RESPONSE TO COMMENTS
NPDES PERMIT NO. MA0100633
LOWELL REGIONAL WASTEWATER UTILITY
LOWELL, MASSACHUSETTS

The U.S. Environmental Protection Agency's Region 1 ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") are issuing a Final National Pollutant Discharge Elimination System ("NPDES") Permit to the City of Lowell ("the City" or "Lowell") for the Lowell Regional Wastewater Utility ("LRWU") located in Lowell, Massachusetts. This permit is being issued under the Federal Clean Water Act ("CWA" or "Act"), 33 U.S.C., §§ 1251 *et seq.*, and the Massachusetts Clean Waters Act, M.G.L. Ch. 21, §§ 26-35.

This permit is being jointly issued by EPA and MassDEP. EPA will generally present responses to comments as EPA's and MassDEP's, even where the reference is only to EPA. MassDEP's certification and joint issuance of the permit establishes that MassDEP affirms EPA's response. Accordingly, this document represents the joint determinations of EPA and MassDEP, which are reflected in separately enforceable discharge permits issued under federal and state law.

In accordance with the provisions of 40 C.F.R. §124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit No. MA0100633 ("Draft Permit"). The Response to Comments explains EPA's determinations that form the basis of the Final Permit. From June 7, 2019 through July 23, 2019, EPA and MassDEP (together, the "Agencies") solicited public comments on the Draft Permit.

EPA and MassDEP received comments from:

- Mark A. Young, Executive Director, Lowell Wastewater Utility dated July 22, 2019
- Stephen E. Jahnle, Assistant Director, Town of Chelmsford Department of Public Works dated July 23, 2019
- Town of Tyngsborough Sewer Commission dated July 23, 2019
- Richard Montuori, Town Manager, Town of Tewksbury dated July 23, 2019
- Betsy Reilley, Ph.D., Director, Environmental Quality Department, Massachusetts Water Resources Authority dated July 23, 2019
- Heather McMann, Executive Director, Groundwork Lawrence dated July 23, 2019
- Julia Blatt, Executive Director, Massachusetts Rivers Alliance and Caitlin Peale Sloan, Senior Attorney, Conservation Law Foundation dated July 23, 2019
- Alison Field-Juma, Executive Director, OARS for the Assabet Sudbury & Concord dated July 23, 2019
- Gene Porter, Chair, Lower Merrimack River Local Advisory Committee on July 20, 2019
- Christina Eckert, Co-Executive Director and John Macone, Co-Executive Director, Merrimack River Watershed Council dated July 22, 2019
- Philip D. Guerin, President & Chairman, Massachusetts Coalition for Water Resources Stewardship dated July 22, 2019
- Peter Severance, River Merrimack dated July 22, 2019

EPA received one additional comment letter that arrived on August 26, 2019, over a month after the close of the comment period. This comment letter was untimely, and accordingly, pursuant to EPA's NPDES regulations, it can neither be utilized to establish the commenter's standing, nor preserve any of the specific issues raised in it for review under 40 C.F.R. Part 124 procedures. Nevertheless, EPA, in its discretion, reviewed the letter and concluded that it does not raise any new issues beyond those addressed in Comments and Responses 4, 18, 21, 37 & 39 below.

After a review of the timely-submitted comments, EPA and MassDEP have made a final decision to issue this permit authorizing the discharge. The Final Permit takes the same fundamental approach as the Draft Permit made available for public comment. EPA's decision-making process has benefited from the various comments and additional information submitted and, as an outgrowth of those materials, EPA has made certain revisions to the permit in response. EPA also has supplemented certain analyses supporting the Final Permit, also in response to comments. These improvements and changes are detailed in this document and reflected in the Final Permit. A summary of the changes made in the Final Permit is listed below. The analyses underlying these changes are explained in the responses to individual comments that follow, which are identified after each change where applicable.

A copy of the Final Permit and this response to comments document will be posted on the EPA Region 1 web site: http://www.epa.gov/region1/npdes/permits_listing_ma.html.

A copy of the Final Permit may be also obtained by contacting Meridith Finegan, U.S. EPA, 5 Post Office Square, Suite 100 (Mail Code: 06-1), Boston, MA 02109-3912; Telephone: (617) 918-1533; Email finegan.meridith@epa.gov.

Table of Contents

I. Summary of Changes to the Final Permit

1. The maximum daily limits for $CBOD_5$ and TSS have been removed and replaced with report only requirements in the Final Permit. *See* Response 5.

2. A footnote to Part I.A.1 of the Final Permit has been added to the 85% removal requirements for $CBOD_5$ and TSS indicating that these limits apply only during dry weather, meaning any calendar day on which there is less than 0.1 inches of rain and no snow melt. *See* Response 6.

3. Footnote 1 to Part I.A.1 of the Final Permit has been modified to include flexibility as follows: "Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report." *See* Response 11.

4. Footnote 4 to Part I.A.1 of the Final Permit has been deleted and footnote 3 has been modified for clarification to say: "For reporting an average based on a mix of values detected and not detected, assign a value of "0" for all non-detects for that reporting period and report the average of all the results." *See* Response 12.

5. Footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1 of the Final Permit has been modified to clarify that a bypass of secondary treatment is subject to the requirements of Part II.B.4. (and not just Part II.B.4.c.) of the permit. *See* Response 13.

6. The last sentence of footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1 of the Final Permit has been modified to say: "The Permittee shall not add septage to the waste stream at the treatment plant during activation of the secondary treatment bypass." *See* Responses 14.

7. Footnote 8 to Part I.A.1 of the Final Permit has been modified to remove the requirement to achieve a minimum level of 20 µg/L for total residual chlorine. *See* Response 15.

8. Part I.C.4.k of the Final Permit has been updated to include "to the extent feasible." The Final Permit also requires the following: "If certain information is determined to be infeasible to obtain, a justification must be included along with the map. If EPA disagrees with the assessment, it may require the map to be updated accordingly." *See* Response 20.

9. Part I.F.1 of the Final Permit has been modified to include snow melt as a source of wet weather. *See* Response 24.

10. Part I.F.3.e of the Final Permit has been modified to specify a record retention period of three years from date of the sample measurement, report, or application. *See* Response 31.

11. The total phosphorus compliance schedule in the Final Permit has been modified. *See* Response 32.

12. Part I.H.2 of the Final Permit has been modified to say: "The Permittee shall notify the downstream community water systems listed below of any emergency condition, plant upset, bypass, CSO discharges, SSO discharges or other system failure if any of those occurrences have the potential to affect the quality of the water to be withdrawn for drinking water purposes." *See* Response 33.

13. Footnote 13 to Part I.A.1 of the Final Permit has been modified to allow WET results to be submitted on the "second monthly DMR submittal following completion of the test." *See* Response 47.

14. Part I.B.2 of the Final Permit has been modified to specify that notifications shall remain on the Permittee's website for a minimum of 12 months. *See* Response 48.

15. Part I.B.2 of the Final Permit has been modified to require public notification within 24 hours of *becoming aware* of any unauthorized discharge impacting the surface water or the public. *See* Response 48.

16. Part I.F.3.g of the Final Permit has been modified to remove references to "affected entities" and "affected parties." *See* Response 49.

17. Part I.F.3.f of the Final Permit has been modified to require signage in English, Spanish and Khmer or the addition of a universal wet weather sewage discharge symbol to existing signs. *See* Response 58.

II. Responses to Comments

Comments are reproduced below as received and have not been edited.

A. Comments from Mark A. Young, Executive Director, Lowell Wastewater Utility on July 22, 2019:

Comment 1

Our NPDES permit is the primary regulatory mechanism for the operation, maintenance, and management of Lowell's wastewater transport and treatment system, one of the largest systems in Massachusetts. The permit also regulates four surrounding towns (Chelmsford, Dracut, Tewksbury, and Tyngsborough) that are listed as co-permittees. This permit has profound implications for the communities that we serve, and the environment that we protect. To illustrate the consequences of an inadequate comment period, Lowell has not had an opportunity to consult with our co-permittees regarding this draft permit. As such, Lowell is requesting the permit comment period be extended for sixty days (until September 23, 2019).

In the meantime, we offer our comments on Lowell's draft permit, with the caveat that more time is needed in order to thoroughly review and thoughtfully comment on this permit. During our

initial review of the draft permit, Lowell has identified several areas of concern, including: unnecessary and outdated requirements, inconsistencies with similar NPDES permits, the appropriateness of general water quality standards compliance language, certain permit limits that conflict or compete with Lowell's wet-weather flow treatment goals, the inclusion of a Phosphorous permit limit, and a lack of authorization for the permittee to implement CSO control policy.

Lowell believes that these issues have substantial interest to the public. Therefore, we are requesting a public hearing for this draft permit. Additionally, Lowell proposes a meeting with EPA and MassDEP to discuss our comments and identify a potential path for moving forward with this permit.

In the event that our concerns could be satisfactorily addressed through an agreement that might come out of such a meeting, followed by the issuance of a revised draft permit to reflect such revision, Lowell would likely waive its right to a public hearing.

Response 1

EPA appreciates the comments submitted by the City on the Draft Permit and has addressed the topics referred to in this comment throughout the document. In addition to the required 30-day public comment period pursuant to 40 C.F.R. § 124.10, EPA granted a 15-day extension that provided all stakeholders (including the Co-Permittees) with additional time to review the Draft Permit and submit relevant comments. Therefore, EPA is not further extending the public comment period, given that in its experience 30 days is typically sufficient to submit comments on a draft permit, especially in the context of a permit reissuance, where the permittee is already familiar with facility operations, permit regulations and attendant permit requirements, the vast majority of which remain unchanged from permit to permit. EPA also observes that this permit is long-expired and every reasonable effort should be made to ensure its expeditious reissuance, as contemplated by the Act.

Moreover, the permittee has been on notice that a draft permit was forthcoming even before the notice and comment period commenced. The Agencies met with representatives of the Lowell Regional Wastewater Utility ("LRWU") on multiple occasions to discuss the development of the NPDES Draft Permit and the permit renewal process. Most recently, on May 15, 2019, EPA met with representatives of the LRWU to further discuss the Draft Permit and also shared EPA's goal of finalizing permits within a six month period. This goal is in the FY 2018-2022 U.S. EPA Strategic Plan, and represents one of EPA's highest policy priorities.[1] The City was forewarned that draft permit proceedings were reaching a critical juncture, and it could have taken measures to retain any necessary technical and legal assistance beyond those already available to a municipality of Lowell's size in advance of the public comment period.

[1] FY 2018-2022 U.S EPA Strategic Plan, February 2018 (Updated September 2019), page 46. https://www.epa.gov/sites/production/files/2019-09/documents/fy-2018-2022-epa-strategic-plan.pdf

EPA disagrees that a public hearing is necessary. A public hearing would delay the issuance of these permits, which address issues of significance to human health and the environment, not only to the City but to downstream communities as well. The permit, in addition, is expired, so EPA does not take the prospect of further delay lightly. Additionally, the format of public hearings is not well -suited to clarify the types of complex legal and technical issues associated with this permit decision. The submission of written comments is in EPA's experience a more efficient and effective manner through which to communicate these issues to EPA. Accordingly, for each and all these reasons, the request for a public hearing is denied.

Comment 2

Total Phosphorous Limit (Page 3)

We support protecting the Merrimack River from excessive phosphorous loadings and are taking a proactive approach to accomplish this objective – such as our ongoing facility upgrade that will improve our ability to reduce phosphorous loadings – as well as additional future improvements that may be warranted. However, we have concerns about the phosphorous limit proposed in our permit.

First, we don't understand why EPA has not adopted its "Gold Book" value through notice and comment rulemaking. We believe it is both necessary and appropriate for EPA to provide the public with the safeguards of rulemaking to evaluate the appropriateness of the Gold Book limits along with how those criteria will be implemented.

Rulemaking is particularly warranted given that EPA is imposing the same Gold Book limit on all of the dischargers to the Merrimack River. It is clearly being applied as a binding norm and, therefore, meets the definition of a rule. We also note that in addition to the opportunity for stakeholders to evaluate the appropriateness of the Gold Book criteria in notice and comment rulemaking, such rulemaking brings additional safeguards such as compliance with various Executive Orders and financial impact analyses.

We note that EPA's 2010 Permit Writers' Manual, in Section 6.4, provides guidance on assessing reasonable potential using water quality models. For conservative pollutants, EPA recommends the use of steady-state dilution models; however, for nutrients, EPA instead recommends, "modeling that accounts for biological activity or reaction chemistry."

EPA's dilution-based approach for nutrients, as described in Lowell's draft permit, is inconsistent with EPA's own permitting guidance. Oftentimes, a more appropriate water quality model that considers reactivity is not available; however, Lowell is currently developing a Qual2K reactive model for the Lowell reach of the Merrimack River. Once calibrated, the model's output could be used to predict instream conditions for response variables associated with nutrients, such as dissolved oxygen and algal growth, thus supporting a more accurate evaluation of reasonable potential for the Duck Island discharge to cause or contribute to impairment associated with nutrients.

Accordingly, EPA should:

- As an interim measure, EPA should impose a Total Phosphorous loading limit for Lowell that is based upon our 2.24 mg/L multi-year annual average concentration (from EPA's Fact Sheet) times our 32 MGD design flow.
- Require Lowell to optimize our ongoing Duck Island treatment facility upgrade, and then report to EPA on our facility's phosphorous removal capability. A two-year timeframe is necessary in order for Lowell to complete its current phosphorous reduction improvements and optimize this system.
- Include a reopener in the permit that would incorporate any new limit based upon site-specific data acquired from Qual2K modeling.
- Impose a compliance schedule for any limit based upon the water quality model, consistent with the schedule for same in Lowell's approved CWA Section 402(s) Integrated Plan.

Response 2

Prior to offering specific responses to the City's comments, EPA observes that its overall approaches to establishing both phosphorus and nitrogen effluent limitations in NPDES permits have been extensively adjudicated over the past fifteen years, and they have been found to be reasonable and upheld by both the Environmental Appeals Board and the United States Court of Appeals for the First Circuit. Petitions for *certiorari* have twice been denied by the United States Supreme Court for Region 1 nutrient permitting (total phosphorus and total nitrogen) decisions under 40 C.F.R. §122.44(d)(1)(vi) in recent years. Arguments similar if not substantively identical to the ones relating to the use of the Gold Book as relevant information in setting phosphorus effluent limitations, as well as those raised below concerning 7Q10 and use of dilution, seasonal averaging periods, permit delay based on development of new models or TMDLs, and others, have been addressed and have been decided in EPA's favor. *See e.g., Upper Blackstone Water Pollution Abatement Dist. v. U.S. Envtl. Prot. Agency*, 690 F.3d 9 (1st Cir. 2012), cert. denied, 133 S. Ct. 2382 (2013); *City of Taunton v. U.S. Envtl. Prot. Agency,* 895 F.3d 120 (1st Cir. 2018), cert. denied, 139 U.S. 1240 (2019). Should the City wish to review these decisions, they are available here:

City of Taunton v. EPA (EAB and First Circuit)

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/0A045314B61E682785257FA80054E600/$File/Denying%20Review%20Vol-17.pdf

- https://yosemite.epa.gov/oa/eab_web_docket.nsf/A568248B44D1C63785258053005AEDD0/$File/Opinion%207.9.2018%20(46%20pages).pdf

  Upper Blackstone Water Pollution Abatement Dist. v. EPA (EAB and First Circuit)

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/A44361EC4C211B0685257865006EA1EC/$File/Upper%20Blackstone.pdf

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/2D0D249E441A18F185257B6600725F04/$File/October%2018%202017.pdf

In re Town of Newmarket Wastewater Treatment Plant

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/97CCD304C9B7E58585257C3500799108/$File/Newmarket%20Decision%20Vol%2016.pdf

In re City of Attleboro MA Wastewater Treatment Plant

- https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/D506EBEE22A1035E8525763300499A78/$File/Attleboro.pdf

EPA is both confident in and committed to the overarching decision-making framework for nutrient permitting established by these precedents: administrative and judicial bodies have expressly found EPA's approach to be reasonable under the Act and, for its part, EPA has found the approach in its experience to be workable, expeditious, as well as demonstrably effective in addressing nutrient pollution, in a manner that is neither overly stringent, nor overly lax. While drawing on information from the scientific literature and national and regional EPA guidance, EPA also accounts for site-specific facts and circumstances surrounding the discharge and receiving waters in arriving at the permit result. EPA acknowledges that there are a range of alternative technical approaches and opinions when permitting for nutrients to ensure that uses for the waters designated by the Commonwealth for its citizens are achieved; while some of these may have merit, EPA's existing approach has been proven to have merit. EPA, accordingly, has discerned no persuasive reason to abandon the protective approach that has been adopted in the Draft Permit, and that has proven effective in other permitting initiatives, for the *far* less stringent and unproven one proffered by the City.

The commenter questions the use of the Gold Book in setting phosphorus limits. As stated in the Fact Sheet (at 23), the Massachusetts Water Quality Standards (MA WQS) contain a narrative criterion for phosphorus. *See* 314 CMR 4.05(5)(c). Until the State adopts numeric criteria, EPA must derive phosphorus limits that are protective of the State's narrative water quality standards.

In the course of deriving protective phosphorus effluent limits that meet the narrative phosphorus criterion, the Region looked to a variety of sources, including the Gold Book, Ecoregional Nutrient Criteria (*Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV (*EPA December 2000) and Nutrient Criteria Guidance (*Nutrient Criteria Technical Guidance Manual: Rivers and Streams, July 2000)*. These

constitute information published under CWA §304(a) and were used as *guidance* to interpret the State's narrative criterion for nutrients and not as substitutes for state water quality criteria. The Region's use of the Gold Book and other relevant materials published under Section 304(a) to develop a numeric phosphorus limit sufficiently stringent to achieve the narrative nutrient criterion is consistent with applicable NPDES regulations. The Gold Book does not contain a phosphorus criterion, but instead, as the commenter is aware, presents a "rationale to support such a criterion." Gold Book at 240. EPA's guidance document recommends in-stream phosphorus concentrations of 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.[2] When deriving a numeric limit to implement a narrative water quality criterion, EPA is authorized under 40 C.F.R. §122.44(d)(1)(vi)(B) 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." EPA also relied on 40 C.F.R. §122.44(d)(1)(vi)(A) in arriving at its determination. This provision similarly entails derivation of an instream target based on relevant information that will protect designated uses.

NPDES permit proceedings are informal adjudications, and may result in the imposition of limitations, conditions and other requirements on a discharge prior to authorizing that discharge. The imposition of conditions in a permit pursuant to the Act and implementing regulations, of course, does not amount to a rulemaking. While it is certainly true that EPA has over a period of years endeavored to utilize its experience and technical expertise to fashion a consistent technical approach to implement the Commonwealth's narrative water quality standard for nutrients, under the authority of *existing* regulations governing the translation of narrative water quality criteria, it is also a fact that this approach has been applied, as here, on a permit-specific basis: EPA's determination here does not bind the public generally and does not bind EPA in future permitting actions. Those actions will be based on the best information reasonably available in the administrative record at the time. EPA's permit-specific decisions, conducted under the rubric of 40 C.F.R. § 122.44(d), take into account, *indeed turn on*, site-specific information relating to the discharge and receiving water, and other relevant facts and circumstances. Thus, the phosphorus limitation was derived from the Act and existing regulations using relevant information in the course of translating the Commonwealth's narrative nutrient water quality criterion.

The City suggests the use of water quality modeling that accounts for biological activity and/or reaction chemistry. While EPA is open to considering this information, the City acknowledges that such a model is not available for use at the time of permitting. Congress intended for EPA to revisit and reissue NPDES permits at regular intervals, which is why permit terms are not to exceed five years. As EPA has noted, this permit is long expired, and EPA is in the process of clearing a very substantial permit backlog. Additionally, the types of impacts to human health and the environment resulting from the discharge here, including phosphorus and CSOs, are extremely significant from the

[2] The issue of whether Lowell discharges into a river or an impoundment/reservoir was raised by a commenter is a difficult one; it is addressed in Comment 97.

standpoint of human health and the environment, and directly and adversely impact members of the public, including the City's own citizens who recreate and otherwise utilize the Merrimack River.[3]

The administrative record establishes that the discharge has the reasonable potential to cause or to contribute to violations of the Commonwealth's narrative water quality standard for nutrients in Merrimack River. EPA appreciates that the City "supports protecting the Merrimack River from excessive phosphorous loadings," but this assertion is *not* consistent with the City's proposal for EPA to *indefinitely* forestall permit issuance pending development of a water quality model, whose completion date the City does not commit to and whose results obviously are unknown. Under law, EPA cannot fail to include a permit effluent limitation that it has determined to be necessary under Section 301, as that provision of the Act and implementing regulations requires, among other things, EPA to include limits in permits necessary to assure compliance with water quality standards. The commenter's proposals of either including an interim limit based on an arbitrary long-term average performance (since the facility has not in the past been subject to any nutrient controls) or based on technological capabilities associated with the plant upgrade are not considerations based in water quality and have no purchase under Section 301 from the standpoint of *establishing* water quality-based effluent limitations.

All of these factors counsel in favor of reasonably expeditious permit issuance, rather than waiting on the hope or expectation that more or better science will develop, while water quality degradation persists and potentially intensifies. Therefore, EPA has acted upon all available information and has concluded that the steady-state model applying the Gold Book guidance, as informed by other information in the administrative record, is a reasonable basis for the permit limit at this time. Should the permittee complete the model, it may submit that information to EPA as a permit modification and EPA will adjust the limit up or down, as warranted.

Comment 3

Total Phosphorous Limit (Page 3)

We disagree with the dilution-based approach that EPA utilizes to justify the inclusion of a phosphorous limit in Lowell's draft permit. In addition, Lowell has several other concerns with the phosphorous limit in our draft permit, as follows:

- Most permitting agencies base loading limits for conservative pollutants, such as metals, on the facility's design flow. EPA's approach, which uses the lowest monthly average, is overly conservative, given that nutrient impacts tend to be long-term, as opposed to the potentially acute impacts associated with conservative (metal) pollutants.

[3] *See e..g.*, https://www.nytimes.com/2015/10/01/us/toxic-algae-outbreak-overwhelms-a-polluted-ohio-river.html?searchResultPosition=3; https://www.nytimes.com/2017/07/07/nyregion/beware-the-blooms-toxic-algae-found-in-some-city-ponds.html?searchResultPosition=1; https://www.nytimes.com/2019/08/12/us/blue-green-algae-dogs.html?searchResultPosition=2.

- EPA's approach of developing limits based upon the plants' lowest monthly average flows is grossly unfair to CSO systems because it discounts the wet weather flows that we must treat.
- CSO systems like Lowell's should be given an additional loading based on the phosphorous loadings in their CSO discharges. As CSOs are reduced, these loadings should be shifted to the POTW. Another approach would be to exclude from the annual average calculation our concentration/loadings on any day when our treatment facility flows exceed 32 MGD. This is particularly appropriate given that EPA is using the 7Q10 rather than a longer term flow value to establish this twelve month rolling average limit.
- For these reasons, we believe that the mass calculation for a phosphorous loading limit in the permit is incorrect. The permit would give us 276 pounds of phosphorous per day using the lowest monthly average effluent flow. We think the correct approach is to base our loading on our design flow (32 MGD). That approach would give us 288 pounds per day.
- We also believe that EPA should give us a revised allocation that reflects the anticipated instream reductions that will result from the upstream facilities' reducing their phosphorous loadings.
- It is clearly erroneous to base our annual average total phosphorous limit on a 7Q10 river flow value. The 7Q10 condition occurs 1-3 percent of the time, so it is logically untenable to apply that flow as the basis for an annual average limit. While acknowledging MassDEP's regulations specify the use of the 7Q10 for aquatic life criteria, the narrative criteria for nutrients are related to "nuisance conditions", as opposed to acute impacts on fish and aquatic life. Therefore, within the existing regulations, there is flexibility in determining appropriate hydrologic conditions for establishing nutrient limits. We also note that the Permit Writers' Manual, in Section 6.1, suggests that states adopt seasonal or annual averaging periods for nutrients, as opposed to conditions set out for toxic pollutants. For these reasons, we believe that the harmonic mean or annual average flow is a more appropriate basis for characterizing stream flow in a reasonable potential analysis.

Response 3

The limit as calculated is appropriate given EPA's knowledge of currently prevailing background conditions, the uncertainty of accurately projecting the extent of reduced background concentrations in the near-term, and the reasonable potential for the discharge to violate water quality standards downstream. The waters downstream of this discharge have been listed by the Commonwealth as impaired for phosphorus on its 303(d) list. It is prudent to adopt a reasonably conservative, or protective, approach in aquatic systems at risk of cultural eutrophication. In order for a river to be restored to health, the eutrophic cycle must be broken by limiting the amount of excessive phosphorus available for uptake by aquatic plants and to allow whatever existing phosphorus has accumulated in the sediments in the past to gradually flush out of the system over time. Once the cycle is underway, it is much more difficult and costly to restore designated uses in the receiving waters. Thus, from a pollution management standpoint, a preventative approach makes sense in the context of nutrient permitting. This is particularly important since Lowell discharges upstream of a segment whose hydrology has been altered. This approach is entirely consistent with EPA's nutrient technical guidance, as well as case law in the First Circuit.

EPA has an obligation under the Act to establish effluent limits in an NPDES permit necessary to achieve water quality standards. As discussed in the Fact Sheet, the implementing regulation at 40 C.F.R. § 122.44(d)(1)(i) states that, "Limitations must control all pollutants or pollutant parameters which may be discharged at a level which will cause, have reasonable potential to cause or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." EPA uses the design flow of a treatment plant as well as the 7Q10 low flow of the receiving water to calculate concentration-based effluent limits. In determining water quality-based effluent limits for an individual permit, EPA reviews water quality standards, characterizes the effluent and the receiving water, then determines the need for a water quality-based limit using a reasonable potential analysis.

