Massachusetts Water Resources Authority

Combined Sewer Overflow Control Plan

Annual Progress Report 2002

March 2003

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1. Introduction

The Massachusetts Water Resources Authority ("MWRA") files this CSO Annual Report for 2002 in accordance with the Federal District Court Order in the Boston Harbor Case. Annual and quarterly CSO reports describe the progress of work to complete MWRA's long-term CSO control plan relative to milestones on the court-ordered schedule.

MWRA's long-term CSO control plan was recommended in the *Final CSO Facilities Plan and Environmental Impact Report* (the "Facilities Plan/EIR"), which MWRA filed with federal and state regulatory agencies in August 1997. Together with certain plan modifications addressed in subsequent Notices of Project Change and Supplemental EIRs, it recommends 25 wastewater system improvement projects (see Figure 1) to bring CSO discharges at 84 outfalls in the metropolitan Boston area into compliance with the federal Clean Water Act and state Water Quality Standards.

The Facilities Plan/EIR proposed elimination of CSO discharges to sensitive use areas (i.e. beaches and shellfishing areas), significant reduction and/or treatment of discharges to less sensitive waters, and means to control floatable materials where CSO discharges will remain. Figure 2 summarizes the scope, schedule and benefits of the plan. The Facilities Plan/EIR received state and federal regulatory approvals in late 1997 and early 1998, respectively, allowing MWRA to move the projects into design and construction.

Design and construction milestones for all of the projects are included in Schedule Six of the Federal Court Order in the Boston Harbor Case. Schedule Six calls for the CSO plan to be fully implemented by November 2008, although MWRA has reported to the Court that completion of certain projects, especially projects now undergoing reassessment due to implementation obstacles, will take longer. MWRA expects to request changes to Schedule Six upon completing each reassessment and reaching agreement with the Court parties. Those projects and the circumstances necessitating more time are reviewed in this report.

This annual report for 2002 reviews planning, design and construction progress and accomplishments in 2002 and in the quarterly period December 17, 2002, to March 14, 2003. Like previous annual reports, it discusses issues that have affected or may affect MWRA's ability to complete the CSO projects on schedule and describes efforts to address problems and move CSO control forward. In addition, this report looks back on ten years of progress in CSO control in the Boston area since work to develop the current plan began in 1992.

2. A Decade of Progress and Commitment

2002 marked ten years of CSO control by MWRA and its CSO communities since federal and state approvals in early 1992 allowed MWRA to reevaluate CSO impacts and an earlier CSO plan (1990) in light of expected changes to federal and state CSO policies. MWRA's 1997 CSO plan was one of the first in the nation to be guided by, and to conform to, the new National CSO Policy issued by the U.S. Environmental Protection Agency (EPA) in 1994, as well as Massachusetts's revised CSO Policy and Guidance issued by the Department of Environmental Protection in 1997. Complying with these revised policies necessitated extensive and expensive investigations by MWRA, including flow metering, water quality sampling, system inspections, detailed hydraulic modeling, and a full evaluation of CSO control alternatives over a range of control levels and costs (efforts MWRA continues to undertake in support of ongoing project reassessments and water quality standards reviews). The result of this work, MWRA's long-term CSO control plan, evidenced the merits of the federal and state regulatory changes.

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Notes:

(1) Construction of Cambridge Sewer Separation and other Alewife Brook CSO controls is on-hold pending federal and state regulatory approval of a revised plan.
(2) A MEPA reassessment of the CSO control plan for North Dorchester Bay and the Reserved Channel is underway.
(3) Portions of the East Boston project are being reevaluated by MWRA.

FIGURE 1. MWRA RECOMMENDED CSO CONTROL PLAN AND STATUS OF IMPLEMENTATION

March 2003

CSO CONTROL PROJECTS

7 Sewer Separation Projects

5 Existing CSO Treatment Facility Upgrade Projects

4 CSO Consolidation/Storage Conduits

2 New CSO Treatment Facilities

3 Sewer Relief Projects

2 Hydraulic Relief Projects

1 Outfall Improvement Project

Region Wide Floatables Controls

TOTAL: 25 Projects

Planning, Design & Construction $651 Million

Annual O&M $1.2 Million

BENEFITS

- 84 CSO Outfalls: 35 Closed
  44 Reduced to a Minimal Number of CSO Discharges per Year
  5 Treated
- Reduces CSO Activations to Achieve a Level of CSO Control Consistent with Applicable Water Quality Standards
- Treats More Frequent Discharges
- Controls Floatable Materials at All CSO Outfalls

COURT-MANDATED SCHEDULE

Final CSO Conceptual Plan	Dec 94
Draft Facilities Plan and EIR	Oct 96
Final Facilities Plan and EIR	Jul 97
Design Phase	1995-2005
Construction Phase	1996-2008

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IMPACT OF CSO CONTROL PLAN ON SYSTEM-WIDE CSOs

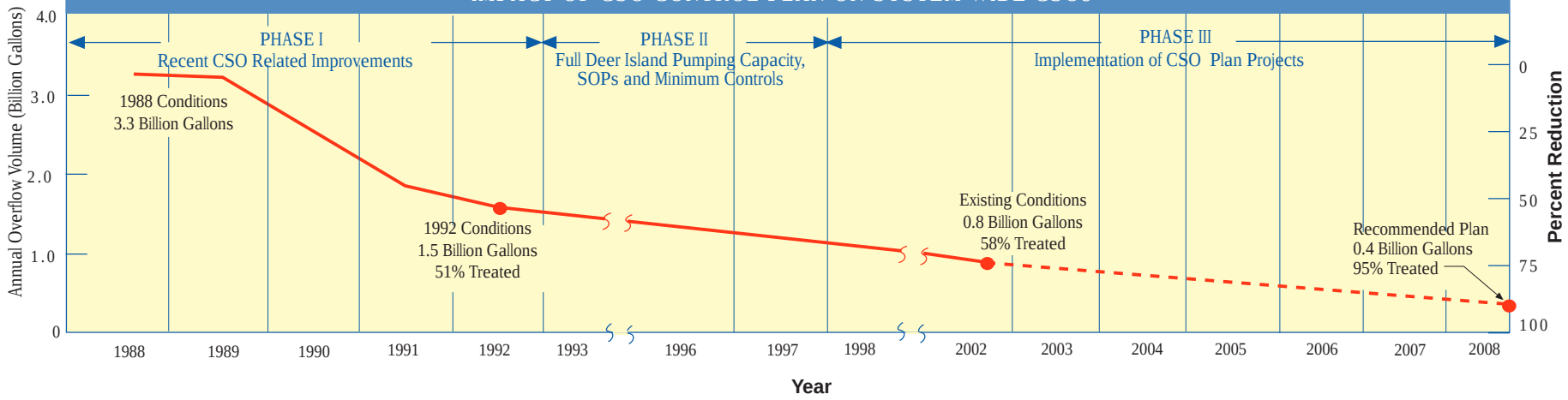


FIGURE 2. RECOMMENDED PLAN AND BENEFITS

MWRA's 1997 plan recommended a high level of CSO control and water quality improvement, while reducing what was seen in Boston, and in other CSO communities nationwide, as a prohibitive financial burden to comply with earlier federal and state CSO regulations (MWRA's earlier CSO plan was estimated to cost $1.3 billion, in 1990 dollars). Possibly most significant, the new policies allowed and promoted the review and possible revision of state water quality standards, particularly to address wet weather realities. Regulatory changes in 1997 in Massachusetts were influenced by the National CSO Policy and were key to the water quality standards determinations made by DEP in 1998 that allowed MWRA's CSO projects to move forward and their water quality benefits to be realized. The progress achieved since then is clearly evident.

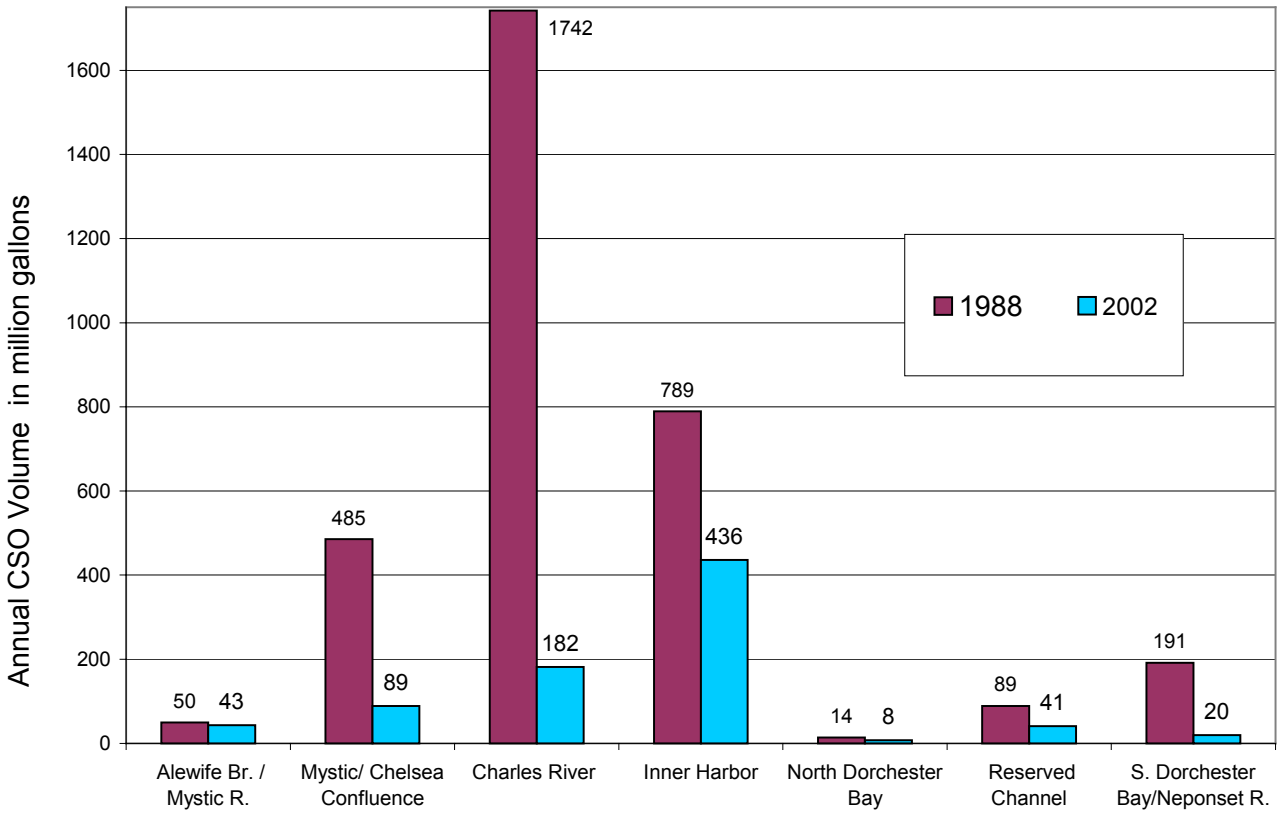
Among the 772 CSO municipalities nationwide, MWRA continues to be a leader in meeting federal and state requirements in reducing the impacts of CSO discharges. In a report to Congress in 2002, EPA noted that only 32% of the municipalities had submitted documentation showing compliance with the Nine Minimum Controls requirements in the National CSO Policy (MWRA submitted its documentation on time on January 1, 1997); only 19% had long-term plans approved; and only 17% of those had begun to implement the plans (whereas 70% of MWRA's CSO projects are complete or in construction).

