

**FINAL DETERMINATION TO ADOPT A VARIANCE  
FOR COMBINED SEWER OVERFLOW DISCHARGES TO  
LOWER CHARLES RIVER/CHARLES BASIN**

**FACT SHEET**

This document is intended to provide a summary of the activities that have taken place since the Massachusetts Department of Environmental Protection’s (“MassDEP”) original issuance of the Variance for Combined Sewer Overflow (“CSO”) Discharges to the Lower Charles River/Charles Basin (the “Variance”) on October 1, 1998, and to provide a frame of reference for MassDEP’s final decision to adopt a new Variance through August 31, 2024.

**I. Background on CSO Control and Variance**

***Boston Harbor Case***

As part of the Boston Harbor Case (D. Mass. C.A. No. 85-0489-RGS), the Massachusetts Water Resources Authority (“MWRA”) is required to undertake corrective actions through its approved Long-Term CSO Control Plan (the “LTCP”) to reduce or eliminate CSO discharges to the Charles River and other Boston area surface waters affected by CSO discharges. MWRA’s approved LTCP comprises 35 wastewater system improvement projects that would reduce or eliminate CSO discharges at 84 outfalls in the metropolitan Boston area at a capital cost of \$906.7 million. The eight projects in the LTCP that address CSO discharges to the Charles River have a total estimated cost of \$88.8 million.

MWRA originally presented a recommended region-wide LTCP in its *Final CSO Facilities Plan and Environmental Impact Report, July 31, 1997* (the “1997 Facilities Plan/EIR”). The 1997 Facilities Plan/EIR was the result of a several-year CSO planning process, and underwent extensive public, regulatory and Massachusetts Environmental Policy Act (“MEPA”) review as part of the process. Early in the planning process, MWRA characterized the baseline conditions throughout the regional planning area, including the Charles River Basin, through extensive sewer system inspections, flow metering, water quality sampling, sewer system modeling and receiving water quality modeling. In accordance with federal and Massachusetts CSO policies, the 1997 Facilities Plan/EIR evaluated the costs and benefits of a range of CSO control alternatives for the Charles River Basin and recommended several Charles River projects within a preferred regional control plan that addressed cost effectiveness, maximum water quality improvement considering other pollution sources and their impacts, and affordability.

MassDEP and the United States Environmental Protection Agency (“EPA”) reviewed the information in the 1997 Facilities Plan/EIR, and in early 1998 concurred that the recommended plan for the Charles River Basin should move forward without delay. At that time, MassDEP and EPA also decided to defer a final determination on the water quality standard and associated long-term level of CSO control for the Charles River Basin until additional information on CSO and non-CSO pollutant loads and their impacts could be collected and evaluated. Accordingly, MassDEP, based on regulations in effect at the time, and with the support of EPA, issued the Variance for CSO discharges to the Charles River on October 1, 1998.

MassDEP has since extended the Variance several times in part to accommodate many ensuing actions: water quality sampling programs by the Charles River Watershed Association (“CRWA”) and MWRA; the collection and evaluation of water quality data by the United States Geological Survey (“USGS”) in 1999-2002 on the effectiveness of stormwater pollution controls; the implementation of stormwater pollution control measures by municipalities along the Charles River; and the further evaluation of additional CSO controls and water quality benefits. These analyses led MWRA to recommend additional controls and a revised and expanded LTCP for the Lower Charles River Basin in 2005.

In March 2006, MWRA reached agreement with EPA, MassDEP, the Massachusetts Attorney General’s Office (“AGO”), and the United States Department of Justice (“DOJ”) on the revised plan, along with a revised and expanded implementation schedule. The revisions included modified or additional schedule milestones for projects in the Charles River, Alewife Brook, and East Boston portions of the LTCP. The agreement was filed with the Federal District Court as part of a joint motion to amend the court schedule in the Boston Harbor Case (D. Mass. C.A. No. 85-0489). At that time, MassDEP and EPA determined that MWRA’s LTCP would continue to satisfy the requirements for a water quality standards variance for CSO discharges to the Lower Charles River Basin through 2020. As part of this determination, MassDEP and EPA agreed that MassDEP would issue, and EPA would approve, five consecutive extensions of no more than three-year duration each through 2020, when the LTCP would be fully implemented and verification of attainment of the long-term levels of CSO control would be made. The variance extensions would be consistent with, and limited to, the projects in MWRA’s LTCP. On March 14, 2006, EPA approved variances MassDEP submitted to EPA on March 13, 2006, for the CSO discharges to the Alewife Brook/Upper Mystic River and the Lower Charles River Basin. EPA’s action approved triennial reissuance of the variances through the year 2020, subject to conditions specified in EPA’s March 14, 2006 letter. To ensure that those conditions are satisfied, EPA also has reviewed and taken a separate approval action on each triennial reissuance of the variances through 2020. EPA’s most recent approval of the variances for the CSO discharges occurred on April 17, 2019.

