

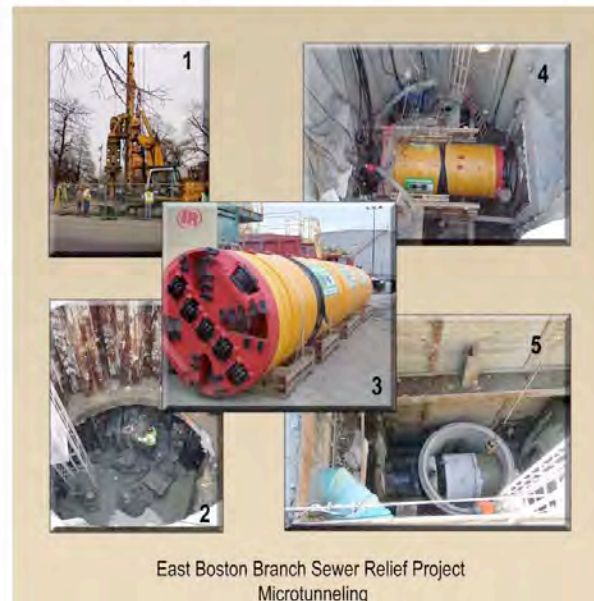


CSO Annual Progress Report 2009

Massachusetts Water Resources Authority



Combined Sewer Overflow Control Plan



Annual Progress Report 2009

March 2010



Presentation Outline

- **CSO Projects**
 - **2009 Highlights and Ongoing Work**

- **System Optimization**

- **Long-Term CSO Control**
 - **Progress Achieving Long-Term Levels of Control and Water Quality Benefits**



Highlights of CSO Progress in 2009

- ✓ MWRA completed 2.1 mile-long 17-ft. diameter CSO Storage Tunnel contract in South Boston.
- ✓ MWRA completed the Cottage Farm Brookline Connection and Inflow Control project.
- ✓ BWSC completed the Morrissey Boulevard Storm Drain project.
- ✓ MWRA, BWSC, and Town of Brookline installed:
 - 12,040 linear feet of new sewer
 - 18,035 linear feet of new storm drain
 - 2,300 linear feet of sewer force main in South Boston
- ✓ MWRA commenced construction of North Dorchester Bay pump station and force main and North Dorchester Bay tunnel ventilation building.
- ✓ Cambridge commenced construction of two of five projects in Alewife Brook Sewer Separation plan (January 2010).



Cottage Farm Brookline Connection and Inflow Control

Capital Cost

\$3.3M

Completed

June 2009



60" interconnection of Cottage Farm overflow chambers



Cottage Farm Brookline Connection and Inflow Control





Morrissey Boulevard Storm Drain

Capital Cost
\$36.4M

Completed
July 2009



New stormwater outfall to Savin Hill Cove



North Dorchester Bay CSO Plan: \$269.0M

- Pleasure Bay Storm Drain
Completed May 2006
- CSO Storage Tunnel
Completed November 2009
- Morrissey Blvd Storm Drain
Completed July 2009
- Pump Station & Force Main
NTP May 2009
Completion May 2011
- Below-Ground Vent Building
NTP November 2009
Completion May 2011

Figure 10
North Dorchester Bay and Reserved Channel
Recommended CSO Control Plans





North Dorchester Bay 15 MGD Pump Station Conley Terminal

Construction Contract
\$25.9M NTP: May 4, 2009

Slurry wall



August 2009



November 2009

Installation of 43 mini-piles

**Slurry wall, foundation piles and
excavation are complete.**



North Dorchester Bay 24-Inch Force Main

Farragut Road and East Broadway, S. Boston

**60% of 4,000 ft. force main
is complete.**



Installation of force main in East Broadway.



