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June 10, 2024

Robin Johnson
Environmental Protection Specialist
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912
Via email to johnson.robin@epa.gov

**Re: U.S. EPA Draft NPDES Permit, City of Manchester, New Hampshire,
Wastewater Treatment Facility, NH0100447: Comments Submitted by the
City of Manchester**

Dear Ms. Johnson:

The City of Manchester, New Hampshire (the “City”), by and through its attorneys, McLane Middleton, P.A., submits the following comments on the United States Environmental Protection Agency’s (“EPA” or “Agency”) Draft National Discharge Elimination System (“NPDES”) Permit for the City’s Wastewater Treatment Facility, NPDES Permit No. NH100447 (the “Draft Permit”). These comments are timely, having been submitted prior to the deadline for public comments of June 10, 2024, established by EPA.¹

While the City shares EPA’s interests in protecting the water quality of the Merrimack River, the Draft Permit as currently written exceeds EPA’s statutory authority, contradicts the terms of a previously negotiated Consent Decree between the EPA and the City, and arbitrarily relies on unreliable data to establish various effluent limits and compliance schedules. We also incorporate by reference technical comments on the Draft Permit appended hereto as Attachment A.

I. Factual Background

The City owns and operates a wastewater treatment facility (“WWTF”), that serves approximately 155,000 people in the City of Manchester, and also serves portions of Bedford, Londonderry, and Goffstown, New Hampshire. Pursuant to its existing NPDES permit, the City’s sewer collection system conveys wastewater to the WWTF for treatment and discharge to the Merrimack River. The system also discharges from 15 combined sewer overflow (“CSO”) outfalls, in compliance with its current NPDES permit.

¹ EPA extended the initial May 10, 2024, public comment period by 30 days, at the request of the Conservation Law Foundation.

The City is currently in the midst of a decades-long effort to update and improve its CSO system.² In June 2020, the City, the State of New Hampshire on behalf of the New Hampshire Department of Environmental Services (“NHDES”), and the United States on behalf of the EPA, entered a Consent Decree lodged with the federal District Court of New Hampshire (“2020 Consent Decree”)³ in response to allegations that the City violated its NPDES permit and the Clean Water Act by making unauthorized discharges of pollutant from its CSO outfalls to the Merrimack River and its tributaries. The 2020 Consent Decree is wide sweeping and is part of the City’s long-term comprehensive plan to control and reduce overflows of the City’s sewer system.

II. Standard of Review

Under the Administrative Procedure Act (“APA”), an agency may not take actions, issue findings, or make conclusions that are:

- (A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;
- (B) contrary to constitutional right, power privilege, or immunity; (C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right; (D) without observance of procedure required by law; (E) unsupported by substantial evidence in a case subject to sections 556 and 557 of [the APA] or otherwise reviewed on the record of an agency hearing provided by statute; or (F) unwarranted by the facts to the extent that the facts are subject to trial de novo by the reviewing court.

5 U.S.C. § 706(2). An agency action is considered arbitrary and capricious when that agency relied on factors that Congress did not intend, “entirely failed to consider an important aspect of the problem,” explained its decision in such a way that is contradicted by the actual evidence or is “so implausible that it could not be ascribed to a difference in view or the product of agency experience.” Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983). In addition, “an error of law also constitutes an abuse of discretion.” Yepes-Prado v. U.S. I.N.S., 10 F.3d 1363, 1366 (9th Cir. 1993).

III. Comments

- A. EPA exceeds its legal authority, and creates undue burdens on the City, by including requirements in the Draft Permit that the City monitor for PFAS analytes in influent, effluent, and sludge.

The Draft Permit incorporates requirements that the City use EPA methods 1633 and 1621 to monitor for per- and polyfluoroalkyl substances (“PFAS”), and adsorbable organic fluorine (“AOF”), respectively, in its influent, effluent, and sludge. EPA cannot, as a matter of

² See *infra* Part III.D.

³ *United States of America v. City of Manchester*, Case No. 20-cv-762-SM.

law, include requirements related to PFAS-monitoring in the City's final permit. The EPA lacks clear legislative authority to require PFAS monitoring for discharges to surface water. Furthermore, any requirement that the City monitor for PFAS analytes will pose an undue financial burden on the City, without proper justification or legal basis, and without conducting a cost and benefit analysis.⁴

EPA does not have the authority to require PFAS monitoring absent clearly established water quality criteria. While EPA has the authority to regulate pollutants under the Clean Water Act, including the establishment of monitoring requirements, the lack of specific PFAS surface water quality criteria leave EPA devoid of any clear benchmark against which to assess the necessity of monitoring. EPA's recently established drinking water quality standards cannot serve this purpose. Drinking water quality standards and ambient groundwater quality criteria are entirely separate from surface water quality standards and have no legal or practical bearing on permitted discharges to the Merrimack River. The EPA has not demonstrated any evidence of adverse environmental impacts to the river, biota or fauna, nor has it found adverse human health effects in connection with PFAS compounds in surface waters. Therefore, EPA's demand for monitoring is entirely without basis.

Moreover, EPA's directive that the City utilize methods 1633 and 1621 to monitor for PFAS analytes and AOF is outside of the scope of the EPA's authority. EPA notes in the Draft Permit that there is no "final 40 C.F.R. § 136 method for measuring PFAS in wastewater and sludge." Draft Permit NH0100447 Fact Sheet, p. 34. Nonetheless, EPA seeks to require monitoring via Method 1633 which it states was "finalized" in January of this year. Respectfully, no analytical method is "final" for the purpose of NPDES permit monitoring, until promulgated via the notice and comment rulemaking process. Neither Method 1633 nor method 1621 has been properly promulgated by EPA. EPA's reliance on non-promulgated analytical methods contravenes the procedural requirements of the APA, section 503. See 5 U.S.C. §§ 553, 706(2)(D).

Finally, should the EPA include PFAS monitoring requirements in the City's Final NPDES Permit, mandating that the City use method 1633 and 1621 for monitoring PFAS analytes and AOF will create undue financial burdens on the City. The City anticipates that sampling via these methods will cost \$1,245 per site and per sample, at a total of 50 sampling sites. The sampling will therefore impose an additional \$62,250.00 per year in costs annually. These costs simply cannot be justified for PFAS sampling, as the EPA lacks any legal or factual basis to justify the necessity of the sampling itself.

⁴ *See infra* Part III.D.

- B. EPA exceeds its legal authority and creates undue burdens on the City, by including requirements in the Draft Permit that the City develop a climate Adaptation Plan.

The Draft Permit requires that the City develop a climate Adaptation Plan with respect to the WWTF's critical assets. The City appreciates EPA's intentions to proactively anticipate the impacts of climate change. However, the requirements included in the Draft Permit fall outside the scope of EPA's authority under the Clean Water Act's NPDES program, were included without any cost benefit analysis,⁵ and create an undue burden on the City and its environmental justice communities.

EPA erroneously bases its authority for requiring the Adaptation Plan on several grounds. First, the EPA states that the "Adaptation Plan permit conditions are necessary to further the overarching goal of the CWA 'to restore and maintain the chemical, physical, and biological integrity of the Nation's waters....'" EPA suggests that increased precipitation, floods, storm surges, and sea level rise associated with climate change could cause a failure of wastewater treatment facilities, and thereby threaten the Nation's waters. EPA confuses the overarching policy objectives of the Clean Water Act, with the Act's actual delegation of authority to the Agency under the NPDES program. EPA has authority under the Act to regulate the discharge of a pollutant by any person from any point source⁶ to a navigable water. See 33 U.S.C. § 1342. The Adaptation Plan requirements included in the Draft Permit extend well beyond these criteria. Nothing in EPA's Adaptation Planning requirements can reasonably be tied to a discharge from an actual point source and are therefore outside the scope of its authority. See Nat'l Pork Producers Council v. EPA, 635 F.3d 738, 751 (5th Cir. 2011) ("[T]here must be an actual discharge into navigable waters to trigger the CWA's requirements and the EPA's authority"); Nat. Res. Def. Council, Inc. v. EPA, 859 F.2d 156, 170 (D.C. Cir. 1988) ("[C]ontrary to EPA's assumption, the CWA does not empower the agency to regulate point sources themselves; rather, EPA's jurisdiction under the operative statute is limited to regulating the discharge of pollutants. Thus, just as EPA lacks authority to ban construction of new sources pending permit issuance, so the agency is powerless to impose permit conditions unrelated to the discharge itself.").

Second, EPA argues its own regulations, namely 40 C.F.R. § 122.41(d) and (e), authorize the EPA to require Adaptation Planning within the scope of NPDES permits. Part 122.41(d) requires all permittees to "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." Part 122.41(e) requires permittees to "at all times properly operate and maintain all facilities and systems of treatment and control" to achieve compliance with the conditions of a NPDES permit. EPA argues that Adaptation Planning

⁵ *See infra* Part IV.C.

⁶ "The term 'point source' means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture." 33 U.S.C. § 1362.

requirements constitute “reasonable steps to minimize or prevent” potential future discharges associated with a changing climate, and that the extensive and costly upgrades to critical WWTF assets constitute “proper operation and maintenance” of municipal wastewater facilities.