In addition, the United States and MWRA agreed to withdraw the February 27, 1987 *Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflows* and replace it with a Second Stipulation that requires MWRA to implement the CSO requirements set forth in the court schedule and to meet the levels of control described in the revised LTCP. In April 2006, the Court allowed the joint motion of the United States and MWRA seeking to revise the compliance schedule to incorporate the proposed changes. MWRA presently has until the year 2020 to meet the last of the CSO requirements set forth in Schedule Seven – a three-year post-construction monitoring and CSO Performance Assessment to verify achievement of the court-mandated long-term levels of CSO control in the approved LTCP, with submission of a related report to EPA and MassDEP by December 2020.

More information about MWRA’s LTCP, including descriptions of the 35 CSO control projects and the benefits for each receiving water segment, is presented in MWRA’s *CSO Annual Progress Report 2015*, March 2016, at: <http://www.mwra.com/annual/csoar/2015/2015csoar-r4.pdf>.

In December 2015, MWRA, with support from its member communities with permitted CSO outfalls, completed construction of the last of the 35 projects in the LTCP, in compliance with the respective project completion milestones in the court schedule. All of the projects are functioning for environmental benefit. MWRA, Boston Water and Sewer Commission (“BWSC”), the City of Cambridge and the Town of Brookline had earlier completed the eight projects in the LTCP that address CSO discharges to the Charles River (see project updates below, under *Revised CSO Control Plan and Implementation Status*). Separately, the City of Cambridge continues to implement its own long-term plans for the separation of combined sewers tributary to MWRA’s North Charles Metropolitan Sewer, North Charles Relief Sewer and Cambridge Branch Sewer, which MWRA predicts will contribute to attainment of the LTCP levels of CSO control for the Charles River.

MWRA, on June 4, 2019, filed a request with the Court to extend the deadline for submittal of the CSO Performance Assessment to December 31, 2021, and also informed the Court that MWRA has requested a five year CSO Variance for the Charles River watershed.

***Level of CSO Control***

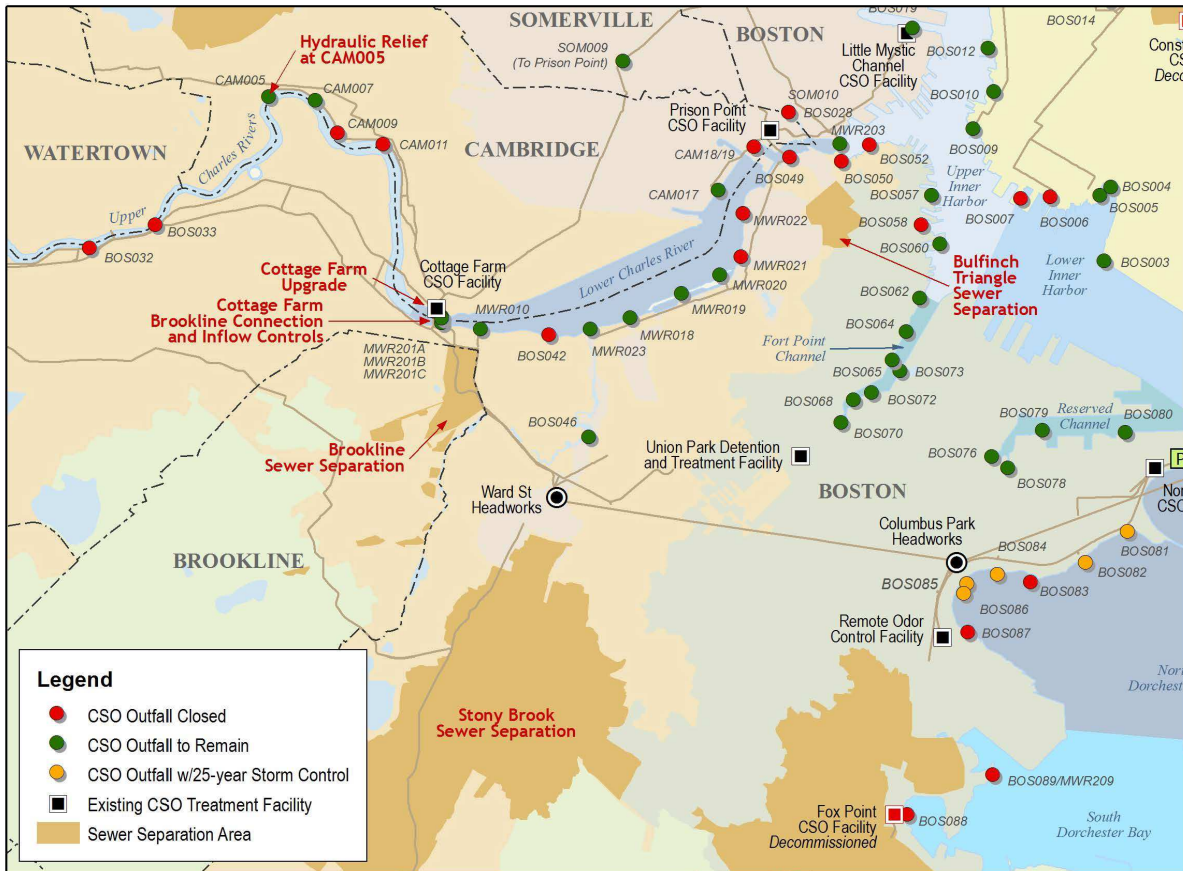
***Revised CSO Control Plan and Implementation Status***