The City suggests that the use of the design flow would be more appropriate than the lowest monthly average flow in calculating the mass-based phosphorus limit. While the phosphorus limit in the Draft Permit is a concentration-based limit based on design flow, EPA also presented an alternative approach applying a mass-based limit in the Fact Sheet (at 26-27) based on the lowest monthly average flow. As described in the Fact Sheet, the mass-based approach is based on a critical condition of 7Q10 low flow and the lowest monthly average flow from the WWTF. This critical condition would result in the lowest downstream flow that would provide the lowest available dilution for the allowable load and still protect water quality standards. In other words, if the mass-based limit were 288 lb/day based on design flow (4% higher than the 276 lb/day based on the lowest monthly average flow) then water quality standards could be violated under these critical conditions. If the discharge of 288 lb/day occurred at the lowest monthly average flow during 7Q10 conditions, the resulting downstream concentration would be 103 µg/L (> 100 µg/L). Therefore, in order to protect water quality standards under the critical condition allowed in the permit, the mass-based limit must be based on the lowest average monthly flow. EPA notes that, given the dilution available, there is only a 4% difference between the limits based on the lowest monthly average flow and the design flow. However, EPA notes that the Final Permit contains a concentration-based limit using the facility's design flow and not a mass-based limit using the lowest monthly average flow, as described below.

The City asserts that under high flow conditions (> 32 MGD), the mass-based limit may be overly stringent as the facility attempts to minimize CSO discharges. EPA notes that the limit is a monthly average limit based on weekly monitoring, so any sampling done under conditions above 32 MGD would only partially impact the resulting monthly average. However, EPA understands the concern related to high flow events and has determined that the concentration-based limit of 1.08 mg/L would be appropriate in light of this consideration. Under this limit, as flows increase to 32 MGD the allowable mass would increase proportionally to approximately 288 lb/day. Therefore, the Final Permit maintains the concentration-based limit from the Draft Permit.

The City requests that EPA account for potential future reductions in phosphorus from upstream dischargers. EPA notes that the permit limit is based on ambient data from

2018, which is reflective of any recent upstream load reductions. While upstream loads of phosphorus may be reduced over time, the magnitude, timing and impact of those reductions are unclear. It is inequitable for the City to ask members of the public who recreate on these and downstream waters to bear the risk of this uncertainty, or to shift the responsibility for protecting these waters to upstream communities. While *permitted or regulatorily planned* upstream reductions might well be a sound basis on which to analyze downstream permit limits, to base a permit limit on potential or merely "anticipated" future reductions is sheer conjecture. The fact that permits are to be issued at five-year intervals, and EPA's commitment to reducing the permit backlog by timely reissuance, will allow water quality conditions to be assessed at relatively short intervals and limits adjusted as necessary.

Crediting Lowell for any reductions in CSO flow with an additional phosphorus allocation would not be consistent with Section 301 under the circumstances here, especially given the nature of nutrient pollution and the reasonably protective approach EPA is required to take when confronted with nutrient impaired waters, or those at risk of impairment. Unlike CSO phosphorus loading, POTW phosphorus loading is continuous and less dilute, and will occur not only during wet weather, when there may be some buffering capacity in the receiving waters, but also during critical low flow conditions, when those waters are most stressed. In other words, the City's efforts to reduce the adverse water quality impacts of one of its discharges does not give its license to then exacerbate an ongoing water quality exceedance caused by another.

Finally, the City suggests that the use of the 7Q10 flow is inappropriate as the basis of an annual average phosphorus limit. First, EPA notes that the commenter mistakenly references the phosphorus limit as an annual average limit. Rather, the limit is a *monthly* average limit applied from April through October. Second, the Gold Book values are clearly referenced as values not to be exceeded at any time, not annual averages. Therefore, it is appropriate to apply the recommended values to the 7Q10 flow as a critical condition. For comparison, the ecoregional value (31.25 µg/L) represents average values during the critical growing season. If EPA were to use a seasonal or annual averaging period and the associated harmonic mean flow, the ecoregional value would be a more appropriate in-stream target concentration. Given the upstream median concentration of 41.6 µg/L, this approach would likely result in more stringent effluent limits. Moreover, as the City fully acknowledges, MA WQS are *required* to be met under 7Q10 conditions, and EPA therefore used the 7Q10 flow for the purposes of deriving the limit.

There is good reason for this in the context of nutrient permitting, which can, contrary to the commenter's assertion, result in adverse short-term impacts on receiving water quality and aquatic life, including low DO, in addition to recreational and other designated uses. During the growing season, when light and temperature are optimal for plant growth and the receiving water is subject to elevated nutrient concentrations, aquatic plant biomass growth can proliferate in relatively short periods of time. A permit limit based on 0.1 mg/L and calculated using seasonal or annual flows would have the potential to allow periods of excessive loading of nutrients during and around critical low

flow conditions while still meeting the overall limit. The resulting biomass from any plant growth would violate water quality standards and have the potential to settle into the sediments and contribute to future water quality violations. It is imperative, therefore, to ensure that phosphorus effluent discharges from the facility and the resulting ambient phosphorus concentrations are maintained at consistently low levels. A phosphorus effluent limit that assumes worst case hydrological conditions will accomplish the objective of maintaining consistently low phosphorus in-stream concentrations.

In terms of compliance, EPA imposes the limit as a monthly average, as explained. Not only is imposition of a 30-day average limit consistent with federal regulations governing the NPDES programs, such an averaging period will again reasonably minimize (when compared to a seasonal average limit) the amount of time that phosphorus effluent concentrations from the facility can cause an instream exceedance of 0.1 mg/L and still comply with the limit.[4] This approach maintains consistently low phosphorus effluent concentrations, as well as minimizes overall phosphorus loading into the system, which is important in impaired waters, like the receiving water here, and where there may be some potential for the existing sediment phosphorus deposits to recycle in the water column. A conservative approach is appropriate and consistent with EPA's obligation to ensure compliance with water quality standards. EPA does not foreclose the imposition of limits based on seasonal or annual flows in all instances, so long as such limits are sufficiently low to ensure compliance with water quality standards. Based on EPA's review of protective seasonally-based ambient phosphorus values that were available in EPA's Nutrient Technical Guidance Manual and the peer-reviewed literature, it is clear that the City proposals would not be sufficiently stringent to meet this test.

In sum, EPA does not believe a 0.1 mg/L target that is calculated using seasonal or annual average flows would be sufficiently protective to *ensure* the discharge complies with applicable water quality standards, as it is required to under the Act.

Comment 4

Effluent Flow Limit (Page 3)

The effluent flow limit must be removed from the permit. It is completely unnecessary to protect public health or the environment. The concentration and/or mass limits do that. There is no circumstance where a flow limit is necessary. Because of this reality, most states (and their EPA Regional Offices) do not impose flow limits (certainly not on CSO facilities). We note that EPA Headquarters and Region 3 do not impose a flow limit for the District of Columbia's Blue Plains treatment facility. Thus, it is clear that NPDES permits can legally and technically be issued without flow limits.

Moreover, flow limits are counterproductive for CSO facilities because such limits conflict with the technology-based requirement of the Nine Minimum Controls to maximize flow (not comply with an unnecessary flow limit) through the treatment facility. Why would we ever impose a

[4] *See* 40 C.F.R. § 122.45(d)(2) ("For continuous discharges all permit effluent limitations, standards and prohibitions, including those necessary to achieve water quality standards, shall unless impracticable be stated as average weekly and average monthly discharge limitations for POTWs.").

restriction on how much flow we can take through the treatment facility? Accordingly, a flow limit will cause us to reduce wet weather flows to the Duck Island facility so that we don't exceed a permitted flow limit. This is not a hypothetical concern – we have exceeded the flow limit in two of last five years.

We thought EPA understood this reality and the unintended consequences from our flow limit when EPA agreed to impose interim "monitor only' limits for flow in our 2010 administrative order (Order Docket 010-026; 9/30/10). We anticipated that the "monitor only" approach would be carried over into this draft permit. We continue to believe that is the correct approach. This is not an issue involving faulty operation of our facility, but rather of conflicting permitting provisions that must be resolved.

We also note that concerns about inflow and infiltration are misplaced in terms of an attempt to justify inclusion of a flow limit. As a CSO community, Lowell's long-term control plan will address any cost-effective opportunities to remove excessive inflow and infiltration. A flow limit is far too removed from that planning and will, in effect, limit Lowell's ability to cost-effectively comply with the CSO Policy because such a limit restricts Lowell's use of its treatment facility capacity to manage peak wet weather flows. This will make Lowell's CSO control program unnecessarily more expensive and will result in greater untreated sewer overflows.

We also question EPA's legal authority to limit the flow that can be discharged from a POTW. In one of the most significant Clean Water Act decisions in the last thirty years, the U.S. District Court for the Eastern District of Virginia issued an opinion holding that EPA lacks authority under the Clean Water Act to regulate flow in a TMDL. Fairfax County and the Virginia Department of Transportation (VDOT) appealed a TMDL issued by EPA establishing flow limits for Accotink Creek in Northern Virginia. The flow limits were intended to reduce the amount of sediment in the creek. Fairfax and VDOT successfully argued that the Clean Water Act clearly denies EPA the authority to regulate flow, even as a surrogate for a pollutant such as sediment.

United States District Court Judge Liam O'Grady conducted an analysis under Chevron Step 1, concluding that, under the plain language of the statute, EPA unambiguously does not have authority to establish TMDLs for non-pollutants, such as flow, as surrogates for pollutants. The court invalidated any interpretation of EPA's regulations that would allow the agency to regulate non-pollutants such as flow. The decision went on to find that, even with the deference that would be accorded to EPA in a Chevron Step 2 analysis, EPA's interpretation of the Clean Water Act to allow the regulation of flow would be an impermissible construction of the statute [Virginia Department of Transportation et al v. United States Environmental Protection Agency et al., case number 1:12-cv-00775].

While we feel strongly that there should be no flow limit whatsoever – because it provides no environmental protection (keep in mind that the vast majority of POTW permits in the country do not include flow limits) – if EPA were to insist on a flow limit, it should at least be set at a level that won't prevent our maximization of wet weather flows.
For example, rather than using our long-term average flow of 32 MGD, the permit limit could be based on a higher, peak flow value or simply allow us to exclude from the calculation any flows

greater than 32 MGD that occur in response to wet weather events. Nevertheless, Lowell retains the right to challenge the inclusion of even such modified flow limits.

Unless the flow limits are removed, Lowell will either have to challenge the permit in order to be able to continue to maximize wet weather flow through the treatment facility, or we will have to modify our high flow management plan to ensure that we throttle back flows at the treatment facility in order to ensure compliance with the flow limit.

Finally, we note that flow is not a pollutant under Massachusetts law either [see 314 CMR 3.19].

Response 4

EPA Region 1 has included limits on the wastewater effluent flow from POTWs, based on the design capacity of the facility, throughout Massachusetts (96 facilities since 1984, 13 of which include CSOs, including the 2005 NPDES Permit issued to Lowell) and increasingly in New Hampshire (13 facilities since 2005). Moreover, States and other EPA Regions have issued over 3750 NPDES permits (92 facilities with CSOs) to POTWs with similar limits in other parts of the country.

The inclusion of a wastewater effluent flow limit in the Lowell Regional Wastewater Utility permit is authorized by the CWA § 402(a)(2), which provides that "[t]he Administrator shall prescribe conditions for such permits to assure compliance with the requirements of" CWA § 402(a)(1) – including, by reference, CWA § 301 – "and such other requirements as [she] deems appropriate." As discussed below, the Lowell wastewater effluent flow limit is an appropriate "operation and maintenance" requirement that assures compliance with the technology and water quality-based effluent limitations required by CWA § 301 and is "appropriate" pursuant to CWA § 402(a)(2).

40 C.F.R. §§ 122.41(d) and (e) require the permittee to (1) "take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment," and (2) "at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit." The design capacity-based wastewater effluent flow limit is authorized by section 402(a)(2) and appropriate in order to assure that Lowell operates its facility to comply with its permit's technology- and water quality-based effluent limitations.

As stated in the Fact Sheet, using a facility's design flow in the derivation of pollutant effluent limitations, including conditions to limit wastewater effluent flow, is fully consistent with, and anticipated by NPDES permit regulations. 40 C.F.R. § 122.45(b)(1) provides, "permit effluent limitations…shall be calculated based on design flow." POTW permit applications are required to include the design flow of the treatment facility. Id. § 122.21(j)(1)(vi).

The City unfairly contends that EPA sought to limit wastewater effluent flow from the facility on the basis that flow, or quantity of water, was a "pollutant" whose discharge could be regulated under the Act. This is not the case. Establishing water quality-based

effluent limitations that are sufficiently protective to meet in-stream water quality criteria requires EPA to account for both *wastewater effluent* and receiving water flows, as EPA explained in the Fact Sheet. Conditions imposed by EPA to limit wastewater effluent flows from the facility for the permit term are designed to assure that the facility's pollutant discharges do not result in excursions above in-stream water quality criteria, in accordance with section 301(b)(1)(C) of the Act and implementing regulations. 40 C.F.R. §§ 122.4(d), 122.44(d)(1), 122.44(d)(1)(vii)(A), 122.44(d)(5). Most trenchantly, 40 C.F.R. § 122.4(d) prohibits issuance of an NPDES permit "[w]hen the imposition of conditions cannot ensure [emphasis added] compliance with the applicable water quality requirements of all affected States." Section 122.44(d)(1) is similarly broad in scope and obligates the Region to include in NPDES permits "any requirements…necessary to: (1) Achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality." "Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma*, 503 U.S. 91, 105 (1992). Under CWA section 402, EPA may issue NPDES permits "for the discharge of any pollutant, or combination of pollutants" if the permit conditions assure that the discharge complies with certain requirements, including those of section 301 of the CWA. The Act defines "pollutant" to mean, inter alia, "municipal . . . waste[]" and "sewage…discharged into water." CWA § 502(6). EPA has implemented Sections 301(b)(1)(C) and 402 of the Act through numerous regulations, which specify when the Region must include specific permit conditions, water quality-based effluent limitations or other requirements in NPDES permits. The wastewater effluent flow limit is a condition designed to ensure that WQS will be met. More specifically, EPA based both its reasonable potential calculations and its permit effluent limitations for individual pollutants on a presumed maximum wastewater effluent discharge from the facility. EPA's reasonable potential regulations require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," 40 C.F.R. § 122.44(d)(1)(ii), which is a function of both the wastewater effluent flow and receiving water flow. EPA guidance directs that this reasonable potential analysis be based on critical conditions. EPA, accordingly, is authorized to carry out its reasonable potential analysis by presuming that a plant is operating at its design flow during critical instream conditions (*i.e.*, 7Q10) when assessing reasonable potential.[5]

The commenter's citation to *Virginia Department of Transportation* is not relevant to this proceeding. That case concerned EPA's approval of TMDLs under Section 303 of the Act, not the development of reasonable effluent limitations under separate and distinct authority governing the NPDES permitting process—Sections 301, 402 and implementing regulations.

EPA guidance for the Nine Minimum Controls ("NMCs") states that the fourth minimum control, maximizing flow to the POTW, "requires particular attention to regulatory

[5] USEPA, 2010, National Pollutant Discharge Elimination System (NPDES) Permit Writers' Manual, EPA-833-K-10-001, p. 6-17

considerations as well as treatment and capacity considerations. Although many POTWs have the physical capacity to accept increased flows during wet weather events, the following regulatory and technical issues must be addressed, however, in order to ensure that flow maximization provides a net environmental benefit.[6]"

EPA included a flow limit in Lowell's 2005 NPDES Permit. EPA recognizes that that the effluent flow limit was later the subject of an Administrative Order (AO) and that the effluent flow limit was changed to monitor only "…until the issuance of a new Permit". The AO required significant work by Lowell to address effluent flow and CSOs. Lowell is not the only POTW with CSOs and a flow limit; EPA has included flow limits in NPDES permits for twelve other POTWs with CSOs in Massachusetts. The flow limit in the permit is based on the design flow of the treatment facility. Nine Minimum Control number 4 ("maximization of flow to the POTW for treatment") should be implemented within the capacity of the facility.

Finally, EPA observes that the public notice period is not the proper venue in which to request an increase in the permitted effluent flow, absent an antidegradation review by the State supporting such a request, for any parameters calculated on the basis of flow. The City has neither submitted, nor to EPA or MassDEP's knowledge, conducted such a review. Should the City decide to seek an increase, it may contact MassDEP and EPA concerning the information necessary for the Agencies to review such a request (*i.e.*, the Massachusetts' Comprehensive Wastewater Management Plan, relevant antidegradation provisions and applicable local, state, and federal regulations).

EPA has maintained the flow limit in the Final Permit. *See* Response 37. The flow limit does not represent a change from the prior permit, and City acknowledges that it has worked with EPA enforcement to address flow issues relating to CSOs to the satisfaction of the City while ensuring a protective environmental outcome. EPA or the relevant state has worked with virtually every CSO community in New England to develop CSO abatement schedules to be memorialized in administrative or judicial enforcement mechanisms. As necessary, such schedules are adjusted to reflect new information and evolving financial conditions.

Comment 5

Daily Maximum Limits for CBOD and TSS (Page 3)

The daily maximum limits for CBOD and TSS are technology-based limits. They are legally inconsistent with EPA's regulations, which require monthly and weekly average limits, unless impracticable [40 CFR § 122.45(d)(2)]. The development of average monthly and weekly permit limits is clearly not impracticable, because EPA has, in fact, imposed them in the permit as well. We also note that the vast majority of POTW permits in the country have monthly/weekly only limits for CBOD and TSS – including facilities such as the District of Columbia's Blue Plains treatment plant (permit issued by EPA Headquarters/Region III).

[6] U.S. EPA, Office of Water, 1995, "Combined Sewer Overflows: Guidance for Nine Minimum Controls," EPA-832-B-95-003, p. 5-2.

As with the flow limits addressed above, the daily maximum CBOD/TSS limits are also counter-productive environmentally because they are a de facto limit on how much peak wet weather flow we can take through the Duck Island treatment facility. Specifically, we have exceeded the TSS daily maximum limits on a number of occasions. It makes no sense to restrict flows into the treatment facility (which flows would then receive treatment - including disinfection) as opposed to discharging those same volumes as untreated combined sewage from our CSO outfalls.

We also note that the expression of the daily maximum TSS limit appears to be incorrect. We assume EPA is working from the construct of taking the monthly average (30 mg/L) and multiplying it by 1.5 to get the weekly average (45 mg/L) found in the secondary treatment regulation and then multiplying the monthly average value times "2" to get the daily maximum value of "60". However, the permit includes a highly unusual value of "50" for TSS.

Finally, we note that these limits are neither necessary nor appropriate, as they were not included in the recent draft permits for Springfield and Haverhill. EPA has provided no explanation as to why such limits are necessary and appropriate for Lowell (and Lawrence), but not for the other two communities. As with the flow limits, our exceedance of these inappropriate limits is not due to our faulty operation of our treatment facility. Instead, it is due to conflicting and inappropriate permitting requirements for our facility.

Response 5

EPA agrees that the maximum daily limits are not listed as technology-based limits for secondary treatment in 40 C.F.R. § 133.102 and, in this case, may create a disincentive to minimize CSO discharges. Therefore, EPA has removed the maximum daily limits from the Final Permit and replaced them with reporting only requirements. EPA is requiring monitoring as this data along with monthly and weekly average data will be useful to assess overall operation of the facility.

Comment 6

CBOD/TSS Percent Removal (Page 3)

Lowell objects to the 85 percent removal requirement for CBOD and TSS in the permit. There is no need for this limit. Percent removal provides no environmental protection whatsoever – that is done by the mass/concentration limits for both CBOD and TSS. Accordingly, we ask that the percent removal requirement be removed.

If the percent removal limit is to remain – over our objection and without waiving our right to challenge its retention – EPA should specify that the percent removal requirement only applies during dry weather days. This is the approach EPA took in Springfield's permit and is appropriate for all CSO systems.

Response 6

Regarding the percent removal requirement, EPA notes that the 85 percent removal requirements for $CBOD_5$ and TSS are included in the Draft Permit as technology-based limits for secondary treatment pursuant to 40 C.F.R. § 133.102. However, a special

consideration may be made for treatment works with combined sewer systems based on 40 C.F.R. § 133.103(a), which allows for flexibility with respect to percentage removal levels on a case-by-case basis. EPA has determined upon review of the record before it that an attainable percentage removal level cannot be defined under wet weather conditions. To avoid creating any disincentive to minimize CSO discharges, EPA agrees with the commenter and has added a footnote in Part I.A.1 of the Final Permit to clarify that the 85 percent removal requirement applies only during dry weather (meaning any calendar day on which there is less than 0.1 inches of rainfall and no snow melt).

Comment 7

E. Coli Daily Maximum Limit (Page 3)

First, we note that the daily maximum limit should be deleted because it is based on EPA's criteria Statistical Threshold Value (STV) (410 colonies per 100 mL), which is derived from the same statistical distribution as the geometric mean-based average value, both derived to protect the defined intestinal illness rate. As such, protection of the average is also protection of the STV (particularly given the high monitoring frequency), and it is unnecessary to impose a daily limit for protection of the criteria and the designated use.

We also note that there is no reason that EPA could not calculate monthly and weekly average bacteria limits for our facility, in lieu of monthly and daily limits. After all, several states calculate weekly bacteria limits (such as North Carolina, Kentucky, and Missouri while other States such as Virginia, Maryland, and the District of Columbia use monthly geometric mean limits only.

Moreover, for the same reasons noted above for the daily maximum limits for CBOD and TSS, we urge EPA to provide some flexibility with the daily maximum E. coli limit. Most POTWs across the country have either monthly geometric mean limits or monthly and weekly average/geo-mean limits. Unless some flexibility is provided on this daily maximum E. coli limit, it could cause Lowell to have to restrict its wet weather treatment capacity.

Also, we note EPA Region III's response to public comments urging EPA to impose a daily maximum bacteria limit on the District of Columbia's Blue Plains treatment facility. In rejecting the inclusion of a daily maximum E. coli permit limit for Blue Plains, EPA stated: "Single sample maximums are not normally taken to evaluate continuous municipal discharges."

We also note that because the water quality standard for E. coli is applied to Lowell at the end-of-pipe, we should be given some compliance flexibility. Lowell benefits from an 18:1 dilution during 7Q10 flows (which occur 1-3 percent of the time) and significantly higher dilution during all other periods. We suggest that Lowell is allowed to exceed the daily maximum permit limit one percent of the number of annual samples that we take. This is the approach that West Virginia DEP has taken – particularly to accommodate CSO programs. During wet weather, when CSOs (and urban runoff) discharges are active, holding the treatment facility to a daily maximum limit does not make sense.

Under our one percent proposal, if we sample five times per week, that equates to 256 samples per year – resulting in an allowable 3 exceedances of the daily maximum limit over those 256 samples. Given the dilution available to us, that would ensure year-round compliance with the instream bacteria standard. Accordingly, we ask that EPA add the following footnote to the E. coli limit: "The permittee shall not exceed this daily maximum limit in more than one percent of the samples taken each year. For this permit cycle, the permittee will sample 256 times per year, so the daily maximum limit may not be exceeded in more than three samples in any calendar year."

There are many approaches that EPA could take in order to provide some appropriate flexibility while still meeting the instream bacteria standard (to the extent it is even attainable during wet weather events). Another approach could be a higher bacteria limit when treatment facility flows exceed our 32 MGD design capacity. We only exceed that capacity during wet weather events. In such circumstances, a higher limit – say 2040 counts (five times higher than dry weather yet only occurring when we get enormous dilutions) would be appropriate and fully protective of instream water quality. By way of example, even in 7Q10 conditions, a treatment facility discharge of 2040 counts, diluted 18 times would equate to a concentration of approximately 200 counts at the edge of our mixing zone. This assumes a background concentration of 100 counts. During wet weather, the dilution factor would increase dramatically and the bacteria concentration at the edge of the mixing zone would drop essentially to the river background level.

Response 7

While EPA acknowledges that there are different methodologies available for implementing recreational bacteria criteria, EPA has opted for a protective approach that is consistent with the Commonwealth's interpretation and application of its water quality standards. Recreational use of waters contaminated with microbial contamination can result in human health problems such as sore throat, gastroenteritis, or even meningitis or encephalitis (Cabelli, 1983; USPEA, 1986; Cabelli, 1989; Haile, 1996; Pruss, 1998). In 2007 Massachusetts finalized the adoption of EPA's then recommended 1986 recreational bacteria criteria.[7] The 1986 EPA recommendations are summarized in Table 1. EPA's subsequent guidance on implementation of the criteria recommended that states decide how to apply the single sample maximum (SSM) for purposes beyond the context of beach notifications and closure decisions. This guidance was included in the preamble to the final Water Quality Standards for Coastal and Great Lakes Recreational Waters, on November 16, 2004.[8]

[7]EPA, *Ambient Water Quality Criteria for Bacteria*-1986, EPA440/5-84-002, January 1986,
[8]Federal Register/Vol. 69, No. 220/Tuesday, November 16, 2004, paragraph IV.B.3, page 67224.

Table 1 - 1986 Recommended Recreational Criteria for Fresh Water[9]

		Geometric mean*	SSM*			
	Use/ frequency		Designated Bathing Beach Area	Moderate Full Body Contact Recreation	Lightly Used Full Body Contact Recreation	Infrequently Used Full Body Contact Recreation waters
	Confidence level		upper 75%	upper 82%	upper 90%	upper 95%
Fresh waters						
enterococci		33	61	89	107	151
E. coli		126	235	298	409	575

*Values are colonies per 100 ml.

MassDEP regulations at 314 CMR 4.05(3)(b)(4)(b), regarding Class B bacteria for other (non-bathing) waters state "where E. coli is the chosen indicator… no single sample taken during the bathing season shall exceed 235 colonies per 100 ml." This language refers to a single sample of ambient water quality, not wastewater effluent.

In its implementation of the Class B bacteria criteria, MassDEP uses the 90th percentile single sample maximum (SSM) recommended criteria as the maximum daily effluent limitations for NPDES discharges. EPA and DEP agree that the 90th percentile single sample maximum recommended value is protective of human health while accounting for the comparatively lower recreational use in the immediate vicinity of wastewater treatment plant outfalls.

