October 30, 2026

Draft Updated CSO Control Plan Partners:

On behalf of the Mystic River Watershed Association (MyRWA), I am grateful for the opportunity to submit this set of comments on the Draft Updated CSO Control Plan.

As participants in the Partners' stakeholder outreach over many months, the staff at MyRWA has admiration and respect for the thoroughness and professionalism of the Draft Report. We believe strongly, however, that the evidence in the report itself supports different ultimate conclusions.

1. Executive Summary
2. MyRWA history and standing
3. The regulatory landscape and burden of proof
4. The goal should be virtual elimination of CSOs
5. The current proposed plan is inadequate
6. Eliminating CSOs on Alewife Brook is an urgent priority
7. Financial analyses show that higher levels of control are financially feasible
8. The Partners' arguments for stopping short of virtual elimination are inadequate
    - Cost-benefit analysis is crucially flawed
    - Water quality arguments ignore much higher concentrations of pollutants on days following CSO events
    - Flooding concerns from the Partners push in favor of a more comprehensive solution than less
9. What we ask of MassDEP and EPA and the Partners

1. Executive Summary

The Mystic River Watershed Association (MyRWA) argues that the goal of the next Long Term Control Plan should be the virtual elimination of CSO discharges to the Mystic River, Alewife Brook and the Charles River. In addition, we hold that the Partners' own report shows that virtual elimination is both technically and economically feasible.

The recommended alternatives the teams put forward fall dramatically short of the goal of virtual elimination. We call on the Massachusetts Department of Environmental Protection (MassDEP) and the US Environmental Protection Agency (EPA) to require higher levels of control than those recommended in the plan, specifically controls equivalent to a 25Y level of control or sewer separation.

Key facts:

- The partners acknowledge that all three water bodies are "sensitive areas," by the standards of EPA's CSO policy (1994), demanding elimination wherever "physically possible and economically achievable."

- The partners show that, under their 2050 Typical Year preferred alternatives, Alewife Brook and the Charles River would still have received CSO discharges in recent historical years (5 of 10 years, 41 MG in Alewife, all untreated, and 6 of 10 years, 100MG in the Charles, 2015-2024). And the Partners have not shown that these plans would not release even larger volumes under 2050 conditions, when large storms are projected to be more frequent.

- All examined levels of control mapped out by the project teams, even the highest, score "low impact" for the MWRA service area as a whole, according to EPA's Financial Capability Assessment methodology. According to MWRA's own modeling, 25-year controls would add approximately $82 to the average 2050 MWRA household bill ($2,462 vs. $2380) compared to the recommended alternative. Proportionately greater household bill impacts in Somerville and Cambridge are strong reasons to explore alternative funding mechanisms and cost-sharing schemes, not to reduce the level of control.

- The Boston, Somerville, and Cambridge City Councils have issued resolutions or policy orders directing effort at the 25Y level of control or virtual elimination, demonstrating support among the public and well-informed City Councilors for more ambitious goals.

- Water quality arguments pointing to the impact of stormwater pollution ignore the increased public health risk from dramatically higher concentrations of pollutants on days following CSO releases.

Major calls for action:

- Mass DEP and EPA should demand higher levels of control, specifically equivalent to 25Y controls or complete sewer separation.

- Under no circumstances should any of the water bodies be downgraded to B(CSO). We understand that the feasibility of typical year controls, which the Partners assert, precludes any downgrading pathway (Massachusetts Water Quality Standards, 314 CMR 4.06(1)(d)(10)).

- Sewer separation is the most resilient, permanent long-term solution, and should be maximized. We call on regulators to require the teams to revisit plans for higher levels of control by expanding the use of sewer separation first, to the extent practicable, augmented by storage, even if it results in longer timelines.

- The teams should perform additional modeling that shows the true performance of alternative plans from various levels of control under 2050 conditions (consistent with the "continuous simulation" approach described in the EPA CSO policy and Guidance).

- We demand heightened regulatory attention for Alewife Brook, in particular, where public health risks of CSOs are magnified because the CSOs are completely untreated and the stream is prone to over-the-bank flooding.

- On the Mystic River, the difference in cost between the TY plans and the more ambitious plans is especially small. Regulators should demand the highest level of control for the Mystic River.

- Eliminating CSOs is a regional problem for metropolitan Boston. State decision makers should explore creative avenues for increased state-level and federal investments.

2. MyRWA history and standing

The Mystic River Watershed Association is a science-based non-profit organization whose mission is to protect and restore the Mystic River, its tributaries, and its green spaces for the benefit of residents and future generations. We are a small non-profit representing thousands of people who donate, who volunteer, and who care about living next to and enjoying a thriving Mystic River and Alewife Brook.

MyRWA has a long history of collaboration with state and federal agencies. We have a 25-year-old volunteer monitoring program, based on an EPA-approved QAPP, and a resulting long-term, urban water-quality dataset. We have published Water Quality Report Cards for the Mystic River in collaboration with EPA, based on our own sampling data and others'. In 2020, EPA and Mass DEP published an Alternative TMDL for Phosphorus in the Mystic River Watershed, building on years of collaboration and field sampling effort by MyRWA, among other partners including MWRA and USGS, which serves as the basis for new proposed nutrient management rules in the current MS4 Draft stormwater permit.

MyRWA was one of three watershed groups that have been closely involved in the LTCP public outreach process conducted by the Partners for more than three years. We have attended every meeting on the development of alternatives and of the final plan. MyRWA is grateful for the opportunity to have our questions addressed over many months. Participation has allowed us to come to this comment letter well briefed. Our comments are centered on arguments that support higher levels of control than those recommended, rather than challenging the obvious engineering expertise brought to the Alternatives development.

3. The regulatory landscape and burden of proof

The 2024-2029 Variance for Combined Sewer Overflow ("CSO") Discharges to the Alewife Brook/Upper Mystic River Basin issued by Mass DEP (Variance)--like the Variance before it--calls for the Partners to produce "an evaluation of the costs and water quality benefits of further CSO control alternatives, up to and including elimination of CSO discharges." The Variances further direct that "the Updated CSO Control Plans shall conform to the EPA CSO Policy and MassDEP's 1997 CSO guidance. The relevant documents are the 1994 CSO Policy (59 FR 18688) its accompanying Guidance, and MassDEP, Guidance for Abatement of Pollution from CSO Discharges (1997).

The CSO Policy clearly prioritizes “sensitive areas” and gives guidance on determining which waters qualify as sensitive areas. The Partners acknowledge in the plan that all three water bodies meet the criteria for “sensitive areas” (Tables 13-3 to 13-5), a finding that EPA and Mass DEP should endorse, based on recreational (public health) and habitat criteria. The Policy states that “EPA expects a permittee's long-term CSO control plan to give the highest priority to controlling overflows to sensitive areas” (CSO Policy II.C.3) and “eliminate or relocate overflows… **wherever physically possible and economically achievable,** except where elimination or relocation would provide less environmental protection than additional treatment.” The MassDEP guidance states that “elimination of receiving water impacts is the primary goal” (II.1, p. 3), and “Where elimination of CSOs is not feasible, the goal is minimization of impacts to the maximum extent feasible and attaining the highest water quality achievable.” (II.2, p.3).

(We note also that the Variance was issued under the assumption in 40 CFR 131.14(b)(1)(ii)(A)(3), which applies only “if no additional feasible pollutant control technology can be identified.” The Draft Plan identifies technically feasible alternatives at every level of control evaluated, up to and including sewer separation. The Partners’ own FCAs also rate every alternative “low impact,” as described below, suggesting no “widespread economic and social impact,” as per the Variance.)

We believe these policy mandates and facts together mean that the burden of proof lies with the Partners to show why eliminating these discharges to sensitive variance waters is not physically or economically achievable.

4. The goal should be virtual elimination of CSOs

We insist that the goal of this updated LTCP should be the elimination or virtual elimination of CSOs on the remaining CSO outfalls on the Mystic, Charles, and Alewife.

We acknowledge, as the Partners argue, that complex stormwater and sewage systems like greater Boston’s need safety release valves and structures, and that no system can guarantee under all circumstances--even the most extreme--that there will be no sewage releases to water bodies.

But citing failures in the most extreme cases does not remove the obligation to minimize CSO releases to prioritized sensitive areas. An argument that *complete* elimination of overflows is impossible should not preclude a design goal that makes CSO discharges exceedingly rare.