In August 2005, MWRA recommended a revised region-wide LTCP that included a schedule for implementing the revised plan for the Charles River. At that time, MWRA recommended adding a set of optimization measures and targeted sewer separation projects to its plan to increase the level of CSO control at Cottage Farm and at other Charles River outfalls by improving hydraulic conditions and reducing stormwater inflow. These additional projects account for approximately \$40 million of the \$88.8 million MWRA committed for the Charles River CSO plan. The projects were included in the revised LTCP approved by EPA and MassDEP in March 2006 and incorporated into Schedule Seven by the Federal District Court in the Boston Harbor Case (D. Mass. C.A. No. 85-0489) in April 2006. See Table 1 and Figure 1 for project descriptions, locations, costs and schedules.

**Table 1: MWRA Long-Term CSO Control Plan for Charles River**

<b>Project</b>	<b>Purpose</b>	<b>Completed and Operational</b>	<b>Cost (million\$)</b>
Upgrade Cottage Farm CSO Facility	Improve disinfection; add dechlorination	2000	5.7
CAM005 Hydraulic Relief	Increase flow into the MWRA system; reduce CSO	2000	1.1
CSO Outfall Closings	Eliminate CSO discharges at Outfalls BOS028, BOS032, BOS033, BOS042, SOM010, MWR020 and MWR021	2000	<1
Stony Brook Sewer Separation	Remove stormwater from BWSC sewer system; reduce CSO to Stony Brook Conduit	2006	44.3
Floatables Controls	Control floatable materials at active outfalls	2007	0.4
Cottage Farm Brookline Connection and Inflow Controls	Reduce CSO overflows into the Cottage Farm Facility	2009	3.6
Bulfinch Triangle Sewer Separation	Remove stormwater from BWSC system; close outfall BOS049	2010	9.1
Brookline Sewer Separation	Remove stormwater from Town of Brookline system; reduce CSO at Cottage Farm Facility	2013	24.7

**Figure 1: Charles River Basin CSO Outfalls and Projects**



The Deer Island Wastewater Treatment Plant conveyance system and treatment upgrades, which MWRA completed in the early 2000s, had an especially pronounced effect in reducing CSO discharges to the Charles River. In the 1990s, MWRA and the CSO communities implemented more than 100 “system optimization plans,” including raising dozens of overflow weirs, which further reduced system-wide CSO discharges, including those to the Charles River. These early improvements, along with the LTCP, are predicted to reduce treated CSO discharges at the Cottage Farm facility to 2 activations and 6.3 million gallons in a typical year, compared to the 1997 plan goals of 7 activations and 23 million gallons. Most of the additional benefit comes from optimization improvements recommended in the 2004 Cottage Farm report that have increased in-system storage and directed more wet weather flow to MWRA’s Ward Street Headworks for transport to the Deer Island Wastewater Treatment Plant, thereby reducing overflows into the Cottage Farm facility. The targeted sewer separation work in Brookline and in the Bulfinch Triangle area of Boston are predicted to lower wet weather flows to the conveyance system, thereby offsetting the hydraulic impacts of projects that increase in-system storage and/or direct more flow to the Headworks. Upon completion of the Bulfinch Triangle sewer separation project, the BWSC closed its last CSO outfall (BOS049) to the Lower Charles and thus they are no longer included as a permittee in the proposed new Variance.

Separately, and at significant additional cost, the City of Cambridge continues to implement its long-term plans for the separation of combined sewers tributary to MWRA’s