NPDES permits issued in Massachusetts have established bacterial limitations equal to the water quality criteria with no allowance for dilution. The Massachusetts Water Quality Standards at 314 CMR 4.03(2), Mixing Zones allow the recognition of a limited area or volume of a waterbody as a mixing zone, and that waters within the mixing zone may fail to meet specific water quality criteria. However, among the conditions that must be met before a mixing zone may be established is that the mixing zone may not "interfere with the existing or designated uses of surface waters". Because bacterial counts in excess of the applicable water quality criteria would interfere with attainment of primary and secondary contact uses within the mixing zone, EPA and MassDEP have in other cases not allowed mixing zones for bacteria and have instead incorporated the water quality criteria as end-of-pipe limits.

This practice is further supported by MassDEP's "Implementation Policy for Mixing Zones".[10] Part III a) of this policy states that "The most important site-specific factors governing the application of mixing zones are the actual and projected water uses in the segment. Certain uses may be deemed critical in that no excursions from criteria are desirable. These include areas that are highly sensitive or extensively used. In order to

[9]EPA, *Ambient Water Quality Criteria for Bacteria*-1986, EPA440/5-84-002, January 1986, Table 4 on page 15.
[10] MassDEP, *Implementation Policy for Mixing Zones,* January 1993, page 2.

provide a reasonable margin of safety for these uses, no mixing zone can be permitted." Among such critical uses listed in the policy are shellfish harvest areas (Class SA and SB waters) and public bathing beaches and other heavily used recreational waters.

Further support for not allowing mixing zones for bacteria may be found in a November 12, 2008 memo[11] prepared by EPA's Office of Science and Technology regarding initial zones of dilution for bacteria in rivers and streams designated for primary contact recreation that concludes that "…we cannot envision a circumstance where discharges that elevate bacteria levels beyond criteria can be viewed as protective of primary recreation use in fresh flowing waters like rivers and streams."

EPA believes that use of mixing zones which allow for an elevated level of bacteria in waterbodies which are designated for primary and secondary contact recreation is inconsistent with the designated use of the water and should not be allowed as it may result in a significant health risk. Thus, the Final Permit provides that the effluent limitations for bacteria shall be met at the end of pipe.

Comment 8

Whole Effluent Toxicity (Page 4)

We object to the permit requirement to continue performing whole effluent toxicity testing on a quarterly basis. We have been doing so since 2005. This quarterly testing is in addition to the four two-species tests we performed for our permit renewal. Associated with this WET testing is additional testing for metals and other parameters which EPA has required. This unnecessary testing costs Lowell thousands of dollars over a five year permit term.

After 14 years of quarterly WET testing, our effluent is well characterized as being non-toxic. We have passed all of our quarterly tests as well as the four, two-species tests we performed for the application for renewal. This comes as no surprise, given that our instream waste concentration is approximately five percent. After more than 56 straight passes, our effluent is beyond being well-characterized as non-toxic.

Moreover, as EPA's reasonable potential spreadsheet reveals, our effluent is nowhere close to having reasonable potential for the common municipal toxicants (e.g., copper, lead, ammonia). Thus, the quarterly WET testing is simply a waste of time and public resources. We ask that it be removed from the permit. We do agree, however, with a requirement to perform the four two-species tests required for each future permit renewal.

Response 8

As indicated in the Fact Sheet, the MassDEP[12] current toxic policy requires toxicity testing for all dischargers such as the LRWU. EPA notes that the test species was reduced in 2005 to a single species (*Ceriodaphnia dubia*), with a report only requirement for the

[11] Ephraim S. King, Director, Office of Science and Technology, U.S. EPA Memo to Walter Spratlin, Director, Water, Wetlands and Pesticides, U.S. EPA, RE: Initial Zones of Dilution for Rivers and Streams Designated for Primary Contact Recreation, November 12, 2008, p. 2.
[12] *Implementation Policy for the Control of Toxic Pollutants in Surface Waters*, MassDEP 1990

chronic C-NOEC test. Recent monitoring data during the review period reveal multiple occasions of chronic toxicity at as low as 6.25 percent effluent. Given that a potential permit limit for chronic toxicity would be 5.6 percent effluent (1 / (dilution factor) = 1/17.8 = 0.056), the recent results demonstrate the potential for toxicity to occur.

Additionally, EPA disagrees that the previous chemical-specific whole effluent toxicity ("WET") data reveals the effluent is "nowhere close" to having reasonable potential. Rather, the data for certain metals (e.g., lead) reveal that the downstream concentration is quite close to the chronic criterion (i.e., 0.45 µg/L compared to 0.56 µg/L). EPA intends to use the ambient and effluent chemical-specific WET data for future reasonable potential analyses and notes that quarterly samples over the next permit term would allow for a more robust analysis.

For these reasons, the quarterly WET test requirement will be maintained in the Final Permit.

Comment 9

Sampling for Metals (Page 4)

As noted above, we are nowhere close to having reasonable potential for any of the metals we test for. Accordingly, we object to the continued quarterly sampling requirement for AL, CD, CU, NI, PB, and ZN. Instead, we propose to continue to sample for these pollutants as part of the three priority pollutant scans that we conduct each permit term.

Response 9

As described in Response 8 above, the data for certain metals (*e.g.*, lead) reveal that the downstream concentration is close to the chronic criterion (*i.e.*, 0.45 µg/L compared to 0.56 µg/L). Given that chemical-specific monitoring is required as part of the WET protocol, these requirements will remain in the Final Permit.

Comment 10

Mandating Sampling Day and Time (Page 6)

We object to Footnote 1 on page 6 which requires that we sample on the same days of the month at the same times. This is micromanaging the operation of our facility and program. There is no legal (or practical) basis for such a requirement. EPA's regulation (and the permit) already requires representative sampling. That is the applicable legal requirement. We do not believe that sampling requirement is imposed on other permittees.

We similarly object to Footnote 13 on Page 8, which requires that WET testing be done during the same week in the months of January, April, July, and October. As noted above, the quarterly WET testing should be removed from the permit. In addition, there is no legal or technical basis to mandate a particular week within a particular month in the quarter.

Numerous other NPDES permits around the country simply specify "quarterly" sampling for parameters without mandating the month, and certainly not the week. We note that EPA's permit

renewal regulation specifies four WET tests for major dischargers as part of applications for renewal without specifying a particular month or week.

Response 10

Regarding footnote 1, EPA disagrees that a routine sampling plan with specific days and times of sampling does not have any basis. Rather, such a plan facilitates the ability to track long-term trends in effluent quality and to characterize the discharge without any bias related to the variability within a given day or week. This is a standard permit requirement which has been applied, in general, in all recent Massachusetts NPDES permits issued to POTWs, and further delineates the representativeness requirement, which may be subject to varying interpretations. EPA has in the past encountered issues with certain permittees' sampling practices that tested the boundaries of the term "representative," to which this additional layer of guidance is a response.

Regarding footnote 13, EPA similarly disagrees that a routine sampling plan with specific weeks and months of sampling does not have any basis. Rather, such a plan facilitates the ability to track long-term trends in effluent and ambient quality without any bias related to the variability within a given calendar quarter.

Comment 11

Additional Monitoring by Permittee (Page 6)

We request a clarification of the following requirement of Footnote 1 as follows:

The Permittee shall report the results to the USEPA Region 1 and the State of Massachusetts any additional testing of finished effluent for any pollutant required to be tested by this permit above the frequency ~~that~~ required herein, if testing is in accordance with 40 C.F.R. Section 136.

This comment is intended to clarify that only testing for pollutants required to be analyzed, using finished effluent (as opposed to process control testing) must be submitted to EPA. Please confirm this interpretation.

Finally, while still objecting to EPA's authority to impose this prescriptive sampling regimen at all, we note that EPA allowed Springfield flexibility should there be deviations from the date and time of sampling but did not afford that option to Lowell (along with other permittees).

Response 11

EPA agrees with the interpretation presented by the commenter regarding additional data that must be submitted to EPA.

Regarding Springfield, the 2018 Draft Permit did allow some occasional flexibility. The same language will be added to the Lowell Final Permit, which says: "Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report."

Comment 12

Assigning Half the MDL to Non-Detected Data (Page 6)

Footnote 4 requires that we assign one-half the minimum detection limit (MDL) to non-detected values, if we have any detectable result for the pollutant in question during the prior twelve months. This is both legally and technically wrong.

If a pollutant is not detected in the effluent, it is legally not there. EPA cannot require the permittee to assign an arbitrary number to that non-detect and then certify the arbitrary number (which was really non-detected) as being "true, accurate, and complete." No other State or EPA region takes this approach to our knowledge. Instead, non-detected data should be reported as "0" and assigned "0" in the calculation of any multi-day averages.

While not a major issue for our facility given the level of our limits and the dilution in our receiving instream, it is still inappropriate to require that 11 non-detected results be assigned one-half the detection level because one sample out of twelve is above the detection level. Such an approach clearly biases the pollutant data on the high end and then puts the permittee in the untenable position of having to then certify the ½ MDL value is a true, accurate, and complete result.

We ask that EPA provide us with any statutory or regulatory reference which supports the requirement to assign and then certify and report one-half the MDL to non-detected data. Finally, we note that this condition is not included in the Springfield draft permit. EPA should remove it from Lowell's permit as well.

Response 12

EPA agrees that footnote 4 should be removed from the Final Permit to avoid any compliance issues raised based on non-detected sampling results. Additionally, EPA has added the following language to footnote 3 for clarification in calculating averages:

For reporting an average based on a mix of values detected and not detected, assign a value of "0" to all non-detects for that reporting period and report the average of all the results.

Comment 13

CSO Bypass (Page 7)

Footnote 6 explains that the flow limit is an annual average flow for the current and prior eleven months. This footnote then goes on to prohibit secondary bypasses which don't qualify as allowable bypasses (Standard Conditions Part II.B.4.c and 24-hour reporting (Part II.D.1.e)).

Lowell has a secondary bypass which allows us to treat significant peak wet weather flows as part of our efforts to maximize flows at the treatment facility (Nine Minimum Controls - Part I.F.2.a.4). Such bypasses are to maximize the treatment of wet weather flows and not for essential maintenance as contemplated by Part II.B.4.c. Accordingly, the reference to Part II.B.4.c should be removed.

We note that Springfield's permit explicitly authorizes their secondary bypass. Lowell's secondary bypass should be authorized as well.

Moreover, the permit should:

- Identify and authorize our high flow management facilities and
- Incorporate by reference our High Flow Management Plan. This plan was submitted to EPA and DEP in 2011 in accordance with our 2010 Administrative Order. While we did our part to develop and submit the plan, EPA has yet to issue the plan approval expressly contemplated by the 2010 order. Because our plan is a living document, it makes the most sense to us to incorporate by reference an updated High Flow Management Plan, with a requirement to submit annual updates as appropriate. For example, we are working on a major facility upgrade. Once that project is complete and we have completed an optimization period, we will need to submit an updated High Flow Management Plan.

Response 13

Permit conditions related to bypasses of secondary treatment are set forth in Part II.B.4. of the Final Permit. Specifically, in accordance with 40 C.F.R. § 122.41, Part II.B.4 incorporates verbatim the *Bypass* rule at 40 C.F.R. § 122.41(m).

The Permittee's comments regarding the authorization of a CSO-related bypass implicate Section 7 of the 1994 CSO Policy, entitled "Maximizing Treatment at the Existing POTW Treatment Plant." 18688 Fed. Reg. at 18693. Following the approach set forth therein, EPA could include a CSO-related bypass provision in the permit if there are no feasible alternatives to bypassing under specific conditions. Section 7 of the CSO Policy further provides that:

> "[T]he feasible alternatives requirement of the [bypass] regulation can be met if the record shows that the secondary treatment system is properly operated and maintained, that the system has been designed to meet secondary limits for flows greater than the peak dry weather flow, plus an appropriate quantity of wet weather flow, and that it is either technically or financially infeasible to provide secondary treatment at the existing facilities for greater amounts of wet weather flow. The feasible alternative analysis should include, for example, consideration of enhanced primary treatment (e.g., chemical addition) and non-biological secondary treatment. Other bases supporting a finding of no feasible alternative may also be available on a case-by-case basis."

Id. at 18694.

The Permittee has not submitted sufficient information or analysis directed to satisfy these requirements for inclusion of CSO-related bypass conditions in the Permit for

specific flows. Consequently, the permit does not contain such conditions. The Permittee is welcome to submit such documentation for EPA's consideration.

EPA acknowledges that the Permittee has submitted a high flow management plan ("HFMP"), dated March 1, 2011, in accordance with an enforcement action taken by EPA. The HFMP identifies the circumstances under which some wet weather flows may be diverted around secondary treatment. The HFMP does not itself satisfy the requirements for the approach outlined in Section 7 of the CSO Policy such that it alters the appropriate permitting approach for CSO-related bypasses. Accordingly, there is no basis for incorporating the HFMP into the permit.

EPA acknowledges language contained in the *draft* NPDES permit for the Springfield Regional Waste Water Treatment Facility. EPA continues to review comments and the basis for draft language in that permit. That permit has not yet been finalized.

The notification requirements that apply in the event of a bypass are set forth in Part II.B.4 of the Final Permit. Specifically, if the Permittee knows in advance of the need to bypass secondary treatment (i.e., an anticipated bypass), prior notice shall be submitted at least ten days before the date of the anticipated bypass (see Part II.B.4.c. of the Final Permit.). In the event of a bypass which was not anticipated (i.e., unanticipated bypass), notification shall be submitted within twenty-four hours of the bypass in accordance with Part II.D.1.e. of the Final Permit. Footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1. of the Final Permit has been modified to clarify that a bypass of secondary treatment is subject to the requirements of Part II.B.4. (and not just Part II.B.4.c.) of the permit (which incorporates the regulations in their entirety which pertain to bypasses of secondary treatment that are established at 40 C.F.R. 122.41(m)).

The commenters reference to "essential maintenance" seems to pertain to Standard Conditions Part II.B.4.b which is not referenced in Footnote 5, formerly footnote 6.

Comment 14

Prohibition on Septage During Wet Weather (Page 7)

Lowell intends to continue to accept septage and hauled wastes, with the understanding that we will manage acceptance of these wastes in accordance with a hauled waste management plan. The plan will ensure that we optimize treatment of such wastes to the extent practicable. We are not aware of any plant or instream impacts from our acceptance of such wastes and our hauled waste management plan will be focused on continuing that successful program. In addition to providing the appropriate facilities to process such wastes, our processing of these wastes generates critical revenues for our utility that are being used for our current facility upgrade and future treatment facility and CSO-related controls. A critical part of our septage receiving facility is an equalization tank that we use to store wastes for subsequent introduction into our facility's treatment process at a controlled rate.

We object to the prohibition on our acceptance of septage at the treatment facility on any day when a bypass of secondary treatment is anticipated. This prohibition is environmentally

unnecessary, as the volumes are relatively small and our facility has the capacity to handle the pollutant loadings. On wet-weather days, the plant meets 7Q10-based limits when instream flows are significantly higher, allowing far greater dilution. There is simply no environmental problem with our acceptance of such waste streams. Notably, our quarterly WET testing has included two tests each year when our treatment facility is bypassing. We have passed each of those tests.

This prohibition is also counterproductive financially for Lowell. Hauled waste fees are critical in funding the highest practical level of CSO control, along with other facility improvements such as phosphorous control.

Finally, we note that this prohibition on accepting septage at the treatment facility is contradicted on Page 16 – which only prohibits acceptance of septage (to the collection system) if certain instream impacts are expected to result – such as an oil sheen."

Response 14

EPA disagrees that the prohibition of septage during a bypass of secondary treatment is environmentally unnecessary. The high concentrations of pollutants in septage discharged to the Merrimack River without secondary treatment could pose significant environmental and public health concerns. As such, the intent of Footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1. of the Draft Permit is to minimize any negative impacts from septage received during periods when flows may not be receiving secondary treatment. EPA recognizes that the septage receiving practices employed at the LRWU, as described in the above comment, ensure that septage is managed in such a way to mitigate any potential negative impacts.

In recognition of these practices, and to clarify the intent of Footnote 5 (footnote 6 of the Draft Permit) to Part I.A.1. of the Draft Permit, the Final Permit has been modified to read as follows:

"*The Permittee shall not add septage to the waste stream at the treatment plant during activation of the secondary treatment bypass".*

Finally, EPA disagrees with the commenter's interpretation of the prohibition of septage on page 16 of the Draft Permit. Part I.F.3.c of the Draft Permit states:

Discharges to the combined system of septage, holding tank wastes, or other material which may cause a visible oil sheen or containing floatable material are prohibited during wet weather when CSO discharges may be active (NMC # 3, 6, and 7).

This language prohibits three waste streams from being discharged to the wastewater collection system during periods of wet weather when CSO discharges may be active: (1) septage, (2) holding tank waste, and (3) other material which may cause a visible oil sheen or containing floatable material. The prohibition of septage is not dependent on certain instream impacts such as oil sheen.

Additionally, Part I.F.3.c. of the Draft Permit is the minimum implementation level for complying with NMCs #3 (review and modification of the pretreatment program to

assure CSO impacts are minimized), #6 (Control of solid and floatable materials in CSOs), and #7 (pollution prevention programs that focus on contaminant reduction activities), and as such, may be implemented through the Permittee's pretreatment program. The language in Part I.F.3.c. of the Draft Permit does not present a contradiction regarding the prohibition of adding septage to the waste stream of the treatment plant during activation of the secondary treatment bypass.

Comment 15

20 ug/L MDL for Residual Chlorine (Page 7)

The permit imposes an MDL of 20 ug/L for residual chlorine when our permit limit is 338 ug/L (daily max) and 196 ug/L (monthly average). Given the magnitude of our permit limits, there is no need to impose a 20 ug/L MDL. Instead, we request it be set at 100 ug/L or, at worst, 50 ug/L. Many states use 100 ug/L or 50 ug/L as their MDLs. We think these are more appropriate levels in light of analytical issues and the magnitude of the limits that we must meet.

Response 15

EPA agrees that the requirement to achieve a minimum level no greater than 20 µg/L for total residual chlorine (TRC) is not necessary in this case, for the reasons set forth in the comment. Therefore, this requirement has been removed from footnote 8 in the Final Permit. Monitoring for all pollutants, including TRC, must be sufficiently sensitive as described in footnote 2 of Part I.A.1 of the Final Permit.

Comment 16

General Water Quality Standards Compliance Language (Page 9)

It appears that the sections/numbering is off from page 8 to page 9. At the top of page 9, the following prohibition is imposed:

"2. The discharge shall not cause a violation of water quality standards of the receiving water."

This language is legally incorrect and fundamentally unfair. Legally, this provision deprives Lowell of its Clean Water Act permit shield in that Lowell will never know what it can or can't discharge at any given time. The provision deprives Lowell of its right to fair notice of what it must do to comply. More importantly, there is no opportunity for due process. In this context, due process is Lowell's (and all stakeholders') right to know what limits EPA/DEP believe are warranted, an opportunity to comment on the correctness of such limits and the right to appeal such determinations. Moreover, for a public body, the provision deprives us of a compliance schedule to come into compliance with a new or more stringent requirement.

There has been significant litigation over similar provisions in recent years and Lowell will be compelled to file a challenge should this language be retained. We note that the State of West Virginia recently removed similar language from its NPDES permits. EPA Region 3 treated that action as a change to WV's NPDES permit program which triggered EPA review and approval. EPA approved the change by letter dated March 27, 2019 (incorporated herein by reference). EPA concluded that such language is not a requirement of the NPDES Permit program.

Further the restrictions imposed in Paragraphs 3-7 are more than broad enough to protect the general standard.

For these reasons, Paragraph 2 language must be removed from Lowell's permit. It impermissibly undermines the CWA permit shield, deprives dischargers of fair notice of what they can discharge and due process (to comment on, seek compliance schedules, and appeal effluent limits). It is inconsistent with other EPA Regions as demonstrated by the EPA Region 3 March 27, 2019 formal finding that such a permit condition is not required under the CWA.

Response 16

EPA notes that the numbering is accurate. Page 8 ends with the final footnotes for the effluent tables under Part I.A.1 and then page 9 continues with Part I.A.2, and so forth.

EPA disagrees with the commenter's assertion that the following provision is unlawful, unfair, and undermines the permit shield provision of the CWA: "The discharge shall not cause a violation of water quality standards of the receiving water." Draft Permit, Part I.A.2.

EPA's authority is not as narrowly constrained as the commenter implies. To the opposite, Section 402 of the Act authorizes EPA to issue an NPDES permit with conditions that ensure that the discharge will meet, among other things, the requirements of § 301 of the CWA. That provision includes § 301(b)(1)(c), which requires that a discharge shall achieve "...any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulation...." (emphasis added). Nowhere does the statute specify that EPA may only impose specific numeric effluent limitations to meet state water quality standards. EPA's regulations at 40 C.F.R. § 122.44(d)(1) state that each permit shall include "any requirements in addition to or more stringent than promulgated effluent limitations guidelines.... necessary to achieve water quality standards...." While § 122.44(d) does require "effluent limits" to be established when EPA determines that a particular pollutant has the reasonable potential to cause or contribute to an in stream excursion above a water quality criterion, the regulations do not require that all "effluent limitations" necessary to meet water quality standards be expressed in terms of specific pollutant by pollutant numeric limitations. They may be narrative in form, including for example, when they are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes or intent of the CWA. As explained below, this requirement narratively tracks a key, and unambiguous, provision of the MA WQS.

The language included in Part I.A.2 is both lawful and consistent with EPA Region 1's past practice. Exactly the broad narrative language to which the commenter objects is included in all Massachusetts NPDES permits, and was included in the City's previous 2005 NPDES Permit (Part I.A.1.(1) of the 2005 Permit). EPA includes this provision to ensure full implementation of Sections 301(b)(1)(C) and 402 of the Clean Water Act. 33 U.S.C. §§ 1311(b)(1)(C), 1342. *Northwest Envtl. Advocates v. City of Portland*, 56 F.3d 979, 990 (9th Cir. 1995) (concluding that "the statutory language, legislative history, and case law authorize citizens to enforce permit conditions stated in terms of water quality

standards"). Moreover, this provision is also consistent with requirements under Massachusetts state law and regulations. Section 4.03(1)(a) of Massachusetts' water quality standards specifically states, "The Department will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained." 314 CMR 4.03(1)(a). EPA's Draft Permit is consistent with, and derived from, this state requirement.

While the commenter may feel that "the restrictions imposed in Paragraphs 3-7 are more than broad enough to protect the general standard," and that narrative prohibition is therefore duplicative, EPA sees merit in including a more general, narrative, preventative permit provision that restates the commands of Section 301 and the implementing regulations at 40 C.F.R. §§ 122.4 and .44 to "ensure" compliance with quality standards, and that similarly mirrors the Commonwealth's mandate at 314 CMR 4.03(1)(a). Doing so not only allows EPA to incorporate a legal assurance in the permit that water quality standards will be met, consistent with its obligations under sections 301 and 402 of the Act and MA WQS, but also will allow it to address, as necessary, water quality violations caused or contributed to by the Permittee due to such circumstances as unanticipated changes in or alterations to effluent quality that might otherwise meet permit conditions or the discharge of pollutants not identified in the City's permit application, for example. Again, this requirement narratively tracks a key provisions of the MA WQS, which EPA is not required to translate or express as a series individual numeric limitations, but that it may instead frame as a narrative prohibition in furtherance of its obligation to include in permits conditions that ensure compliance with water quality standards, as it is incontrovertibly entitled to do under law. The "[Clean Water] Act permits enforcement of broad, narrative criteria." *PUD No. 1 of Jefferson Cty. v. Washington Dep't of Ecology*, 511 U.S. 700, 700 (1994).

The commenter claims that this provision is unfair and violates the due process rights of the permittee and its stakeholders. Specifically, the commenter asserts that there is a lack of fair notice as to "what limits EPA/DEP believe are warranted, an opportunity to comment on the correctness of such limits and the right to appeal such determinations." However, the commenter, in this case the permittee, has been operating under a permit that contains this provision since at least 2005. *See Ohio Valley Envtl. Coal. v. Fola Coal Co., LLC,* 845 F.3d 133, 144 (4th Cir. 2017) (finding that a permittee had fair notice of narrative water quality standards included in its permit due in part to the amount of time the permittee was bound by that language). The language in the permit clearly states what is required of the permittee: that the permittee ensure no violation of Massachusetts water quality standards. This narrative standard is consistent with the CWA and adequately puts the permittee on notice of its obligations. *See Upper Blackstone Water Pollution Abatement Dist. v. E.P.A.*, 690 F.3d 9, 33 (1st Cir. 2012) ("EPA regulations [at 40 C.F.R. § 122.41(d)(1)(i)] require permitting authorities to include in NPDES permits conditions which 'control all pollutants or pollutant parameters ... [that] are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.'").

Moreover, the permittee has been aware of EPA's and MassDEP's application of such narrative water quality standards for over a decade. MassDEP's water quality standards are fully available to the public, as codified in 314 CMR 4.00 (latest revisions occurred in 2013). To the extent that the commenter states that the public is precluded from an opportunity to comment on or appeal such water quality standards, this is incorrect. In fact, the notice-and-comment procedures as well as the appeal procedures required pursuant to the CWA and its regulations provide just such opportunity (33 U.S.C. § 1369(b); 40 C.F.R. § 124.19), and in submitting the above concerns during the public comment period, the commenter has availed itself of that procedure.

The commenter generically mentions due process violations but fails to specify whether it refers to substantive or procedural violations and further fails to identify with particularity how EPA's action is inconsistent with the requirements for ensuring either type of due process in this particular setting. *See, e.g., Mathews v. Eldridge,* 424 U.S. 319 (1976) (identifying factors for assessing a procedural due process violation); *Collins v. City of Harker Heights, Tex.,* 503 U.S. 115 (1992) (outlining what constitutes a substantive due process claim). EPA is not required to develop arguments on behalf of a commenter.