The current plan does not meet that design goal. We will refer to this design goal standard as “virtual elimination.” MWRA has done this before: in 2011 it completed the North Dorchester Bay tunnel, which eliminated CSO discharges to the South Boston beaches for storms up to and including the then-current 25-year storm (5.4 inches in 24 hours), while keeping regulator relief points open for larger events. The Draft Plan itself calls this “effective elimination” (p. 7-10). We use “virtual elimination” in the same sense: no CSO activations up to a stated 2050 design storm, with relief structures retained for larger events, a state in which sewage releases are predictably rare. We believe that the path to virtual elimination has been laid out by the project teams themselves in the plan in the form of 25-year controls and complete regional sewer separation.

5. **The current proposed plan is inadequate**

We commend the Partners for projecting forward to future climate scenarios and using state-of-the art climate modeling in describing future conditions. The teams ambitiously framed the planning process to include the expected increases in the frequency and intensity of extreme weather under 2050 climate scenarios. We are grateful to the project teams for developing an innovative methodology for planning that can serve as a model for other cities around the country.

But to take future conditions into account in modeling does not by itself mean that any proposal that emerges from this process is adequate to the future task.

We insist that the design goal of Zero CSOs in a 2050 Typical Year is an inadequately robust design standard.

First, it is important to note that Zero CSOs in a 2050 Typical Year **does not mean zero CSOs on average in the period around 2050, or even that CSOs will be rare.** The "typical year" is meant to capture a long-term-average shape to a precipitation year (# of storms, volumes, intensities). But like any average, it falls midway across a set of probable outcomes. Something like half the years will have precipitation patterns (frequency, intensity, volumes) that are greater than the typical year. "Zero in a TY" predicts ONLY the volume of CSO in that statistical, modeled year, not in any year with more intense precipitation.

What will the performance of the recommended alternatives be across, say, a 10-year period under predicted 2050 conditions? What volumes and activations can we expect on average per year in 2050? (Again, it will not be zero.)

The Partners do not answer this question directly, although they provide a partial proxy for future-year performance measures. They ran the last 10 historical years of precipitation data (2015-2024) through their unified hydraulic models and report the results. **The Partners' own results show that had the proposed plans been in place, in 10 recent calendar years there would have been CSO releases on the Alewife and Charles in half or more those years (Alewife, 5 of 10 years, 9 activations, 41 million gallons, all untreated; Charles, 6 of 10 years, 10 activations, 100 million gallons**).

But one key separate finding of the Partners' climate modeling was that if we do nothing to address the CSOs currently under discussion, the volumes of CSO discharge on all three water bodies would increase by a factor of at least 2x. Climate change will stress our stormwater and combined sewer systems in unprecedented new ways.

Decision-makers and the public are left without a clear understanding of what expected volumes will be during an equivalent 10-year period in 2050 under the Partners' recommended alternative. The teams' own projections of increased pressure on the system in 2050 from climate change suggest that volumes will be greater than the modeled results for the recent 10-year historical run. The project teams have certainly not shown that volumes and activations would be less. The record does not show how the systems perform in years around 2050 that exceed the TY.

The Draft Recommended Plan is, therefore, not a plan to eliminate or virtually eliminate CSOs in the future. CSOs would continue to occur regularly, from all evidence presented in this report.

The absence of performance estimates under 2050 conditions is a serious gap in the analysis that affects ability to evaluate the true benefits of each of these plans. We have

asked several times for performance estimates of all the scenarios (including the 2050 Typical Year) across, for example, a 10 year period under 2050 conditions, using continuous historical precipitation records adjusted to match climate projections. The project teams indicated that this modeling exercise was beyond the scope of the project to date. We call on regulators to require additional modeling of future conditions for each of the alternatives, in order to quantify how much the current proposal and other projects in the report fall short of virtual elimination. Note that EPA CSO policy itself identifies that "continuous simulation models," like the ones we are proposing, "may be the best way to model sewer systems, CSOs, and their impacts" (Policy, II.C.1.d). We believe there are CSO modeling projects that can serve as precedent for this request.[1]

6. Eliminating CSOs on Alewife Brook is an urgent priority

Alewife Brook CSO discharges present an especially urgent case for CSO elimination, particularly at outfalls CAM401A and SOM001A, which contribute the vast majority of discharge to the stream, for several reasons:

- Discharges at these outfalls are completely untreated.
- Discharges are frequent and substantial.
- Pollutants in the stream reach especially high concentrations.
- Proximity to recreational greenways presents an especially acute public health threat, especially because the stream is prone to over-the-bank flooding in storms with CSO events.
- There is evidence of ecological harm in the form of extremely low dissolved oxygen levels that may trace its source in part to CSO discharges.

[1] Swarner, R. et al, "Assessing Climate Change's Impact on the Size of CSO Facilities in King County (WA)" (2021). *Proceedings of the Water Environment Federation.* Swarner et al performed the type of analysis we suggest in order to test the performance of proposed CSO controls. The report describes the methods: "For climate simulations predicting future conditions, the historical rainfall was adjusted to conditions near the end of this century as reflected in the RCM results. The historical rainfall was factored to maintain the variability of rainfall across the service area and to keep the rainfall record in a minute-by-minute time scale (the RCM output is hourly). Model simulation results (without climate impacts) have been generated by KCWTD for the period from 1978 through 2018 (41 years) to estimate the CSO control volumes and peak flow rates that would be necessary to maintain CSO locations to an average of one event per year over any 20-year period during the historical record. For comparison, the same years were simulated using the factored rainfall associated with the two climate change scenarios representing climate at the end of this century. The resulting CSO control volumes were tabulated for each CSO location to show the potential impacts of climate change on control volumes."

Public health. CSOs are a known cause of contamination of drinking water, surface water, recreational water, and ground water.[2] CSO discharges can pose health risks from contact with the water through splashing, accidental ingestion, hand-to-mouth, inhalation, or skin contact (Sojobi & Zayed, 2022). Specifically, for fecal contaminants, including *E. coli* and enterococcus bacteria, contamination is associated with gastrointestinal (GI) illness (Wade, 2003). When the EPA released guidelines for long term control of CSOs in 1995, one of the three main goals was to "minimize the impact of CSOs on water quality, aquatic biota, and human health" (p. 1-2).

A study of CSO events on the Merrimack River found that emergency room (ER) visits for acute GI illness rose within four days of CSO events among residents of municipalities along the watershed (Haley et al., 2024). These findings likely understate the true burden, because the study could not count people who were sick but did not go to the ER. The study also found no difference in risk based on a municipality's drinking water source. This suggests that contaminated drinking water alone does not explain the illness, and that people are being exposed through other routes. The study suggests that proximity to CSOs endangers neighboring communities. And the study shows that risk rises with event size, being highest after the largest events, exactly the events the TY plan leaves uncontrolled.

Contact with contaminated water can clearly put individuals at risk. A study in Denmark compared triathletes competing in the same triathlon in Copenhagen in 2010 and 2011. The day before the triathlon in 2010, there was unusually heavy rainfall that led to CSO events in the marine waters where the swimming portion was being held. A water quality model showed there was contamination of an average of 1.5x10^4 *E. coli* per 100mL. The athletes were five times more likely to develop gastrointestinal illness in 2010 compared with 2011 when there were no CSO events, primarily related to accidental ingestion (Harder-Lauridsen, 2013). Safety standards for swimming exist because these risks are well understood.

CSO discharges from Cambridge and Somerville to Alewife Brook are untreated. Evidence shows that concentrations of bacteria are greater in the 48 hours after CSO (see below and Appendix) than when no CSO has occurred, even in wet weather. The channel adjacent to the Alewife Greenway bike and recreational path receives flow from the CAM401A outfall, just feet from pathway. Indeed at many places along the greenways along the brook--all designated public parklands owned by the Massachusetts Department of Conservation and Recreation (DCR)--the bike and recreational paths are often only a few yards from the stream.

In conditions of intense rain, Alewife Brook experiences over-the-bank flooding with the result, as the report itself points out, water contaminated by CSO discharge escapes the banks, and is delivered to recreational pathways. This by any reasonable estimate greatly increases the public health risk posed by untreated CSO discharges to Alewife Brook. As long as over-the-bank flooding is a possibility and even regular occurrence (and flooding studies suggest it will continue to be), regulators should prioritize the elimination of CSOs on Alewife Brook to protect public health.

We believe these public health considerations, combined with proximity of the Alewife greenway to environmental justice neighborhoods in Cambridge, increase the urgency of virtual elimination on the Alewife.

[2] The referenced sources in this section are listed in Appendix 1.

