the basis for these estimates. We (and UBWPAD) do not yet know the most cost-effective treatment options for the UBWPAD facility. In addition, we do not yet know how and over what time period cost of treatment would be funded. As stated elsewhere, EPA intends to work with UBWPAD and its consultants to discuss cost issues in the context of scheduling.

Comment #F27: The schedule for whole effluent toxicity testing presented on page 7 of the permit is too restrictive, requiring that the test be conducted during the second week of January, April, July and October. The previous permit required only that one test be conducted each quarter with no definition on when during each quarter the test would be conducted. It is helpful when there is more flexibility in scheduling tests in any quarter to coordinate with the workload of the few labs in the nation that perform these tests, as well as the Upper Blackstone staffing and vacation schedules. It is suggested that more flexibility be offered in the scheduling of these tests.

Response #F27: Identifying the time when quarterly samples are taken is necessary to ensure that samples are representative and not selectively conducted only at times when the treatment performance is at its best. This is now a standard requirement in EPA Region 1's permits and has not proven to be a significant burden for either labs or other dischargers.

Comment #F28: Page 1 of 19 of the permit states, "The City of Worcester, the Towns of Millbury, Auburn, Holden, West Boylston and Rutland, and the Cherry Valley Sewer District are co-permittees for Part D and E. Only municipalities specifically listed as co-permittees are authorized to discharge waste water into the UBWPAD facility."

The Fact Sheet, page 1, defines Co-Permittees as follows: The municipalities of Worcester, Millbury, Auburn, Holden, West Boylston, Rutland and the Cherry Valley Sewer District are co-permittees for specific activities required by the permits as set forth in Section IV.H of this Fact Sheet and Section I.D and I.E of the Draft Permit.

Section I of the Fact Sheet states, "The facility serves Worcester and portions of Auburn, West Boylston, Holden, Rutland, Oxford and Millbury."

Section IV.H, last paragraph, states, "Because Worcester, Millbury, Auburn, Holden, West Boylston, Rutland and the Cherry Valley Sewer District each own and operate collections systems that discharge to UBWPAD's treatment plant, these entities have been included as co-permittees for the specific permit requirements discussed in the paragraph above."

Refer to Attachment A regarding the legal issues associated with the Co-Permittee, however, note the inconsistencies in permit needs regarding the municipalities that discharge to the Upper Blackstone Water Pollution Abatement District. A portion of

Sutton is conveyed through the Millbury collection system. The District also serves portions of Shrewsbury (Goodard Park) and Paxton (Anna Maria) via connections to the sewer system of Worcester and Oxford (Thayer Pond) via a connection to the Auburn system.

Also, please clarify that the language on Page 1 of the permit does not exclude the District from accepting septage and sludge from other communities.

Part D states, "The permittee and co-permittees are authorized to discharge only in accordance with the terms and conditions of this permit [and] only from the outfall(s) listed in Part I A.1." This is contrary to page 1 of 19 which indicates that the co-permittees discharge to the UBWPAD facility and District discharges from the outfall(s).

Response #F28: EPA derived the list of co-permittees set forth in the Draft Permit from information provided by UBWPAD in its re-application; specifically, in Response to Question A4 on Form 2A, UBWPAD indicated that its treatment facility serves the following municipalities: Auburn, Cherry Valley Sewer District, Holden, Millbury, Rutland, West Boylston and Worcester. Page 1 of the Draft Permit, the top of page 1 of the Fact Sheet, and page 19 of the Fact Sheet list co-permittees consistent with the information provided on the re-application. Section I of the Fact Sheet should have included Cherry Valley Sewer District and not Oxford. Notwithstanding the information provided in the permit application, EPA notes that UBWPAD's Facilities Plan does indicate that certain other municipal systems contribute wastewater to UBWPAD. The portions of Sutton, Shrewsbury, Oxford and Paxton that are sewered to the UBWPAD, or will be sewered to the UBWPAD during the life of this permit, are very small; accordingly, EPA will not include these three permittees as "co-permittees" in this permit. EPA may, however, include them as "co-permittees" in a future permit reissuance or a separate permit action. In addition, in the Final Permit, EPA has amended the language on Page 1 of the permit to make clear that these communities are not prohibited from discharging to UBWPAD.

The language on Page 1 of the permit refers to wastewater flows and not to septage and sludge deliveries.

The language in Part D of the permit is general permit language that applies to the permittee as well as the co-permittees. The language indicates that the only outfalls authorized for wastewater discharges are those listed on page 1 of the permit. We have clarified Section D of the final permit to make it clear that the term discharge in this context refers to discharges to waters of the United States.

Comment #F29: In order to achieve the proposed permit limits of 5 mg/L total nitrogen and 0.1 mg/L total phosphorus, significant modifications and additions to the current facility under construction would have to be implemented at a capital cost of \$150,000,000 in today's dollars. The increase in operation and maintenance costs to achieve the limits is expected to approach \$3,700,000 per year. The required treatment processes to achieve these limits is not sustainable, especially given that the benefits in the receiving waters realized from achieving these limits is suspect.

The current design, under construction, employs enhanced biological nutrient removal (EBNR) for phosphorus removal, nitrification and denitrification. However, there are limitations to the level of treatment that can be achieved using these biological processes. For total nitrogen, a limit of 8 mg/L can be consistently achieved without supplemental chemical addition (methanol) with a properly designed system. The system under construction is designed to treat an average daily flow of 45 mgd, maximum daily flow of 80 mgd and will be able to achieve 8 mg/L total nitrogen even though this was not included in the current permit. The system under optimal conditions (related to influent flow, influent load, and temperature) will likely produce an effluent less than 8 mg/L. It should be noted that the District chose to move forward with a system that has the ability to nitrify and denitrify because this system, although slightly more capital intensive, reduces power, since less oxygen is required, and reduces chemical consumption (sodium hydroxide) since alkalinity [is] returned to the system. For phosphorus, the EBNR system, will achieve the current permit limit of 0.75 mg/L and will likely be able to produce an effluent quality in the range of 0.6 to 0.7 mg/L. However, this is about the limit of effluent quality that can be achieved simply with EBNR. [Note that achieving nitrification, denitrification and EBNR concurrently is a delicate process since competing reactions can favor the removal of one nutrient over the other.] Phosphorus removal can be heightened with the addition of an iron based chemical coagulant. However, consistently achieving a total phosphorus limit <0.5 mg/L without the aid of final filtration is difficult, especially when the treatment facility serves a combined sewer system.

In order to achieve a total phosphorus limit of 0.1 mg/L (a limit which is currently required at less than 30 of the 17,000 publicly owned treatment works in the nation) and a total nitrogen limit of 5 mg/L for the entire flow reaching the treatment facility, additional aeration tankage would be required, and the tankage currently under construction would have to be modified to provide the volume necessary to implement the modified Bardenpho process. Storage and feed facilities to accommodate the addition of 800 gallons per day of methanol or a similar energy source, would be required for nitrogen removal. [Note, significant care must be taken in the design and operation of this chemical storage facility, since methanol is an explosive substance.] Use of such energy sources will produce additional carbon dioxide (a notorious greenhouse gas); and will reduce the amount of the alternative energy available for other purposes while consuming the parent agricultural material needed as a food supply.

Subsequent to final clarification, the entire flow would have to be pumped to an add-on filtration or high rate settling process to achieve the phosphorus limits. Multipoint chemical addition (likely ferric chloride) would be required at a rate of 8,500 gallons per day. The chemical addition will increase sludge production at the facility by 35%. The sludge generated by the District is currently thickened, dewatered and incinerated on-site in multiple hearth furnaces. The chemical sludge produced in order to achieve the proposed phosphorus limit will be more difficult to dewater and incinerate. It is likely that the dewatered sludge will have a lower percent solids and it will be more inert due to the high fraction of chemicals in the sludge. Additional energy required to dewater and incinerate the sludge is expected to be significant. Lastly, additional ash will be

produced, again due to the inert chemical addition, which will more readily consume the finite ash landfill capacity on the District's property. The electrical energy required to achieve these limits is expected to be on the order of 3,000,000 kW-hr/yr, nearly 20% above current usage, resulting in a commensurate increase in green-house gas emissions.

Before expending this much energy, consuming significant amounts of chemicals and generating significantly more sludge to be processed and disposed of, the benefits of achieving these limits should be known and the indirect impacts of achieving these limits quantified.

Response #F29: Please see Responses #F8 and #F52 relative to sustainability. See also Responses #A9 and #F1 relative to cost and technological considerations in establishment of water-quality based effluent limitations. See also Response #F6 relative the need for and benefits of the limits.

Comment #F30: Paragraph F.2.c specifies the maximum daily concentration of metals in the sludge fed to the incinerators. Limits for chromium and nickel should be revised to 1×10^6 mg/kg since no concentration can exceed 1×10^6 mg/kg.

We are unsure of the source of the stated metal control efficiencies. The metal control efficiencies used to calculate the maximum concentration of metals in the sludge are comparable but not the same as those recently obtained in the stack emissions test for cadmium, chromium and nickel, and should be revised to reflect most recent testing. Understand that even with the revised control efficiencies, easily achievable sludge metal concentrations result and there is no material change in the results.

Paragraph F.3.b,c,e, F.5.f and F.7.1: The moisture correction verbiage for carbon monoxide is incorrect. Moisture correction is not required.

Response #F30: The calculations for maximum daily concentration limits for chromium and nickel were done correctly, but as the commenter notes, result in concentration greater than physically possible. Limits of 1×10^6 mg/kg have been included in the final permit.

The stated metal control efficiencies were taken from the permit application.

Federal regulations, 40 CFR 503.40(c), provides as follows: "The management practice in 40 CFR 503.45(a) . . . do not apply if the following conditions are met: (1) the exit gas from a sewage sludge incinerator stack is monitored continuously for carbon monoxide. (2) The monthly average concentration of carbon monoxide in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to seven percent oxygen does not exceed 100 parts per million on a volumetric basis . . .".

However, since UBWPAD's carbon monoxide monitoring system automatically corrects for moisture, the final permit language has been modified accordingly.

Comment #F31: Footnote No. 1. Since all influent flow to the facility is measured through the Parshall Flume at the influent end of the facility, this meter will be used to determine total flow to the facility.

Response #F31: The comment is noted for the record. Please note that the permit requires that outfall 001A discharge flows must also be reported.

Comment #F32: Ammonia nitrogen standards are listed in pounds per day and in milligrams per liter. Which limit prevails?

Response #F32: Both limits are required to be met.

Comment #F33: The draft permit requires the use of a continuous TRC analyzer for reporting monthly average and daily maximum discharges. The previous permit allowed daily grab samples for monitoring TRC. There seems to be inconsistency with the permit table and associated footnotes 7 and 8. The table establishes limits of 12 ug/L and 21 ug/L based on the daily grab and indicates "report" of continuous monitor. The footnotes, however, imply that [the] continuous monitor will be used for reporting purposes and daily grab simply used for calibration. The reliability of the TRC monitors for reporting is questionable based on experience which has shown that monitors foul easily, lose calibration quickly and are insufficiently sensitive to monitor required TRC limits. To our knowledge there are no continuous monitors capable of reliably measuring down to 12 Mg/L. The District has already tried three different probes on their TRC analyzers with limited success. Does the EPA have experience with any reliable TRC monitors? We would contend that the daily grab sample be the sample that is monitored for compliance, while the continuous recorder is presented for informational purposes only.

Response #F33: The permit requires that the grab sample be used for compliance and that the continuous meter be used for reporting-only. In light of fluctuations of flow and chlorine demand at the facility, grab samples may not be sufficient to determine if the discharge is in consistent compliance with TRC limits. For this reason, we have supplemented the grab samples with a requirement that TRC be measured continuously. We do not believe, however, that there is sufficient experience with TRC analyzers to require continuous monitoring to be used for compliance purposes at this time. Accordingly, continuous monitoring is report-only and will be presented for informational purposes. In addition, we note that the reporting level for TRC is 20 ug/l. With regard to experience with specific TRC analyzers, EPA has been working with a number of other wastewater treatment facilities and as we gain additional information, we will share this information with all the facilities including UBWPAD.

As described above, the grab sample results are to be used to calculate compliance. Each day, at least one grab sample result shall be used to calibrate the continuous meter. This sample does not have to be taken in addition to the minimum number of samples required by the permit, but if it is, the result must be included in the data set used for compliance reporting of monthly average and daily maximum values. *See also* Response #D5.

Comment #F34: Footnote 9 indicates, “The permittee shall operate the treatment facility to reduce the discharge of total nitrogen during the months of November – April to the maximum extent possible.” What is the basis for N reduction in the cold weather months? How is the District to show conformance to this standard? Should the facility be operated to reduce nitrogen in the colder months at the expense of phosphorus reduction?

Response #F34: The winter optimization requirement is included to minimize the potential that higher nitrogen loads might accumulate in the system and contribute to a further elevation of the nitrogen concentrations in the growing season. (*see also* RIDEM Response to Comments, page 26). The permit requires UBWPAD to use all available equipment, except carbon source addition and operate in a manner that allows for denitrification. As detailed in Response #A13 above, EPA has not established an effluent limit for the winter period. The facility is expected to operate in a manner that allows for denitrification during the November through April period while meeting all other permit requirements including the winter phosphorus limit. *See* Response #A13.

Comment #F35: On a combined sewer system, where the influent is often very dilute, it can be difficult to attain 85% removal of CBOD and TSS, even though the effluent limits are met. This requirement is a remnant of the old secondary treatment standards and should be stricken from the permit.

Response #F35: We concur and have modified the final permit to require that the permittee’s treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand during dry weather. Dry weather is defined as any calendar day on which there is less than 0.1 inch of rainfall and no snow melt. The percent removal shall be calculated as a monthly average using the influent and effluent BOD and TSS values collected during dry weather days.

Comment #F36: In order to properly operate a waste water treatment facility, operators need to perform routine process monitoring and control. This draconian requirement [set forth at Part I.A.1.f of the draft permit] will ultimately discourage operators from performing this monitoring for fear that the results will be used to penalize the District.

Response #F36: The referenced requirement provides that: “The result of sampling for any parameter above its required frequency must also be reported.” The requirement is not intended to be punitive. Rather, it is merely a re-statement of requirements applicable to all permits found at 40 CFR Part 122.41(l)(4)(ii) and included in Part II of the permit. This requirement is a condition of the expired permit. Facilities are required to be in

compliance with limits at all times and not just when they are conducting compliance sampling. The condition remains in the final permit but has been clarified that it applies to effluent data collected and analyzed using EPA approved methods in Part 136.

The permittee should review the requirements in the expired permit, and if it finds that it has failed to report such data in the past, it should provide the missing data to EPA and MassDEP as soon as possible.

Comment #F37: Part I.D, This section is not clear on whom is responsible for notification of overflows the permittee or the co-permittee.

Response #F37: The co-permittees are responsible for reporting overflows from sewer systems under their jurisdiction. We have further clarified this requirement in the final permit.

Comment #F38: The Permit requires the I/I Control Plan must be submitted within six months of the effective date of the permit. This does not provide the permittee or co-permittees enough time to prepare the required plan. The time should be extended.

Response #F38: In light of the requirements of the 1999 permit (modified December 2001), we believe that six months is adequate time to complete the required plan. Among other requirements, the previous permit required UBWPAD to work with the member communities to develop and implement strategies to eliminate excessive infiltration/inflow. Accordingly, UBWPAD and the co-permittees should have already developed much of the basis for the required plan. The UBWPAD is subject to extreme high flows that are in large part due to the very high level of infiltration/inflow in the member community sewer systems. *See also* Response #A4 and #F8.

Comment #F39: As noted in the Fact Sheet, MassDEP has submitted revised site-specific water quality criteria for copper. We are in support of the site specific criteria and would welcome its adoption in the final permit.

Response #F39: *See* Response #D1 above.

Comment #F40: The attached figure depicts an estimate of sewerage population in Eastern Massachusetts and Rhode Island. As presented, a number of communities lining the Bay are less than 50% sewerage. The identification of all non-point sources of nitrogen in Narragansett Bay has not been well established and thus the basis for the nitrogen limit for Upper Blackstone is questioned. Non-point sources, such as groundwater (from septic systems), combined sewer overflows (CSOs), atmospheric deposition, and sediment flux all contribute to the nitrogen load in Narragansett Bay and is not well understood. Until a better understanding of all loads to the Bay is provided (especially those in such close proximity to the Bay) it is illogical to spend significant funds to further reduce the nitrogen load originating at the Upper Blackstone facility miles away.

Response #F40: The March 3, 2004 report, *Governor's Narragansett Bay and Watershed Planning Commission, Nutrient and Bacteria Pollution Panel, Initial Report*, cited on page 11 of the Fact Sheet, identifies various reports analyzing nitrogen loads to Narragansett Bay. The reports indicate a general consensus that point sources are the dominant source of nitrogen to Narragansett Bay (60 – 70% of the total load). These evaluations of the relative significance of sources did include septic systems, CSOs and atmospheric deposition. Point sources represent the majority of the load to Narragansett Bay. Thus it is necessary and appropriate to limit point sources in order to achieve water quality standards. Further, non-point sources are not as amenable to controls as point sources, making point source reductions all the more critical. While efforts to reduce non-point sources of nitrogen are important and will have beneficial effects, even a high level of non-point source nitrogen reduction would not preclude the need for significant point source reductions.

Site specific factors affecting the response to nitrogen loadings in Narragansett Bay (as opposed to the results of the MERL tank experiments) are clearly recognized and discussed in the Fact Sheet. The differences between the MERL tank experiments and conditions in Narragansett Bay are the primary reason why even lower limits for total nitrogen are not being established at this time. *See Response #F18A.*

Comment #F41: Clarifications to Fact Sheet

Description of Treatment Facility

1st para, 3rd line, delete, “and chemical addition facilities for total phosphorus removal.” There are no chemical addition facilities currently and none are planned in the current upgrade.