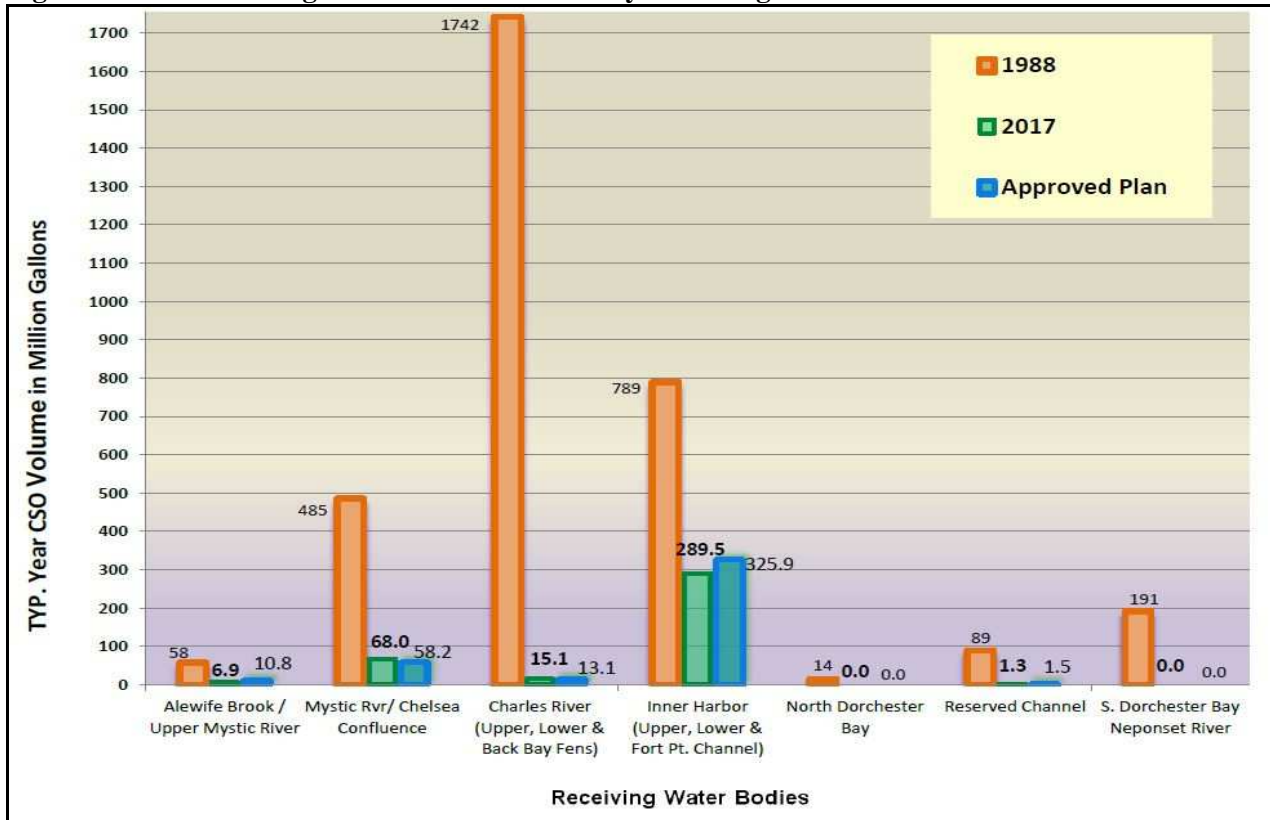
North Charles Metropolitan Sewer, North Charles Relief Sewer and Cambridge Branch Sewer. Ongoing and planned work to separate sewers in the Harvard Square, Western Avenue, Cambridgeport and Binney Street areas is expected to reduce CSO discharges at MWRA's Cottage Farm CSO treatment facility and at untreated CSO outfalls CAM005, CAM007 and CAM017. Though MWRA's LTCP does not require the closure of CAM009 and CAM011, Cambridge temporarily closed them in 2007 and continues to monitor system performance to determine whether these outfalls can remain closed in the long term.

### ***Achieved and Anticipated CSO Reductions in the Charles River Basin***

With completion of the LTCP projects and the earlier major improvements to the Deer Island Wastewater Treatment Plant conveyance and treatment systems, MWRA has reduced Typical Year<sup>1</sup> CSO discharge volume to the Charles River (including Back Bay Fens) by 99 percent, from 1.74 billion gallons in 1988 to 15.10 million gallons today (see Figure 2 and Table 2). Of the current Typical Year discharge volume, 10.62 million gallons is treated at the Cottage Farm CSO facility. With the completion of ongoing sewer separation projects by the City of Cambridge, MWRA predicts that Typical Year CSO discharge volume to the Charles River will be reduced to approximately 7.76 million gallons, and 81.2 percent of this remaining volume will be treated at the Cottage Farm CSO facility.

The predictions of MWRA's hydraulic model updated for end-of-year 2017 conditions show that Typical Year CSO activation frequency in the Charles River watershed has been reduced from up to 40 events in the early 1990s to only 3 events today at the Cottage Farm facility and up to 3 events at remaining untreated outfalls.

**Figure 2: CSO Discharge Reduction 1988-2015 by Receiving Water**



**Table 2: Typical Year CSO Discharge Frequency and Volume to the Charles River 1988-2015**

Outfall	Baseline Conditions (1988)		Current Conditions <sup>(1)</sup>		Long-Term Control Plan <sup>(2)</sup>	
	Activations	Volume (MG)	Activations	Volume (MG)	Activations	Volume (MG)
BOS032	4	3.17	Eliminated	N/A	Eliminated	N/A
BOS033	7	0.26	Eliminated	N/A	Eliminated	N/A
CAM005	6	9.17	3	1.36	3	0.84
CAM007	1	0.81	2	0.26	1	0.03
CAM009	19	0.19	Closed <sup>(3)</sup>	N/A	2	0.01
CAM011	1	0.07	Closed <sup>(3)</sup>	N/A	0	0.0
BOS028	4	0.02	Eliminated	N/A	Eliminated	N/A
BOS042	0	0.00	Eliminated	N/A	Eliminated	N/A
BOS049	1	0.01	Eliminated	N/A	Eliminated	N/A
CAM017	6	4.72	1	1.27	1	0.45
MWR010	16	0.08	0	0.00	0	0.0
MWR018	2	3.18	0	0.00	0	0.0
MWR019	2	1.32	0	0.00	0	0.0
MWR020	2	0.64	0	0.00	0	0.0