To date, MWRA has spent almost $200 million on planning, design and construction of CSO projects. With the cooperation of its CSO communities, MWRA has completed 14 of the 25 projects the plan recommends (see Figure 1 and the table below). Three additional projects are well into construction, and two more are expected to move into construction by the end of March 2003. Of the 84 CSO outfalls addressed in the plan, 21 have been closed to CSO discharges (of the total 35 outfalls recommended to be closed). CSO discharges to Constitution Beach and the Neponset River have been eliminated.

CSO Project Implementation Status
March 2003

Completed Projects	In Construction	In Preliminary Design	In Reassessment
Hydraulic Relief at CAM005	*South Dorchester Bay Sewer Separation (39% complete)*	*Fort Point Channel Storage Conduit*	*North Dorchester Bay CSO Conduit*
Hydraulic Relief at BOS017	*Stony Brook Sewer Separation (31% complete)*	*Charlestown BOS019 Storage Conduit*	*Reserved Channel CSO Conduit*
Chelsea Trunk Sewer Relief	*Regionwide Floatables Control (75% complete)*		*Reserved Channel CSO Facility*
Chelsea Branch Sewer Relief	*Union Park Detention Treatment Facility – 3/03*		*Cambridge/Alewife Brook Sewer Separation*
CHE008 Floatables Control/Outfall Repair	*East Boston Branch Sewer (Contract 1 - 3/03)*		*East Boston Branch Sewer (Except Contract 1)*
Cottage Farm CSO Facility Upgrade			
Prison Point CSO Facility Upgrade			
Somerville Marginal CSO Facility Upgrade			
Commercial Point CSO Facility Upgrade			
Fox Point CSO Facility Upgrade			
MWRA Floatables/Outfall Closing Projects			
Neponset River Sewer Separation			
Constitution Beach Sewer Separation			
Somerville Baffle Manhole Separation			

Improvements to MWRA's wastewater transport and treatment systems over the last 15 years have produced huge reductions in CSO discharges with dramatic improvement in water quality, especially in waters where CSO discharges were a major contributor of pollutants, such as Boston Inner Harbor and the Charles River. In addition, the chronic dry weather overflows of the past have been eliminated in all areas. Projects and other efforts that have reduced CSO discharges include the new Deer Island Treatment Plant and its pumping facilities, several new or rehabilitated pumping stations and headworks facilities, the CSO system optimization plans completed by MWRA and the communities in the 1990s, MWRA and community pipeline improvements, ongoing system optimization and maintenance efforts, and the 14 CSO projects completed so far. These improvements have reduced average annual volume of CSO discharge (in a typical rainfall year) from 3.3 billion gallons in 1988 to 0.8 billion gallons in 2002, with 58% of the remaining overflow receiving treatment at MWRA's five CSO facilities. And for the first time, MWRA is now removing residual chlorine and eliminating its impacts on aquatic life by dechlorinating treated flows at all of its facilities.

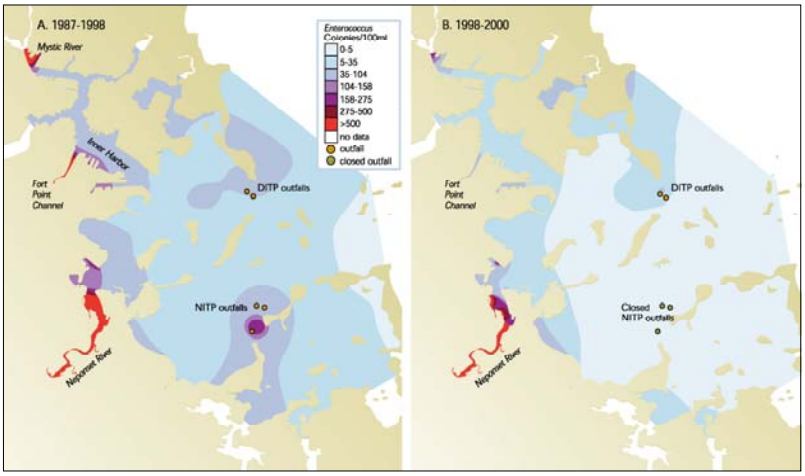


Comparison of Average Annual CSO Discharge Volumes for 1998 and 2002 System Conditions

CSO impacts to water quality have been greatly reduced. CSO discharges to South Boston beaches have been cut almost in half with the improvements to pumping capacity at Deer Island from 1989 to 2000. Water quality samples collected at Carson Beach in dry and wet weather in the period 1996-2000 show 94 percent compliance with swimming standards. During this past summer (2002), of the ten beach postings at Carson, only one was attributable to rainfall conditions that may have triggered a CSO activation - the remaining postings were either precautionary or occurred during dry or damp weather, when CSOs did not discharge.

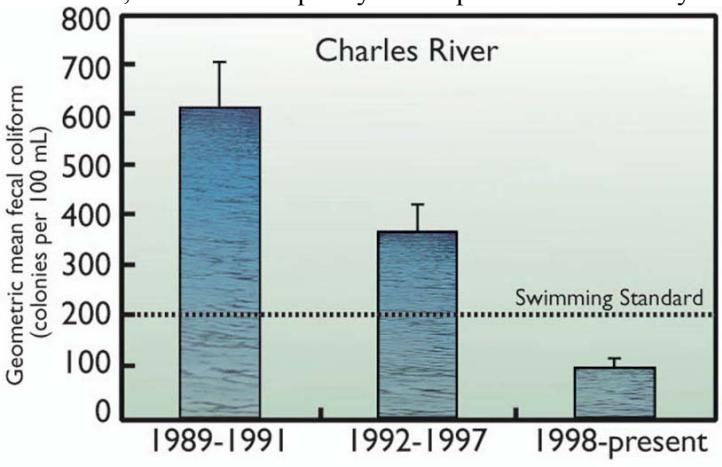
For Boston Harbor, a decrease in bacteria counts harbor-wide since the late 1980s shows the cumulative effect of the Boston Harbor Project and CSO control projects. The counts in the outer harbor are now at or below detection limits, and well within the swimming standard. Boston Harbor as a whole generally meets swimming standards. However, bacteria counts remain elevated in some shoreline areas, embayments, and the Inner Harbor, particularly after heavy rain. The highest bacteria levels are in the rivers and in Fort Point Channel. Of the rivers tributary to Boston Harbor, the Neponset, Mystic Rivers and Alewife Brook continue to suffer from poorest bacterial water quality and show little change over the past ten years. Bacteria counts in these rivers are frequently elevated in dry weather and following light rainfall, indicating

Comparison of bacterial water quality before and after 1998



The maps show contours generated from average *Enterococcus* collected during harbor surveys since 1987. *Enterococcus* is a measure of marine water quality recommended by EPA.

that dry weather pollution sources and stormwater are problematic in these areas. The lower ends of the Mystic and Neponset Rivers frequently fail to meet standards in both wet and dry weather, even though CSO discharges in these areas are treated, have been eliminated or rarely occur. The Charles River, on the other hand, has shown dramatic improvement over the past decade in both wet and dry weather. Nowhere were CSO discharges more affected by improved pumping capacity at Deer Island than along the Charles River, where water quality has improved dramatically since monitoring began in the late 1980s. Geometric mean bacteria counts in the Charles River decreased nearly 10-fold between 1989 and 2001, although water quality continues to be poor in wet weather at the Stony Brook (where MWRA and BWSC are constructing a sewer separation project to greatly reduce CSO discharges) and Laundry Brook (which is not affected by CSOs).



Shoreline water quality is highly variable and subject to numerous pollution sources typical in an urban harbor. Carson and Constitution beaches have generally good water quality, with samples meeting standards at least 90 percent of the time. Tenean Beach meets standards 85 percent of the time. While CSO discharges can affect some beaches (e.g. Carson and Tenean), elevated bacteria counts have been seen in both wet and dry weather,

indicating diverse sources of contamination which can be difficult to pinpoint and control. These more obscure sources can include tidally-influenced stormwater discharges, animal waste, leaky storm drains and/or sewers and illicit sewer connections to storm drains. Of all the shoreline areas in the harbor monitored as part of MWRA's receiving water program, southern Dorchester Bay, near the Neponset River mouth, has the worst water quality in both wet and dry weather. This condition appears to be unrelated to CSO discharges, as CSOs in this area have been eliminated or are treated.

3. Costs and Risks in Completing the CSO plan

The budget for MWRA's CSO Program has grown considerably since the long-term CSO control plan was first proposed in 1994 (MWRA's *CSO Conceptual Plan and System Master Plan)* and approved in 1997-8. Project cost estimates (Table 1) have been affected primarily by site-specific conditions, construction requirements and impact mitigation measures identified during the preliminary design phase of each project. Preliminary design is now complete for most of the projects, and the overall cost of the CSO program has been relatively stable in the last few years.