1st para, 7th line, delete, “stored in a septage holding facility and then introduced” and replace with “directly discharged.” The District does not have septage holding tanks.

2nd para., 2nd line, delete “two” and replace with “four.” The current waste water treatment facility upgrade consists of four phases, the first two of which are essentially as described, a third phase which will soon be under design, will focus on sludge management improvements needed to sustain the facilities constructed in Phase I and II, and a fourth phase to accommodate future development in the service area.

2nd para., 3rd line, after “and” insert “improvements to multiple hearth furnaces and associated.”

2nd para., delete last sentence and replace with “Phase I was completed in 2006 and Phase II is scheduled to be completed by August 5, 2009.”

3rd para., 3rd line, delete “with minimal treatment.”

3rd para., 4th line, after “a peak hour flow of” insert, “up to.”

3rd para., insert at the end of the paragraph, "The upgraded facilities were designed to meet the permit limits established in the September 30 1999 (modified on December 19, 2001) with the blended effluents from outfalls 001 and 001A."

4th para. Refer to comments above regarding Discharge at Outfall 001A.

Description of the Receiving Waters

The Rhode Island waters are clearly designated with a partial use restriction — waters likely to be impacted by combined sewer overflows. Why isn't the Blackstone River in Massachusetts so designated?

Limits Derivation

Page 8, 2nd para., under "Phosphorus" states, "The expired permit has a monthly average limit of 750 ug/l from April 1 to October 31. Effluent data from DMRs for April thru October during 2004 thru 2006 ranged from 900 to 2,400 ug/l total phosphorus." This implies that the District has been in constant violation of its current permit which is not the case. Interim permit limits were negotiated in good faith with the regulators in late 2001, understanding, at that time, that the phosphorus limits included in the September 30 1999 (modified on December 19, 2001) would not be achieved until August 2009. The interim permit only required that the District "report" phosphorus, no limits on phosphorus were included. The District has operated in compliance with the Consent Order and the interim permit.

Sludge

Page 19, 2nd para., delete second paragraph in its entirety and replace with the following, "UBWPAD owns and operates two multiple hearth incinerators equipped with flue gas recirculation. The incinerators have the following air pollution control devices: a venturi scrubber which removes particulate matter and volatile metals; an impingement tray scrubber which removes acid gases and additional metals; a wet electrostatic precipitator which removes fine particulates and metals; and regenerative thermal oxidizers which converts volatile organic compounds to carbon dioxide. The District generates approximately 8836 dry metric tons of sewage sludge annually and receives approximately 2260 dry metric tones annually from off-site facilities.

Response #F41: The Fact Sheet is a document that accompanies the draft permit and is not subsequently modified with issuance of a final permit. The requested clarifications relative to the description of the treatment facility are noted for the record.

The Massachusetts Water Quality Standards do identify the Blackstone River as a CSO-impacted water, but it does not have a CSO designation because such designation requires a use attainability analysis that shows that elimination of CSOs is infeasible. A demonstration of infeasibility has not been made and no Use Attainability Analysis has been submitted to EPA. It remains to be seen how frequently the CSO facility will be discharging and whether the UBWPAD facility will be able to comply with water quality-based permit limits while accepting large volumes of combined sewer flows.

The effluent phosphorus data cited in the Fact Sheet indicates that the facility is not yet meeting the final limits in the expired permit. The facility has satisfied the interim requirements related to phosphorus included in the enforcement order.

The sludge clarifications are noted for the record.

Comments raised in Attachment B (Legal and Policy Issues/Comments) prepared by Bowditch & Dewey, in consultation with Barnes & Thornburg, LLP are addressed below.

Comment #F42: The District's central objection to the Draft Permit concerns the underlying scientific criteria, data and methods used to interpret narrative water quality standards and develop waste load allocations resulting in the proposed imposition of unrealistic and unreasonable numeric limits, particularly those limits pertaining to nitrogen and phosphorus. The Draft Permit's limits are not supported by reliable, probative and substantial evidence and are not in accordance with law and EPA's own policies. Several conditions of the Draft Permit are based upon clearly erroneous findings of fact and errors of law and implicate significant policy considerations. The data relied upon by EPA in determining certain nutrient limits is outdated and does not account for recent and ongoing upgrades and permit adjustments to municipalities discharging to the Blackstone River. Equally troubling is that EPA has acted on outdated information with full knowledge of the fact that updated information with respect to the water quality of the Blackstone River is currently being developed and should be available later this year.

Response #F42: The basis and methodology for development of the nutrient limits is detailed in the Fact Sheet. More specific comments raised by counsel to UBWPAD regarding the nutrient limits are addressed below. With regard to consideration of upgrades currently being undertaken by UBWPAD, *see* Responses #F7 and #F9. With regard to consideration of upgrades necessary to be undertaken by other facilities relative to establishment of the nitrogen limit, *see* Response #47(b)(iii). With regard to phosphorus, EPA established the limit based on the near field impacts of this pollutant and in order to meet Massachusetts water quality standards before other dischargers to the Blackstone River. *See* Responses #F9 and #F48. With reference to the modeling being undertaken by UBWPAD, EPA does not believe it is appropriate to delay permit issuance pending completion of this work. *See* Responses #F7 and #F43.

Comment #F43: On May 18, 2007, the District submitted a request for an extension of the public comment period to December 31, 2007 to allow sufficient time to complete an improved, more robust water quality model of the Blackstone River watershed and generate model results which are critical to making an informed decision and developing scientifically defensible permit limits for nitrogen and phosphorus. On May 23, 2007, the EPA denied this request, noting that the District's request does not include any discussion as to how, or even if, its model could be used to establish point source permit limits that "will ensure attainment of water quality standards in the Blackstone River and in Narragansett Bay." *See* Appendix. Tab B-1. Under the Clean Water Act ("CWA") that

burden of proof is on EPA [not the District], and EPA has not done this. Pursuant to 40 C.F.R. §122.44(d)(1), a water quality-based permit requirement is justified only if it is determined that the discharge will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard. Since EPA has not made any showing that the proposed limits in the Draft Permit are needed to prevent violations of, or that they will lead to attainment of, Rhode Island water quality, there is no legal basis for those limits.

Response #F43: EPA's May 23rd correspondence does not state or suggest that UBWPAD has the obligation or authority to determine whether its discharge of nitrogen and phosphorus "will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard" pursuant to 40 C.F.R. §122.44(d)(1). Similarly, the Region appreciates it is not UBWPAD's regulatory responsibility to conduct a TMDL. In our May 23rd letter, the Region simply explained that, based on the information provided regarding the modeling efforts and the documented extent of impairments to receiving waters, delay in permit issuance pending completion of the model is not warranted. The fate and transport of nutrients is very difficult to simulate in a dynamic system such as the Blackstone River. It is far from certain that the model can be calibrated and verified for low-flow, 7Q10 conditions or be a useful tool to evaluate the impact of the UBWPAD discharge on water quality, particularly in the marine waters in Rhode Island. This is necessary in order for EPA to use the model results to establish water quality-based effluent limits. Additional challenges in this regard were discussed in previous responses. *See* Response # F7 relative to nitrogen.

Understandably, UBWPAD does not suggest that the results of the model will be akin to an approvable TMDL with final point source allocations, nor would we expect the UBWPAD to undertake such an effort. Again, if the results of the effort yields information indicating that any final effluent limit is more or less stringent than necessary to attain water quality standards, a permit modification can be pursued. *See* 40 CFR §122.62.

The comment also appears to confuse the "reasonable potential" analysis with the establishment of effluent limits. An NPDES permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has a "reasonable potential" to cause or contribute to an excursion above any water quality criterion. Where EPA makes such a determination, it then proceeds to establish an appropriate effluent limit.

The comment asserts generally that EPA has failed to demonstrate that the discharge from UBWPAD causes or has the reasonable potential to cause or contribute to an excursion above state water quality standards for phosphorus and nitrogen and that the limits are necessary. The basis for these determinations is set forth in the Fact Sheet and the comment offers no specific facts or arguments to rebut the explanation in the Fact Sheet. *See also* Responses #F44, #F47(a)(1) and #F48 below.

Comment #F44: The District is concerned that EPA is moving too quickly on implementing nutrient limits more stringent than those required by state law, and more

stringent than those that will soon be achieved by the District in 2009, based on political considerations, insufficient or incorrect information, speculation and questionable scientific footing, which could cost the Blackstone River communities hundreds of millions of dollars without reaping discernable water quality benefits. Without explanation, EPA Region I seems to be rejecting the recommendation by EPA's national experts [the Science Advisory Board] that prior to installing expensive treatment technology, a comprehensive study of the watershed should be conducted to determine the need for and the effectiveness of other controls including, among others, non-point source controls, removing contaminated sediments, and dam removal modification.¹⁵

We disagree with the apparent approach of the Agency in allocating responsibility for waste load removal mainly to point source dischargers without a commensurate effort aimed at the other significant sources [e.g., non-point sources, contaminated sediments originating from past discontinued practices, the presence of dams]. In addition, the District questions whether certain segments of the Blackstone River (particularly the reach to which the District discharges) were properly listed under Section 303(d)(1)(A) of the CWA, rather than some other more appropriate section, such as Section 303(d)(3). The imposition of the Draft Permit's conditions to which the District objects exceeds the Agency's authority under the CWA, lacks sufficient support in the administrative record, is otherwise substantively and procedurally deficient, and based on an inappropriate exercise of discretion.

By imposing another state's water quality standards or legislative mandate [RI Gen. Laws §46-12-2(f); requiring that nitrogen discharges be reduced by 50% by December 31, 2008] on the District's facility, without the CWA-required demonstration that the District's discharge is causing or contributing to a violation of those out-of-state standards, is contrary to law. Among other things, it deprives the District and its ratepayers of their procedural due process rights to an adequate, meaningful opportunity to be informed of, and to participate in, the Rhode Island rulemaking process for the narrative standards upon which the total nitrogen limits are purportedly based. EPA's attempts to impose its own interpretation of state water quality standards, and its failure to respect and address the Massachusetts Department of Environmental Protection's ("DEP") objections and concerns regarding EPA's proposed nitrogen and phosphorus limits and conditions, violate constitutional federalism principles.

EPA has failed to consider or to adequately explain how the proposed nutrient limits which will cause the District to spend funds approaching \$200 million [with no guarantee or scientific evidence to demonstrate that it will work] meets the requirements of the DEP regulations which require that the treatment be the best practical.

While costs are generally not given much weight in considering compliance with permit conditions where, as here, the costs are "wholly disproportionate" to the benefits [if any]

¹⁵ See EPA Draft Science Advisory Board (SAB) Report: Evaluation of the Blackstone River Initiative, prepared by the Ecological Processes and Effects Committee, EPA-SAB-EPEC-98-XX, June 25, 1998; and An SAB Report: Evaluation of the Blackstone River Initiative, EPA-SAB-EPEC-98-0 11, September 1998.

sought, the conditions should be deemed arbitrary and capricious.¹⁶ The proposed permit limit changes of concern, here, constitute an unfunded mandate.

Response #F44: With regard to cost considerations in the establishment of water quality based effluent limits, see Responses #A9 and #F1. The commenter's reliance on *BASF Wyandotte Corp. v. Costle*, 598 F.2d 637, 656 (1st Cir. 1979), *cert. denied*, 444 U.S. 1096, 100 S. Ct. 1063, 62 L. Ed. 2d 784 (1980) for support that costs are to be considered in establishment of a water quality based-effluent limit (such as the nitrogen limit in this matter) is misplaced. *BASF Wyandotte* involves a challenge to EPA's development of technology-based effluent limitations guidelines for the pesticide industry pursuant to 33 U.S.C. §1311(b)(1)(A) and §1314(b)(1). For industrial sources, Sections 1314(b)(1)(A) and (B) direct EPA to establish national effluent limitation guidelines representing the level of treatment attainable through application of the best practicable control technology currently available for specific categories of industrial facilities and taking into account, among other things, the cost of the technology in relation to the effluent reduction benefits to be achieved. These guidelines are inapplicable to POTWs (such as UBWPAD), which are required, pursuant to Section 301(b)(1)(b), to meet limits based on secondary treatment, which is defined at 40 CFR Part 133. Moreover, in issuance of a NPDES permit, EPA is required to consider not only applicable technology-based limits, but also water quality-based requirements where necessary to comply with applicable water quality standards. 40 CFR §122.44(d)(1)(i). Cost considerations or technological feasibility are not permissible factors in setting water quality based effluent limits. See *United States Steel Corp. v. Train*, 556 F. 2d 822, 838 (7th Cir. 1977). See also *In re City of Moscow*, 10 E.A.D. 135, 168 (EAB 2001); *In re New England Plating Co.*, 9 E.A.D. 726, 738 (EAB, 2001). As noted above, UBWPAD can conduct an analysis of affordability issues for the purposes of determining whether a designated use cannot be obtained or for obtaining a variance. See Response #F2.

This permit issuance does not contravene recommendations of the SAB. As a preliminary matter, EPA did not use the 1997 Dissolved Oxygen model developed as part of the Blackstone River Initiative as the basis for the phosphorus or nitrogen limits in the current permit. As is explained in Response #F5, EPA established the Blackstone River Initiative (BRI) in 1991 to promote interstate assessment and cleanup of the Blackstone River. The BRI had a budget of approximately two million dollars and included an intensive environmental sampling and assessment program to describe interstate water quality, biology and toxicity in the river system under both dry and wet weather conditions, and to develop a wasteload allocation model and a toxics model to predict impacts of contaminant loadings to the system. It is one of several sources of data documenting the severe eutrophication in the Blackstone River and the significance of the nitrogen loadings to Narragansett Bay from the Blackstone River. The University of Rhode Island, MassDEP, and RIDEM all participated. At the request of the Region, the

¹⁶ See *BASF Wyandotte Corp. v. Costle*, 598 F.2d 637, 656 (1st Cir. 1979), *cert. denied*, 444 U.S. 1096, 100 S. Ct. 1063, 62 L. Ed. 2d 784 (1980).

SAB reviewed the results of the BRI. In addition, the BRI participants submitted a response to the comments and recommendations raised by the SAB.¹⁷

Nowhere in its review did the SAB indicate that the Region should suspend issuance of NPDES permits pending completion of comprehensive studies of the watershed including non-point source controls, removal of contaminated sediments and dam removal. The SAB's recommendations for further study reflect an attempt to foster Regional adoption of integrated watershed management assessment approaches. More specifically, the SAB recommended that the Region undertake a second phase effort that would include: incorporation of the ecological risk assessment framework, limited additional monitoring, inclusion of biological information and the use of additional existing models for watershed-level analysis. We disagree that this permit issuance should await such TMDL-like efforts. *See also* Responses #E3 and #F6 for a discussion that the permit should not await completion of TMDLs or the modeling being conducted by UBWPAD. Where EPA determines that a discharge of a pollutant causes or contributes to an excursion above any State water quality standard, including State narrative criteria for water quality, EPA must include an effluent limitation in the permit for that pollutant.

In establishing the nitrogen limit in this permit, EPA adhered to the requirements of the CWA and the Agency's regulations. Section 301(b)(1)(C) of the CWA requires NPDES permits contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to comply with, among other things, any applicable state or federal water quality standards. EPA's regulation at 40 CFR §122.4(d) prohibits the issuance of an NPDES permit unless its conditions can "ensure compliance with the applicable water quality requirements of all affected States." In the context of this permit issuance, both Massachusetts and Rhode Island are "affected states." Section 401(a)(2) of the CWA and EPA's regulations at 40 CFR 122.44(d)(4) also require EPA to condition NPDES permits in a manner that will ensure compliance with the applicable water quality standards of a "downstream affected state," in this case Rhode Island. The statute directs EPA to consider the views of the downstream state concerning whether a discharge would result in violations of the state's water quality standards. If, as in this matter, EPA agrees that a discharge would cause or contribute to such violations, EPA must condition the permit to ensure compliance with the water quality standards.

As is detailed in the Fact Sheet and this Response to Comments, the total nitrogen limit in this permit is necessary to ensure compliance with Rhode Island's water quality standards. Excessive loadings of nutrients stimulate the growth of aquatic plants and algae in downstream water bodies. The abundance of aquatic plants and algae deplete dissolved oxygen levels and impair the physical habitat of these water bodies.

Phosphorus is the primary nutrient of concern in fresh waters (such as the Blackstone River) and nitrogen is the primary nutrient of concern in salt waters (such as the Seekonk and Providence Rivers). Narragansett Bay is an important New England fishery and

¹⁷ See Letter dated February 4, 1999 from John P. DeVillars, Regional Administrator to Drs. Joan M. Daisey and Dr. Mark A. Harwell.

recreational resource. The designated uses of the Seekonk and Providence Rivers include primary and secondary contact recreational activities and fish and wildlife habitat. The upper sections of Narragansett Bay (including the Providence and Seekonk rivers), are no longer able to support a healthy aquatic community. At times, dissolved oxygen levels decline dramatically and significant fish kills are becoming regular occurrences. Only a small fraction of the historic eelgrass habitat remains.

Numerous scientific studies conducted over the last 15 – 20 years have documented that excessive discharges of nitrogen are causing the impairment and wastewater discharges are the dominant source of nitrogen. *See also Nutrient and Bacteria Pollution Panel, Initial Report, Governor's Narragansett Bay and Watershed Planning Commission, March 2, 2004 at page 3 (summarizing studies).* The UBWPAD – with a permitted design flow of 56 MGD – is one of the largest sources of nitrogen to Narragansett Bay. The loadings data utilized in DEM's 2004 study indicate that UBWPAD represented approximately 64% of the nitrogen load discharged to the Blackstone River from municipal wastewater treatment facilities for the period of time considered in the study. In addition, the Blackstone River discharges into the relatively poorly flushed areas at the head of the Upper Bay, which has exacerbated the impact of nutrients. Based on review of these various reports and studies of impairments in the Upper Bay and sources and loadings of nutrients, EPA concluded that discharges of nitrogen from the UBWPAD facility are causing or have the reasonable potential to cause or contribute to violations of Rhode Island's water quality standards.

