

UNITED STATES DISTRICT COURT  
for the  
DISTRICT OF MASSACHUSETTS

.....  
UNITED STATES OF AMERICA,

Plaintiff,

v.

METROPOLITAN DISTRICT COMMISSION,  
et al.,

Defendants.  
.....

CIVIL ACTION  
No. 85-0489-RGS

.....  
CONSERVATION LAW FOUNDATION OF  
NEW ENGLAND, INC.,

Plaintiff,

v.

METROPOLITAN DISTRICT COMMISSION,

Defendants.  
.....

CIVIL ACTION  
No. 83-1614-RGS

MWRA QUARTERLY COMPLIANCE AND  
PROGRESS REPORT AS OF JUNE 15, 2009

The Massachusetts Water Resources Authority (the "Authority") submits the following quarterly compliance report for the period from March 17, 2009 to June 15, 2009 and supplementary compliance information in accordance with the Court's order of December 23, 1985 and subsequent orders of the Court.

I. Schedule Seven.

A status report for the scheduled activities for the months of March, April, and May 2009 on the Court's Schedule Seven, certified by Frederick A. Laskey, Executive Director of the Authority, is attached hereto as Exhibit "A."

A. Activities Completed.

1. Combined Sewer Overflow Annual Report.

On March 16, 2009, the Authority submitted its Combined Sewer Overflow ("CSO") Annual Progress Report in compliance with Schedule Seven.

2. Commence Construction of Reserved Channel Sewer Separation.

On May 26, 2009, the Boston Water and Sewer Commission ("BWSC") issued the Notice to Proceed with the first construction contract for Reserved Channel Sewer Separation in compliance with Schedule Seven. There will be a total of nine construction contracts associated with this project, the last of which is scheduled to be completed by December 2015. This project is intended to minimize CSO discharges to the Reserved Channel by separating combined sewer systems in adjacent areas of South Boston. Implementation of the recommended sewer separation plan will reduce the number of overflows to Reserved Channel from as many as 37 to three in a typical year.

3. Commence Implementation Of Additional Charles River Interceptor Interconnection Projects In Compliance With The Schedules Submitted Pursuant To The Related January 2009 Milestone.

In its last Compliance and Progress Report, the Authority indicated that it had completed its evaluation of additional Charles River interceptor interconnections and submitted the related report to the United States Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("DEP") in accordance with the January 2009 milestone in Schedule Seven.<sup>1</sup> The milestone was added to the Authority's Long-Term Control Plan and Schedule Seven in 2006 and involves assessments of the hydraulic performance of four of the Authority's interceptors along the Charles River. Any CSO benefits achieved would add to and exceed, but not be necessary to attain, the approved long-term level of control. The milestone required that the report include reasonably expeditious schedules for completing projects that could be completed for low cost, that do not have unexpected construction impacts, and that result in a meaningful reduction in overflow volume or frequency. The Authority's report concluded that additional interconnections among the four interceptors would not provide CSO control benefit at the Cottage Farm CSO Facility or at other Charles River CSO outfalls beyond the benefits that the Authority will achieve with the projects in its approved Long-Term CSO Control Plan. Therefore, the Authority did not recommend the implementation of any additional interconnections between the

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<sup>1</sup> See Compliance and Progress Reports dated March 16, 2009, pp. 2-3.

interceptors along the Charles River, which means that there is no activity to which this milestone applies.

B. Activities Not Completed.

1. Commence Design Of Control Gate/Floatables Control At Outfall MWR003 and MWRA Rindge Avenue Siphon Relief.

The Authority was unable to commence design of the control gate and floatables control at outfall MWR003 and MWRA Rindge Avenue siphon relief project in accordance with Schedule Seven as a result of the appeal of the Superseding Order of Conditions issued for the City of Cambridge Department of Public Works Cambridge Park Drive Drainage project (Contract 12 - CAM004 stormwater outfall and wetlands basin) pursuant to the Wetlands Protection Act.<sup>2</sup> This appeal has caused delays of at least 27 months to the five projects that comprise the Alewife Brook CSO plan. Since the Authority's last quarterly compliance and progress report, the Massachusetts Suffolk Superior Court denied the motion for reconsideration on February 27, 2009, and on May 5, 2009, the court allowed Cambridge's motion to dismiss the January 16, 2009 notice of appeal.

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<sup>2</sup> See Compliance and Progress Reports dated March 16, 2009, pp. 3-5; December 15, 2008, pp. 6-7; September 15, 2008, pp. 5-6; June 13, 2008 pp. 6-7; March 14, 2008, pp. 4-5; December 14, 2007, pp. 5-6; December 15, 2006, pp. 9-10; September 15, 2006, pp. 6-7; December 15, 2004, pp. 10-12; and September 15, 2004, pp. 6-7 for previous reports on the wetland permitting issue.

Cambridge is now well into design of three of the four Alewife Brook projects that it has assumed responsibility for implementing and anticipates that it will commence design of the fourth project this summer. The Authority currently plans to commence design of the control gate and floatables control at outfall MWR003 and MWRA Rindge Avenue siphon relief project in July 2011, in accordance with the original sequencing plan for the Alewife work and Cambridge's current schedule.

The Authority is working with Cambridge to develop new construction milestones for the five projects that comprise the Alewife Brook CSO plan. The proposed milestones will be based primarily on updated project schedules Cambridge is establishing with new and more complete information it has been able to collect since it commenced design efforts last fall. The Authority expects to propose these new milestones for the Court's approval in September.

C. Progress Report.

1. Combined Sewer Overflow Program.

- a. Brookline Connection, Cottage Farm Overflow Chamber Interconnection, and Cottage Farm Gate Control.

