

UNITED STATES DISTRICT COURT  
for the  
DISTRICT OF MASSACHUSETTS

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UNITED STATES OF AMERICA,

Plaintiff,

v.

CIVIL ACTION

No. 85-0489-RGS

METROPOLITAN DISTRICT  
COMMISSION, et al.

Defendants.

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CONSERVATION LAW FOUNDATION OF  
NEW ENGLAND, INC.,

Plaintiff,

v.

CIVIL ACTION

No. 83-1614-RGS

METROPOLITAN DISTRICT  
COMMISSION, et al.

Defendants.

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MASSACHUSETTS WATER RESOURCES AUTHORITY'S SUPPLEMENT TO  
2021 FINAL COMBINED SEWER OVERFLOW POST CONSTRUCTION  
MONITORING PROGRAM AND PERFORMANCE ASSESSMENT REPORT

The Massachusetts Water Resources Authority ("Authority" or "MWRA") respectfully submits the following supplemental report in accordance with the Court's order of December 23, 1985, and subsequent orders of the Court,

including the Court's February 18, 2022, Schedule Seven Compliance Order Number 250 (ECF No. 1901).

I. Introduction

The Authority's Combined Sewer Overflow ("CSO") Long-Term Control Plan ("LTCP") aimed at reducing or eliminating discharges from 86 CSO outfalls. As the Court has recognized, the results of the plan are impressive. As a result of the Authority's and the CSO communities' significant efforts and expenditures in excess of \$1 Billion in CSO control work, an estimated annual CSO discharge of 3.3 billion gallons to the harbor and rivers in the late 1980s has been reduced by 88% to 401 million gallons ("MG") in the Typical Year, as of the end of 2024, beating the LTCP goal of 404 MG. The transformation of the conditions of Boston Harbor, its tributary rivers, and area beaches has been undeniably dramatic.

II. Schedule Seven

In compliance with the then last Schedule Seven milestone, on December 30, 2021, the Authority submitted its *Final Combined Sewer Overflow Post Construction Monitoring Program and Performance Assessment Report* ("Final Assessment Report"). Prior to the filing of the Final Assessment Report, the Authority had engaged in discussions with the Environmental Protection Agency ("EPA"), Massachusetts Department of Environmental Protection ("MassDEP), and the Conservation Law Foundation ("CLF") regarding a possible framework and path forward in the case. An agreement was ultimately reached and, upon an Assented-to Motion of the Authority, the Court ordered that Schedule Seven

be amended to include the following new final compliance milestone:

In December of 2024, the MWRA will file a supplemental report that contains: (i) the final Typical Year performance of all 86 outfalls as compared to 1992 system conditions and the LTCP; and (ii) the MWRA's final results and conclusions as to the 16 outfalls, which shall include an alternatives analysis describing what further actions could be taken, and costs associated with those actions, to further reduce or meet LTCP activation and volume goals for any of the 16 outfalls that have not met their respective LTCP goals. This supplemental report, coupled with the performance assessment report and water quality assessment report filed in December 2021, will provide information to EPA, MassDEP, and the Court to make the final determinations as to attainment of the levels of control in the LTCP and draw any final conclusions.

See Compliance Order 250 (ECF No. 1901).

The *Update to the Final CSO Post Construction Monitoring Program and Performance Assessment Report (December 30, 2024)* (filed herewith as Exhibit A) (“Supplemental Report”) satisfies this final Schedule Seven milestone. The Supplemental Report will also be posted on the Authority’s website. The Final Assessment Report and the Supplemental Report provide the information necessary for EPA, MassDEP, and the Court to make the final determinations regarding the Authority’s attainment of the levels of control in the LTCP for each outfall included in Exhibit B to the *Second Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflow Control* (ECF No. 1636).

### III. Supplemental Report

The Supplemental Report, in essence, picks-up where the Final Assessment Report left off in 2021.<sup>1</sup> It draws upon three years of additional work by the Authority and its municipal partners, as well as additional performance assessment, portions of which have been provided to the Court on an annual interim basis in prior reports for calendar years 2021, 2022, and 2023.<sup>2</sup>

In order to appreciate how far CSO control in the Boston metropolitan region had advanced by 2021, as well as the further advancements since that time, a brief recap is warranted. As the Court will recall, as of the end of 2021:

- System-wide CSO discharges were reduced to 414 MG in the Typical Year;
- 40 of 86 outfalls were closed or effectively closed;
- 70 of 86 outfalls met or materially met LTCP goals;<sup>3</sup> and
- 16 outfalls had not attained their LTCP goals (the “16 Outfalls”).<sup>4</sup>

In the Final Assessment Report, the Authority also reported that: (i) it had developed plans to enable six of the 16 Outfalls to meet LTCP goals after 2021;<sup>5</sup>

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<sup>1</sup> See *Final Assessment Report*, Exhibit A (ECF No. 1898).

<sup>2</sup> See *MWRA Annual Report for Calendar Year 2023*, Exhibit A (ECF No. 1910-1); *MWRA Annual Report for Calendar Year 2022*, Exhibit A (ECF No. 1905); and *MWRA Annual Report for Calendar Year 2021*, Exhibit A (ECF No. 1913).