North Dorchester Bay Ventilation Building

Construction Contract

\$5.2M NTP: November 4, 2009





North Dorchester Bay Ventilation Building

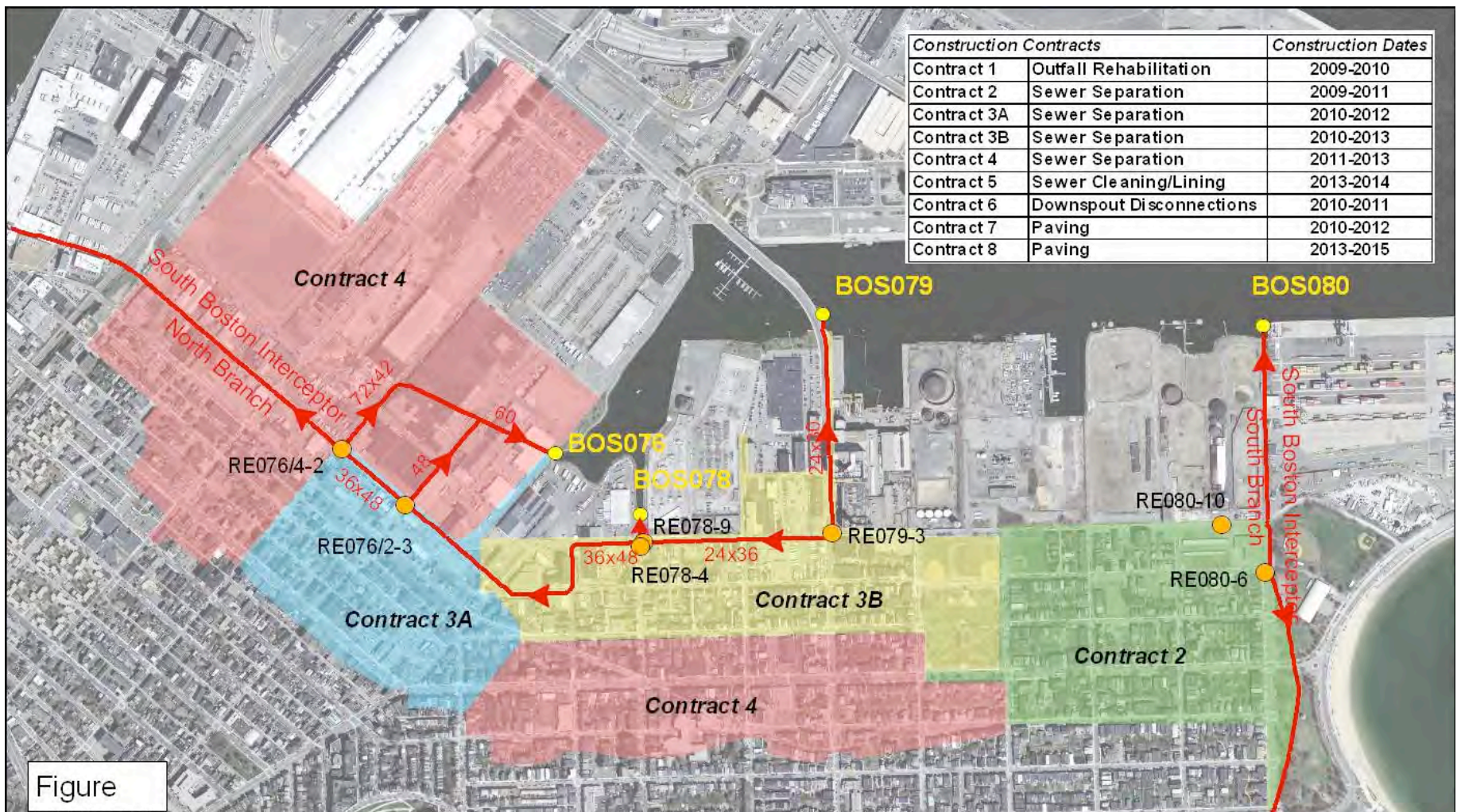


- **Installation of support of excavation (sheet piling) for below-ground ventilation facility is underway.**
- **Contract completion: May 2011**