EPA appropriately based the nitrogen limits on the requirements of Rhode Island's currently approved water quality standards. Rhode Island, like the vast majority of states, has not yet developed and EPA has not approved numeric total nitrogen criteria or numeric response variable criteria. Nor has Rhode Island developed site specific numeric criteria for total nitrogen or response variables for Narragansett Bay. Until then, EPA must base effluent limits on the criteria in the currently approved water quality standards, including applicable narrative criteria. *See 33 U.S.C. §1311(b)(1)(C); 40 CFR 122.44(d)(1)(requiring limits on pollutants that have "a reasonable potential to cause or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.)"* (emphasis added). Applicable criteria from Rhode Island Water Quality Standards are as follows:

"At a minimum, all waters shall be free of pollutants in concentrations or combinations or from anthropogenic activities subject to these regulations that:

- i. Adversely affect the composition of fish and wildlife;
- ii. Adversely affect the physical, chemical, or biological integrity of the habitat;
- iii. Interfere with the propagation of fish and wildlife;
- iv. Adversely alter the life cycle functions, uses, processes and activities of fish and wildlife...." Rule 8.D.(1).

The dissolved oxygen shall be “not less than 5 mg/l at any place or time, except as naturally occurs. Normal seasonal and diurnal variations which result in *insitu* concentrations above 5.0 mg/l not associated with cultural eutrophication will be maintained in accordance with the Antidegradation Implementation Policy.” Table 2, Rule 8.D.(3)1.

There shall be no nutrients “in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication.” Nutrients “shall not exceed site-specific limits if deemed necessary by the Director to prevent or minimize accelerated or cultural eutrophication. Total phosphorus, nitrates and ammonia may be assigned site-specific permit limits based on reasonable Best Available Technologies.” Table 2, Rule 8.D.(3)10; see also Rule 8.D.(1)(d).

Additional relevant regulations include Rule 9.A. and B., which prohibit discharges of pollutants which alone or in combination will likely result in violation of any water quality criterion or interfere with one or more existing or designated uses, and prohibit discharges that will further degrade waters which are already below the applicable water quality standards.

In interpretation and application of these criteria, EPA considered, among other things, the physical model conducted by RIDEM assessing the impacts of total nitrogen on non-attainment of water quality standards in the Seekonk and Providence Rivers. EPA also considered loadings from the facility and the amount of nitrogen anticipated to be delivered from the point of discharge to the mouth of the Blackstone River. Further, EPA considered that the discharge flows to the area of the Upper Bay where the most impairments have been measured. *See also* Response #F6.

EPA did not rely on or apply the Rhode Island legislation at R.I. Gen. Laws § 46-12-2. This provision directs the state Department of Environmental Management to: “implement measures to achieve an overall goal of reducing nitrogen loadings from waste water treatment facilities by fifty percent (50%) by December 31, 2008....” Rather, EPA relied on Rhode Island’s Water Quality Standards, consistent with 40 CFR §122.44(d), to impose nitrogen limits necessary to ensure attainment of Rhode Island’s water quality standards. Moreover, RIDEM’s 2004 study suggests that even more stringent limits (perhaps to the limit of technology) may be needed in future permit reissuances.¹⁸

The constitutional issues raised by UBWPAD in its comment do not need to be reached and, in any event, are not appropriately raised in this administrative permitting proceeding. More specific constitutional challenges are addressed below.

¹⁸ While EPA recognizes its independent obligation to establish protective permit limits, it is fully appropriate for EPA to consider the technical reports generated by RIDEM in the development of nitrogen limits for this permit. As noted above, the CWA expressly directs EPA to consider the views of a downstream state concerning whether a discharge would result in violations of the state’s water quality requirements.

With regard to the comment that EPA should further evaluate non-point and other sources of nutrients before proceeding with permits for point sources, please see Responses #A8 and #C1.

With regard to its comment that Massachusetts incorrectly listed certain reaches of the Blackstone River on its 303(d) List of Impaired Waters, EPA has several responses. First, the comments provides no specific information that would call the listing into question. Second, the permit proceeding is not the appropriate forum for challenging the state's listing or EPA's approval of it. The permittee could have raised this issue during the listing process. Third, irrespective of a state's current 303(d) list, EPA is obligated to impose a water quality-based effluent limit for a pollutant if there is a reasonable potential that the discharge will cause or contribute to a violation of water quality standards. *See* 33 U.S.C. §1311(b)(1)(C) and 40 CFR §122.44(d)(5).

With reference to the comment that the new permit limits constitute unfunded mandates, *see* Response #B2.

Comment #F45: For several reasons (explained below), the co-permittees should be deleted from the proposed permit. The District challenges the proposed expansion of its NPDES permit to include co-permittees comprised of satellite sanitary sewer collection systems not owned or operated by the District or of any entity whose wastewater, septage or sludge the District accepts. The Agency's unwarranted expansion of its authority fails to consider the numerous and varied legal relationships and state municipal powers governing intercommunity collection systems, and is not in accordance with law. EPA's attempt to regulate entities discharging wastewater to the District's treatment facility usurps and undermines state and municipal authority. As the District has previously informed EPA (e.g., during the 1999 Permit renewal process), the District does not have the authority to legally bind co-permittees in the manner proposed by EPA.

None of the affected municipalities participated in or signed the Permit application, nor did they intend to be permit applicants. In addition, EPA did not make any provision in the Draft Permit for the targeted co-permittees to become signatories (thereby binding them to the terms of the permit). Before EPA can add any co-permittees to the permit, it will need to resolve these legal issues with the State and the respective municipalities involved.

The Draft Permit imposes legal and administrative burdens on the District for management of member sewers through the co-permittee process that are not allowed in the District's enabling legislation and that the District has no authority to accept.

The District does not own or operate the wastewater collection systems which discharge to its facility. The operation and maintenance of such systems is adequately regulated by the Commonwealth pursuant to 314 CMR 12.00. We understand that under NPDES permit issued to the Massachusetts Water Resources Authority ("MWRA") (permit no. MA0103284), co-permittee status is driven by ownership of infrastructure (e.g., pipes, treatment facility). We further understand that MWRA member communities are not

included as co-permittees [with very few exceptions] and that, for portions of the regional sewer system operated by member communities, reporting of sanitary sewer overflows are governed by the reporting and basic operation and maintenance requirements contained in the DEP regulations at 314 CMR 12.00. That practice should be followed here.

The Draft Permit's language purporting to limit which entities may discharge to the District conflicts with and undermines the District's authority under its enabling statute [Chapter 752 of the Acts of 1968, as amended] which authorizes the District to determine which entities may become members of the District and/or discharge to the District's regional treatment facilities. Since it is questionable whether such federal action is a valid exercise of Congress' constitutionally delegated powers, under the Tenth Amendment of the U.S. Constitution, the State enabling statute should be given precedence.

As explained below, the Draft Permit purports to regulate satellite wastewater collection systems as co-permittees under a proposed (not final) Sanitary Sewer Overflow (SSO) Rule regardless of whether or not these systems result in overflows that reach waters of the United States. This raises serious questions about whether the Agency has subject matter jurisdiction under the Clean Water Act [over discharges that do not reach, nor are they likely to reach, waters of the United States]. The Second Circuit recently ruled, in the *Waterkeeper Alliance* case (also known as the CAFO decision) that unless there is an actual discharge of a pollutant to navigable waters, there is no point source discharge, no statutory violation of the CWA, no requirement to comply with EPA regulations for point source discharges, and no duty to seek or obtain an NPDES permit in the first instance. See *Waterkeeper Alliance et al. v. EPA*, 399 F.3d 486 (2nd Cir. 2005). The Court stressed that: "The CWA gives the EPA jurisdiction to regulate and control only actual discharges - not potential discharges, and certainly not point sources themselves." (Emphasis in original).

The primary function of collection systems is to convey wastewater to the District's regional plant for treatment, but not to provide treatment. Under the current regulatory definition of POTW, neither CSOs nor SSOs may be deemed part of the POTW because they do not convey wastewater to the POTW, but instead result in a discharge prior to the POTW. The D.C. Circuit ruled in the *Montgomery Environmental Coalition v. Costle* case, 649 F.2d. 568 (D.C. ' Cir. 1980), that CSOs are not part of the "treatment works" under the 1979 or the 1980 definition, and consequently they are not subject to the "secondary treatment" standards applicable to POTWs. Since this decision, neither EPA nor the courts have formally determined that SSOs must be treated differently from CSOs.

The proposed addition of the satellite collection systems as co-permittees violates and/or circumvents the rulemaking procedural requirements. Any attempt to implement a proposed rule or materially change or rewrite a regulation through policy deprives the District and the impacted ratepayers of their fundamental rights to public notice, review and comment on such important matters.

While a proposed SSO regulation was signed by EPA Administrator Browner in 2001, the Administration withdrew the proposal before it was published, and the actual regulatory proposal still appears to be far in the future. Had the proposed SSO Rule been promulgated, it would have applied NPDES permit conditions to satellite systems in one of two ways: the NPDES permitting authority would have been given the discretion to give a collection system permit to either the satellite collection system owner/operator or the regional publicly owned treatment works (POTW) that accepts its flow.

The Association of Metropolitan Sewerage Agencies ("AMSA") has submitted substantial comments on the proposed SSO Rule opposing the discretion the Rule would have given to NPDES permitting authorities to decide which entity receives a collection system permit, stating that "the only appropriate permittee is the satellite collection system owner/operator entity." See AMSA letter to EPA Administrator Christine Todd Whitman, dated June 8, 2001. As EPA is aware, the draft rule's CMOM (capacity, management, operation and maintenance), reporting, public notification and recordkeeping provisions would be burdensome to all potential permittees regardless of the size.

The Draft Permit states, on page 1 of 19, that "[o]nly municipalities specifically listed as co-permittees are authorized to discharge wastewater into the UBWPAD facility." The Draft Permit's proposed list does not include all dischargers to the District. For example; Sutton, Oxford, Paxton, and Shrewsbury discharge to the District's facility through their respective collection systems. The Draft Permit and its Fact Sheet are unclear as to whether its co-permittee language precludes the District from continuing to accept sludge and septage per its authority under the state enabling act. The Draft Permit language should not alter or diminish in any way the District's current authority under its enabling statute including, without limitation, its authority to accept wastewater, sludge or septage from member municipalities or otherwise.

Response #F45: In its comment above, UBWPAD objects to imposition of any requirements through the permit on the operation and maintenance of the "satellite" municipal collection systems that discharge waste to UBWPAD. UBWPAD does not challenge EPA's general authority to regulate appropriate operation and maintenance of collection systems. Rather, UBWPAD comments that EPA cannot impose such requirements on the satellite systems through this permit as they are separate legal entities from the owner/operator of the treatment facilities and outfalls.

Section 212(2)(A) of the CWA defines "treatment works" to include "any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature... including ... intercepting sewers, outfall sewers, sewage collection systems...." EPA regulations define the term "publicly owned treatment works" similarly at 40 CFR 122.2 and 403.1. As UBWPAD is well aware, historically, the Region has issued an NPDES permit only to the legal entity owning and operating the wastewater treatment plant, which is only a portion of the "treatment works" serving the communities for whom the UBWPAD provides wastewater treatment. The Region has now chosen to provide a more comprehensive approach to permitting

these facilities to ensure proper operation and compliance of the entire treatment works, not a portion of it.

The requirements in the permit imposed on satellite systems are set forth in the Draft Permit in Part I.D. ("Unauthorized Discharges") and Part I.E. ("Operation and Maintenance of the Sewer System"). Those provisions are as follows:

Part D provides that the permit only authorizes discharges through two specific outfalls. Part D also states that discharges through sanitary sewer overflows are not authorized and requires that UBWPAD and co-permittees report to EPA and Mass DEP any such overflows.

Part E of the Draft sets forth requirements related to operation and maintenance of the sewer system. Part E provides that operation and maintenance shall be in compliance with the General Requirements of Part II. The General Requirements of Part II, in turn, are standard conditions included in all NPDES permits. They track certain required conditions set forth in EPA's regulations such as duty to comply [40 CFR 122.41(a)], permit actions (40 CFR 122.41(f)) and duty to provide information [40 CFR 122.41(h)]; and a reopener clause [40 CFR 122.44(c) and 122.44(d)(vi)(C)(4)]. The standard conditions also include a recitation of EPA regulations related to confidentiality of information, and provisions regarding the impact of the permit on other local, State or Federal requirements. Part E also sets forth particular requirements regarding operation and maintenance of satellite collection systems in the respective municipal POTWs, including:

- provision of adequate staff to carry out the operation, maintenance, repair and testing functions required to ensure compliance with the terms and conditions of the permit;
- maintenance of an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failure of the sewer system infrastructure, including an inspection; and
- development and implementation of a plan to control infiltration and inflow (I/I) to the separate sewer system, including annual reporting of activities taken to minimize I/I; and
- provision of an alternate power source to operate the treatment works.

Proper operation and maintenance at 40 CFR 122.41(e). This standard permit condition requires proper operation and maintenance of permitted wastewater systems and related facilities to achieve compliance with permit conditions; and

Duty to mitigate at 40 CFR 122.41(d). This standard condition requires the permittee to take all reasonable steps to minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment.

EPA's regulations include a duty to provide information at 40 CFR 122.41(h). This standard condition requires the permittee to provide any information which EPA may

request to determine, among other things, compliance with the permit. In addition, the regulation requires the permittee to provide copies of records required to be kept by the permit.

Based on these provisions in the statute and regulation, EPA clearly has authority to require appropriate operation and maintenance of collection systems necessary to achieve compliance with an NPDES permit. Since the District does not own or operate some of the collection systems that discharge to the treatment works, it is appropriate to apply these conditions to the owners/operators as co-permittees. The requirements set forth in Parts D and E give more specific direction to the satellite systems as to what is expected related to operation and maintenance, duty to mitigate and reporting.

Under *Montgomery Environmental Coalition v. Costle*, 649 F.2d. 568 (D.C. Cir. 1980), combined flows that exceed the design capacity of a combined system and are intentionally diverted away from a treatment works are not subject to secondary treatment requirements but rather are subject to the technology requirements applicable to non-POTWs. *Montgomery* does not address which NPDES permit conditions may be applicable to collection systems attached to treatment plants, nor does it address the circumstance of unpermitted discharges such as SSOs. This case simply is not relevant to the co-permittee issue raised by the comment.

The *Waterkeeper Alliance* case, 399 F.3d 486, also does not restrict EPA's ability to impose conditions on the operation and maintenance of the collection systems owned and operated by the satellite systems. *Waterkeeper Alliance* involved review of challenges to regulations setting forth NPDES and effluent limitation guidelines and standards for Concentrated Animal Feeding Operations (CAFOs). The Second Circuit vacated that portion of the regulation that required CAFOs to apply for NPDES permits or otherwise demonstrate that they have no potential to discharge. The Court reasoned that effluent limitations can only be applied to point sources that actually discharge, not that simply have the potential to discharge. *Id.* at 505. In this matter, wastewater from the treatment works (including the collection system) is discharged through the outfalls at UBWPAD's treatment plant. Therefore, the treatment works (including the collection system) is subject to permitting. EPA has determined that operators of the collection system portion of the POTW must comply with the operation and maintenance requirements in the draft permit to ensure that compliance with the permit and the goals of the Clean Water Act are achieved.

EPA does not agree that the co-permittees each need to sign the permit application. The permit application requirements are designed to facilitate the permitting process and to aid the permitting authority by ensuring submittal of relevant information. In this case, UBWPAD submitted the permit application, including requisite information about satellite systems. As detailed above, EPA is authorized to regulate the entire POTW (including the treatment plant and collection systems). That UBWPAD and its member communities have decided to maintain separate ownership of the treatment plant and collection system does not require the EPA to solicit separate signatures from each of the satellite systems. Nor does it require that EPA issue separate permits to UBWPAD and

the satellite systems. Further, EPA provided a copy of the Fact Sheet and Draft Permit to each of the satellite systems included as “co-permittees” in the Final Permit. Each was invited to attend the public hearing and to submit oral and/or written comments on the Draft Permit.

UBWPAD also comments that it does not have authority to legally bind the satellite systems and that the requirements will impose additional “legal and administrative burdens” on UBWPAD. Through this permit, EPA has made each municipality responsible for implementation of the requirements of Parts D and E applicable to the portion of the collection system and/or treatment plant that it owns or operates. For instance, each municipality would be responsible to report to EPA any SSO that occurred from its collection system. Each municipality would be separately responsible for developing and implementing a plan to control I/I and reporting on the progress of its respective plan. EPA recognizes that this approach is a change from the expired permit, which required UBWPAD to serve in the role of facilitating a work group of its member communities to develop and implement strategies to eliminate excessive I/I. The expired permit also included a provision indicating that EPA and MassDEP might seek to add the member communities as co-permittees directly regulated under the permit if adequate progress was not made. That time has come: I/I flows to the UBWPAD continue to be very high – at 15 million gallons per day (*see* NPDES permit application at page 7) -- and more aggressive action is necessary to abate excessive I/I. The shift in approach to having EPA directly oversee the satellites as co-permittees should reduce any “legal and administrative burdens” on UBWPAD. While EPA believes that the language in the Draft Permit makes clear that each co-permittee is responsible for implementation of the operation and maintenance and reporting requirements of Parts D and E related to its respective system, the Final Permit includes an additional sentence to that effect.