MWR021	2	0.5	Eliminated	N/A	Eliminated	N/A
MWR022	2	0.43	Eliminated	N/A	Eliminated	N/A
MWR201 <sup>(4)</sup>	18+	1,547	3	10.62	2	6.3
MWR023	39	115	1	0.02	2	0.13
SOM010	18	3.38	Eliminated	N/A	Eliminated	N/A
Subtotal Charles Basin		1,690		13.53		7.76
BOS046 (Back Bay Fens)		52	1	1.57	2	5.38
TOTAL		1,742		15.10		13.14

- <sup>(1)</sup> From MWRA modeling of 2017 year-end system conditions in a Typical Year. Includes the benefits of major improvements to Deer Island transport and treatment systems, implementation of system optimization measures (SOPs) recommended by MWRA in 1993 and 1994, and the CSO control projects in the approved LTCP.
- <sup>(2)</sup> These are the required levels of control. Higher levels of control may be achieved (see, for instance, Outfall BOS046 Back Bay Fens current and Long Term Control Plan discharge levels). The LTCP levels of control on the Charles River Basin anticipate completion of ongoing sewer separation work (independent of MWRA's LTCP) by the City of Cambridge. These projects are a part of the City's long term capital improvements program, are contingent on funding and other factors, and thus are not on the schedule of MWRA's LTCP.
- <sup>(3)</sup> Pending ongoing hydraulic performance evaluation by the City of Cambridge.
- <sup>(4)</sup> MWR201 is the (treated) effluent discharge for the Cottage Farm CSO Facility. Flows are screened, disinfected and dechlorinated prior to discharge. Actual, measured Cottage Farm activations in 2017 was 2, with total discharge volume of 24.60 MG, of which 21.61 million gallons was discharged during the large storm on October 30, 2017.
- <sup>(5)</sup> Back Bay Fens and CSO discharges at Outfall BOS046 is not subject to the variance for the Lower Charles River/Charles Basin. While Back Bay Fens is within the Charles River Watershed, its Water Quality Standards classification is B(cso), which limits CSO discharges at BOS046 to the LTCP level of control.

### ***Other Priorities to Ensure Continued Progress***

Further water quality improvements in the Charles River watershed will also rely on municipal efforts to locate and remove illegal wastewater discharges to storm drains, implement stormwater Best Management Practices, and address other stormwater impacts as they contribute to wet weather issues affecting these watersheds. MassDEP recognizes that progress is continuing to be made by the communities in these areas.

MassDEP also acknowledges the importance of proper operation, maintenance and rehabilitation of MWRA and community sewer and stormwater systems to assure optimized conditions for conveying wastewater flows through the system for treatment at Deer Island and improving stormwater quality. Sewer system repairs and cleaning, as well as optimized operation of the sewer system and facilities during wet weather, have resulted in improved conveyance capacities in a number of locations, removal of localized system flow constraints, and maximum use of in-system storage, all contributing to CSO reduction. Lastly, effective infiltration/inflow removal programs being implemented by MWRA and all of the member communities will be important to achieve and sustain CSO control benefits.