As for the commenter's reference to the March 27, 2019, letter from EPA Region 3 to the State of West Virginia, this letter is specific to the State of West Virginia and its revisions to its authorized NPDES program. Changes to the authorized NPDES program and state water quality standards in West Virginia have no bearing on the EPA's implementation of the NPDES program in Massachusetts. As stated above, EPA's inclusion of Part I.A.2 is consistent with law and regulations and ensures that the permit is in compliance with Massachusetts' State Certification and water quality standards.

Finally, the commenter's assertion that this provision deprives it of its Clean Water Act permit shield is entirely without merit. Section 402(k) of the Clean Water Act, 33 U.S.C. § 1342(k), establishes the "permit shield" by stating "[c]ompliance with a permit issued pursuant to this section shall be deemed compliance" with section 301 (among other sections) of the CWA. In order to avail itself of the protections of section 402(k), a permittee must first be in compliance with all express terms of the permit. *See Ohio Valley Envtl. Coal. v. Fola Coal Co., LLC*, 845 F.3d 133, 142 (4th Cir. 2017) ("[A] permit shields its holder from liability as long as the permit holder complies with the express terms of the permit and with the Clean Water Act's disclosure requirements." (internal quotations omitted)). Courts have clearly held that narrative water quality standards are express terms when included in an NPDES permit. *Id.* at 144; *PUD No. 1 of Jefferson Cty. v. Washington Dep't of Ecology*, 511 U.S. 700, 700 (1994) (The "[Clean Water] Act permits enforcement of broad, narrative criteria."); *Nat. Res. Def. Council v. Metro. Water Reclamation Dist. of Greater Chicago*, 175 F. Supp. 3d 1041, 1053–54 (N.D. Ill. 2016) (The NPDES Permit "incorporates the WQS as substantive terms of the permit, compliance with which is required in order for the permit shield to apply. . . . [T]he permit shield defense can apply only if the three WRPs' effluent does not cause violations of the Illinois WQS."). Thus, when included in a permit, narrative water quality standards are enforceable conditions that must be met for the permittee to invoke

the permit shield provision of the CWA. Lowell Regional Wastewater Utility, the permittee, is not deprived of the protections afforded by section 402(k). Rather, the permittee is required, as is always the case, to comply with all its permit terms prior to invocation of the permit shield. The City's concern the narrative prohibition will deprive it of its ability to comply with a new or more stringent requirement according to a schedule is misplaced, as the permit limit together with schedule comprise the enforceable effluent limitation. So long as the City is complying with the terms of a compliance schedule for a given limit, it will not be subject to an enforcement action for failing to meet a final limit not yet in effect, and it can avail itself of the permit shield.

Comment 17

Pass Through and Interference (Page 9)

We ask that Part I.A.9 (Page 9) be removed because it is unnecessary and duplicative to suggest that it could be a violation of the permit for a non-domestic user to cause pass-through, when by definition pass-through already is predicated on a permit exceedance. See 40 C.F.R. §403.3(p) (pass-through is "a discharge that exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit") (emphasis added). Similarly, interference with plant operation or performance is an event that the owner must remedy, but such interference should not by itself constitute a permit violation.

Response 17

EPA disagrees that the requirement in Part I.A.9 is unnecessary and duplicative.

First, EPA would clarify that the definition cited by the commenter is incomplete. The full definition found at 40 C.F.R. §403.3(p) is "The term **Pass Through** means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation)." (emphasis added)

Based upon this complete definition, a violation of Part I.A.9 would occur if pollutants introduced by a non-domestic user cause a violation of any requirement of the permit, or increases the magnitude or duration of a permit violation.

While the definition of "Pass through" is included in Part II of the Draft Permit, the requirement at Part I.A.9 is the only place where a pass through is expressly prohibited. Therefore, EPA has determined that the requirement is not unnecessary nor duplicative and will remain in the Final Permit.

Comment 18

Requirement to Identify All Potential and Actual Unauthorized Discharges (Page 10)

Part I.C.2 requires the permittee to develop a preventive maintenance program that includes a system-wide inspection program designed "to identify all potential and actual unauthorized

indirect discharges." This requirement should be restated, because no inspection program will identify all potential or even actual unauthorized discharges. For example, local residents may report unauthorized discharges to Lowell's collection system. The premise that Lowell staff should be responsible for identifying all potential and actual unauthorized indirect discharges is impracticable. The requirement should be modified to require an inspection program designed:

"To the extent practicable, to identify actual or potential collection system releases."

Response 18

The language in the permit states: "The program shall include an inspection program *designed* to identify all potential and actual unauthorized discharges." (emphasis added) EPA recognizes that identifying "all potential or even actual unauthorized discharges" is a challenge and will be an ongoing process. Nevertheless, the City shall design this program in an effort to identify all unauthorized discharges through this program. The original language remains in the Final Permit.

Comment 19

Collection System Inflow/Infiltration Requirements Should be Limited to Co-Permittees (Page 11)

Part I.C.3 requires the Permittee and co-permittees to address I/I into the sewer system to prevent high flow releases from the collection system and high-flow-related violations at the Permittee's treatment facility. The Permittee already address I/I as part of our NMC and CSO LTCP requirements. Accordingly, the reference to "Permittee" should be removed such that this section is limited to the Co-permittees.

Furthermore, Lowell's I/I control program, which is part of its LTCP, should be referenced within the permit. Lowell's implementation of I/I and CSO control should be guided by our written control plans, which should be incorporated by reference in the permit.

Response 19

EPA disagrees. Although Lowell may be under an obligation to address I/I under separate legal instruments and obligations, that does not obviate the need for an enforceable requirement in the NPDES permit, as the provision is intended to ensure compliance with Section 301 and is a necessary condition of the permit. Having all components of the POTW subject to similar requirements relative to I/I will assure that a comprehensive scheme is in place to address these issues, which can adversely affect treatment plant operation and lead to adverse impacts on water quality. This holistic approach to I/I abatement is one of the underlying functions of the co-permittee approach, so that the issue can be addressed through enforceable mechanisms in, rather than extrinsic to, the NPDES permits.

EPA recognizes that Lowell has an I/I program which is part of its LTCP. The permittee (and co-permittees) do not need to duplicate efforts to comply with the provisions of the permit. If, for example, the LRWU has already completed items which are required by the permit and submitted to EPA, they can be referenced for permit compliance.

Comment 20

Collection System Mapping (Page 11)

Part I.C.4 requires extensive collection system mapping work to be completed within 30 months of the permit effective date. Some of the mandated information is unlikely to be available. For example, we won't know with certainty where every sewer pipe in our system is, what it is made of, the diameter, date of installation, distance between manholes, etc. We are particularly concerned with the breadth and scope of Subsections 4.a, 4.c, and 4.k.

Accordingly, the requirement in this part should be qualified "to the extent practicable" by the Permittee. Also, a requirement to update the mapping each permit term to reflect new infrastructure or newly characterized infrastructure would be acceptable.

Response 20

EPA agrees that some of the information related to the collection system mapping requirement may not be available. In general, EPA's interpretation of this provision is that the permittee must take reasonable measures to fulfill it. Regarding the specific subsections listed in the comment, EPA offers the following responses:

Part I.C.4.a – The Permittee has not identified a specific reason why it is unable to obtain a map of all sewer lines and manholes, as other communities have done. The permit requirement does not mandate a specific level of "certainty" in the production of this information, as the commenter presumes. Where there are uncertainties that cannot be resolved, the Permittee may include that notation and explanation on the map.

Part I.C.4.c – The requirement only asks for "known or suspected" connections; therefore, it does not require the inclusion of any information that may not be available or practicable to obtain.

Part I.C.4.k – EPA agrees that some information may be infeasible to obtain. Therefore, this subpoint of the Final Permit has been updated to include "to the extent feasible." However, if certain information is determined to be infeasible to obtain, a justification must be included along with the map. If EPA disagrees with the assessment, it may require the map to be updated accordingly. EPA reserves the right to default to the original formulation in the next permit cycle if it determines that the City's justifications were inappropriate and/or inadequate.

Finally, the commenter requests a requirement to update the map each permit term. The Draft Permit currently requires that the map be kept up-to-date. EPA notes that proper operation and maintenance of the sewer system would likely require mapping to be updated more frequently than each permit term as the Permittee and Co-permittees make changes to the portion of the collection system they own. Therefore, the language from the Draft Permit is maintained in the Final Permit.

Comment 21

Preventing Unauthorized Discharges (Page 12)

All collection systems will experience releases from time-to-time due a wide range of operational and capacity-related issues. Consistent with this reality, please revise Part I.C.5.b(6) to require and I/I program for "minimizing" and not (the impossible of) "preventing" unauthorized discharges. Otherwise, we have double jeopardy for having an unauthorized discharge and then a separate violation for not preventing it pursuant to this requirement. Neither EPA nor the permittees can guarantee no overflows.

Response 21

While not all unauthorized discharges may be completely prevented, Part I.C.5.b(6) of the Draft Permit is in place to require the development of programs for "preventing I/I related effluent violations and all unauthorized discharges of wastewater…". The actual prevention of unauthorized discharges will be based on the level of success in implementing these programs. EPA notes that if the Permittee develops and implements programs in accordance with Part I.C.5.b(6) of the Draft Permit, yet an unauthorized discharge still occurred, the Permittee would only be in violation of Part I.B.1 regarding unauthorized discharges but would not be in violation of Part I.C.5.b(6) regarding the development and implementation of programs for preventing unauthorized discharges. Therefore, Part I.C.5.b(6) is maintained in the Final Permit.

Comment 22

Imposing Local Limits Guidance (Page 13)

We object to EPA requiring that we comply with EPA's Local Limit Development Guidance (July 2004). We are agreeable with a requirement that we use such guidance in developing local limits, but this guidance is not law and, accordingly, cannot be imposed as a mandatory requirement. The provision should require the Permittee to review its local limits in consultation with EPA's Local Limit Development Guidance (2004).

Response 22

The Draft Permit states "The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004)." This document provides guidance for developing and implementing local limits in accordance with the Pretreatment Regulations found in 40 C.F.R. Part 403; EPA concurs that it is not binding, but referencing this guidance in the permit condition is reasonable, in EPA's view, as it provides some assurance to EPA that local limits are being developed consistent with the regulatory regime. EPA recognizes that the Permittee may have some flexibility in developing local limits so long as those limits are not contradictory to EPA's Local Limit Development Guidance (2004). EPA interprets the phrase "in accordance with" in this case to mean an application of local limits that is consistent with, but not necessarily exclusively based on, this guidance document. This interpretation of the use of such guidance seems to be amenable to the commenter. The language is maintained in the Final Permit.

Comment 23

Assuring Significant Industrial User Compliance (Page 14)

Part I.E.5 requires the Permittee to "assure" that applicable pretreatment standards are met by all categorical industrial users of the POTW. The Permittee is not a guarantor of SIU performance. This must be changed to require that the Permittee require that SIUs meet applicable categorical standards through the issuance of appropriate permits to such users. Otherwise, if an SIU violates a categorical standard – through no fault of the Permittee – the Permittee will be in non-compliance. That is a legally incorrect and unfair requirement.

Response 23

EPA agrees that the City is not affirmatively required by the terms of Part I.E.5 to do anything beyond developing and enforcing local limits. This represents EPA's binding interpretation of the permit.

Comment 24

CSO Authorization (Page 15)

Part I.F.1 should be revised as follows:

During wet weather and/or periods of snow melt, the Permittee is authorized to discharge wastewater from the CSO outfalls listed below:

This change is a common and necessary approach for CSO permits in the northern half of the country where sewer overflows can be triggered by both rainfall and/or snow melt.

Response 24

Consistent with the CSO Policy, 18688 Fed. Reg. at 18689, and 40 C.F.R. § 122.26(b)(13), EPA agrees to the suggested change to include snow melt as a source of wet weather. The Final Permit has been updated accordingly.

Comment 25

CSO Long-Term Control Plan Development Language (Page 15)

The permit is inconsistent with CWA Section 402(q), because it fails to address the development of our CSO Long-Term Control Plan (LTCP). We are still at the stage of a Phase 1 permit under EPA's CSO Policy. The Policy requires that a deadline for submittal of our CSO LTCP update be included in the permit. We request the opportunity to discuss the appropriate deadline with EPA.

Response 25

The CSO Policy states that "Permittees should develop and submit [the] long-term CSO control plan as soon as practicable, but generally within two years after the date of the NPDES permit provision, Section 308 information request, or enforcement action requiring the permittee to develop the plan." 18688 Fed. Reg. at 18691. EPA and the City of Lowell entered into an Order on Consent on September 27, 2017, which, in part,

requires the City to submit a LTCP. EPA understands that the LRWU is in the process of developing an Integrated Plan, which will incorporate their LTCP to include any updates. Requests for discussions regarding the deadlines for the development and submittal of these plans should be directed to EPA's Enforcement and Compliance Assurance Division ("ECAD").

Comment 26

High Flow Management/Secondary Bypass Authorization (Page 15)

As noted above, Part I.F should incorporate our current High Flow Management Procedures. These procedures ensure that we maximize flow at the treatment plant to the maximum extent practicable.

Response 26

See Response 13.

Comment 27

General Water Quality Standards Compliance Language for CSOs (Page 16)

Part I.F.2.b imposes the same WQS compliance language that we objected to above in relation to the POTW discharge. It is legally and factually wrong to apply these standards to the POTW discharge, and particularly egregious to apply the WQS to our CSO discharges – which are untreated. EPA cannot logically on one hand authorize our CSO discharges and then on the other hand require compliance with water quality standards at all times. It is physically impossible and legally inconsistent with CWA 402(q), which specifies the conditions for Phase I and Phase 2 CSO NPDES permits.

Response 27

EPA disagrees with the commenter's assertion that EPA cannot authorize CSO discharges and require compliance with water quality standards. See Response 16.

In addition to the reasons set forth in Response 16, inclusion of the narrative condition at issue is consistent with EPA's CSO Policy, which is incorporated by reference into CWA Section 402(q). *National CSO Control Policy,* 59 Fed. Reg. 18688, 18696 (1994) (requiring NPDES permits to include narrative limitation mandating compliance with applicable WQS no later than the date allowed under the State's WQS). Both the *NPDES Permit Writer's Manual* and the *Combined Sewer Overflows: Guidance for Permit Writers* ("*CSO Guidance")* underscore the importance of ensuring that CSO discharges achieve state water quality standards including those that are narrative. *NPDES Permit Writer's Manual,* EPA at 9-16 to 9-17 (Sept. 2010); *Combined Sewer Overflows: Guidance for Permit Writers*, EPA Office of Water, at 3-36 to 3-37, 4-27 (Sept. 1995). The *CSO Guidance* specifically states that "in addition to performance standards designed to meet WQS, the permit writer should include narrative permit language providing for the attainment of applicable WQS." *Combined Sewer Overflows: Guidance for Permit Writers*, EPA Office of Water, at 4-27 (Sept. 1995). These guidance documents are consistent with the CWA and its implementing regulations.

As such, Part I.F.2.b of the Draft Permit which requires compliance with State WQS, is both lawful and appropriate, and will remain in the Final Permit.

Comment 28

CSO Structures Set to Minimize Overflows (Page 16)

Part I.F.3.b should be revised as follows:

Each CSO structure/regulator, pumping station and/or tide gate shall be routinely inspected, at a minimum of once per month, to ensure that they are in good working condition and adjusted to minimize combined sewer discharges consistent with system operation (not causing upstream surcharges nor plant operational problems) and compliance with all effluent limitations and conditions in this permit (NMC #1, 2, and 4).

Response 28

The Draft Permit requires the permittee to properly operate and maintain its wastewater treatment facility and collection system, which includes CSO structures/regulators, pumping stations and/or tide gates, so as to prevent upstream surcharges and plant operational problems. The Draft Permit also requires compliance with all effluent limitations and conditions. Re-stating these requirements would be unnecessarily redundant. Therefore, Part I.F.3.b. of the Final Permit remains unchanged from the Draft Permit.

Comment 29

Prohibition on Acceptance of Septage into the Collection System During CSO Events (Page16)

Lowell agrees with Part I.F.3.c, which prohibits the acceptance of septage discharges into the collection system (as compared with the treatment facility prohibition on Page 7, which we objected to above). We think this prohibition makes sense.

Response 29

Comment noted. See Response 14.

Comment 30

Requiring Direct Measurement of CSO Discharge Information (Page 16)

Part I.F.3.e requires the "direct measurement" of duration and volume for each of the nine CSO outfalls. Lowell already complies with this requirement by calculating flow over a weir or flow through an orifice. In addition to actual weirs, Lowell uses the weir calculation for its downward-opening diversion gates, and the orifice calculation for its upward-opening diversion gates. Please confirm that our existing approach satisfies this requirement. If for any reason it does not, we ask that the requirement be refined to match our operational practice (which has been effective).

Response 30

Forms of direct measurement *may* include, but are not limited to, metering of flows at each CSO outfall. Alternate approaches could include, for example, extrapolating the flow volume discharged through a CSO outfall from measurements of water levels in the interceptor sewers (or some other measured metric of a known quantity from which the flow volume could be derived). Therefore, the approach described by the commenter is appropriate.

Comment 31

Requiring Record Retention for 6 Instead of 3 Years (Page 17)

Part I.F.3.e requires that Lowell retain records of CSO discharges for six years instead of the three years specified in EPA's regulations. This should be changed to three years from the creation of the record.

Response 31

EPA agrees that 40 C.F.R. § 122.41(j) stipulates a retention period of at least three years from date of the sample measurement, report, or application. Therefore, Part I.F.3.e of the Final Permit has been modified to specify three years from date of the sample measurement, report, or application.

Comment 32

Total Phosphorous Compliance Schedule (Page 21)

Lowell objects to the one-year compliance schedule for Total Phosphorous (Part I.H.1) for several reasons. First, we are still completing a major treatment facility upgrade that won't be fully in service for another 12 months. Second, we have not yet determined how we will comply with the total phosphorous limit. One year is indisputably inadequate for us to plan, design, permit, fund, and construct such an upgrade. Last, but by no means least, we are due to submit our integrated plan (pursuant to CWA 402(s)) to EPA by December 31, 2019. That plan will specifically balance a number of CWA and related capital needs and programs.

The compliance schedule for our new TP limit will be identified in that CWA 402(s) integrated plan. Upon EPA's approval of that plan, the compliance schedule associated with the total phosphorous limit should become a part of this permit. Accordingly, we request the following compliance schedule language for the new Total Phosphorous limit:

The Permittee is required to submit an integrated plan to EPA in accordance with CWA-AO-RO1—FY17-016 (October 2, 2017) on December 31, 2019. The plan will include a compliance schedule for Lowell to meet the new total phosphorous limit. Upon EPA's approval of the plan, the compliance schedule therein for Lowell to comply with the total phosphorous limit shall be incorporated into this permit as if set forth herein.

Response 32

EPA agrees that the one-year compliance schedule in the Draft Permit is inadequate based on recent levels of total phosphorus which consistently exceed the newly

established permit limit and the potential need for capital investment in the treatment plant. However, EPA disagrees with the approach of incorporating a compliance schedule into a future integrated plan, which would effectively render the phosphorus limit unenforceable and would not be consistent with the Act; a permit must either require immediate compliance, or where appropriate, may include, pursuant to 40 C.F.R. § 122.47(a)(1), a compliance schedule as an enforceable requirement of the permit itself. The Final Permit will contain a revised compliance schedule provided below which is consistent with schedules in other permits in Massachusetts containing new phosphorus limits and will also allow sufficient lead time for the Permittee to incorporate this work into its December 2019 integrated planning.

In order to comply with the permit limits, the Permittee shall take the following actions with regard to total phosphorus:

1. Within twelve (12) months of the effective date of the permit, the Permittee shall submit to EPA and MassDEP a status report relative to the planning and design of the facilities necessary to achieve the permit limit.
2. Within twenty-four (24) months of the effective date of the permit, the Permittee shall complete design of the Facility improvements required to achieve the total phosphorus limit.
3. Within thirty (30) months of the effective date of the permit, the Permittee shall initiate construction of the Facility improvements required to achieve the total phosphorus limit.
4. Within forty-two (42) months of the effective date of the permit, the Permittee shall submit to EPA and MassDEP a status report relative to construction of the Facility improvements required to achieve the total phosphorus limit.
5. Within fifty-four (54) months of the effective date of the permit, the Permittee shall complete construction of the Facility improvements required to achieve the total phosphorus limit and shall comply with the permit limit.

The commenter should be aware that there are also provisions under EPA's minor modification provisions that allow adjustment by letter of interim milestones of up to 120 days, which may provide additional flexibility. *See* 40 C.F.R. § 122.63(c).

Comment 33

Notice to Downstream Community Water Systems (Page 21)

Lowell objects to the wording of the requirement to notify downstream community water systems. Of course, virtually every water system is downstream of some upstream community. Accordingly, these facility operators make investments in their water systems that assume challenging source water conditions (not necessarily dumping of unusual chemicals in large quantities, but certainly upstream sources such as CSOs, urban stormwater, and background pollution). Accordingly, we believe Part I.H.2 is overly broad. Read literally, it would require us to notify downstream water systems about each and every SSO we have, regardless of volume. That serves no real purpose. We believe the provision should be replaced with the following:

"The Permittee shall notify the downstream community water systems listed below of any emergency condition, plant upset or bypass, collection system release into surface waters, or permit noncompliance, which could potentially adversely affect their ability to adequately treat drinking water. The Permittee may consult with such community water systems for the purpose of developing written agreements as to the type of events/releases by the Permittee that they want notice of. A copy of any such agreement shall be provided to EPA and DEP."

Response 33

Part I.H.2 of the Draft Permit requires the following: "The Permittee shall notify the downstream community water systems listed below of any emergency condition, plant upset, bypass, CSO discharges, SSO discharges or other system failure which has the potential to violate permit limits or affect the quality of the water to be withdrawn for drinking water purposes."

EPA agrees that the language may be overly broad in that it may be interpreted to apply to every SSO, regardless of volume. However, EPA does not agree with the proposed language provided by the commenter to only require notification if such discharges could "adversely affect their ability to adequately treat drinking water." EPA recognizes that downstream drinking water sources may need advanced notification in order to be prepared to adjust treatment and/or modify monitoring frequency to ensure such treatment meets all drinking water quality standards and to minimize the risk to public health. A downstream drinking water system may be capable of adequately treating drinking water during or in response to an SSO discharge event precisely because it received advanced notification and was able to take appropriate actions. Therefore, in lieu of adopting the commenter's language, EPA will modify the language as follows in the Final Permit.

"The Permittee shall notify the downstream community water systems listed below of any emergency condition, plant upset, bypass, CSO discharges, SSO discharges or other system failure <u>if any of those occurrences have</u> the potential to ~~violate permit limits or~~ affect the quality of the water to be withdrawn for drinking water purposes."

Based on this clarification to the Final Permit, the proposed language regarding the development of a written agreement between the City of Lowell and downstream community water systems is not included in the Final Permit.

Comment 34

<u>Notification to Massachusetts Division of Marine Fisheries (Page 21)</u>

We object to Part I.H.3, which requires us to notify Mass Department of Marine Fisheries (DMF) within 4 hours of "any emergency condition, plant upset, bypass, CSO discharges, SSO discharges or other system failure that has the potential to violate bacteria permit limits." This needs to be revised. This notification requirement is far too broad. Also, why are we notifying DMF rather than DEP regarding bacteria-related issues? We think this notice requirement should be deleted or revised to target meaningful events that warrant notice to DMF.

Response 34

EPA disagrees that the language is overly broad. Due to the lag time for the City to receive results of bacteria testing which would indicate a permit violation has occurred compared to more immediate impacts to shellfish resources, it is important to notify the Department of Marine Fisheries ("DMF") even of the "potential to violate bacteria permit limits." DMF is the appropriate department to notify based on their role with the Shellfishing Management Program and the implications of bacteria limits on shellfishing uses.

Comment 35

Definition of Waters of the United States (Page 19 of the Standard Conditions)

We question whether this definition needs to be in the permit. The vast majority of NPDES permits do not include this definition. Given the uncertainty and controversy over defining WOTUS, we ask that EPA remove this definition.

Response 35

Part II (general conditions) contains definitions from 40 C.F.R. § 122.2 and there is regulatory and legal activity around this provision. *See* https://www.epa.gov/wotus-rule/definition-waters-united-states-rule-status-and-litigation-update. EPA acknowledges that the referenced definition may change, as may any other definition in the statute or implementing regulations during the permit term. That by itself is not a sound basis for removing existing regulatory definitions from the permit, which can provide guidance to the regulated community on the interpretation and operation of the permit. The commenter does not specify any reason why it believes that the definition of the Waters of the United States ("WOTUS") would be in controversy or material given the circumstances of the discharge or receiving waters here, as there is no dispute that the Merrimack River is a water of the U.S. Rather than introduce uncertainty into the permit itself, EPA has determined that the more straightforward approach is to base the permit on those regulations in effect at the time of permit issuance.

B. Comments from Stephen E. Jahnle, Assistant Director, Town of Chelmsford Department of Public Works on July 23, 2019:

Comment 36

The Town of Chelmsford has reviewed the draft referenced NPDES permit issued to the Lowell Regional Wastewater Utility (LRWWU) and the four co-permittees (Chelmsford, Dracut, Tewksbury and Tyngsborough). The co-permittees will be required to comply with Part B-Unauthorized Discharges, Part C - Operation and Maintenance of the Sewer System and Part D-Alternate Power Source. Upon review of Parts B, C, & D, the Town of Chelmsford is in position to comply with the requirements within those sections and has mapped the sewer system and has an online GIS system, has a robust short and long term capital plan as well as daily operation, maintenance and inspections. The Town will accept the conditions as presented in the draft permit.

Response 36

Comment noted. EPA appreciates the work done by the Town of Chelmsford with respect to these permit requirements.