The Authority anticipates that the contractor for the Brookline Connection, Cottage Farm Overflow Chamber Interconnection, and Cottage Farm Gate Control project will achieve substantial completion by June 30, 2009 in compliance with Schedule Seven. This project includes placing the previously unused 54-inch Brookline Connection conduit into service,

implementing new gate controls and a control system for the Authority's Cottage Farm CSO treatment facility, and installing an interconnection between the two overflow chambers outside the Cottage Farm facility to make optimum use of available upstream system storage and to improve the conveyance of wet weather flows to the Authority's Ward Street Headworks. Once implemented, this project is expected to provide further reductions in treated CSO discharges from the Authority's Cottage Farm CSO Facility.

Over the past quarter, the contractor completed installation of the new 60-inch pipe interconnection between the North and South Charles Relief Sewer overflow chambers on the Cambridge side of the Charles River. The contractor also removed the three existing sluice gates in the North and South Charles Relief Sewer Overflow Chambers and the Brookline Chambers and replaced them with new sluice gates. Across the Charles River in Boston at the junction chamber, the contractor completed all work within the chamber and installed the control cabinet and the utility pole with the solar panel and radio equipment.

During the remainder of this month, the contractor plans to complete electrical connections to the Brookline sluice gate, the installation of the remote instruments to monitor flow level, the installation of the control cabinet at the Cambridge remote site, and the interior electrical work in the Cottage Farm facility.

b. Morrissey Boulevard Storm Drain.

The Authority was recently notified by BWSC that completion of construction of the Morrissey Boulevard storm drain will be delayed by a few weeks beyond the June 30 milestone for completion because BWSC's construction contractor uncovered an unknown concrete structure that is in one-foot vertical conflict with a portion of the 8-foot by 8-foot culvert being installed across Mount Vernon Street. BWSC has determined that the concrete structure is an encasement installed to repair BWSC's Boston Main Interceptor years ago. BWSC has redesigned the culvert crossing and has directed the contractor to proceed with the modification. The contractor has commenced the modified work by removing a portion of the concrete encasement. BWSC estimates the modification will impact the contract schedule by approximately two weeks, and now anticipates the contract work to be substantially complete by July 10, 2009. This delay will not affect system performance or water quality since the Morrissey Boulevard Drain is not necessary for CSO control until the North Dorchester Bay CSO Storage Tunnel is brought on-line in May 2011. The \$36.9 million Morrissey Boulevard Storm Drain project is a component of the North Dorchester Bay CSO control plan. The storm drain is intended to direct some of the North Dorchester Bay stormwater away from the Authority's CSO storage tunnel in storms greater than the 1-year design storm. Redirecting these stormwater flows to Savin Hill Cove and South Dorchester Bay in large storms will reserve capacity in the Authority's storage tunnel to attain the required 5-year level of stormwater control, as well as the required

25-year level of CSO control, along the South Boston beaches. The storm drain will also enable the BOS087 outfall located near Mother's Rest to be eliminated when the Authority brings the North Dorchester Bay CSO Storage Tunnel on-line in May 2011.

c. North Dorchester Bay Storage Tunnel  
And Related Facilities.

The contractor for the North Dorchester Bay CSO storage tunnel continues to make progress with construction of the storage tunnel and the connections from the tunnel to the existing CSO and stormwater outfalls. The contractor completed installation of the reinforced concrete liner and roof at the large shaft at the tunnel's upstream end, adjacent to the State Police Building. Similar work is now underway at the large mining shaft at the tunnel's downstream end at Massport's Conley Terminal. The contractor also has nearly completed the work to install CSO and stormwater diversion structures and associated connections to the tunnel at the existing outfalls that will remain in-service (though rarely active) in the long-term. The diversion structures and connections to the tunnel are now complete at Outfalls BOS081, BOS082, BOS084, BOS085 and BOS086. During the next quarter, the Authority anticipates that the contractor will be able to complete all of substantially the remaining construction work on the storage tunnel.

In the meantime, the Authority's Board of Directors awarded the \$25.9 million construction contract for the 15-mgd dewatering pump station at Conley Terminal and 24-inch force main at its April 15, 2009 meeting, and the



Authority issued the Notice to Proceed with construction of the contract on May 4, 2009. In addition, the design contractor for the tunnel ventilation building located at the upstream end of the tunnel near the State Police Building submitted draft design documents for the below-ground facility. The Authority expects to advertise the construction contract for the ventilation building in August 2009.

d. Interceptor Relief For BOS003-014.

All design work for the \$85.4 million East Boston Branch Sewer Relief project (Interceptor Relief for BOS003-014) is now complete, and all three construction contracts have been awarded. The Authority completed the first construction contract in 2004, made substantial progress on the second contract and recently issued the Notice to Proceed with the third and final contract.

With respect to the second contract, the contractor has completed the construction of 10 jacking and receiving shafts and continues with construction of four additional shafts. The contractor also completed the mining and installation of 48-inch pipe along three jacking runs totaling 1,490 linear feet on East Eagle and Condor Streets. In addition, the Authority issued the Notice to Proceed with the third and final construction contract on April 27, 2009. This \$7.3 million contract involves replacement and upgrade of approximately one mile of interceptor sewers in upstream reaches of the Authority's East Boston sewer system using "pipe-bursting" methods. All work

associated with the East Boston Branch Sewer Relief project is scheduled to be complete by July 2010.

e. Charles River Valley Sewer/South Charles Relief Sewer Gate Controls.

The Authority's design consultant has completed supplemental hydraulic modeling investigations for Charles River Valley/South Charles Relief Sewer Gate Controls and Additional Interceptor Connections. This project was added to the Authority's Long-Term Control Plan and Schedule Seven in 2006 and involves assessments of the hydraulic performance of four of the Authority's interceptors along the Charles River. The project was intended to identify any opportunities that may exist to further lower CSO discharges at the Cottage Farm CSO Facility or other related Charles River CSO outfalls by optimizing flow allocation among the interceptors and maximizing hydraulic conveyance to the Deer Island Treatment Plant. Recommendations for CSO improvements, if identified, would then be implemented in accordance with Schedule Seven milestones. Any CSO benefits achieved would add to and exceed, but not be necessary to attain, the approved long-term level of control.