The language of one requirement in Part E related to I/I control does require UBWPAD to take measures to control discharges from the satellite communities. That provision states: “The permittee shall require, through appropriate agreement, that all member communities control discharges to the permittee’s POTW sufficiently to ensure that high flows do not cause or contribute to a violation of the permittee’s effluent limitation or cause overflows from the permittee’s collection system.” UBWPAD’s enabling legislation appears sufficiently broad to meet this provision. In particular, the legislation indicates that the purpose of establishing UBWPAD is to treat sewage from the local communities, not I/I such as groundwater or rainwater. *See* Chapter 752 of Act of 1968 at Sections 6 and 16. The legislation also gives the District authority to prevent the discharge into the sewers of substances which may damage or impair the sewerage collection and sewerage treatment system or interfere with its maintenance or operation. *Id.* at Section 7. In any event, the intent of the permit provision cited above is to ensure that high flows do not cause or contribute to violations of effluent limitations or cause unauthorized bypasses at the treatment plant. To address UBWPAD’s concern, EPA has modified the language in the Final Permit to indicate that both the permittee and co-permittees are responsible to ensure that high flows do not cause such violations.

UBWPAD also notes that the Draft Permit does not include all satellite dischargers. UBWPAD specifically notes that EPA failed to include Sutton, Oxford, Paxton and Shrewsbury. EPA derived the initial list of discharges from information provided by UBWPAD in its re-application; specifically, in Response to Question A4 on Form 2A, UBWPAD indicated that the UBWPAD facility serves the following municipalities: Auburn, Cherry Valley Sewer District, Holden, Millbury, and Rutland. EPA notes that UBWPAD's Facilities Plan, however, does indicate that the municipal systems of Sutton, Oxford, Paxton and Shrewsbury also contribute wastewater to UBWPAD. As the contributions from these municipal systems are relatively smaller than the other satellite systems, EPA will not include these four municipalities as "co-permittees" in this permit. EPA may, however, include them as "co-permittees" in the future. In addition, in the Final Permit, EPA has amended the language on Page 1 of the permit to make clear that these communities are not prohibited from discharging to UBWPAD.

UBWPAD comments that the co-permittee language in the Draft Permit is unclear as to whether it precludes the District from continuing to accept sludge and septage per its authority under the state enabling act. The language in the Draft Permit referenced by UBWPAD only addresses discharges of wastewater. *See* Draft Permit at 1 (indicating that only co-permittees "are authorized to discharge wastewater into the UBWPAD facility"). To address UBWPAD's concern, EPA has clarified this intent in the final permit.

Comment #F46: Compliance Schedule. The Draft Permit Fact Sheet contains EPA's admission that the District will not be able to comply immediately with the proposed nutrient limits and states that EPA will work with the District to develop a schedule for the planning, design and construction of facilities necessary to meet these limits and that takes into account currently ongoing facility upgrades. EPA should include that schedule in the District's final permit. The Massachusetts permitting regulations control the issuance of permits in that state and these regulations allow compliance schedules and do not specify any term limits for such schedules.

In addition, the Fact Sheet states that the Draft Permit would supersede the permit issued on September 30, 1999. As the Agency knows, the District appealed certain conditions of the 1999 permit. After extensive negotiations with EPA, and in consideration of various accommodations by the parties (including the District's withdrawal of its appeal), a settlement agreement was executed and the permit was modified on December 19, 2001 (the "2001 Permit"). The settlement agreement, and the administrative consent order issued there under in 2002 (the "Consent Order"), gave the District an 8-year compliance schedule, until August, 2009, to complete treatment plant upgrades and meet many of the 2001 Permit limits, including a phosphorus limit of 0.75 mg/l. Public notice of this compliance schedule and the interim permit limits effective during the permit was provided in the 2001 Permit's fact sheet or statement of basis.

Significant upgrades are currently underway at the District at costs of over \$180 million, which will further limit the discharge of pollutants to the Blackstone River including nitrogen and phosphorus. In 2009, the new facilities will achieve a better than required

reduction in phosphorus for half of the year under the existing permit and provide nitrogen removal approaching the 40-50% nitrogen summer nitrogen reduction sought by the Rhode Island Governor's Special Committee without a new standard. In light of this significant progress, an appropriate adaptive management plan would consist of allowing the significant upgrades in Worcester to occur, address all local sources to the impaired waters in Rhode Island, and monitor the results of these actions prior to requiring additional severely restrictive and costly upgrades in Massachusetts.

The Draft Permit's provisions, particularly the new nutrient limits, conflict with the existing, enforceable compliance schedule established under the settlement agreement and Consent Order signed by the EPA. The settlement agreement and Consent Order were more than merely agreements between the NPDES permitting authorities and the District; they are administrative determinations entitled to substantial deference. One such determination was that a phosphorus limit of 0.75 mg/l would lead to attainment of the Massachusetts water quality standards, yet no new information has been provided to conclude otherwise. Like any written instrument affecting the rights and obligations of a party, a settlement agreement and consent order must be given effect according to its terms. The District has, in good faith, complied with the terms of these agreements including the compliance schedule. It expects that the Agency will, likewise, abide by its commitments under these agreements.

If additional measures are required in the permit beyond those specified in the amended 2001 Permit and settlement agreement, or if a more stringent water quality-based effluent limitation is included in the permit, the District is entitled to a compliance schedule under Massachusetts law. State regulations provide for compliance schedules as follows: A permit may, when appropriate, specify a schedule leading to compliance with the Massachusetts and Federal Clean Water Acts and regulations. The purpose of a schedule of compliance generally is to afford a permittee adequate time to comply with one or more permit requirements or limitations that are based on new, newly interpreted or revised water quality standards that became effective after both issuance of the initial permit for a discharge and July 1, 1977. The Department may include a schedule of compliance in a permit at the time of the permit reissuance or modification where the permittee either cannot comply with such permit requirements or limitations, or where there is insufficient information available to determine whether the permittee can comply with such permit requirements and limitations. A schedule of compliance shall require compliance at the earliest practicable time, as determined by the Department. A schedule of compliance shall include dates for specified tasks or activities leading to compliance and may include interim effluent limitations, as the Department deems appropriate. 314 CMR 4.03(1)(b).

Although the District does not agree that a more stringent limit is authorized or appropriate, EPA acknowledged in the Draft Permit fact sheet that the District likely will not be able to comply with such a limit. Accordingly, a compliance schedule should be included in the permit for any more stringent water quality-based effluent limit. The state compliance schedule provision is consistent with federal regulations, which allow

compliance schedules that require compliance "as soon as possible." 40 CFR §122.47(a)(1).

The District requests that long-term compliance schedules, if necessary, be included in the permit itself, rather than in an administrative order or other agreement. There is no time limit on such compliance schedules under federal or state law. In other situations, EPA has authorized compliance schedules that extend beyond the term of the permit, and that extend for more than five years. For example, federal regulations concerning Great Lakes dischargers provide that compliance schedules may extend beyond the term of the permit. 40 CFR Part 132, Appendix F, Procedure 9. In addition, California provides long-term compliance schedules that can extend for several permit terms, consistent with the requirements of any TMDL. See, e.g., Basin Plan Amendment (Los Angeles Regional Water Quality Control Board, May 14, 2003). EPA approved those provisions on February 10, 2004. See *Water Quality Standards: Examples of Alternatives to Changing Long-term Designated Uses to Achieve Water Quality Goals* (EPA, March 2005) at p. 6. Therefore, a long-term compliance schedule---so long as it requires compliance "at the earliest practicable time" or "as soon as possible"-- may be included within the permit itself, consistent with both federal and state regulations.

Response #F46: EPA has determined not to include a compliance schedule in the Permit. Compliance schedules to meet water quality based effluent limits may be included in permits only when the state's water quality standards clearly authorize such schedules and where the limits are established to meet a water quality standard that is newly adopted, revised or interpreted after July 1, 1977. As noted in the Fact Sheet supporting the Draft Permit, EPA recognizes that UBWPAD will not be able to comply immediately with the water quality based effluent limits proposed for total nitrogen and phosphorus.

In this case, the limits on total nitrogen are based solely on ensuring compliance with the Rhode Island Water Quality Standards. Rhode Island's standards, in turn, do not include provisions allowing for schedules in permits. While Massachusetts standards do allow schedules in permits, the decision of whether to include a compliance schedule is discretionary and may only be granted "when appropriate." See 314 CMR 4.03(1). Thus, even if only Massachusetts standards were applicable, they do not mandate that a schedule be included in the permit itself. In this matter, there are many overlapping issues related to the planning, design and construction of facilities to meet the limits for phosphorus and nitrogen. In light of these overlapping issues and the fact that Rhode Island standards do not include provisions allowing schedules in the permit itself, EPA intends to issue a reasonable compliance schedule to meet both the phosphorus and nitrogen limits in a separate administrative order rather than in the permit itself. See also Response #E2.

The Settlement Agreement and Compliance Order issued in 2002 do not in any way restrict EPA's ability to issue a permit with more stringent limits or to issue a schedule to meet the new permit limits in a new administrative order. Recognizing that UBWPAD would not be able to immediately meet the limits in the expired permit, the 2002

Administrative Order included a schedule for treatment upgrades to meet those limits. The 2002 Administrative Order was issued pursuant to EPA's enforcement authorities and, as such, represents the Agency's enforcement response to UBWPAD's violations and anticipated ongoing violations of the permit limits in the expired permit. Nothing in the 2002 Order or Settlement Agreement alters the requirement of the CWA that EPA re-issue the permit and, where necessary, change effluent limits to ensure attainment of water quality standards. It is EPA's intent to issue a new administrative order with a reasonable schedule to meet the effluent limits in the new permit. In addition, we will likely incorporate remaining milestones under the old order into the new schedule.

Comment #F47: Nutrients. As a matter of law, policy and fairness, the Draft Permit's proposed nutrient limit changes should be stricken from the Permit and deferred or postponed until Total Maximum Daily Loads ("TMDLs") are developed. Such postponement is consistent with the DEP's May 9, 2007 comments regarding TMDLs for nutrients. The Draft Permit Fact Sheet fails to address the DEP's concerns about the uncertainties and inadequacies of the scientific knowledge used to develop the total nitrogen limits and about establishing effluent limits for nitrogen and phosphorus without the benefit of scientific guidance provided by TMDLs and the water quality goals they establish. DEP's comments, which were previously documented in the administrative record of the RIDEM permits and certain Massachusetts NPDES permits (e.g., Attleboro and North Attleboro), continue to go unanswered. Given the DEP's well-documented concerns and the fact that the District's capital improvements and upgrades slated for completion in 2009 will significantly reduce nutrient levels, it is proper to defer these newly proposed limits pending revision of the relevant water quality standards and TMDL development.

In addition, any proposed seasonal limits for nutrients should be based on temperature and flow in the River, and such limits should not start until the month of June. Some Rhode Island-issued permits recognize this relationship and, accordingly, have used June as the starting month for its seasonal nutrient limits. The Draft Permit acknowledges that nutrient limits are dependent on the temperature by selecting various months that are assumed to be representative of the spectrum of receiving water temperatures that are experienced in the Blackstone River.

Response #F47: NPDES permits must include effluent limits sufficient to meet water quality standards of all affected states; this requirement is not dependent on the existence of a TMDL. *See* 40 CFR §§122.4(d) and 122.44(d). *See also* Response #A3. The commenter does not indicate which specific comments raised by MassDEP have been unaddressed. Response to specific comments raised by MassDEP in this permit issuance are addressed above. *See* Responses #E1 - #E3.

Regarding the basis for the seasonal periods, *see* Response #F20. In addition, please note that these seasonal time frames correspond to those in RIDEM's permit to Woonsocket.

Comment #F47(a): Total Nitrogen (TN). For several reasons (explained below), the Draft Permit's total nitrogen limits should be stricken and the determination of such limits should be deferred to the future completion of a TMDL. The DEP has declined to impose

the total nitrogen limit contained in the Draft Permit, nor does it support this limit. The interstate nature of this predicament raises several legal and policy issues, which are discussed more fully below.

This problem is exacerbated by the absence of TMDL calculations as well as other reliable data supporting the nitrogen limit proposed by Rhode Island and/or EPA here. The Draft Permit's total nitrogen limit rests upon an approach that the Clean Water Act attempted to avoid, that Massachusetts regulators contest, and that science cannot justify. This raises additional factual, legal and policy issues under the Act.

The problem of nitrogen should be addressed at a watershed level by completion of a TMDL. The identification of all sources and their relative importance has not been well established in the RIDEM documents, which are the basis for the proposed permit limits. Major omissions include nitrogen loads from local contributing non-point sources such as groundwater (i.e. septic system) and CSOs, atmospheric deposition, effect of sediments on nitrogen flux, and effects of tidal ranges and currents within the Bay and River systems on dispersion, dilution, and effective retention time. Without a complete, consistent, and logically progressed evaluation of the sources and their contributions, financially expensive solutions are being proposed for implementation in both Rhode Island and Massachusetts without confidence that the projected benefits will be obtained once construction is completed and the solutions are implemented. See DEP letter to RIDEM, dated February 11, 2004, commenting on RIDEM Permits and Documents in Support of Permit Limits (Appendix, Tab B-2); see, also, MA DEP Review Comments (February 8, 2005) RIDEM Discharge Permits and Modification to Permits (Attached to Technical Comments).

Response #F47(a): EPA is responsible for development and issuance of NPDES permits in Massachusetts as the Commonwealth has not received authorization from EPA to administer the federal NPDES program. Although EPA administers the NPDES program, Massachusetts maintains independent water pollution control permitting authority under state law. *See* Mass. Gen. Laws Ann. Ch. 21, §43. EPA and the Commonwealth have often issued their respective permits in the same document. In this matter, the final permit is issued only by EPA pursuant to its authority under the CWA. Regardless of whether EPA and MA DEP issue their respective permits in the same or in different documents, the nitrogen limit in this permit is based upon an application of the requirements of the federal CWA and is necessary to meet Rhode Island's water quality standards, but not Massachusetts water quality standards.

Excessive nutrients, generally nitrogen in marine water and phosphorus in fresh water, can contribute to eutrophication. At the point of discharge from the facility, the receiving water is a fresh water river – the Blackstone River. The Blackstone River is an interstate water which has its headwaters in Worcester, Massachusetts and flows through several communities in Massachusetts before entering Rhode Island. The Blackstone then flows to the headwaters of the Seekonk River, which is a marine water.

Section 401(a)(2) of the CWA and 40 CFR § 122.44(d)(4) require EPA to condition NPDES permits in a manner that will ensure compliance with the applicable water quality standards of a “downstream affected state,” in this case Rhode Island. The statute directs EPA to consider the views of the downstream state concerning whether a discharge would result in violations of the state’s water quality standards. If EPA agrees that a discharge would cause or contribute to such violations, EPA must condition the permit to ensure compliance with the water quality standards.

A TMDL is not required for EPA to establish water quality-based limits. *See* Responses #A3 and #E3.

With regard to the comment that EPA must evaluate other sources of nutrients before proceeding with nutrient limits in this permit, *see* Response #F40.

Comment #F47(a)(1): The TN limit is fatally flawed because it is based on criteria that are not scientifically defensible. In EPA's recommended water quality criteria for nutrients [published in January 2001 (66 FR 1671)], EPA states "wherever possible, develop nutrient criteria that fully reflect localized conditions and protect specific designated uses." The criteria used to develop the TN limit failed to determine causal relationships between the nutrients and attainment of the designated uses; they are not effects-based criteria. The causal relationships between the nutrients and response variables (e.g., Chlorophyll a, Dissolved Oxygen, pH) were not adequately determined. Experts recommend 3-5 years of growing season data to account for annual variability and such nutrient data should not be developed using data reflective of unusual hydrologic and physical conditions of the water body. This was not done. *See* Guidance on Developing Nutrient Criteria for Protecting Designated Uses of Water Bodies, Benjamin R. Parkhurst, Ph.D., et al., prepared for Federal Water Quality Coalition, Fredric Andes, Barnes & Thornburg LLP (Appendix, Tab B-3).

Response: #47(a)(1): It is unclear if the commenter is challenging Rhode Island’s narrative water quality criteria for nutrients or the approach used by EPA to develop the specific nitrogen effluent limit in this permit. Water quality criteria are one of three parts of state water quality standards. (The other two components include one or more “designated uses” and an antidegradation provision.) Rhode Island, like most states, has not yet developed statewide numeric total nitrogen criteria or numeric response variable criteria, nor has Rhode Island developed site specific numeric criteria for total nitrogen or response variables for Narragansett Bay. Until then, EPA must base effluent limits on its interpretation of the narrative criteria in the currently approved water quality standards. Water quality-based effluent limits imposed through NPDES permits must ensure that all components of water quality standards are achieved, including narrative criteria. *See* 33 U.S.C. §1311(b)(1)(C); 40 CFR 122.44(d)(1)(requiring limits on pollutants that have “a reasonable potential to cause or contribute to an excursion above any State water quality standard, **including State narrative criteria for water quality.**”) (emphasis added).

The commenter refers to a study prepared on behalf of the Federal Water Quality Coalition (which is described on its website as “a group of industrial facilities,

municipalities, agricultural parties and trade associations whose goal to ensure that water quality programs under the Clean Water Act are focused, flexible and founded on sound science”). Counsel for the permittee in this matter also represents the Coalition and serves as its Coordinator. The study reviews and recommends approaches that can be taken by state and tribal authorities in the development of numeric water quality criteria for nutrients, and may be of interest to Rhode Island as it pursues development of such criteria. In the meantime, EPA’s charge is to establish effluent limits that ensure that all components of Rhode Island’s existing water quality standards are met – including designated uses, criteria and antidegradation.