Low dissolved oxygen. There is also evidence of harm to aquatic life. MyRWA's and MWRA's data show unusually low summer dissolved oxygen in Alewife Brook over many years, conditions much worse than in any comparable stream in the Mystic watershed (Appendix: Dissolved Oxygen Analysis). The likeliest cause is sediment oxygen demand. EPA itself has stated that CSOs "can over time increase or maintain sediment oxygen demand as untreated organic material settles on the riverbed… a process that continues long after the end of an overflow event" (88 FR 88316, Dec. 21, 2023), and cites peer-reviewed studies of comparable slow-moving urban streams in Philadelphia and Chicago link CSO outfalls to elevated sediment oxygen demand and oxygen depletion (Miskewitz & Uchrin, 2013; Motta et al., 2010). Without local sediment studies in the Alewife, the link is not definitive, of course, but it is highly suggestive. Applying caution under uncertainty argues for CSO elimination, since deposited organic material continues to consume oxygen long after overflows end. We ask at least that the Final Plan commit to a sediment characterization study in Alewife Brook.

7. Financial analyses show that higher levels of control are financially feasible

We believe that the financial analyses produced by the Partners support the case that virtual elimination is financially feasible for the cities and for the service area as a whole. We address counterarguments by the Partners, below.

Financial Capability Assessments. By the terms of the Partners' own completed Financial Capability Assessments (FCAs), done in accordance with EPA protocols, **all** contemplated plans, including those for the highest level of control, result in "Low Impact" scores in the expanded FCA matrices (Tables 11-3, 11-12, 11-13, 11-19, 11-20) for MWRA, Cambridge and Somerville. These are matrices that attempt to capture the capacity of a community or set of communities to pay for required infrastructure investments, while also taking into account the impact on residents, including those most vulnerable.

The Partners argue that there are mitigating factors that should complicate our reading of these results. We respond to some of those arguments below. But a clear result of the FCA analysis is that EPA methodology yields "low impact" scores for all plans.

Household bill impacts

In addition, the Partners use financial modeling to predict real dollar impacts on household sewer bills. It is important to note that for MWRA ratepayers, the expected household bill in 2050 for the 25-year storm level of control is only 5% or $125 higher than it would be if no CSO work were done at all ($2462 vs. $2337). The average household bills if the recommended alternative TY plans were built would be <2% greater than if no CSO work were done at all (Figure 11-3, Appendix I, and Table 11-3).

The vast bulk of MWRA rate increases projected over the period go to capital investments and debt service payments independent of any of these CSO plans being considered.

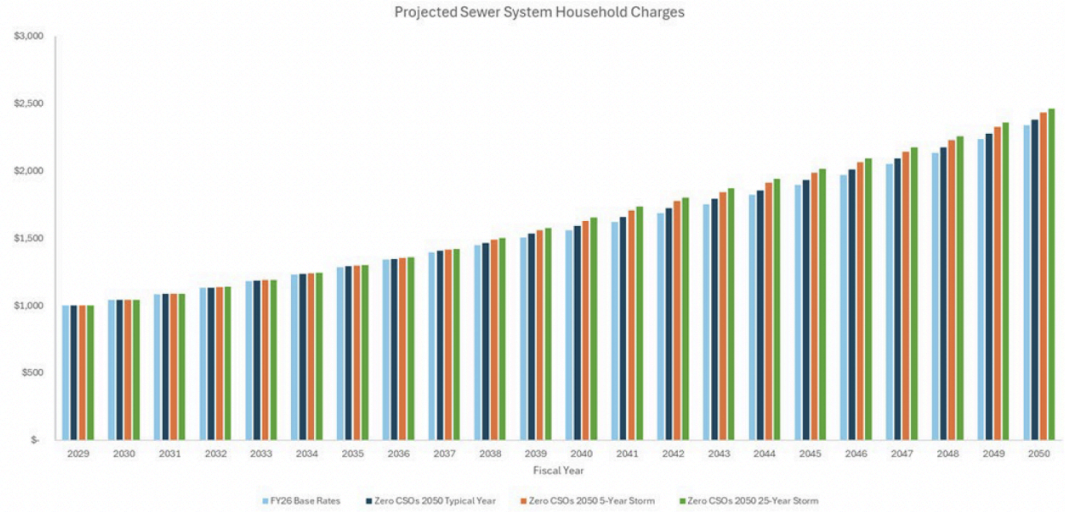


Figure 11-3. Projected Sewer System Household Charges

The sewer system annual household charges are currently anticipated to increase from $999 per year to $2,337 per year without the CSO spending between fiscal years 2029 and 2050. In 2050, based on the additional CSO spending, the household charges are projected to increase to $2,380, $2,433 and $2,462 per year for spending associated with level of control to achieve 0 CSOs in the 2050 TY, 2050 5-year, and 2050 25-year storms, respectively.

There will, of course, be an impact to sewer rates; these plans cost more than baseline. But as a proportion of already planned spending, and already predicted bills, the relative cost of CSO virtual elimination is modest, given the environmental benefit.

Our reading of these analyses--meant to capture communities' and the region's capacity to support the work necessary to meet clean water obligations--is that none of the plans is ruled out as financially infeasible.

Counterarguments

In the narratives surrounding their FCAs, MWRA, Cambridge and Somerville offer several counterarguments to the claim that the plans are financially feasible. It is important to address these.

Counterargument 1: In the MWRA analysis by community (as opposed to the region as a whole), the FCA matrix rates the impact of different levels of control on some communities as "medium" impact (4 or 5) and one (1) as "high impact."

The high-impact community is the City of Chelsea, which lies in the Mystic River watershed, and whose residents we count as Mystic residents. The issue of equitable impact of MWRA rates across municipalities with very different median household incomes is an important issue of economic justice. But it is not one that curtailing CSO investments will remedy. Note that the City of Chelsea receives a "high impact" rating **even under the Baseline scenario**, that is, **even if no CSO projects were to be constructed at all.** In fact, the number of cities that receive "high" and "medium" impact ratings under the proposed alternative is exactly the same as it is under the baseline (no-CSO work) scenario. In moving to the highest levels of control,

only **one** additional community is added to the "medium impact" category. Planned capital expenditures independent of the projects in the proposed LTCP already score as "high impact" in Chelsea, given the standards set out by the EPA FCA protocol. The question of what the best policy solution is to the relatively high burden of MWRA rates on Chelsea will **not** be resolved by deciding not to achieve highest levels of CSO control.[3]

Table 9-1. Percentage of MWRA Sewer Service Area Households in Medium to High Impact Communities

	Residential Indicator Results for Service Area Communities			Expanded FCA Matrix Results for Service Area Communities			Percentage of Total Households in Medium to High Impact Communities
Alternative	Low Impact	Medium Impact	High Impact	Low Impact	Medium Impact	High Impact	
Baseline	38	5	0	38	4	1	41.0%
Limited 2050TY	37	6	0	38	4	1	41.0%
2050TY	35	8	0	38	4	1	41.0%
Sewer Separation	30	13	0	37	5	1	43.8%
2050 5-yr	31	12	0	37	5	1	43.8%
2050 25-yr	28	15	0	37	5	1	43.8%

Note: Values presented in table reflect use of 2024 ACS 5-year data.

Counterargument 2: Impacts of 2-5% in household bills would affect ratepayers not in the variance watersheds. We argue that the continued existence of CSOs is a system responsibility in the sense, at least, that these are regional resources. This LTCP is the last, unfinished chapter of the cleanup of Boston Harbor, from which all the residents of and visitors to greater Boston benefit. The cleanup of Boston Harbor--a widely celebrated success story of the Clean Water Act--supplies a clear precedent in sharing responsibility for CSO mitigation as part of regional compliance with the Clean Water Act.

Counterargument 3: Cambridge and Somerville residents would pay proportionately significantly higher sewer bills as a result of implementation. Because of the structure of the current cost-sharing agreement among the partners, these projected cost increases are undeniably greater in Cambridge and Somerville, for the proposed plan and for higher levels of control, than for other municipalities in the MWRA service area.

Part of the reason that Cambridge and Somerville score "low impact" in the FCAs despite higher absolute rates is that median household income in those cities is higher compared to other towns in Massachusetts. Higher median household income (MHI) puts many residents in a better position to pay higher bills for sewer services.

[3] EPA goes out of its way to note that the FCA is not meant as a decision procedure for determining whether pollution reduction is required: "Showing a "medium" or "high" impact in the Expanded FCA Matrix does not mean that capital investments in critical infrastructure projects should stop. Communities should continue to make capital investments to meet water quality standards even where the Expanded FCA Matrix results indicate a "medium" or "high" impact, though extensions of schedules as suggested by Exhibit 9's recommended implementation schedule benchmarks may offer flexibility for communities." (FCA Guidance, p.15.)