An earlier report from this study, submitted to EPA and DEP in January 2009,<sup>3</sup> included a preliminary finding that modifying three existing connections

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<sup>3</sup> The "Evaluation of Additional Charles River Interceptor Interconnection Alternatives," January 2009, also concluded that additional interconnections of the four of the Authority's interceptor sewers related to the Cottage Farm CSO Facility, beyond the several interconnections that already exist, would not improve CSO control at the facility or at other CSO outfalls along the Charles River.

between the Charles River Valley Sewer and the South Charles Relief Sewer “can reduce CSO discharge at Cottage Farm in the typical year,” but that “higher fixed weirs are predicted to increase hydraulic grade lines ... to unacceptable levels in extreme storms.”

Since January 2009, the Authority's engineering consultant has evaluated a series of additional alternatives to “attempt to preserve the potential CSO benefits while avoiding adverse impacts.” However, the consultant now concludes that it can identify no interceptor optimization alternative that would further reduce CSO discharges to the Charles River without increasing the risk of system flooding. The Authority plans to submit the engineering consultant's final report to EPA and DEP once it is completed and then seek permission from the Court to delete the remaining construction milestones for this project from Schedule Seven.

f. Quarterly CSO Progress Report.

In accordance with Schedule Seven, the Authority submits as Exhibit “B” its Quarterly CSO Progress Report (the “Report”). The Report summarizes

progress made in design and construction on the CSO projects during the past quarter and identifies issues that affect or may affect compliance with Schedule Seven.

By its attorneys,

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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 paper copies will be sent to those indicated as non-registered participants on June 15, 2009:

/s/ John M. Stevens  
John M. Stevens (BBO No. 480140)  
jstevens@foleyhoag.com

Dated: June 15, 2009

**EXHIBIT A**

SCHEDULE SEVEN

MWRA MONTHLY COMPLIANCE REPORT

March, April, May 2009

EXHIBIT "A"

LONG-TERM  
SLUDGE MANAGEMENT  
NEW BOSTON HARBOR  
SECONDARY  
TREATMENT PLANT

MONTH/YEAR      CSO CONTROL

March 2009      MWRA to submit annual report which describes progress in planning, design, and construction of each CSO project, and identifies any issues which may interfere with timely completion of any project.<sup>31</sup>

(Completed March 16, 2009)

April 2009      MWRA to commence design of control gate/floatables control at outfall MWR003 and MWRA Rindge Avenue siphon relief.  
(Not Completed – See June 15, 2009 Compliance and Progress Report.)

MWRA to commence implementation of additional Charles River interceptor interconnection projects in compliance with the schedules submitted pursuant to the related January 2009 milestone.

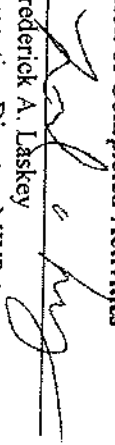
(No Longer Applicable – See June 15, 2009 Compliance and Progress Report.)

May 2009      MWRA, in cooperation with BWSC, to Commence construction of Reserved Channel sewer separation.

(Completed May 26, 2009)

Certification of Completed Activities

By:

  
Frederick A. Laskey  
Executive Director, MWRA

Date: June 15, 2009

**EXHIBIT B**

**Massachusetts Water Resources Authority**



**Combined Sewer Overflow  
Control Plan**

**Quarterly Progress Report**  
**June 15, 2009**



Massachusetts Water Resources Authority  
Combined Sewer Overflow Control Plan  
Quarterly Progress Report - June 2009

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**Table 1**  
**Status of CSO Project Implementation**  
**June 15, 2009**

MWRA Contract	CSO Projects in Schedule Seven	IN DESIGN	IN CONSTRUCTION	COMPLETE
<b>MWRA Managed Projects</b>				
N. Dorchester Bay Tunnel	N. Dorchester Bay CSO Storage Tunnel and Related Facilities	X	X	
N. Dorchester Bay Facilities				
Pleasure Bay Storm Drain Improvements				X
Hydraulic Relief Projects	CAM005 Relief			X
	BOS017 Relief			X
East Boston Branch Sewer Relief			X	
BOS019 CSO Storage Conduit				X
Chelsea Relief Sewers	Chelsea Trunk Sewer Relief			X
	Chelsea Branch Sewer Relief			X
	CHE008 Outfall Repairs			X
Union Park Detention/Treatment Facility				X
CSO Facility Upgrades and MWRA Floatables	Cottage Farm Upgrade			X
	Prison Point Upgrade			X
	Commercial Point Upgrade			X
	Fox Point Upgrade			X
	Somerville-Marginal Upgrade			X
MWRA Floatables and Outfall Closings				X
Brookline Connection and Cottage Farm Overflow Interconnection and Gate			X	
Charles River Interceptor Gate Controls and Additional Interceptor Connections		X		
Optimization Study of Prison Point CSO Facility				X
<b>Community Managed Projects</b>				
South Dorchester Bay Sewer Separation				X
Stony Brook Sewer Separation				X
Neponset River Sewer Separation				X
Constitution Beach Sewer Separation				X
Fort Point Channel Sewer Separation and System Optimization				X
Morrissey Boulevard Storm Drain			X	
Reserved Channel Sewer Separation		X	X	
Bulfinch Triangle Sewer Separation			X	
Brookline Sewer Separation		X	X	
Somerville Baffle Manhole Separation				X
Cambridge/Alewife Brook Sewer Separation	CAM004 Outfall and Basin	X		
	CAM004 Sewer Separation	X <sup>(1)</sup>	X <sup>(1)</sup>	
	CAM400 Manhole Separation	X		
	Interceptor Connection Relief/Floatables	X		
	MWR003 Gate and Rindge Ave. Siphon	Start July 2011		
<b>Region-wide Floatables Control and Outfall Closings</b>				X

<sup>(1)</sup> In 1997-2002, the City of Cambridge completed the design and construction of four initial contracts to separate the CAM004 tributary area and close this outfall. Cambridge plans to commence design of the remaining CAM004 sewer separation work by February 2010 and complete construction by April 2015.