Reserved Channel Sewer Separation: \$78.6M

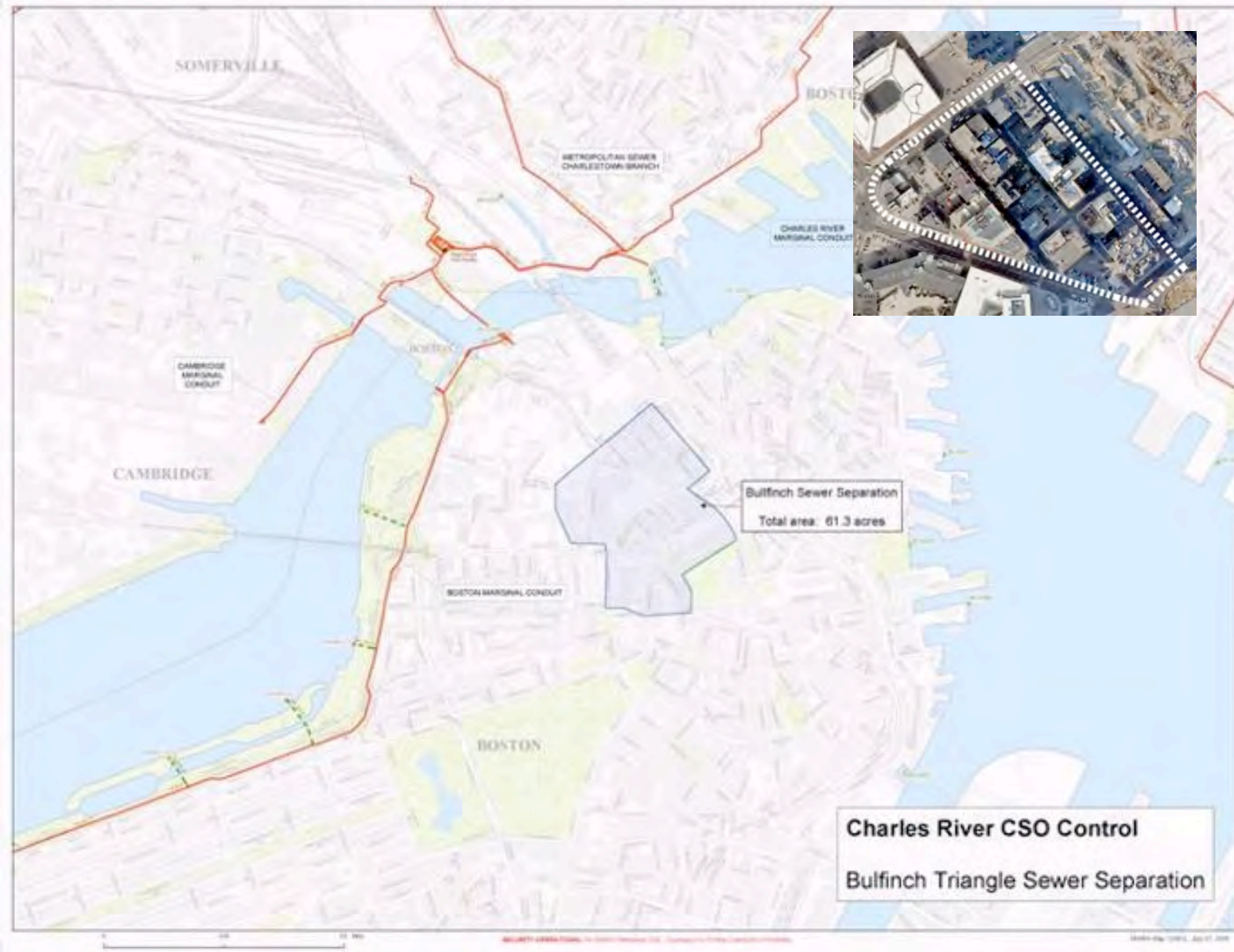
- 9 BWSC construction contracts are planned: May 2009 – Dec 2015.
- BWSC has installed 2,700 ft of drain with first contract since May 2009.





Bulfinch Triangle Sewer Separation

BWSC Construction Sep 2008 – Jul 2010





Bulfinch Triangle Sewer Separation: \$9.6M

**BWSC has installed 4,000 ft of storm drain since Sept 08.
Completion: July 2010**



Installation of 42" storm drain on Merrimac Street



Brookline Sewer Separation

MWRA Cost \$24.0M. Brookline Construction Nov 08–Jul 13.