<sup>3</sup> See *Final Assessment Report* at Section 2.1.3 (ECF No. 1898). As explained in the Final Assessment Report, among the 70 CSO outfalls were six that were noted with an asterisk in Table 2-2 where, while the predicted activation and/or volume did not meet the LTCP goal, the performance had improved since 1992 to a level believed to achieve water quality goals. In each of the six cases, the difference between the Q4-2021 performance and the LTCP goal was relatively nominal, the inability to precisely meet the activation and/or volume goals at these locations was not considered material, and water quality was not impaired by the failure to meet the LTCP goals.

<sup>4</sup> The 16 Outfalls were: SOM001A; SOM007A/MWR205A; MWR205; BOS014; BOS017; CHE008; BOS009; BOS003; BOS062; BOS065; BOS070/DBC; CAM005; MWR018; MWR019; MWR020; and MWR201.

<sup>5</sup> The six outfalls were: SOM007A/MWR205A; MWR205; BOS014; CHE008; BOS009; and

(ii) it had identified potentially feasible alternatives for four outfalls to achieve LTCP goals;<sup>6</sup> and (iii) six CSO outfalls remained particularly challenging at the end of 2021 (the “Six Challenging Outfalls”).<sup>7</sup>

Three years later, the majority of the Final Assessment Report forecast has proven true. As summarized herein, and further detailed in the Supplemental Report, of as the end of 2024:

- On a system-wide basis, CSO discharges have been reduced to 401 MG in the Typical Year (reduction of approximately 2.9 billion gallons from late 1980s levels), beating the overall goal of 404 MG by approximately 3 MG;<sup>8</sup>
- 41 of 86 CSO outfalls are closed or effectively closed;
- 78 of 86 CSO outfalls meet or materially meet (or in the case of one outfall is expected to imminently materially meet) their LTCP goals;<sup>9</sup> and
- Eight CSO outfalls fell short of their LTCP goals; however:
  - for two of these outfalls, a construction project is underway that is forecasted to enable the outfalls to materially meet their LTCP goals by December 2025;<sup>10</sup> and
  - there remain six outfalls that do not meet their LTCP goals, although the composition of the six outfalls is slightly different

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BOS003. In the Final Assessment Report and annual report for calendar year 2021 the Authority noted that with respect to these outfalls it had developed plans to enable them to meet LTCP goals after 2021. This statement should have been more precise to indicate that the plans would enable BOS014 and BOS009 to meet and SOM007A/MWR205A, MWR205 and CHE008 to *materially* meet their LTCP goals after 2021.

<sup>6</sup> The four outfalls were: BOS017; BOS062; BOS065; BOS070/DBC.

<sup>7</sup> The Six Challenging Outfalls were: SOM001A; MWR201; CAM005; and MWR018; MWR019; MWR020.

<sup>8</sup> See Supplemental Report Section Four and Figure 4-1. Due to modeling adjustments to better calibrate the model with measured CSO discharges and other model changes as documented in Appendix A of the Supplemental Report, there was a net increase of 4 MG (397 MG to 401 MG) in modeled total CSO volume compared to what was most recently reported in April 2024.

<sup>9</sup> See Supplemental Report Table 1-2. Construction of a parallel relief pipe to provide further CSO improvement at BOS070/DBC has been delayed due to unforeseen field conditions. Final Q4 system conditions results in Table 4-1 include the relief pipe, and therefore is reported as having materially met its LTCP goals, although construction completion is not expected until January 2025.

<sup>10</sup> The two outfalls are: MWR205 and SOM007A/MWR205A (Somerville Marginal).

than the Six Challenging Outfalls identified in 2021.<sup>11</sup>

MWRA's understanding of the physical system configuration continues to increase. During the last three years, some model adjustments were made to better reflect the amount and location where flows enter the conveyance system; small adjustments were also made to more accurately reflect piping sizes and connectivity to those in the field. In Appendix A of the Supplemental Report, the Authority has included a complete listing of modeled system changes since December 2021 made to reflect the CSO improvements and increased system understanding.

IV. Summary of the Final Typical Year Performance of All 86 Outfalls as Compared to 1992 System Conditions and the LTCP

The Supplemental Report includes a complete accounting of the 86 CSO outfalls active in the late 1980s. Supplemental Report at Table 4-1. For the 45 remaining active CSO outfalls, the Supplemental Report provides discharge estimates using the Authority's calibrated hydraulic model as updated with system changes and new information as it existed at the end of 2024 and run under Typical Year rainfall conditions. The hydraulic model was configured to represent system conditions at the end of 2024 (with the exception of BOS070/DBC being configure to January 2025 conditions (See FN 9)). These results were compared against the 1992 system conditions, as well as the LTCP

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<sup>11</sup> Since December 2021, two of the Six Challenging Outfalls (MWR201 and MWR020) now materially meet their LTCP goals, and two additional outfalls (BOS003 and CAM401A) are now within the group of six outfalls that do not meet their LTCP goals.

goals.<sup>12</sup>

As noted above, system-wide CSO discharges outperformed the overall annual discharge goal of 404 MG. Significantly, 94.5% of CSO discharge is treated, better than the LTCP overall goal of 94.3%. Although the LTCP goals do not distinguish between treated and untreated CSO discharges, MWRA has worked to maximize the ratio of treated (i.e., screening, disinfection, and some removal of solids at three of four facilities, with screening and disinfection at the remainder ) versus untreated discharges to further reduce the pollutant loads to the receiving waters, whenever feasible.

