



COMPLETED CSO CONTROL PROJECTS AS OF DECEMBER 31, 2009

1. SOMERVILLE BAFFLE MANHOLE SEPARATION		
	<p>Receiving Water: Alewife Brook, Upper Mystic River</p> <p>Completed: 1996</p> <p>Capital Cost: \$400,000</p> <p>Description: Separated common manholes connecting local sewer and storm drain systems. City of Somerville performed design and construction with MWRA financial assistance.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Eliminated CSO discharges at three City of Somerville outfalls.</p> <p>CSO Outfalls: SOM001, SOM006, SOM007</p> <p>Frequency of Discharge (typical year): Before project: 2 With project: Eliminated</p> <p>Annual Discharge Volume (typical year): Before project: 0.04 million gallons With project: Eliminated</p> <p>CSO Reduction by Volume: 100%</p>
2. CONSTITUTION BEACH SEWER SEPARATION		
 <p style="font-size: small; margin-top: 5px;">MWRA decommissioned its Constitution Beach CSO Facility after CSO flows were eliminated by BWSC sewer separation.</p>	<p>Receiving Water: Boston Harbor/Constitution Beach</p> <p>Completed: 2000</p> <p>Capital Cost: \$3,768,888</p> <p>Description: Installed approximately 14,000 linear feet of storm drain to separate the combined sewer system, removed stormwater flows from area sewers, and eliminated CSO discharges to Constitution Beach, allowing MWRA to decommission the Constitution Beach CSO treatment facility. BWSC performed design and construction with MWRA financial assistance.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Eliminated CSO discharges to Constitution Beach to comply with Class B water quality standards.</p> <p>CSO Outfalls: MWR207(BOS002)</p> <p>Frequency of Discharge (typical year): Before project: 16 treated With project: Eliminated</p> <p>Annual Discharge Volume (typical year): Before project: 1.35 million gallons With project: Eliminated</p> <p>CSO Reduction by Volume: 100%</p>

Completed CSO Projects (continued)

**3. HYDRAULIC RELIEF AT OUTFALL CAM005
 4. HYDRAULIC RELIEF AT OUTFALL BOS017**



Receiving Water:
 CAM005: Upper Charles River Basin
 BOS017: Mystic R./Chelsea Creek Confluence

Completed:
 2000

Capital Cost:
 \$2,294,549

Description:
 CAM005: In Cambridge, the 40-foot long, 24-inch diameter dry weather connection between the CAM005 regulator and MWRA's North Charles Metropolitan Sewer was relieved with a 54-inch additional connection.

BOS017: In Charlestown, 190 feet of 36-inch diameter pipe were installed in Sullivan Square to divert two local (BWSC) combined sewers to a direct connection with MWRA's Cambridge Branch Sewer. In addition, a 10-foot long restriction between the Charlestown and Cambridge Branch Sewers, adjacent to Sullivan Square, was eliminated.

CSO Control

Water Quality Benefit:
 Minimized CSO discharges to meet B(cso) water quality standards (>95% compliance with Class B).

CSO Outfalls:
 CAM005, BOS017

CAM005:

Frequency of Discharge (typical year):
 Before project: 11
 With project: 3

Annual Discharge Volume (typical year):
 Before project: 3.8 million gallons
 With project: 0.84 million gallons

CSO Reduction by Volume: 78 %

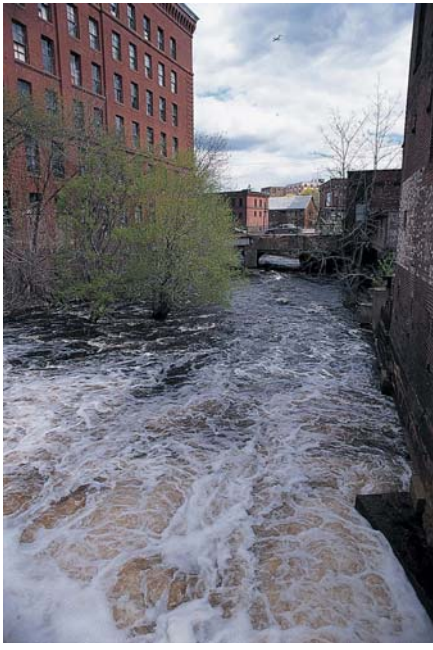
BOS017:


Frequency of Discharge (typical year):
 Before project: 18
 With project: 1

Annual Discharge Volume (typical year):
 Before project: 2.5 million gallons
 With project: 0.02 million gallons