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Combined Sewer Overflow Control Plan  
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1. Quarterly Progress Overview

This quarterly progress report is presented to comply with reporting requirements in the Federal District Court's Order in the Boston Harbor Case. For the combined sewer overflow ("CSO") projects referenced in the Court's Order and its schedule of milestones (Schedule Seven), the report summarizes progress made during the period from March 17, 2009, to June 15, 2009, identifies project schedules relative to corresponding Court milestones, and describes issues that have affected or may affect compliance with Schedule Seven.

Detailed descriptions of the CSO projects and identification of all corresponding Court milestones for design and construction are not presented in this report but can be found in MWRA's *CSO Annual Progress Report 2008*, dated March 2009 (the "Annual Report"). The Annual Report is available for public review on MWRA's website, at [www.mwra.com](http://www.mwra.com).

Table 1 shows the status of implementation for each of the 35 projects that comprise the long-term CSO control plan as referenced in Schedule Seven. As shown in Table 1 and reported in earlier progress reports, MWRA and the CSO communities have completed 22 of the 35 projects.

Eight of the remaining projects are in the construction phase; one more than reported last quarter. In May 2009, Boston Water and Sewer Commission (BWSC) issued the notice to proceed with the first of several construction contracts for the Reserved Channel sewer separation project. Construction work continues on six other projects: North Dorchester Bay CSO Storage Tunnel and facilities; Morrissey Boulevard storm drain; East Boston Branch Sewer Relief project (Interceptor Relief for Outfalls BOS003-014); Brookline Connection and Cottage Farm Overflow Interconnection and Gate; and Bulfinch Triangle Sewer Separation. The eighth project Table 1 shows is "in construction" (as well as "in design") is CAM004 sewer separation, for which the City of Cambridge and MWRA completed early construction contracts several years ago, as previously reported.

Later sections of this report provide information on the recent progress and status of the 13 CSO projects that are not yet complete. In addition to these projects, BWSC continues design work it started in November 2008 for CSO-related improvements in an area tributary to BWSC's Dorchester Brook Conduit, which discharges stormwater and CSO flows to the Fort Point Channel at Outfall BOS070.

The following are highlights of the progress MWRA and its CSO communities made on CSO control projects in the second quarter of 2009.

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- MWRA continued to make progress with construction of the \$148 million North Dorchester Bay CSO Storage Tunnel, and expects the tunnel contract will be substantially complete this summer. As anticipated in last quarter's report, the tunnel contractor completed the reinforced concrete lining and roof structure at the equipment retrieval shaft at the upstream end of the tunnel, next to the State Police Building. The contractor is presently installing a similar lining and roof structure at the mining shaft at the downstream end of the tunnel, in Massport's Conley Terminal. This is the last of the work to complete the tunnel itself, while other work continues under the same contract to complete the CSO and stormwater diversion structures and associated piping, gates and gate controls to connect the existing outfalls to the tunnel. Much of the final restoration work, including street paving is also complete. The contractor expects all work to be substantially complete by August 2009, several months ahead of the contract schedule.

Meanwhile, MWRA issued the Notice to Proceed with the \$25.9 million construction contract for the tunnel-dewatering pump station and force main on May 4, 2009, and is completing design and construction contract documents for the below-ground ventilation building at the upstream end of the tunnel. The ventilation building contract, which MWRA plans to award in October 2009, is the final construction contract to implement the \$260 million North Dorchester Bay CSO control plan. MWRA plans to complete all work by May 2011, in compliance with Schedule Seven.

- MWRA continued to make progress with construction of the \$85.4 million East Boston Branch Sewer Relief project (Interceptor Relief for BOS003-014) and issued the Notice to Proceed with the last of the three construction contracts on April 27, 2009. This \$7.3 million contract involves replacement and upgrade of approximately one mile of interceptor sewers in upstream reaches of MWRA's East Boston sewer system using "pipe-bursting" methods. The contract has a substantial completion date of June 2010, in compliance with Schedule Seven.
- MWRA also continued to make progress with the \$1.98 million construction contract for the Brookline Connection and Cottage Farm Overflow Connection and Gate Control project. The work necessary to provide the CSO control benefits of the project, including reduced CSO discharges at MWRA's Cottage Farm CSO Facility, will be substantially complete by June 30, 2009, in compliance with Schedule Seven.
- MWRA's design consultant has completed the design investigations and design report for Charles River Valley/South Charles Relief Sewer

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Gate Controls and Additional Interceptor Connections. An earlier report, submitted to EPA and DEP in January 2009<sup>1</sup>, included a preliminary finding that modifying three existing connections between the Charles River Valley Sewer and the South Charles Relief Sewer "can reduce CSO discharge at Cottage Farm in the typical year," but that "higher fixed weirs are predicted to increase hydraulic grade lines ... to unacceptable levels in extreme storms."

Since January 2009, MWRA's engineering consultant has evaluated a series of additional alternatives to "attempt to preserve the potential (CSO) benefits while avoiding adverse impacts." The consultant has concluded that no interceptor optimization alternative has been found that can further reduce CSO discharges to the Charles River without increasing the risk of system flooding.

- The BWSC construction contract for the Morrissey Boulevard Storm Drain calls for substantial completion of the work by June 30, 2009, in compliance with Schedule Seven. BWSC's contractor continued to make progress in the past quarter toward meeting the milestone, but encountered on June 8, 2009 a buried concrete structure that was in one-foot vertical conflict with a portion of the 8-foot by 8-foot culvert being installed near the Bayside Exposition Center. BWSC has determined that the concrete structure is an encasement installed to repair BWSC's Boston Main Interceptor years ago. The contractor has since commenced a work modification that BWSC estimates will impact the contract schedule by approximately two weeks. BWSC now anticipates the contract work to be substantially complete by July 10, 2009.
- BWSC continued to make progress with construction of the \$10.2 million Bulfinch Triangle Sewer Separation project. The construction contract commenced in September 2008, and the work is on schedule for substantial completion in July 2010, in accordance with the contract.
- The Town of Brookline continued to make progress with the first of two construction contracts for the \$24.0 million Brookline Sewer Separation project. Construction began in November 2008. Brookline is also making progress with final design of the second, much larger, contract, which the town plans to advertise for bids in October 2009.