In fact, Somerville's own analysis of rate impacts shows that even on the 25Y level of control scenario, the residential household indicator peaks in FY2040 at 1.35% of MHI, putting it well below the 2% threshold that would qualify as a "high" RI (Table 11-22). Table 5-3 (page 21, Appendix H) summarizes the projected cost per household as percentage of MHI, and shows that all scenarios other than Full Sewer Separation are well below 2%. Full Sewer Separation shows a maximum of 2.55% in FY2055. Somerville suggests that the Sewer Separation result would require a longer LTCP schedule (page 24).

The RI indicator--what percentage of MHI the sewer bill represents--is a separate metric from what the percentage increase households would see under various projections. Somerville's projections show steep increases in sewer bills in early years of project implementation for the recommended alternative and for other plans. But it is crucial to note that the Baseline scenario **also** rapidly increases, almost as steeply. That is, even if no CSO work were to be done, Somerville residents can expect sharp increases in the short term. This indicates a likely historic underinvestment in water and sewer infrastructure, against which projected increases are catching up. Table 5-2 notes that the proposed plan would constitute a 205% increase over the current annual bill; but the Baseline scenario itself would result in a 146% increase. The average household bill under the proposed plan would be 24% greater than Baseline, and the 25Y plan roughly 48% greater. But, again, this is against the backdrop of those higher bills remaining well below an RI that would generate a "high" score.

Cambridge shows results that rate increases that would result in High RI scores for various years. We have notes and questions about these analyses.

First, Cambridge labels RI values over 2% as "unaffordable," despite correctly identifying elsewhere that FCA scores are not an affordability test. We believe that Cambridge should use the clearer High designation for these results throughout, so as not to prejudge the case.

We also note two anomalous results that raise questions about how the calculations were made. In Appendix G, Figure 4-1 the curve representing the recommended alternative Zero CSOs in 2050 TY and the curve representing baseline (no CSO work) are virtually identical, despite the capital expenditures necessary for the TY plan. Is this because different assumptions are being made in the two scenarios around bonding and implementation schedule? Similarly, the scenario of sewer separation is recorded in that graph as having less of an impact on household bills than the 25Y controls, despite the fact that it is acknowledged elsewhere to have higher capital costs. Again, is this because different assumptions are being made about borrowing and implementation schedules? If so, what are these assumptions?

For a clearer understanding of the tradeoffs among plans, we ask the Cambridge team to clarify the analysis, with consistent assumptions across all scenarios, so that decision makers can more transparently weigh the pros and cons of different approaches.

Counterargument 4: Cambridge and Somerville point out that medians mask the extremes of distributions, and many residents in both cities have significantly lower household incomes.

We, of course, acknowledge the weakness of the MHI to well-characterize the whole population. Households in the lowest quintile of the income distribution can experience a proportionately greater increase in rates than the RI would indicate.

The EPA CWA FCA Guidance document (2024) explicitly addresses this case by advocating a suite of water affordability tools:

> "Many communities are implementing a variety of tools to assist low-income customers. These programs can include **bill discount programs, arrearage forgiveness, and emergency assistance**. Additionally, some utilities seek to distribute revenue responsibilities equitably within customer classes. Some of those programs include **nontraditional rate structures** that are designed to send a more precise pricing signal or to approach the economics of water service differently. EPA encourages the establishment of these innovative programs that help households address issues with affordability and help protect public health throughout the community." (FCA Guidance, pp. 25-26).

EPA argues that "water affordability programs can allow utilities to meet specific customer needs while also meeting the utility's financial needs and obligations." These same affordability policy tools, of course, would also be available to communities like Chelsea, where they could lead to a fairer distribution of burdens across residents.

So, we argue that the need to protect the most vulnerable ratepayers is real, but tools are left unexplored. EPA encourages communities submitting plans to explore the use of these tools--including tiered discounts, income-based caps and subsidies--in relieving the impact of rate changes on the most vulnerable and to submit the analyses as part of their FCA presentations. In our reading of the current draft, Cambridge and Somerville do not provide this analysis, as required by the FCA Guidance (p.12). We request that the Partners address this EPA guidance in the final draft.

8. The Partners' arguments for stopping short of virtual elimination are inadequate

The Partners offer several reasons for rejecting higher levels of control. We believe that these reasons are not convincing and that Mass DEP and US EPA should demand the highest levels of control.

Cost-benefit analysis is crucially flawed

The partners ultimately rest their economic case for not proposing higher levels of control primarily on the cost-benefit analysis summarized in Figure 10-9.

The Partners' implicit argument is that higher levels of control should be rejected because they show drastically diminishing returns of benefits relative to cost. We believe the presentation by no means demonstrates this case. The current cost-benefit analysis is misleadingly framed and incomplete in several distinct ways.

First, by choosing a historical period that does not include storms of a magnitude that are predicted to happen in 2050, the analysis artificially flattens the cost-benefit curve. The Plan's cost-benefit curve evaluates performance by reference to historical 2015–2024 precipitation, despite acknowledging that future pressure on the CSO network as a whole will worsen under 2050 climate assumptions. As the historical evaluation period does not include storms large enough to distinguish the performance of 5-year and 25-year alternatives,

the curve cannot accurately represent the incremental benefit of higher levels of control under conditions that will exist in 2050.

If the evaluation included 10 years of storms of the range predicted in 2050 by climate models, baseline CSO volume would have been higher, and the higher Level of Control (LOC) alternatives (5-year and 25-year) would have shown corresponding larger reductions in CSO volume. This would change the reported values in Table 10-25 and reshape Figure 10-9: rather than flattening after the TY-level point, the curve would likely continue rising, showing the benefit of additional spending rather than the flattening returns currently shown.

We flag this as a particularly important gap in the current analysis. Obviously, we do not want public money to be wasted chasing marginal improvements for exorbitant sums of money. But we challenge the depiction of marginal benefits in the report. The current analysis suggests that there is only marginal benefit from increasing levels of control **only because** the y-axis of the cost-benefit curve fundamentally misrepresents the benefits accruing from the projects. The benefits analysis should include at the least performance metrics under future 2050 conditions, capturing the impact of storms at and above the 5-year levels, to better differentiate alternatives and support a more defensible regulatory decision.[4]

We also ask that the Partners disaggregate the water bodies in the Cost-Benefit analysis, with separate curves for each water body. Showing how the different projects' benefits scale with costs would give more insight into where maximal efficiencies are to be found in each watershed.

Second, the Plan's cost-benefit evaluation gives limited weight to the full public benefits of additional CSO control. The current quantitative framing in the cost-benefit analysis emphasizes capital cost per gallon of CSO volume reduced (across the wrong timespan, we argue), while giving no weight to the broader public benefits that may result from higher levels of CSO control. These benefits include reduced public health exposure, enhanced recreational use, greater climate resilience, improved equity outcomes, and long-term community and economic benefits associated with cleaner rivers.

There is precedent for evaluating wide-ranging prospective benefits even before projects are started. Economic analyses prepared in connection with the Boston Harbor cleanup, including the Caulkins study, estimated substantial public benefits from improved water quality, recreation, aesthetics, public health, and waterfront use, demonstrating that long-term community and economic benefits can be considered in advance to help inform planning and public investment decisions rather than only documented after implementation.[5]

---

[4] The project teams also indicated in a stakeholder meeting that the modeled performance of the 5-year level of control was based on running the full 2015–2024 precipitation record through the hydraulic model, rather than relying only on a simplified comparison to a nominal 5-year storm depth. This clarification strengthens the need to distinguish modeled "virtual elimination" of recent-period CSOs from performance under future larger storms, and supports requesting additional model results that show the incremental benefit of 5-year and 25-year controls under climate-adjusted future conditions.

[5] Caulkins, P., Binkley, C., Ruf, C., and Miller, C. 1988. The Role of Economic Benefits Analysis in Funding Marine Combined Sewer Overflow Projects: Case Study of Boston Harbor. Journal (Water Pollution Control Federation), 60(7): 1275-1280.

A similar approach could be demanded here to assess whether more ambitious 5-year and 25-year levels of control may provide benefits that offset or help justify higher capital costs. At the least, the plan should more clearly document how or whether these broader benefits were considered. Providing this information would better support MassDEP's and EPA's roles in reviewing the LTCP and determining whether the selected level of control is adequately justified under the CSO Control Policy, including whether the recommended approach appropriately accounts for cost, practicability, and the broader public benefits of additional CSO reduction.