As to specific outfalls, the Authority is also pleased to report that 78 outfalls meet or materially meet (one of which will soon materially meet) their LTCP goals.<sup>13</sup> Noteworthy highlights are:

- four additional CSO outfalls (BOS017, BOS009, BOS062, BOS065) meet their LTCP goals as of the end of 2024;
- a project is underway to improve performance at BOS070/DBC, which is predicted to materially meet its LTCP goals by January

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<sup>12</sup> With respect to the 1992 System Conditions for CAM401A and CAM401B, the 1992 model results predicted a maximum of 18 activations and the sum of 2.21 MG, for these two CSOs. Extensive field investigations after the 1997 CSO Conceptual Plan/EIR identified sewer/stormwater areas that were combined that were thought to be separate. A later 2001 Alewife Notice of Project Change reported much higher Typical Year values of 25 activations and 13.2 MG for these two CSO outfalls. For consistency, the 1992 System Conditions in Table 4-1 have not been altered with the revised values. However, it bears noting that the 1992 CSO conditions at CAM401A and CAM401B were actually worse than believed.

<sup>13</sup> The outfalls that materially meet the LTCP goals are noted with an asterisk in Table 4-1 of Section Four in the Supplemental Report. They are BOS057, BOS060, BOS064, BOS070/DBC (result is expected upon completion in January 2025 of an ongoing project), MWR203 (Prison Point), CAM007, MWR201 (Cottage Farm), and MWR020. For these outfalls, the model predicted activation and volume for Q4-2024 System Conditions has decreased since 1992 to a level believed to achieve anticipated water quality improvements. The inability to precisely meet activation and/or volume goals at these locations is considered immaterial and water quality is not impaired by the deviation from the LTCP goals.

2025;

- MWR201 (Cottage Farm) and MWR020 now materially meet their LTCP goals; and
- BWSC closed one additional CSO outfall in East Boston (BOS005). Thus, there are now 36 outfalls (eleven more than required under the Second Stipulation) that have been permanently closed. When coupled with the five outfalls along the South Boston Beaches that were effectively closed (*i.e.*, achieving a 25-year level of control in 2011), 41 outfalls have been closed since the CSO control program's onset.

With these changes, the number of outfalls that do not meet or materially meet the LTCP goals has decreased from 16 in December 2021 to eight (the "Eight Remaining Outfalls").<sup>14</sup> See Supplemental Report at Section Four. Two of the Eight Remaining Outfalls (MWR205 and SOM007A/MWR205A) are expected to materially meet their LTCP goals by December 2025 when an ongoing project is scheduled to reach substantial completion. The Eight Remaining Outfalls also include two outfalls (BOS003 and CAM401A) that were projected to meet or materially meet LTCP goals as of the 2023 annual report but are now predicted to fall short of their goals. These outfalls are discussed further below.

V. Summary of the Authority's Final Results and Conclusions as to the 16 Outfalls.

The Supplemental Report includes the final results and conclusions as to the 16 Outfalls, with an account of improvements made, and an alternatives analysis for any of the 16 Outfalls that have not met or materially met LTCP

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<sup>14</sup> The Eight Remaining Outfalls are: BOS003; CAM401A; SOM001A; SOM007A/MWR205A; MWR205; CAM005; MWR018; and MWR019.

goals. A summary is provided below; further details are provided in the Supplemental Report, Sections Two and Three.

A. CHE008

For CHE008, the project to increase the capacity of the connection from the City of Chelsea's system to MWRA's interceptor was completed in June 2023. The as-built conditions were coded into the Authority's hydraulic model, which shows no CSO outfall activations in the Typical Year, thus meeting the LTCP goals.

B. BOS009, BOS014 & BOS003

BWSC completed work in East Boston (Phase 3) that included: (a) separation of combined sewerage areas tributary to BOS012 and BOS009 as well as a small portion tributary to BOS003; and (b) hydraulic relief work between the BOS014 and BOS003 regulators to the Authority's interceptor system. The contracted work was partially funded by the Authority in an amount of \$2,181,667.

As previously reported, work under this project resulted in BOS014 meeting its LTCP goals. Improvements included construction of a new dry weather flow connection to convey additional combined flows to the Authority's interceptor system. This work was completed in January 2022, and the model shows elimination of CSO in a Typical Year.

For BOS009, BWSC completed the work pertinent to removal of inflow from the collection system in the outfall's tributary area, reducing the number

of activations from 10 to five, and reducing the volume discharged from 0.73 MG to 0.13 MG in a Typical Year, thereby meeting the LTCP goals.<sup>15</sup>

Improvements to the restricted interceptor connection at a CSO regulator tributary to BOS003 were completed in May 2022. BWSC also conducted additional system modifications in their construction contract, including the closure of two other CSO regulators tributary to BOS003. The increased connection capacity included replacing the existing 12-inch connection with a 24-inch connection and eliminating other hydraulic restrictions preventing flow from entering the Authority's interceptor system. The model predicted that this work would enable BOS003 to meet the LTCP activation and volume goals. However, following completion of the work, and as noted in the 2022 and 2023 annual reports' comparison of meter verses model predictions, higher activation frequencies and volumes have been measured than those predicted by the model. Using recent BWSC meter data collected within the BOS003 regulator sub-system and within the downstream interceptor the Authority revisited the model calibration at this location. Although the model calibration was well-established in 2018 and 2019, it had become apparent that additional model adjustments were required. Ultimately, adjustments were needed to the flows into the regulator, as well as reductions in the assumed conveyance capacity through the connection to the MWRA sewer. These changes resulted in CSO activation and

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<sup>15</sup> The 2023 annual report incorrectly noted that this work would not be completed until summer of 2024. After submittal of the 2023 annual report, BWSC informed the Authority that it had, in fact, completed the work in December 2023. Although street restoration continued into the summer of 2024, the benefit of this project was realized at BOS009 for all of calendar year 2024.

volumes in the Typical Year now falling short of the LTCP goals. It appears the capacity of the new 24-inch connection is less than originally represented in the model and additional inflow is entering the regulator beyond original estimates, resulting in higher overflows than originally predicted.