When calculating a numeric permit limit to achieve a narrative criterion, EPA’s regulations at 40 C.F.R. §§ 122.44(d)(1)(vi)(A), (B) authorize the agency to base its permitting decision on a wide range of relevant material, including EPA technical guidance, state laws and policies applicable to the narrative water quality criterion, and site-specific studies. In establishing the nitrogen limit in this permit, EPA considered the more than 15 years of water quality data, studies and reports evaluating nitrogen levels and response variables in Narragansett Bay. EPA also considered the results of a physical model operated by the Marine Ecosystems Research Laboratory (MERL) at the University of Rhode Island. This enrichment gradient experiment included a study of the impact of different loadings of nutrients on DO and chlorophyll a. (See *Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers*, RI DEM, December 2004). Both the MERL tank experiments and the data from the Providence/Seekonk River system indicate a clear correlation between nitrogen loadings, chlorophyll a levels, and dissolved oxygen impairment. Low dissolved oxygen levels, as well as supersaturated dissolved oxygen levels, are an indicator of cultural eutrophication. The MERL tank experiments showed a clear correlation between nitrogen loading rates and dissolved oxygen variability. In addition, sampling in the Providence/Seekonk River system documents both extremely low and extremely high dissolved oxygen levels.

A stronger indicator of cultural eutrophication is phytoplankton chlorophyll a levels. The RIDEM data from 1995-96 indicates that average photoplankton chlorophyll a levels in the Seekonk River ranged from 14 ug/l to 28 ug/l with the highest levels in the upper reaches of the river and the lowest levels in the lower reaches of the river. The chlorophyll a levels in the Seekonk River correlate with total nitrogen levels as well as dissolved inorganic nitrogen levels. Again, this response is consistent with the MERL tank experiments that showed a correlation between nitrogen loading rates and chlorophyll a levels. Peak chlorophyll a levels in the Providence/Seekonk River system exceeded 200 ug/l. Coastal areas without high nutrient loads could be expected to have chlorophyll a levels in the 1 to 3 ug/l range (Nutrient Criteria Technical Guidance Manual – Estuarine and Coastal Marine Waters, USEPA, October 2001).

EPA recognizes that the MERL tank experiments cannot completely simulate the response of chlorophyll a and dissolved oxygen to nitrogen loadings in a complex, natural setting such as the Upper Narragansett Bay. In this regard, use of a physical model introduces some uncertainty in determining the precise level of nitrogen controls which

may ultimately be needed in the River. Both the MERL Tank experiments and the data from the River system, however, indicate a clear correlation between nitrogen loadings, chlorophyll *a* levels and dissolved oxygen impairment. Accordingly, the MERL tank experiments are an appropriate tool for evaluating the relationship between nitrogen loadings and cultural eutrophication indicators. While the uncertainties in the model and the receiving water response to reduced nutrient loading may ultimately mean that additional nitrogen reductions are needed beyond those required by this final permit, it is EPA's judgment that based on the available evidence, water quality standards cannot be met with a less stringent nitrogen limit than 5.0 mg/l. *See* Response #F18A for additional detail on establishment of the nitrogen limit.

Comment #F47(a)(2): Current multiple plant upgrades already under construction by the District and other WWTFs are expected to significantly reduce the TN loading to the Upper Bay. Requiring additional treatment to meet a 5 mg/l TN limit will result in extremely high construction and operating costs to acquire additional, non-renewable resources such as chemicals and electricity without any reasonable confidence that it will attain the designated uses. In addition, the use of substantial amounts of non-renewable resources is not consistent with the EPA's sustainable development policies. *See* discussion of Sustainability, below.

Response #F47(a)(2): *See* Responses #F6, #F7, and #F8, and Response #F53 below.

Comment #F47(a)(3)(i)-(iii): TMDL considerations.

- (i) The results of the 1981-84 MERL laboratory tank studies are not an acceptable substitute for a TMDL to establish TN effluent limits. RIDEM should complete the federally-required TMDL before EPA imposes the proposed TN permit modification.¹⁹
- (ii) Without a TMDL, the current approach lacks (a) clear, scientific justification, (b) a definite schedule or endpoint, and (c) a clear assessment to determine the need for future tighter restrictions.²⁰
- (iii) TN loading to Narragansett Bay is a regional, interstate issue that needs a comprehensive plan [as was implemented in Long Island Sound], which plan cannot be developed without a working TMDL.

Response #F47(a)(3)(i)-(iii): When reissuing an NPDES permit, EPA is not allowed under the CWA to delay imposition of water quality based-limits pending completion of a TMDL. *See* Responses #E3 and #F12. Further, as discussed above, nutrient TMDLs are very complex and can take many years to develop with no guarantee that the effort will be successful. *See* Responses #E3 and #F12. We also note that the Long Island Sound TMDL is undergoing a major revision to address certain deficiencies. *See* Framework for Reassessing a Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen Deficiencies in the Long Island Sound TMDL

¹⁹ See February 7, 2005 letter from Narragansett Bay Commission (NBC) to RIDEM commenting on proposed N limits (Attached to Technical Comments).

²⁰ See Footnote [immediately preceding].

(June 1, 2007). With regard to the Upper Narragansett Bay, for the past decade or more RIDEM expended significant resources in an attempt to simulate the estuary through the use of mathematical models and had concluded that the system was too complicated to simulate with available mathematical models. *See* Response #E3. In its decision to move forward now with a nitrogen limit, EPA also considered the existing severe nitrogen-driven cultural eutrophication in the receiving waters and the tendency for nitrogen to not only exacerbate existing water quality impairments but to persist in the environment in a way that contributes to future water quality problems. In light of these factors, delay in establishing permit limits is inappropriate.

In the absence of a validated dynamic model or TMDL, EPA has relied on the best information reasonably available to it, which is also precisely the type of information contemplated by 40 CFR §122.44(d)(vi). The agency considered more than 15 years of water quality data, studies and reports evaluating nitrogen levels and response variables in Narragansett Bay. These materials included EPA's *Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters* (EPA, October 2001) and a variety of site-specific reports undertaken by Rhode Island to address nitrogen loading and control the effects of cultural eutrophication in the receiving waters. *See, e.g., Evaluation of Nitrogen Targets and WWTF Load Reductions for the Providence and Seekonk Rivers* (December 2004); *Plan for Managing Nutrient Loadings to Rhode Island Waters* (RI-DEM, February 1, 2005); *Nutrient and Bacteria Pollution Panel – Initial Report* (Governor's Narragansett Bay and Watershed Planning Commission, March 3, 2004); and *Massachusetts Estuaries Project – Site-Specific Nitrogen Thresholds for Southeastern Massachusetts Embayments: Critical Indicators*, July 21, 2003 as revised). In addition, EPA relied on the results of the MERL model, which was designed to predict the relationship between nitrogen loading and several trophic response variables in the Narragansett Bay system. In establishing the nitrogen limit in this permit, and evaluating the MERL model, EPA also considered actual measurements of nitrogen loadings from point source discharges, including a 1995-96 study by RIDEM Water Resources. *See* Response #F18A relative to EPA's establishment of the nitrogen limit and use of the MERL model.

That the MERL tank experiments were a physical rather than mathematical model and could not completely simulate the complex natural setting of Narragansett Bay does not undermine the relevance and validity of the model to the nitrogen limits here. This view of physical models is consistent with EPA guidance, which states:

There are many other examples of empirical models used to relate environmental forcing functions to ecological responses, especially nutrient load/concentration and response relationships. Much of the professional aquatic ecological literature reports on use of empirical models (e.g., Chapters 2 and 3). Empirical models have their limitations, but when judiciously applied, they offer a highly useful tool to water quality managers.

Nutrient Criteria, Technical Guidance Manual; Estuarine and Coastal Marine Waters,

EPA-822-B-01-003 (October 2001) at 9-2. Further, the MERL model was peer-reviewed and published in a scientific journal, thereby withstanding the scrutiny of representatives of the scientific community. EPA itself cited the MERL experiment with approval in national nutrient technical guidance. *Id.* at 2-11 and 2-16 (“Three case studies provide some of the strongest evidence available that water quality managers should focus on N for criteria development and environmental control (see NRC 2000 for details). One study involves work in large mesocosms by the University of Rhode Island (Marine Ecosystem Research Laboratory—MERL) on the shore of Narragansett Bay. Experiments showed that P addition was not stimulatory, but N or N+P caused large increases in the rate of net primary production and phytoplankton standing crops (Oviatt et al. 1995).”).

The commenter’s proposed course — to await completion of a dynamic model or a TMDL while pollutant loadings continue unabated — is unreasonable and contrary to policy objectives of the CWA to make reasonable further progress toward eliminating pollution to the Nation’s waters.

Comment #F47(a)(3)(iv): The District shares the concern of the Narragansett Bay Commission (NBC) about the unanticipated effects that could result from a dramatic TN reduction from WWTFs on the Upper Bay.²¹

Response #F47(a)(3)(iv): During permitting proceedings administered by RIDEM, NBC offered a comment expressing concern that dramatic nitrogen reductions in the Bay could have detrimental impacts on secondary productivity such as fisheries and shell fishing. We concur with RIDEM’s response which, among other things, noted that in light of the highly degraded condition of the Providence and Seekonk Rivers (including DO levels that have dropped to levels that are lethal to aquatic life), the aquatic life benefits of the nutrient reduction are expected to far exceed potential negative impacts to secondary productivity. Certainly, there will be improved secondary productivity in those areas that regularly experience lethal levels of oxygen depletion. A study of the Boston Harbor before and after moving the outfall from the Deer Island wastewater treatment facility, for instance, looked at the catch per unit effort for winter flounder (a relative measure of their abundance). Catch per unit effort increased after the outfall was moved. Nester et al. (2007), *2006 Annual Fish and Shellfish Report*, Boston, MWRA. Report ENQUAD 2007-06. 200p.

Comment #F47(a)(3)(v): Total N loading to Narragansett Bay has been essentially level in the past 3 decades, based on evaluations by Dr. Scott Nixon of URI/GSO.²² Such findings underscore the need for a TMDL to determine the appropriate relationship and

²¹ See Footnote [immediately preceding].

²² See Nixon, S. et al. February 2005. Anthropogenic Nutrient Inputs to Narragansett Bay: A Twenty-Five Year Perspective, A Report to The Narragansett Bay Commission and Rhode Island Sea Grant.

relative importance of nutrient loading and climatic conditions to producing hypoxic conditions.

Response #F47(a)(3)(v): Questions have been raised relative to the limitations of the data used to draw this conclusion (*see, e.g.*, RIDEM Response to Comments at page 17). Moreover, studies and reports have documented that water quality has been severely degraded for at least 15 years. Regardless of whether loadings have been consistent over time, the nitrogen loadings are excessive and must be reduced.

Comment #F47 (a)(3)(vi): Research efforts are needed to clarify the role of nutrients in seasonal hypoxic events along with a TMDL that can replicate the physical and chemical conditions observed in Narragansett Bay. There is a growing tendency [among estuarine and coastal scientists] to view eutrophication in a more complex manner. The interaction of nutrient limitation to light limitation [sic], as well as to the influence of residence time on community structure and ecological interactions [sic] are still poorly understood, and an improved understanding of the factors that determine the sensitivity of estuaries to nutrients may eventually lead to better management of coastal nutrient pollution.²³

Response #F47(a)(3)(vi): Additional research is not needed to substantiate the total nitrogen limit in the final permit. As detailed repeatedly throughout this Response to Comments, the CWA does not allow EPA to postpone development of water quality-based effluent limits pending completion of a TMDL. *See* Responses #E3 and #F12. Further, as previously explained, EPA has determined that a seasonal reduction of nitrogen to no more than 5.0 mg/l at the UBPWAD facility is required in order to achieve water quality standards. *See* Responses #F17, #F18A, #F22, #F44, #F47(a)(1), #F47(a)(3)(i)-(iii).

We agree that physical conditions such as stratification, temperature, tidal stage, wind induced mixing and re-aeration do have an effect on dissolved oxygen levels. Indeed, as part of RIDEM's modeling efforts, water quality data (11 sampling events during 1995 and 1996) were collected under a variety of conditions in order to reflect the dynamic physical conditions of the system. Additional evaluations of site specific factors might be informative in determining whether further reductions of nitrogen are necessary in future permit issuances. Monitoring conducted after completion of the upgrades required by this permit and RIDEM's permits will incorporate consideration of appropriate site specific factors relative to the response of nitrogen loadings to Narragansett Bay.

Comment #F47(b): Interstate/Transboundary pollution considerations.

Comment #F47(b)(i): The Draft Permit seeks to apply a Rhode Island legislative mandate [RI Gen. Laws §46-12-2(f); requiring that nitrogen discharges be reduced by 50% by December 31, 2008] to Massachusetts dischargers. That mandate does not

²³ Howarth, R.W. and Marino, R. 2006. Nitrogen as the limiting nutrient for eutrophication in coastal marine ecosystems: Evolving views over the decades. *Limnol. Oceanogr.*, 51:364-376.

constitute a state water quality standard that has been promulgated and then approved by EPA. As such, it is not part of Rhode Island's water quality standards under Federal law, and there is no legal basis, under the "Alaska Rule" (40 CFR 131.21) to apply it in NPDES permits.

Response #F47(b)(i): EPA did not apply RI Gen. Laws §46-12-2(f) in establishing the effluent limit for nitrogen. *See* Response #F44.

Comment #F47(b)(ii): In order to subject a point source to permit requirements based on another state's water quality standards, EPA must demonstrate that the point source's discharge is causing or contributing to a violation of those out-of-state standards.²⁴ As discussed elsewhere in these comments, EPA has not made any showing that the proposed limits in the Draft Permit are needed to prevent violations of Rhode Island water quality standards. The burden is on EPA to show how the proposed limits will lead to attainment of the Rhode Island standards, and EPA has not done this. Therefore, there is no legal basis for those limits.

Response #F47(b)(ii): The discussion of the nitrogen limit in the Fact Sheet (pages 8-14) details the basis for EPA's finding that discharges of nitrogen from UBWPAD's facility are causing or have the reasonable potential to cause violations of Rhode Island's Water Quality Standards. Related and more specific comments and objections from UBWPAD are addressed elsewhere. *See, e.g.,* Response #F6 and #47(a)(1).

There is no need to reach UBWPAD's comment that, absent having determined "reasonable potential," consideration of Rhode Island's water quality standards violates Section 510 of the CWA and the Tenth Amendment of the Constitution. As is detailed above, EPA has satisfied this regulatory threshold. In any event, UBWPAD does not explain how the permit limits in any way restrict Massachusetts' sovereignty or rights over waters in the Commonwealth in contravention of Section 510 of the CWA. In establishing the permit limits in this matter, EPA adhered to the requirements of the CWA and its implementing regulations. These requirements mandate that EPA set effluent limits that ensure compliance with the applicable water quality requirements of all affected states, including downstream affected states. 33 U.S.C. §1341(a)(2); 40 CFR §122.44(d)(4).

Further, to the extent that UBWPAD is challenging the constitutionality of the CWA and/or its implementing regulations, such a challenge is not appropriately raised in these administrative permitting proceedings. *See, e.g., In re: City of Marlborough,*

²⁴ Related legal concerns of the District include whether the imposition of Rhode Island requirements on Massachusetts point source discharges, without the CWA-required demonstration that the point source's discharge is causing or contributing to a (1) violation of those out-of-state standards/requirements: violates Section 510 of the Clean Water Act, 33 U.S.C. § 1370, which prohibits construing any provision of the statute as impairing "any right or jurisdiction of the States with respect to waters (including boundary waters) of such states"; and/or (2) violates the Tenth Amendment of the United States Constitution or invades Massachusetts' sovereignty and, thus, is unconstitutional.

Massachusetts, NPDES Appeal No. 04-1 at n. 19 (EAB March 11, 2005); *In re: City of Port St. Joe and Florida Coast Paper Co.*, 7 EAD 275 at n.58 (July 30, 1997). In any event, UBWPAD does not substantiate any such claim. The Tenth Amendment does not itself limit the power of the federal government, but simply confirms that such power is limited to that provided in the Constitution, *New York v. United States*, 505 U.S. 144, 156-57 (1992). 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).

Comment #F47(b)(iii): Dischargers in Rhode Island, which are much closer to the Bay than is the District's facility, have received TN limits as high as 8 or 10 mg/l and, in some cases, no limit at all. If attenuation is considered (as it must be), an equivalent limit for the District, based on alleged impacts to the Bay, would be much higher than those limits. Yet, without justification, EPA has applied a limit of 5mg/l to the District. In light of RIDEM's actions concerning its own dischargers, EPA's interpretation of the Rhode Island narrative water quality standards is erroneous.

Requiring that Massachusetts plants meet more stringent limits than Rhode Island plants, without a technical justification based on protection of water quality, violates the Commerce Clause of the Constitution to the extent that Rhode Island is attempting to employ the Clean Water Act to secure an unfair economic advantage or benefits for Rhode Island [e.g., by unfairly shifting a disproportionate share of the responsibility and expense of reducing/treating the TN load that may not be necessary or economically feasible].

Response #F47(b)(iii): The predominant sources of the nitrogen loading in the Providence and Seekonk Rivers are municipal wastewater treatment facilities in Rhode Island and Massachusetts. See Response #F6. In administration of the NPDES program, Rhode Island (who administers the NPDES program in that state) and EPA (who administers the program in Massachusetts) have prioritized the most significant point sources of nitrogen to the system. In developing nitrogen limits for these facilities, both Rhode Island and EPA have considered the relative nitrogen loading and location of the discharge of each facility.