As to both arguments, EPA misinterprets its own regulations by extending their reach to encompass speculative future impacts associated with climate change. Although a changing climate appears inevitable, the precise storm patterns that will emerge, and the precise impacts of climate change on a given local facility are far too speculative to serve as a basis to assess either “reasonable steps to minimize” discharges, or “proper operation and maintenance.” These provisions should not be stretched beyond their plain meaning to require facilities to undertake costly and burdensome upgrades based on uncertain future scenarios.

Furthermore, EPA’s interpretation undermines 40 C.F.R. § 122.41(n)(1)-(4), providing a defense for “upsets” defined as “an exceptional incident” resulting in unauthorized discharges that are “unintentional and temporary beyond the reasonable control of the operator.” Surely, the severe storm events associated with climate change are beyond the reasonable control of the City of Manchester. Holding the City responsible for preventing the harm borne by these catastrophic events belies the intent of EPA’s own regulations. EPA’s efforts to interpret the “duty to mitigate” and the duty to ensure “proper operation and maintenance” to guarantee against all possible speculative future upsets, effectively nulls Part 122.41(n) with respect to severe storm events.

Assuming *ad arguendo* that EPA has authority to require climate Adaptation Planning in the City’s NPDES permit, compliance with the Adaptation Planning requirements, as proposed, is simply infeasible for the City of Manchester. In addressing climate change impacts on municipal WWTFs, it is crucial to ensure a fair and effective approach. The current approach encompassed in the Draft Permit risks overwhelming municipal permit holders with unrealistic timelines and financial obligations. EPA offers no assurance of financial assistance or support to aid WWTFs in meeting these obligations. Without adequate financial assistance, the proposed permit conditions place an undue financial burden on the municipality and could potentially compromise critical wastewater treatment services. As written, the Draft Permit’s development of the Adaptation Plan would require hundreds, or even thousands of staff hours, and significant engineering costs will be associated with identifying critical assets and assessing appropriate adaptive measures. The costs associated with developing and executing such an extensive plan would cost millions of dollars.

Additionally, the City urges EPA to consider the distinctive challenges that Manchester faces as an environmental justice community. Requiring a small, disadvantaged community to create an Adaptation Plan threatens to exacerbate existing disparities in the City. Without assurance of federal and/or State financial assistance or support from the EPA and/or NHDES, the financial strains associated with the Draft Permit conditions place additional strains on the financial and managerial capacity of the City’s wastewater treatment services upon which our residents rely. Therefore, the City requests that EPA eliminate the Adaptation Planning

requirements until it identifies an available funding source to support these efforts, in the City's final permit.

Further, the timeline proposed in the Draft Permit for compliance with Adaptation Planning requirements is not achievable, even with adequate funding. Compliance with all three components of the Adaptation Plan necessitates substantial financial investment and some operational disruption. The City conservatively estimates that fully developing a meaningful implementation schedule for its adaptation plan would require 5 to 6 years.

The City shares EPA's concerns over the threats of climate change and has already voluntarily taken proactive steps to guard against its impacts and protect the Merrimack River. Working closely with the City to establish realistic timelines and providing logistical and financial support will lead to the implementation of more effective long-term climate change adaptation measures and a stronger partnership between EPA and the City of Manchester.

- C. The EPA failed to perform a cost-benefit analysis to establish effluent limits for ammonia and aluminum, implement PFAS monitoring requirements, or mandate Adaptation Planning.

Considering the costs and benefits of agency actions has long been a guiding principle in pursuit of informed and prudential agency decision-making. In the context of the Clean Water Act, the EPA is authorized to weigh financial costs of a permit requirement, against the anticipated water quality benefits. Historically, EPA has conducted cost-benefit analyses under the Clean Water Act even in the absence of a clear legislative directive. In Entergy Corp. v. Riverkeeper Inc., for example, the United States Supreme Court upheld EPA's application of a cost-benefit analysis, finding that despite the statute's silence with respect the consideration of costs and benefits, "it was well within the bounds of reasonable interpretation for the EPA" to perform a cost-benefit analysis in setting effluent standards under the Clean Water Act. Entergy, 556 U.S. at 223; see also id. at 218 (agreeing with EPA's interpretation that the setting of effluent limits allows for the consideration of the costs of technology and the relationship between those costs and the environmental benefits produced). Consistent with the EPA's approach of considering costs and benefits when setting effluent limits under the Clean Water Act, EPA should conduct a proper cost-benefit analysis before setting effluent limits on ammonia and aluminum in the City's final permit.

Moreover, it is evident that the EPA's authority to perform cost-benefit analyses extends beyond effluent limits to encompass other permit requirements, including climate Adaptation Planning requirements, and PFAS monitoring. Given the extraordinary compliance costs to the City, the City requests that EPA perform a meaningful cost-benefit analysis before imposing the abovementioned effluent limits, Adaptation Planning requirements, or PFAS monitoring in the City's final NPDES Permit.

- D. The Draft Permit contradicts numerous provisions of the 2020 Consent Decree negotiated in good faith between the City and the EPA related to the City's CSO system.

In 1999, the City entered a Compliance Order with the EPA, marking the commencement of the first phase of its comprehensive CSO abatement control efforts ("Phase I"). Over a 10-year period, the City fulfilled its obligations under Phase I, investing \$58 million to completely eliminate thirteen CSO outfalls, implement sewer separations, and implement various other abatement control measures. These efforts resulted in a remarkable 99% reduction in CSO discharges to the Merrimack River from the outfalls on the west side of the River, from approximately 53.2 million gallons to a mere 0.2 million gallons annually. Following the successful completion of Phase I, the City was effectively capturing and treating around 83% of its annual wet weather combined sewage by volume.

The subsequent 2020 Consent Decree encompassed an agreement between the City and EPA, for the City to implement the second phase of the City's CSO abatement efforts ("Phase II"). Phase II comprises of a comprehensive set of further corrective measures to the City's sewer system, including additional WWTF upgrades, sewer separation projects, and further abatement controls. The 2020 Consent Decree was the result of several years of negotiations between the City and the EPA. Unfortunately, the Draft Permit ignores several provisions included in the carefully negotiated agreement.

The City strongly urges the EPA to reconsider terms included in the Draft Permit, which contradict the terms of the 2020 Consent Decree, currently in effect. The decree, lodged with the U.S. District Court for the District of New Hampshire, is "binding upon the United States and the State, and upon the City and any successors, assigns, or other entities or persons otherwise bound by law." 2020 Consent Decree ¶ 3. Thus, the agreement is not only binding upon the City, but upon EPA as well. Further, the "Consent Decree resolve[d] the civil claims of the United States and the State for violations alleged in the Complaints filed in this action through the date of lodging." 2020 Consent Decree ¶ 62. To the extent the Draft Permit contradicts the Consent Decree, the Draft Permit cannot be sustained.

The 2020 Consent Decree is a product of years of good faith negotiations between the City and the EPA. It represents a comprehensive and mutually agreed-upon framework for responsibly managing and monitoring the City's CSO outfalls. Deviating from the terms of the Consent Decree undermines the substantial investment of time, resources, and goodwill made by all parties involved and the sound decision to balance the schedule for improvements with fiscal consideration. To the extent that the 2020 Consent Decree and the Draft Permit are contradictory or otherwise inconsistent, the EPA must harmonize the terms of the Draft Permit to meet the negotiated terms of the 2020 Consent Decree. Should the EPA fail to update the Draft Permit in this manner, the City must resolve any ambiguity regarding which legal standards and obligations apply, in favor of the 2020 Consent Decree approved by the Court.

For example, consistent with the terms of the 2020 Consent Decree, the City has used continuous flow devices to directly monitor six of the City's fifteen CSO outfalls, 044, 031A, 050, 052, 047, and 046. See Consent Decree ¶ 19 (“[T]hese six CSO outfalls are estimated to be more than 99% of all of the City's total CSO discharge volumes.”). However, EPA's Draft Permit requires the City to quantify and record all discharges from combined sewer outfalls via direct measurement, for each discharge event, for *all fifteen* of the City's CSOs. See Draft Permit Part I.H.3.e. Not only does the Draft Permit directly contradict the 2020 Consent Decree, undermining several years of collaboration, cooperative efforts, and joint decision-making between the City and the EPA, but it is altogether arbitrary to require the City to directly monitor an additional nine outfalls, which combined constitute a *de minimis* amount of the City's total CSO discharges.

Additionally, the NPDES Draft Permit includes lengthy requirements for the City to follow a Public Notification Plan concerning discharges from the City's CSOs. The 2020 Consent Decree, however, includes its own public notification plan already approved by EPA, and followed by the City. The 2020 Consent Decree and the Draft Permit require different dates and frequencies for publishing CSO notifications. Compare Consent Decree ¶ 19(c) (“By no later than March 15th, annual notification of the locations of CSOs, a summary of CSO activations and volumes, and the status and progress of CSO abatement work shall be posted by the City....”), with Draft Permit Part I.H.5. (“For each combined sewer overflow outfall listed in Part I.H.1 of this permit, Permittee must monitor the following which shall be reported in *each monthly* DMR for each outfall.”) (emphasis added). Consistent with the Consent Decree, the City respectfully reiterates⁷ its request to submit CSO notifications on an annual basis on March 15 of each year.