Although the model currently predicts Typical Year volume of 1.2 MG below that predicted in the Final Assessment Report (5.93 MG to 4.76 MG), the adjusted model now also predicts no reduction in the nine activations that were predicted in the Final Assessment Report. The updated model predictions do not meet the LTCP goals of four activations and 2.87 MG discharge volume. The Authority and its consultant continue to work with BWSC to understand the apparent additional flows into the regulator and connection capacity being less than theoretically anticipated. Additional inspections have been conducted and additional metering has been installed. The long-term solution, however, appears to be additional sewer separation work. Specifically, BWSC continues its sewer separation work in East Boston, having now begun a fourth phase of work with the first of four contracts beginning in spring of 2025. Subsequent completion of the full scope of Phase 4 sewer separation, currently included in BWSC's capital plan for completion by 2030, is predicted to ultimately eliminate CSO discharges at outfall BOS003 in the Typical Year.

C. BOS017, BOS062, BOS065, BOS070/DBC & BOS013

As previously reported, the Authority entered into a memorandum of understanding and financial assistance agreement (MOU/FAA) with BWSC in

November 2022, in an amount up to \$10 million, for the design and construction of modifications to BWSC's collection system expected to improve performance for four CSO outfalls (BOS017, BOS062, BOS065, BOS070/DBC). In December 2023, the Authority's Board of Directors approved an amendment to the MOU/FAA to add improvement work for BOS013. Although BOS013 already materially met its LTCP goals (and therefore was not among the 16 Outfalls), BWSC identified further improvements consistent with other work in East Boston that would further reduce overflows at this outfall. The Authority agreed to fund this work under the terms of the MOU/FAA. BWSC competitively bid the construction project for the work for these five outfalls. In January 2024, a second amendment to the MOU/FAA with BWSC was approved by MWRA's Board of Directors increasing the amount by \$1,881,274, to \$11,881,274, given the higher-than-estimated construction bid for the work.

BOS070/DBC is predicted to meet the LTCP goals once BWSC completes sewer separation Contracts One and Two in South Boston (independently funded and managed by BWSC) and the construction of a new 60-inch diameter relief pipe running approximately 540 feet along Massachusetts Ave, funded through the MOU/FAA. Given the significant disruption to the community, BWSC was not able to complete Contract Two before December 2024, as originally projected. Remaining sewer separation work in Contract Two is now expected to be complete in April 2026. At present, Contract One and approximately 23 acres of beneficial sewer separation under Contract Two are completed and coded into the hydraulic model. Construction of the 60-inch relief pipe has been hampered

by unforeseen site conditions and substantial completion is now expected in January 2025. However, given the expectation that this work will be completed next month, the relief pipe has been included in the MWRA hydraulic model. The model shows that with the installation of the 60-inch relief pipe BOS070/DBC will materially meet its LTCP goals. Specifically, it is predicted that the Typical Year discharge volumes will be reduced below the LTCP goal and the Typical Year activations will be reduced to six (within three of the LTCP goal), with three of these activations predicted to have volumes less than 0.10 MG. BOS070/DBC is therefore categorized as having materially met its LTCP goals in Table 4-1 of the Supplemental Report. With the completion of South Boston Sewer Separation anticipated in April 2026, activations at BOS070/DBC are predicted to be further reduced to one and volumes to less than 0.8 MG in a Typical Year. MWRA identified modifications to regulators tributary to BOS062 and BOS065 that were subsequently designed, with minor modifications, and constructed under the MOU/FAA by BWSC. System modifications included increasing the connection capacity from the BOS062 regulator to the BWSC interceptor and increasing the weir height within the regulator discharging to BOS065. Given the interconnections in this system, a small weir adjustment was also required to the regulator discharging to BOS064. This work was completed in the summer of 2024. The as-built conditions were added to the Authority's hydraulic model, which shows no CSO outfall activations in the Typical Year at BOS062 and BOS064; these outfalls now meet the LTCP goals. Given the system interconnections, one small activation of 0.01 MG in the Typical Year was

predicted at BOS064. Although the LTCP goal for BOS064 is zero activations in a Typical Year, MWRA considers this CSO outfall to materially meet the goal. Furthermore, with the completion of BWSC's sewer separation Contract Two in April 2026, discharges from this CSO outfall are predicted to be eliminated in a Typical Year.

The Authority identified modifications to a structure upstream of the BOS017 regulator that would divert storm flows away from the CSO outfall during Typical Year storms but allow relief during larger events that could result in street or basement flooding. The modifications included rebuilding an adjustable weir system (i.e., stop logs) within an upstream chamber. The project was designed and constructed under the MOU/FAA by BWSC. The as-built conditions were coded into the Authority's hydraulic model, which shows no CSO activations in the Typical Year at BOS017; this outfall meets its LTCP goals.