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<sup>1</sup> The "Evaluation of Additional Charles River Interceptor Interconnection Alternatives," January 2009, also concluded that additional interconnections of the four MWRA interceptor sewers related to the Cottage Farm CSO Facility, beyond the several interconnections that already exist, would not improve CSO control at the facility or at other CSO outfalls along the Charles River.

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- On May 26, 2009, BWSC issued the Notice to Proceed with the \$6.9 million contract for the first of nine, phased construction contracts for the \$78.6 million Reserved Channel Sewer Separation project, in compliance with Schedule Seven. BWSC continues to make design progress with the remaining eight contracts, which BWSC plans to award over the next several years.
- The City of Cambridge continues to make design progress with three of the five projects in Schedule Seven that comprise the \$117 million Alewife Brook CSO control plan. In addition to making technical progress, Cambridge has updated project schedules for final design and construction, taking into account new information collected from field investigations over the past several months, an updated assessment of easement needs and landowner status, and current permit requirements. MWRA is now reviewing the updated schedules and working with Cambridge with the intent of proposing new schedules to the Court. The Alewife projects were previously delayed by at least 27 months beyond Schedule Seven milestones due to citizens' appeals of a wetlands permit issued by the Department of Environmental Protection.
- BWSC recently received from its design consultant the preliminary design report for the Lower Dorchester Brook Sewer improvements, which are intended to bring CSO discharges to the Dorchester Brook Conduit and Fort Point Channel in line with the long-term plan level of control. BWSC and MWRA are sharing the cost of these improvements, whereby MWRA will fund the cost to relocate regulator RE070/11-2 to RE070/7-1 and complete sewer separation in the adjacent 25-acre NSTAR area (up to the \$2.03 million funding cap, with BWSC paying any higher costs), and BWSC will fund any additional sewer separation and hydraulic relief work necessary to bring the CSO discharges into compliance with the long-term plan levels of control. BWSC plans to commence construction of the MWRA-funded improvements in November 2009.



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Project Implementation

2.1 MWRA-Managed Projects

North Dorchester Bay Tunnel and Related Facilities

MWRA continued to make progress with construction of the CSO storage tunnel and its connections to the existing CSO and stormwater outfalls. MWRA expects the tunnel contract will be substantially complete by August 2009, four months ahead of the contract schedule.

The contractor has completed installation of the reinforced concrete liner and roof at the large shaft at the tunnel's upstream end, adjacent to the State Police Building. Similar work is now underway at the large mining shaft at the tunnel's downstream end, at Massport's Conley Terminal, and installation of the liner there is 50% complete. The tunnel contractor will soon complete the piped connection between the upstream shaft and the Outfall BOS087 stormwater diversion structure. The upstream shaft has been prepared to accept a dry-pipe connection to the below-ground ventilation building that will be installed under a separate contract MWRA plans to award later this year. The downstream shaft has been prepared to accept a wet-pipe connection to the dewatering pump station that is part of a contract MWRA recently awarded.

The contractor has also nearly completed the work to install CSO and stormwater diversion structures and associated connections to the tunnel at the existing outfalls that will remain in-service (though rarely active) in the long-term. With the exception of the pipe connection at BOS087 mentioned above, the diversion structures and connections to the tunnel are now complete at Outfalls BOS081, BOS082, BOS084, BOS085 and BOS086. Earlier completed work established pipe connections to redirect CSO and stormwater flows from Outfall BOS083 to the Outfall BOS084 diversion structures, and Outfall BOS083 will be abandoned when the tunnel project is brought on-line in 2011. The contractor will soon install the new storm drain system in Logan Way, upstream of Outfall BOS085, that had been delayed due to utility conflicts and contaminated soils.

The contractor has nearly completed restoration work at all of the outfalls, with only the restoration work at Outfall BOS082 left to be finished over the next several weeks. The contractor was also able to complete the final paving of Day Boulevard before Memorial Day and in advance of the 2009 beach season.

In addition, the contractor has begun to line the retrieval shaft at the upstream end of the tunnel. When the tunnel becomes operational in 2011, this shaft will accept stormwater diverted from the BOS087

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outfall, which will be closed, and will be connected by piping to the tunnel ventilation building.

MWRA also made progress with design and construction of the tunnel related facilities, including the 15 million-gallon per day dewatering pump station at Conley Terminal and associated 24-inch force main, and the below-ground ventilation building. On May 4, 2009, MWRA issued the Notice to Proceed with the construction contract for the pump station and force main. The contractor is currently providing initial construction submissions required by the contract documents and preparing to mobilize on the Conley Terminal worksite as the tunnel contractor completes its work and begins to move off the site.

In the meantime, MWRA continues with design and preparation of separate construction contract documents for the tunnel ventilation building. As reported last quarter, MWRA made the decision in March 2009 to revise the design of the ventilation building from an above-ground structure to a below-ground structure. MWRA's design consultant recently submitted draft construction plans and specifications for the below-ground building. MWRA expects to complete the design this summer and award the contract for this final component of the North Dorchester Bay project by October 2009.

**East Boston Branch Sewer Relief (BOS003-014)**

All design work for the \$85.4 million East Boston Branch Sewer Relief project (Interceptor Relief for Outfalls BOS003-014) is now complete, and all three construction contracts have been awarded. MWRA completed the first construction contract (Contract 6840) in 2004, has made substantial progress with the second contract (Contract 6257) since the Notice to Proceed in July 2008, and recently issued the Notice to Proceed with the third and final contract (Contract 6841).