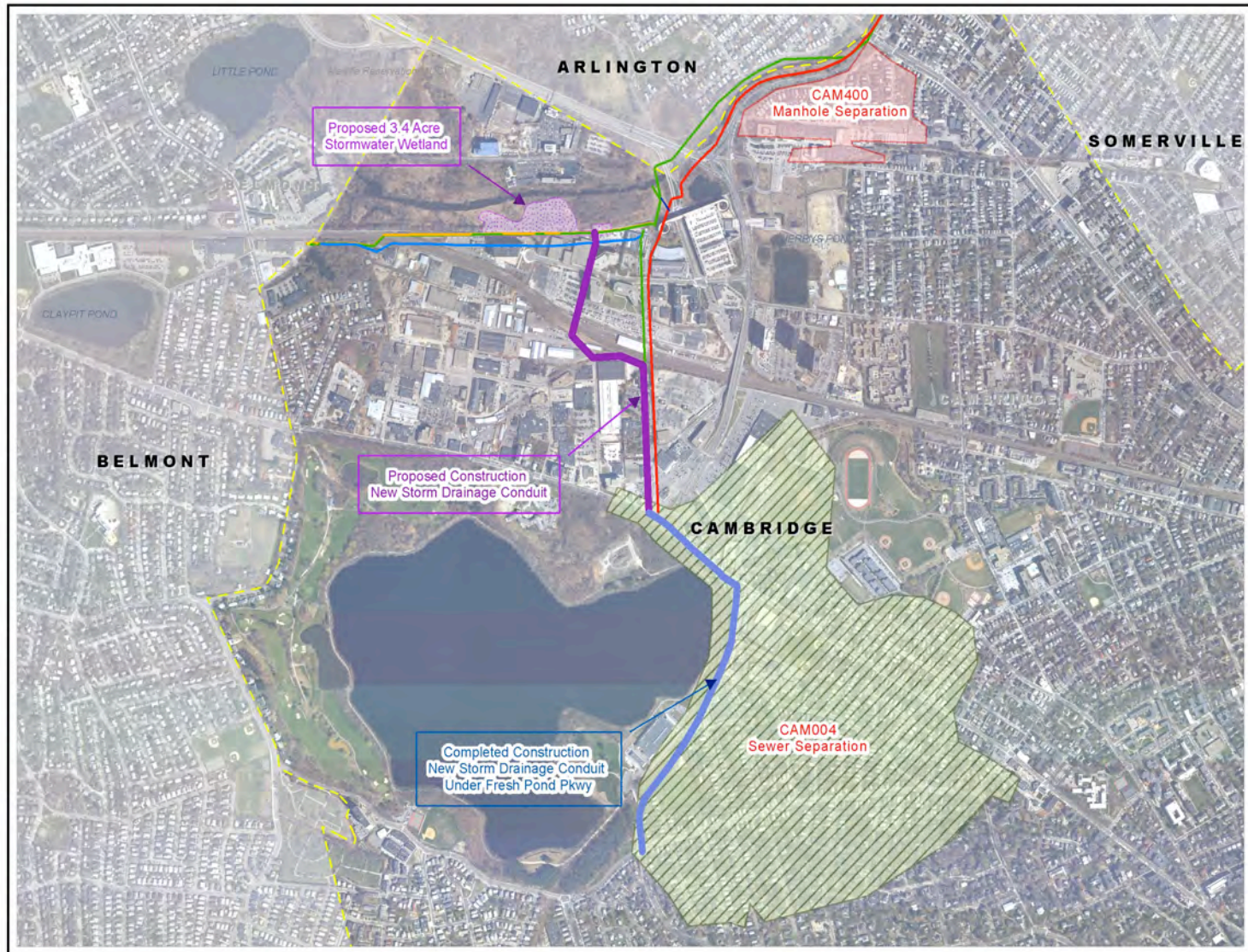
- **Contract 1 (\$1.4M) completed Nov 2009; 6,800 ft. of storm drain.**
- **Contract 2 (\$15.7M) begins Spring 2010.**
- **MWRA outfall cleaning and repairs (\$3M).**