However, MWRA faces obstacles to completing the remaining CSO projects and considerable risk in bringing remaining CSO discharges into regulatory compliance. Typical of problems in implementing CSO plans nationwide, the obstacles facing MWRA relate to siting, cost and difficulties in realizing the expected hydraulic and treatment benefits. These obstacles have been addressed, though not all fully resolved yet, by MWRA primarily by conducting project reassessments. While EPA and DEP have been supportive of the reassessments, MWRA faces considerable cost and institutional risk in being able to recommend project changes that can receive public approval and support regulatory goals. Such is the case with the reassessments of the South Boston, East Boston, and Alewife Brook projects.

Other pending regulatory decisions also expose MWRA to cost risk. These include decisions on the Charles River Variance and the Alewife Brook/Upper Mystic River Variance, both of which end in the fall of 2003, when DEP is expected to issue final decisions on water quality standards and the required levels of CSO control consistent with those standards.

The total cost of the CSO plan (planning, design and construction) has risen from $411 million when the Final CSO Conceptual Plan was issued in 1994, to $481 million when the Final CSO Facilities Plan and Environmental Impact Report was approved in 1997, to $651 million in MWRA's Proposed FY04-06 CIP (see Figure 3). The latest cost estimate continues to carry a cost for the North Dorchester Bay and Reserved Channel projects ($229 million) based on the 1997 recommended plan, pending completion of the reassessment. Revised project recommendations and regulatory decisions expected to be made in late 2003 (for Charles River, Alewife Brook) and early 2004 (for East Boston, South Boston) place MWRA and its ratepayers at additional, significant financial risk.

MWRA spending on its CSO program from 1987 (when MWRA assumed responsibility for CSO control for all outfalls in the Metropolitan Boston area) through calendar year 2002 exceeded $175 million. In 2002, the bulk of spending was on construction contracts, especially the South Dorchester Bay and Stony Brook sewer separation work. Annual spending has increased over the last few years and will continue to increase as more projects move into construction. Spending is expected to peak in FY07, at $101.4 million, and continue through at least FY10.

Table 1. Cost of CSO Plan *

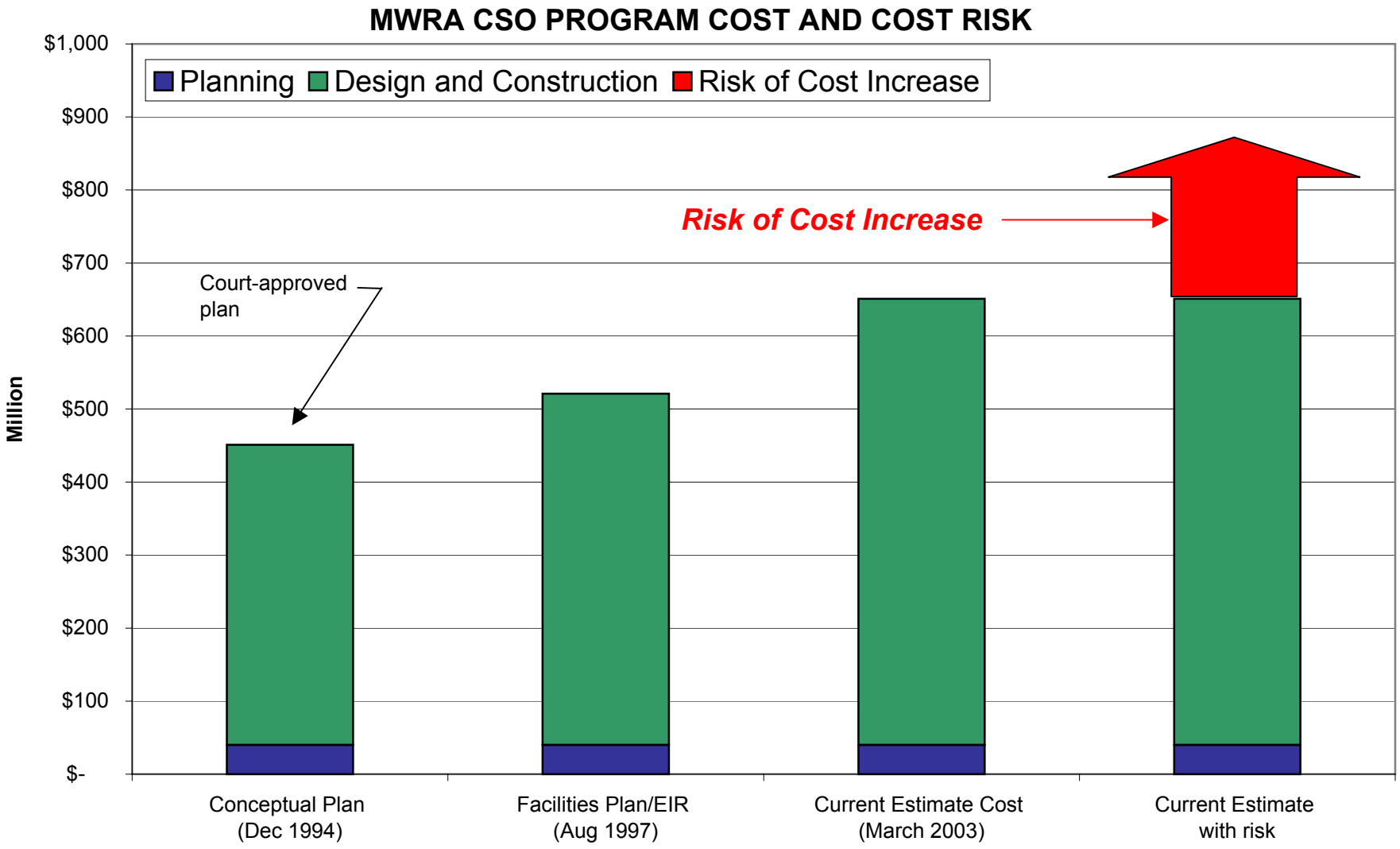
Project	Conceptual Plan (Dec 1994)	Fac. Plan/EIR (Aug 1997)	Current Estimated Costs ** (Mar 2003)	Status
North Dorchester Bay and Reserved Channel ***	$ 122.7	$ 164.4	$ 224.3 M	Design on hold pending project reassessment
Hydraulic Relief Projects at CAM005 and BOS017	6.1	1.3	2.4	Complete
East Boston Branch Sewer Relief	38.4	30.8	59.8	Construction start March 03; in reassessment
Fort Pt. Channel and BOS019 Storage Conduits	7.8	17.6	20.4	Preliminary Design
Chelsea Trunk Sewer and Chelsea Branch Sewer Relief	7.8	31.1	31.0	Complete
Union Park Detention Treatment Facility	16.9	36.3	38.6	Construction start March 03
Upgrades to Existing CSO Facilities and MWRA Floatables Control	13.3	14.6	22.4	Complete
S. Dorchester Bay Sewer Separation	94.0	69.2	118.8	Phased design and construction underway
Stony Brook Sewer Separation	24.4	45.0	43.4	Phased design and construction underway
Neponset River Sewer Separation	10.9	9.0	2.7	Complete
Constitution Beach Sewer Separation	8.9	5.6	3.8	Complete
Somerville Baffle Manhole Separation	0.7	0.4	0.4	Complete
Cambridge/Alewife Brook Sewer Separation	12.1	13.8	38.9	Phased design and construction underway; project revisions in regulatory review
Region-wide Floatables Control	1.6	1.6	3.5	Phased design and construction underway
SUBTOTAL	365.6	440.7	610.4	
BOS032 Interceptor Connection Relief	1.1	0	0	Project deleted
Dorchester Brook Conduit In-line Storage	4.1	0	0	Project deleted
TOTAL CSO PROJECTS	**$ 370.8 M**	**$ 440.7 M**	**$ 610.4 M**	

* Not including costs for past and ongoing planning and support activities, which total $40 M; cost increases include inflation.

** From MWRA proposed FY04-06 Capital Improvement Program (CIP).

*** Based on the recommended plan in the 1997 Facilities Plan/EIR, now under reevaluation.

FIGURE 3


MWRA CSO PROGRAM COST AND COST RISK
Planning
Design and Construction
Risk of Cost Increase
$1,000
$900
$800
$700
$600
$500
$400
$300
$200
$100
$-
Million
Risk of Cost Increase
Court-approved plan
Conceptual Plan (Dec 1994)
Facilities Plan/EIR (Aug 1997)
Current Estimate Cost (March 2003)
Current Estimate with risk

CSO Program Spending

	Thru FY03	FY04	FY05	FY06	FY07	Beyond
MWRA-managed Design and Construction	$ 78.1 M	$ 27.2 M	$ 26.5 M	$ 69.7 M	$ 83.8 M	$ 113.7 M
Community-managed Design and Construction	95.3	32.2	27.0	24.5	17.3	14.8
Program Planning and Support Activities	37.5	0.9	1.1	0.8	0.3	0.1
TOTAL CSO PROGRAM	$ 210.9 M	$ 60.3 M	$ 54.6 M	$ 95.0 M	$ 101.4 M	$ 128.6 M

Note: From MWRA's Proposed FY04-06 CIP. MWRA's fiscal year (FY) ends on June 30.

The implementation schedule for the 25 projects that comprise MWRA's Long-term CSO control plan are set forth in Schedule Six of the Federal District Court Order. Numerous milestones are established for commencement and completion of planning, design and construction of the projects. However, since 1994 when MWRA first proposed a new CSO control plan and implementation schedule, many CSO project scope and schedule changes have been proposed by MWRA and accepted by the court parties and the Court. As recommendations and regulatory decisions unfold in several key areas over the next year, MWRA expects more changes will occur. These areas include South Boston, Alewife Brook, East Boston and the Charles River. In all of the reevaluations to date, MWRA has consistently recommended projects that are implementable and appropriate (based on cost and benefit), provide maximum benefit in controlling CSO discharges, and meet federal and state regulatory requirements.

MWRA believes that decisions from the reassessments, as well as their total financial impact, should take into consideration the current state fiscal crisis, MWRA's loss of debt service assistance, and the impacts on water and sewer rates. While MWRA believes it is reasonable to continue on schedule with those CSO projects that clearly provide benefit for cost and do not carry significant risk, it believes the other projects should be reevaluated methodically and carefully.