## **II. Water Quality Monitoring in the Charles River**

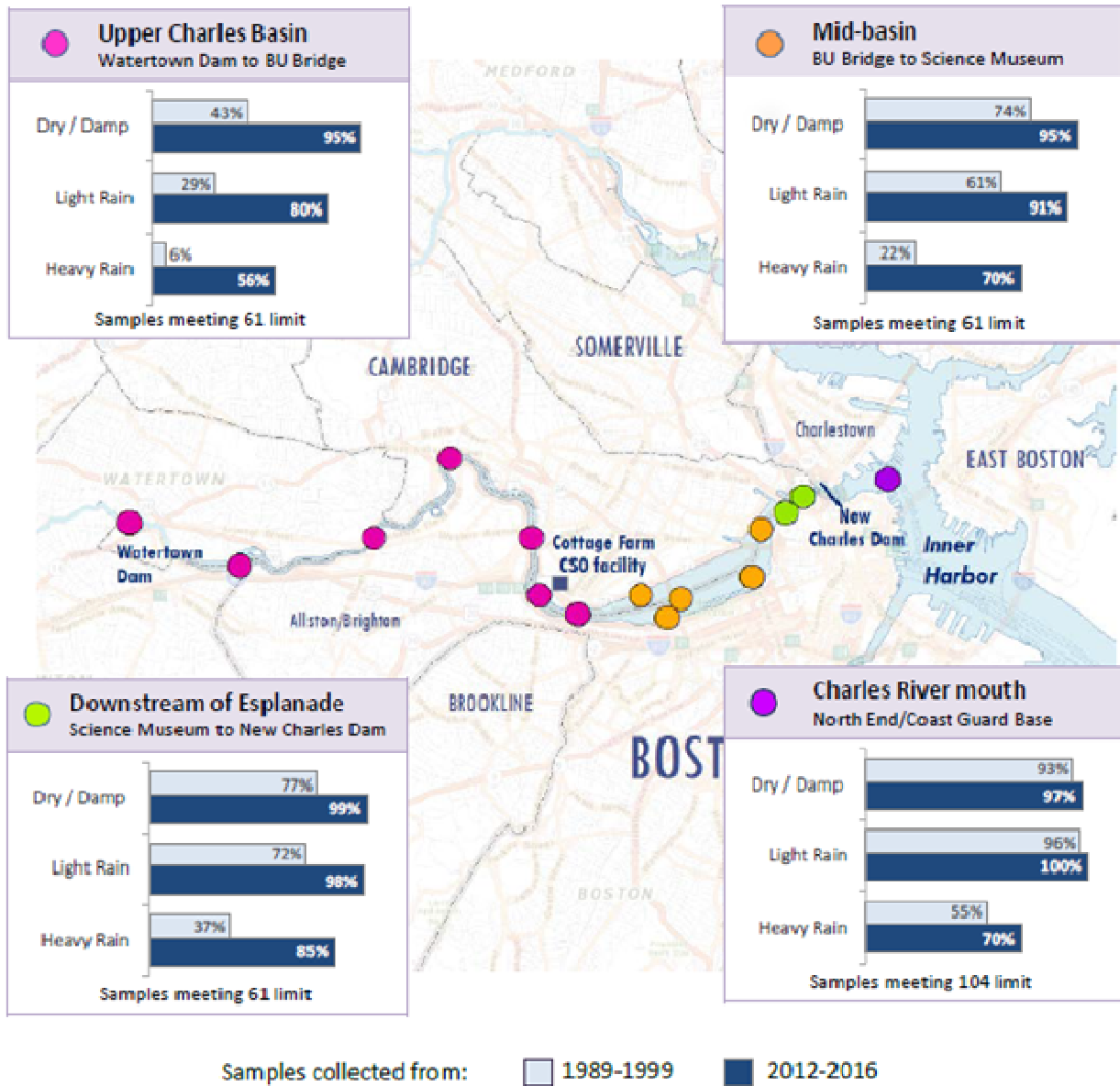
MWRA has been monitoring water quality continuously in the Charles River since 1989. Studies include measurements of sewage indicator bacteria and nutrients, along with physical measures like dissolved oxygen, Secchi depth and pH. MWRA has submitted reports on the results annually during the full timeframe of the variance. The reports (e.g. Wu D, Goodwin C., 2018. *Summary of CSO Receiving Water Quality Monitoring in Upper Mystic River/Alewife Brook and Charles River, 2017*. Boston: Massachusetts Water Resources Authority. Report 2018-03. 94 p. plus appendices.) are available at: <http://www.mwra.state.ma.us/harbor/enquad/trlist.html>.

Water quality in the Lower Charles River Basin has improved tremendously over the last 25 years, in part due to significant reductions in CSO discharges at the Cottage Farm facility and several other outfalls. Greatly improved pumping capacity at the Deer Island Wastewater Treatment Plant, system optimization, improved sewer system operation and maintenance, and the implementation of projects under the LTCP have all contributed to the CSO discharge reductions. Urban stormwater pollution controls implemented by communities along the Charles River have also contributed to improved water quality. As shown in Figure 3, there has been noticeable improvement in the level of *Enterococcus* bacteria in the Charles River since MWRA began implementation of the LTCP. Average bacteria counts during heavy rain, when the river is affected by contaminated stormwater and CSOs, have decreased substantially.



**Figure 3: Change in Lower Charles River Water Quality**

Graphs show the percent of samples meeting the *Enterococcus* bacteria limit for swimming, by river reach and weather condition.



Dots are MWRA sampling locations. State swimming standards for *Enterococcus* single sample limits are 104 cfu/100 mL for marine waters, and 61 cfu/100 mL in freshwater. Rainfall: Heavy Rain is at least 0.5 inches of rain in previous 48 hours; Light Rain is between 0.1 and 0.5 inches of rainfall in previous 48 hours. 2012 – 2016 period is considered current conditions, following substantial completion of infrastructure improvements. Data from intervening years (2000 – 2011) are excluded.

### **III. Variance History**

In October 1998, MassDEP issued, and EPA subsequently approved, the Variance to water quality standards for CSO discharges to the Lower Charles River/Charles Basin for a variance term of 24 months. The Variance, along with several subsequent extensions of it, allowed limited CSO discharges from outfalls along the Charles River permitted to MWRA, BWSC and the City of Cambridge, subject to specific conditions, while providing time for MassDEP to collect information necessary to determine the appropriate long-term water quality standard and related level of CSO control.