As part of the MOU/FAA, BWSC also designed and constructed improvements to the hydraulic capacity between the regulator upstream of BOS013 and the Authority's interceptor. Hydraulic capacity was improved by removing unnecessary restrictions and structures. This work was completed in May 2022 and was added to the model, which shows a reduction to three activations in the Typical Year and volume reduced to 0.08 MG in the Typical Year – both meeting the LTCP goals.

D. SOM007A/MWR205A and MWR205 (Somerville Marginal CSO Facility)

A contract for the construction of a supplemental connection and control gate upstream of the Somerville Marginal CSO facility, which is expected to significantly reduce CSO discharges from treated CSO outfalls SOM007A/MWR205A and MWR205 and further optimize system capacity, was awarded in September 2024. The project includes construction of a gate chamber within the on-ramp from Mystic Valley Parkway to Interstate 93. The project was delayed due to several design obstacles requiring resolution before the construction advertisement and ultimate contract award. As reported in the 2023 annual report, construction of this work is to be performed at night, given the high traffic area. Work remains on schedule with the project components for CSO control improvements expected to be completed by the end of 2025. Once completed, these outfalls are projected to materially meet their LTCP goals. Although the increased combined flows into the MWRA's interceptor system from this new connection are expected to increase future CSO volumes at MWR203 (Prison Point CSO Facility), a net CSO reduction of 24 MG is expected from this project. Somerville's Poplar Street pump station project and the first phase of their Spring Hill sewer separation with an expected commissioning in 2027 will offset approximately 2 MG of the increase at Prison Point in a Typical Year.<sup>16</sup>

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<sup>16</sup> Future Phase 2 sewer separation within the Spring Hill area that would convey stormwater away from Prison Point (MWR203) has not been funded in Somerville's capital program. However, should Phase 2 of the Spring Hill sewer separation (consisting of 168.9 acres) be performed in the future, such work is estimated to bring Prison Point below its LTCP activation and volume goals by approximately two and 10 MG, respectively.

#### E. SOM001A

For SOM001A, the Authority reviewed several alternatives. Among the alternatives analyzed was wide-spread green infrastructure improvements with an estimated approximate cost of \$12M. This alternative is expected to have no reductions in activations and only a 0.31 MG reduction in CSO volume at SOM001A.

Another alternative evaluated was to allow more flow to enter the Authority's sewer system from the SOM001A system but with further Authority interceptor capacity improvements. Although predicted to allow SOM001A to meet its LTCP goals, this alternative would simply push additional overflow to another Alewife Brook CSO outfall (MWR003), causing it to exceed its LTCP goals, as well as increase levels within the MWRA's system to unacceptable levels.

Although modifications to the SOM001A regulator, coupled with relocating 115 acres of stormwater out of the SOM001A system directly to Alewife Brook, is also predicted to meet LTCP goals, levels within the MWRA interceptor were still predicted to increase to unacceptable levels even with the storm water reduction to the regulator. Furthermore, the additional stormwater flows to Alewife Brook would exacerbate brook flooding and result in increases in the bacterial and phosphorus loading to the brook if stormwater treatment were not also provided. Further determination of costs for this alternative were therefore not calculated. See Supplemental Report at Section 3.1. Finally, storage alternatives predicted to meet the SOM001A LTCP goals were also reviewed and

have a preliminary estimated cost ranging from \$45 to \$60 million.

F. CAM005

The Authority retained a consultant to further evaluate and design modifications to the CAM005 regulator to lengthen and increase the height of the weir. Site investigations and a preliminary design indicate a weir of roughly similar length and height to that included in the hydraulic model can be constructed. With a raised and lengthened weir and completed sewer separation at Willard Street in Cambridge, CAM005 is predicted to meet the LTCP volume goal (0.64 MG vs. 0.84 MG) but exceed the LTCP activation goal (five vs. three).

For the sake of the alternatives analysis, the Supplemental Report assumed implementation of the above weir work as the starting point to evaluate the added benefit of sewer separation, and a few variations of green stormwater infrastructure within the tributary area to CAM005. At a preliminary estimated cost ranging from \$2.5M to \$5M for green infrastructure and \$22M for sewer separation with stormwater treatment, each of the alternatives is predicted to reduce activations to at least meet the LTCP goal of three. The feasibility of implementing green infrastructure requires further detailed evaluations. The Authority will continue to work with Cambridge to design and, if agreed, to raise and lengthen the weir at CAM005.

G. MWR018, MWR019, MWR020

Since the Final Assessment Report, sewer separation work performed by BWSC has improved the Typical Year performance at MWR018, MWR019 and

MWR020. As reported in the 2022 Annual Report, BWSC had completed two contracts in the Roxbury area, which required model adjustment and piping reconfigurations. These changes hydraulically influenced downstream outfalls, including MWR018, MWR019, and MWR020 and to a lesser degree MWR201 (Cottage Farm CSO), and MWR203 (Prison Point CSO). BWSC continued sewer separation with a third contract, completed in 2024, resulting in further CSO reductions at the hydraulically interconnected downstream outfalls. All together, the three BWSC sewer separation contracts covered 116 acres. This resulted in substantive reductions in CSO volumes at MWR018, MWR019, and MWR020, including a decrease from two to one activation at MWR020 now discharging only 0.02 MG; the LTCP goal is zero activations. With these unanticipated improvements, the Authority is pleased to report that MWR020 materially meets its LTCP goals.