With all of this in mind, MWRA plans to commence discussions with court parties on a review and revision of CSO project scopes, schedules and priorities. MWRA's goal in these discussions is to move CSO control and water quality improvement forward on realistic and reasonable schedules, with a level of assurance that benefits will be commensurate with cost and with a consideration of the current and projected fiscal difficulties.

4. Progress and Accomplishments in 2002

4.1 2002 Progress Highlights

The following summarizes key accomplishments in 2002. More information on each of these items is presented later in this report.

- MWRA completed design of the Union Park Detention/Treatment Facility (see pages 37-39) and advertised the construction contract in December. On March 12, 2003, MWRA awarded the contract, which is scheduled to commence by March 31, 2003, in compliance with Schedule Six.

- In December, MWRA received bids on the first construction contract for the East Boston Branch Sewer Relief project (outfalls BOS003-014). MWRA awarded this contract and expects to commence the work by March 31, 2003, in compliance with Schedule Six (see pages 32-33).

- MWRA commenced design services for proposed CSO storage conduits at Fort Point Channel (outfalls BOS072 and BOS073) and at outfall BOS019 on the Little Mystic Channel in July, in compliance with Schedule Six (see pages 34-36).

- Boston Water and Sewer Commission ("BWSC") and the City of Cambridge continued to make design and construction progress on community-implemented sewer separation and floatables control projects, as described in the corresponding project sections on pages 41-52. Construction progress on BWSC's South Dorchester Bay and Stony Brook Sewer Separation projects is approaching the court-ordered progress level for each project. The city of Cambridge completed its Contact 2B construction in the Fresh Pond area and conducted additional planning and preliminary design work to respond to public comments on the Alewife Brook Notice of Project Change (April 2001) and obtain regulatory approvals to move the remainder of the revised sewer separation project into design and construction.

- MWRA completed Phase I of the South Boston CSO Reassessment (North Dorchester Bay and Reserved Channel projects, pages 19-31), including recommending a short list of CSO options for detailed evaluation in Phase II, expected to commence in March 2003.

- MWRA continued to comply with the conditions of regulatory variances for CSO discharges to the Charles River, Alewife Brook/Upper Mystic River and continued to coordinate related watershed planning activities with others, as described on pages 12-16. DEP issued time extensions to both the Charles River and Alewife Brook/Upper Mystic River variances, which now end in October 2003 and September 2003, respectively.

- In October, MWRA received approvals from DEP regarding floatables controls at outfalls MWR018, 019 and 020 on the Lower Charles River Basin and the long-term status of outfall MWR010, also on the Charles River (see pages 50-53).

- BWSC received bids on a contract to construct system optimization plans to lower CSO discharges to the Dorchester Brook Conduit and Fort Point Channel, specifically, the raising of an overflow weir and the installation of a new tide gate. BWSC has since commenced the construction work, which it expects to complete by May 2003. See page 47.

4.2 Planning and Regulatory Review

Since late 1997 and early 1998, when EPA and DEP issued water quality standards determinations and CSO plan approvals, MWRA has conducted additional planning level investigations to support continuing regulatory review and remaining regulatory decisions. These investigations fall into the following areas:

- Project cost and benefit evaluations and project reassessments,
- Charles River CSO Variance conditions,
- Alewife Brook/Upper Mystic River CSO Variance conditions, and
- Floatables control.

Project Reassessments

MWRA routinely reviews the costs and benefits of the CSO projects, especially during the design phase, and particularly as part of preliminary design assessments. Where the results of these evaluations may cause MWRA to recommend plan changes, MWRA works with regulatory agencies to ensure that they are kept informed during the evaluations and have early opportunity for review and input.

These reassessments may be limited to a simple optimization of cost and benefit or value engineering study, leading to recommendations to increase or decrease the size of a new pipe, modify a pipeline or facility layout, modify design criteria (such as the design capacity of a treatment facility) or make other project adjustments, without changing the engineering approach or significantly changing the level of CSO control. An example of this type of evaluation in 2002 was the initial work to review the cost and benefit of the proposed BOS019 Storage Conduit, in Charlestown, at an early stage in preliminary design. New information about system flows, based on flow metering conducted in 2002, may result in a recommendation to increase the size of the proposed storage conduit to meet the CSO control goals in the 1997 Facilities Plan/EIR. More information on the recent evaluations of this project can be found on page 35.

New information about a project may also lead to a more comprehensive project reassessment that considers a full range of engineering alternatives and levels of CSO control. Such was the case with the ongoing South Boston CSO Reassessment and the continuing efforts to obtain regulatory approvals for the revised Alewife Brook (Cambridge) Sewer Separation Plan, discussed in Section 5. In 2002, new information about the East Boston Branch Sewer Relief project and the Fort Point Channel (BOS072 and BOS073) Storage Conduit project prompted MWRA to recommend reassessment of cost and benefit and reevaluation of project alternatives. Information on these project reassessments is presented in Section 5.

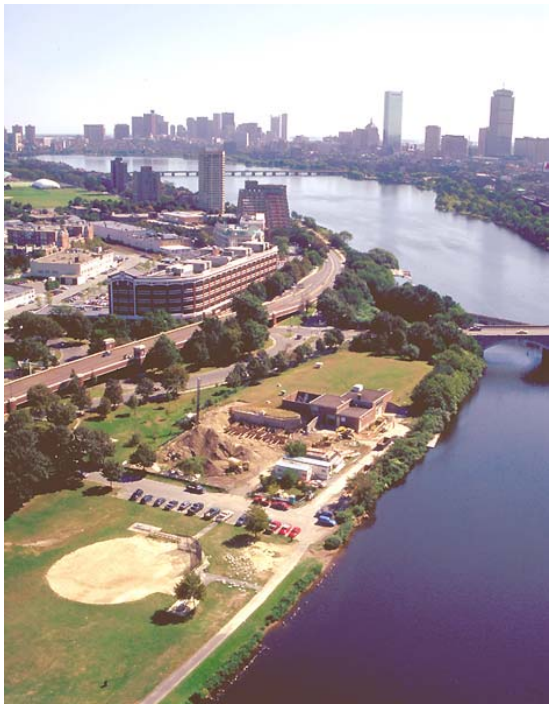
Project reassessments conducted in 2001 led to MWRA recommendations to delete or suspend three projects that had been earlier recommended and to conduct other work to bring CSO discharges into compliance with CSO control goals and water quality standards, as described in last year's Annual Report. The projects included Dorchester Brook Conduit In-System Storage, MWRA Floatables Control at Outfalls MWR018-020, and MWR010 Outfall Closing. In lieu of these projects, MWRA recommended system optimization measures, targeted system maintenance, and changes to wet-weather operational procedures, to minimize CSO discharges and their impacts. Much of the work was conducted in 2002 and is described in the respective project reports in Section 5.

Charles River CSO Variance

The Charles River CSO variance, issued by DEP on October 1, 1998, originally covered a two-year period during which MWRA would continue to implement its 1997 CSO plan for the Charles River and conduct additional water quality and CSO control evaluations prior to DEP making a final determination on water quality standards and the required level of CSO control. As a component of NPDES permits issued pursuant to the Clean Water Act, the variance specified a number of conditions that the three Charles River CSO permitees - MWRA, BWSC and the City of Cambridge - must fulfill, with the goals of minimizing CSO impacts in the short-term, reassessing the relative impacts of CSO and stormwater pollutant loadings to the lower basin, and evaluating the cost and benefit of higher levels of CSO control associated with the Cottage Farm CSO facility. During 2002, MWRA and its CSO planning consultant continued to work with USGS, DEP, EPA and others to coordinate the variance-related work.

As described in the last Annual Report, DEP had twice issued one-year extensions to the variance, pushing out the term of the variance to October, 2002, and the deadline for submission of the report on Cottage Farm storage to July 1, 2002. In discussions with EPA and DEP in the spring of 2002, MWRA identified three issues that would make it impossible to meet the July 2002 report deadline: the need for additional time to conduct the Cottage Farm sampling program because completion of the startup period for the upgraded facility had been delayed due to insufficient rainfall caused by drought conditions; the need to update the sewer system model to incorporate new information about the system and tributary flows; and delay in receiving necessary information from USGS on pollutant loadings to the Charles River. Accordingly, and only after public review, on October 24, 2002, DEP extended the variance a third time, to October 2003, with the report on Cottage Farm storage due July 1, 2003.

A core condition of the variance requires MWRA to submit a report that assesses the treatment performance of its recently upgraded Cottage Farm CSO facility and reevaluates the cost and benefit of providing additional storage capacity for CSO flows. In 2002, MWRA's planning consultant began the work to evaluate additional storage for Cottage Farm. Preliminary layouts were prepared for several alternative storage facilities over a range of additional storage volumes. This work will continue in 2003. The report on additional storage is intended to be based, in part, on updated water quality information collected by MWRA and others during the variance term. Preparation of the this Cottage Farm report is dependent upon information from several sources, including the United States Geological Survey ("USGS") stormwater study, and on completion of certain prerequisite activities, including the Cottage Farm performance sampling program.



In May 2002, USGS completed its work to identify a range of stormwater pollution reductions that could be achieved by implementing Best Management Practices (BMPs) in the watershed. With this information, MWRA will develop different modeling scenarios to assess the potential for water quality improvement in the Charles River with different levels of reduction of stormwater bacteria loading. In January 2003, MWRA met with DEP, EPA, Charles River Watershed Association and USGS to reach consensus

on baseline bacteria concentrations in stormwater and the percent reductions to be evaluated. MWRA and its consultant are proceeding with the necessary modeling.

While lack of sufficient rainfall in 2001 and 2002 hampered MWRA's efforts to complete the startup and optimization period at its upgraded Cottage Farm treatment facility (and four other upgraded CSO treatment facilities, as well), those efforts were completed at Cottage Farm with a large storm and significant facility activation on December 14, 2002. MWRA is now making preparations to conduct the Cottage Farm sampling program, as well as synchronous receiving water sampling, in compliance with variance conditions. MWRA and its planning consultant finalized a sampling work plan in December 2002 and distributed copies to EPA and DEP. In early 2003, MWRA intends to sample between four and six storm events of sufficient magnitude (at least one inch of rain) to activate the facility for the minimum two-hour period prescribed in the sampling work plan.