Additionally, while the 2020 Consent Decree requires the City to notify the public and other potentially affected parties of probable CSO activation “no later than, four (4) hours after the City has become aware, by monitoring, modeling or other means, that a CSO discharge has occurred,” the Draft Permit imposes a more stringent two-hour time window. Compare Consent Decree ¶19(a), with Draft Permit Part I.H.3.g.2. The City respectfully requests that the Draft Permit be modified so that it is consistent with the Consent Decree.

Finally, the Draft Permit requires the City to develop and infiltration and inflow (“I/I”) program for preventing I/I in the City's sewer system to prevent unauthorized discharges. The City again urges EPA to consider the binding 2020 Consent Decree currently in effect. Under this agreement, the City is expected to remove 95% by volume of the City's annual wet-weather combined sewage (approximately 1.5 out of the City's 1.6 million gallons) by the year 2030. Additional WWTF treatment upgrades and abatement controls are expected to reduce the City's

⁷ *See E-mail Correspondence from Fred McNeill to Robin Johnson and Hayley Franz* (Feb. 2, 2024) (requesting that the deadline for the CSO DMRs submittals be changed from January 15 to March 15). This change, in part, was requested because a January 15 deadline makes it very difficult to obtain the flow metering data and run the SWMM Model to estimate CSO discharges since the DMRs for December are not completed until early January. A March 15 deadline will allow the City sufficient time to gather all of the flow information, analyze it, and complete our model runs before officially submitted.

Robin Johnson

June 10, 2024

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remaining CSO discharge volume by an additional 74%, at a cost of \$271 million, by the end of Phase II. This enormous undertaking requires the City to perform construction work, which will necessarily remove I/I. The City's entire CSO system is undergoing massive abatement, spanning a decades long effort to reduce I/I. Therefore, the requirements outlined in the Draft Permit are redundant and unnecessary in light of the City's longstanding commitment and significant investments in CSO abatement.

IV. Conclusion

Based on the foregoing, the Draft Permit as currently written exceeds EPA's authority under the Clean Water Act and the Administrative Procedure Act, and contravenes and conflicts with the City's obligations under the 2020 Consent Decree. The City requests that EPA make the abovementioned changes to the Draft Permit, and all changes included in the technical comments included as Attachment A. The City requests that EPA address and respond to each of its comments, in kind.

Thank you for your attention to this matter. Please contact me directly should you have any questions.

Very truly yours,

A handwritten signature in black ink, appearing to read "Greg Smith", enclosed within a rectangular box.

Gregory H. Smith

GHS:AMD

cc: Ken Moraff, Director, Water Division, EPA Region 1
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ATTACHMENT

A

June 10, 2024

Frederick McNeill, PE
Chief Sanitary Engineer
Dept. of Highways - Environmental Protection Division
City of Manchester
300 Winston Street
Manchester, NH 03103-6826

SUBJECT: City of Manchester EPD – Draft NPDES Permit No. NH0100447
Technical Comments for Submission to US Environmental Protection Agency

Dear Mr. McNeill,

Wright-Pierce has reviewed the draft permit (NPDES Permit No. NH0100447) for the City of Manchester, New Hampshire's (City) Wastewater Treatment Facility (WWTF). To support the development of these technical comments, we reviewed and analyzed the draft Permit, Fact Sheet and backup calculations used to derive new effluent limitations. We have discussed the key issues with City staff and developed the following comments on behalf of the City for submittal to EPA:

1. Effluent Flow

- Part I.C.3.f – "If the monthly average flow exceeded 80 percent of the facility's 34 MGD design flow (27.2 MGD) for three consecutive months in the previous calendar year, or there have been capacity related overflows, the report shall include:
 - Plans for further potential flow increases describing how the Permittee will maintain compliance with the flow limit and all other effluent limitations and conditions; and
 - A calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year

The City disputes this provision in the permit because the City already has a High Flow Management Plan in place as required by EPA which requires and promotes treating as much flow as possible. The monthly flows treated by the WWTF routinely exceed 80 percent of permitted flow particularly during winter/spring months and driven by extended wet weather events (refer to monthly flow data in Appendix A of the Fact Sheet). This criterion could be exceeded in any given winter/spring. The City has developed plans for addressing the noted concerns including:

- The City has a Long-Term Control Plan (CDM-Smith, 2010) in place and is currently making a major investment to separate Cemetery Brook from the collection system. This alone will decrease flows to the WWTF by 12% on average and peak flows by up to 55 MGD.

- The City completed its most recent facility plan update for the WWTF in 2010 (AECOM) and is currently following that plan and intends to update the plan every 20 years with the next facility plan update intended to be finalized by 2030.

Request 1: The City requests that EPA remove or revise Part I.C.3.f to be consistent with the City's actual flows in relation to the permit flow as the City has the potential to exceed this criteria and the fact that long-term plans are already in place to address these concerns.

2. Total Aluminum

The City takes exception to the proposed aluminum limit for the following reasons:

- Unreliable ambient river data
- Anomalous effluent results
- Pending change to EPA's Aluminum Calculator

a. Ambient River Results – WET versus Clean Sampling

The ambient river level for aluminum was determined to be 130 µg/l for the reasonable potential to exceed analysis based on Manchester's WET testing data from December 2018 through September 2023. This ignores past clean sampling results from Manchester as well as important information presented on aluminum levels in the Merrimack River in the comments for the most recent NPDES permits for the City of Lowell and Greater Lawrence Sanitary District (GLSD). These analyses have demonstrated the inadequacy of WET testing for determining river aluminum levels. Clean sampling techniques and testing via EPA Method 1669 for aluminum are critical. Another is the relationship of metal levels with river flow, especially for an element as abundant as aluminum. High river flows result in sediment scour that elevates the resulting ambient concentration in the river.

Figure 1 below was developed by OspreyOwl Environmental, LLC (OOE) and shows the results of clean sampling conducted by Manchester as part of their 2008/2009 study self-performed by the City and led by Rick Cantu, who now is the chief investigator for OOE. The results (reproduced with permission from OOE) are shown versus river flow for sampling at the Queen City Bridge upstream of the Manchester WWTF outfall. A detailed interpretation of the chart can be provided if desired, but a key issue is that scouring of aluminum particles is understood to occur at river water velocities of 7,000 cfs and greater.

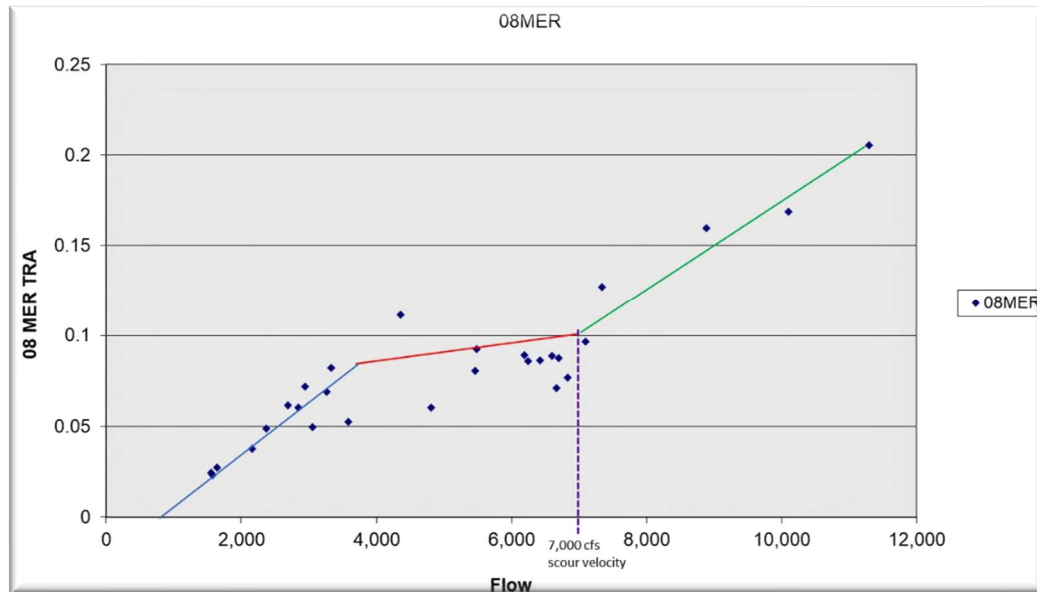


Figure 1 - 2008/2009 Aluminum Clean Sampling Results in Merrimack River Just Upstream of Manchester WWTF Outfall Versus River Flow

It is notable that at river flows below 4,000 cfs, the river concentration is less than the 87 µg/l chronic criteria for aluminum in the river and well below the adjusted value of 105.8 µg/l for total recoverable aluminum.