With the Variance, MassDEP approved MWRA's 1997 LTCP for the Lower Charles River, Charles Basin and required MWRA to implement the LTCP, evaluate the potential for infiltration/inflow (I/I) removal to increase CSO control and benefits, and conduct additional water quality investigations to assess pollutant loadings to these waters. With the new information collected during the variance period, MWRA was required to report on whether certain CSO control measures beyond the LTCP recommendations might be cost effective, most notably alternatives for providing additional storage capacity at MWRA's Cottage Farm CSO treatment facility.

MassDEP issued 1-year extensions of the Variance in 2000, 2001, 2002 and 2003. An early condition of the Variance required MWRA to prepare and submit the Cottage Farm CSO Facility Assessment Report (the "Cottage Farm Report" or "Report"). MWRA submitted the Report in January 2004, and it underwent a lengthy public review and comment period extending to May 2004. The Cottage Farm report concluded that the CSO facility provides significant treatment in compliance with MWRA's NPDES permit, and that additional storage at the facility would carry great cost and have an adverse impact to the recreational facilities at Magazine Park, with limited water quality benefit for the Charles River. In the Report, MWRA instead recommended specific system optimization measures to maximize the conveyance of wet weather flows to the Deer Island Wastewater Treatment Plant, minimize overflows into the Cottage Farm facility, and maximize the benefit of the facility's existing storage basins. The report also demonstrated the value of additional sewer separation work (i.e., removal of stormwater inflow from the combined sewer system) in the City of Cambridge and the Town of Brookline to reduce CSO discharges to the Charles River.

After reviewing the Cottage Farm Report and related public comments, MassDEP issued a three-year extension of the Variance, to October 1, 2007. Later, MassDEP separately issued additional three-year Variance extensions, in 2007, 2010, 2013, and 2016. This succession of variances were approved by EPA on March 14, 2006. EPA's approval in 2006 included the triennial reissuance of the variance through the year 2020, subject to conditions specified in EPA's March 14, 2006 letter. MassDEP has reissued, and EPA has approved, the variance every three years, re-affirming during each re-evaluation that the conditions on which its 2006 approval were based remain in effect. Each of these variance extension determinations was also made with information MassDEP collected from MWRA, CRWA, and the public regarding the status of MWRA's LTCP implementation efforts and updated water quality conditions.

Conditions in the current variance that expires on August 31, 2019 require MWRA and the City of Cambridge to implement all elements of the recommended CSO control plan for the

Charles River. The variance also requires MWRA and Cambridge to continue to implement the CSO Nine Minimum Controls, monitor CSO discharges, report annually on the frequency and volume of CSO discharges to the Charles River, and respond to any MassDEP comments or questions related to system conditions and CSO control. The current variance also requires MWRA to continue to conduct Charles River water quality monitoring, to work with MassDEP and MWRA member communities to minimize the impacts of I/I flows and identify opportunities for I/I removal that may further reduce CSO discharges, and to assist member communities in evaluating the CSO benefits associated with I/I removal or other sewer system improvements.

Water quality data collection and water quality characterization by the CRWA, MWRA, and others has continued, and the implementation, including construction and operational start-up, of MWRA's 35 LTCP projects is now complete. Over the past three decades, MWRA has achieved more than 180 discrete federal court schedule milestones related to CSO control. One schedule milestone remains: completion of post-construction monitoring and CSO Performance Assessment and submission of a related report verifying attainment of the long-term levels of control in MWRA's approved LTCP that was to have been completed by December 2020. As noted above, MWRA has recently requested additional time to complete the CSO Assessment Report.

#### **IV. Request for New CSO Variance**

As part of the agreement on the LTCP reached in March 2006 among EPA, MassDEP, the Massachusetts Attorney General's Office, the United States Department of Justice and MWRA, MWRA requested that the Variance for the Charles River Basin be reissued through 2020 when MWRA must complete the region-wide LTCP and subsequent monitoring to verify that the long-term CSO control goals are achieved. MWRA based this request on the work that was then completed to achieve a high level of CSO control at certain outfalls, the expectation for significant CSO control and water quality improvement with the remaining CSO projects in the Charles River CSO control plan, and the desire to provide a level of financial certainty and stability for its ratepayers.

During this time, MassDEP and EPA determined that MWRA's LTCP satisfied the requirements in effect at that time for a variance from water quality standards for CSO discharges to the Charles River Basin through 2020. As part of this determination, MassDEP and EPA agreed that MassDEP would issue and EPA would approve five consecutive extensions on no more than a three-year duration each through 2020, which would be consistent with and limited to the requirements in MWRA's LTCP.

On May 14, 2019, MWRA submitted a written request to MassDEP for a CSO Variance in the Charles River Basin for five years to August 31, 2024. MWRA has indicated that such time is needed to complete the CSO Assessment work, which includes both quantification of CSO activations and volumes, and associated water quality assessment of the receiving water impacts of the remaining CSO discharges. The additional time is also needed for MWRA and the city of Cambridge to complete updated CSO control plans and affordability analyses upon which MassDEP will be able to base the receiving water quality standards determinations.

Finally, MassDEP will also use this time to determine what additional reductions in CSO events can be attained beyond 2024, if any, and evaluate whether a future water quality standard variance or change to the designated use may be warranted for these waters.