The second construction contract (Contract 6257), at \$60.8 million, is the largest of the contracts. It involves the installation of 2.5 miles of new sewer interceptor along Border, Condor, East Eagle and Chelsea streets and along Marginal, Orleans and Bremen streets primarily using micro-tunneling methods to minimize conflicts with congested utilities and high traffic volumes along the East Boston streets. The contractor's work plan and schedule splits the contract work into three phases. The construction progress for each phase is described below.

Phase I involves 8,000 feet of micro-tunneling to install 48-inch and 66-inch diameter pipe from an intermediate point along Border Street to the downstream end of the project at MWRA's Caruso Pump Station. The Phase I alignment follows Border, Condor, East Eagle and Chelsea streets. The contractor has completed the construction of 10 of the 12



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jacking and receiving shafts in Phase I, and continues construction with the remaining two shafts. The contractor received the first micro-tunnel boring machine (MTBM), a 48-inch diameter machine, in December 2008, and began mining in March 2009. The new sewer pipe is installed in a one-pass process as the jacking progresses.

To date, the contractor has completed the mining and installation of 48-inch pipe along three Phase I jacking runs totaling 1,500 linear feet on East Eagle and Condor streets. A fourth jacking run, for 730 linear feet of 48-inch diameter pipe, is presently underway. The 66-inch diameter sections at the downstream end of Phase I will be mined with a separate MTBM the contractor expects to receive later this year. The contractor also plans to receive a second 48-inch diameter MTBM this summer, to replace the older 48-inch machine that is now in operation.

Phase II involves 1,500 linear feet of micro-tunneling to install a 48-inch diameter pipe which will be slip-lined with a 36-inch diameter PVC liner. The Phase II alignment extends south along Border Street from the end of Phase I. The contractor has commenced construction of the two shafts related to Phase II, and plans to commence Phase II mining following completion of Phase I in the spring of 2010.

Phase III involves 2,500 linear feet of micro-tunneling along Orleans and Bremen streets to install a 48-inch diameter pipe which will be slip-lined with a 36-inch diameter PVC liner. Phase III also includes open-trench construction on Marginal and Porter streets to install two sections of 36-inch diameter pipe totaling 1,200 linear feet. The contractor recently mobilized for Phase III and has initiated construction of shafts. The Phase III mining operation is scheduled for the spring of 2010.

MWRA and the contractor maintain continuous coordination with private utility companies and public utility agencies to identify and resolve physical conflicts or protect utilities in-place. MWRA and the contractor regularly maintain and submit utility relocation priority lists and priority relocation orders to the utility companies. Efforts also continue to regularly identify construction strategies for offsetting any delays associated with utility conflicts and keeping to the original contract schedule, which calls for substantial completion by July 2010, one month later than the respective milestone in Schedule Seven.

Meanwhile, MWRA issued notice to proceed with the third and final construction contract on April 27, 2009. This \$7.3 million contract involves replacement and upgrade of approximately one mile of interceptor sewers in upstream reaches of MWRA's East Boston sewer system along Marginal, New, Maverick, Border and Jefferies streets

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using "pipe-bursting" methods. The contract has a substantial completion date of July 2010. The contractor has been making early contract submittals and is conducting field surveys in advance of mobilizing on the streets of East Boston.

**Brookline Connection and Cottage Farm  
Overflow Chamber Interconnection and Gate Control**

The Brookline Connection and Cottage Farm Overflow Chamber Interconnection and Gate Control project is intended to reduce treated CSO discharges from the Cottage Farm CSO Facility to the Charles River Basin by increasing the conveyance of related wet weather flows to MWRA's Ward Street Headworks and Deer Island Wastewater Treatment Plant. The project involves modifications to existing MWRA facilities on both sides of the Charles River, in Cambridge and Boston. These modifications will combine and improve the conveyance capacities of the two MWRA sewers that already carry flows across the Charles River and will bring into service a previously unutilized 54-inch diameter sewer (the "Brookline Connection") constructed nearly 40 years ago by MWRA's predecessor, the Metropolitan District Commission.

MWRA anticipates the contractor will achieve substantial completion of all CSO performance-related work by June 30, 2009, in accordance with the contract documents and in compliance with Schedule Seven. The new 60-inch pre-stressed concrete cylinder pipe interconnection between the North and South Charles Relief Sewer overflow chambers is installed and tested. The three existing sluice gates within the North and South Charles Relief Sewer overflow chambers and the Brookline Connection chamber, all adjacent to the Cottage Farm CSO Facility, have been removed and replaced with new sluice gates. All exterior conduit runs are installed, and the overall Cottage Farm worksite is backfilled to within a couple feet of grade. Surplus soil has been transported offsite, and the groundwater dewatering treatment system has been decommissioned and removed.

Across the Charles River, at the Junction Chamber in Boston, the contractor has completed all work within the chamber. Work is complete at the Boston remote flow-level monitoring site, including the conduit, the control cabinet, concrete base pad, utility pole with the solar panel, and radio equipment.

Work is also complete at the Cambridge remote flow-level monitoring site, including the conduit and concrete base pad for the control cabinet. Unfortunately, DCR withdrew its previously granted permission to install the 40-foot high utility pole required for the solar panel and radio equipment installation, due to local resident objections over the pole's potential to obstruct river views. MWRA is evaluating alternative designs to power the remote level instrument and transmit

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the data back to the Cottage Farm site. MWRA hopes to have the redesign completed and installed by early Fall 2009. This delay will not hold up bringing the project into service and commencing operational start-up and optimization activities.

Remaining work this month includes making the electrical connections to the Brookline Connection sluice gate, along with training and testing; installing all five remote instruments to monitor flow depth; installing the control cabinet at the Cambridge remote site; and performing interior electrical work in the Cottage Farm CSO Facility.