The 2004 RIDEM study includes evaluation of various combinations of nitrogen reduction from the significant point sources of nitrogen to the system. These include seven Rhode Island and three Massachusetts wastewater treatment facilities. The Rhode Island facilities include: Woonsocket, NBC Fields Point, NBC Bucklin Point, East Providence, Cranston, Warwick and West Warwick. The Massachusetts facilities include UBWPAD, Attleboro and North Attleborough. (See *Evaluation of Nitrogen Targets and WWTF Load Reductions of the Providence and Seekonk Rivers*, DEM, December 2004). RI DEM has established final nitrogen limits of 5.0 mg/l for Rhode Island facilities with relatively larger design flows that also discharge into areas of the river system experiencing the most significant impairment – NBC Fields Point (65 MGD) and NBC Bucklin Point (31 MGD). RIDEM also issued a nitrogen limit of 5.0 mg/l to Woonsocket; although Woonsocket has a permitted design flow of 16 MGD, it

discharges to the area of the Bay where the greatest impairments have been measured.²⁵ Rhode Island also has issued permits with a nitrogen limit of 8.0 mg/l for four other facilities – East Providence, Cranston, Warwick and West Warwick. These facilities have relatively smaller permitted design flow (and corresponding nitrogen load) – ranging from 8 MGD to 20 MGD – and they discharge further downstream in the Providence River. In Massachusetts, EPA has issued final permits with total nitrogen limits of 8.0 mg/l to Attleboro and North Attleborough. While these two facilities discharge to a freshwater river that flows to areas of the Upper Bay where the greatest impairments have been measured, they also have much smaller permitted flows and corresponding nitrogen loadings than UBWPAD. Attleboro has a design flow of 9 MGD and North Attleborough has a design flow of 5 MGD. There are several smaller facilities in both Rhode Island and Massachusetts and Rhode Island that discharge to freshwater rivers that flow to the Upper Bay. The CWA requires that Rhode Island and EPA assess whether these discharges require water quality based effluent limits, including any limits for nitrogen, in subsequent permit reissuances.

As Massachusetts facilities are not being treated more stringently than Rhode Island facilities, there is no need to reach the commenter's contention that Rhode Island has violated the Commerce Clause of the United States Constitution. Further, to the extent that UBWPAD is challenging the constitutionality of the CWA and/or its implementing regulations, such a challenge is not appropriately raised in these administrative permitting proceedings. *See, e.g., In re: City of Marlborough, Massachusetts*, NPDES Appeal No.04-12 at n.19 (EAB March 11, 2005); *In re: City of Port St. Joe and Florida Coast Paper Co.*, 7 EAD 275 at n.58 (July 30, 1997). In any event, a Commerce Clause claim alleging that one State is attempting to secure an economic advantage over another State should be directed at the allegedly offending State, not the federal government. *See, e.g., City of Philadelphia v. New Jersey*, 437 U.S. 617 (1978). EPA, not Rhode Island, is the permitting authority in this matter.

Comment #F47(b)(iv): Due process violations. Massachusetts facilities, ratepayers, and taxpayers have not had an adequate opportunity to be informed of, and to participate in the Rhode Island rulemaking process for the out-of-state, narrative water quality standards upon which the total nitrogen limits are based. This deprives the District, other Massachusetts POTWs, and their impacted ratepayers of their fundamental rights to public notice, review and comment on such important matters, thus depriving them of due process under the federal and state constitutions.

Response #F47(b)(iv): Section 401(a)(2) of the CWA and 40 CFR § 122.44(d)(4) require EPA to condition NPDES permits in a manner that will ensure compliance with the applicable water quality standards (including narrative criteria) of a “downstream affected state,” in this case Rhode Island. To the extent the comment challenges the constitutionality of this statutory and regulatory framework, it is not appropriately raised

²⁵ In resolution of an appeal of this permit, Woonsocket recently entered into a Consent Agreement that the facility will meet a nitrogen limit of 3.0 mg/l. *See* Consent Agreement, *In re: AAD No. 05-004/WRA* dated June 27, 2008.

as part of these administrative permitting proceedings. *See, e.g., In re: City of Marlborough, Massachusetts*, NPDES Appeal No. 04-12 at n.19 (EAB March 11, 2005); *In re: City of Port St. Joe and Florida Coast Paper Co.*, 7 EAD 275 at n.58 (July 30, 1997).

In any event, the procedures governing this permit issuance satisfy any due process concerns. UBWPAD, co-permittees and members of the public have had the opportunity to participate in these permitting proceedings through the notice and comment process. As part of that process, EPA has received written comments from numerous organizations, public entities and individuals, including substantial comments from UBWPAD, its technical consultants and attorneys. EPA also held a public hearing at which 23 persons provided comment on the draft permit. Accordingly, UBWPAD has had full opportunity to comment on EPA's interpretation and application of the relevant Rhode Island water quality standards.

Moreover, in its comment above, UBWPAD simply raises broad due process concerns without articulating any specific concerns with Rhode Island's narrative nutrient criteria. Indeed, it is difficult to imagine what possible concerns with the criteria UBWPAD could forward. The CWA requires States to adopt water quality criteria sufficient to protect designated and existing uses of each water body. *See* 33 U.S.C. §§1313(a)-(c). *See also* 40 CFR §131.11(a). These criteria may be numeric or narrative. Rhode Island has adopted (and EPA has approved) the following narrative criteria applicable to the nitrogen limit:

“At a minimum, all waters shall be free of pollutants in concentrations or combinations or from anthropogenic activities subject to these regulations that:

- i. Adversely affect the composition of fish and wildlife;
- ii. Adversely affect the physical, chemical, or biological integrity of the habitat;
- iii. Interfere with the propagation of fish and wildlife;
- iv. Adversely alter the life cycle functions, uses, processes and activities of fish and wildlife....” Rule 8.D.(1).

There shall be no nutrients “in such concentration that would impair any usages specifically assigned to said Class, or cause undesirable or nuisance aquatic species associated with cultural eutrophication.” Table 2, Rule 8.D.(3)10; see also Rule 8.D.(1)(d).

Additional relevant regulations include Rule 9.A. and B., which prohibit discharges of pollutants which alone or in combination will likely result in violation of any water quality criterion or interfere with one or more existing or designated uses, and prohibit discharges that will further degrade waters which are already below the applicable water quality standards.

In short, Rhode Island's criteria prohibit discharges of nutrients that would impair or interfere with uses. Nowhere in its comments does UBWPAD challenge that these criteria are somehow flawed, do not appropriately protect uses or otherwise contravene the requirements of Section 303(a)-(c) of the CWA. Nor does UBWPAD offer what possible commentary or concerns it would have raised during the development of such narrative criteria by Rhode Island. The more specific objections UBWPAD has raised elsewhere in its comments relate to EPA's application of these criteria in establishment of the nitrogen effluent limit. And, as is detailed above, UBWPAD and other interested persons have had full opportunity through this permitting proceeding to comment on the Region's interpretation of and application of Rhode Island's narrative criteria.

Comment #F48: Phosphorus. For several reasons (explained below), the Draft Permit's phosphorus limits should be stricken and the determination of such limits should be deferred/postponed to the future completion of a TMDL. The limit set in the existing Permit should remain in effect.

There is no adequate technical and legal basis for imposing the reduced phosphorus limits proposed in the Draft Permit. The new phosphorus limits are based on outdated and irrelevant assessments. The manner in which the modified limits were developed is too simplistic, and does not reflect real world conditions. EPA has erroneously concluded that compliance with the proposed limits will have an affect on the cultural eutrophication of the Blackstone River.

Notwithstanding the extensive upgrades and phosphorus limit adjustments to several plants discharging into the Blackstone River, and the improved water quality associated with or expected from those upgrades and permit adjustments, EPA, without any assessment of the beneficial effect of these upgrades and adjustments for phosphorus, issued a Draft Permit to the District containing phosphorus limits that are significantly more stringent than the limits in its 2001 Permit. As discussed in CDM's technical comments, the phosphorus levels that allegedly led to the water quality conditions described in the Draft Permit's Fact Sheet are not the same conditions that will exist after completion of the ongoing upgrades/improvements, but rather reflect the same loadings that compelled the implementation of the 0.75 mg/l phosphorus limitation. EPA should look to its wasteload allocation studies to determine if there is evidence of cultural eutrophication once the dischargers have complied with the limits in the modified 1999 permits.

The United States Geological Survey (USGS) and the District have undertaken development of hydrologic and water quality models suggested by the EPA's Science Advisory Board and the Watershed Action Plan.²⁶ The USGS is undertaking the hydrologic simulation model in concert with the Rhode Island Water Resources Boards,

²⁶ See EPA-SAB-EPEC-98-001, Evaluation of the Blackstone River Initiative, p. 2; and 2004 Blackstone River Watershed Five-Year Action Plan.

and with the cooperation and sponsorship of the District. The District is undertaking the development of the HSPF water quality model (building on the HSPF quantity model developed by USGS), including additional wet and dry weather sampling, the installation of continuous recording analytical devices and the integration of the extensive volunteer data sets into the program. Significant outputs from the USGS and District models are expected in November/December 2007. Until the release of this modeling information and the associated understanding it should provide with respect to the affect of the various plant upgrades and permit adjustments on the water quality of the Blackstone River, there remains an inadequate and unreliable factual basis for imposing stricter phosphorus limits.

In the absence of a TMDL, EPA appears to rely solely on a purely mechanical application of national guidance that is outdated [namely, the 1986 Quality Criteria of Water, otherwise known as the Gold Book] and has no relation to site specific facts or the environmental impacts of the District's wastewater discharge. The existing limit, which was based on a water quality model previously embraced by the Region, should not be replaced with an unproven, speculative method [the Gold Book] that would necessitate a multi-million dollar renovation.

In addition, EPA considered an incorrect interpretation of the current Massachusetts Surface Water Quality Standards ("WQS") when it set the Draft Permit's phosphorus limit. Consequently, any reliance on the misinterpreted WQS is erroneous as a matter of law.

The Draft Permit Fact Sheet (pg. 3, footnote 1) states that the 1996 version of the Massachusetts WQS is applicable to this Draft Permit as the DEP's January 2007 revisions are not yet approved by EPA. The applicable Massachusetts WQS do not contain a numerical criteria for total phosphorus; instead, a narrative criterion at 314 CMR 4.05(5)(c) provides that nutrients "[s]hall not exceed the site specific limits necessary to control accelerated or cultural eutrophication."

In the Draft Permit's Fact Sheet (pg. 8), EPA asserts that the Commonwealth's WQS, at 314 CMR 4.04, require the imposition of "highest and best practical treatment" for phosphorus for all discharges, not just discharges to lakes and ponds as justification for the increase. This strained interpretation completely ignores the plain meaning of the language in the applicable WQS which states, in relevant part:

(5) Control of Eutrophication. From and after the date 314 CMR 4.00 become effective there shall be no new or increased point source discharge of nutrients, primarily phosphorus and nitrogen, **directly to lakes and pond**. There shall be no new or increased point source discharge to **tributaries of lakes or ponds** that would encourage cultural Eutrophication or the growth of weeds or algae in these lakes or ponds. *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. Activities which result in the non-point source discharge of nutrients **to lakes and ponds** shall be provided with all reasonable best management practices for non-point source control. 314CMR 4.04(5) (emphasis added).

The applicable [1996] Massachusetts regulations relied upon by EPA do not apply to the District given that they are clearly intended to control eutrophication in lakes and ponds and their tributaries, and there is no language to suggest that it was intended to apply to rivers and streams – other than tributaries to lakes and ponds. Critically, the District does not discharge to a lake, pond or tributary to the same.

The DEP has acknowledged that the 1996 regulatory language only applies to lakes, ponds and their tributaries by publishing, in January 2007, new proposed water quality standards, which are not yet adopted and approved by EPA, and which insert new language that states the “resulting provision is *expanded* to ensure that all surface waters, not just lakes and ponds, are protected from excessive nutrients. See DEP, *Summary of Proposed Revisions to 314 CMR 4.00 Water Quality Standards, Appendix, Tab B-4*].

The few publicly-operated POTWs across the country that have been required to meet phosphorus limits of 0.1 mg/l or lower [less than 0.18 percent of the 17,000 POTWs in the nation] are mainly facilities that discharge to lakes or ponds.

Regardless of which version [1996 or 2007] of the Massachusetts Water Quality Standards (314 CMR 4.00) is applied here, the District’s technical experts have shown the 0.75 mg/l phosphorus limit to be appropriate and adequate. The existing QUAL2E model has indicated that at extreme low flow conditions (as compared to seasonal average values) with the existing phosphorus limit of 0.75 mg/l and with 25 percent reduction in sediment phosphorus flux, that chlorophyll *a* levels would be reduced substantially from 66 ug/l to 22 ug/l. The increased seasonal average flow [seasonal chlorophyll *a* was directly used in the Charles River as a measure of cultural eutrophication] would undoubtedly have mitigated algal growth further (e.g., dilution and reduced residence time) resulting in even lower chlorophyll *a* levels.

Response #F48: In the expired permit, EPA established a phosphorus limit of 0.75 mg/l based on a waste load allocation for achieving minimum dissolved oxygen criteria [Blackstone River Watershed Dissolved Oxygen Waste Load Allocation for Massachusetts and Rhode Island (November 1997)]. That permit issuance made clear that the 0.75 mg/l total phosphorus limit was based on meeting dissolved oxygen criteria in the Blackstone River only and did not address eutrophication related impairments in either the Blackstone River or Narragansett Bay. EPA specifically cautioned that future permit limits might include more stringent phosphorus limits if warranted by eutrophication impacts. See Response #F5 for a description of the development of the limit in the expired permit and the Agency’s increased awareness of nutrient-related impairments.

As outlined in the Fact Sheet and as described below, EPA has determined that the discharge of phosphorus allowed under the expired permit causes or has the reasonable potential to cause or contribute to excursions above Massachusetts' narrative water quality criteria for cultural eutrophication. The 0.75 mg/l limit does not ensure that eutrophication related criteria will be met in the Blackstone River. *See* Fact Sheet at pages 8-9 and Response #F9.

Under undisturbed natural conditions, phosphorus concentrations are very low in most aquatic ecosystems. Excessive nutrient levels can result in increases in algae and other primary producers, which may prevent streams from meeting their designated uses. Typically, elevated levels of nutrients such as phosphorus will cause excessive algal and/or plant growth. Phosphorous and other nutrients (*i.e.*, nitrogen) promote the growth of nuisance levels of algae, such as phytoplankton (free floating algae) and periphyton (attached algae), filamentous algae such as moss and pond scum, and rooted aquatic plants, referred to generally as macrophytes.

Noxious aquatic plant growth degrades aesthetic and recreational uses in a variety of ways. Unsightly algal growth is unappealing to swimmers and other stream users and reduces water clarity. Heavy growths of algae on rocks can make streambeds slippery and difficult or dangerous to walk on. Algae and macrophytes can interfere with angling by fouling fishing lures and equipment. Boat propellers and oars may also get tangled by aquatic vegetation. Excessive plant growth can also result in a loss of diversity and other changes in the aquatic plant, invertebrate, and fish community structure and habitat.

Through respiration, and the decomposition of dead plant matter, excessive algae and plant growth can reduce in-stream dissolved oxygen concentrations to levels that could negatively impact aquatic life. During the day, primary producers (*e.g.*, algae, plants) provide oxygen to the water as a by-product of photosynthesis. At night, however, when photosynthesis ceases but respiration continues, dissolved oxygen concentrations decline. Furthermore, as primary producers die, they are decomposed by bacteria that consume oxygen, and large populations of decomposers can consume large amounts of dissolved oxygen. Many aquatic insects, fish, and other organisms become stressed and may even die when dissolved oxygen levels drop below a particular threshold level.

Decomposing plant matter also produces unpleasant sights and strong odors, again negatively impacting recreational and aesthetic uses. Nutrient-laden plant detritus can also settle to bottom of a stream bed. In addition to physically altering the benthic environment and aquatic habitat, organic materials in the sediments can become available for future uptake, further perpetuating and potentially intensifying the eutrophic cycle.

As a Class B water, the Blackstone River has been designated by Massachusetts as a habitat for fish, other aquatic life and wildlife and for primary (*e.g.* swimming) and secondary (*e.g.* fishing and boating) contact recreation. *See* 314 C.M.R. §§ 4.06 (Table 12) and 4.05(3)(b). Such waters must have consistently good aesthetic value and, where designated, must be suitable as a source of public water supply with appropriate

treatment, as well as for irrigation and other agricultural uses. See 314 C.M.R. § 4.05(3)(b). Class B waters must also be free of floating, suspended or settleable solids that are aesthetically objectionable or could impair uses. *Id.* at § 4.05(3)(b)(5). Changes to color or turbidity of the waters that are aesthetically objectionable or use-impairing are also prohibited. *Id.* at § 4.05(3)(b)(6).

Numeric criteria for Class B waters include limits on dissolved oxygen (not less than 5.0 mg/l) and pH (6.5-8.3 s.u. and not more than 0.5 units outside the background range). *Id.* at §§ 4.05(3)(b)(1) and (3). In addition to criteria specific to Class B waters, Massachusetts imposes minimum narrative criteria applicable to all surface waters, including aesthetics (“free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life”), bottom pollutants and alterations (“free from pollutants in concentrations or combinations or from alterations that adversely affect the physical or chemical nature of the bottom, interfere with the propagation of fish or shellfish, or adversely affect populations of non-mobile or sessile benthic organisms.”), and nutrients. See 314 C.M.R. § 4.05(5)(a),(b) and (c). Pursuant to C.M.R. § 4.05(5)(c), Massachusetts water quality standards require that “unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses...” Massachusetts standards do not include a numeric criterion for total phosphorus.²⁷

The Blackstone River is listed on the *Massachusetts Year 2004 Integrated List of Waters* (which incorporates the CWA § 303(d) list) as a water that is impaired (not meeting water quality standards) and requires one or more Total Maximum Daily Loads (TMDLs) to be prepared to reduce pollutant loadings into the River so that it can attain water quality standards. The Blackstone River is listed as impaired for unknown toxicity, priority organics, metals, ammonia, chlorine, nutrients, organic enrichment/low dissolved oxygen (DO), flow alterations and other habitat alterations, pathogens, suspended solids, turbidity, and objectionable deposits.