For comparison, the City's recent WET test results for the ambient river concentration are plotted along with river flow in Figures 2a and 2b. The ambient river concentrations show very strong correlation to river flow as was also found in the City's 2008/2009 study. For reference, the annual mean flow for the Goff's Falls monitoring station is 5,504 cfs (USGS web site), 4,284 cfs for the monitoring period, and the current 7Q10 flow is 676 cfs. The strong correlation between river concentrations and river flow is extremely well documented both from the 2008/2009 data set and the more recent WET test data. As discussed further below, concentrations that are representative of low flow conditions should be used in the reasonable potential to exceed analysis.

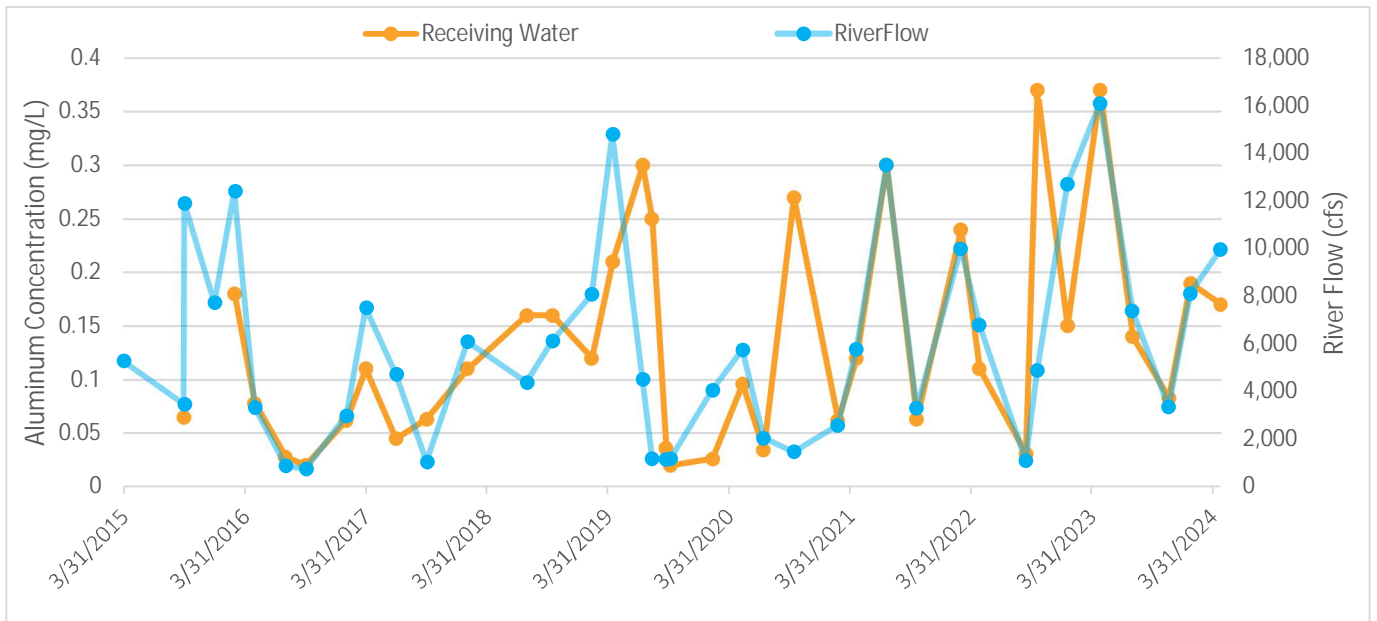


Figure 2a - Manchester Aluminum WET Testing Data (2015-2024), Ambient Merrimack River Just Upstream of Manchester WWTF Outfall and River Flow by Date

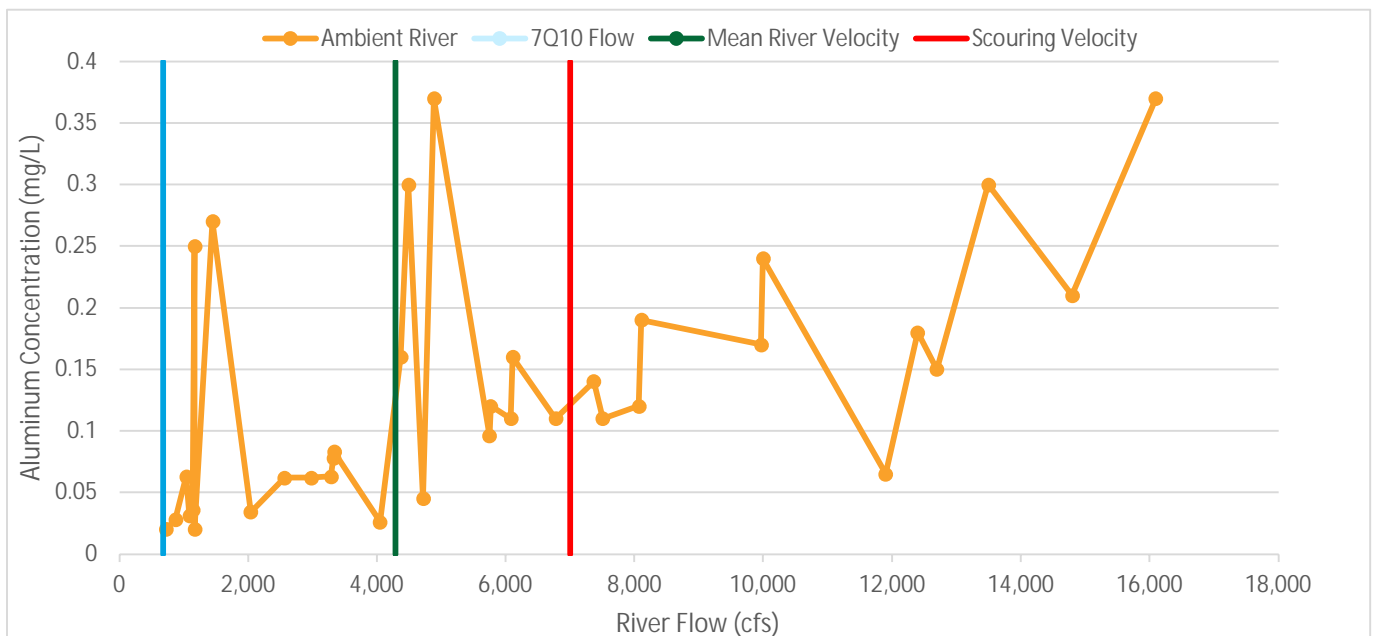


Figure 2b - Manchester Aluminum WET Testing Data (2015-2024), Ambient Merrimack River Just Upstream of Manchester WWTF Outfall Versus River Flow

The City's WET test results in Figure 2 above show scatter similar to that demonstrated by GLSD WET testing as noted in their comments on their most recent permit as shown in Figure 3 (reproduced with permission). Based on the information provided in their comments to their draft permit, GLSD's ambient concentration was reduced from a median value based on WET testing of 112.5 µg/l to 80.0 µg/l based on the clean sampling data. It is notable that GLSD clean sampling occurred at mean to moderately high flows.

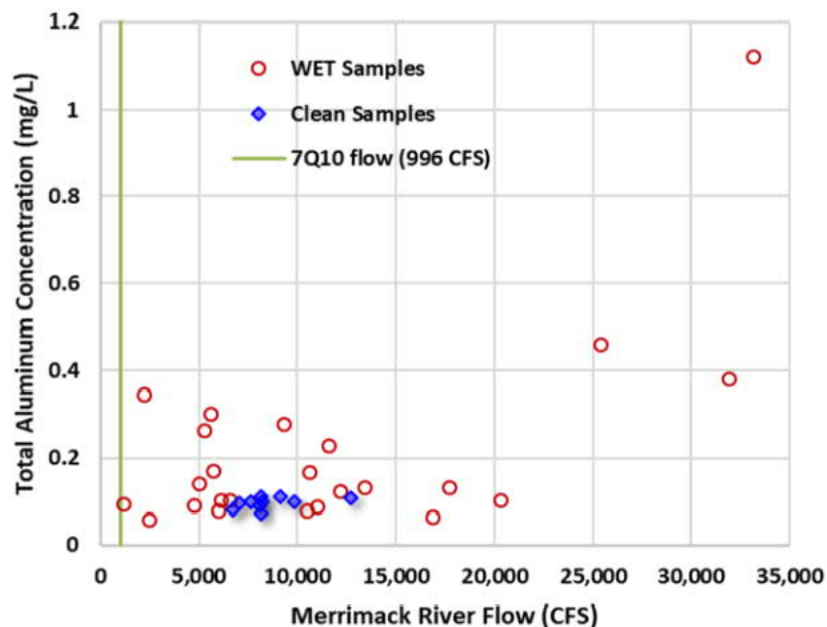


Figure 3 – GLSD Aluminum WET & Clean Sampling Data for Merrimack River Just Upstream of GLSD WWTF Outfall (Downstream of Manchester) and River Flow

The City of Lowell provided the clean sampling data in Table 1 to support its most recent 2019 NPDES permit that allowed a reduction of the river concentration to 35 µg/l from WET test results with a median level of 140 µg/l. It should be noted that while there is significant additional flow to the Merrimack River between Manchester and Lowell, there is not enough dilution to account for the difference between a proposed ambient concentration of 130 µg/l for Manchester and 35 µg/l at Lowell even if there was no aluminum in the additional flow. It is notable that the Lowell sampling occurred predominantly during lower flow conditions.