Alewife Brook CSO Control Plan

MWRA Cost \$62.8M. First Construction NTP: Jan 2010



Alewife Brook CSO Control - Revised Plan

1/21/07 MvraGIS 1050-16



System Optimization in CSO Control

- **Maximize Existing System Performance**
 - **1994 System Optimization Plans (>100 projects)**
- **Develop Long-Term CSO Control Plan**
- **Implement Plan and Track Performance**
- **Reassess Hydraulic Optimization Opportunities**



System Optimization in CSO Control Planning

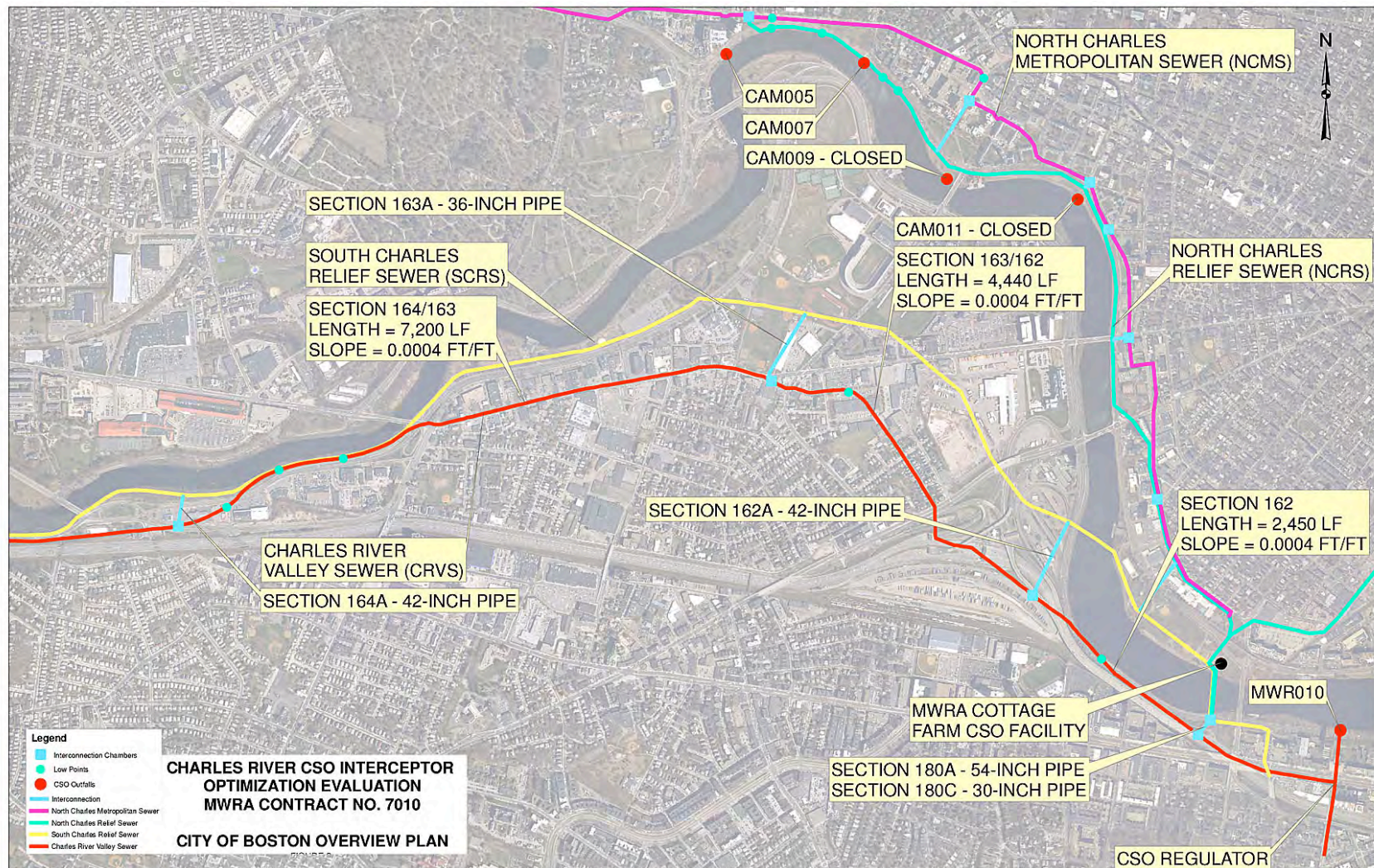
Examples of System Optimization:

- **Localized hydraulic relief replaced a planned detention treatment facility at Outfall CAM005.**
- **Localized hydraulic relief replaced a planned detention treatment facility at Outfall BOS017.**
- **Prison Point Facility Gate Operation**
 - Before: 30 activations, 350 million gallons
 - After: 17 activations, 243 million gallons
- **Cottage Farm Brookline Connection/Inflow Control**
 - Before: 7 activations, 44.5 million gallons in 2008
 - After: 7 activations, 24.0 million gallons today



Charles River Interceptor Study – Gate Controls and Additional Interconnections

MWRA concludes there is no cost-effective interceptor optimization measure beyond those already implemented.

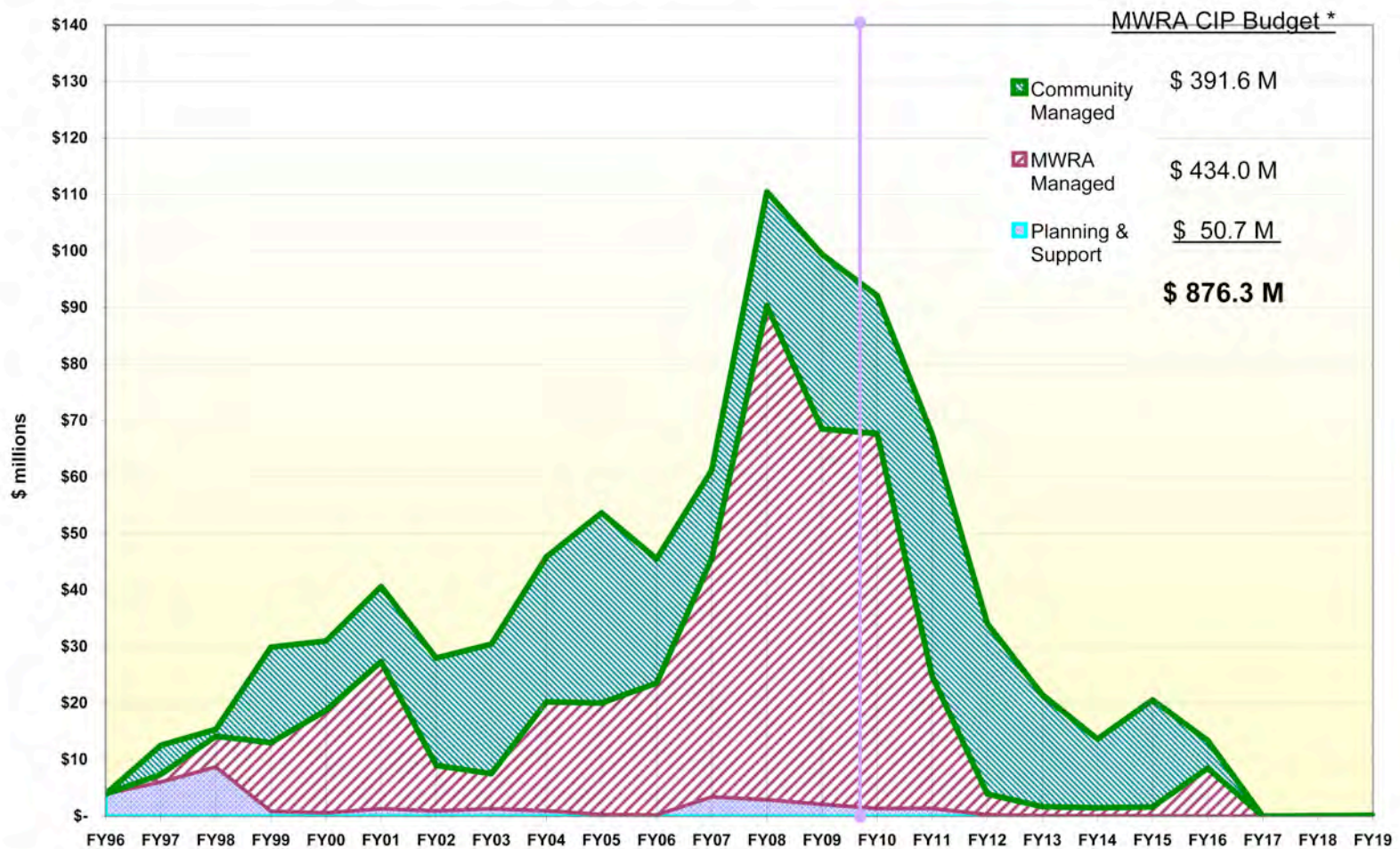




CSO Capital Spending

\$665M spent through 2009

Figure 9
MWRA CSO Program Capital Budget and Spending (1996-2020)



* from MWRA Prop. FY11 Capital Improvement Program (CIP)