Prior to incorporating the final Roxbury sewer separation contract improvements into the hydraulic model, several alternatives that could allow MWR018, MWR019, and MWR020 to meet LTCP goals were investigated. Given the improvements noted with the Roxbury sewer separation, further improvements to the BWSC conveyance system that would remove restrictions in the Roxbury Canal Sewer were evaluated to move more flow to the Fort Point Channel away from the subject outfalls. Although alternatives were shown to improve downstream CSO performance, under larger design storms adverse hydraulic impacts increasing the potential for flooding were identified, negating the potential for this to be an acceptable alternative.

Several other CSO improvement alternatives were investigated. These include sewer separation in the Back Bay area, storage alternatives along the Charles River, diversion of already separated areas away from the subject outfalls, and wide scale green stormwater infrastructure. These alternatives were considered independently as well as in combination. Sewer separation, coupled with diverting already separated areas, at an estimated preliminary cost of \$115M would result in significant increases to phosphorus and bacterial loading to the Charles River without stormwater treatment, as well as widespread construction disruption to the Back Bay community. Given the already infrequent and low volume of CSO from these locations, sewer separation to improve performance at MWR018, MWR019, and MWR020 would present nominal reduction in CSO volumes, and minimal water quality benefits (or even adverse impacts in light of the greater stormwater discharge to the Charles). Storage alternatives with an estimated preliminary cost ranging from \$51 to \$63M were also evaluated.<sup>17</sup>

#### H. MWR201

Since the Final Assessment Report, sewer separation work performed by Cambridge and BWSC has improved the Typical Year performance at MWR201 (Cottage Farm CSO Treatment Facility). BWSC's completion of three sewer

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<sup>17</sup> Alternative evaluations for MWR018, MWR019, and MWR020 were conducted in 2023, on a baseline of Q1-2023 system conditions, which did not reflect all system changes occurring before Q4-2024. While the CSO discharges in Q1-2023 were higher than those ultimately reported in the Supplemental Report, the magnitude of the differences does not change the conclusions from the evaluations presented.

separation contracts, including piping reconfigurations and 116 acres of now-separated area in the Roxbury area have resulted in reductions at MWR201. A further direct impact to flow tributary to the Cottage Farm CSO facility was realized with the completion of 28 acres of sewer separation in the Willard Street area by the City of Cambridge in 2024. The impact of these projects was greater than anticipated by the Authority. The Authority's hydraulic model now shows that Typical Year volume has been reduced to 6.72 MG (2.37 MG below 2021 conditions), bringing this treated CSO outfall within 0.42 MG of the LTCP goal and allowing the Authority to report that MWR201 now materially meets its LTCP goals.

Prior to incorporating the above sewer separation into the hydraulic model, alternatives that might allow MWR201 to meet the LTCP goals were investigated. The Supplemental Report presents two alternatives that would further reduce CSO discharges by approximately 1.4 MG, thereby meeting the LTCP goals during the two activations predicted in a Typical Year. The first alternative is sewer separation of approximately 300 acres. This area was identified upstream of the closed CAM011 regulator. Although, this alternative predicted a CSO discharge reduction to 6.01 MG (1.73 MG below the 2021 conditions) in a Typical Year, the resulting stormwater increase to the Charles River was estimated at 48.2 MG. If untreated, this stormwater would substantially increase bacterial and nutrient load to the Charles; the preliminary estimated cost for sewer separation with additional stormwater treatment is approximately \$257M. The second alternative evaluated is storage adjacent to the Cottage Farm CSO

Treatment Facility at a preliminary estimated cost ranging from \$50M to \$65M that is predicted to result in a 1.44 MG CSO discharge reduction in a Typical Year to meet the goal of 6.3 MG.

#### I. CAM401A

CAM401A was reported as meeting LTCP goals in the Final Assessment Report. However, working with the City of Cambridge, the Authority has reevaluated this outfall and now reports that it does not meet its LTCP goals. The hydraulic model representing this outfall's subsystem was calibrated based on a meter upstream of the regulator to measure tributary system flows as well as meters to monitor regulator depths to determine when overflows occurred. Based on field observations in 2019, this portion of the Cambridge system also included significant sediment depth within the piping network downstream of the regulator conveying combined flows to MWRA's interceptor.

In November of 2020, Cambridge completed sediment removal from this system, which was subsequently removed from the hydraulic model. Model results as reported thereafter, including in the Final Assessment Report, predicted the LTCP goals at CAM401A meeting at five activations and 3.06 MG in the Typical Year. However, MWRA and Cambridge noted MWRA's model under-predicting CAM401A discharges in comparison with measured values reported by Cambridge and MWRA within their respective annual reports. An extensive metering program was implemented for over three months in spring-summer 2024, collecting system flow and depth data at over seven locations to

better understand system hydrology and hydraulics.

Because Cambridge's more detailed model of this subsystem better predicted measured conditions at CAM401A, MWRA revised its model to comport with Cambridge's. Beside the greater level of system detail within the updated CAM401A system model, another notable update was a correction to the hydraulic model that excluded areas downstream of the CAM401A regulator thought to be separated. Although these areas include sanitary and stormwater lines within the streets, interconnections between these lines exist and all flows ultimately enter the combined sewer system. A second complete calibration including adjustments to hydrologic and hydraulic parameters to best match extensive system measurement and recorded overflows was performed by MWRA and reviewed with Cambridge. The recalibrated model predicts that CAM401A activates ten times with a total volume of 6.27 MG in the Typical Year, not meeting the LTCP goal of five and 1.61 MG in the Typical Year. During the 2024 meter installation and follow-up inspections, some sediment was noted to be present in the CAM401A system, although much less than that removed in 2020. Removal of this sediment from the model resulted in nominal improvements to the CAM401A overflows.