In the absence of a numeric criterion for phosphorus, EPA looks to nationally recommended criteria, supplemented by other relevant materials, such as EPA technical guidance and information published under Section 304(a) of the CWA, peer-reviewed scientific literature and site-specific surveys and data. See 40 C.F.R. § 122.44(d)(1)(vi)(B). EPA also relies on 40 C.F.R. § 122.44(d)(1)(vi)(A) when interpreting a state narrative criterion and deriving a limit that will achieve uses.

EPA explained in the Fact Sheet that it used a variety of Section 304(a) information and recommended criteria as *guidance* to interpret the States’ narrative criterion for nutrients and not as substitutes for state water quality criteria. See also Response #F10. In addition to the 1986 Quality Criteria of Water (“Gold Book”), EPA also looked to

²⁷ Massachusetts has established site-specific criteria for numerous lakes and ponds pursuant to TMDLs. The criteria range from 0.0051 mg/l to 0.0455mg/l (see 314 C.M.R. 4.06, Table 28).

Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria and the Nutrient Criteria Technical Guidance Manual. In these guidance documents, EPA has set forth total ambient phosphorus concentrations that are sufficiently stringent to control cultural eutrophication and other adverse nutrient-related impacts.

The Region's use of the Gold Book and ecoregional criteria published under Section 304(a) to develop a numeric phosphorus limit sufficiently stringent to achieve the narrative nutrient criterion is expressly contemplated by applicable NPDES regulations. When deriving a numeric limit to implement a narrative water quality criterion, EPA is authorized to:

Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under Section 304(a) of the CWA, supplemented where necessary by other relevant information.

40 C.F.R. § 122.44(d)(1)(vi).

The guidance documents produced by EPA present protective in-stream phosphorus concentrations based on two different analytical approaches. An effects-based approach provides a threshold value above which adverse effects (*i.e.*, water quality impairments) are likely to occur. It applies empirical observations of a causal variable (*i.e.*, phosphorus) and a response variable (*i.e.*, chlorophyll *a*) associated with designated use impairments. Alternatively, reference-based values are statistically derived from a comparison within a population of rivers in the same eco-region class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent conditions in waters in that ecoregion that are minimally impacted by human activities (*i.e.*, reference conditions), and thus by definition representative of water without cultural eutrophication. While reference conditions, which reflect minimally disturbed conditions, will meet the requirements necessary to support designated uses, they may also exceed the water quality necessary to support such requirements.

The Gold Book follows an effects-based approach. It sets forth maximum threshold concentrations that are designed to prevent or control adverse nutrient-related impacts from occurring. Specifically, the Gold Book recommends in-stream phosphorus concentrations of no greater than 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 mg/l within the lake or reservoir. A more recent technical guidance manual, the Nutrient Criteria Technical Guidance Manual: Rivers and Streams (EPA 2000) ("Nutrient Criteria Technical Guidance Manual"), cites to a range of ambient concentrations drawn from the peer-reviewed scientific literature that are sufficiently stringent to control periphyton and plankton (two types of aquatic plant growth commonly associated with eutrophication). This guidance indicates in-stream phosphorus concentrations between 0.01 mg/l and 0.09 mg/l will be sufficient to control periphyton growth and concentrations between 0.035 mg/l and 0.070 mg/l will be sufficient to control plankton (Table 1 shows the range of

literature values cited in the Nutrient Criteria Technical Manual, and Table 2 shows a range of phosphorus criteria established by various states).

While the various recommended values for phosphorus contained in the materials cited above – e.g., 24 ug/l (Ecoregional Nutrient Criteria) to 100 ug/l (Gold Book Criteria) – were not specifically developed by or for Massachusetts, these values do reflect a range of ambient phosphorus concentrations that are sufficiently low to prevent cultural eutrophication. The Region opted for an in-stream phosphorus target approximating the Gold Book value rather than the more stringent Ecoregional criterion. EPA opted for the effects-based approach in this permitting proceeding because it is often more directly associated with an impairment to a designated use (i.e., fishing, swimming). The effects-based approach provides a threshold value above which adverse effects (i.e., water quality impairments) are likely to occur. Reference-based values are statistically derived from a comparison within a population of rivers in the same eco-region class. Specifically, reference conditions presented are based on the 25th percentiles of all nutrient data, including a comparison of reference conditions for the aggregate ecoregion versus subcoregions. *See* Ecoregional Nutrient Criteria at vii. Thus, while reference conditions, which reflect minimally disturbed conditions, may meet the requirements necessary to support designated uses, they may also exceed the water quality necessary to support such uses.

Based on these materials, EPA determined that an ambient phosphorus concentration of 0.1 mg/l would be necessary to control the effects of cultural eutrophication and to ensure compliance with applicable nutrient criteria in Massachusetts. The expired permit has a monthly average limit of **0.75 mg/l** from April 1 to October 31. Effluent data from DMRs for the period January 2004 through December 2006 show a range of 0.9 to 2.4 mg/l of total phosphorus. There is no significant dilution in the receiving stream under 7Q10 conditions. (*See* Att. B to Fact Sheet). Further, UBWPAD is the dominant source of phosphorus loadings to the Blackstone River (*see* Response #F7). With reference to the commenter's suggestion that EPA failed to consider upgrades at other facilities in establishing the limit, the phosphorus limit is necessary to ensure compliance with Massachusetts' water quality standards downstream of the discharge and before other dischargers. *See also* Response #F9 for detail on the data set collected by MassDEP on August 28, 2003.

The phosphorus limit is intended to ensure compliance with and is based on interpretation of the Commonwealth's narrative criterion related to nutrients – not on the provisions in the standards related to “highest and best practicable treatment.” The Commonwealth's 1996 water quality standards include a narrative criterion which provides that nutrients “shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication.” 314 CMR 4.05(5)(c). The antidegradation provisions of Massachusetts' 1996 standards also include a requirement that “any existing point source discharges containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients.” 314 CMR 4.04.

Massachusetts revised its standards in 2007, and EPA approved changes to the narrative nutrient criteria by letter dated September 19, 2007. The 2007 standards include a narrative criterion for nutrients at 314 CMR 4.05(5)(c) which prohibits nutrients in amounts “in concentrations that would cause or contribute to impairment of existing or designated uses,” and addresses the role of TMDLs and site specific criteria. In addition, it includes the nutrient-related provisions for existing point and non-point sources that had previously been in the antidegradation section of the water quality standards at 314 CMR 4.04(5). It specifies that existing point sources of nutrients in concentrations that would cause or contribute to cultural eutrophication shall be provided with “the most appropriate treatment,” which can include certain specified levels of technology (“BAT” and “HBPT” for non-POTWs and POTWs, respectively), and non-point sources are to be provided with “cost effective and reasonable” BMPs. In a letter to EPA dated January 2, 2007, and as reflected in EPA’s September 9, 2007 approval letter, these later provisions do not interpret, modify or supersede the general prohibition against nutrients at levels that would impair uses, but rather inform the regulated community of requirements that will generally be imposed where nutrients are a concern.

The 2007 standards apply to the final permit issuance in this matter. In any event, the applicable narrative criterion in both the 1996 and 2007 version remains the same: there is a general prohibition against nutrient levels that would impair uses. In the Fact Sheet, EPA referenced the “highest and best practicable treatment requirement” (included in the antidegradation provisions of MassDEP’s 1996 standards) because in some other permitting decisions, MassDEP had interpreted the requirement to require an effluent limit of 0.2 mg/l for phosphorus; EPA wished to make clear that such a limit would not ensure compliance with the narrative criterion for nutrients in this matter.

With regard to QUAL2E, as explained in previous responses, in light of changes in the system (i.e., macrophyte growth immediately downstream of the discharge), the model was determined to be an insufficient tool for establishing a limit in the new permit that will ensure attainment of standards. *See* Response #F13. Additionally, the Charles River system is a very different from the Blackstone River in that the lower Charles is more similar to a lake. The in-stream phosphorus target established for the Charles River was 28 ug/l as opposed to 100 ug/l for the Blackstone River. *See* Response #F12.

Comment #F49: Year-Round Disinfection. Since the proposed year-round disinfection condition is based solely on the Rhode Island water quality standards, the same interstate legal and policy issues raised in the District's comments on the proposed nitrogen limits apply here as well. In addition, as discussed in the technical comments and below, and as a matter of law, policy and fairness, the District questions the need to disinfect year-round or at all.

Pursuant to 40 C.F.R. §122.44(d)(i), a water quality-based permit requirement is justified only if it is determined that the discharge will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard. Further, Massachusetts permits must ensure compliance with the applicable water quality requirements of all affected States. 40 C.F.R. §122.4(d). Rhode Island water quality

standards governing fecal coliform are designed to protect bathing waters from bacterial contamination. There is no evidence, however, that the District's discharge adversely affects water quality in Rhode Island during the non-swimming season. In fact, there are no designated bathing waters on the Blackstone River in Rhode Island. In the absence of evidence that the District's discharge has a reasonable potential to exceed Rhode Island water quality standards, the CWA does not authorize the imposition of water quality-based effluent limits based on those standards.

Further, even if reasonable potential were demonstrated, it is not appropriate to regulate the District's fecal coliform discharges through a year-round disinfection requirement. Rhode Island has adopted water quality standards governing fecal coliform and, in addition, has chosen to impose technology-based requirements in municipal permits that include year-round disinfection. Those technology-based requirements, however, are not water quality standards. As a result, EPA has no authority to impose such requirements on Massachusetts dischargers, even if water quality-based limitations are required to ensure compliance with the Rhode Island water quality standards. EPA has no authority to impose such a requirement on the District's discharge.

Response #F49: The Blackstone River in Rhode Island is designated by the Rhode Island Water Quality Standards as a Class B1 water from the MA/RI border to the Slaters Mill Dam at the confluence with the Seekonk River. Under Rhode Island's Water Quality Standards, Class B1 waters are designated for, among other things, "primary and secondary contact recreational activities."

For fresh waters that are designated for primary contact recreation, Rhode Island's Water Quality Standards specify that fecal coliform bacteria shall not exceed a geometric mean value of 200 MPN/100 ml and that no more than 20% of instream samples shall exceed 500 MPN/100ml. These bacteria criteria apply year round, including during non-bathing season. These are EPA-approved water quality standards (not technology requirements) and are applicable to Massachusetts dischargers to the extent such discharges affect Rhode Island waters.

EPA has determined that in the absence of year round fecal coliform limits, the District's discharge – the dominant point source on the Blackstone River – does have a reasonable potential to cause or contribute to a violation of Rhode Island's fecal coliform criteria. The basis for this determination is detailed in the Fact Sheet and in Response #F25 and includes analysis of water quality sampling.

Please note that we have modified the final limit to account for bacteria die off during the travel time from the point of discharge to the state line. *See* Response #F25.

Comment #F50: Sampling and Monitoring. The District objects to Part 1.A.I (f) of the Draft Permit (one sentence on page 8). This provision infers that the District is required to report the results of all testing regardless of whether or not the results are representative of the activity being monitored or don't conform to EPA test protocols. This provision conflicts or is inconsistent with Part II.C. (Monitoring Requirements; page

6 of 25) which requires that all monitoring results be conducted according to approved test protocols, unless other test procedures have been specified in the permit. The requirements of Part I.A.1 (f) are analogous to requiring drivers of motor vehicles to report their speed every time they look at their speedometer. This provision is burdensome and should be stricken or clarified because it restricts operator flexibility and will increase paperwork, impacting plant performance by taking personnel away from other more important work.

Response # F50: The permittee should report all monitoring performed in accordance with EPA approved methods and monitoring requirements of the permit. *See* 40 CFR Part 122.41 (l)(4)(ii). *See also* Response #F36.

Comment #F51: Environmental Justice. In issuing the Draft Permit, EPA failed to account for disproportionate impacts on minority and low-income populations. The Agency is required to do so under Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations* (February 11, 1994). That Executive Order provides, in part, that the “EPA will . . . review the environmental effects of major Federal actions significantly affecting the quality of the human environment. For such actions, EPA reviewers will focus on the spatial distribution of human health, social and economic effects to ensure that the agency decision makers are aware of the extent to which those impacts fall disproportionately on covered communities.” (Emphasis added). In addition, EPA's website notes that the “EPA's Environmental Justice mandate extends to all of the agency's work, including setting standards, permitting facilities, awarding grants, issuing licenses and regulations in reviewing proposed actions by Federal agencies.” (Emphasis added).

As explained elsewhere in this set of comments, the estimated cost to meet the proposed limits for nutrients approaches \$200 million. The cost for required facility upgrades would be borne by the users. Because the City of Worcester contributes approximately 90% of the flow to the District's POTW, the City's ratepayers are responsible for approximately 90% of the District's costs.

The current upgrade project has resulted in Worcester's sewer rates doubling in the last four years. Sewer rates will necessarily increase to complete the current upgrade project and carry out operation and maintenance activities. The burden of further capital investment and operation and maintenance costs required to meet the proposed permit limits would result in additional rate increases to rate payers.

The median household income in Massachusetts is \$57,000.00. The median household income in Worcester, however, is \$37,000.00. Because half of the households in Worcester make less than \$37,000.00 per year, approximately 30% less than the Massachusetts median, the burden of paying additional sewer rates on Worcester's rate payers is extraordinary.

The Massachusetts Executive Office of Energy and Environmental Affairs (“EOEEA”) has identified a significant portion of the City of Worcester as an Environmental Justice

("EJ") area. Specifically, Mass GIS has prepared maps showing approximately 45% of Worcester consists of EJ Populations. An EJ Population is identified as those segments of the population that EOEEA has determined to be most at risk of being unaware of, or unable to participate in, environmental decision-making or to gain access to state environmental resources. These are neighborhoods (based on US Census Bureau block groups) that meet one or more of the following criteria: (1) median annual household income is at or below 65% of the statewide median income for Massachusetts; or (2) 25% of the residents are minority; or (3) 25% of the residents are foreign born; or (4) 25% of the residents are lacking English language proficiency. (EOEEA Environmental Justice Policy dated October 9, 2002).

The Draft Permit would cause Worcester's EJ Population to bear a disproportionate share of the consequences of an EPA-issued permit. Worcester's EJ Population would bear this extraordinary cost. EPA has not recognized this impact or thought about ways to avoid it. Consequently, the requirements set by the Draft Permit are inconsistent with the EPA's Environmental Justice Policy. In addition, and contrary to the EPA's Environmental Justice Policy, the EPA has failed to allow for meaningful involvement of the EJ Population affected by the Draft Permit. The EPA New England's Environmental Justice Council's Environmental Justice Action Plan for fiscal years 2006 and 2007 (dated December 16, 2005), calls for the issuance of "environmentally significant [NPDES] permits, ensuring community input from potential EJ areas of concern is sought, where appropriate," (EJ Action Plan FY2006-FY2007, page 6 of 31). By failing to ensure community input from Worcester's EJ Population, EPA has ignored its own action plan. Before proceeding further with this permit, EPA needs to assess the social and economic effects on minority and low-income populations that will result from the requirements in the permit, and then review options, for avoiding or minimizing those impacts. That is called for by the Agency's own policies and by fundamental considerations of equity and fairness.

Response #F51: EPA is aware of the Environmental Justice populations in both Massachusetts and Rhode Island that are impacted by UBWPAD's discharge and this permit issuance. *See* Response #F2. A central tenet of Environmental Justice is ensuring that all people can enjoy the same level of water quality and environmental protection. EPA's Environmental Justice webpage (cited above by UBWPAD), explains that the goal of Environmental Justice "will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work." UBWPAD's facility discharges to the Blackstone River in Worcester. The flow travels downstream through Environmental Justice communities in the Worcester area and also in the area of Pawtucket. While we must be mindful of cost impacts to communities in the UBWPAD sewer area, we also have a responsibility to abate impacts to those downstream populations that are adversely impacted by the discharge. Excess levels of nutrients have resulted in impaired water quality and have interfered with such designated uses as swimming and fishing. The nutrient loading reductions in this permit represents a significant reduction and reflects an appropriate and reasonable determination of water quality-based limits necessary to achieve applicable water quality standards in

Massachusetts and Rhode Island. The nitrogen reductions required through this permit will have substantial environmental benefits, including significant reductions in algal growth and associated dissolved oxygen impairments that have severely impaired the marine fish community and recreational use of Narragansett Bay. The phosphorus reductions will also have substantial environmental benefits, including significant reductions in algal growth and associated odors that have severely impaired the aquatic community and recreational uses of the Blackstone River.

EPA cannot evaluate UBWPAD's unsubstantiated cost estimates – which have varied in oral and written comments from \$100 to \$200 million – because the basis for those estimates has not been provided. In addition, as noted above, UBWPAD can conduct an analysis of affordability issues for the purposes of determining whether a designated use cannot be obtained or for obtaining a variance. Should UBWPAD choose to pursue a demonstration that such relief is appropriate, the affordability analysis prepared for the required use attainability analysis (UAA) would include evaluation of the social and economic impacts on the communities in the UBWPAD service area, including the Environmental Justice communities. *See* Response #F2.

EPA further notes that in light of the substantial interest in this permit issuance throughout the Worcester area, EPA held a public hearing at a community college in Worcester and extended the public comment period.

Comment #F52: Sustainability. Any permit limits imposed by EPA should promote basic concepts of sustainability, and should be consistent with the Agency's own sustainability policies and efforts. The requirements of the Draft Permit do not achieve either of these goals.

EPA defines “sustainability” as “balancing a growing economy, protection for the environment, and social responsibility, so they together lead to an improved quality of life for ourselves and future generations.” The Agency further states that “sustainability is the ability to achieve continuing economic prosperity while protecting the natural systems of the planet and providing a high quality of life for its people.”²⁸ To this end, the Agency has published several policy-driven tools to help decision-makers evaluate risks to watersheds and other ecosystems. The Agency's sustainability policy is designed to promote sustainable watershed management through pollution prevention and other strategies, enforce federal clean water and safe drinking water laws, and support sustainable wastewater infrastructure.