Comment 37

The Town of Chelmsford would like to comment on the effluent limit limitation of 32.0 million gallons per day (MGD) based upon an annual rolling average. The limit is based upon the limit contained in the 2005 final NPDES permit for the LRWWU Water Resource Recovery Facility ("facility"). The facility has been in compliance with that limitation for the vast majority of time during the period of 2014-2018. In addition, it is important to note that the facility has demonstrated that it has been in compliance with other effluent parameters the vast majority of the time. The Lowell facility is a regional facility treating flow from five (5) urban municipalities and their associated industrial sources. The Town requests that USEPA and MassDEP reconsider the effluent flow limit in this draft permit. The limit will likely hinder the facility's ability to serve the region and expand capacity to treat wastewater and CSO flows.

The Town would like to also note that NPDES permits issued to major communities upstream in New Hampshire (Concord, Manchester and Nashua- source: EPA Region 1 NPDES web page) did not include a flow limit and pollutant loads were controlled by allowing certain pollutant loads. This approach would have value and merit for the LRWU facility. EPA’s practice is to use design flow in evaluating "reasonable potential" and such flows can still be used in those calculations without a limit being placed in the final permit.

All of the Lowell Regional Wastewater Utility partners are members of the Middlesex 3 Coalition, which is fostering regional economic development, job growth and retention, as well as diversification of the tax base-all which require sewer infrastructure to support.

In addition to the Northern Middlesex Council of Governments Regional Planning Agency's drive for economic development, housing and jobs, which they deem reliant on water and sewer infrastructure, sewer infrastructure (flows and capacities) are all necessary to support Massachusetts' Sustainable Development Principles.

With all of these facets reliant on both water and sewer infrastructure, it does not make sense that the Lowell Draft Permit includes a flow limit of 32 MGD. Chelmsford is limited to 3.01 MGD and is approaching that flow. With expanding residential and commercial redevelopment in the community, additional capacity is a necessity. The facility is designed to handle much larger flows and this limit will severely restrict any of the regional partners from attaining the goals that are driven by the state.

The LRWWU facility is a valuable infrastructure resource for the region, has potential to treat additional wastewater from this region of economic growth and can continue to be a major element in the control of CSOs in the City of Lowell. The Town of Chelmsford respectfully request that the flow limit be eliminated from the Permit. The Town of Chelmsford suggests that USEPA and MassDEP remove the 32 MGD limit and select one of the following options (presented in order of preference): 1.) Put a "report only" for flow with pollutants controlled by mass limitations; 2) Revise the permitted flow to a higher amount that reflects real time capacity

based on current operating capacities as shown on all previous reports, or 3.) Put two flow limits in the permit- one based upon dry weather flow, a second based upon wet weather flow (which would be designated in the permit).

Response 37

The effluent flow limit of 32 MGD is not based on an arbitrary value. The NPDES permit application signed by Thomas E. Kawa, Operations Superintendent on May 25, 2010 lists the design flow of the treatment plant as 32 MGD. The effluent flow limit in the Final Permit is the design flow of the POTW which is the annual average flow of 32 MGD. The limit is expressed as an annual average, to be reported as a rolling average. The value is calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flow of the previous eleven (11) months. The Permit's approach to determining an effluent flow limit reasonably accounts for seasonal variations in the facility's effluent flow. EPA notes that the 2005 Permit contained the same limit as proposed in the 2019 Draft Permit. For the period January 2014 through December 2018 the permit has had 2 violations of the flow limit (November and December, 2018). The average rolling average flow during this period was 25 MGD.

40 C.F.R. §§ 122.41(d) and (e) require the permittee to (1) "take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment," and (2) "at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit." The Region has determined that the design capacity-based effluent flow limit is appropriate in order to assure that LRWU operates its facility to comply with its permit's technology-and water quality-based effluent limitations.

The statement that EPA's practice is to use design flow in evaluating "reasonable potential" is correct; however, without a flow limit the assumptions in those reasonable potential calculations may not be valid. Further, 40 C.F.R. §122.45(b)(1) requires that "In the case of POTWs, permit effluent limitations, standards, or prohibitions shall be calculated based on design flow." Consequently, since options 2 and 3 presented by the commenter would base permit conditions on flows other than the design flow of 32 MGD they are not viable.

EPA does not agree with option 1 proposed by the commenter which proposes "report only" for flow with pollutants controlled by mass limitations. A mass-only effluent limit and "report only" condition for flow would not be protective of the assumptions used to evaluate reasonable potential and develop effluent limitations.

EPA Region 1 has been consistently issuing NPDES permits with flow limits to NH WWTPs since 2016 and will continue to do so.

EPA recognizes that the LRWU is a valuable asset to the region. It is therefore, critical that the facility be operated within its design parameters. The Town Chelmsford states that they are close to meeting their limit of 3.01 MGD and will need additional capacity.

It is assumed that these flows are daily flows and would fall within the 32 MGD design capacity of the Facility. Accommodating additional flows would need to be done through finding available capacity from other co-permittees, reducing I/I or increasing the design capacity of the wastewater treatment facility.

EPA also recognizes that LRWU has been subject to an administrative order for compliance, dated September 30, 2010, which states "[f]rom the effective date of this Order until the issuance of a new Permit or this Order is modified or superseded, the limitation for Annual Average Flow through the WWTF shall be monitor only." EPA encourages the Permittee to contact EPA's Enforcement and Compliance Assurance Division (ECAD) to discuss whether a new order is necessary and/or appropriate. Please see https://r1-gis-web.r1.epa.gov/ecad/enforcement_comp.html for relevant contacts.

See Response 4**Error! Reference source not found.** for additional discussion.

C. Comments from Town of Tyngsborough Sewer Commission on July 23, 2019:

Comment 38

The Town of Tyngsborough has reviewed the draft referenced NPDES permit issued to the Lowell Regional Wastewater Utility (LRWWU) and the four co-permittees (Chelmsford, Dracut, Tewksbury and Tyngsborough). The co-permittees will be required to comply with Part B-Unauthorized Discharges, Part C - Operation and Maintenance of the Sewer System and Part D-Alternate Power Source. Upon review of Parts B, C, & D, the Town of Tyngsborough feels that it is in a good position to comply with the requirements within those sections and has made significant progress to date on sewer system mapping and operation and maintenance planning and implementation. The Town will accept the conditions as presented in the draft permit.

Response 38

Comment noted. EPA appreciates the work done by the Town of Tyngsborough with respect to these permit requirements.

Comment 39

The Town would like to comment on the effluent limit limitation of 32.0 million gallons per day (MGD) based upon an annual rolling average. The limit is based upon the limit contained in the 2005 final NPDES permit for the LRWWU Water Resource Recovery Facility ("facility"). As shown in Appendix A (attached hereto) of the draft permit, the facility has been in compliance with that limitation for the vast majority of time during the period of 2014-2018. In addition, it is important to note that the facility has demonstrated that it has been in compliance with other effluent parameters the vast majority of the time. The Lowell facility is a regional facility treating flow from five (5) urban municipalities and their associated industrial sources. The facility is also an integral part of the City of Lowell' s control and treatment of combined sewer overflows (CSOs). The facility has successfully demonstrated that it can consistently treat volumes greater than the effluent limit of 32.0 MGD. The Town requests that USEPA and MassDEP reconsider the effluent flow limit in this draft permit. The limit will likely hinder the facility's ability to serve the region and expand capacity to treat wastewater and CSO flows. Flow is not a direct correlation to the ability to properly treat wastewater and should not be used

as a deterrent to solving regional wastewater needs and maximizing the capacity at this regional facility. It is understood that if a higher flow value is put into the permit that other pollutant loads (such as BOD and TSS) will not be increased and that the concentration values will be reduced while keeping the mass loading constant.

The Town would like to also note that NPDES permits issued to major communities upstream in New Hampshire (Concord, Manchester and Nashua- source: EPA Region 1 NPDES web page) did not include a flow limit and pollutant loads were controlled by allowing certain pollutant loads. This approach would have value and merit for the LRWU facility. As noted in the fact sheet (pages 8-9 attached hereto), EPA's practice is to use design flow in evaluating "reasonable potential" and such flows can still be used in those calculations without a limit being placed in the final permit.

The LRWWU facility is a valuable infrastructure resource for the region, has potential to treat additional wastewater from this region of economic growth and can continue to be a major element in the control of CSOs in the City of Lowell. The Town of Tyngsborough suggests that USEPA and MassDEP remove the 32 MGD limit and select one of the following options (presented in order of preference): 1.) Put a "report only" for flow with pollutants controlled by mass limitations; 2) Revise the permitted flow to a higher amount that reflects real time capacity based on current operating capacities as shown on all previous reports, or 3.) Put two flow limits in the permit- one based upon dry weather flow, a second based upon wet weather flow (which would be designated in the permit).

In addition to the comments above, the following comments impact the entire region that the Lowell Wastewater Treatment Facility services. The Town of Tyngsborough has been proactive in its wastewater planning, coordinating regional efforts, as well as completed sewer system buildouts to align with the state's housing and economic development goals. As a regional partner with Lowell, and noting the Merrimack River cuts the Town of Tyngsborough in half, this includes sewer buildouts conducted on three geographic areas where the Town maintains active Intermunicipal Agreements:

1. Chelmsford, MA - through the Worden and Middlesex Metering Stations on the west side of the Merrimack River with an IMA for 350,000 GPD. This IMA was initially set up in order for the federal/state mandate to service the Charles George Landfill. Infill sewer, as well as the Town's Phase 1 West Sewer (2018), now encapsulates the entire flow limit under the IMA. The west side of the River contains all of Tyngsborough's commercial and industrial parcels, as well as land targeted for mixed use zoning. The largest potential for economic development, as well as housing, is within this geographic area. Additional economic development and housing initiatives will not be able to correct to sewer due to flow limits in the IMA. Tyngsborough is working with the Town of Chelmsford in evaluating sewer infrastructure along the JMA route, as well as coordinating with Lowell. Both Tyngsborough and Chelmsford are deficient needed flows in this area. Tyngsborough projects it will need an additional 150,000 to 200,000 GPD over the next few years in this IMA location to meet housing and economic development projections.

2. Dracut, MA - through the Mascuppic and Farwell Metering Stations servicing the east side of the River with an JMA for l.0M MGD. This area is mainly residential parcels and schools, with some smaller commercial entities. There are two major bodies of water located on the east side of the River-Mascuppic Lake and Althea Lake. Soils and groundwater conditions are severe in this area adding to the need for offsite wastewater treatment. Tyngsborough IMA of l .0M will suffice to address sewering per the state-approved Comprehensive Wastewater Management Plan (CWMP).
3. Lowell, MA - through the Pawtucket Boulevard Metering Station servicing the lower region of Pawtucket Boulevard, most importantly the Greater Lowell Regional Vocation School with an JMA of 80,000 GOD. This JMA purpose was to service the Greater Lowell Regional Vocational School and any parcels along the route. The initial JMA was 20,000 GOD and was extended to 80,000. The current IMA is sufficient to service Tyngsborough' s needs from the CWMP in this area.

Tyngsborough is proactive in its approach to planning for not only the present, but the future as well. Tyngsborough was awarded the title "Housing Choice Community" from the state as part of the state's Community Compact Program's Best Management Program with both affordable housing and transportation. To attract and maintain the housing status requires sewer infrastructure as the area is riddled with severe soil and groundwater conditions, as well as a multitude of environmental concerns that are all addressed with municipal sewer.

All of the Lowell Regional Wastewater Utility partners are members of the Middlesex 3 Coalition, which is fostering regional economic development, job growth and retention, as well as diversification of the tax base-all which require sewer infrastructure to support.

In addition to the Northern Middlesex Council of Governments Regional Planning Agency's drive for economic development, housing and jobs, which they deem reliant on water and sewer infrastructure, sewer infra structure (flows and capacities) are all necessary to support Massachusetts' Sustainable Development Principles. These impact all of the Lowell regional partners with the following:

- Housing and Economic Development
- Transportation
- Job Growth and Retention
- PLANNING REGIONALLY

One more factor that impacts these regional partners in this geographic location of the state, is the fact that these communities border New Hampshire to the south. A state with no state tax. This provides a hardship in many areas attempting to diversify the tax base to relieve residential property owners, as well as any commercial entities within these towns. In looking to compete with New Hampshire and drive and retain business in Massachusetts, sewer is of utmost need! Restaurants, service industries, hotels and other large water users can compete with no sales tax in New Hampshire and actually grow in Massachusetts, but not without sewer service. Limiting Lowell's flow further exacerbates an already existing problem.

With all of these facets reliant on both water and sewer infrastructure, it does not make sense that the Lowell Draft Permit includes a flow limit of 32MGD. The facility is designed to handle much larger flows and this limit will severely restrict any of the regional partners from attaining the goals that are driven by the state.

Based on this supporting documentation, we respectfully request that the flow limit be eliminated from the Permit. The Town of Tyngsborough suggests that USEPA and MassDEP remove the 32 MGD limit and select one of the following options (presented in order of preference): 1.) Put a "report only" for flow with pollutants controlled by mass limitations; 2) Revise the permitted flow to a higher amount that reflects real time capacity based on current operating capacities as shown on all previous reports, or 3.) Put two flow limits in the permit- one based upon dry weather flow, a second based upon wet weather flow (which would be designated in the permit).

Response 39

See Responses 4 and 37.

D. Comments from Richard Montuori, Town Manager, Town of Tewksbury on July 23, 2019:

Comment 40

The intent of this letter is to request an additional 30 days of public comment for NPDES Permit No. MA0100633 for the Lowell Regional Wastewater Utility. As a co-permittee, the Town of Tewksbury did not have adequate notice or time to properly review the draft permit with appropriate departments, officials, and counsel. It is our understanding that only a paper copy of the draft permit was sent to the town, and unfortunately to an incorrect address. I respectfully request an extension on the public comment period to ensure the Town can perform a thorough and satisfactory review. I appreciate the consideration of the Environmental Protection Agency on this important matter.

Response 40

EPA mailed the public notice package via USPS Certified Mail to the Tewksbury Town Hall at 1009 Main Street, Tewksbury, MA 01876. According to the official USPS tracking records, this package was delivered to the appropriate address on June 6, 2019 and signed for by an individual at the Tewksbury Town Hall. The public notice period began on June 7, 2019 and was extended until July 23, 2019, a total of 47 days. EPA acknowledges that it may have taken the Town a short period of time to distribute the notice to the appropriate departments, officials and counsel within the Town, but does not agree that this would preclude the Town from having adequate time (at least 30 days pursuant to 40 C.F.R. § 124.10(b)(1)) to review and submit any necessary comments.

Further, EPA notes that the above comment letter submitted by the Town was mailed from the same Town Hall address that received the original Draft Permit package on June 6, 2019 and was dated July 23, 2019, the final day of the 47-day comment period. This indicates that the address which received the public notice package is the official business address for the Town and that the Town was aware of the public notice end date.

For these reasons, EPA has a basis to conclude that the Town had adequate notice and a further extension of the public comment period is not granted.

E. Comments from Betsy Reilley, Ph.D., Director, Environmental Quality Department, Massachusetts Water Resource Authority on July 23, 2019:

Comment 41

Comments on Co-Permittees

MWRA appreciates that the United States Environmental Protection Agency (EPA) has included language that provides clarity about responsibilities among the co-Permittees. However, MWRA continues to have reservations about the inclusion of municipal entities that have not applied for a permit and are not directly discharging to a water of the Commonwealth or the United States. MWRA remains concerned that the co-Permittee model is inconsistent with the intent of the Clean Water Act.

Response 41

EPA acknowledges the comment. For a discussion of the three aspects of EPA's co-permitting approach identified in the comment, please see *In re Charles River Pollution Control Dist*., 16 EAD 623 (EAB 2015). Those specific rationales, as well as the bases identified by the Board in upholding EPA co-permittee approach, are incorporated here.

Comment 42

Comments on BOD and TSS Percent Removal

The draft permit includes a requirement to achieve 85 percent removal of BOD5 and TSS. Pursuant to 40 C.F.R. 133.103(a), this requirement should be applied only "during dry weather" because the treatment plant serves a combined sewer system and thus may not be able to meet the percentage removal requirements established under §§133.102(a)(3) and 133.102(b)(3), or §§133.105(a)(3) and 133.105(b). During wet weather the Nine Minimum Controls requirement to maximize flow to the treatment facility, conflicts with a percent removal requirement. MWRA recommends adding a footnote such as the following:

> The permittee's treatment facility will 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 rain and no snow melt. The percent removal shall be calculated as a monthly average using the influent and effluent BOD5 and TSS values collected during dry weather days.

Response 42

See Response 6.

Comment 43

Comments on Phosphorus

The draft permit includes a seasonal limit for phosphorus, subject to a compliance schedule whereby the limit takes effect one year from the effective date of the permit. However, MWRA disagrees with EPA's "reasonable potential" analysis in the Fact Sheet, relating to phosphorus.

Massachusetts Water Quality Standards include a narrative standard for nutrients. There is no Gold Book criterion for phosphorus in freshwater. In fact, the Gold Book outlines, "No national criterion is presented for phosphate phosphorus for the control of eutrophication." Nor has Massachusetts established either a loading allocation such as an approved TMDL, or site-specific criteria, for the Merrimack River for phosphorus.

The Gold Book, as noted above, explicitly does not recommend a criterion for phosphorus in fresh water. However, the following statement in the Fact Sheet is used to support the phosphorus values used for the reasonable potential analysis:

> EPA's 1986 Quality Criteria for Water (the "Gold Book") recommends that in-stream phosphorus concentrations not exceed 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 a lake or reservoir.

The Fact Sheet erroneously uses values mentioned in one (1973) literature citation in the Gold Book, ignoring the remainder of the text, and uses that those numbers as though they were approved water quality criteria or standards. Such use is inappropriate.

The Clean Water Act requires states to develop TMDLs where numeric criteria are not available or where required to restore impaired waters. EPA's web site on TMDLs notes:

> The TMDL process is important for improving water quality because it serves as a link in the chain between water quality standards and implementation of control actions designed to attain those standards.

Furthermore, once a TMDL is approved the state must allocate pollutant loads equitably to contributing point and nonpoint sources, before permit limits can be set based on the TMDL. Although the TMDL process is time-consuming, it requires public input and allows for scientific review. Therefore, EPA cannot apply arbitrary criteria that have not gone through a review and public participation process. The statement in the Fact Sheet "In the absence of numeric criteria for phosphorus, EPA uses nationally recommended criteria and other technical guidance to develop effluent limitations for the discharge of phosphorus" has no legal basis.

The draft permit further cites the *Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV* (EPA December 2000). MWRA notes that the Foreword to this document states:

> This document presents EPA's nutrient criteria for Rivers and Streams in Nutrient Ecoregion XIV. These criteria provide EPA's recommendations to States and authorized Tribes for use in establishing their water quality standards consistent with section 303(c) of CWA. Under section 303(c) of the CWA, States and authorized Tribes have the primary responsibility for adopting water quality standards as State or Tribal law or regulation. The standards must contain scientifically defensible water quality criteria that are protective of designated uses. **EPA's recommended section 304(a) criteria are not laws or regulations** – they are guidance that States and Tribes may use as a starting point for the criteria for their water quality standards. (emphasis added)

The receiving water for the Lowell municipal wastewater discharge has been classified as impaired due to phosphorus in the 2014 Integrated List of Waters. The next step must be development of a TMDL for phosphorus loading. The phosphorus limit should be removed from the draft permit.

Response 43

See Responses 2, 3, and 97.

Consistent with the guidance documents cited by the commenter, EPA relied on these values as information relevant to the translation of the Commonwealth's narrative nutrient and nutrient-related criteria. EPA evaluated these values and methodological approaches and included them in the total mix of information, from which it ultimately derived a protective instream target, which fell within a range of available targets, set against a backdrop of scientific uncertainty. EPA did not apply them as binding criteria and may refine the target in future permitting cycles based on all the information in the record before it at the time of permitting. EPA did not select the most stringent available instream target available to it from the peer-reviewed literature in the administrative record, which it was fully authorized to do, and instead opted as a policy matter to measure receiving water response during the permit term and fine-tune the limit, if necessary, in future permitting cycles after assessing receiving water response. EPA reserves the right to revisit this judgment.

Neither the CWA nor EPA regulations require that a TMDL, or its equivalent, be completed before a water quality-based limit may be included in an NPDES permit.[13] Rather, water quality-based effluent limitations in NPDES permits must be "consistent with the assumptions and requirements of any *available* [emphasis added] wasteload allocation." 40 C.F.R. § 122.44(d)(1)(vii)(B). *Id*. Thus, an approved TMDL is not a precondition to the issuance of an NPDES permit for discharges to an impaired waterway. *Id*. This interpretation is consistent with the preamble to 40 C.F.R. § 122.44(d)(1), which expressly outlines the relationship between subsections 122.44(d)(1)(vi) (i.e., procedures for implementing narrative criteria), and (d)(1)(vii):

[13] *See*, e.g., 43 FR 60662, 60664 (December 28, 1978) ("EPA does not consider the establishment of TMDL's as essential to setting of water quality based effluent limits. Development of TMDL's pursuant to section 303(d) is not a necessary prerequisite to adoption or enforcement of water quality standards, and therefore, will not determine the validity of existing, revised or new water quality standards.")

> The final point about paragraph (vi) is that in the majority of cases where paragraph (vi) applies waste load allocations and total maximum daily loads will not be available for the pollutant of concern. Nonetheless, any effluent limit derived under paragraph (vi) must satisfy the requirements of paragraph (vii). Paragraph (vii) requires that all water quality-based effluent limitations comply with "appropriate water quality standards," and be consistent with "available" waste load allocations. Thus for the purposes of complying with paragraph (vii), where a wasteload allocation is unavailable, effluent limits derived under paragraph (vi) must comply with narrative water quality criteria and other applicable water quality standards.

See 54 Fed. Reg. 23,868, 23,876 (June 2, 1989). If a TMDL is completed and approved by EPA, the effluent limitation in any subsequently issued NPDES permit must be consistent with the wasteload allocation assigned to the facility. In the meantime, relevant regulations require that EPA develop water quality-based effluent limitations based on the existing applicable water quality standard in order to ensure that the permit complies with the EPA regulations requiring permits to include requirements "necessary to achieve water quality standards" (40 C.F.R. § 122.44(d)(1)) and limits "derived from, and [that comply] with" water quality standards (§ 122.44(d)(1)(vii)). These requirements implement Clean Water Act section 301(b)(1)(C), which mandates inclusion of "any more stringent limitation, including those necessary to meet water quality standards" in NPDES permits. *See In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 604-05 (EAB 2010) (expressly rejecting the idea that the permitting authority cannot proceed to determine permit effluent limits where a TMDL has yet to be established), *aff'd*. 690 F.3d 9 (1st Cir. 2012), *cert. denied*, 133 S. Ct. 2382 (2013).

Comment 44

Comments on Nitrogen

The draft permit requires monitoring of total nitrogen in the effluent. The Fact Sheet (section 5.1.9.1) asserts that estuarine portions of the Merrimack River have "elevated" nitrogen and chlorophyll 'a' levels, which can be related. The Fact Sheet goes on to describe observed levels of nitrogen and chlorophyll 'a' in the estuarine portion of the river, and then states "most of these results are outside the range typically found in healthy estuaries in Massachusetts". However, the citation given as a basis for that assertion is a study of southeastern Massachusetts estuaries, which are very different in their sensitivity to nitrogen loading from the colder, deeper, macrotidal, better-flushed estuaries north of Cape Cod. For example, Boston Harbor total nitrogen ranges from 0.15 to 0.99 mg/L while chlorophyll 'a' ranges from 0.13 to 68 µg/L (surface samples, collected biweekly year-round, throughout the estuary, 2014-2018). These ranges, from the now-healthy Boston Harbor, are similar to those cited for the brackish portions of the Merrimack River.

Although monitoring of effluent nitrogen is likely not onerous, MWRA cautions that the Fact Sheet does not adequately justify a concern about nitrogen loading to the Merrimack River. Establishing whether the receiving water, or the downstream estuary, is impaired because of nitrogen loading, is not the responsibility of NPDES permittees. In addition, as for phosphorus,

the appropriate next step for addressing any such impairment would be development of an approved TMDL.

Response 44

EPA concurs that more information is necessary to comprehensively assess the impact of nitrogen loadings in the Merrimack River watershed, because it will result in a more effective permitting regime, should limits prove to be necessary. EPA explains its approach to permitting for TN more fully in Response 64 below. Over the course of the next permit term, EPA expects to gather a variety of effluent and ambient data from various permittees and other entities. Although EPA agrees that the decision to impose an effluent limitation for a pollutant of concern upon finding reasonable potential is the obligation of EPA, the commenter's suggestion that wastewater dischargers may not be subject to monitoring or sampling requirements imposed for the purpose of determining the quality of the waters that receive their pollutant discharges, and the need to control those pollutant discharges, is without foundation in the Act. To the contrary, it is expressly contemplated by NPDES regulations and is supported by case law.

EPA frequently includes monitoring requirements in a permit with the objective of using the data to determine the need for a limit in a subsequent permit, and is authorized to do so under the Act and implementing regulations. The data collected during this permit cycle in conjunction with other water quality data will be used by EPA in the development of a subsequent permit.

See Response 43 regarding TMDL development.

Comment 45

Comments on Footnote 4

It is concerning that in Footnote 4 results are reported differently based on other results. Results should always stand on their own; their values should not depend on other results collected later. What is the rationale for the time period of 12 months? Why is the Permittee to use half the detection limit? It is also not clear that if a result in month 12 is a detect, then do all the non-detects in the previous 11 months get retroactive values of half the detection limit, or is it just any other non-detected result in month 12? There is no logical or scientific rationale for arbitrarily changing values of results.

As a practical matter, conditioning data values on whether all measurements in some past time period were non-detects, makes calculating the results and management of the data extremely complex. It would be difficult for the permittee to document how the monthly average is calculated in a straightforward way, if it changes from month to month. Automating the calculation procedure may become impossible. It also makes the reported results unusable for examining trends. MWRA also does not understand why Footnote 4 only applies to the average monthly effluent limits and not the average weekly or maximum daily limits. EPA should be consistent in how non-detects are treated, both within this footnote and between Footnotes 3 and 4.