Water quality arguments ignore much higher concentrations of pollutants on days following CSO events

The report cites modeling results that purport to show that only a marginal number of extra days in violation of water quality swimming thresholds are attributable to CSOs, and that stormwater alone already causes, for example, Alewife Brook to be out of compliance with water quality standards. The implication is that investing in CSO reduction is not warranted because of the ongoing nature of stormwater pollution.

MyRWA has invested decades of effort in monitoring conditions at Alewife Brook. We know that stormwater inputs can elevate bacteria values on days when no CSOs have occurred. But the continued presence of non-CSO pollutant sources does not diminish the importance of additional CSO control.

First, stormwater pollution is addressed under its own regulatory regimes (MS4, TMDL). The Massachusetts 2018 Mystic pathogen TMDL for Boston Harbor (*Final Pathogen TMDL for the Boston Harbor, Weymouth-Weir, and Mystic Watersheds* (2018)) calls for greater than 90% reductions in stormwater bacteria through illicit-discharge removal and best management practices. The state already treats stormwater as remediable. EPA MS4 permit obligations require municipalities to perform extensive Illicit Discharge Detection and Elimination (IDDE) work to remediate the sources of wastewater contamination in stormwater.

But there is another crucial point. Water quality standards for bacteria can be exceeded by a small amount or by very large amounts. The Partners' arguments ignore demonstrably much higher concentrations after CSO events, as evidenced by MWRA's own water quality sampling data at Alewife Brook (Figures 1 and 2 and Appendix). The data summaries they choose (days of compliance with water quality standards) mask the dramatic contrasts in concentration of pollutants in the 48 hours after CSO events and outside those windows. The contrast remains even in wet weather conditions (when other stormwater inputs are present), and even comparing similar sized storms of >0.75". (Figures 1 and 2).

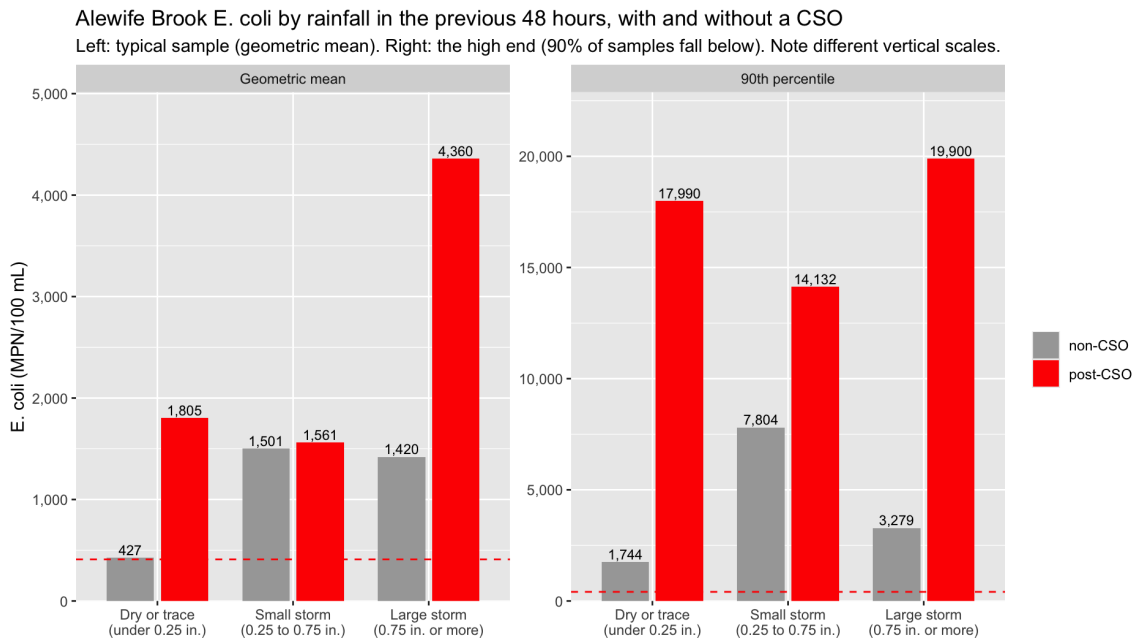


Figure 1. Summaries of MWRA sampling data 2019-2026, Alewife Brook. Geometric mean, all sites (left) and 90th percentile (right). Note different vertical axes. The red dotted line shows MA water quality primary contact standard for E. coli. Post-CSO samples are higher in dry/trace and large-storm conditions (about 3x typical, 6x at the 90th percentile for large storms); small storms (with smaller CSO releases) are similar on average. *(Data sources: MWRA CSO Receiving Waters Monitoring sampling program; NPDES CSO reports from Cambridge and Somerville; MA EEA CSO data portal.)*

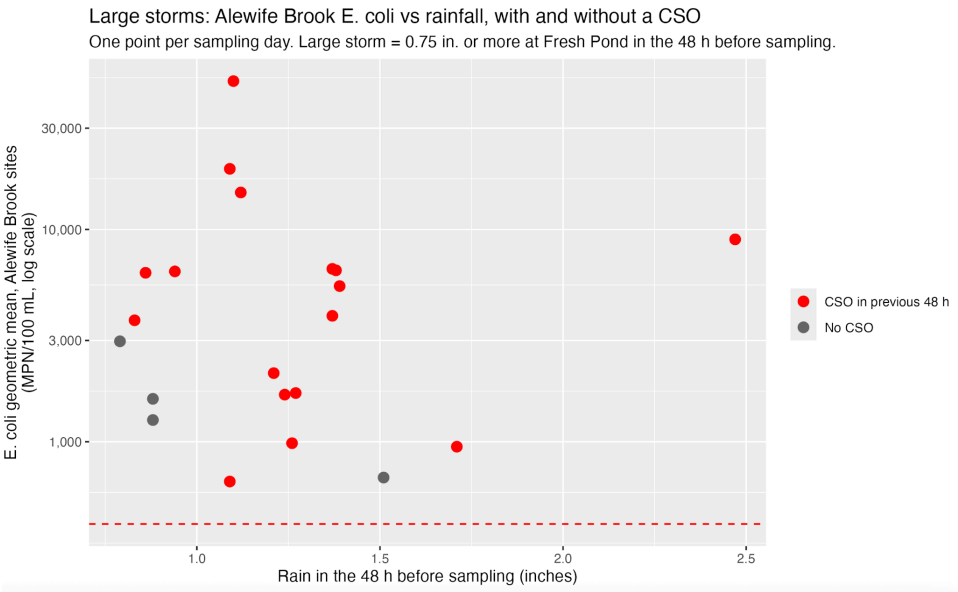


Figure 2. Comparison of samples taken by MWRA after antecedent precipitation of >0.75" in the previous 48 hours. In this time series (2019-2026) there were not many non-CSO samples, because large storms usually cause CSOs. But note log vertical scale. CSO-day samples are generally higher, even much higher than non-CSO day samples. (*Data sources: MWRA CSO Receiving Waters Monitoring sampling program; NPDES CSO reports from Cambridge and Somerville; MA EEA CSO data portal.)*

These results show that the concentrations in the wake of CSO events are not only higher, but consistently much higher after large storms, even comparing storms of similar size.

Much higher concentrations of indicator bacteria in the wake of CSO events imply much higher concentrations of all the other components of sewage (biological, chemical) that pose public health risks. Together these results demonstrate the urgency of CSO control on Alewife Brook, even as already mandated municipal work to reduce stormwater pollution continues.

Flooding concerns from the Partners push in favor of a more comprehensive solution than less

The Plan's argument that 25-year controls are impractical or counterproductive because of non-CSO source dominance or system-wide failure during the largest storms, especially in Cambridge and Somerville (Draft Plan, 7.5, p. 7-10 and 10.4.1.1, p. 10-22) is not convincing.

First, the flooding projections--and the threat of CSO discharge in city streets--assumes current conditions. But presumably solutions that deployed wide-scale sewer separation and/or large storage capacity could change the overall capacity of the stormwater system to accommodate intense precipitation. That flooding would occur under current conditions cannot be used to justify major efforts to change the system in ways that would precisely reduce the scale of that flooding. At the very least, a more detailed analysis of how exactly projected system-wide hydraulic limitations during 25-year storms would preclude meaningful incremental benefits from 25-year CSO controls under different would provide MassDEP and EPA with better information for evaluating the basis for rejecting higher-control alternatives.

Second, and more broadly, the projected system-wide hydraulic limitations during large storms points to a potentially more comprehensive plan that could embed CSO elimination in a broader effort to protect people and property under climate change scenarios. Flooding scenarios provide no excuse to scale back CSO work. They provide every reason to integrate CSO projects--including sewer separation and large scale storage--into wider planning efforts.