Under EPA's policy for Sustainable Infrastructure for Water and Wastewater, EPA sets forth its commitment to promoting sustainable practices that will help to reduce the potential gap between funding needs and spending at the local and national level. The Sustainable Infrastructure Initiative reportedly guides EPA efforts in changing how the nation views, values, manages, and invests in its water and wastewater infrastructure.

²⁸ See <http://www.epa.gov/sustainability/basicinfo.htm#What>.

Under this policy, EPA's "Watershed Approach" encourages the merger of watershed management principles into utility management, so that key decision makers consider watershed-based, cost-effective alternatives alongside the traditional treatment technology investments. For example EPA programs that are focused on wastewater utility management principles include:

Watershed Based NPDES Permitting. This approach, aimed at achieving new efficiencies and environmental results, provides a process for considering all stressors within a hydrologically defined drainage basin or other geographic area, rather than address individual pollutant sources on a discharge-by-discharge basis (EPA 833-B-03-004).²⁹ Managing for Excellence: Utility Management System Initiatives. As part of EPA's overall effort in collaboration with industry to ensure that the Nation's water and wastewater infrastructure is sustainable through more effective utility management, EPA's Office of Water recently profiled eight leading utilities to document and promote sustainable management approaches by utilities including the consideration of life-cycle costing and benefits to ensure decisions regarding projects and programs are evaluated over the lifetime of the project/program. EPA has documented that today's utilities are focusing on environmental performance that positions them as stewards of water and other natural resources with environmental management systems that include holistic water resources management, water conservation, solids and effluent reuse, materials recycling, and energy efficiency. Managing for Excellence: Analysis of Water and Wastewater Utility Management Systems, EPA-W-04-023 (August 2005).

In issuing the Draft Permit, EPA has not taken into account these policy considerations. For example, in order to achieve the proposed permit limits of 5 mg/l total nitrogen and 0.1 mg/l total phosphorus, significant modifications and additions to the current facility under construction would have to be implemented at a capital cost of \$150,000,000 in today's dollars. The increase in operation and maintenance costs to achieve the limits is expected to approach \$3,700,000 per year. Imposition of these costs on the ratepayers will have substantial social and economic effects. While those effects could be justified if there were significant environmental benefits, that is not the case here. The benefits to the receiving waters realized from achieving these limits are uncertain. In addition, as explained below, compliance with these limits would itself result in significant additional sludge production, chemicals use and energy consumption, with resulting increases in greenhouse gas emissions. Viewed from a sustainability perspective, then, the limits in the Draft Permit are not justified.

In order to achieve a total phosphorus limit of 0.1 mg/l [a limit which is currently required at less than 30 of the 17,000 publicly owned treatment works (POTWs) in the nation] and a total nitrogen limit of 5 mg/l for the entire flow reaching the treatment facility, additional aeration tankage would be required, and the tankage currently under construction would have to be modified to implement the modified Bardenpho process. Storage and feed facilities to accommodate the addition of 800 gallons per day of methanol or a similar energy source, would be required for nitrogen removal. (Note,

²⁹ See <http://www.eoa.gov/waterinfrastructure/watershedapproaches.html>

significant care must be taken in the design and operation of this chemical storage facility, since methanol is an explosive substance.) Use of such energy sources will produce additional carbon dioxide (a notorious greenhouse gas); and will reduce the amount of the alternative energy available for other purposes while consuming the parent agricultural material needed as a food supply.

Subsequent to final clarification, the entire flow would have to be pumped to an add-on filtration or high rate settling process to achieve the phosphorus limits. Multipoint chemical addition (likely ferric chloride) would be required at a rate of 8,500 gallons per day. The chemical addition will increase sludge production at the facility by an estimated 35%. The sludge generated by the District is currently thickened, dewatered and incinerated on-site in multiple hearth furnaces. The chemical sludge produced in order to achieve the proposed phosphorus limit will be more difficult to dewater and incinerate. It is likely that the dewatered sludge will have a lower percent solids and it will be more inert due to the high fraction of chemicals in the sludge. Additional energy required to dewater and incinerate the sludge is expected to be significant. Lastly, additional ash will be produced, again due to the inert chemical addition, which will more readily consume the finite ash landfill capacity on the District's property. The combined electrical energy required to achieve these nutrient limits is expected to be on the order of 3,000,000 kW-hr/yr, nearly 20% above current usage, resulting in a commensurate increase in greenhouse gas emissions.

Before requiring any facility to expend this much energy, consume significant amounts of chemicals and generate significantly more sludge to be processed and disposed of, EPA should determine that there are substantial water quality benefits that will result from achieving the proposed limits. In this situation, the opposite is the case: viewed as a whole, achieving these limits would have more detrimental environmental impact than any benefits realized in the receiving waters, EPA should reconsider the requirements in the Draft Permit.

Response #F52: Water infrastructure sustainability is an approach that UBWPAD should most assuredly embrace – not simply in evaluation of treatment to meet the new limits, but also across management and operations of the entire District. These considerations, however, are not part of the statutory and regulatory requirements for **setting** water quality-based effluent limitations. *See Responses #A9 and #F8.*

Through their water quality standards, states determine the level of protection needed for receiving waters. Where EPA (or other permitting authorities) conclude there is a reasonable potential that a discharge will cause or contribute to a violation of the standards, EPA then must set an effluent limit necessary to ensure the standards are met. *See 40 CFR §122.44(d)(1)(i).* Costs and technical considerations are not considered at this point in the process of establishing water quality-based effluent limits. Once these limits are established and set forth in a final permit, however, the regulations include a mechanism to allow relief from meeting the limits where they are demonstrated to be unaffordable. *See Response #F1.*

With regard to watershed permitting approaches and addressing other stressors to the receiving waters, efforts to reduce non-point sources and to address such issues as the impacts of dams will have beneficial effects. That being said, point sources are the dominant source of the nutrient load to the receiving waters and must be reduced in order to achieve water quality standards. See Response #B1, #C1 and #F40 relative to the need for point source controls notwithstanding significant reductions of other sources. In light of the severe existing nitrogen-driven cultural eutrophication in the receiving waters and the tendency for nitrogen to not only exacerbate existing water quality impairments but to persist in the environment in a way that contributes to future water quality problems, it is appropriate to move forward now with permit limits on UBWPAD and other point sources. See also Responses #F6, #F9, #F18A, #F48 and #F51 relative to need for and benefits from nutrient limits.

The Region is very supportive of UBWPAD's efforts to plan and design the most environmentally sustainable treatment processes necessary to meet the new effluent limits, as well as of any efforts to examine sustainability across all operations. The age of infrastructure, and the fact that UBWPAD has only recently undertaken significant upgrades to its facility, present both challenges and opportunities in this regard.

Two key components of our Regional Sustainable Infrastructure Initiative are optimized utility management and energy and water efficiency. A commitment to effective management and energy efficiency by utility leadership is the hallmark of a sustainable, environmentally progressive utility. These efforts should enhance sustainability and reduce the direct and indirect energy footprint no matter what level of treatment is employed.

With regard to utility management, EPA and six national water and wastewater associations are working collaboratively to identify the characteristics of sustainable utilities and to promote effective utility management. EPA and its partners formed a steering committee comprised of leading utility managers from around the country. The committee identified *Ten Attributes of Effectively Managed Utilities; Keys to Management Success* and was pivotal in the production of a primer for water and wastewater utilities titled *Effective Utility Management*, referenced in the comment above. These documents and additional tools and information can be found on EPA's website at <http://www.epa.gov/waterinfrastructure/watereum.html>. These tools seek to promote institutionalization of management systems and other innovative approaches that improve performance across utility operations at reduced cost. They do not, however, guide EPA's establishment of water quality-based effluent limits.

With reference to efficiency, water and energy efficiency are inextricably linked. By employing practices such as water conservation, leak detection, inflow/infiltration correction and the use of green infrastructure to capture and treat storm water, the amount of energy required to provide drinking water and collect and treat wastewater can be significantly diminished. Using a local example, through a leak detection grant program funded through the Drinking Water State Revolving Fund, the City of Holyoke eliminated the leakage of 127 million gallons per year of treated, potable water (and

North Attleboro 118 million gallons). Likewise, the Town of Cohasset recently employed a variety of green infrastructure technologies to the first 0.9 inches of rainfall keeping it out of traditional collection infrastructure.

Through an energy management plan that sets goals for energy efficiency and optimizes the use of renewable sources of energy, the impacts of conventional energy use can be mitigated. A holistic plan could consider equipment choices, HVAC, lighting, vehicle use, methane capture, energy generation from microturbines, wind or solar, and the purchase of energy from renewable sources. To address this issue, EPA New England has produced an energy management workbook to help utilities set measurable energy goals, manage energy issues and reduce consumption. *See also* Response #F8 relative to energy efficiency and opportunities for UBWPAD.

PART G.

Additional comments were received from: New England Plating Co., Inc., Town of Holden, City of Worcester (City Manager), Town of West Boylston, Worcester Regional Chamber of Commerce, City of Worcester (DPW), UBWPAD Board of Directors, Town of Leicester, Pepe & Hazard.

Comment #G1: Several expressed concerns about requiring an expenditure of substantial sums without clear evidence that water quality would improve. Rate payers would be affected without proper modeling (Town of Holden, City of Worcester (City Manager), Town of West Boylston, City of Worcester (DPW), UBWPAD Board of Directors, Town of Leicester).

Response #G1: *See* Responses #F1, #F2, #F4, #F5, #F6, #F9, #F17, #F18 and #F51.

Comment #G2: Several commented that the current upgrades are not considered and the upgrades should be allowed to be completed and results monitored before imposing new permit limits (New England Plating Co., Inc., Town of Holden, City of Worcester (City Manager), Town of West Boylston, City of Worcester (DPW), UBWPAD Board of Directors, Town of Leicester).

Response #G2: *See* Responses #F5, #F6, #F7, and #F9.

Comment #G3: A few commented that no affordability analysis or cost benefit analysis has been completed (Town of Holden, Town of West Boylston, City of Worcester (DPW)).

Response #G3: *See* responses #A9, #F1, #F2, and #F4.

Comment #G4: Several commented that the cost increase will hamper business growth and expansion, economic development, affordable housing and smart growth initiatives (New England Plating Co., Inc., Worcester Regional Chamber of Commerce, City of Worcester (DPW), UBWPAD Board of Directors).

Response #G4: As detailed in previous responses, cost is not an appropriate consideration in the process to establish water quality-based effluent limitations. EPA does, however, have a mechanism to evaluate whether relief is warranted from public entities seeking relief from meeting water quality standard requirements. *See* Response #F1. If UBWPAD seeks to undertake this demonstration, it involves evaluation of financial impacts to the public entity and current socioeconomic conditions of the community.

We know that Worcester has been a leader in encouraging smart growth redevelopment of the urban core, and do not intend to hamper those efforts. We recognize that the cost of wastewater treatment can be a burden for some businesses and residents, but clean water also is an economic asset to the communities in the UBWPAD service area. Boston is a good example of this; although it has been costly to clean up Boston Harbor, the waterfront has turned into an economic engine that is driving business growth and expansion.

Comment #G5: The City of Worcester (DPW) commented that the impact of nutrients is site specific and that dissolved oxygen in the Blackstone River is not low.

Response #G5: *See* Responses #F9, #F10, and #F13. Additionally, the Corps of Engineers data cited in Response #F13 indicated that dissolved oxygen concentrations below the UBWPAD discharge did not meet the water quality standards.

Comment #G6: The City of Worcester (DPW) commented that it is not clear what is causing cultural eutrophication in Narragansett Bay and that the 5.0 mg/l total nitrogen limit is not supported.

Response #G6: *See* Responses #F6 and #F18.

Comment #G7: The City of Worcester (DPW) commented that the need for year round TRC limits is not justified and that there are many other sources of bacteria.

Response #G7: Bacteria criteria are required to be met year round by RIDEM water quality standards, and RI requires its facilities to disinfect year round. We agree that there are many other sources of bacteria and therefore believe it is inappropriate to allow for dilution. However, we believe it is appropriate to base the fecal coliform limits on an assumed die off rate that will occur. *See* Response #F25.

Comment #G8: Several commented that we should wait for the new model and the MassDEP attenuation work (New England Plating Co., Inc., Town of Holden, City of Worcester (City Manager), Town of West Boylston, City of Worcester (DPW), UBWPAD Board of Directors).

Response #G8: *See* Responses #A2, #F5, #F7, and #F17.

Comment #G9: The City of Worcester (DPW) commented that the 7Q10 flow and the design flow do not occur at the same time and we should use minimum average daily plant flow.

Response #G9: Federal regulations, 40 C.F.R. §122.45(b), require that permit limits and conditions be based on the design flow. The 56 MGD flow is the design flow identified in the permit application and represents an annual average value. We note that flows will often be much higher than 56 MGD and at times may be as high as 180 MGD.

Comment #G10: A few commenters raised concerns with the legal and administrative burden of the UBWPAD relative to managing co-permittees and questioned whether the UBWPAD has the authority (Town of Holden, Town of West Boylston, UBWPAD Board of Directors).

Response #G10: See Responses #F3 and #F45.

Comment #G11: The UBWPAD Board of Directors commented that the river model previously used for the dissolved oxygen WLA is the only scientific basis for effluent limits today and the model resulted in limits that were needed to improve conditions and to benefit Narragansett Bay. Further, the UBWPAD will achieve a 40-50% summer reduction of total nitrogen by 2009.

Response G11: See Responses #F2, #F5, #F6, #F9, #F10, #F13, and #F18.

Comment #G12: New England Plating asked "how clean is clean" and that current water quality may be good enough. Does it make sense to regulate to non-detect levels such as is the case for cadmium?

Response #G12: The Clean Water Act requires states to adopt water quality standards that, at a minimum, provide for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, through the establishment of designated uses and criteria to protect those uses. NPDES permits must ensure that discharges do not cause or contribute to violations of applicable state water quality standards. EPA does not have the authority to impose less protective limits except in the narrow circumstances where a variance is justified or the water quality standards are amended. As documented in the Fact Sheet, water quality in both the Blackstone River and Narragansett Bay does not meet state water quality standards and more pollutant reductions are needed.

The cadmium limit is based on the applicable Massachusetts water quality criteria value for protection of aquatic life. The limitation on how low cadmium can be detected is specific to measuring cadmium in waste water. As new analytical methods are developed and approved by EPA the ability to detect lower levels will enhance our ability to ensure that aquatic life are protected.

Comment #G13: Pepe and Hazard commented that there are 33 industrial users and not over 200 as referenced in the Fact Sheet.

Response #G13: There are more than 200 industrial users discharging to municipal sewer systems that send waste to the UBWPAD. Among these, there are 33 industrial users who meet the definition of Significant Industrial User at 40 CFR §403.3(v) and, therefore, must be regulated under the federal Industrial Pretreatment Program.

Comment #G14: Pepe and Hazard commented that since the permit prevents the introduction of pollutants from industrial sources that would pass through the POTW, the nutrients that now pass through the POTW must come from its domestic influent. The draft permit, however, is silent on requiring UBWPAD and the co-permittee communities to develop and implement programs which would reduce, let alone prevent, the introduction and pass through of domestic nutrients to the treatment works.

Response #G14: The federal pretreatment program addresses only non-domestic wastewater, and therefore the permit's requirement related to pass through and interference is appropriately applicable only to industrial users. *See* 40 C.F.R. Part 403.

The permit does not specifically require the permittee or co-permittees to pursue source reduction and EPA does not believe that this alternative alone would result in attainment of the effluent limitations. However, such reductions may be beneficial in decreasing capital cost and operation and maintenance costs of treatment, including reducing energy use, chemical use, and sludge production. We note that these appear to be priority issues for the UBWPAD and as such we expect that source reduction alternatives will be thoroughly evaluated. *See* Response #B1.

Comment #G15: Pepe and Hazard commented that it is inconceivable that waste water treatment facilities dominate the nitrogen load to Narragansett Bay since there are many other sources and no basis is cited for this conclusion. Part C (5) of the permit should include requirements for non-point source controls.

Response #G15: *See* Responses #B1 and #C1.

Comment #G16: Part C(5) currently requires UBWPAD to submit proposals for local law and other changes six months after the new permit is issued and in effect. The issuance of the new permit will trigger UBWPAD's extraordinary expenditure on treatment works improvements. Instead, the Draft Permit should be modified so that UBWPAD should have to comply with the amended requirements of Part C(5) *before* it goes forward with contracting for the capital improvements to treatment technology currently required by the Draft Permit. The Draft Permit should make provision for possible implementation of non-point source and domestic flow controls in lieu of the capital improvements if EPA finds that they would attain the desired reductions in nutrient loading. This would position the Draft Permit to be in better compliance with the objectives of 403.2, would achieve a superior environmental result, and may reduce the need for expensive, additional capital improvements and increase operation and maintenance costs at UBWPAD. These costs are presently proposed to be unfairly borne by the industrial users who do not create the problem discharges. In the case of domestic

flows, the enactment of prohibitions on certain nutrients as a method of pretreatment would be consistent with 40 CFR 403.5.

Pepe and Hazard commented that there is no public documentation of how fees are set and industrial facilities are not responsible for upgrades necessary to address nutrients.

Response #G16: Section C(5) of the permit requires the permittee, within six months of the effective date of the permit, to modify its pretreatment program in order to conform with all changes in the federal requirements related to the federal industrial pretreatment program. This provision has nothing to do with the revised nutrient limits established by the permit. Since industrial sources of nutrients are minor compared to domestic sources, implementation of the requirements in Section C(5) will have little, if any, effect on the capital improvements needed to meet the effluent limitations.

While non-point source controls would be beneficial, they are insufficient for meeting water quality standards. *See Responses #B1, #C1 and #F40.* Similarly, wastewater source reductions alone will not be sufficient to achieve the permit limits. *See Response #B1.*

EPA does not regulate how sewer use fees are established. Documentation of how fees are set should be requested from the UBWPAD and from the member communities.