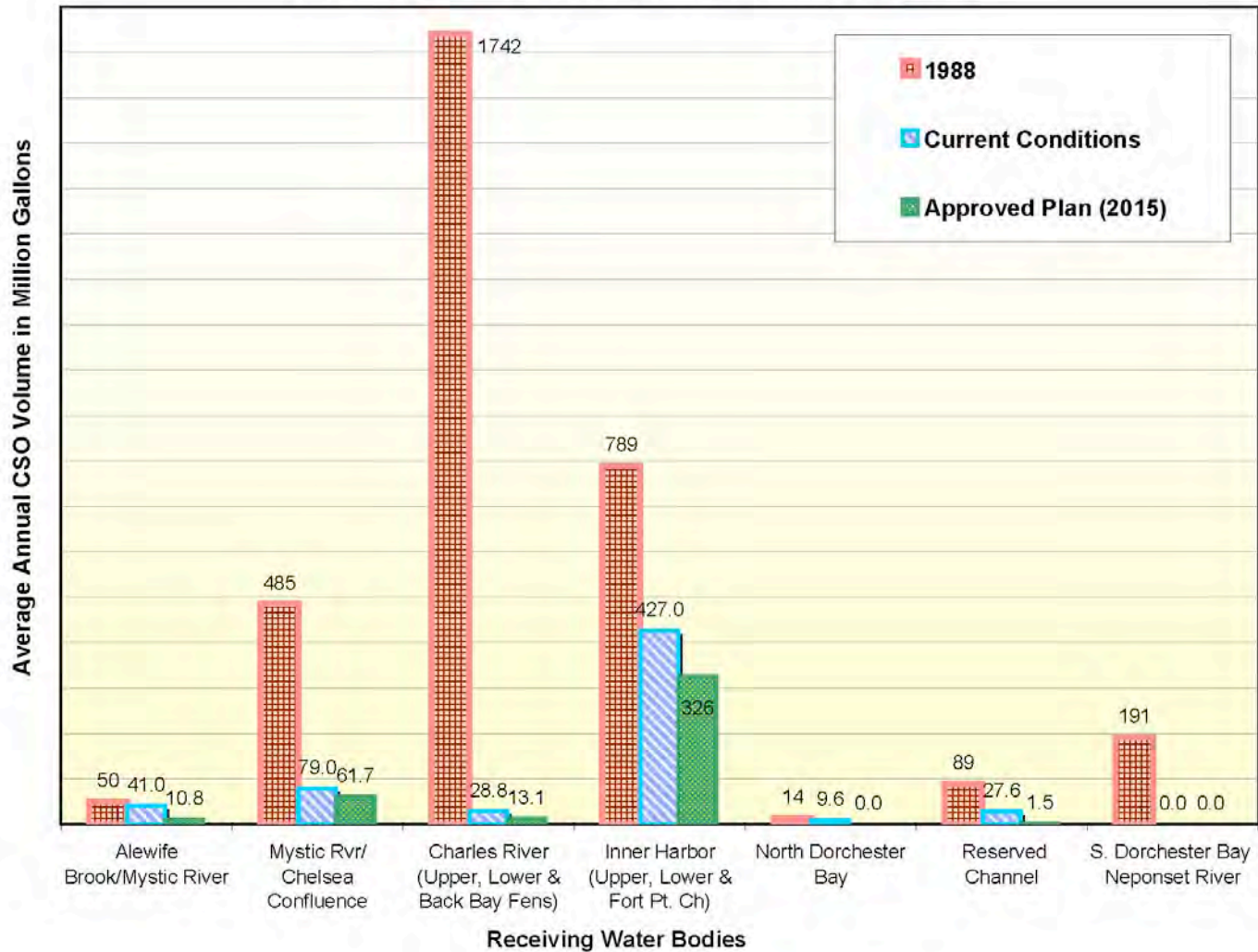
Long-Term CSO Control Plan Achievements

- ✓ **Completed 24 of the 35 CSO projects in the plan.**
- ✓ **Closed 29 of 84 CSO outfalls. Total of 38 to be closed (4 more than recommended plan).**
- ✓ **Eliminated CSOs to Constitution Beach, Neponset River and South Dorchester Bay (including Tenean and Malibu beaches).**
- ✓ **Reduced annual CSO volume by 2.7 billion gallons since 1988 (81% reduction), with 73% now treated. Goal is 88% reduction with 93% treated.**



CSO Volume Reductions 1988 to 2015

Figure 4
Predicted Typical Year CSO Discharge Volumes 1988-2015

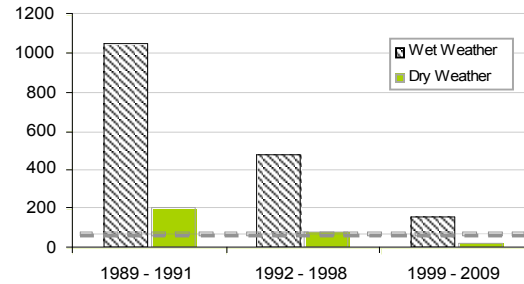




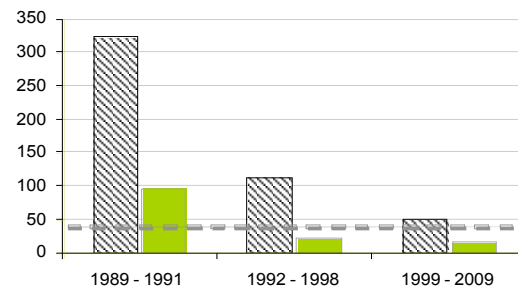