MWRA recommends that non-detect results continue to be assigned a value of '0' as is the current practice according to the most recent available instructions for completing a discharge monitoring report (DMR) in EPA Region 1, the NPDES Permit Program Instructions For the Discharge Monitoring Report Forms (DMRs) Report Year 2010, (EPA January 2010). In this document, Permittees are instructed to substitute '0'for any non-detect results prior to averaging or reporting results on the DMR.

Response 45

See Response 12.

Comment 46

Comments on Footnote 6

MWRA recommends that EPA include the following bypass language in Lowell's draft NPDES permit as they did in Springfield's draft NPDES permit (MA0101613): "A bypass of secondary treatment is allowed when wet weather influent flow exceeds the wet weather capacity of the secondary treatment." Wastewater treatment plants are designed and constructed with the understanding that, at times, primary-treated-only wastewater will be blended with secondary treated flows and disinfected, provided that the final blended effluent meets secondary permit limits. This practice allows the POTW to maximize flow to the treatment plant from its combined collection system, which may be subject to large fluctuations in flow during wet weather, to minimize combined sewer overflows (CSOs), consistent with EPA policy and regulation.

Additionally, it is unclear why the permit states that a bypass of secondary treatment is subject to the requirements of Part II.B.4.c (prior notice/24-hour reporting). The permit should clarify that Part II.B.4.c applies only when flow bypasses secondary treatment at flows less than the secondary process limit. Thus, the permit should clarify that, for plant flows greater than the secondary process limit that do not cause violations of numerical permit limits or endanger health or the environment, 24-hour reporting of blending is not required.

EPA should also clarify that discharges from CSO outfalls during wet weather are not bypasses of secondary treatment.

Response 46

EPA's response to comments concerning footnote 5 (footnote 6 of the Draft Permit) and the conditions in the permit which relate to bypasses of secondary treatment are found in Responses 13 and 14.

EPA acknowledges language contained in the *draft* NPDES permit for the Springfield Regional Waste Water Treatment Facility. EPA continues to review comments and draft language on that permit, which has not yet been finalized.

The distinction between CSOs and bypasses of secondary treatment are clearly established in Part I.A. of the National CSO Control Policy, 59 Fed. Reg. 18688, which defines a CSO as "a discharge from a combined sewer system at a point prior to the

POTW Treatment Plant" and at 40 C.F.R. § 122.41(m) which defines a bypass as "the intentional diversion of waste streams from any portion of a treatment facility". *See also* 40 C.F.R § 403.3(r) (defining "POTW Treatment Plant" as "that portion of the POTW which is designed to provide treatment (including recycling and reclamation) of municipal sewage and industrial waste.").

Notice requirements in Part II.B.4.c incorporate required regulatory language at 40 C.F.R. § 122.41(m)(3). Regarding bypasses which do not require notice, Part II.B.4.c., pursuant to 40 C.F.R. § 122.41(m)(2), clearly states that bypasses which do not "cause effluent limitations to be exceeded" and are "essential for maintenance to assure efficient operation" are not subject to the sub-section (c) notice provisions.

Comment 47

Comments on Footnote 13

It is unclear whether EPA is eliminating the submittal of separate, quarterly DMRs for Whole Effluent Toxicity testing. Due to the time necessary to complete the toxicity test report, particularly for chronic tests, it will not usually be the case that results are available by the 15th of the following month. If EPA intends for the Permittee to submit quarterly toxicity DMRs, MWRA suggests that the language below be modified:

> The complete report for each toxicity test shall be submitted as an attachment to the monthly DMR submittal immediately following the completion of the test.

should be changed to:

> The complete report for each toxicity test shall be submitted by the last day of the month following the completion of the test. The results are due by February 28, May 31, August 31, and November 30.

If EPA intends for the quarterly toxicity results to be submitted on the same monthly DMR form as the other results for the reporting month, the permit should clarify what NODI code should be used for data not yet available, and that the permittee should resubmit the DMR with the toxicity data and report once they become available. It should also clarify that the updated DMR will not be considered late, provided that the non-toxicity results were submitted by the 15th of the month.

Response 47

First, EPA clarifies that the Draft Permit does not require the submittal of separate, quarterly Discharge Monitoring Reports ("DMRs") for WET tests.

Second, EPA agrees that the requirement to submit results with the "monthly DMR submittal immediately following completion of the test" could result in a report being due before it is available. However, EPA does not agree with the proposed alternative because of the technical challenges involving EPA's NetDMR and ICIS systems that may be associated with consistent submittal of late WET test data. Rather, to account for the

processing time of each WET test, EPA has revised the language to allow for the WET results to be reported on the "second monthly DMR submittal following the completion of the test."

Comment 48

Comments on Unauthorized Discharges

Part I.B.2 is not consistent with Part II.D.1.e.(1) (Standard Conditions, 24-hour reporting) of the draft permit, nor with 314 CMR 3.19 (20)(e). Part II.D.1.e.(1) requires verbal reporting of any noncompliance which may endanger health or the environment within 24 hours from the time the Permittee becomes aware of the circumstances. A written report containing discharge volumes is then required within five days of the time the Permittee becomes aware of the circumstances.

It is generally infeasible to provide accurate information on the timing and volume of unauthorized discharges such as sanitary sewer overflows within 24 hours. The Permittee should be given adequate time to analyze, process, and validate data to report accurate information. Specifically, the permit should allow five days to report the "description of the discharge; estimated volume; the period of noncompliance, including exact dates and times; and, if the noncompliance has not been corrected, the anticipated time it is expected to continue." If the 24-hour notification requirement is retained as written, the unauthorized discharge information is very likely to undergo some corrections between the 24-hour notification and the five-day report. It is not clear in the permit how the Permittee is to handle any discrepancies.

EPA should also clarify how long it intends for this information to be available on the Permittee's website.

Response 48

The two provisions cited by the commenter are distinct requirements in the Draft Permit, which were included to achieve different objectives.

Part I.B.2. requires public notification of an unauthorized discharge (*i.e.*, plant upset, sanitary sewer overflow (SSO), *etc*.), so that appropriate precautions can be taken to minimize exposure risks by the public associated with recreating on or near receiving waters where untreated wastewater may be present. Part I.B.2 is properly included, as stated in the Fact Sheet, to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment pursuant to authority established in 40 C.F.R. § 122.41(d) ("*Duty to mitigate")*. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment."). It is, in EPA's judgment, reasonable to expeditiously disclose these occurances, even subject to correction, given the potential risks to the public, so that it may be put on notice and assess the risks prior to utilizing the resource. Although EPA must strike a balance between notifying the public in a timely manner and ensuring the accuracy of the notification, a five-day delay would likely lead to members of the public recreating or otherwise utilizing the resource while unaware of potential risks. It is unclear to EPA why any discrepancies between an initial public notification

may not be addressed by simply providing updated information on the website. As for the commenter's concern about reporting "volumes," Part I.B.2. requires only reporting of the *estimated volume* of any unauthorized discharge, not an exact volume. The commenter does not specify why Part I.B.2 is inconsistent with 314 CMR 3.19(20)(e).

Part II.D.1.(e.), on the other hand, requires that notification be provided to the permitting authority(ies) of *any noncompliance* which may endanger health or the environment. Moreover, reporting of discharge volumes is generally not required by Part II.D.1(e) except for noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events.

Additionally, EPA has modified the language in Part I.B.2 of the Final Permit to require public notification within 24 hours of *becoming aware* of any unauthorized discharge impacting a surface water or the public, which is consistent with the language set forth in Part II.D.1.(e).

Finally, EPA agrees that clarification regarding the length of time notifications of unauthorized discharges are to remain on the permittee's website is needed, and therefore, Part I.B.2. of the Final Permit specifies that such notifications shall remain posted for a minimum of 12 months. This will provide a reasonable record and history that the public may consult when assessing the frequency of unauthorized discharges in particular water bodies in assessing whether to utilize them.

Comment 49

Comments on Combined Sewer Overflows

The permit should allow flexibility in choosing the most effective way to "characterize CSO impacts and the efficacy of CSO controls" (Nine Minimum Controls [NMC] #9), as EPA did in the Public Notification Requirements for Combined Sewer Overflows to the Great Lakes Basin final rule promulgated in the Federal Register on January 8, 2018. MWRA's experience is that due to the complexity of CSO regulator structures, and the difficulty in maintaining sensors in the harsh environment of a combined sewer, it is usually impossible to accurately measure CSO discharges (i.e., "Duration (hours) of discharge; Volume (gallons) of discharge" for "each combined sewer outfall" [pg. 18; Part I.F.3.e]) over a short period of time. These measurements in the field -- as opposed to those at CSO treatment facilities -- require extensive, expensive metering at each outfall and regulator. Once the collected meter data are determined (through careful technical assessment) to be valid, the data must then undergo post-processing and expert interpretation, as well as validation against other information such as system performance records and model output, to determine reasonably accurate activation start and stop times and discharge volumes. MWRA has seen that, even with good meter "data," the discharge durations and volumes determined from the data are often suspect or unreliable.

CSO discharge estimates can change between an immediate or short-term notification, and annual reporting. To avoid concern about "discrepancies," the permit should state that discharge estimates in initial notifications are "preliminary and subject to change with new information or additional evaluation."

As an alternative to direct measurement, MWRA encourages EPA to also allow modeling, precipitation-based estimates and other analytical tools to estimate CSO discharge duration and volume as EPA does in the Public Notification Plan section of the draft permit (Part I.F.3.g.(2)). Under the right conditions, modeling can be an effective method for determining the occurrence and characteristics of CSOs.

MWRA is providing rapid public notification of CSO discharges at CSO treatment facilities. These facilities are typically the most active CSOs in their respective receiving waters, and can be accurately measured and verified compared to stand-alone CSO regulator structures.

Public notification plan

The draft permit provides 180 days to develop a public notification plan (CSO Nine Minimum Controls #8). Because the infrastructure to provide notification needs to be put in place, MWRA recommends that additional time, an additional 36 months from the effective date of the permit, be allowed for implementation of the plan.

MWRA also recommends that EPA include a schedule for implementation and a listing of potentially affected entities in the plan. EPA should also provide guidance to the Permittee on how to determine which downstream communities might be potentially affected entities.

Initial notification

MWRA supports the draft permit language that allows the use of "monitoring, modeling, or other means" to determine that a CSO discharge has occurred.

It is important to keep in mind that notifying the public of CSO discharges into a receiving water body that is affected by many wet weather (and possibly dry weather) sources of pathogens is likely to give the false impression that the water is safe for contact recreation when CSOs are not discharging; or, that the water is safe if there has not been a CSO activation in a storm or a series of wet weather events. The risk to public health is influenced by a number of factors, not just CSO discharges. A requirement for rapid public notification of CSO discharges may give the erroneous impression that the receiving waters are safe during and immediately after storms in the absence of CSO discharges.

More helpful to the public and protective of public health would be a much more general short-term notification of the potential for one or more CSO discharges to a receiving water segments (along with stormwater and other discharges). The risk to public health is best determined and communicated by public health authorities rather than wastewater Permittees. MWRA recommends that the language be changed to provide a general notification that because large storms can trigger CSOs, public health officials recommend avoiding contact with water bodies during rainstorms and for 48 hours afterwards, as there may be increased health risks due to bacteria or other pollutants associated with urban stormwater runoff and CSO discharges.

Follow-up notification

The draft permit requires a supplemental notification within 24 hours after becoming aware of the end of a CSO discharge. This supplemental notification would confirm whether the CSO did indeed discharge and provide the start and stop times. MWRA believes it is infeasible to provide accurate information on the timing of each activation within 24 hours at any CSO outfall other than those from CSO treatment facilities. As discussed above, the Permittee should be given adequate time to analyze, process and validate data (or model results) to report accurate information. Furthermore, it is not clear what public health benefit would be obtained by such a notification. The potential benefit of these notifications is not immediate public health protection but as input to longer term CSO public policy and control efforts, adequately provided for with the other CSO discharge reporting requirements in the draft permit.

MWRA recommends that the follow-up notification requirement be eliminated.

Response 49

The Final Rule Public Notification for CSOs to the Great Lakes implements Section 425 of the Consolidated Appropriations Act of 2016, which requires EPA to work with the Great Lakes States to establish public notification requirements for combined sewer discharges to the Great Lakes. It does not apply to dischargers outside of the area.

EPA maintains its position that the objective of the monitoring required under the nine minimum controls is to provide data that can be used to evaluate compliance with the technology-based effluent limitations for CSOs that are set forth in the permit (i.e., the nine minimum controls), the efficacy of the CSO controls that have been implemented and to validate the assumptions set forth in the permittee's LTCP, as well as to facilitate the CSO notification program. It has been EPA and MassDEP's experience that direct measurement provides the most accurate indication of CSO activations. Therefore, the collection of data through direct measurement is essential for the regulatory agencies to conduct these evaluations. Forms of direct measurement *may* include, but are not limited to, metering of flows at each CSO outfall. Alternate approaches could include, for example, extrapolating the flow volume discharged through a CSO outfall from measurements of water levels in the interceptor sewers (or some other measured metric of a known quantity from which the flow volume could be derived). The requirement to monitor CSO discharges through direct measurement remains unchanged in the Final Permit.

EPA understands that additional time may be needed to validate and refine CSO data that is collected each month through direct measurement, and as such, the permit requires CSO discharge data to be submitted with the Annual Report that is submitted in accordance with Part I.F.4. of the permit.

EPA agrees that CSO discharge estimates may change between the time the initial and supplemental notifications are provided. This understanding is reflected in Part I.F.3.e.(2) (initial notification) of the Draft Permit, which states that "Initial notification of a *probable* CSO activation shall be provided…". This language has been maintained in the Final Permit.

Public notification plan

With respect to the commenter's request that the deadline for the submittal and implementation of the public notification plan be extended to 36 months, the deadline for complying with this requirement remains unchanged in the Final Permit. Neither the commenter nor the permittee have identified any specific impediments to meeting this requirement within the time frame established in the permit.

With respect to the commenter's request for guidance on determining "potentially affected parties", upon further consideration, EPA has determined that the notification requirements in the Draft Permit, including the requirements in Part I.F.3.g. to provide the general public with notification of CSO discharges and the requirements in Part I.H.2. and Part I.H.3. to notify downstream community water systems and the Massachusetts Division of Marine Fisheries of any emergency condition, plant upset, bypass, CSO discharges, SSO discharges or other system failure that has the potential to violate permit limits or affect the quality of the water to be withdrawn for drinking water purposes, are inclusive of all categories of the public, and the references to "affected entities" and "affected parties" have been removed from Part I.F.3.g. of the Final Permit.

Initial Notification

EPA disagrees with the commenter's statement that notifying the public of the cessation of a CSO discharge will provide a false sense of security that the water is safe. While water quality may be negatively impacted by non-CSO sources, including stormwater runoff, providing timely notice of CSO discharges may allow the public to take steps to reduce potential exposure to pathogens associated with untreated wastewater. EPA does, however, encourage the permittee to provide the public with information relative to the impacts of wet weather, including those due to stormwater and other non-CSO sources, on the quality of the receiving water as well as to public health. Additionally, EPA supports the collaboration between the permittee and public health entities in communicating the health risks presented by untreated discharges of combined stormwater and wastewater.

Follow-up Notification

EPA disagrees with the commenter's suggestion that confirmation of a CSO discharge can only be made if the discharge is from a CSO treatment facility. The concerns expressed by the commenter regarding the time needed to analyze, process and validate data (or model results) to report accurate information appear to be more appropriately directed towards the collection and reporting of flow volumes, as opposed to confirming whether a CSO discharge occurred.

The intent of the supplemental notification, in conjunction with the initial notification, is to provide the public with timely information relative to CSO discharges so that appropriate precautions can be taken to minimize exposure risks associated with

recreating on or near receiving waters into which CSO discharges occur. These public notification requirements are reasonable given the uses of the receiving water and remain unchanged in the Final Permit.

Comment 50

Condition I.H.4 requires monitoring of phosphorus (see also Footnote 11.) There is no justification for this requirement provided in the Fact Sheet. It is not clear what the purpose is or how the proposed study design is going to meet that purpose. The classic reference for designing marine pollution monitoring programs, Managing Troubled Waters, emphasizes the importance of starting with clear monitoring questions in order to assure that the study design will generate data that will answer those questions.

If there were a rationale provided for the study, reviewers could make more relevant comments on the appropriateness of the study design. What is the reason for sampling in dry weather? How will tidal aliasing be avoided?

Furthermore, the requirement to collect monthly samples in dry weather is infeasible. The permittee may schedule sampling during an expected dry day, only to have the weather change. If there are no dry days during a month, how should the lack of data be reported on the DMR?

If this ambient monitoring condition is retained, EPA should clarify that Part I.H.4 refers to monitoring for total phosphorus only.

Response 50

EPA clarifies that the purpose of the ambient monitoring requirement for phosphorus is to track background conditions over the life of the permit. This data can be used in the next permit reissuance to ensure that appropriate limits are in place to protect water quality standards.

The comment questions the condition of dry weather and tidal aliasing. Monitoring during dry weather is required because the critical condition for the impact of phosphorus loading from the Lowell discharge is during periods of low flow. If it is raining, then the conditions of the river are likely impacted by stormwater and are not representative of critical dry weather conditions.

EPA does not expect tidal aliasing to impact the upstream monitoring because the monitoring will be conducted above the head of tide dam on the Merrimack River.

EPA disagrees that monitoring during dry weather is infeasible. However, if there are no dry days during a month, the Permittee may report a No Data Indicator (“NODI”) code “V” (Weather Related) for that month.

Part I.H.4 applies to total phosphorus monitoring only.

Comment 51

Typographic errors

Page 31 of the Fact Sheet, section 5.5

"Specific permit conditions have also been included in Part I.C. and I.D. of the Draft Permit."

The reference here should be to Part I.B and I.C.

Fact Sheet page 37

- The Draft Permit proposed to limit CBOD, TSS, pH, total residual chlorine, E. coli, total aluminum, total lead, and total phosphorus

should say

- The Draft Permit proposed to limit CBOD, TSS, pH, total residual chlorine, E. coli, and total phosphorus

Also

- Acute toxicity tests will be continued four times a year. Present toxicity test results are in compliance with the permit limits

should say

- Acute and chronic toxicity tests will be continued four times a year. Present toxicity test results are in compliance with the permit limits

Response 51

EPA agrees with these typographical edits and they are noted here for the record.

F. Comments from Heather McMann, Executive Director, Groundwork Lawrence on July 23, 2019:

Comment 52

We strongly support the inclusion of a total phosphorous average monthly limit of 1.08 mg/L. The MassDEP's Massachusetts Year 2014 Integrated List of Waters (2014 Integrated List), the 303(d) list, includes the Merrimack River, Segment MA84A-04 and the Spicket River, Segment MA84A-10 as Massachusetts Category 5 Waters, with the Merrimack River impaired for total phosphorous. Given these significant impairments, we were pleased to see the inclusion of a total phosphorous limit in this permit.

Response 52

Comment noted. See Responses 2 and 3.

Comment 53

We support the addition of total Kjeldahl nitrogen, total nitrate/nitrite, and total nitrogen weekly (April - October) and monthly (November - March) monitoring and reporting, but we recommend that EPA proposes a total nitrogen average monthly limit for the permit. As noted in the Fact Sheet, nitrogen levels in the Merrimack River estuary are higher than is acceptable for a healthy nearshore coastal system. Recent nitrogen data collected by CDM Smith in 2014 and 2016 in the estuarine portions of the Merrimack River indicates elevated total nitrogen and chlorophyll 'a' levels. In addition, in 2012, the Gulf of Maine Council on the Marine Environment reported that the Merrimack was the second greatest contributor of nitrogen and phosphorus to the Gulf of Maine. We disagree that any additional reasonable potential analyses need to be conducted for this criterion. EPA should move forward with establishing a limit total nitrogen, but at a minimum should include in the current permit that a future permit may require nitrogen limits and/or process optimization at the facility.

Response 53

See Response 64.

The commenter suggests that EPA "at a minimum should include in the current permit that a future permit may require nitrogen limits and/or process optimization at the facility." EPA agrees with this comment and has already indicated in the Fact Sheet (at 22) that "The Agencies recommend the Permittee factor in treatment methods to reduce nitrogen in the effluent for any planned upgrades at the treatment plant, as nitrogen limits may be included in subsequent permits."

Comment 54

We support the inclusion of additional characteristics beyond LC50 and C-NOEC for Whole Effluent Toxicity (WET) testing in the permit, but recommend that EPA includes specific time frames for quarterly monitoring to occur, similar to the schedule established in the Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613).

Response 54

EPA agrees with this comment and notes that footnote 13 of the Lowell Draft Permit states: "Toxicity test samples shall be collected, and tests completed, during the same weeks in January, April, July and October." This level of specificity in the timing of the WET tests is already consistent with the Draft Permit for the Springfield WWTF referenced in the comment. Therefore, no change has been made to the Final Permit.

Comment 55

We support the inclusion of public notifications for unauthorized discharges on a publicly available website, but we recommend that notices be made to the public within two hours rather than within 24 hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. 24 hours is not sufficient notice for individuals who choose to

recreate in or near the Merrimack River.

Response 55

Requiring the permittee to provide notification within 24 hours of becoming aware of an unauthorized discharge is appropriate given the nature of such discharges, specifically, because they are unpredictable and not amenable to modeling, as are, for example, discharges from CSOs, which would provide information for providing notifications on a shorter timeframe. EPA must balance the need to notify the public in a timely way while also accounting for administrative, staffing and logistical constraints with which a permittee may be confronted. EPA also needs to ensure that there is sufficient time for a permittee to preliminarily assess any data and ensure that the information disclosed is reasonably accurate. Finally, EPA observes that the condition mandates disclosure *within* 24 hours; it is likely as a practical matter that, in many if not most cases, notification will occur before that time, given that elected officials and municipal employees have an interest in providing timely information to protect the health and welfare of the City's citizens.

Comment 56

We support the inclusion of a collection system mapping and collection system operation and maintenance plan to ensure that the most accurate data is utilized in system review.

Response 56

Comment noted.

Comment 57

We support the inclusion of inspections and reporting for CSO structures in the permit, but we recommend that the frequency of inspections be increased from once per month to twice per month to ensure that adequate assessments are occurring and fix and address problems as they arise.

Response 57

The inspection frequency of one per month that was included in Part I.F.2.b. of the Draft Permit was carried forward form the permit that was issued in 2005. EPA does not have any specific basis to conclude that the existing inspection frequency is inadequate, or that more frequent inspections would materially impact the operational integrity of the CSO structures. The Permittee is required to document any necessary maintenance, the date the necessary maintenance was performed, and whether the observed problem was corrected. EPA is unaware of any issues that have occurred with this frequency. Should EPA become aware of specific facts relating to this issue, it may revisit its determination. Part I.F.2.b. of the Final Permit remains unchanged from the Draft Permit.

Comment 58

We support the inclusion of additional signage at CSO locations, but recommend that the permit makes signage in additional languages a requirement rather than a suggestion. We recommend that signage be posted in both English, Spanish and

Cambodian, as according to the most recent U.S. Census data from July 1, 2018, 21% of the population of Lawrence identifies as Hispanic or Latino, 20% identify as Asian and according to Data USA, 15% of the population speaks Spanish or Spanish Creole as their first-language and 15% of the population speaks Cambodian as their first-language.

Response 58

EPA agrees with this comment and has updated Part I.F.3.f. of the Final Permit to require signage in English, Spanish and Khmer, or the addition of a universal wet weather sewage discharge symbol to existing signs.

Comment 59

We support the inclusion of initial notifications for CSO discharges, but we recommend that the notice is required within two hours rather than four hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. Four hours is not sufficient notice for individuals who choose to recreate in or near the Merrimack River. In addition, the most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes a requirement that initial notifications are made by no later than two hours. Despite the fact that discharges across multiple treatment facilities to the Merrimack River collectively number in the hundreds and total more than 800 million gallons of sewage annually, the Merrimack River is still used heavily for recreation. From kayak and boat clubs to spin-rod and fly fishermen, the River supports a substantial recreation community. To provide these individuals with adequate notice and maintain consistency across CSO permits, we strongly recommend that this requirement is corrected to two hours.

Response 59

The 2-hour initial notification requirement that was proposed in the Draft Permit for the Springfield Wastewater Treatment Facility, which has not yet been finalized, was based, in part, on existing requirements in the State of Connecticut, including EPA's obligation to consider and protect the water quality of a downstream state, the proximity of the discharges to the downstream State of Connecticut and the time of travel from the Springfield Water and Sewer Commission's CSOs to the state border (approximately 2 hours). *See* 33 U.S.C. § 1341(a)(2). Again, EPA must balance the need to notify the public in a timely way while also accounting for administrative, staffing and logistical constraints with which a permittee may be confronted. EPA also must ensure that there is sufficient time for a permittee to preliminarily assess any data and ensure that the information disclosed is reasonably accurate. EPA will evaluate the protectiveness of this condition over the course of the permit term, and based on that information, will make a record-based judgment on whether more rapid dissemination of this information is warranted. Therefore, the Final Permit has not been changed.

Comment 60

We support the inclusion of supplemental notifications for CSO discharges, but we recommend that the notifications also include total volume discharged from the CSO.

The most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes this information as a requirement for reported information. In the interest of maintaining consistency across CSO permits and ensuring accurate data is presented to the public, we strongly recommend that the total volume discharged from the CSO is included in the notifications as well.

Response 60

EPA acknowledges language contained in the *draft* NPDES permit for the Springfield Regional Waste Water Treatment Facility. EPA continues to review comments and draft language on that permit. That permit has not yet been finalized and remains subject to change.

In consideration of the time needed for the validation, post-processing and interpretation of CSO data, EPA has determined that requiring the reporting of CSO discharge volumes in the annual notification is more appropriate than the supplemental notification. See also Response 49 regarding the time needed to verify and process CSO data to ensure the reporting of accurate information. The annual notification requirements in the Final Permit remain unchanged.

Comment 61

We ask that the permit Fact Sheet be updated to include the following information: (1) the most recent annual volume reports for CSO discharges at each outfall, (2) the most recent version of GLSD's Long Term Control Plan and the status of improvements made in accordance with the plan thus far, and (3) summaries of reductions or eliminations of CSO's that have been made in accordance with the plan. It is extremely difficult to evaluate the impacts on receiving waters without complete information on the discharges.