As with other CSOs that were not predicted to meet LTCP goals in the Final Assessment report, MWRA evaluated an alternative that would likely enable CAM401A to meet the LTCP goals. Providing a storage volume of 0.40 MG and raising the CAM401A weir crest elevation would be sufficient to reduce the annual discharge volume below the 1.61 MG goal. The preliminary cost for this

storage alternative was estimated at \$19M.

VI. Other Updates

A. 2023 Draft NPDES Permit

As the Authority previously reported in its 2023 Annual Report (ECF No. 1910), on or about May 31, 2023, EPA issued a public notice and request for comments on a revised draft National Pollutant Discharge Elimination System ( NPDES”) Permit and corresponding Fact Sheet for the Authority’s Deer Island Treatment Plant ( DITP”), CSO Treatment Facilities, and other CSO outfalls. Concurrently, MassDEP issued a similar state draft discharge permit, which largely incorporated EPA’s draft NPDES permit by reference (collectively, these actions are hereinafter referred to as the 2023 Draft Permit”). The Authority has concerns with certain proposed conditions in the 2023 Draft Permit, which were raised during the public comment period. These concerns included the 2023 Draft Permit’s wet-weather-related and CSO provisions requiring compliance with volume and activation limits in Exhibit B to the Second Stipulation, which have not been met at certain outfalls. (ECF No. 1910 at 23-27).

B. Variances

As with the 2023 Draft NPDES Permit, the topic of water quality standards variiances ( VariANCES”) was previously discussed in the Authority’s 2023 Annual Report. (ECF No. 1910 at 21-23). As the Court will recall, CSO outfalls owned by the Authority and the Cities of Cambridge and Somerville that discharge to the Lower Charles River/Charles River Basin and the Alewife Brook/Upper

Mystic River (Variance Waters”) have, over the years, operated under periodically reissued Variances.<sup>18</sup> The Variances recognize that during wet weather events, it is not feasible to fully attain the Class B water quality standard (which effectively require no CSO discharges) currently applicable to these Variance Waters. The Variances provide the Authority with regulatory certainty with respect to discharges to the Variance Waters.

The Variances issued by MassDEP in August 2019 and subsequently approved by EPA required, among other things, the development of updated CSO control plans for the outfalls that discharge to the Variance Waters. As previously reported, on September 22, 2022, the Authority, Cambridge, and Somerville requested an extension of time to add scope desired by EPA and MassDEP prior to submitting their respective draft and final updated CSO control plans.

In March 2024, MassDEP issued tentative determinations for new Variances for a five-year period generally running through August 2029 and invited public comment through April 22, 2024. The Authority submitted written comments, which were generally in support of the tentative determinations; however, the Authority also submitted some important comments and proposed refinements for purposes of clarity. The Authority's comments largely focused on the timing of certain deliverables, as well as on issues similar to those that

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<sup>18</sup> In total, there are sixteen CSO outfalls that discharge to the Variance Waters. They are CAM001, CAM002, MWR003, CAM401A, CAM401B, SOM001A, SOM007A/MWR205A (Somerville Marginal CSO Facility), CAM005, CAM007, CAM017, MWR010, MWR018, MWR019, MWR020, MWR201 and MWR023.

arose in the context of the 2023 Draft NPDES Permit (*e.g.*, conditioning the Variances on attaining a level of CSO control extrapolated from the Second Stipulation Exhibit B CSO discharge activations and volumes).

On August 30, 2024, MassDEP issued its final determinations for the Variances, which will expire at the end of August 2029 ( "2024 Variances"). Unfortunately, MassDEP did not agree with the Authority's comments and promulgated the 2024 Variances with a level of CSO control that the Authority cannot meet for certain outfalls now or in the five-year term of the 2024 Variances. Accordingly, the Authority was faced with little alternative other than to challenge this aspect of the 2024 Variances.

On September 27, 2024, the Authority filed Notices of Claim for Adjudicatory Appeal and Request for Adjudicatory Hearing in MassDEP's Office of Appeals and Dispute Resolution ( "OADR"), challenging the conditions contained in each of the 2024 Variances as failing to represent the "highest attainable condition," as required by 40 C.F.R. § 131.14(b)(1)(ii), arguing that the conditions are not attainable either immediately or within the 2024 Variances' five-year term. On October 28, 2024, the Authority also filed also a civil action in the Massachusetts Superior Court, on similar grounds. These matters remain pending before the MassDEP OADR and Superior Court, respectively.