## **V. Regulatory Requirements**

EPA regulations at 40 CFR 131.14, adopted in 2015, and MassDEP regulations at 314 CMR 4.03(4), establish the currently applicable regulatory requirements for issuing water quality standards variances. Use of variances for CSO discharges is also discussed in detail in MassDEP's *Guidance for Abatement of Pollution from CSO Discharges* (August 11, 1997), and EPA's *Guidance: Coordinating CSO Long-Term Planning with Water Quality Standards Reviews* (July 31, 2001).

### ***Substantial and Widespread Social and Economic Impact***

Water Quality Standard (WQS) Variances must be supported by at least one of six factors common to both EPA and MassDEP regulations. The following is included as one of these factors, in both 40 CFR 131.10(g)(6) and 314 CMR 4.03(4)(f):

*“Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.”*

On May 24, 2019, MWRA submitted an economic analysis to MassDEP, documenting an estimated cost of \$18.6 billion to completely eliminate CSO discharges. Based on the information provided by MWRA, MassDEP has determined that proceeding at this time with controls necessary to eliminate CSO discharges would result in substantial and widespread social and economic impact per 40 CFR 131.14(g)(6) and 131.10(g)(6) and MassDEP regulations at 314 CMR 4.03(4)(f). The determination to issue a CSO Variance is further supported by EPA's 1994 *Combined Sewer Overflow (CSO) Control Policy*:

*“A water quality standard variance may be appropriate in limited circumstances on CSO-impacted waters where the State is uncertain as to whether a standard can be attained and time is needed for the State to conduct additional analyses on the attainability of the standard.”*

Accordingly, MassDEP has determined that a new CSO Variance is appropriate at this time. Issuance of this proposed Variance in the Lower Charles River/Charles Basin watershed is consistent with both MassDEP's and EPA's WQS variance regulations noted above, which allow for subsequent variances provided that all conditions of EPA's variance regulations at 40 CFR 131.14 are met.

MassDEP also notes that the requirements in the proposed CSO Variance specifically include developing updated CSO control plans, which encompass an assessment of a full range of higher levels of CSO control, as well as a rigorous financial capability analysis, both of which will be central to regulatory determinations on a final water quality standard.

### ***Highest Attainable Condition***

Federal regulations at 40 CFR 131.14(b)(1)(ii) also establish that the requirements applicable over the term of a variance must represent the “highest attainable condition” of the waterbody segment. For discharger(s)-specific WQS variances, 40 CFR 131.14(b)(1)(ii)(A) provides that the “highest attainable condition” must be quantified as one of the following:

- (1) *The highest attainable interim criterion; or*
- (2) *The interim effluent condition that reflects the greatest pollutant reduction achievable; or*
- (3) *If no additional feasible pollutant control technology can be identified, the interim criterion or interim effluent condition that reflects the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the State adopts the WQS variance, and the adoption and implementation of a Pollutant Minimization Program.*

For this proposed Variance, MassDEP has incorporated conditions in the Variance which require not only implementation of the Nine Minimum Controls, but also additional system optimization measures which collectively will further minimize CSO discharges and their water quality impacts. MassDEP has conducted a review of the past CSO facilities planning documents by the CSO Variance permittees, and concluded that there are no further CSO abatement projects which could be feasibly designed and implemented in the CSO Variance timeframe. Thus, the Variance requirements, including those projects identified in Exhibit A to the Variance Determination, represent the highest interim attainable condition which can be achieved during the course of the CSO Variance. The Variance requirement for development of updated CSO control plans will facilitate a determination on the affordability and feasibility of higher levels of CSO controls, at the end of the Variance term.

### ***2019 Variance Conditions***

In developing the 2019 draft Variance conditions MassDEP has carried forward many tasks from past Variances, and has added many additional requirements MassDEP considers vital steps to further minimize CSO discharges, to gather information needed to understand CSO water quality impacts and to render water quality standards determinations at the close of the Variance period. In addition, some of the tasks carried forward from past iterations of the Variance have been strengthened, so that the collection of Variance requirements achieves the highest attainable conditions to control CSO discharges and improve water quality in the Charles River watershed. Draft Variance conditions include:

- A Pollution Minimization Program which includes continued implementation of the Nine Minimum Controls and implementation of a number of additional system optimization projects intended to further reduce CSO discharges;
- An expanded CSO/receiving water quality monitoring program;
- Progress Reports and public meetings for the ongoing MWRA CSO Performance Assessment;

- A requirement for MWRA to develop and calibrate a receiving water quality model, and use such model to present information on the water quality impacts of CSO and non-CSO discharges in the Charles River Basin;
- A requirement for MWRA and the City of Cambridge to establish a subscriber-based CSO notification program, and to maintain CSO data on their respective websites; and
- A requirement for MWRA and the City of Cambridge to provide a scope of work and schedule for developing an updated CSO Control Plan, along with updated affordability analyses, which will be needed to determine if higher levels of control are feasible.