Response 61

Fact sheets are not modified following the public comment period; however, an annual CSO discharge summary from 2014-2018 (as submitted by the permittee with their Annual CSO Reports) is provided in **Attachment A** to this document and is hereby incorporated into the administrative record. Inquiries into Long Term Control Plans may be directed to EPA's Enforcement and Compliance Assurance Division (ECAD). Please see https://r1-gis-web.r1.epa.gov/ecad/enforcement_comp.html for relevant contacts.

Comment 62

We ask that the LRWF take steps to reduce the amount of Per- and polyfluoroalkyl substances (PFAS) discharged from the facility. Significant amounts of landfill leachate from the Turnkey landfill in Rochester, NH that contains PFAS are discharged to the Merrimack River at the Lowell Wastewater Treatment Plant (Lowell Regional Wastewater Utility). Waste Management, Inc., the owner of the Turnkey landfill, has an Industrial Discharge Permit with Lowell to accept the leachate from its Turnkey landfill, which allows Waste Management to truck up to 100,000 gallons per day to the Lowell WWTP. Leachate from Turnkey has been tested for PFAS at very high levels, including: PFOA 8200 ppt, PFOS 430 ppt, PFNA 330 ppt, and PFHxS 810 ppt. The waste trucked

from Turnkey to Lowell includes leachate collected from water permeating the landfill and other liquid and solid wastes produced at the landfill. Turnkey has a reverse osmosis system to remove PFAS from its leachate, but has historically sent untreated wastes to Lowell. Some of these wastes sent to Lowell contain very high amounts of PFAS because they include "reject" water that does not go through Turnkey's reverse osmosis system, as well as the solids that are trapped by the reverse osmosis system. These liquid and solid wastes are not tested for PFAS before being trucked to Lowell.

Response 62

EPA encourages LRWU to take steps to reduce per and polyfluoroalkyl substances from industrial users that are discharging directly to the treatment plant and monitor these compounds in their effluent. There are no specific water quality criteria for the perfluorinated compounds; however, EPA reserves broad discretion to ask for additional information pursuant to Section 308 of the CWA and may utilize this authority during the permit term if facts are brought to its attention that would warrant that course of action, including work on the development of per and polyfluoroalkyl criteria.

In February 2019, EPA published an action plan, "EPA's Per-and Polyfluoroalkyl Substances ("PFAS") Action Plan (the Action Plan)"[14]. The PFAS Action Plan identifies EPA short-term actions, longer-term research, and potential regulatory approaches designed to reduce the risks associated with PFAS in the environment[15]. The EPA Action Plan identifies wastewater effluent as a common source of PFAS and drinking water as a common source of exposure to the population.

As part of the EPA's statutorily-required Effluent Guidelines planning process, the EPA has reviewed readily-available information about PFAS surface water discharges to identify industrial sources that may warrant further study for potential regulation through national Effluent Limitation Guidelines and Standards ("ELGs").

In 2016, EPA issued a drinking water health advisory of 70 part per trillion (0.070 µg/L) for PFOA and PFAS. The 1996 Safe Drinking Water Act amendments requires EPA to sample up to 30 unregulated contaminants in public water systems once every five years. The Third Unregulated Contaminant Monitoring Requirement ("UCMR 3") rule for Public Water Systems required public water supply systems to submit data on 6 perfluorinated compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA and PFBS) from 2013 to 2015. PWS were required to sample at the entry point to the distribution system and at a frequency of 4 consecutive quarters for surface water systems or groundwater under the direct influence of surface water. The minimum reporting levels range for these compounds were from 0.01 µg/L to 0.090 µg/L. The perfluorinated compounds were not detected in any of the water treatment plants downstream of the LRWU.

In light of the above data, the Final Permit does not require monitoring for these pollutants during this permit cycle but EPA may require monitoring in a subsequent permit.

[14] https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf
[15] EPA's Per-and Polyfluroalkyl Substances (PFAS) Action Plan, page 8.

EPA recommends the LRWU work with dischargers in their industrial pretreatment program to reduce per-polyfluorinated compounds in process wastewater discharged to the treatment plant.

G. Comments from Julia Blatt, Executive Director, Massachusetts Rivers Alliance and Caitlin Peale Sloan, Senior Attorney, Conservation Law Foundation on July 23, 2019:

Comment 63

We strongly support the inclusion of a total phosphorous average monthly limit of 1.08 mg/L. The MassDEP's Massachusetts Year 2014 Integrated List of Waters (2014 Integrated List), the 303(d) list, includes the Merrimack River, Segment MA84A-04 and the Spicket River, Segment MA84A-10 as Massachusetts Category 5 Waters, with the Merrimack River impaired for total phosphorous. Given these significant impairments, we were pleased to see the inclusion of a total phosphorous limit in this permit.

Response 63

Comment noted.

Comment 64

We support the addition of total Kjeldahl nitrogen, total nitrate/nitrite, and total nitrogen weekly (April - October) and monthly (November - March) monitoring and reporting, but we recommend that EPA proposes a total nitrogen average monthly limit for the permit. As noted in the Fact Sheet, nitrogen levels in the Merrimack River estuary are higher than is acceptable for a healthy nearshore coastal system. Recent nitrogen data collected by CDM Smith in 2014 and 2016 in the estuarine portions of the Merrimack River indicates elevated total nitrogen and chlorophyll 'a' levels. In addition, in 2012, the Gulf of Maine Council on the Marine Environment reported that the Merrimack was the second greatest contributor of nitrogen and phosphorus to the Gulf of Maine. We disagree that any additional reasonable potential analyses need to be conducted for this criterion. Delaying reductions in nutrients is not a viable strategy as noted by the EAB: "Due to the tendency of nutrients to recycle once released into the system and contribute to future impairment, delay in addressing point source nutrient contributions will only compound the challenges in restoring receiving waters" (Upper Blackstone Water Pollution Abatement District, Determination on Remand, EAB, 7/7/2010, p. 3). EPA should move forward with establishing a total nitrogen limit. In addition, as EPA moves forward with other CSO NPDES permits on the Merrimack, we remind EPA that discharge permitting on the Merrimack River in both Massachusetts and New Hampshire should be consistent and ensure that the concentrations and loads of nutrients discharged in the river system as whole will prevent the creation of eutrophic conditions both in the river and in the lower Merrimack estuary.

Response 64

As EPA evaluated both phosphorus and nitrogen impacts from this discharge, it notes that there is an inherent distinction in the approach to ensure the attainment of water quality standards and evaluate eutrophic impacts from each nutrient. Typically, phosphorus is the limiting nutrient in freshwaters, such as the Merrimack River immediately downstream of this discharge. Nitrogen is the limiting nutrient in downstream estuarine segments, such

as near the mouth of the Merrimack River. This distinction plays an important role in EPA's evaluation of whether the discharge has the reasonable potential to cause or contribute to an excursion of water quality standards with respect to each nutrient specifically.

For phosphorus, the impacted waterbody is immediately downstream and impacts can be measured or predicted with relative ease using all available site-specific ambient and effluent data. For nitrogen, on the other hand, impacts to segments much farther downstream may be impacted by a variety of sources including over 40 POTWs in the Merrimack River watershed as well as significant non-point source loads. The evaluation of watershed-wide nitrogen loading and far-field impacts of such nitrogen loading lends itself to a much larger-scale evaluation and approach to establishing reasonable potential and setting permit limits to ensure water quality standards are met.

EPA has the discretion to apply a site-specific analysis and establish nitrogen permit limits for any individual discharger based on information available at the time of permit reissuance; it need not base that decision on the collection of a comprehensive watershed-wide data set. The reasonable potential standard governing the imposition of effluent limitations in NPDES requires, after all, certainty only beyond a "mere possibility" of a water quality impact. However, the Agency has chosen at this juncture to evaluate nitrogen impacts, including those from this discharger, on a watershed-wide basis. This permit cycle will be focused on gathering information to characterize watershed loading and evaluate far-field impacts so that the next permitting cycle can more definitively determine whether such loadings have the reasonable potential to cause or contribute to a violation of water quality standards and, if necessary, establish appropriate nitrogen limits throughout the watershed to ensure that water quality standards are met. EPA concurs with the commenter's view that permitting should follow a consistent approach in both New Hampshire and Massachusetts, which it believes counsels as a matter of policy, in favor of collecting a more comprehensive dataset on which to base limits, in order to lay the groundwork for consensus between upstream and downstream states, which will generate more sustainable and impactful water quality-based solutions to any problems that are found. Again, should EPA's preferred approach fail to cohere prior to the next permit cycle, EPA is authorized to move forward on a more disaggregated, individualized basis with information that is reasonably available at the time concerning a particular discharge.

EPA fully agrees with the comment that delaying nutrient reductions is not a viable strategy when confronted with a waterbody impaired for nitrogen such as in the Upper Blackstone permit. However, more data are necessary at this time to better understand the impact of nitrogen loading in the Merrimack River and the Gulf of Maine. A model, sophisticated statistical analyses and years of water quality information were available for Blackstone and Upper Narragansett Bay; although EPA requires a far lower quantum of proof prior to making a permitting decision, EPA remains cognizant of the fact that, at this time, the Merrimack River is not well characterized for nitrogen impacts. *See, e.g.*, "National Estuarine Eutrophication Assessment, Effects of Nutrient Enrichment in the Nation's Estuaries" (National Oceanic and Atmospheric Administration) at 18

https://ian.umces.edu/neea/pdfs/eutro_report.pdf. Although this report is dated, EPA is not aware of any comprehensive assessment that has been conducted and made available since its publication. It is in the interests of the watershed and all stakeholders for EPA to make as informed a decision as possible on this critically important issue, in order for EPA to select an appropriate permit regime (*i.e.*, one that will be effective on a watershed-wide basis should EPA find permit limits to be necessary and that will entail an efficient expenditure of federal, state and municipal resources toward that end).

Comment 65

We support the inclusion of additional characteristics beyond LC50 and C-NOEC for Whole Effluent Toxicity (WET) testing in the permit, but recommend that EPA includes specific time frames for quarterly monitoring, similar to the schedule established in the Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613).

Response 65

See Response 54.

Comment 66

We support the inclusion of public notifications for unauthorized discharges on a publicly available website, but we strongly recommend that notices be made to the public within two hours rather than within 24 hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. A twenty-four hour delay in notifying the public after a CSO event exposes individuals who choose to recreate in or near the Merrimack River to significant health risk.

Response 66

See Response 55.

Comment 67

We support the inclusion of a collection system mapping and collection system operation and maintenance plan to ensure that the most accurate data is used in system review.

Response 67

Comment noted.

Comment 68

We support the inclusion of inspections and reporting for CSO structures in the permit, but we recommend that the frequency of inspections be increased from once per month to twice per month to ensure that adequate assessments are occurring and that operators can fix and address problems as they arise.

Response 68

See Response 57.

Comment 69

We support the inclusion of additional signage at CSO locations, but recommend that the permit make signage in additional languages a requirement rather than a suggestion. We recommend that signage be posted in both English, Spanish and Cambodian, as according to the most recent U.S. Census data from July 1, 2018, 21% of the population of Lowell identifies as Hispanic or Latino, 20% identify as Asian and according to Data USA, 15% of the population speaks Spanish or Spanish Creole as their first-language and 15% of the population speaks Cambodian as their first-language.

Response 69

See Response 58.

Comment 70

We support the inclusion of initial notifications for CSO discharges, but we recommend that the notice be required within two hours rather than four hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. Four hours is not sufficient notice for individuals who choose to recreate in or near the Merrimack River. We note that the most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes a requirement that initial notifications are made by no later than two hours. Despite the fact that discharges across multiple treatment facilities to the Merrimack River collectively number in the hundreds and total more than 800 million gallons of sewage annually, the Merrimack River is still used heavily for recreation. From kayak and boat clubs to spin-rod and fly fishermen, the River supports a substantial recreation community. To provide these individuals with adequate notice and maintain consistency across CSO permits, we strongly recommend that this requirement is corrected to two hours.

Response 70

See Response 59.

Comment 71

We support the inclusion of supplemental notifications for CSO discharges, but we recommend that the notifications also include total volume discharged from the CSO. The most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes this information as a requirement for reported information. In the interest of maintaining consistency across CSO permits and ensuring accurate data is presented to the public, we strongly recommend that the total volume discharged from the CSO is included in the notifications as well.

Response 71

See Response 60.

Comment 72

We ask that the permit Fact Sheet be updated to include the following information: (1) the most recent annual volume reports for CSO discharges at each outfall, (2) the most recent version of

LWRF's Long Term Control Plan and the status of improvements made in accordance with the plan thus far, and (3) summaries of reductions or eliminations of CSO's that have been made in accordance with the plan. It is extremely difficult to evaluate the impacts on receiving waters without complete information on the discharges.

Response 72

See Response 61.

Comment 73

We ask that the LRWF take steps to reduce the amount of Per- and polyfluoroalkyl substances (PFAS) discharged from the facility. Significant amounts of landfill leachate from the Turnkey landfill in Rochester, NH that contains PFAS are discharged to the Merrimack River at the Lowell Wastewater Treatment Plant (Lowell Regional Wastewater Utility). Waste Management, Inc., the owner of the Turnkey landfill, has an Industrial Discharge Permit with Lowell to accept the leachate from its Turnkey landfill, which allows Waste Management to truck up to 100,000 gallons per day to the Lowell WWTP.(1) Leachate from Turnkey has been tested for PFAS at very high levels, including: PFOA 8200 ppt, PFOS 430 ppt, PFNA 330 ppt, and PFHxS 810 ppt.(2) The waste trucked from Turnkey to Lowell includes leachate collected from water permeating the landfill and other liquid and solid wastes produced at the landfill. Turnkey has a reverse osmosis system to remove PFAS from its leachate, but has historically sent untreated wastes to Lowell.(3) Some of these wastes sent to Lowell contain very high amounts of PFAS because they include "reject" water that does not go through Turnkey's reverse osmosis system, as well as the solids that are trapped by the reverse osmosis system.(4) These liquid and solid wastes are not tested for PFAS before being trucked to Lowell.

Response 73

See Response 62.

H. Comments from Alison Field-Juma, Executive Director, OARS for the Assabet Sudbury & Concord on July 23, 2019:

Comment 74

Nitrogen: We urge the EPA to include a total nitrogen average monthly limit in the permit. We support the requirement for monitoring of total Kjeldahl nitrogen, total nitrate/nitrite, and total nitrogen weekly (April - October) and monthly (November - March). As noted in the Fact Sheet, nitrogen levels in the Merrimack River estuary are higher than is acceptable for a healthy nearshore coastal system. Recent nitrogen data collected by CDM Smith in 2014 and 2016 in the estuarine portions of the Merrimack River indicate elevated total nitrogen and chlorophyll-a levels. EPA research on the impacts of nitrogen in the estuary are ongoing and, as noted in the Fact Sheet, "EPA is concerned about the impacts that these nitrogen levels may be having on aquatic life in the estuary as most of these results are outside the range typically found in healthy estuaries in Massachusetts" (p. 22). In addition, Gulf of Maine Council on the Marine Environment reported that the Merrimack was the second greatest contributor of nitrogen and phosphorus to the Gulf of Maine ("Eutrophication, State of the Gulf of Maine Report," 2012). We disagree that additional reasonable potential analyses needs to be conducted for this criterion. EPA should move forward with establishing a limit for total nitrogen.

Response 74

See Response 53 and Response 64.

Comment 75

Ammonia-Nitrogen: In addition to being a nutrient as a component of total nitrogen, nitrogen in the form of ammonia can reduce the receiving stream's dissolved oxygen concentration through nitrification and can be toxic to aquatic life, particularly at elevated temperatures. The toxicity level of ammonia depends on the temperature and pH of the receiving water (USEPA 1999). It is important to continue monitoring this pollutant to continue an accurate reasonable potential analysis.

Response 75

EPA agrees with this comment and notes that effluent and ambient monitoring for ammonia will continue to be required in the quarterly WET tests. This data will allow EPA to perform a reasonable potential analysis for ammonia in the next permit reissuance.

Comment 76

Total Phosphorus: We support the inclusion of a Total Phosphorous average monthly discharge limit of 1.08 mg/L and support the use of an "effects based" approach for deriving the limit—it is the effects that ultimately determine whether the discharge will "cause or contribute to impairment of the existing or designated uses" (Fact Sheet p. 23). The MassDEP's Massachusetts Year 2014 Integrated List of Waters (303d List) includes the Concord River (Rogers St. to confluence with Merrimack, Segment MA82A-09) and the Merrimack River (upstream of the LRWWU outfall to confluence with Little River, Haverhill, Segments MA84A-02 to -04) as Massachusetts Category 5 Waters impaired for Total Phosphorous. The proposed Year 2016 List includes the Concord River for "excess algal growth" and the Merrimack River sections as above for Total Phosphorus. Given these significant impairments, we believe that a total phosphorous limit is in this permit is appropriate and we encourage EPA Region 1 to ensure that upstream discharges are likewise reduced. Biomass monitoring should be undertaken by some party or parties to provide up-to-date data on this impairment.

Response 76

Comment noted. EPA agrees that upstream dischargers may also receive phosphorus limits if justified based on reasonable potential analyses in their future permit reissuances.

EPA agrees with the need to monitor the impaired reaches of the Merrimack River in this area for parameters related to phosphorus and cultural eutrophication. MassDEP plans to conduct monitoring and coordinate with other entities monitoring these stretches of river to provide updated information concerning water quality impairments.

Comment 77

PFAS: We ask that the permit require the LRWWU reduce the amount of Per- and polyfluoroalkyl substances (PFAS) discharged from the facility. This may require review and amendment of the Industrial Discharge Permit for the Waste Management, Inc. Turnkey landfill in Rochester, NH. Documentation and monitoring of influent and effluent concentrations of the relevant members of the PFAS family of chemicals should be required. The landfill leachate and other solids from the Turnkey landfill contain a significant concentration of PFAS chemicals that enter the Lowell Wastewater Treatment Plant. Unless removed by the treatment process, which is difficult for these extremely persistent and non-reactive chemicals, they will be discharged to the Merrimack River. Waste Management, Inc., the owner of the Turnkey landfill, has an Industrial Discharge Permit with Lowell to accept the leachate from its Turnkey landfill. The permit allows Waste Management to truck up to 100,000 gallons per day to the Lowell treatment plant. We understand that leachate from Turnkey has been tested and very high levels of PFAS have been identified, including: PFOA at 8200 ppt, PFOS at 30 ppt, PFNA at 30 ppt, and PFHxS at 810 ppt. The waste trucked from Turnkey to Lowell includes leachate collected from water permeating the landfill and other liquid and solid wastes produced at the landfill. Apparently these liquid and solid wastes are not tested for PFAS before being trucked to Lowell (Industrial Sewer User Permit HW001, Waste Management of New Hampshire, 8/12/17).

The current EPA health advisory level for PFOA and PFOS is 70 ppt. Leachate containing 8,200 ppt PFOA is over 100 times the EPA level for PFOA. MassDEP is proposing a cleanup standard for groundwater of 20 ppt for the sum of 6 PFAS chemicals under the Massachusetts Contingency Plan. These are chemicals that are known mutagens, carcinogens and/or endocrine disruptors that don't degrade, that bioaccumulate in fish tissue, and presumably will be consumed by people fishing in the river or estuary or ocean. This water is also consumed directly by people supplied by water supply systems drawing directly from the Merrimack River downstream of the LRWWU discharge and the research shows that it is difficult and costly to remove PFAS chemicals from drinking water. Ensuring conformity with current federal regulations may not be adequate to deal with the PFAS problem; the effluent discharge will also need to meet state water quality limits currently under revision. Dilution calculations will indicate a suitable level, but releasing this volume of PFAS into a river is completely unjustified given what we know and where the regulations and standards are headed.

Response 77

See Response 62.

Comment 78

WET Test: We support the inclusion of additional characteristics beyond LC50 and C-NOEC for Whole Effluent Toxicity (WET) testing in the permit, but recommend that EPA includes specific time frames for quarterly monitoring to occur, similar to the schedule established in the Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613).

Response 78

See Response 54.

Comment 79

Collection system mapping and O&M: We support the inclusion of a collection system mapping and collection system operation and maintenance plan to ensure that the most accurate data is utilized in system review.

Response 79

Comment noted.

Comment 80

CSO inspections: We recommend that the frequency of inspections be increased from once per month to twice per month to ensure that adequate assessments are occurring and fix and address problems as they arise.

Response 80

See Response 57.

Comment 81

CSO signage: We support the inclusion of additional signage at CSO locations, but ask that the permit require signage in additional languages. We recommend that signage be posted in English, Spanish and Cambodian. According to the most recent U.S. Census data from July 1, 2018, 21% of the population of Lawrence identifies as Hispanic or Latino, 20% identify as Asian and according to Data USA, 15% of the population speaks Spanish or Spanish Creole as their first-language and 15% of the population speaks Cambodian as their first-language.

Response 81

See Response 58.

Comment 82

Notification of unauthorized discharges
We ask that the Fact Sheet be updated to include: (1) the most recent annual volume reports for CSO discharges at each outfall, (2) the most recent version of LRWWU's Long Term Control Plan and the status of improvements made in accordance with the plan thus far, and (3) summaries of reductions or eliminations of CSOs that have been made in accordance with the plan. It is difficult to evaluate the impacts on receiving waters without complete information on the discharges. We support the permit's requirements for CSO discharges with the following revisions:

a. **Timing**: We recommend that the notice is required within two hours rather than four hours. These discharges can pose significant risks to public health ranging from hepatitis to gastrointestinal illnesses. Unless a timely notification is shared broadly, the public cannot take the necessary precautions to protect their health. Four hours is not sufficient notice for individuals who choose to recreate in or near the Lower Concord or the Merrimack River. The notification requirement should be consistent with that of the most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) requirement that initial notifications are made no later than two hours. Discharges across multiple treatment facilities to the Merrimack River collectively

number in the hundreds and total more than 800 million gallons of sewage annually. At the same time the Merrimack River is still heavily used for recreation. From kayak and boat clubs to spin-rod and fly fishermen, the River supports a substantial recreation community. To provide these individuals with adequate notice to protect public health as required in the CSO Policy's Nine Minimum controls (#8) and maintain consistency across CSO permits, we strongly recommend that this requirement is revised to two hours. We support the provision of notification "provided electronically to any interested party" so that the public can receive notification rather than be expected to go to a website.

b. **Volume**: We recommend that the notifications also include total volume discharged from the CSO. The most recent Springfield Waste Water Treatment Facility and CSO draft NPDES permit (MA0101613) includes this information as a requirement for reported information. This is needed in order to adequately quantify the impact of the CSO, maintain consistency across CSO permits, and ensure that adequate and accurate data are presented to the public.

Response 82

See Response 59, Response 60 and Response 61.

I. Comments from Gene Porter, Chair, Lower Merrimack River Local Advisory Committee on July 20, 2019:

Comment 83

I am the Chair of New Hampshire's Lower Merrimack River Local Advisory Committee (LMRLAC) and have a vested interest in the EPA's efforts to upgrade the permits for all wastewater treatment facilities that discharge untreated effluent to the River. Although the two major permits in New Hampshire are not scheduled for review until next year, the precedent set by the Massachusetts permits will be important.

The more people who feel confident in using the River for recreational purposes, the more people who will have a vested interest in helping ensure that environmental safeguards are observed and strengthened. To that end, greater transparency of the limits of any pollution threats will increase public confidence in the safety of the River's waters.

My major comment applies to all three Massachusetts permits. I trust you will transmit these comments to the appropriate officials before the 7/23 deadline.

CSO discharges pose a significant public health risk to the recreational users of the River. It is therefore gratifying to see that the draft EPA permits specifically call out the threat to recreational use as a major reason for strengthening the CSO reporting requirements from only downstream drinking water suppliers but to now include the general public. Nevertheless, the draft language requiring such reporting is needlessly vague and needs to be strengthened to at least reflect more explicitly current "best practices" for the notification of potentially affected parties of the emergence of an imminent public health hazard.

To that end, the existing draft public notification language:

- **Public Notification of CSO discharges:** within 4 hours of becoming aware of a probable CSO discharge, notice shall be provided to the public and downstream communities; supplemental notification confirming the occurrence of a CSO discharge, the CSO outfall number, and the start and stop times of the discharge shall be provided within 24 hours of the termination of any CSO discharge; an annual report shall be posted, summarizing annual CSO activation information.

should be strengthened, not just by allowing electronic notification, but by **mandating** that each municipality that employs CSOs establish an internet-based public alerting system that allows interested downstream individuals and recreation oriented entities, such as marinas, to subscribe to a free alerting service that conveys the foregoing information in a timely fashion. Such "list-serve" systems have already been established in many municipalities for disseminating similar time-sensitive information and would not pose an undue burden if CSO reports were to be added to the menu.

Response 83

EPA sought to strike a balance in fashioning the draft permit requirements for the minimum implementation level for NMC #8 (Public notification to ensure that the public receives adequate notification of CSO occurrences and impacts). As contemplated by NMC #8, the public notification plan affords the permittee reasonable flexibility in implementing the plan to account for facility-specific concerns (e.g., logistics in obtaining and disseminating information in a timely and efficient manner given funding and staffing resources), while at the same time ensuring that important health and safety information is disseminated to the public in a timely manner. *Combined Sewer Overflow, Guidance For Nine Minimum Controls*, at 9-1 (EPA 1995) ("The measure selected should be the most cost-effective measure that provides reasonable assurance that the affected public is informed in a timely manner."). The communication strategy described in the above comment is one approach that may be employed to satisfy the Public Notification requirement, and the permittee is encouraged to consider this as it develops its public notification plan in accordance with Part I.F.g.3. of the Final Permit.

Comment 84

There is also a larger issue involving the need for at least rudimentary predictions of the geographic and temporal boundaries of the likely plume of contaminated water under various river flow conditions. The absence of a rigorous river sampling program immediately after major CSO events in each location precludes the establishment of reliable models that permit prediction of the limits of the public health threat. The resulting general advice to "stay away from the river for 48 hours" may be excessively conservative. It would seem to me appropriate that the EPA include such sampling and modeling requirements in the emerging NPDES permits. Users of the River would benefit greatly.