The field work will include sampling the facility influent and effluent to evaluate the performance of the upgraded treatment process. It will also include collecting receiving water samples in the Charles River at the facility outfall, as well as upstream and downstream of the outfall, to assess the effects of the CSO discharges on river water quality. MWRA assessed the logistical challenges and potential scientific drawbacks of conducting the Cottage Farm sampling program during 2002-3 winter conditions and weighed these against the need to complete the program in time to meet the July 2003 Cottage Farm report deadline. MWRA decided to wait for spring conditions to provide for successful data collection.

In 2002, MWRA also continued to evaluate hydraulic conditions in the combined sewer system to ensure an accurate understanding of baseline CSO activations and volumes at Cottage Farm. MWRA reported in early 2002 the need to collect additional system information and flow information to verify current and future flows through Cottage Farm, prior to evaluating the cost and benefit of increasing the storage capacity of the facility. MWRA was concerned that it had not accurately represented combined flows from the Town of Brookline (now being separated by Brookline under a long-term plan) and that it needed to verify the configuration and the hydraulic effects of a diversion weir that regulates flow entering Cottage Farm. MWRA has since confirmed that the weir is set at an appropriate elevation that is consistent with the elevation used in the modeling work that was the basis for the 1997 Facilities Plan/EIR CSO estimates.

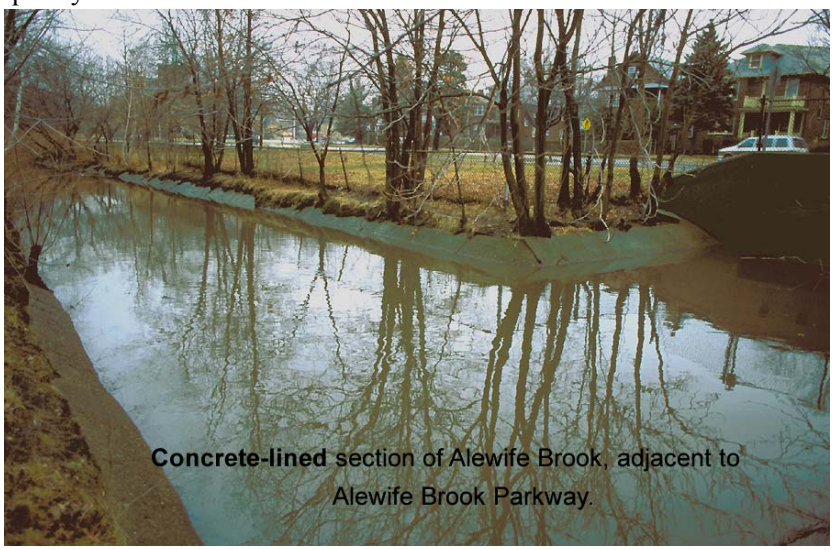
MWRA's planning consultant is now updating the modeled flows to account for the ongoing sewer separation work in Brookline, ongoing and planned sewer separation work in Cambridge, and planned wastewater system improvements by Cambridge that are intended to reduce flooding near Harvard Square. In early 2003, MWRA also commenced updated hydraulic evaluations to identify additional system optimization and hydraulic control measures to minimize CSO discharges at Cottage Farm and outfall MWR010. These include consideration of diverting certain flows, raising overflow weir elevations, and revising the operation of in-system gates.

DEP's most recent variance extension established additional conditions that must be satisfied by MWRA, BWSC and Cambridge. One condition requires permitees to prepare and implement an enhanced program for public notification of CSO discharges to the Charles River. Another condition required MWRA to submit a summary of existing water quality data for the lower basin. Staff of MWRA's Environmental Quality Department are currently finalizing a report entitled *CSO Receiving Water Quality Monitoring in Boston Harbor and Tributary Rivers, 1989-2001*, which compiles and evaluates MWRA data for that 12-year period. In January 2003, MWRA submitted a draft Charles River chapter of that report to satisfy this variance condition.

As noted earlier in this report, water quality in the Lower Charles River Basin has improved tremendously over the last decade, in part as a result of significant reductions in CSO discharges at the Cottage Farm facility and several other outfalls. Greatly improved pumping capacity at the Deer Island Treatment Plant, improved sewer system operation and maintenance, and the implementation of projects under the long-term CSO control plan have contributed to the CSO reductions. The completed CSO projects include hydraulic relief at outfall CAM005; upgrade of the Cottage Farm facility; the closing of several outfalls by MWRA and BWSC; and the ongoing sewer separation work in areas along the Stony Brook Conduit. The required report on additional Cottage Farm storage will evaluate the extent to which remaining CSO discharges affect water quality degradation compared to non CSO sources and whether further CSO control would provide any incremental benefit.

Alewife Brook/Upper Mystic River CSO Variance

The Alewife Brook/Upper Mystic River CSO Variance, issued by DEP on March 5, 1999, originally covered a three-year period during which MWRA was to implement its 1997 CSO plan and conduct additional water quality and CSO control evaluations, prior to DEP making a final determination on water quality standards and the attendant level of CSO control for these receiving waters. As with the Charles River Variance, DEP specified a number of conditions that the CSO three permitees - MWRA and the cities of Cambridge and Somerville - must fulfill, with the goals of minimizing CSO impacts, better assessing relative impacts of CSO and stormwater pollutant loads, and reevaluating CSO control alternatives for these receiving waters. Among the original conditions, MWRA, Cambridge and Somerville were required to perform stormwater monitoring, and MWRA was required to conduct receiving water sampling and prepare a report reassessing the costs and benefits of higher levels of CSO control, using the new water quality data. This final variance report is intended to summarize and evaluate the information gathered during the variance process and reevaluate the recommended level of CSO control for Alewife Brook and Upper Mystic River. Once the variance report was complete and public comments were received, DEP would make its water quality standards deter-minations.



Concrete-lined section of Alewife Brook, adjacent to Alewife Brook Parkway.

As indicated in the last Annual Report, MWRA requested an 18-month extension for the Alewife Brook/Upper Mystic River variance in December 2001. MWRA noted that the time extension was necessary to allow Cambridge, Somerville and MWRA to complete required stormwater sampling. MWRA also noted that the extension would allow Cambridge and MWRA to complete the MEPA process associated with the revised Alewife Brook Sewer Separation plan prior to the variance period ending and DEP making its final determination on water quality standards. A summary of the ongoing work necessary to complete the MEPA process and finalize the CSO plan is presented in Section 5, in the

"Cambridge/Alewife Brook Sewer Separation" discussion. In February 2002, DEP issued a Tentative Determination to extend the variance and held a public meeting. On May 8, 2002, DEP issued its Final Determination to extend the variance 18 months, to September 2003. The extension also postponed the deadline for submission of the final variance report discussed above by one year, to July 1, 2003.
DEP included additional conditions in the variance extension and required submission of four work plans to identify how the objectives of each condition would be met. The new conditions called for enhanced public notification of CSO discharges and their potential associated health risks, quantification of CSO discharges, consideration of the modifying sampling locations for the existing stormwater monitoring program, and sampling and analysis of CSO flow.

MWRA prepared the work plans in cooperation with Cambridge and Somerville and submitted them to DEP on July 2, 2002. MWRA and Cambridge met with DEP and EPA in October and again in November to review agency and stakeholder comments. General accord was reached on three of the four work plans. On the matter of developing and implementing an enhanced public notification program, pursuant to EPA's Nine Minimum Controls requirement, additional coordination is occurring among the permitees and the regulatory agencies to ensure that the program is practical, affordable and effective. On certain elements of the draft program, such as improved signage and better communication with local health officials, parties are in close agreement and need only to work out details, whereas on other elements, such as public notification within 24-hours of a CSO discharge, the parties have more substantial differences to resolve. MWRA will continue efforts to finalize the public notification plan and expects the plan will be implemented in 2003.

The interest in the public notification program voiced by members of the public arises in part from the particular circumstances in the Alewife Brook relating flooding and the potential for public health impacts. In large storms, the Alewife Brook overtops its banks, and its floodwaters, carrying CSO discharges, reaches the yards and basements of Arlington homes situated in the floodplain. Large volumes of separate stormwater from the tributary communities also contribute to poor water quality conditions and potential health risks. Regional flooding in the Alewife/Upper Mystic River watershed is recognized as a serious, long-standing problem. Recently, renewed efforts by Cambridge, Arlington and Belmont, with guidance and support from appropriate state and federal agencies and the Mystic River Watershed Association, are aimed at crafting a coordinated approach for flood control.

During 2002, MWRA continued other activities required by the variance conditions. In accordance with the requirements for receiving water sampling, MWRA submitted two reports in April: the "Summary Data Report" on the results of sampling conducted by MWRA and others during 2001 and the "Proposed 2002 Sampling Plan." MWRA understands that DEP has since reviewed these reports and generally concurs with the level of information and the recommendations contained therein.

In 2002, MWRA was also able to catch up on the backlog of required stormwater sampling activities caused by lack of adequate storm events and near-drought conditions in 2001 and early 2002. In March 2002, MWRA submitted to DEP a report on two sampling events conducted in late 2001. With the return of warmer weather conditions, MWRA reinstalled flow meters in the affected storm drains and was able to sample two storms in the spring of 2002. A report on these events was submitted to DEP in July 2002. To satisfy extended sampling requirements in the variance extension, MWRA conducted another stormwater sampling event in November.

As noted above, the variance extension also required MWRA to sample CSO flows in two storm events. MWRA conducted the first CSO sampling in conjunction with the November stormwater event and sampled CSO flow in a second event later that month. MWRA expects to submit reports on these sampling

events to DEP in early 2003. At this time, MWRA believes it has fulfilled its variance sampling requirements and does not plan to conduct any further sampling. MWRA also believes it has sufficient data now to update the assessment of water quality conditions and CSO impacts for the Alewife/Upper Mystic River CSO reassessment report, due July, 1, 2003.