CSO Reduction by Volume: 99 %

Completed CSO Projects (continued)

5. NEPONSET RIVER SEWER SEPARATION		
	<p>Receiving Water: Neponset River</p> <p>Completed: 2000</p> <p>Capital Cost: \$2,444,394</p> <p>Description: Installed approximately 8,000 linear feet of storm drain to separate the combined sewer system, removed stormwater flows from area sewers, and closed CSO regulators, eliminating CSO discharges at the two remaining CSO outfalls to the Neponset River. BWSC performed design and construction with MWRA financial assistance.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Eliminated CSO discharges to Neponset River to comply with Class B water quality standards and protect South Dorchester Bay beaches (Tenean Beach).</p> <p>CSO Outfalls: BOS093, BOS095</p> <p>Frequency of Discharge (typical year): Before project: 17 With project: Eliminated</p> <p>Annual Discharge Volume (typical year): Before project: 5.8 million gallons With project: Eliminated</p> <p>CSO Reduction by Volume: 100%</p>

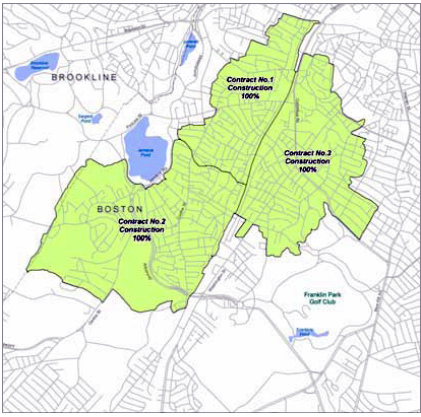
6. CHELSEA TRUNK SEWER REPLACEMENT 7. CHELSEA BRANCH SEWER RELIEF 8. CHE008 OUTFALL REPAIRS		
	<p>Receiving Water: Mystic River/Chelsea Creek Confluence Chelsea Creek</p> <p>Completed: 2000-2001</p> <p>Capital Cost: \$29,779,319</p> <p>Description: Replaced 18-inch diameter city-owned trunk sewer with 30-inch pipe, relieved MWRA's Chelsea Branch and Revere Extension Sewers with 48-inch to 66-inch diameter pipe, rehabilitated Outfall CHE008, and installed underflow baffles for floatables control at all outfalls.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Minimized CSO discharges to meet B(cso) water quality standards (>95% compliance with Class B).</p> <p>CSO Outfalls: CHE002, CHE003, CHE004, CHE008</p> <p>Frequency of Discharge (typical year): Before project: 8 With project: 4</p> <p>Annual Discharge Volume (typical year): Before project: 9.0 million gallons With project: 0.58 million gallons</p>

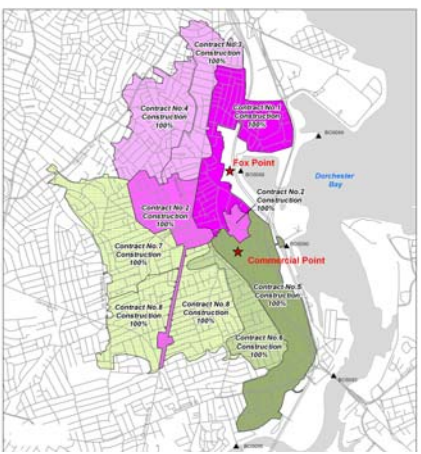
Completed CSO Projects (continued)

<p>9. UPGRADE COTTAGE FARM CSO FACILITY 10. UPGRADE PRISON POINT CSO FACILITY 11. UPGRADE SOMERVILLE MARGINAL CSO FACILITY 12. UPGRADE FOX POINT CSO FACILITY 13. UPGRADE COMMERCIAL POINT CSO FACILITY</p>		
	<p>Receiving Water: Lower Charles River Basin Upper Inner Harbor Upper Mystic River Mystic River/Chelsea Creek Confluence South Dorchester Bay</p> <p>Completed: 2001</p> <p>Capital Cost: \$22,261,200</p> <p>Description: Upgraded chlorine disinfection systems, added dechlorination systems, process control and safety improvements.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Upgrade treatment to meet Class B water quality criteria, including residual chlorine limits.</p> <p>CSO Outfalls: MWR201 MWR203 MWR205, MWR205A(SOM007A) MWR209(BOS088/BOS089) MWR211(BOS090)</p> <p>These projects improved treatment performance, but did not affect treated discharges frequency or volume.</p>
<p>14. PLEASURE BAY STORM DRAIN IMPROVEMENTS</p>		
	<p>Receiving Water: North Dorchester Bay</p> <p>Completed: 2006</p> <p>Capital Cost: \$3,200,000</p> <p>Description (cont): Stormwater piping and appurtenances to relocate stormwater dischargers from Pleasure Bay to Reserved Channel.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Eliminated storm water discharges to Pleasure Bay Beach.</p>