9. What we ask of MassDEP and EPA and the Partners

What we ask of MassDEP and EPA in their review of the Draft Plan:

- **Virtual elimination.** Demand virtual elimination, i.e. 25Y controls or sewer separation. (We note that 5-year and 25-year controls show zero CSOs on all three water bodies over the period 2015–24, vs. 5 and 6 of 10 years on Alewife and the Charles under the recommended plan.) The difference in cost between the recommended alternative and higher levels of control is especially narrow in the case of the Mystic, where virtual elimination is eminently possible.
- **No downgrade.** Under no circumstances, downgrade any of these water bodies to Class B(CSO). Demand compliance with rules that assume Class B water quality standards.

Of the Partners:

- **Fuller exploration of hybrid alternatives at the higher levels of control.** At the 2050 Typical Year level, the Partners developed and tested genuine hybrid combinations of storage, sewer separation, and conveyance (e.g., Alternatives 1–3 for each waterbody). At the 5-year and 25-year levels for 2050, however, this same combination is abandoned in favor of a single consolidated tunnel. The alternatives did not feature or discuss results of a distributed combination of several strategically sited but larger facilities, the same category of solutions that performed well at the lower LOC tier. It is unclear why this scaled-up hybrid approach was not considered before defaulting to regional tunnels. **The project teams should evaluate scalable hybrid options for the 5-year and 25-year alternatives, such as distributed storage, targeted sewer separation, GSI, conveyance improvements, and real-time controls.**
- **Continuous simulation of future performance**, as described in Section 5 above, in order to estimate average activations and releases under future conditions.
- **A revised cost-benefit analysis,** as described, broken out by water body..
- **Break out costs.** Project teams should break out the costs across various tools deployed, even in the TY scenarios. We believe decision makers need access to the way different components of each project (separation, tunnel) contribute to each total project cost.
- **Financial alternatives analyses in Cambridge and Somerville,** as described above, and in EPA FCA Guidance.
- **Revisions of Cambridge sewer bill projections,** with consistent assumptions, as above.
- **Fully explore sewer separation options.** Sewer separation is the most permanent, most resilient solution to combined sewer overflows. It should be a presumptive first choice of planners for achieving the highest levels of control (as per MassDEP CSO Guidance, 1997, IV.B(b) and IV.C(1)). In follow-up discussion with the project teams during a meeting on July 20, 2026, the project teams explained that the cost and feasibility of sewer separation may differ substantially between Somerville and Cambridge. In Somerville, particularly within the Alewife subwatershed, topography may require substantial stormwater pumping, making separation more costly and less incremental. In Cambridge, the teams indicated that more incremental sewer separation concepts may be feasible, although storage would still likely be needed as part of any separation-based alternative. The Plan should therefore distinguish more clearly between locations where sewer separation is constrained by topography and pumping requirements and locations where targeted or phased separation could supplement or reduce reliance on storage. The current structure of the plan relegates evaluation of ambitious sewer separation in the Alewife to the Full Sewer Separation scenario. But their costs and feasibility are lumped across the entire project area. Partners should explore more actively an approach that combines tools to achieve the most efficient path to virtual elimination.
- **Obstacles.** The Plan identifies construction disruption, park and open-space impacts, truck traffic, and operational capacity concerns as reasons to prefer the recommended plan. These impacts are legitimate, but the analysis should distinguish between

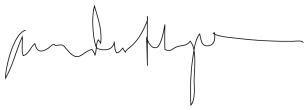
temporary construction impacts, permanent impacts, mitigable impacts, and impacts that create true technical infeasibility or unacceptable risk. Regulators should require clearer documentation of mitigation options, phasing strategies, alternative alignments, staging approaches, capacity upgrades, and adaptive management measures before dismissing these concerns.

- **Consider sewer deflection as a means of addressing stormwater pollution and volume in the scenarios with large storage**. In this way, storage-based solutions might help underlying system capacity questions in the face of climate change.
- Seriously explore using Alewife-adjacent land as stormwater wetland storage.

Finally, we consider the resolution of the final CSOs in these rivers a regional issue, and will continue to work with partners to seek alternative funding mechanisms at the state level, to augment local resources.

We look forward to engaging with the Partners in the coming months, as the revised proposal is drafted, and beyond.

Respectfully submitted,



Andrew Hrycyna
Water Quality Program Manager
Mystic River Watershed Association

Appendix 1
References

Brokamp, C., Beck, A.F., Muglia, L., & Ryan, P. (2017). Combined sewer overflow events and childhood emergency department visits: A case-crossover study. *Sci Total Environ., 31*. 607-608:1180-1187. doi: 10.1016/j.scitotenv.2017.07.104.

Environmental Protection Agency. (1995). *Combined sewer overflows: Guidance for long-term plan controls*.

Haley, B.M., Sun, Y., Jagai, J.S., Leibler, J.H., Fulweiler, R., Ashmore, J., Wellenius, G.A., & Heiger-Bernays, W. (2024). Association between combined sewer overflow events and gastrointestinal illness in Massachusetts municipalities with and without river-sourced drinking water, 2014-2019. *Environ Health Perspective, 132*(5). doi: 10.1289/EHP14213

Harder-Lauridsen, N.M., Kuhn, G.B., Erichsen, A.C., Mølbak, K., & Ethelberg, S. (2013). Gastrointestinal illness among triathletes swimming in non-polluted versus polluted seawater affected by heavy rainfall, Denmark, 2010-2011. *PLOS One, 8*(11).

Miller, A.G., Ebelt, S., & Levy, K., (2022). Combined sewer overflows and gastrointestinal illness in Atlanta, 2002-2013: Evaluating the impact of infrastructure improvements. *Environmental Health Perspectives, 130*(5). https//doi.org/10.1289/EHP10399.

Sojobi, A.O. & Zayed, T. (2022). Impact of sewer overflow on public health: A comprehensive scientometric analysis and systematic review. *Environmental Research, 203*. https://doi.org/10.1016/j.envres.2021.111609

Wade, T.J., Pai, N., Eisenberg, J.N.S., & Colford, J.M. (2003). Do U.S. Environmental Protection Agency water quality guidelines for recreational waters prevent gastrointestinal illness? A systematic review and meta-analysis. *Environmental Health Perspectives, 111*(8).

Additional note: MyRWA consulted with Gail Coad, a financial analyst on the FCAs and economic analysis and with Geosyntec Consultants on some aspects of the engineering analysis. MyRWA is solely responsible for the content of this letter, and reflects only MyRWA's position..

Evidence of CSO impairment of Alewife Brook and Mystic River

Andrew Hrycyna, Mystic River Watershed Association

2026-10-30

Introduction

MWRA has argued that CSOs make only a modest difference in the number of days per year that Alewife Brook and the Mystic River fail to meet certain water quality standards.

We argue that citing this measure obscures a more important metric for CSO decision making: namely, the magnitude of the concentration of pollutants in the wake of CSO events. Compliance rates alone (percentages of samples below a swimming or boating public health standard) fail to capture the much higher concentrations of CSO pollutants in streams in CSO events and on the days following. A stream can exceed a threshold by a little or by a lot, and in this case the difference matters. Higher concentrations of pollutants are more likely to make people sick and to have adverse ecological effects in the streams.

We show evidence below that E. coli concentrations are much, much higher in Alewife Brook and the Mystic River on the days surrounding CSOs than on other days.

Data

In the analysis below, we use only water quality data collected by MWRA itself in the CSO Receiving Waters Monitoring (CSORWM) monitoring program, as well as data on CSO releases from two sources: 1) the Massachusetts EEA CSO portal, which has data from 2022-present, as mandated by law; and 2) the NPDES annual reports submitted by Cambridge and Somerville for 2019-2021 for CAM401A and SOM001A.

MWRA has several sampling locations on the Alewife and Mystic, and the frequency of sampling in recent years at these locations yields a substantial body of data. (In fact, MyRWA uses that data and other data that we collect to calculate MyRWA's annual Water Quality Report Card for the Mystic watershed.)