Floatables Control

The Facilities Plan/EIR recommended extensive use of underflow baffles to meet federal and state requirements for controlling floatable materials in CSO discharges. To address federal and state regulatory concerns that the performance of underflow baffles had not been tested, or proven in the field, MWRA conducted a laboratory physical model study in 1996 and a field verification program from 1997 through 1999, in part using prototype baffle installations.

Although the field study did not yield the data necessary to support a quantitative evaluation of underflow baffle performance, MWRA concluded in a final report submitted in February 2000 that underflow baffles were effective in controlling floatables in CSO discharges, based on direct evidence from the 1996 laboratory studies and the field observations at prototype baffle installations at outfalls BOS012 and BOS078. During a meeting in July 2000, EPA and DEP requested more information comparing the capture efficiency of underflow baffles to other, more widely-used technologies, such as screens and nets. MWRA submitted this information in October 2000. No additional discussions on this subject have since occurred, and no regulatory decisions have been issued.

In 2002, MWRA and the CSO communities continued to design and construct floatables controls primarily using underflow baffles, although other technologies for controlling floatable materials are proposed in a few locations. Where a project is recommended to lower CSO discharges, floatables controls will be provided as part of the design and construction of the project, at all associated outfalls. For instance, under the Chelsea Trunk Sewer Relief project, underflow baffles were installed to control floatable materials at outfalls CHE002, CHE003 and CHE004. At outfalls where CSO discharges were found to be infrequent and no project was recommended in the 1997 Facilities Plan/EIR, floatables controls are being installed under the "Region-wide Floatables Control and Outfall Closing Projects" (see Section 5). Where CSO discharges are rare, defined by MWRA as not occurring in a typical rainfall year. MWRA concluded that floatables control would not provide additional benefit and no floatables control measures are recommended.

4.3 Updating Sewer System Performance and Water Quality

MWRA also performed hydraulic modeling and water quality sampling in 2002. The work was undertaken to update sewer system performance and the progress of CSO control or to confirm or reassess the cost and benefit of CSO control plans in certain areas. A considerable amount of hydraulic modeling and water quality sampling was conducted to comply with the requirements of MWRA's NPDES permit and the conditions of regulatory variances. The permit requires MWRA to estimate, each year, the quantity of CSO discharge from active outfalls in every actual storm event. An evaluation of the efficacy of CSO controls can be made by comparing discharges from year to year and relating them to what would be expected to occur in "typical year" rainfall conditions, which were the basis for the CSO control goals in the 1997 Facilities Plan/EIR. From the modeling evaluations, one can generally assess whether MWRA is "on track" towards realizing the predicted benefits of its CSO plan and associated investment.

To support the modeling work in 2002, MWRA deployed temporary flow meters in several targeted areas to supplement data from dozens of permanent meters in the sewer system. The meter data was used primarily to verify the accuracy of the model in predicting system flows and CSO discharges, and to recalibrate the model if necessary. Temporary meters were used where permanent meters were not available, where a CSO project had recently been completed and MWRA sought to verify the hydraulic benefits of the project, or where model results and observed system conditions appeared to be inconsistent. MWRA plans to collect data from approximately half a dozen temporary meters deployed on a rotating basis each year, in addition to using flow data from MWRA's permanent meters, community meters and operational records at MWRA's headworks and CSO treatment facilities.

MWRA also updated hydraulic modeling assessments and conducted water quality sampling in 2002 to support project reassessments in South Boston (North Dorchester Bay and Reserved Channel projects), East Boston (East Boston Branch Sewer Relief), and the Fort Point Channel and Charlestown areas (Fort Point Channel and BOS019 Storage Conduits). These efforts are described for each project in Section 5.

By the end of 2002, MWRA substantially completed a new wastewater system model that will eventually replace the hydraulic model MWRA has been using for the past several years. The new model will initially be used in 2003 to test hydraulic optimization scenarios at strategic wet weather facilities and in key subsystems, with the goal of maximizing wet weather flow conveyance and treatment capacity and minimizing system backups, flooding and overflows. MWRA expects that the new model, built from InfoWorks software, will completely replace the older sewer system model, which used EPA's Stormwater Management Model (SWMM) software. MWRA will then to use the new model to perform all CSO related hydraulic modeling, including modeling to support the NPDES permit compliance described above.

4.4 Stewardship – Protecting Benefits in the Long-term

Another important activity in MWRA's CSO control program is the review of proposed projects involving changes to the MWRA or community sewer systems or development in the service area. Careful consideration must be given to the impacts of sewer system improvements and development projects to ensure that these projects will not compromise sewer system performance, the attainment of CSO control goals or the benefits of CSO control long into the future. In 2002, MWRA undertook the review of several significant system changes proposed by communities, as well as large projects proposed by developers.

The proposed system changes included Cambridge's plan to reconfigure the sewer system to relieve chronic flooding problems in the Harvard Square and BWSC's South End Facilities Plan, which is intended to relieve flooding in that inner-city neighborhood. Both projects involved the potential for changes to the hydraulic conditions in downstream systems that could exacerbate CSO discharges, to the Charles River in Cambridge's case and to the Fort Point Channel in BWSC's case. In both cases, MWRA worked with the communities and their engineering consultants to estimate impacts and develop plans to mitigate any adverse effects. The driving influence in these efforts was the need to ensure compliance with expected, long-term NPDES permit limits on CSO discharges that will be based on, and are intended to enforce, the CSO control goals in MWRA's 1997 plan.

Through coordinated efforts with its CSO communities (Boston, Cambridge, Chelsea and Somerville) and with DEP, MWRA has reviewed large development plans (e.g. Environmental Notification Forms, Draft and Final Environmental Impact Reports) and worked with developers to ensure that project plans mitigate any potential for negative impacts to the sewer system. Development projects typically increase the

amount of wastewater flow to the community and MWRA sewer systems, which could increase the burden on the systems during wet weather and exacerbate system flooding and overflows.
To offset the impacts of the additional wastewater flow, DEP, MWRA and the communities require developers to remove, at an appropriate ratio (e.g. 2:1, 3:1 or 4:1), the amount of stormwater or infiltration (groundwater) that is robbing sewer system capacity. The developer may accomplish this on the project site, by separating sewers and storm drains that were combined, or the developer may perform work off-site to remove wet weather flows from a hydraulically related sewer system. The result in either case is no net increase in wet weather overflows, at a minimum or a net reduction in flows and overflows. Such is the case with the construction of Boston's Convention and Exhibition Center, which will remove a much greater amount of stormwater from the combined sewer system than it will add as new wastewater flow, which by itself will significantly reduce CSO discharges at several outfalls along the Reserved Channel and Fort Point Channel. Other major development projects reviewed in 2002 included the Channel Center project near Fort Point Channel (formerly called "Midway"), the North Point Project in Cambridge and the IKEA project in Somerville. In all cases, developers have been cooperative and plans for mitigating the impacts of new wastewater flows have been established.

5. Project Implementation

This section defines the scope and schedule of each of the projects recommended in the long-term CSO control plan, and describes progress made in 2002, project changes, if any, and key issues that may affect future progress. Many of the 25 CSO projects recommended in the 1997 Facilities Plan/EIR were combined into design and construction packages. That is how they are presented below.

5.1 MWRA Managed Projects

NORTH DORCHESTER BAY AND RESERVED CHANNEL
CONSOLIDATION CONDUITS AND RESERVED CHANNEL CSO FACILITY

	Court Milestones	MWRA Schedule
Commence Design		
N. Dorchester Bay Conduit	July 1997	August 1997
Reserved Channel Facility	July 1997	August 1997
Reserved Channel Conduit	December 1999	August 1997
Commence Construction		
N. Dorchester Bay Conduit	September 2000	
Reserved Channel Facility	September 2000	
Reserved Channel Conduit	March 2003	Subject to Project
Complete Construction		Reassessment now
N. Dorchester Bay Conduit	March 2003	underway
Reserved Channel Facility	March 2003	
Reserved Channel Conduit	March 2005	

In 2002, MWRA completed Phase I of the technical evaluations, public participation efforts and stakeholder interactions in its reassessment of CSO control alternatives for North Dorchester Bay and Reserved Channel, in South Boston. Phase I included updating the baseline planning assumptions and sewer system model, updating the baseline water quality conditions and receiving water model, evaluating the feasibility of Conley Terminal siting (at the direction of MEPA) and numerous other sites for proposed

facilities, and identifying a manageable number of CSO control alternatives, including variations addressing separate stormwater, to carry into a detailed comparative evaluation in Phase II. MWRA is now developing the scope of work for Phase II, which commenced in March 2003.

The following summarizes the reassessment work accomplished in 2002, presents the Phase I findings, and discusses key issues MWRA should address in conducting the Phase II work and preparing a Supplemental Environmental Impact Report (SEIR) that will recommend a new CSO control plan.

Updating Baseline Sewer System Conditions

By spring 2002, MWRA's planning consultant completed efforts to update the collection system model to incorporate recently completed or planned sewer system changes, including BWSC's South End Facilities Plan improvements and various planned development projects that will add sanitary flow but may remove large quantities of stormwater through sewer separation. New information routinely collected during MWRA and BWSC inspections was also incorporated into the model configuration. The model changes, together with a recalibration of the model with recent flow meter data, resulted in only slight changes to the predicted activations and volumes of CSO discharges to North Dorchester Bay and Reserved Channel, as compared to the predictions in earlier planning and design efforts conducted in the late 1990's.


MWRA crew collects a sample from a storm drain along Day Boulevard for water quality testing.

The updated model was run under existing and future system conditions and for various design storms and the typical rainfall year to predict and compare the hydraulic performance of CSO control alternatives. Results are discussed below, for each CSO control option.