Response 84

EPA encourages collaboration between stakeholders, including community-based organizations, MassDEP and the Permittee to develop and implement an extensive ambient monitoring program, such as the one suggested in the comment.

J. Comments from Christina Eckert, Co-Executive Director and John Macone, Co-Executive Director, Merrimack River Watershed Council on July 22, 2019:

Comment 85

We strongly support the inclusion of notification requirements for CSOs, but we encourage the DES to require notifications within 2 hours. Further, we ask that the information reported be consistent between the Lowell, GLSD and Haverhill wastewater treatment plants.

Because these discharges pose a health risk to those fishing, swimming or using the river for recreation, it's imperative to notify the public in a timely manner so they can avoid contact with the water. Currently Lowell sends out notifications almost as soon as CSOs begin, with follow-up notifications when they end. Within 24 hours, they follow up with notifications estimating the volume of effluent released. MRWC appreciates these notifications; we believe they should be a required part of the permit, and that the other wastewater treatment facilities on the Merrimack should be held to the same standard.

Response 85

See Response 59 regarding 2-hour notification.

To address the commenter's concerns regarding consistency between Lowell, GLSD, and Haverhill wastewater treatment plants, the information reported relating to CSOs in the Draft and Final NPDES Permits for all three permittees is consistent. The requirement in the Draft Permit for CSO discharge volumes to be included in the Annual Notification and Annual Report is appropriate given the additional time that may be needed to validate and refine data that is collected for each discharge event.

Comment 86

MRWC supports the EPA's inclusion of a total phosphorous average monthly limit of 1.08 mg/L.

The MassDEP's Integrated List of Waters in 2014 listed the Merrimack as impaired for total phosphorous. Five years later, it is time to address this issue.

Response 86

EPA agrees with this comment and acknowledges the support for the total phosphorus limit.

Comment 87

MRWC recommends that the EPA/Mass DES require an average monthly limit for total nitrate/nitrite, total nitrogen, and total Kjeldahl nitrogen.

Recent studies have shown that the Merrimack's nitrogen levels are increasing. As stated above, the Merrimack is the second greatest contributor of nitrogen to the Gulf of Maine. As difficult as

it is, our region must find a way to limit or eliminate these pollutants threatening priceless wildlife, not only within the Merrimack, but in the Gulf.

Response 87

See Response 53 and Response 64.

Comment 88

MRWC asks that the LRWF take steps to reduce the amount of Per- and polyfluoroalkyl substances (PFAS) discharged from the facility.
Significant amounts of landfill leachate from the Turnkey landfill in Rochester, NH that contains PFAS is discharged to the Merrimack River at the Lowell Regional Wastewater Facility. Waste Management, Inc., the owner of the Turnkey landfill, has an Industrial Discharge Permit with Lowell to accept the leachate from its Turnkey landfill. The permit allows WMI to truck up to 100,000 gallons per day to the Lowell RWF. Leachate from Turnkey has been tested for PFAS at very high levels. Turnkey has a reverse osmosis system to remove PFAS from its leachate, but has historically sent untreated wastes to Lowell. Some of these wastes contain very high amounts of PFAS because they include waste that does not go through Turnkey's reverse osmosis system. For the health of the Merrimack, it's imperative that Turnkey removes PFAS before sending leachate to Lowell, or that Lowell removes PFAS before allowing it to reach the river. We implore the EPA to look at PFAS limits for discharges at this plant in the future.

Response 88

See Response 62.

Comment 89

In conclusion, we commend Lowell Regional Wastewater Facility for their current notifications and for their efforts in seeking out solutions to the CSO issue. We understand that these stringent requirements are costly. Our preference is that resources first be allocated to reducing CSOs; but that the mitigation of phosphorous and nitrogen needs to begin now, and efforts increase in the next 2-3 years. The mitigation of PFAS should begin immediately.

Response 89

Comment noted. EPA acknowledges the comment regarding the allocation of resources towards CSOs and nutrient removal.

See Response 62 regarding PFAS.

K. Comments from Philip D. Guerin, President & Chairman, Massachusetts Coalition for Water Resources Stewardship on July 22, 2019:

Comment 90

The Massachusetts Coalition for Water Resources Stewardship (MCWRS) is a nonprofit organization committed to promoting watershed-based policies and regulations that effectively manage and conserve water resources. Members include municipalities; public agencies that transport and treat drinking water, wastewater and storm water; quasi-government agencies; and

private organizations whose members are committed to the principles of stewardship and sustainability in protecting the environment and public health. Find us at mcwrs.org.

MCWRS offers these comments on the Lowell Regional Wastewater Utility (Lowell Wastewater Utility) draft NPDES Permit because the City of Lowell is a long-standing member of our organization. We also find that many of the conditions contained in the permit have implications for other communities in the Merrimack Valley and throughout Massachusetts.

On June 24, 2019, MCWRS had requested from EPA Region 1 a 90-day extension of the comment period for this draft permit. That request was denied and instead a 15-day extension was granted. Given the complexities and far-reaching impacts of this permit, MCWRS again suggests that a comment period extension of an additional 90 days would best serve the agencies and stakeholders. The additional time would allow further discussion of many issues and perhaps resolution of most. In lieu of an extension, EPA will have to reissue the draft permit as it needs to be substantially modified to remain fair, accurate and consistent.

Response 90

Comment noted. See Response 1.

Comment 91

MCWRS fully supports the comments submitted by Lowell Wastewater Utility. In particular, their request for reconsideration of a total phosphorus limit is warranted given ongoing facility upgrades including phosphorus reduction improvements. Also, as noted in Lowell Wastewater Utility's July 22, 2019 comment letter, the draft permit includes numerous examples where permit conditions conflict with the goal of maximizing wet weather flow through the facility and thereby diminishing combined sewer overflows. Further discussion between Lowell Wastewater Utility and regulatory agencies and/or a revised draft permit are necessary to resolve these issues.

Response 91

EPA has responded to the comments submitted by the Lowell Wastewater Utility in the relevant sections above. *See* Responses 1 through 35. Although EPA disagrees with the request to remove the total phosphorus limit (See Responses 2 and 3), EPA has agreed to revise the requirements from the Draft Permit to specifically address maximizing wet weather flow through the facility (See Responses 5 and 6).

Comment 92

In addition to Lowell Wastewater Utility's comments, MCWRS also suggests that EPA Region 1 is missing a wonderful opportunity to advance watershed–based permitting by handling permits for Lowell, Greater Lawrence Sanitary District and Haverhill in an isolated fashion. These three large communities are each situated on the Merrimack River within a relatively short stretch of river. They all share the same issues of wastewater treatment, CSOs and aging water infrastructure. Through new language in a revised draft permit, EPA could allow and encourage collaboration between these communities in a way that advances river improvement while minimizing fiscal impacts and duplicative work. Some form of pollution trading or similar actions which allow a community to utilize its strengths and work with a neighboring system to

share costs and implement beneficial improvements would be a great step forward in NPDES permitting in New England.

Response 92

EPA appreciates the suggestion to encourage more collaboration between Permittees within the Merrimack River watershed and notes that the concurrent development of the Draft Permits for these three Permittees has certainly resulted in an increase in collaboration, efficiency and consistency. EPA welcomes more specific suggestions for how environmental benefits can be achieved in a more collaborative fashion in the future. Note that collaborative efforts are not precluded by the issuance of the permit and EPA can revisit the structure of permits, including the introduction of general permits, in future permitting cycles should collaborative efforts coalesce.

L. Comments from Peter Severance, River Merrimack on July 22, 2019:

Comment 93

I. Ambient Monitoring.

a. I would suggest that Chlorophyll-a be added to the list of parameters for ambient monitoring. This will add valuable information concerning response to / need for additional nutrient controls.

b. I would further suggest that ambient monitoring (all monitoring?) be conducted with sufficient quality and controls so as to be useful and acceptable per the quality standards of the the MassDEP Watershed Planning Program. This would entail a couple of additional things:

1. Writing of a detailed QAPP per the Watershed Planning Program standards.
2. Having all testing of grab samples be conducted by labs which hold current Massachusetts certification for the analytical methods specified in the QAPP

Response 93

EPA anticipates that water quality monitoring for chlorophyll-a and other nutrient response variables will be conducted in the coming years by EPA, MassDEP and other stakeholders. EPA has been contacted by Massachusetts Coastal Zone Management and the Mass Bays Program about monitoring needs in the lower Merrimack. This has been a poorly monitored area for a long time but it is now receiving more attention from local watershed groups and the state related to increased monitoring needs. Therefore, EPA has not added additional parameters to the ambient monitoring requirement in the Final Permit but notes that such parameters may be required in a future permit.

EPA recommends that any sampling and analysis performed should be conducted consistent with a state-approved quality assurance project plan ("QAPP") developed for the monitoring work to ensure inclusion in MassDEP's assessment program. Additionally, EPA approved analytical methods found in 40 C.F.R. Part 136 must be employed by any state-certified lab.

Comment 94

II. Nitrogen controls.

You probably would be implementing controls on Total Nitrogen if MassDEP had a finding that the lower Merrimack was IMPAIRED for nutrients according to their current standards. Unfortunately, they have never looked at the estuary.

I believe that the monitoring the USACE and EPA has done for the past 5 or 6 years shows clear need for this, taking into consideration several things we know about the estuary.

a. As outlined in the draft permits, the levels of Total nitrogen in the lower Merrimack are clearly very high.
b. Taking a look at the 45 observations from USACE (2014-2016) and EPA (2017) data for Chlorophyll-a -- for stations downstream from Rivermile 7 (the estuary proper). Consider them non-parametric perspective, in light of the 2018 Massachusetts CALM guidance:

    51% exceeded the 10 mg/L “impaired” standard
    22% met the <= 5 mg/L “healthy” standard
    27% fell in between the “impaired” and “healthy” standards
    78% exceeded the “healthy” standard.

c. Historical records make the case for long-standing nutrient impairment of the estuary:

    1. NOAA and the EPA have known for decades that nitrogen in the Merrimack estuary is among the worst in all of Massachusetts. For example, in 1994, NOAA published data from 1989 and 1990 for the 14 estuarine systems from Cape Cod and Massachusetts Bay to Passamaquoddy Bay in Maine -- the Merrimack estuary was far and away the worst for nitrogen pollution:

Table 4. Summary of physical and hydrological characteristics, nitrogen and phosphorus discharges, and predicted nutrient concentration statuses for estuarine systems bordering the Gulf of Maine [a]

Estuarine System	Total Drain. Area (mi^2)	Water Surf. Area (mi^2)	Water Depth (ft)	Average Daily Freshw. Inflow (10^3 cfs)	Volume ($10^9 ft^3$)	1980 Pop. Density (no./mi^2)	Total Nitrogen Disch. (tons/yr)	Nitrogen Conc. & Status[b] (mg/l)	Total Phos. Disch. (tons/yr)	Phos. Conc. & Status [b] (mg/l)
Passamaquoddy Bay	3200	157	72	62	315	11	293	0.008L	28	0.001L
Englishman Bay	900	76	38	16	80	12	150	0.014L	22	0.002L
Narraguagus Bay	400	70	32	9	63	17	104	0.016L	11	0.002L
Blue Hill Bay	800	115	75	13	241	28	154	0.016L	35	0.004L
Penobscot Bay	9400	361	72	161	725	58	7808	0.102M	771	0.010M
Muscongus Bay	300	72	43	6	85	67	56	0.013L	16	0.004L
Sheepscot Bay	10100	103	41	176	118	66	8745	0.077L	641	0.006L
Casco Bay	1200	164	42	21	191	172	1412	0.086L	465	0.028M
Saco Bay	1800	17	32	36	15	71	1257	0.057L	193	0.009L
Great Bay	1000	15	11	20	5	243	636	0.098L	204	0.031M
Merrimack River	5000	6	12	84	2	423	10111	1.021H	1625	0.164H
Massachusetts Bay	1200	364	77	29	786	2228	7995	0.216M	4091	0.110H
Boston Bay	700	69	26	18	50	2789	N/A	N/A	N/A	N/A
Cape Cod Bay	800	548	77	18	1178	392	377	0.026L	187	0.013M

[a] Data sources:Strategic Assessment Branch (1990); NOAA/EPA Team on Near Coastal Waters (1989).
[b] Concentration status: L = low; M = medium; H = high.

2. Decades ago, specialists on the vascular plants and algae of estuaries were studying New England estuaries and concluded that pollution was having a dramatic impact on the Merrimack. Miller (1971) included this analysis:

"Pollution is often an important limiting factor in algal distribution and abundance. A comparison of species composition of seaweeds from the Merrimack River Estuary with that of the Hampton-Seabrook Estuary (Mathieson and Fralick, In Press) and the Great Bay Estuary Systems {Mathieson, Reynolds, and Hehre, In Press) of New Hampshire indicates a paucity of species in the Merrimack."

- Hampton-Seabrook Estuary: 118 species
- Great Bay: 150 species
- Merrimack: 28 species

"The abundance of many Ulotrichalean green algae (e.g., Enteromorpha spp., Ulva lactuca, Ulva flexuosa subsp. paradoxa, and Monostroma sp.) typifies a polluted estuarine habitat. The latter species are not only tolerant of extremes in pollution, but to gross fluctuations in hydrographic factors."

c. Consider the following historical notes concerning the state of eelgrass in the estuary. While it is currently present, it used to be thriving, but is likely to be impaired at present:

1. Jerome (1965) made note of a 1903 Newburyport Daily News article on clammers digging back "abundant" beds of eelgrass from Plum Island to what is now known as Ring's Island (Salisbury).

2. "Abundant growth" of eelgrass was observed in the lower Merrimack River, Plum Island Sound and the Ipswich River (Addy and Aylward, 1944).
3. By 2010 there was no eelgrass recorded in Plum Island Sound (Novak, 2012).
4. Fred Short (personal communication) observed beds of eelgrass in the Merrimack in the 1980s; however, it had disappeared in the 1990s.
5. Within the last decade, the eelgrass beds of the Merrimack were surveyed and catalogued in the Massachusetts NHESP Natural Communities inventory (MassGIS, 2016), and described as follows:

COMMUN_NAM Seagrass Community
COMMUN_RAN S3
Acres 849.231
COMMUN_DES Seagrass Communities occur on estuarine or marine flats with sand or mud substrates that are submerged by, usually, less than 2m of water at high tide.
SPECIFIC_D This example of Marine Subtidal Flats is **extremely sparsely vegetated** but has a rich diversity of invertebrate fauna that provide forage for many species of birds. [emphasis added]

6. Four of the nine EFH species have eelgrass mentioned in association with habitat of one or more of their life stages.

I would suggest that if there is any hope of restoring the richness of the eelgrass beds to this ~850 acres of EFH (which by the way is used by an additional 38 economically and ecologically important marine species - ELMR) the high levels of TN and resulting Chlorophyll-a in the estuary are probably the key impediment to success of that effort.

d. Macroalgae growth on the shorelines of Deer Island appears to be significant, per the photos sent with the email I forwarded to you from Dr. Mathiesson.

Response 94

EPA appreciates the detailed information regarding the history of nitrogen loading and eelgrass health within the lower Merrimack River estuary. EPA agrees that this information may be useful in determining the impairment status of the estuary. MassDEP will consider this information in its next assessment of the lower Merrimack River.

As explained above, EPA plans to require nitrogen monitoring in NPDES permits throughout the Merrimack River watershed and expects monitoring for other response variable (*e.g.*, chlorophyll-a, dissolved oxygen, eelgrass) to be collected by EPA, MassDEP and other stakeholders, which will result in a comprehensive dataset on which to make systematic regulatory decisions. This approach will ensure EPA has sufficiently representative effluent and ambient data to make effective permitting decisions on a watershed level, as it has done in Upper Narragansett Bay and more recently in the Taunton River Estuary/Mount Hope Bay.

Comment 95

III. The most abundant species of fish using the Merrimack estuary are forage fish (Jerome, 1965; ELMR) -- the prey species that feed the cod, the seabirds, the dolphins and whales of the Gulf of Maine and Massachusetts bay. The populations of many of the fish using the Merrimack as a nursery – the river herring, Atlantic herring, mackerel and others – are not doing well. The list of ELMR species utilizing the estuary and their life stages is found in this shared directory.

The Atlantic States Marine Fisheries Commission is considering designating important shad and river herring spawning and nursery habitat as HAPC (January, 2019).

Response 95

Comment noted.

Comment 96

IV. Additional Economic considerations for taking steps to restore the estuary:

a. Jerome (1965) estimated that the estuary would support the harvest of 30,000 bushels of soft-shell clams, worth $4,500,000 - $6,000,000 at today's wholesale prices.
b. Ipswich Shellfish Group is interested in farming oysters in the estuary, but not until it's cleaned up.

Response 96

Comment noted.

Comment 97

V. LRWU is discharging into a reservoir, and the TP concentrations in the effluent should be adjusted accordingly.

Controls on Total Phosphorus is a welcome improvement to the operation of these plants. However, for Lowell, we suggest that the EPA re-examine the "Gold Book" criteria which they are using to determine the criteria. To cite the language from the draft permit:

> "EPA's 1986 Quality Criteria for Water (the "Gold Book") recommends that in-stream phosphorus concentrations not exceed 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 a lake or reservoir. For this segment of the Merrimack River, the 0.1 mg/L would apply downstream of the discharge."

However, **the river segment that the Lowell plant discharges into is a reservoir** that was built as part of the Lawrence Project's Essex Dam (FERC Project No. 2800), as described in that facility's current federal license:

(ii) Project works consisting of: (l) the existing 33-foot high and 900-foot-long dam of rubble masonry construction; (2) an existing 9.8-mile-long reservoir having a surface area of 655 acres at normal high water elevation 44.17 msl and a maximum storage capacity of approximately 19,900 acre-feet; (3)…

Issuance 19781204-4000. Order issuing major license and authorizing negotiations for sale of securities (Issued December 4, 1978). Pg. 13.

(Water levels of this reservoir are managed in conjunction with water levels maintained at other major dams on the Merrimack. Because of its potential impact on adjacent landowners, rules concerning the management of this component of the project's works are an integral part of the license.)

Mile 9.8 of this reservoir is positioned approximately at Bridge Street in Lowell. The LRWU facility is situated 8.7 miles above the dam, so LRWU is discharging directly into this reservoir, which has a residence time of > 2 days (?).

In light of this information, the appropriate Gold Book Standard applies for in-stream phosphorus concentration is 0.025 mg/L.

Response 97

EPA acknowledges the commenter's information on the hydrology of this stretch of the river, but also notes the uncertainty around certain important facts relevant to the determination whether the receiving water is a river or reservoir; most notably residence time. At this time, based on the information currently before it, EPA disagrees that it is obliged to apply the Gold Book target is 0.025 mg/L for this stretch of the Merrimack River. Pursuant to 310 CMR 10.58(2)(a)(1) "A river is any natural flowing body of water that empties to any ocean, lake, pond, or other river and which flows throughout the year." Further, 310 CMR 10.58(2)(a)(1) rivers include the entire length and width to the mean annual high-water line of the major rivers (Assabet, Blackstone, Charles, Chicopee, Concord, Connecticut, Deerfield, Farmington, French, Hoosic, Housatonic, Ipswich, **Merrimack**, Millers, Nashua, Neponset, Parker (Essex County), Quinebaug, Shawsheen, Sudbury, Taunton, Ten Mile, and Westfield) (emphasis added).

Since the receiving water is classified as a river in the MassDEP regulations cited above, EPA has determined that the Gold Book target of 0.1 mg/L for instream total phosphorus is a reasonable target in this case. Should future monitoring of the Merrimack River downstream of LRWU's discharge show that further reductions of phosphorus are needed at the facility to achieve water quality standards, or if other information is presented to EPA relating to the appropriate hydrological classification of this body of water, EPA will reassess this conclusion.

Attachment A – Combined Sewer Overflows Background and Annual CSO Discharge Summary 2014-2018
Lowell Regional Wastewater Utility (NPDES Permit No. MA0100633)

This Attachment provides background on the statutory and regulatory framework that applies to combined sewer overflows (CSOs). It briefly describes the Region's approach to key permitting and enforcement issues. Finally, it provides data documenting the trends in CSO discharges at the Lowell Regional Wastewater Utility.

A combined sewer system ("CSS") is a wastewater collection system owned by a state or municipality (as defined by section 502(4) of the Clean Water Act ("CWA")) which conveys sanitary wastewaters (domestic, commercial and industrial wastewaters) and storm water through a single-pipe system to a Publicly Owned Treatment Works ("POTW") Treatment Plant (as defined in 40 C.F.R. § 403.3(p)). A CSO is the discharge from a CSS at a point prior to the POTW Treatment Plant. CSO discharges occur when the volume of wastewater exceeds the capacity of the CSS or treatment plant (e.g., during heavy rainfall events or snowmelt). When this occurs, untreated stormwater and wastewater, discharges directly to nearby streams, rivers, and other water bodies.

Like all point sources, CSOs are subject to sections 301 and 402 of the CWA. CSOs require National Pollutant Discharge Elimination System ("NPDES") permits, which may include technology-based and water quality-based requirements of the CWA. Additionally, where EPA is the permitting authority it must ensure that the state or authorized tribe where the CSO discharge may originate either issues a section 401 water quality certification finding compliance with existing water quality requirements or waives the certification requirement.

Further, Section 402(q) of the CWA states that: "[e]ach permit, order, or decree issued pursuant to this chapter after December 21, 2000 for a discharge from a municipal combined storm and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator on April 11, 1994." The Combined Sewer Overflow Control Policy ("CSO Policy"), 59 Fed. Reg. 18688 (April 19, 1994), provides a national strategy for the control of CSOs through the NPDES program at 40 C.F.R. Part 122. The CSO Policy "presents a uniform, nationally consistent permitting approach that should … result in the establishment of both technology-based and water quality-based requirements for all CSOs."[16]

Under the CSO Policy, permittees must undertake a process to accurately characterize their CSS and CSO discharges, demonstrate implementation of the nine-minimum technology-based controls ("NMCs"), and develop long-term CSO controls plans ("LTCPs") which evaluate alternatives for attaining compliance with the CWA, including compliance with water quality standards and protection of designated uses. All CSO permittees are required to implement the Best Available Technology Economically Achievable / Best Conventional Pollutant Control Technology ("BAT/BCT"), which at a minimum includes the NMCs, as determined on a best

[16] "Combined Sewer Overflows Guidance for Permit Writers," at 2-1 (September 1995), available at https://www.epa.gov/sites/production/files/2015-10/documents/csopermitwriters_full.pdf ("CSO Guidance for Permit Writers")

professional judgment basis ("BPJ") by the permitting authority. Implementation of the NMCs is achieved through specific control measures deemed most appropriate for a specific permit and necessary to satisfy the BAT/BCT requirement based on BPJ of the permit writer, considering the factors presented in 40 C.F.R. § 125.3(d).[17]

The CSO Policy sets out a phased approach to CSO permitting. The immediate requirement for CSO permits are: (1) immediately implement the BAT/BCT, which includes at a minimum the NMCs; (2) submit a report documenting such implementation; (3) comply with applicable WQS, no later than the date allows under the State's WQS, "expressed in the form of a narrative limitation;" and (4) develop and submit a LTCP.[18] Once a permittee has developed a LTCP and selected controls necessary to achieve WQS, the CSO Policy articulates the following, among other elements, for inclusion in CSO permits: (1) requirements to implement the NMCs and (2) water quality-based effluent limits under 40 C.F.R. § 122.44(d)(1) and 122.44(k), requiring, at a minimum, numeric performance standards for the selected CSO controls.[19]

For CSO permits on the Merrimack River, EPA has and continues to require implementation of the NMCs. Development of LTCPs, on the other hand, has been and continues to be addressed as part of enforcement actions taken by Region 1's Enforcement and Compliance Assurance Division.

EPA or the relevant state has worked with virtually every CSO community in New England to develop CSO abatement schedules to be memorialized in administrative or judicial enforcement mechanisms. As necessary, such schedules are adjusted to reflect new information and evolving financial conditions.

[17] *Id*. at 3-6.
[18] 59 Fed. Reg. at 18696.
[19] *Id.*

Lowell CSO Discharges - Activations and Volume by Year

EPA notes that the data on activations and volume discharged are significantly influenced by the number and intensity of rainfall events in a given year and/or by improvements made by the permittee in measuring and reporting CSO events and volumes. This permit requires, for the first time, direct measurement of CSO flows. EPA and MassDEP have also taken various enforcement actions against WWTF permittees on the Merrimack River similarly requiring improvements in CSO monitoring and reporting. Accordingly, EPA expects the quality and accuracy of this data to continue to improve.

Outfall	YEAR Activations	2014 Volume (MG)	YEAR Activations	2015 Volume (MG)	YEAR Activations	2016 Volume (MG)	YEAR Activations	2017 Volume (MG)	YEAR Activations	2018 Volume (MG)
002 - Walker Street	5	1.97	2	0.73	5	4.77	6	4.35	12.00	10.96
007 - Beaver Brook	13	4.41	7	1.44	6	4.01	10	0.00	16.00	12.07
008 - West Street	14	74.37	13	27.79	10	26.93	13	24.18	22.00	73.00
011 - Read Street	0	0.00	3	0.07	4	0.12	4	0.14	5.00	0.18
012 - First Street	0	0	0	0	0	0	0	0	0	0
020 - Warren Street	22	40.18	19	31.53	16	28.78	24	30.34	31.00	100.83
027 - Tilden Street	17	17.29	10	9.06	14	8.90	17	8.93	24.00	16.33
030-1 - Barasford Avenue	15	26.80	8	8.71	9	10.16	7	7.83	14.00	16.17
030-2 - Merrimack Station	19	113.45	14	33.54	13	34.75	14	25.31	29.00	62.82
TOTAL	105	278.47	76	112.87	77	118.42	95	101.08	153	292.36

Exhibit 5
AR B.1