Notwithstanding these appeals, the Authority is proceeding with its prescribed deliverables and requirements in the 2024 Variances. For example, the Authority, Cambridge, and Somerville have each begun preparing their respective updated CSO control plans, which are due in draft and final forms by

December 31, 2025, and January 31, 2027, respectively. It is noteworthy that the updated CSO control plans will be forward-looking to a new 2050 typical year that takes into consideration climate change, including larger, more intense rain events. Required elements of the updated CSO control plans include: description of existing level of CSO control; evaluation of the costs and water quality benefits of further CSO control alternatives, up to and including elimination of CSO discharges; consideration of the use of Green Infrastructure technologies; a public participation plan, including opportunities to provide comments on the CSO abatement alternatives and recommendations and robust public outreach to Environmental Justice communities that abut the Variance Waters; and an affordability analysis consistent with EPA's February 2023 Clean Water Act Financial Capability Assessment Guidance. Ultimately, during the period between January 31, 2027, and August 31, 2029, MassDEP, in coordination with EPA, will review the final updated CSO control plans, review and consider public comments on the Plan(s), confer with the Massachusetts Environmental Policy Act ("MEPA") office on compliance with the MEPA regulations, and take action to approve or disapprove the plans.<sup>19</sup>

C. Authority's Conclusions and Ongoing Discussions

Implementation of the LTCP has been a tremendous success, and the vast majority of the outfalls are now meeting the goals. Some, however, continue to

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<sup>19</sup> Outside of the requirements related to CSO control planning, the 2024 Variances also contain a suite of additional obligations, including items such as: (a) receiving water quality monitoring; (b) submission of an annual CSO discharge report; (c) public notification of CSO discharges and impacts; and (d) other actions to minimize CSO discharges (*i.e.*, the "Nine Minimum Controls" and "Pollutant Minimization Program").

be challenging. Other than the ongoing project to improve performance at SOM007A/MWR205A and MWR205 and potential weir work associated with CAM005, no further work to meet the LTCP goals is recommended at this time for the Eight Remaining Outfalls that fell short of the levels of control predicted (nearly twenty years ago) that would result from completion of the LTCP projects. As set forth above, SOM007A/MWR205A and MWR205 are expected to materially meet their LTCP goals by December 2025. BOS003 is predicted to have no discharges in the Typical Year by 2030, when the full scope of BWSC's Phase 4 sewer separation work is expected to be completed. The remaining outfalls - SOM001A, MWR201, CAM005, MWR018, MWR019, and MWR020 - are among the Variance Waters outfalls that are the subject of required updated CSO control plans under development pursuant to the 2024 Variances. As explained in the Supplemental Report, the duration for implementation of acceptable alternatives (including planning, design, and construction) would likely extend beyond the time period for approval of the updated CSO control plans in 2029, and implementation of such alternatives now could potentially limit options that may be identified as part of the updated plans.

The Authority remains committed to amicably resolving differing views as to what happens next with respect to this action, the NPDES Permit and the Variances. To this end, over the last several months, the Authority, EPA and MassDEP have engaged in discussions to see if there is potential for an amicable resolution of the matters before this Court, issues in the 2024 Variances, and issues in the 2023 Draft Permit. As with the discussions among the parties in

2021 regarding the final milestones in Schedule Seven, if the Authority, EPA and MassDEP are able to make sufficient progress, the Authority intends to involve CLF in the discussions. The Authority understands that CLF and EPA intend to meet separately. The Authority will provide a status report to the Court regarding the progress of the ongoing discussions within ninety days.

VII. Conclusion

The Authority has worked, and continues to work, diligently to mitigate the impacts of the legacy infrastructure it inherited, mindful of its responsibility to continue to improve and maintain that infrastructure while serving as steward of ratepayer resources. With support from, and in collaboration with, EPA and MassDEP, as well as CSO communities and watershed advocacy groups, the Authority has made significant improvements to the capacity and reliability of the systems that transport and treat wastewater. The Authority completed all 35 projects required under the LTCP, as well as completed or funded the completion of several additional CSO control projects. The improvements have dramatically transformed the conditions of Boston Harbor, its tributary rivers, and area beaches.

The Authority continues CSO control efforts with its work under the 2024 Variances, including preparing a draft updated CSO control plan for its outfalls in coordination with Cambridge and Somerville as they prepare control plans for their outfalls that discharge to the Variance Waters. While the predictions for what could be achieved through the completion of the projects required in the

LTCP - made nearly 20 years ago - proved to be incorrect for six out of 86 outfalls, this should not detract from the unquestionable success of the Authority's LTCP and the extraordinary efforts of the Authority and the CSO communities. The Authority looks forward to further discussions with the parties in an effort to find a path forward.

Finally, the Authority would be remiss if it did not note the passing of long-time CLF attorney Peter Shelley. Mr. Shelley was a tireless advocate for the cleanup of Boston Harbor. In his March 18, 2016, correspondence to the Court, Mr. Shelley aptly noted the achievements of the cleanup, including “a clean and thriving harbor; a new federal park featuring Boston harbor; an unforeseeable explosion of public and private investments along the harbor and in the City’s future; clean beaches that residents and visitors to Boston can use with confidence; and so many more wonderful outcomes.” March 18, 2016 Correspondence (ECF 1831). Mr. Shelley played a meaningful role in the success of this action that ultimately led to one of the greatest environmental achievements in a generation. The Authority appreciates Mr. Shelley’s advocacy and commitment.

Respectfully submitted,

MASSACHUSETTS WATER RESOURCES  
AUTHORITY

By its attorney,

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December 27, 2024

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CERTIFICATE OF SERVICE

I hereby certify that a true and accurate copy of this document, which was filed via the Court's ECF system, will be sent electronically by the ECF system to the registered participants as identified on the Notice of Electronic

Filing (NEF) and electronic copies will be sent to those indicated as non-registered participants (excluding Christopher Little of Pierce Atwood, who has retired from the practice of law, Lawrence Liebesman and Joseph McGovern, who no longer work at the U.S. Department of Justice, and Edward J. DeAngelo, who no longer works at the Attorney General's Office) on December 27, 2024.

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Dated: December 27, 2024