Table 1 – Lowell Clean Sampling Aluminum Data

Sampling Date	River Flow, cfs	Aluminum, µg/l
7/11/2016	1,650	41
10/3/2016	1,010	18
11/8/2016	2,750	64
9/28/2017	1,980	35
10/18/2017	1,780	23
10/25/2017	4,490	21
7/30/2018	6,210	100

Recent clean sampling conducted by OOE for the Town of Merrimack (slightly downstream from Manchester) is presented in Table 2. These results are representative of the reach that the Manchester WWTF outfall discharges to and includes the impact of the discharge. The results also show the same correlation with river flow.

Table 2 – Merrimack, NH Clean Sampling Aluminum Data

Sampling Date	River Flow, cfs	Aluminum, µg/l
10/7/2021	8,640	95
10/19/2021	3,250	88
8/17/2022	815	31

The City's request for additional time for commenting was not approved by EPA, so the City is unable to complete additional clean sampling results for the river concentration. Nevertheless, the City will be having OOE conduct both an audit of its sampling techniques, sampling location and an intensive round of sampling that we are confident will show that clean sampling results are generally in conformance with the results from the City's 2008/2009 study as shown in Figure 1. The City requests that EPA leave this docket open and refrain from issuing a final permit until this issue has been resolved.

The changes in ambient concentration with flow in the river are a challenge for interpreting EPA's intent in the reasonable potential to exceed analysis. The goal of the reasonable potential to exceed analysis is ostensibly related to ensuring concentrations do not exceed applicable criteria during the 7Q10 low flow conditions that the analysis is conducted. At the current 7Q10 flow of 676 cfs, the river concentration should be less than 50 µg/l as shown in Figure 1 above for Manchester's 2008/2009 study. The recent clean sampling results for Merrimack on August 17, 2022 at a river flow of 815 cfs with a concentration of 31 µg/l is further supporting data. The Lowell data also supports this clearly. As discussed further in comment 2.c., once the State of New Hampshire approves EPA's recommended Aluminum Calculator, the discussion will be moot, because the aluminum criteria will be much higher than actual river concentrations at any flow.

In summary, the WET test results are an inappropriate basis for establishing ambient aluminum concentrations. Moreover, there is a very clear relationship of ambient river concentration to flow. The City requests the resulting downstream concentration be re-calculated to use an ambient concentration characteristic of low river flow conditions. The City will be moving forward to audit their procedures for clean sampling and updated testing of the actual clean sampling river aluminum concentration at lower flows, characteristic of the reasonable potential to exceed analysis.

b. Anomalous Effluent Results

The aluminum levels in the effluent from the reasonable potential to exceed analysis was based on WET testing data collected by the City during the monitoring period from December 2018 to November 2023 as shown in Figure 4. With the exception of 2 data points, which are 5 times higher than the average value of the rest of the data set (0.24 and 0.26 mg/l compared with the average of all other data 0.048 mg/l), the City's discharge is well below the proposed limit. These 2 consecutive data points skew the 95th percentile used in the potential to exceed calculation higher than it would be otherwise. The 3 most recent WET testing concentrations for aluminum in the WWTF effluent for 4th quarter 2023, 1st quarter 2024, and 2nd quarter 2024 (not included in the draft permit), are 0.036, 0.052 and 0.032 mg/l, respectively and further show the anomalous data points are not representative of the actual WWTF effluent aluminum concentration. Figure 5 shows WET testing results from 2015 through to the most recent, with the two anomalous data points circled in red. The average aluminum concentration in the expanded data set is 0.060 mg/L for the WWTP effluent. The 4 most recent results have been back in the historic range.

While the City makes every effort to maintain clean sampling techniques, it is highly probable that the protocol was compromised during those two tests in the first and second quarter of 2023. This is much more likely than the alternative hypothesis that there were unusual discharges to the collection system for the period of the two elevated results. The City will be proceeding with an audit of its effluent sampling methodology by OOE to ensure that there are no future problems, but as noted

Aluminum
Daily Max
(mg/L)
Report
0.026
0.26
0.0485
N/A
0.043
0.068
0.042
0.044
0.042
0.026
0.028
0.069
0.052
0.053
0.045
0.059
0.03
0.059
0.042
0.077
0.036
0.24
0.26
0.054

Figure 4 -
 Manchester
 Effluent
 Aluminum WET
 Data in Permit

above and shown in Figure 5, the 4 most recent results are back at historic levels. The City requests these 2 anomalous data points be removed from the WET testing data set and the potential to exceed be recalculated.

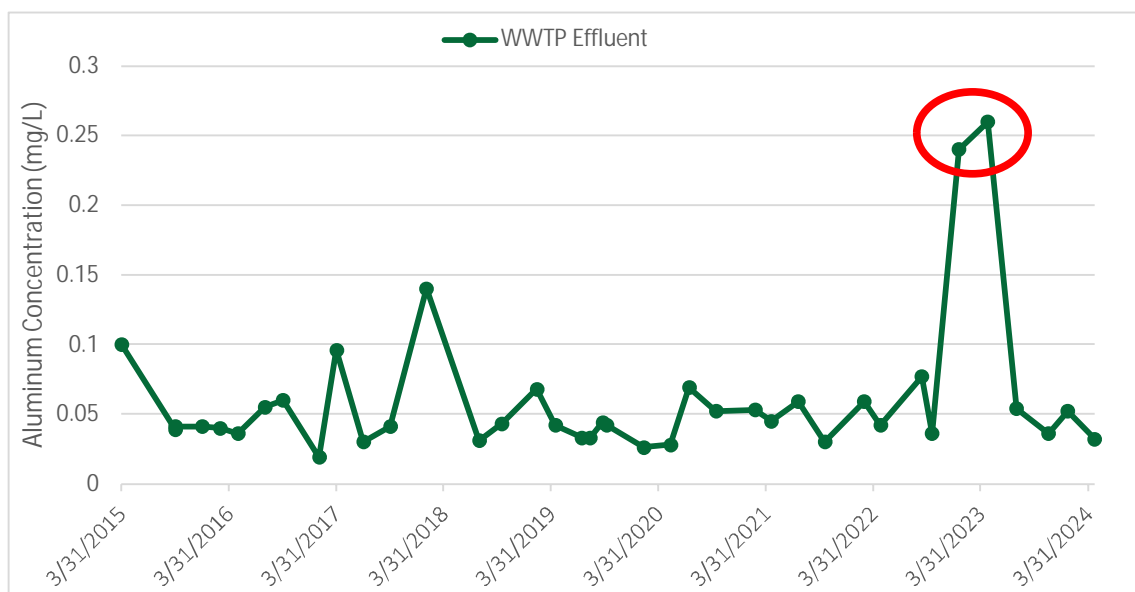


Figure 5 - Manchester Effluent Aluminum WET Testing Data from First Quarter of 2015 to Second Quarter of 2024

c. Aluminum Calculator

The State of New Hampshire has presented draft changes to Env-Wq 1700 Aluminum Criteria that will allow the Aluminum Calculator provided by EPA to be used. The calculator requires Dissolved Organic Carbon (DOC), Total Hardness, and pH data. The Fact Sheet indicates a representative pH for the Merrimack at the Manchester WWTF outfall of 7.5 and a total hardness value of 15.8 mg/l. The City has not conducted DOC testing to date. However, OOE has conducted recent testing for the Town of Merrimack for DOC downstream of Manchester as summarized in Table 3.

Table 3 – Merrimack, NH Dissolved Organic Carbon Data

Sampling Date	River Flow, cfs	Dissolved Organic Carbon, mg/l
10/7/2021	8,640	5.9
10/19/2021	3,250	4.9
8/17/2022	815	3.4

Using the calculator, a sensitivity analysis was completed with the best available data as shown in Figure 6. The results show acute and chronic criteria values far higher than the current chronic criteria of 118 µg/l in the Fact Sheet (105.8 µg/l after the 90% factor in the reasonable potential to exceed analysis). The limiting chronic criteria is in the range of 708 µg/l for DOC of 3.4 mg/l, total hardness of 15.8 mg/l and pH of 7.5.