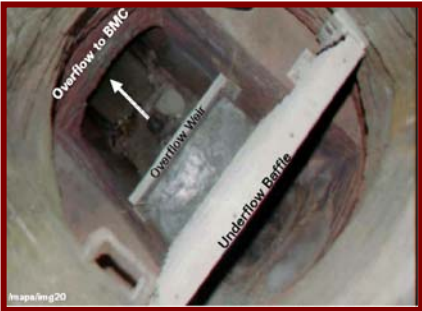
Massachusetts Water Resources Authority
 Combined Sewer Overflow Control Plan
 Annual Progress Report 2009

Completed CSO Projects (continued)


15. STONY BROOK SEWER SEPARATION		
	<p>Receiving Water: Lower Charles River Basin</p> <p>Completed: 2006</p> <p>Capital Cost: \$44,198,623</p> <p>Description: Installed 74,000 linear feet of new storm drain to remove stormwater runoff from local sewers serving a 609-acre area in Jamaica Plain, Mission Hill and Roxbury, and disconnected an already-separated storm drain system serving an adjacent 548-acre area from the sewer system.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Minimized CSO discharges to meet B(cso) water quality standards (>95% compliance with Class B).</p> <p>CSO Outfalls: MWR023 (Stony Brook Conduit)</p> <p>Frequency of Discharge (typical year): Before project: 22 With project: 2</p> <p>Annual Discharge Volume (typical year): Before project: 44.5 million gallons With project: 0.13 million gallons</p> <p>CSO Reduction by Volume: 99.7 %</p>


16. SOUTH DORCHESTER BAY SEWER SEPARATION		
	<p>Receiving Water: South Dorchester Bay</p> <p>Completed: 2007</p> <p>Capital Cost: \$118,394,583</p> <p>Description: Installed 135,700 linear feet (25.7 miles) of storm drain to remove stormwater runoff from local sewers serving a 1,750-acre area in Dorchester. Closed all CSO regulators, allowing decommissioning of MWRA's Fox Point and Commercial Point CSO facilities.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Eliminated CSO discharges to Savin Hill, Malibu and Tenean beaches, in compliance with Class B water quality standards.</p> <p>CSO Outfalls: MWR209(BOS088/BOS089) MWR211(BOS090)</p> <p>Frequency of Discharge (typical year): Before project: 20 (treated) With project: Eliminated</p> <p>Annual Discharge Volume (typical year): Before project: 30 million gallons With project: Eliminated</p> <p>CSO Reduction by Volume: 100 %</p>

Completed CSO Projects (continued)


17. FORT POINT CHANNEL SEWER SEPARATION		
	<p>Receiving Water: Fort Point Channel</p> <p>Completed: 2007</p> <p>Capital Cost: \$11,866,775</p> <p>Description: Removed stormwater runoff from local and MWRA combined sewers by installing 4,550 feet of new storm drains serving 55 acres in the Fort Point Channel area. Also overflow weirs were raised, at BOS072 & BOS073. At both locations new tide gates were installed, and underflow baffles were constructed for floatables control.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Minimized CSO discharges to meet B(cso) water quality standards (>95% compliance with Class B).</p> <p>CSO Outfalls: BOS072, BOS073</p> <p>Frequency of Discharge (typical year): Before project: 9 With project: 0</p> <p>Annual Discharge Volume (typical year): Before project: 3.0 million gallons With project: 0.0</p> <p>CSO Reduction by Volume: 100 %</p>
18. REGIONWIDE FLOATABLES CONTROL 19. MWRA FLOATABLES CONTROL AND OUTFALL CLOSING PROJECTS		
	<p>Receiving Water: Regional Application</p> <p>Completed: 2007</p> <p>Capital Cost: \$2,469,970</p> <p>Description: Projects involved floatables controls and regulator or outfall closings that are independent of the larger projects.</p> <p>In March 2000, MWRA closed Outfalls MWR021 and MWR022 to CSO discharges.</p>	<p style="text-align: center;">CSO Control</p> <p>Water Quality Benefit: Complied with EPA Policy Nine Minimum Controls requirement to control solid and floatable material. Eliminated CSO discharges at select outfalls.</p> <p>CSO Outfalls: Various outfalls system-wide.</p> <p>The floatables controls did not affect CSO discharge frequency or volume.</p>