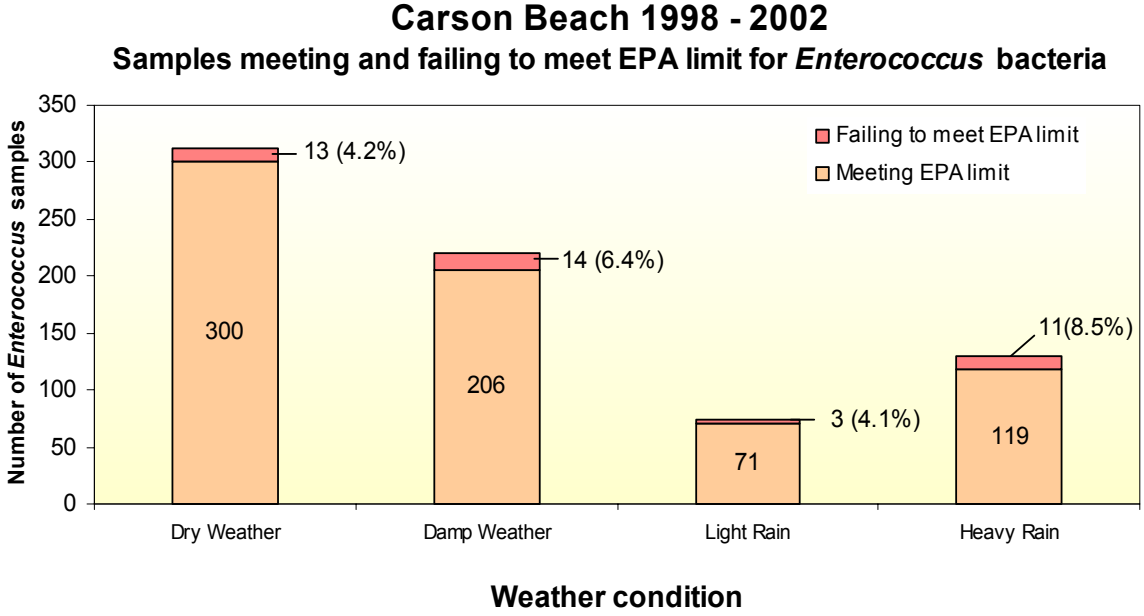
During Phase I, MWRA also investigated opportunities for optimizing current sewer system operations to minimize CSO discharges. From these investigations, it appears that MWRA is taking full advantage of the available flow capacities in its system of facilities and conduits that carries flows from South Boston to Deer Island. The facilities and conduits are essentially maxed out in large storms. While taking advantage of some operational flexibility, especially in operating the Columbus Park and Ward Street Headworks, may provide short-term hydraulic benefit under certain storm conditions, there do not appear to be any operational changes that would significantly reduce CSO discharges at North Dorchester Bay and Reserved Channel.

Updating Baseline Water Quality Conditions

In 2002, MWRA was unable to complete the water quality sampling program needed to update and recalibrate the receiving water model for North Dorchester Bay. This was primarily due to a continued lack of storms of sufficient magnitude to cause adequate CSO discharges for sampling purposes. In 2002, MWRA mobilized sampling crews for nine storms, yet only one of these storms caused a moderate CSO discharge. In addition, other wet weather related obstacles have hampered sampling efforts, including uncertain weather forecasts and high wind conditions that would have compromised the safety of the boat crew.

The water quality work is key to assuring project benefits commensurate with cost, especially with the more expensive alternatives that provide a very high level of control or eliminate CSOs entirely. In evaluating a broad range of options, the reassessment will update water quality information in an attempt to fully understand CSO and non-CSO pollution impacts and how they contribute to water quality degradation and beach closings.

Beach water quality is a very complex issue that is only partially related to CSO discharges. Water samples collected at Carson Beach, the prime recreational beach in South Boston, met the EPA's bacteria standard for swimming 94% of the time during the 1996-2000 period. Of the 6% of samples failing to meet standards, at least 63% occurred in dry weather or light rainfall conditions, when CSOs were not discharging. MWRA believes that collecting additional, targeted water quality information for both dry and wet weather conditions, is essential to comparing the CSO control options and understanding the water quality benefits and remaining water quality problems associated with any selected alternative. Certain stakeholders have voiced similar opinions. MWRA plans to conduct sampling during a large wet weather event, in the hope of collecting water quality information in North Dorchester Bay during a significant CSO discharge.



However, with the onset of winter, temperature and chemical (e.g. road salt) conditions in the collection system compromise representative sampling. Accordingly, the project team temporarily suspended sampling activities until spring conditions again prevail, on or about April 1, 2003. Separately, MWRA will continue to conduct a dry weather sampling program it commenced in 2002 to attempt to determine the sources of dry weather water quality violations. . In addition, MWRA plans to continue to inform and consult with members of Save the Harbor/Save the Bay's (SH/SB) Science Advisory Committee, established by SH/SB to provide independent peer review of the water quality aspects of the South Boston CSO Reassessment. In 2002, MWRA participated in several committee meetings and in technical information sharing.

BWSC has also been working to identify and correct pollution problems along the beaches, with emphasis on dry weather problems. In 2002, BWSC, in cooperation with EPA, began a special investigation of the

storm drainage systems tributary to outfalls BOS087 and BOS083 along the South Boston beaches in response to high bacteria counts in North Dorchester Bay in the vicinity of the outfalls. Inspections identified dry weather flow in the drains and outfall pipes. Sixty houses on the drainage system tributary to BOS087 were dye tested and three illicit sanitary connections were found. Twenty houses on the drainage system tributary to BOS083 were dye tested and two sanitary connections were identified. All of these illicit connections have been corrected, removing an estimated 780 gallons of wastewater that had been released through the outfalls daily, even during dry weather. In addition, a sanitary sewer was found to be leaking an estimated 10,800 gallons per day into outfall BOS084 and out to Carson Beach. BWSC installed a liner within the sewer to stop the leakage. BWSC is currently developing a program to investigate additional storm drainage pipes which discharge to the South Boston beaches.

Identifying Siting Options

MWRA also conducted an initial siting review in 2002. The South Boston study area was divided into seven zones (A-G). After field visits and paper research, an inventory of potential sites within each zone was developed. The inventory identified those sites that could accommodate one or more of the facilities and construction activities contemplated under the CSO control options: a 600 mgd facility needed for CSO elimination; a 10 mgd pump-out facility needed for the storage tunnel alternatives; tunnel mining shafts; and odor control facilities associated with any of the tunnel alternatives. Subsequently, the consultant included an eighth zone (H), in response to public requests that MWRA consider Moon Island for facility siting. Applying certain environmental criteria, MWRA set aside sites from further consideration, including actively used recreation lands, areas within 500 feet of residences, parcels with planned future use for which a notice had been filed with MEPA or BRA, and properties on the federal or state historic registers. For the
remaining sites, consideration was given to minimum size and configuration requirements, which resulted in setting aside additional sites.

Through this two-tiered screening process, potential sites have been narrowed down considerably. The remaining set of sites, shown on Figure 4, will be carried forward into Phase II for more detailed evaluation of cost, acquisition requirements, and environmental and community impacts. Figure 4 identifies the initial seven zones and, using a color code, indicates sites that have been screened out and remaining sites of sufficient size for the different facilities and construction activities. Zone H (Moon Island) could not be shown on the scale of the aerial photograph, and as explained later, Moon Island has been set aside from further consideration. MWRA presented the site screening process and findings at a public meeting in South Boston on September 26, 2002, and discussed the remaining sites with a broad range of stakeholders at a full-day technical workshop held on November 22, 2002.

Potential sites that remain under consideration are within Zones A (Columbia Point), E (along the south side and west end of Reserved Channel), F (Conley Terminal) and G (north of Reserved Channel). For many of the sites within these zones, there are additional concerns. While Zone A appears to have several possible sites, there are considerable issues related to nearby institutions (e.g. UMass Boston, JFK Library, Boston College High School) that may prevent siting a mining shaft or CSO facility. Also, siting a 600 mgd facility here would locate the facilities' discharge to the same waters (North and/or South Dorchester Bays) intended to be protected by the project and would require a change to the existing water quality standard (SB).

Many residents of South Boston and their elected officials continue to be strongly opposed to siting a facility of any sort along East 1st Street, covering much of Zone E, primarily due to concerns about proximity to residences and perceived air quality impacts. Massport has reiterated that it will not permit

MWRA to construct a large facility at Conley Terminal because it would adversely affect its port operations in this Designated Port Area. Massport has indicated, however, that it may be possible to locate a smaller facility (such as a 10 mgd pump-out station) in this area, so long as it does not interfere with port operations and renovations. MWRA has acknowledged and accepted Massport's position, but *has* conducted preliminary siting evaluations for such a facility at Conley to satisfy a MEPA requirement in the June 2001 Secretary's Certificate. Also, in response to formal requests from EPA and State Senator John Hart, MWRA has begun further discussions with Massport on the possibility of siting a large CSO facility at Conley Terminal if Massport were to obtain land on the adjacent Coastal Oil site. Finally, while Zone G may have a site large enough for a 600 mgd facility, driving a deep rock tunnel to the north side of Reserved Channel would add more than $50 million to the capital cost of the next most expensive alternative, calling into serious question its cost-effectiveness. Nevertheless, the option of siting the 600 mgd facility in Zone G will be carried in Phase II.

Evaluating CSO Control Alternatives

Most of the work during Phase I involved identifying, evaluating and narrowing down CSO control alternatives for North Dorchester Bay and Reserved Channel. The number of alternatives and the complexity of the screening process necessary to maintain a level of public and regulatory support for the reassessment have proven greater than MWRA had anticipated at the outset of the reassessment. In accordance with MEPA's directive to examine all alternatives from previous planning efforts, and in response to suggestions from members of the public, MWRA initially identified more than 160 control alternatives, which MWRA evaluated for estimated capital cost, hydraulic performance (level of CSO control), community impacts and siting.

Through an iterative process, MWRA narrowed down these alternatives, first by applying certain straightforward principles. For example, MWRA set aside alternatives that had greater cost but poorer performance than other alternatives, all other factors being similar. Further evaluations and comparisons led to reducing the field of CSO control alternatives to 41 alternatives that fell within four main CSO control options, identified below. Throughout this process, MWRA briefed the public and stakeholders, including regulatory agencies.

Turning Four CSO Control Options into Three

After presenting the four options to its Board of Directors, the public, and various stakeholders in June, 2002, MWRA conducted additional hydraulic performance evaluations and preliminary water quality benefit assessments for the various alternatives that fall within the four control options. With this information, MWRA set aside Option 3 and began to further differentiate the alternatives within the remaining options with more detailed evaluations of hydraulic performance, water quality benefit and capital cost.