ENTER DATA HERE							
					ACUTE	CHRONIC	
SiteName	DOC (mg/L)	Total Hardness (mg/L as CaCO ₃)	pH	FAV	CMC	CCC	
	0.5	15.8	7.5 #	1284.88	640	430	
	1.0	15.8	7.5 #	1857.84	930	540	
	1.5	15.8	7.5 #	2266.7	1100	610	
	2.0	15.8	7.5 #	2587.34	1300	650	
	2.5	15.8	7.5 #	2851.66	1400	680	
	3.0	15.8	7.5 #	3076.66	1500	700	
	3.5	15.8	7.5 #	3272.63	1600	710	
	4.0	15.8	7.5 #	3446.26	1700	730	

Figure 6 - Aluminum Calculator Sensitivity Analysis

In fact, OOE also conducted pH and total hardness testing at the same time on 8/17/2022 for the Town of Merrimack with the acute and chronic criteria results shown in Figure 7.

All concentrations reported are µg/L total Aluminum

Run
Scenarios

<-----Click Button
after entering data

ENTER DATA HERE

SiteName	DOC (mg/L)	Total Hardness (mg/L as CaCO ₃)	pH	FAV	CMC	CCC	Flag
8/17/2022	3.4	18	7.45	3174.839	1600	680	

Figure 7 – Aluminum Calculator Results for 8/17/2022 Data

The City requests that the Aluminum Calculator results for the river be recognized as valid and demonstrating that the current chronic (and acute) criteria for aluminum are excessively low by EPA's own best science.

d. Compliance Schedule

In Part I, Item G.1 of the draft permit, EPA has proposed a compliance schedule of 12 months. The City requests the compliance schedule be increased to 60 months if a limit is included in the permit. This will allow further data to be collected and the WQS revisions proposed by NHDES to be implemented. The City requests that if during the compliance period, should the data or WQS revisions support an elimination of the proposed limit, the EPA shall modify the permit.

e. Summary

The City objects to the proposed aluminum limit as based on the unreliable data and furthermore that the limit is premature based on impending WQS revisions. The City requests the following revisions to the draft permit related to aluminum:

Request 2A: The City requests that EPA delete the two anomalous data points from the WET testing effluent data set for determining the 95th percentile value.

Request 2B: The City requests using the clean sampling results for ambient data from the City's 2008/2009 study using data representative of low flow conditions. Alternatively, the City asks EPA to hold the docket open and refrain from issuing a final permit until the City has time to collect new clean sampling ambient data. In any case, the data is compelling that river concentration will vary with river flow. Concentrations representative of low flow conditions should be used in the reasonable potential to exceed analysis. There is already extensive clean sampling data that indicates the river concentrations at lower flow conditions are less than 50 µg/l.

Request 2C: The City requests that EPA's Aluminum Calculator be used to calculate toxicity criteria. The City plans to move forward with collection of site specific DOC, total hardness and pH data for use with the calculator.

Request 2D: The City requests that the aluminum compliance schedule be extended to 60 months if a limit is included in the final permit. This compliance schedule for aluminum will allow the City to collect additional effluent and ambient aluminum data using clean sampling techniques and will also allow the City to begin collecting DOC, total hardness and pH data for use with the EPA aluminum calculator. The City requests that if during the compliance period, should the data or WQS revisions support an elimination of the proposed limit, the EPA shall modify the permit.

3. Ammonia Nitrogen

The City takes exception to the proposed ammonia limit for the following reasons:

- Inadequate notification of pending limit means the City does not have the funding capacity.
- Inadequate ambient temperature data to determine appropriate shoulder season limits.
- Inadequate ambient pH characterization.
- Extended compliance schedule needed.

a. Inadequate Notification

The implementation of a new permit limit for ammonia has major capital improvement implications and no identified source of funding. The City is operating under a Consent Decree that requires major investments in both the collection system and the WWTF. At the WWTF, the City has an existing Capital Improvements Plan that includes critical infrastructure upgrades over the next 5 to 10 years, including new emergency generators; the complete renovation of the Crescent Road (main) Pump Station delivering all flows to the WWTF; and emergency secondary clarifier renovations. If the EPA had intended to implement an ammonia limit in this next permit, it should have been part of the discussions for the current Consent Decree.

An ammonia limit will also create new difficulties in permit compliance related to the total phosphorus effluent limit which became effective under the Consent Decree this past April. The City resolved to meet this limit using enhanced biological phosphorus removal (EBPR). Critical components of this plan were completed and brought online in late 2023. It is unreasonable of EPA to require a new permit parameter like ammonia that has major ramifications on compliance with a recently promulgated parameter like total phosphorus without greater notice and ability to plan.

There is a long-standing precedent for EPA to require monitoring of a pollutant regulated under the Clean Water Act for at least one permit cycle before a set limit is put into the NPDES permit. Such a monitoring requirement provides the time to gather a data set for a defensible limit for each WWTF. While the City has conducted supplemental ammonia sampling that was supplied to EPA to better characterize effluent ammonia levels, we categorically object on behalf of other WWTFs along the Merrimack that will be facing a limit without anything more than quarterly WET testing. This is significant both for the reasonable potential to exceed analysis and for the specific WWTF to be able to determine how to comply. More significantly for the City of Manchester, the 5-year permit cycle would allow collection of river temperature data to better characterize when and what permit limits are actually needed, especially during the shoulder seasons when an ammonia limit will be most difficult to comply with. This is particularly relevant in light of EPA's response to the City of Fitchburg Comments from Mark McNamara dated January 29, 2024 on the lack of adequate temperature data used to establish new ammonia limits in its draft permit. In its response, EPA placed the burden of proof on the permittee to show that lower temperatures were applicable to shoulder months. This will be discussed further in our Comment 3.c. below. However, it is unreasonable for EPA to propose a limit that will be based on an educated guess of the applicable temperature without giving the potential permittee

reasonable notice and opportunity to collect the appropriate data set. That opportunity would typically be provided by making a pending permit limit parameter a report requirement in the permit cycle prior to actual implementation.

By making ammonia a report parameter for this permit cycle, it would also allow EPA sufficient time to provide adequate and appropriate guidance related to the total nitrogen monitoring requirement, which may result in a future total nitrogen limit. It would be a significant aid to utilities such as Manchester if EPA was able to provide greater guidance on whether a total nitrogen limit will actually be necessary for WWTFs discharging to the Merrimack River and what specific limits might be applicable in determining the most appropriate means to comply with an ammonia limit. For example, to comply only with an ammonia limit, Manchester might choose to nitrify without any meaningful denitrification and thus need significant alkalinity addition both to avoid pH violations and to maintain the pH in the ideal range for EBPR. Conversely, if a future total nitrogen limit is also anticipated, it may be more cost effective to move forward with denitrifying process modifications to reduce or eliminate the need for alkalinity addition. In the latter case, it also would be critical to have guidance on the anticipated effluent limits for total nitrogen. Both alternatives will still require consideration of additional provisions for the current EBPR process and the implications of elevated nitrate levels. Also, nitrification, and total nitrogen removal, can significantly impact secondary system capacity. The City believes that much better planning for more cost-effective facilities can be conducted once EPA is able to provide better guidance.

b. Effluent Ammonia – Warm Season

Using the full data set for ammonia (both WET and supplemental data) in the Fact Sheet for the warm season period as shown in Table 4, our determination of the 95th percentile value does not match the value presented in the reasonable potential analysis in Appendix B of the Fact Sheet. Using the Excel percentile function (.inc version), the 95th percentile value is 18.25 mg/l rather than 21.8 mg/l. Using this revised value for C_e for Ammonia (warm), the C_d value is reduced to 1.48 mg/l. This has important implications for the need for a limit during the shoulder months as discussed further in Comment 3.c. below.

Table 4 – Manchester Effluent Ammonia Data

Date	Effluent Ammonia, mg/l	Date	Effluent Ammonia, mg/l
WET Tests:		City Supplemental:	
12/31/2018		5/1/2020	11.5
3/31/2019		5/1/2021	18.0
6/30/2019	13.0	5/1/2022	16.0
9/30/2019	13.0	5/1/2023	14.0

Date	Effluent Ammonia, mg/l	Date	Effluent Ammonia, mg/l
12/31/2019		6/1/2020	17.0
3/31/2020		6/1/2021	16.0
6/30/2020	12.0	6/1/2022	14.0
9/30/2020	19.0	6/1/2023	12.5
12/31/2020		7/1/2020	12.1
3/31/2021		7/1/2021	5.3
6/30/2021	13.0	7/1/2022	8.6
9/30/2021	4.1	7/1/2023	9.0
12/31/2021		8/1/2020	3.6
3/31/2022		8/1/2021	11.0
6/30/2022	13.0	8/1/2022	6.2
9/30/2022	1.2	8/1/2023	6.4
12/31/2022		9/1/2019	15.0
3/31/2023		9/1/2020	19.0
6/30/2023	7.8	9/1/2021	6.8
9/30/2023	9.0	9/1/2022	3.7
		9/1/2023	4.0
		10/1/2019	8.7
		10/1/2020	8.3
		10/1/2021	4.9
		10/1/2022	15.0
		10/1/2023	7.3

c. Ambient River Temperature

The City objects to the lack of ambient temperature data provided to support the proposed ammonia criteria. EPA has assumed a flat 25°C temperature for the permit limit months of May to October. The derivation for the temperature parameter is not defined in the Fact Sheet, and it does not appear that an adequate current temperature monitoring database exists for the Merrimack River. Because the water quality criteria for ammonia can vary significantly with temperature, the City requests the opportunity to collect further ambient temperature data to be used to derive the acute and chronic criteria. The City is particularly concerned about the temperatures used during the “shoulder” period months of May, June, September and October, when river temperatures are likely to be significantly lower. If an ammonia limit is not needed in these shoulder periods, it will simplify operations as the plant is seeking to comply with its phosphorus limit through

enhanced biological phosphorus removal (EBPR) and could result in major cost savings to comply with any necessary future ammonia limit.