Completed CSO Projects (continued)

20. UNION PARK DETENTION/TREATMENT FACILITY		
	<p>Receiving Water: Fort Point Channel</p> <p>Completed: 2007</p> <p>Capital Cost: \$49,583,406</p> <p>Description: Added CSO treatment facility to existing BWSC Union Park Pumping Station with fine screens, chlorine disinfection, dechlorination, and 2 million gallons of detention storage.</p>	CSO Control
	<p>Water Quality Benefit: Provided treatment of Union Park pumping station discharges to Fort Point Channel to meet Class B water quality criteria, including residual chlorine limits, and lowered discharge frequency and volume with on-site detention basins.</p> <p>CSO Outfall: BOS 070</p> <p>Frequency of Discharge (typical year): Before project: 25 (untreated) With project: 17 (treated)</p> <p>Annual Discharge Volume (typical year): Before project: 132.0 million gallons With project: 71.4 million gallons/year</p> <p>CSO Reduction by Volume: 46 %</p>	


21. BOS019 CSO STORAGE CONDUIT		
	<p>Receiving Water: Upper Inner Harbor (Little Mystic Channel)</p> <p>Completed: 2007</p> <p>Capital Cost: \$14,287,800</p> <p>Description: Installed twin-barrel 10'x17'box conduit to provide 670,000 gallons of off-line storage, between Chelsea St. and the Mystic Tobin Bridge, Charlestown. Included above ground dewatering Pump Station.</p>	CSO Control
	<p>Water Quality Benefit: Minimized CSO discharges to meet B(cso) water quality standards (>95% compliance with Class B).</p> <p>CSO Outfalls: BOS019</p> <p>Frequency of Discharge (typical year): Before project: 13 With project: 2</p> <p>Annual Discharge Volume (typical year): Before project: 4.4 million gallons With project: 0.6 million gallons</p> <p>CSO Reduction by Volume: 86 %</p>	

Completed CSO Projects (continued)

22. PRISON POINT CSO FACILITY OPTIMIZATION		
	<p>Receiving Water: Upper Inner Harbor</p> <p>Completed: 2008</p> <p>Capital Cost: \$50,000</p> <p>Description: Minimized treated CSO discharges to the Inner Harbor by optimizing the operation of existing facility gates and pumps to maximize in-system storage and convey more flow to Deer Island</p>	<p>CSO Control</p>
<p>Water Quality Benefit: Reduced treated CSO discharges to Upper Inner Harbor.</p> <p>CSO Outfall: MWR203</p> <p>Frequency of Discharge (typical year): Before project: 30 (treated) With project: 17 (treated)</p> <p>Annual Discharge Volume (typical year): Before project: 335 million gallons With project: 243 million gallons</p> <p>CSO Reduction by Volume: 27 %</p>		

23. COTTAGE FARM BROOKLINE CONNECTION AND INFLOW CONTROLS		
	<p>Receiving Water: Lower Charles River Basin</p> <p>Completed: 2009</p> <p>Capital Cost: \$3,326,823</p> <p>Description: Optimized the combined conveyance capacity of the two MWRA sewers that carry flows across the Charles River by interconnecting overflow chambers outside the Cottage Farm CSO facility; increased this conveyance capacity by bringing into service a parallel, previously unutilized 54-inch diameter sewer (the "Brookline Connection")</p>	<p>CSO Control</p>
<p>Water Quality Benefit: Minimized treated CSO discharges to the Charles River Basin.</p> <p>CSO Outfall: MWR201</p> <p>Frequency of discharges (typical year): Before project: 7 (treated) With project: 7 (treated)</p> <p>Annual Discharge Volume (typical year): Before project: 44.5 million gallons With project: 24 million gallons</p> <p>CSO Reduction by Volume: 46 %</p>		

Completed CSO Projects (continued)

24. MORRISSEY BOULEVARD STORM DRAIN		
	<p>Receiving Water: North Dorchester Bay</p> <p>Completed: 2009</p> <p>Capital Cost: \$36,405,252</p> <p>Description: Installed 2,800 linear feet of 12-foot by 12-foot box conduit for stormwater conveyance, with gated connection to North Dorchester Bay CSO Storage Tunnel at upstream end, new outfall to Savin Hill Cove, and pollution prevention measures.</p>	<p>CSO Control</p>
	<p>Water Quality Benefit: Maximize level of stormwater control along the South Boston beaches by redirecting some stormwater to Savin Hill Cove in large storms.</p>	