Site restoration including sidewalks, curbing, paving, perimeter fencing, landscaping and wetland restoration will be completed after June 2009.

**Charles River Interceptor Gate Controls  
and Additional Interceptor Connections**

The project was conceived in 2006 with the goal of minimizing discharges at the Cottage Farm CSO Facility and at upstream, untreated CSO outfalls by identifying and realizing any available opportunities to optimize the allocation and conveyance of flows in four MWRA interceptors: North Charles Metropolitan Sewer, North Charles Relief Sewer, Charles River Valley Sewer, and South Charles Relief Sewer. The scope of MWRA's related consultant contract includes detailed analyses of alternatives to optimize existing interconnections among these interceptors and to evaluate the potential CSO control benefits of additional interconnections.

The contract scope also includes final design of any feasible improvements to the existing gates and/or gate controls at three existing interconnections between the Charles River Valley Sewer and the South Charles Relief Sewer that could achieve added CSO benefit. Construction of any recommended improvements is the subject of January 2010 and January 2011 milestones in Schedule Seven.

MWRA's design consultant completed extensive hydraulic model evaluations of alternatives and submitted the Final Hydraulic Modeling Technical Report in December 2008. MWRA submitted portions of the Technical Report evaluating the potential benefits of creating additional interceptor interconnections as a separate report to EPA and DEP on January 31, 2009, in compliance with Schedule Seven. This report concluded that additional interconnections would not provide hydraulic benefit beyond the benefits that will result from possible modifications to existing interconnections and the interconnection of the interceptor overflow chambers at the Cottage Farm Facility that MWRA is now constructing (see "Brookline Connection and Cottage Farm Overflow Chamber Interconnection and Gate Control," page 8).

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Conclusions from the hydraulic modeling study of the interceptor system and its existing interconnections and gates include the following:

- The North Charles Metropolitan Sewer ("NCMS") and the North Charles Relief Sewer ("NCRS") on the Cambridge (north) side of the Charles River are interconnected at several locations, and an additional interconnection of these interceptors would not provide improve the level of CSO control.
- The Charles River Valley Sewer ("CRVS") and the South Charles Relief Sewer ("SCRS") on the Boston (south) side of the Charles River are interconnected at three locations, and an additional interconnection of these interceptors would not improve CSO control.
- Model results showed that portions of the NCMS and NCRS are subject to considerable surcharging in moderate to large storms. While an interconnection of the NCRS and SCRS overflow chambers that MWRA is presently constructing at the Cottage Farm CSO Facility will provide some relief, no other interconnections or modifications to existing interconnections would provide additional CSO control benefit.
- Initial model results indicated that modifying the three existing interconnections of the CRVS and SCRS could provide nominal CSO reduction at Cottage Farm in the typical year. However, while constructing higher fixed weirs at interconnections 162A, 163A and 164A may provide system benefits in dry weather and in moderate storms, the fixed weirs were also predicted to increase hydraulic grade lines to unacceptable levels in the CRVS in large storms, increasing the potential for system flooding.

Since completion of the hydraulic investigations and submission of the report on additional interconnections in January 2009, MWRA has conducted further investigations of various alternatives that might have CSO and flow velocity benefits similar to the preliminary recommended plan to construct higher fixed weirs, but without increasing the risk of system flooding. Alternatives included various weir heights and configurations, as well as strategies for operating the gates that exist within two of the three interconnections.

From these additional investigations, MWRA has found that even a small increase in the height of the weirs carries higher and significant risk for system flooding in large storms. MWRA has concluded from the studies that CSO discharges cannot be further reduced at Cottage Farm and other outfalls without elevating the risk of system flooding to unacceptable levels. This conclusion validates the original interceptor system design, from the 1950's, that recommended the

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existing low-level weirs at the interconnections and the inclusion of the two gates.

Therefore, following 18 months of exhaustive study of the system's hydraulic performance and evaluations of various interceptor alternatives, MWRA concludes that there is no feasible interceptor alternative to improve upon the level of control in MWRA's approved Long-Term CSO Control Plan at the Cottage Farm CSO Facility and related Charles River outfalls. MWRA's consultant is now preparing a final report on these investigations.

## 2.2 Community-Managed Projects

### **Morrissey Boulevard Storm Drain**

A component of the North Dorchester Bay CSO control plan, the Morrissey Boulevard Storm Drain is intended to direct some of the North Dorchester Bay stormwater away from MWRA's North Dorchester Bay CSO Storage Tunnel in storms greater than the 1-year design storm.

Construction of the Morrissey Boulevard Storm Drain commenced in December 2006, in compliance with Schedule Seven, and BWSC completed a first contract in 2007. BWSC issued the Notice to Proceed with the second, much larger, construction contract in September 2007.

During the past quarter, construction activities primarily related to installation of twin 9-foot by 8-foot culverts adjacent to Savin Hill Cove and an 8-foot by 8-foot culvert across the Bayside Exposition Center parking lot and Mount Vernon Street. The entire length of the main storm drain, a 12-foot by 12-foot conduit, is complete.

On June 8, 2009, BWSC's contractor uncovered an unknown concrete structure that is in one-foot vertical conflict with a portion of the 8-foot by 8-foot culvert being installed across Mount Vernon Street. BWSC has determined that the concrete structure is an encasement installed to repair BWSC's Boston Main Interceptor years ago. BWSC has redesigned the culvert crossing and has directed the contractor to proceed with the modification. The contractor has commenced the modified work by removing a portion of the concrete encasement. BWSC estimates the modification may impact the contract schedule by approximately two weeks, and now anticipates the contract work to be substantially complete by July 10, 2009. The Morrissey Boulevard Storm Drain will be used to divert stormwater from Outfall BOS087 once MWRA brings its North Dorchester Bay CSO Storage Tunnel on-line in May 2011.