Charles River Water Quality Improvement Wet Weather *Enterococcus* Geometric Mean

Figure 5
Change in Lower Charles River Water Quality Over Time
Enterococcus bacteria counts, 1990 - 2009 (note change in scale)

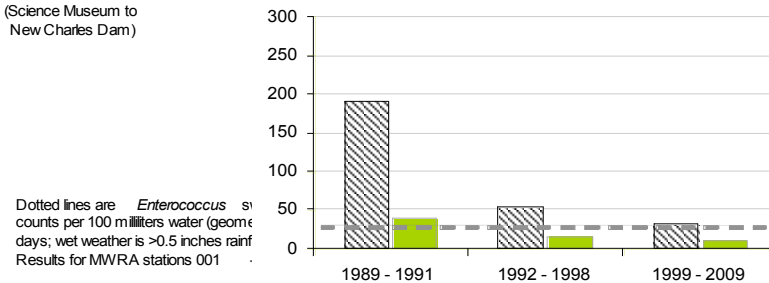
Upper Basin
(Watertown Dam to upstream of Cottage Farm, *note different scale*)



Mid-Basin
(Cottage Farm to Science Museum)



Downstream of Basin
(Science Museum to New Charles Dam)



Dotted lines are *Enterococcus* counts per 100 milliliters water (geometric mean) for wet weather days; wet weather is >0.5 inches rainfall. Results for MWRA stations 001 - 003.

ccus



Cottage Farm, Charles River