The EPA has not defined in the Fact Sheet the applicable temperature as the mean, median, or 95th percentile for determining the criteria. In the EPA response to comments by the City of Fitchburg dated January 29, 2024 noted above in our Comment 3.a, the EPA maintained that the maximum temperature for a particular month was the appropriate temperature parameter for determining the water quality criteria. There is probably a reasonable case to be made for this position regarding the acute criteria, which is not the limiting criteria in the reasonable potential to exceed analysis, but the 95th percentile value would also be a consideration. The NH Env-Wq 1700, 1703.26(c) indicates that the chronic criteria should be based on a 30-day averaging period, which suggests that a monthly average temperature is applicable. The ideal data set would probably include multiple years of monthly average data and might use the highest of the monthly average values.

A search was conducted for available temperature data for the Merrimack River, particularly data applicable to the reach of river that Manchester discharges. Temperature data for the Goffs Falls USGS gauge from 1951 to 1998 is the primary data set that was found for the Merrimack River in its entirety. It is fortunate that this is the most applicable gaging station located just upstream of the Manchester WWTF outfall. Table 5 summarizes all of the USGS data available for May through October and specifically for each month.

Table 5 – Historical Merrimack River Temperature Data, Goffs Falls USGS Gage

Date	All Data	May	June	July	August	September	October
	Temp °C						
5/7/1952	10.5	10.5					
5/12/1953	16.5	16.5					
8/13/1953	21.5				21.5		
5/6/1954	9	9					
8/13/1954	21.5				21.5		
10/6/1955	15						15
5/7/1956	8	8					
8/3/1956	21				21		
10/3/1956	12						12
5/3/1957	13	13					
7/10/1957	23.5			23.5			
8/23/1967	23.5				23.5		
9/8/1978	8					8	
11/1/1979	5						5

6/10/2024

Frederick McNeill, PE

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Date	All Data	May	June	July	August	September	October
	Temp °C						
8/6/1980	28				28		
9/16/1980	24					24	
10/23/1980	10						10
6/16/1981	21		21				
8/5/1981	24				24		
9/15/1981	15					15	
10/27/1981	7						7
5/25/1982	14	14					
7/2/1982	17			17			
8/17/1982	22				22		
10/27/1983	9.5						9.5
5/8/1986	11	11					
6/19/1986	20		20				
8/13/1987	20				20		
5/23/1989	16	16					
7/12/1989	24			24			
7/17/1990	25			25			
9/5/1990	22					22	
6/9/1993	18.5		18.5				
6/28/1995	25.2		25.2				
6/30/1995	26.6		26.6				
8/21/1995	26.5				26.5		
10/10/1995	17.1						17.1
8/12/1996	25.4				25.4		
10/2/1996	17.9						17.9
7/7/1997	25			25			
6/17/1998	20.1		20.1				
Average	18.0	12.3	21.9	22.9	23.3	17.3	11.7
Min	5.0	8.0	18.5	17.0	20.0	8.0	5.0
Max	28.0	16.5	26.6	25.0	28.0	24.0	17.9
Count	41	8	6	5	10	4	8

The City maintains that this data set is inadequate, but it does illustrate the importance of this issue and the inadequacy of EPA's educated guess on temperature for the shoulder periods. In Table 6 below, the applicable chronic criteria was determined based on the average and maximum monthly temperature values from the USGS database in Table 5 above and assuming a pH of 7.5. To reiterate, the City maintains that the monthly average temperature is the appropriate temperature parameter to use for the chronic criteria. For reference, 90% of the chronic criteria in the reasonable potential to exceed analysis for the warm weather period from May through October was 0.91 mg/l based on an assumed temperature of 25°C and a pH of 7.5. The estimated downstream river concentration, C_d , for ammonia was 1.74 mg/l for the warm season, and as noted in Comment 3.b, our determination indicates a slightly lower value of 1.48 mg/l. In Table 6, any time the 90% of the chronic criteria is greater than the downstream concentration, there would be no need for a permit limit. This is illustrated by the highlighted cells (yellow if less than EPA determination of 1.74 mg/l, green if less than 1.48 mg/l).

Table 6 – Chronic Criteria Based on Average and Maximum Monthly Temperatures

Temperature Condition	All Data	May	June	July	August	September	October
Chronic Ammonia Criteria, mg/l							
Average		2.3	1.2	1.15	1.13	1.68	2.4
Maximum		1.75	0.90	0.98	0.83	1.1	1.6
0.90*Chronic Ammonia Criteria, mg/l^a							
Average		2.1	1.08	1.04	1.102	1.51	2.16
Maximum		1.58	0.81	0.72	0.75	0.99	1.44

Notes: a. Yellow highlighting indicates chronic criteria exceeds EPA's calculated downstream ammonia concentration of 1.74 mg/l. Green highlighting indicates additional conditions that comply based of the revised downstream concentration of 1.48 mg/l from Comment 3.b.

This limited data set suggests that monthly temperature data does not support an ammonia limit in May, September, and October. More extensive monitoring may show June to be a possibility, though the current data set does not support this. The possibility of a different lower pH value would also increase the chronic criteria as discussed further in Comment 3.d. below.

One additional source of temperature data was found. The Merrimack River Watershed Council (MRWC) collects and reports on a number of water quality parameters including temperature both on their website and in annual reports. The MRWC has been collecting data at several monitoring locations with data collection on a roughly monthly basis starting in 2021 for most stations. One of the stations is the USGS station at Goff's Falls and the published data is presented in Figure 8 below (MRWC web site). This data was not integrated with the above USGS data due to the limited time provided by EPA to respond, but can easily be added to improve the data set.

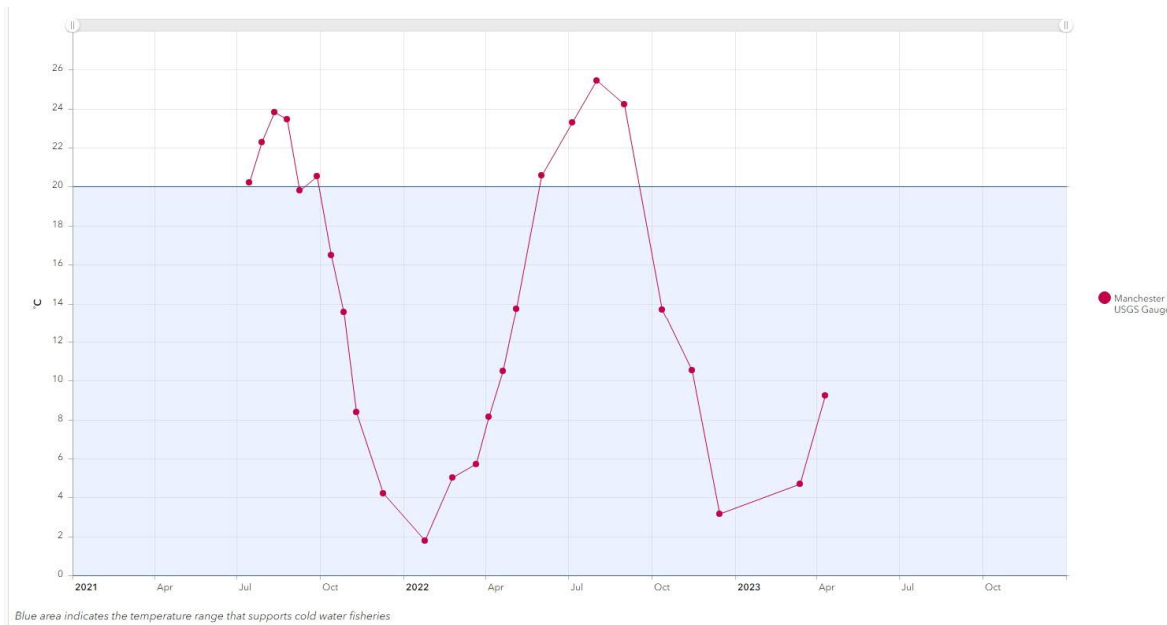


Figure 8 – MRWC Merrimack River Temperature Data at Goff's Falls Gauging Station

In summary, EPA has assumed a flat 25°C temperature for the permit limit months of May to October. While an adequate long-term monitoring data set is not available, a small data set was found that indicates that the shoulder seasons in this area do not approach 25°C for a river temperature. Moreover, the City maintains that the applicable temperature parameter for the chronic criteria is the monthly average temperature. Because the water quality criteria fluctuate greatly with temperature, the City requests a separate and revised temperature be used to evaluate requirements for May, June, September and October – and the City requests adequate time to collect the necessary temperature data.

d. Ambient River pH

The City objects to the limited database for ambient pH in the determination of the applicable ammonia criteria. The limit derivation for pH is noted as being based on WET testing data collected by the City for upstream ambient water quality and plant effluent, which is a very limited data set. For example, the Merrimack River Watershed Council (MRWC) is also monitoring for pH and their available data for the Goff's Falls station is shown in Figure 9. There is unexplained variability in the pH primarily during the cold weather season, but for the warm season months the pH has varied from 6.9 to 7.4. Because the water quality criteria for ammonia can vary significantly with pH, the City requests adequate time to collect additional ambient pH data to be used to determine the applicable acute and chronic criteria.