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**Reserved Channel Sewer Separation**

This project is intended to minimize CSO discharges to the Reserved Channel by separating combined sewer systems in a 365-acre area of South Boston tributary to CSO Outfalls BOS076, BOS078, BOS079 and BOS080. Implementation of the sewer separation plan will reduce the number of CSO activations to the Reserved Channel from 37 to three events in a typical year.

The work includes the installation of approximately 35,000 feet of new storm drains. Connecting catch basins to the new storm drains will require an additional 6,500 feet of minor drain work. To remove enough stormwater inflow from the sewer system to attain the long-term level of CSO control, many building downspout connections and parking lot drains will also be disconnected from the sewer and tied into the new storm drains. The project also includes rehabilitating and/or upgrading the four CSO outfalls to ensure they have the capacity to deliver the separated stormwater flows, as well as remaining CSO flows, to the Reserved Channel for the long term.

BWSC has made substantial progress with design of the project since issuing the Preliminary Design Report in early 2008. BWSC proposes nine, phased construction contracts for this project, including four sewer separation contracts, an outfalls rehabilitation contract, a sewer rehabilitation contract, a downspout disconnection contract, and two final paving contracts.

BWSC completed final design and advertised the first construction contract (called "Contract 2") on January 28, 2009. This contract involves the installation of storm drains and removal of stormwater flows from the combined sewer system tributary to Outfall BOS080, one of four CSO outfalls that discharge to the Reserved Channel. BWSC received bids on this contract on March 3, 2009, and awarded the contract to the low bidder for the contract amount \$6,938,141, \$5,874,700 of which is eligible for MWRA funding pursuant to the CSO Memorandum of Understanding between MWRA and BWSC. BWSC issued the Notice to Proceed with Contract 2 on May 26, 2009, in compliance with Schedule Seven.

In the meantime, BWSC continues to move forward with design of other contracts that will commence sequentially between September 2009 and April 2014. The project schedule calls for all work to be completed by December 2015, in compliance with Schedule Seven.

**Bulfinch Triangle Sewer Separation**

The goal of the Bulfinch Triangle sewer separation project is to minimize CSO discharges to the Charles River by separating combined

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sewer systems in the area of Boston roughly bounded by North Station, Haymarket Station, North Washington Street, Cambridge Street and immediate environs.

BWSC issued the Notice to Proceed on September 2008. Construction activities over the past quarter include continued installation of storm drain pipes on Causeway, Canal, Lancaster and Portland Streets. To date, BWSC has installed over 1,500 linear feet of storm drain, approximately 36% of the project total. The contract completion date is July 8, 2010, well in advance of the July 2013 milestone in Schedule Seven.

**Brookline Sewer Separation**

This project involves sewer separation in several areas of Brookline, totaling 72 acres, where there are remaining combined sewers tributary to MWRA's Charles River Valley Sewer. The project is intended to reduce discharges to the Charles River at the Cottage Farm facility.

The Town of Brookline decided to split the project into two construction contracts. Construction Contract 1 includes the installation of storm drains north and south of Beacon Street. The Town issued the Notice to Proceed for the \$1.4 million first contract on November 21, 2008, in compliance with Schedule Seven. Work to date on this first contract primarily involves construction mobilization, initial field surveys, shop drawing submittals and test pits. The contract completion date is November 24, 2009.

The Town is continuing with final design of the second separation contract with an estimated value of \$15.7 million. The second contract involves micro-tunneling along Beacon Street to install new sewers at significant depths, as well as the construction of several special structures that will connect the new sewers with the existing laterals. Main trunk combined sewers will be converted to storm drains. Brookline is presently resolving several items prior to completing the design documents, including options for the new St. Mary's Street sanitary sewer and optional connections to the MWRA system. Brookline expects to submit the 95% design documents to MWRA in June 2009, and complete final design later this summer. Brookline plans to advertise this contract in October 2009 and complete construction ahead of the July 2013 milestone in Schedule Seven.

**Cambridge/Alewife Brook Sewer Separation**

The City of Cambridge continued with design services for three of the five projects that comprise the Alewife Brook CSO plan (Stormwater Basin and Outfall; CAM400 Common Manhole Separation; and Interceptor Connection Relief and Floatables Control).

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For Contract 12 (Stormwater Basin and Outfall) Cambridge is coordinating the planned construction with public and private railroad owners to obtain required railroad crossing permits. Cambridge has also resumed its discussions with DCR regarding work in the Alewife Reservation. Drafts of the Section 404 and 401 permits have been prepared. Hydraulic modeling is complete, and the design of special structures has been finalized, with the exception of the wetland outfall structure. Meetings have been held with several property owners to review right-of-entry and design considerations for work on the properties. Cambridge continues to update and prepare other construction permit applications for processing, and has initiated negotiations for easement takings. Final design of Contract 12 continues with the preparation of plans and specifications Cambridge expects to advertise in early 2010.

For Contracts 13 (CAM400 Common Manhole Separation) and 4 (Interceptor Connection Relief and Floatables Control), Cambridge is completing topographic surveys and other field investigations and is continuing geotechnical investigations, hazardous materials assessments, hydraulic modeling, preliminary design and initial preparations for permit applications. For Contract 4, modeling has been completed to evaluate the performance of the floatables control technology and its impacts to upstream water surface elevations and potential for system flooding.

For Contract 13, Cambridge has completed the manhole and catch basin inspections as well as all building roof drain investigations, with the exception of investigations on the WR Grace property, which Cambridge recently began. Cambridge is also in the process of updating its hydraulic model for this area. TV inspections of storm drains and sewers are complete, also with the exception of systems on the WR Grace property, which Cambridge recently commenced.

A portion of the Cambridge/Alewife sewer separation project will be implemented by MWRA. The work involves installation of an overflow control gate and floatables control at Outfall MWR003 and hydraulic relief of an MWRA siphon near Rindge Avenue. Due to delays associated with Cambridge's wetlands permit, MWRA has revised its schedule for the MWR003 improvements and Rindge Avenue Siphon. MWRA now plans to commence design by April 2011.