Below we show comparisons between two pools of water quality data:

1. CSO days: samples taken within 48 hours of the initiation of a CSO event
2. Non-CSO days: all other samples.

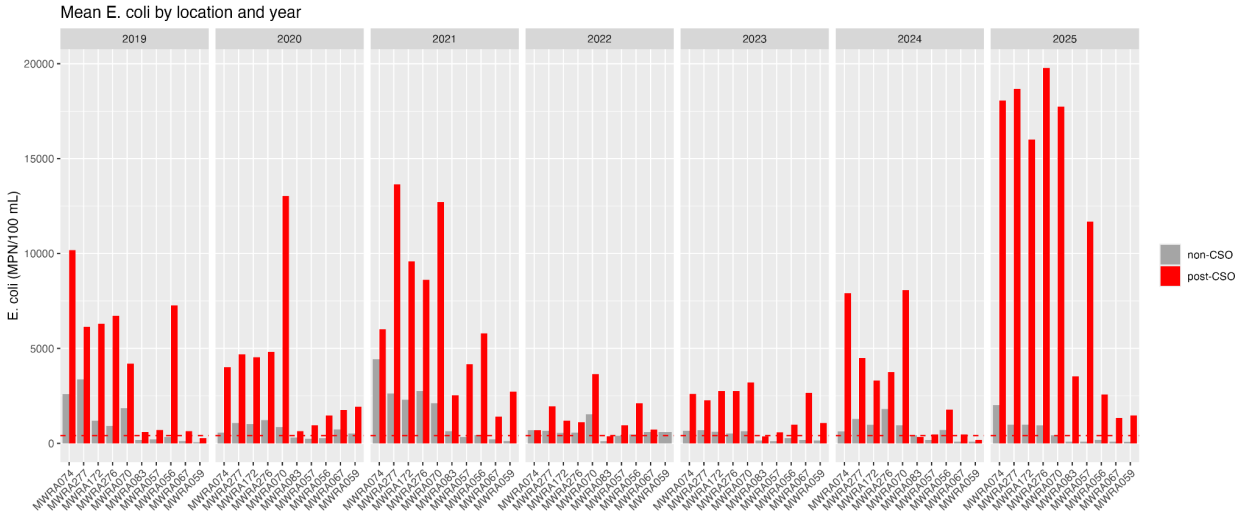
Results

Consider the following figures:

Grouped by year and sampling locations, both sets of data (2019-2022 and 2022-2025) show similar patterns. The mean values for E. coli concentrations on CSO days are generally much higher than on non-CSO days.

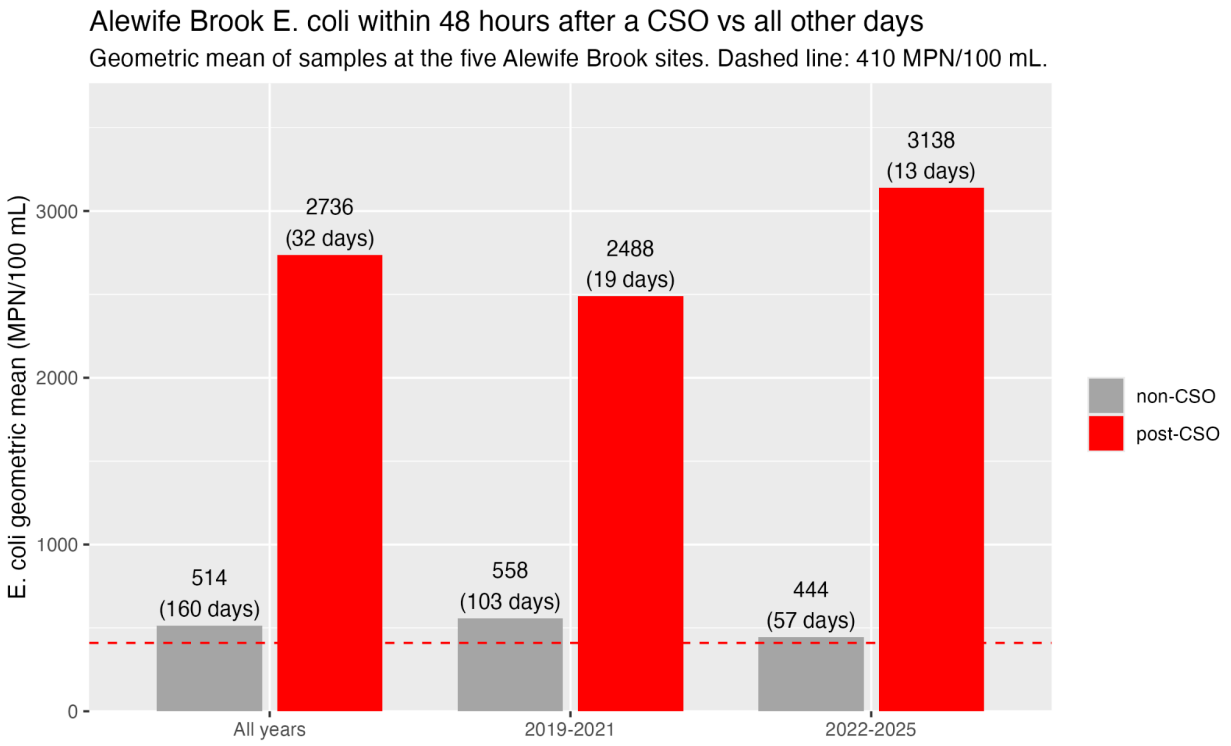
Note that the sites are arranged (left to right) from upstream to downstream in Alewife, then they shift to the Mystic (MWRA083) just upstream from the confluence of the Alewife and Mystic, with the remaining sites on the Mystic downstream. The Mystic and Alewife Brook are subject to backwater conditions in some circumstances, so the MWRA083 is sometimes exposed to flow from Alewife, although in general we see a sharp reduction of concentrations at that station.

Alewife pollution almost certainly affects the Mystic sites downstream, where concentrations tend to be higher than at MWRA083 on CSO days.



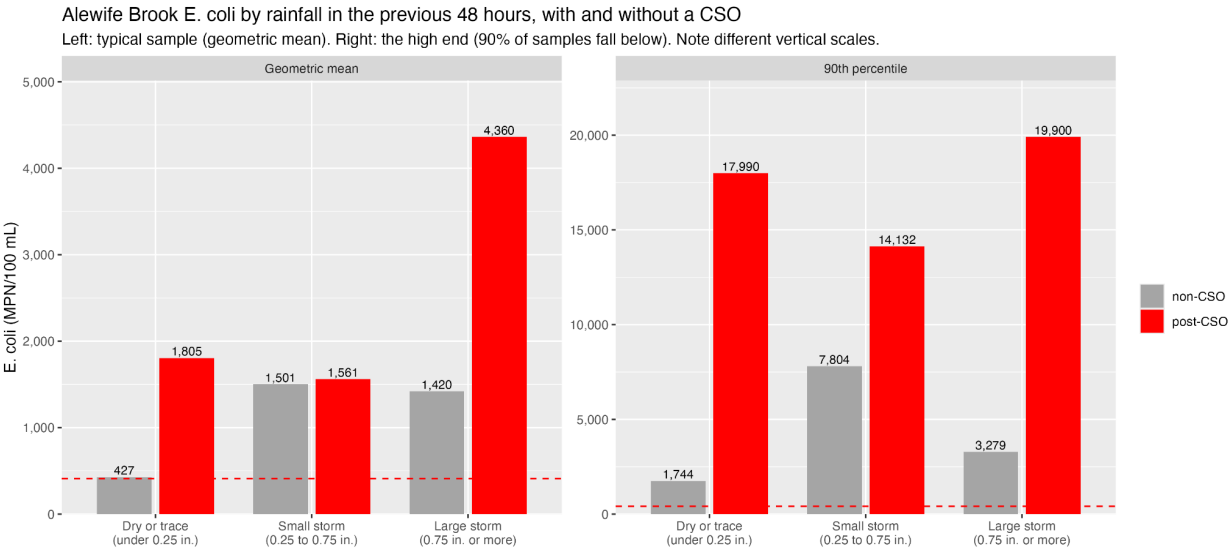
But some of these bars represent relatively few samples. Another view of the same data is given by pooling the data, and caluculating the geometric mean of E. coli, which reduces the influence of extreme values.

The contrast remains : the geometric mean of E. coli concentrations on CSO days is much higher than on non-CSO days. The red dotted line throughout shows the primary contact water quality standard of 410 MPN/ml E. coli.



It might be objected that these patterns do not distinguish the independent influence of CSOs on water quality from the influence of stormwater:days with CSOs are also days with high volumes of stormwater runoff.

So we also can compare groups of samples by bins of antecedent precipitation, which is a proxy for the size of the storm event, and show both geometric mean and the averago 90th percentile values by site.