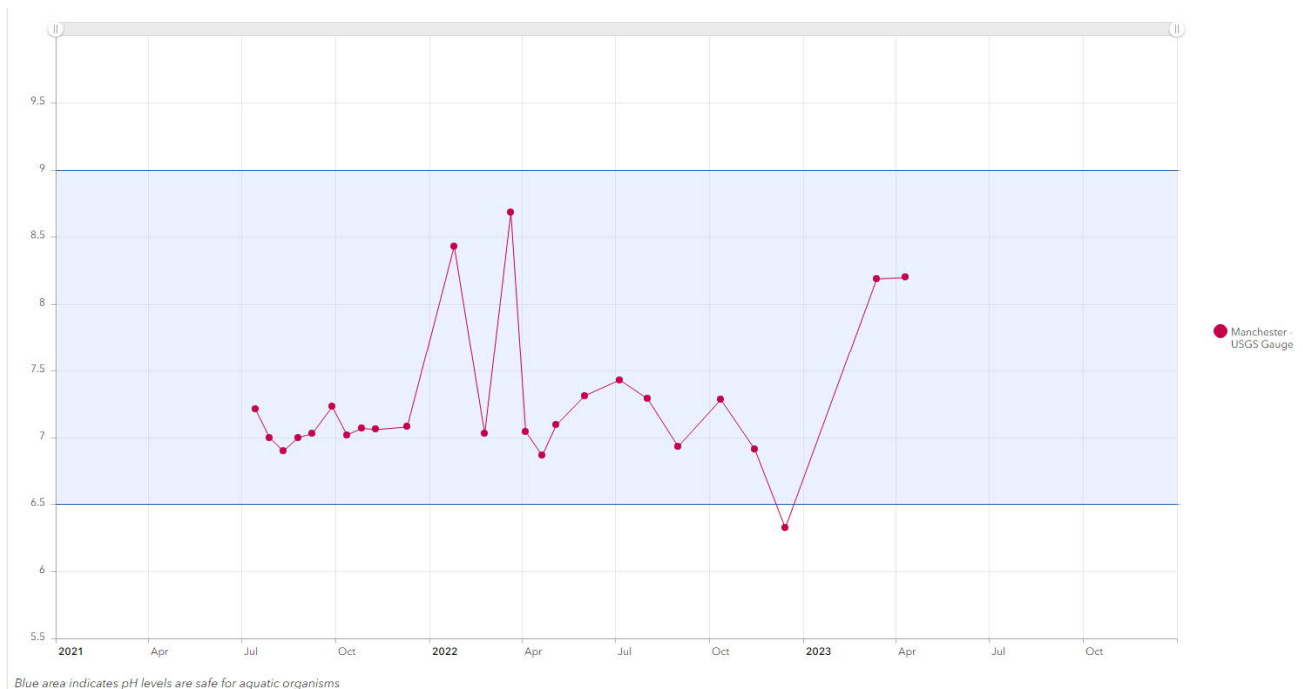


Figure 9 – MRWC Merrimack River pH Data at Goff's Falls Gauging Station

e. Salmonids

The acute criteria values vary with the presence of salmonids. There are reports that indicate salmon cannot tolerate water temperatures over 20°C and will seek colder tributaries (See Figure 8, Merrimack River Watershed Council 2021 Water Quality Report, New Hampshire Fish and Game Fact Sheet, and MassDEP Surface Water Quality Standards). Based on this, it is incorrect to use a river temperature of 25°C to calculate water quality standard criteria, while simultaneously assuming salmonids are present. As such, the acute criteria should be revised and the limit recalculated.

f. Compliance Schedule

Finally, should a limit be maintained in the final permit, the City requests the following changes to the compliance schedule:

- 60-month period to conduct river temperature and pH monitoring to determine the appropriate values to use for analysis to determine whether shoulder periods of May, June, September and October require a permit limit at all, and if so, whether a higher limit would be applicable. It is presumed that after 48 months of monitoring, the City would report on the findings for the applicable river temperature and pH, and an updated analysis of the reasonable potential to exceed on a monthly basis to confirm whether limits can be eliminated for some of the shoulder months.
- Concurrent 60-month period to optimize the existing treatment process for phosphorus removal and conduct operational monitoring and trials related to nitrification for ammonia removal. This optimization period will allow the City to understand the performance of their EBPR system with the improvements that were just brought online in December of 2023. Of critical importance are the early spring months prior to and during compliance season to better define the extent of the existing system's ability to remove ammonia while maintaining EBPR. This period will also be used to trial process modifications (with advanced notice and concurrence of EPA and NHDES) to promote nitrification and better understand overall impacts. The City may also choose to pilot test new systems/technology to make better decisions on the longer-term capital improvements required for ammonia compliance. This optimization period will allow the City to understand the implications of meeting the ammonia limit in relation to the total phosphorus limit, and provide a subsequent report on the optimization efforts
- 12-month period to prepare planning level report for ammonia removal. The planning level report would summarize the findings of process optimization efforts to determine the capability of the existing treatment process, and evaluate alternatives for the needed upgrades to the secondary treatment process to achieve concurrent EBPR and ammonia removal with the possibility of utilizing a nitrogen removal configuration that would incorporate both nitrification and denitrification. Previous upgrades focused on EBPR, which, as constructed, will require changes to allow both EBPR and nitrification simultaneously to ensure permit compliance for both.
- 24-month period to design upgrades needed to meet ammonia limit.
- 30-month period to construct upgrades needed to meet ammonia limit.
- 12-month period to start-up, troubleshoot, and optimize new process to attain compliance.

Overall, a 138-month compliance schedule is requested.

g. Summary

In summary, the City requests the following revisions to the draft permit associated with the ammonia limit:

Request 3.a: The City requests EPA hold off on an ammonia limit for the next permit cycle and instead make ammonia a monitoring requirement. This would provide time for the City to conduct monitoring of the applicable monthly temperature and pH levels to use for a month by month analysis of the need for an ammonia limit. It would also provide EPA with adequate time to provide guidance on whether a total nitrogen limit might be expected in the future and the magnitude of a potential limit. This information would aid in determining the most cost-effective approach for meeting the proposed ammonia limit.

Request 3.b: The City requests a re-calculation of the 95th percentile effluent ammonia concentration for the warm season and updating of the downstream ammonia concentration, C_d , in the reasonable potential to exceed analysis.

Request 3.c: The City requests a re-calculation of the ammonia limit based on monthly average river temperature and pH data for the chronic criteria. The available data on temperature does not support the need for a limit in May, September and October. The City requests that EPA provide adequate time to develop a data set for monthly river temperature, specifically in the months of May, June, September and October, as the river temperature is significantly less than 25°C during these months.

Request 3.d: Similarly, the City requests additional time to collect additional pH data to determine the appropriate monthly average pH.

Request 3.e: The acute criteria noted in the Fact Sheet is based on salmonid presence at a river temperature of 25°C, which according to several reports on salmonid behavior is incorrect. The City requests the acute calculation be revised to use the acute criteria without salmonid presence for water temperatures greater than 20°C.

Request 3.f: The City requests an extended compliance schedule if an ammonia limit is included in the final permit. The proposed 138-month compliance schedule for ammonia will allow the City to compile an adequate data set to address the monthly river temperature that should be used to determine the need for an ammonia limit in May, June, September and October. The City asks EPA to hold on a final determination until this data collection can be completed. The compliance schedule will also provide adequate time to optimize the existing EBPR process, trial process changes and new technologies, evaluate, design, construct and startup new systems to achieve ammonia compliance.

4. Part I. A.1, Footnote 16 - Dilution Water for WET Testing

The City has previously communicated with EPA on the issues found with river water quality for WET testing. Email communication was sent on February 2, 2024 to EPA and NHDES requesting a change in dilution water. This request stems from historical, re-occurring issues with Ceriodaphnia dubia and Pimephales promelas test failures with Aquatec Environmental, Inc, which is the laboratory the City uses for the analysis. In a letter from Aquatec, dated December 29, 2023, the lab director explains that the test failures are likely caused by variable river water quality and they recommend changing to the lab's water for dilution water.

Request 4: The City requests this change to the use of the lab's water for dilution water be accepted.

Please call if you have any questions or clarifications on these comments.

Sincerely,
WRIGHT-PIERCE



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Project Manager

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