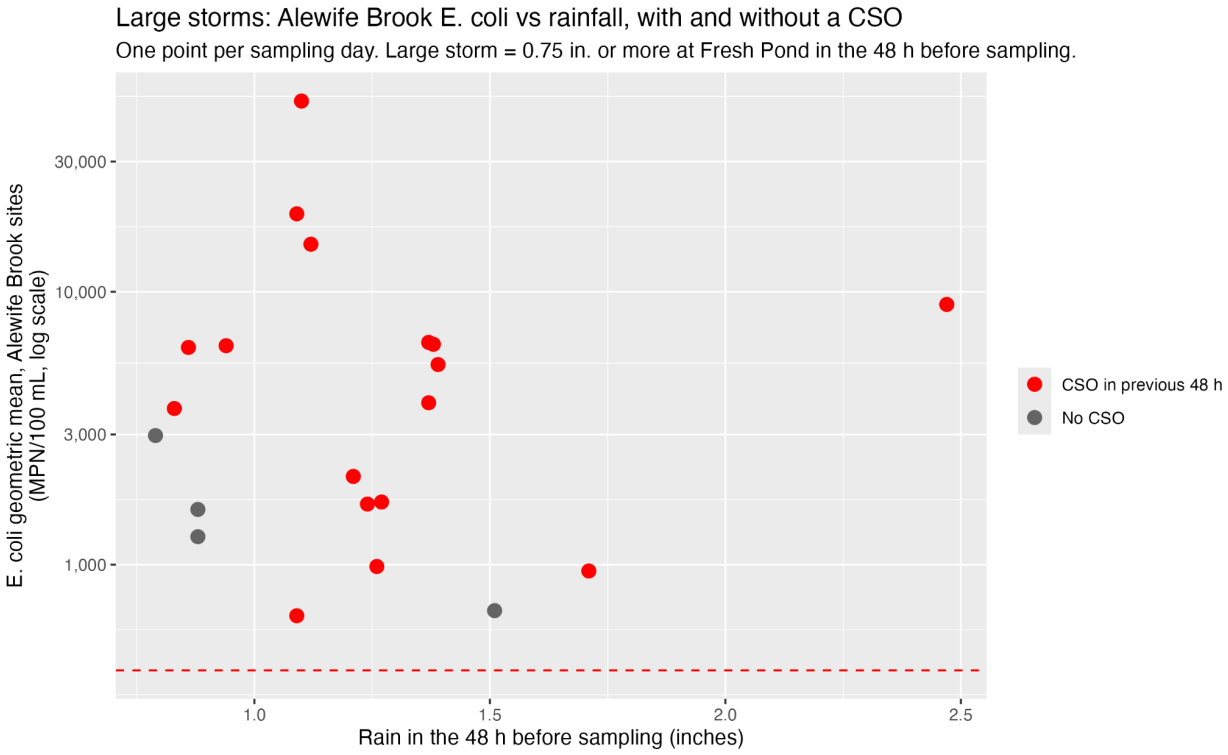
The contrast between CSO days and non-CSO days remains stark for the Dry or Trace category and for large storms. The “dry” CSO data is explained by passing extreme rain events that trigger CSO events even when the antecedent precipitation is low.

The middle category of small storms shows the least contrast when comparing geometric means, but the contrast reemerges in the 90th percentile values.

Please note the different vertical axes for the geo mean and 90th percentile plots. The 90th percentile statistic for CSO days is 50 times the water quality standard.

There is definitely evidence of stormwater pollution in Alewife in the absence of CSOs. But the circumstantial evidence is high that it is CSOs that drive the highest values.

We can zoom into the data just for large storme:



Although the sample size for large storms without CSOs is small (most large storms currently trigger CSOs especially at CAM410A), it is clear that the days with CSOs and large storms greatly exceed in concentration large storm days without CSOs.

Conclusions

- Concentrations of indicator bacteria are typically much higher onCSO-release days and those immediately following than on other days, including days with antecedent precipitation
- It is true that these water bodies suffer from low-grade pollution levels even on non-CSO days, but that is not a reason to ignore the much higher levels of pollution on CSO days and the days following.

- The extremely high values in the stream occur despite the fact that CSO discharge includes a mix of stormwater and wastewater and occur during high-flow periods. No one should take solace in the fact that wastewater inputs are diluted by stormwater in CSO discharge. Even so, the resulting pollutant concentrations are remarkably higher than on days without CSOs.
- The number of CSO days is decidedly non-trivial. Even if the number of CSO days is a percentage of the total number of days, the much higher concentrations of pollutants on those days means that they are likely to be responsible for a disproportionate share of the health risks and ecological harms associated with water quality impairment in these streams.

Appendix: Dissolved oxygen data, Alewife Brook

Two views: MWRA sampling program and MyRWA Baseline program. Both show extremely low DO values in morning samples in July (month 7).

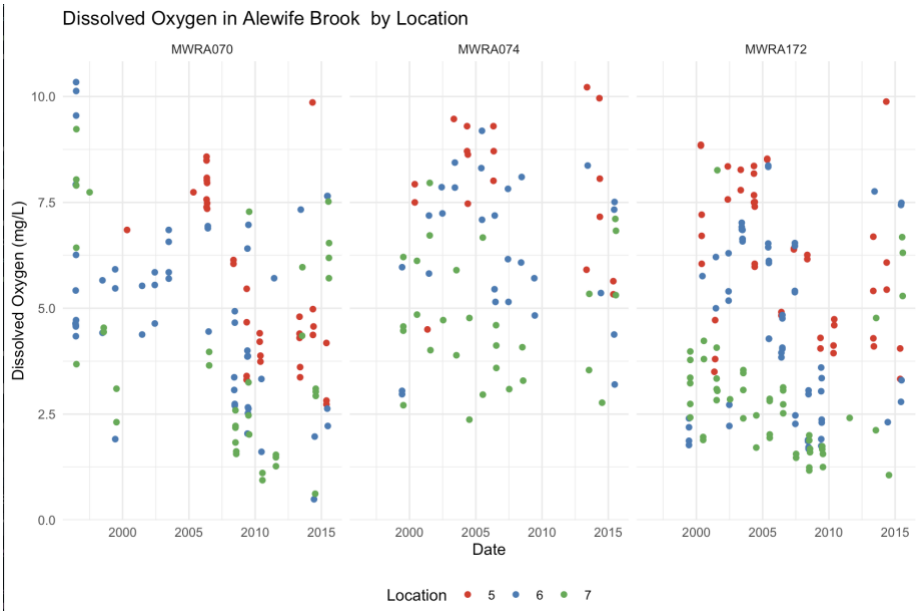


Fig 1. MWRA data.

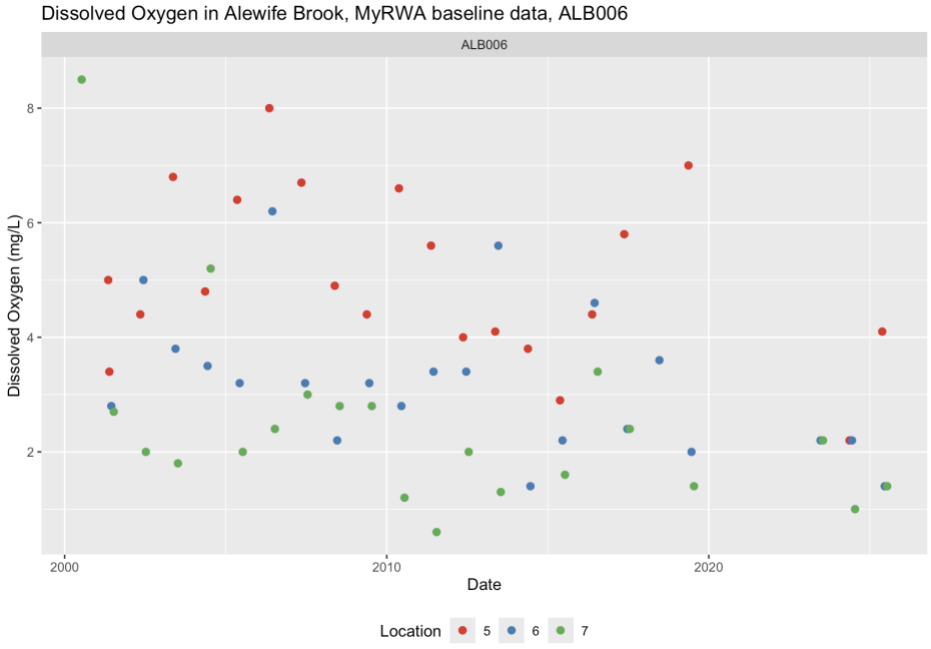


Fig 2. MyRWA baseline data.