The results of these efforts were presented at a technical workshop on November 22, 2002, attended by many stakeholders, including EPA, DEP, the Department of Justice, South Boston elected officials and the South Boston community, Save the Harbor/Save the Bay, The Boston Harbor Association, Conservation Law Foundation, Massport, Boston Redevelopment Authority, Boston Environment Department, Metropolitan District Commission, Boston Water and Sewer Commission, and MWRA Advisory Board. The purpose of the technical workshop was to gain input from the various stakeholders on the appropriateness of the short list of control options and in identifying a subset of alternatives within these options that appeared to be most appropriate to carry forward into Phase II. MWRA also sought input from the stakeholders in defining key issues and criteria for future decision-making.

Figure 4

Summary Results of Potential Sites after Initial Screening

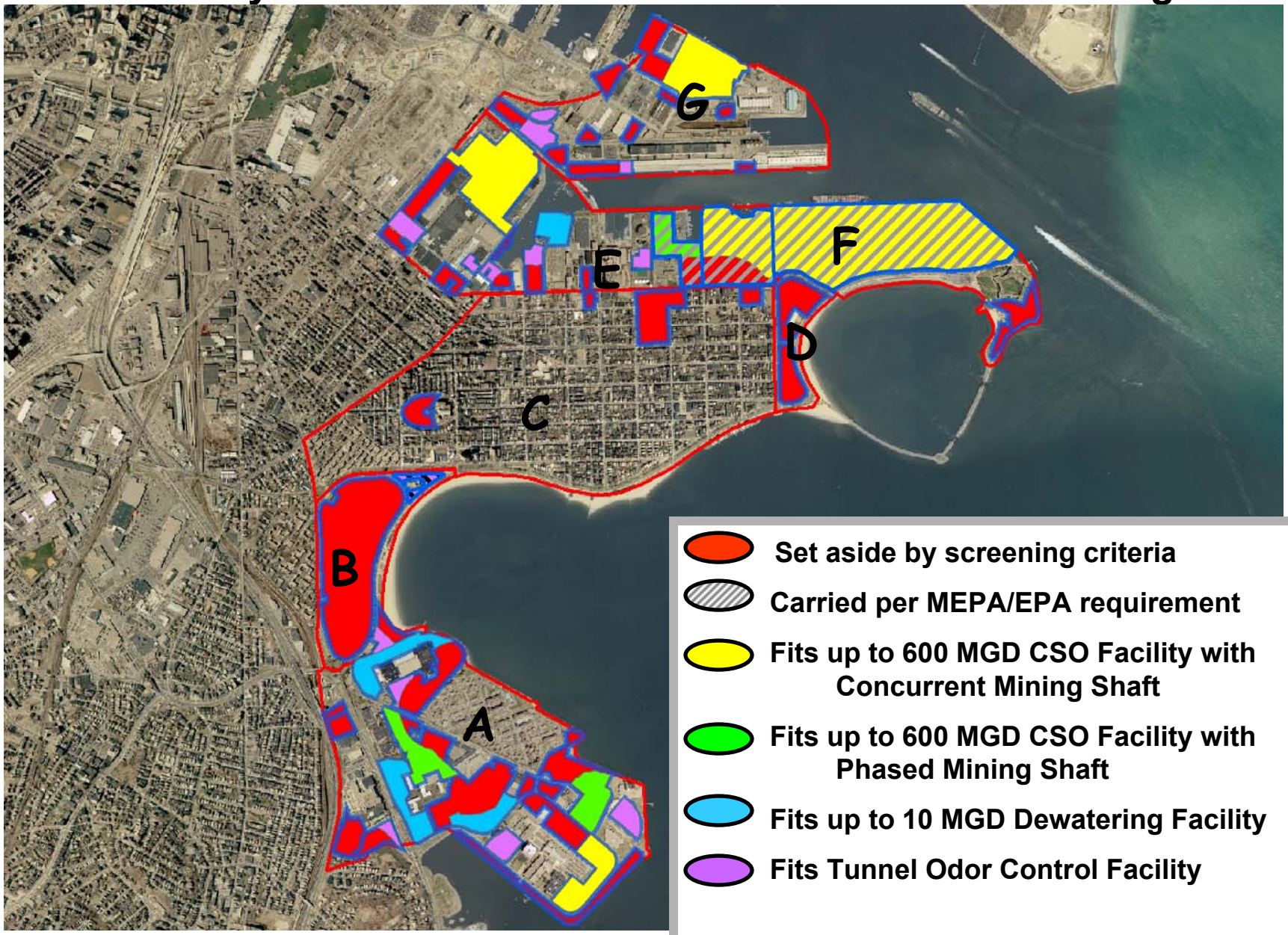
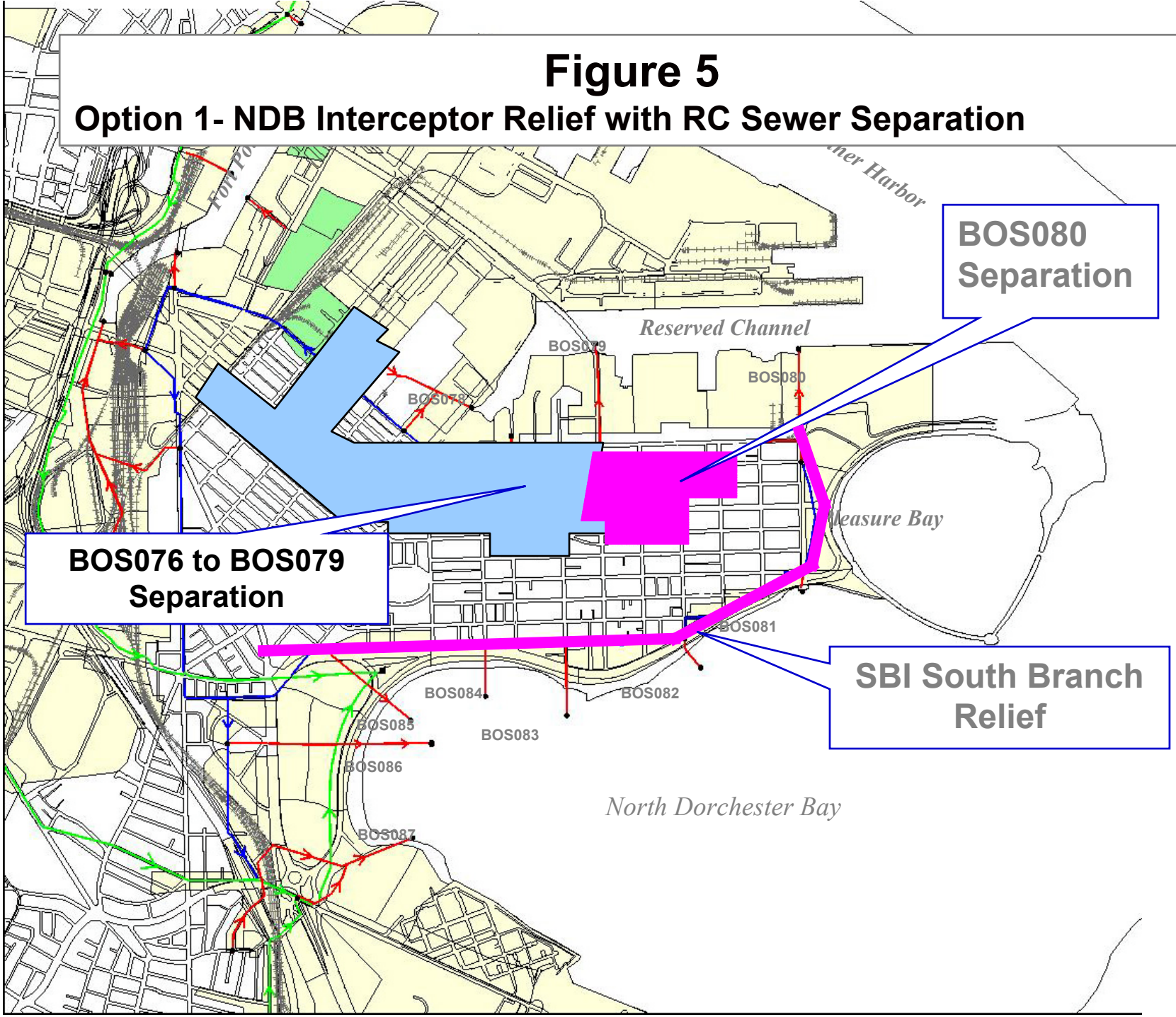


Figure 5

Option 1- NDB Interceptor Relief with RC Sewer Separation



Option 1: Interceptor Relief for North Dorchester Bay and Sewer Separation for Reserved Channel

For the beaches, Option 1 (Figure 5) involves supplementing the capacity of BWSC's South Boston Interceptor-South Branch, which carries combined sewer flows from about half of the South Boston neighborhood to MWRA's Columbus Park Headworks. Under Option 1, a second interceptor, approximately five feet in diameter, would be constructed generally along the current interceptor's alignment in the Day Boulevard/Columbia Road corridor. Option 1 would provide a 1-year level of control for the beaches (zero CSO discharges in an average " typical" rainfall year), compared to the current 21 activations a year. Separate stormwater runoff that discharges through the CSO outfalls to the beaches would not be collected or otherwise changed by this option. Option 1 also includes sewer separation for Reserved Channel, which would reduce CSO discharges to the channel from 37 times per year on average to four times per year (3-month level of control). Stormwater separated from the sewer system would be directed to Reserved Channel. The estimated capital cost of Option 1 is $100 million.

In discussions with stakeholders, the following aspects of this option were raised as warranting further, careful consideration:

- Lowest cost alternative, with a high level of CSO control.
- Least long-term impacts to the community, because no above-ground facilities are required.
- Does not provide the level of CSO control originally recommended and would require changing current water quality standards.
- Higher levels of CSO control may not result in significant water quality improvement, given good existing water quality conditions (94% compliance with swimming standard).
- Does not control separate stormwater that contributes to beach closings.
- Not a building block for possible future CSO elimination.

Option 2: Storage Tunnel for N. Dorchester Bay and Sewer Separation for Reserved Channel

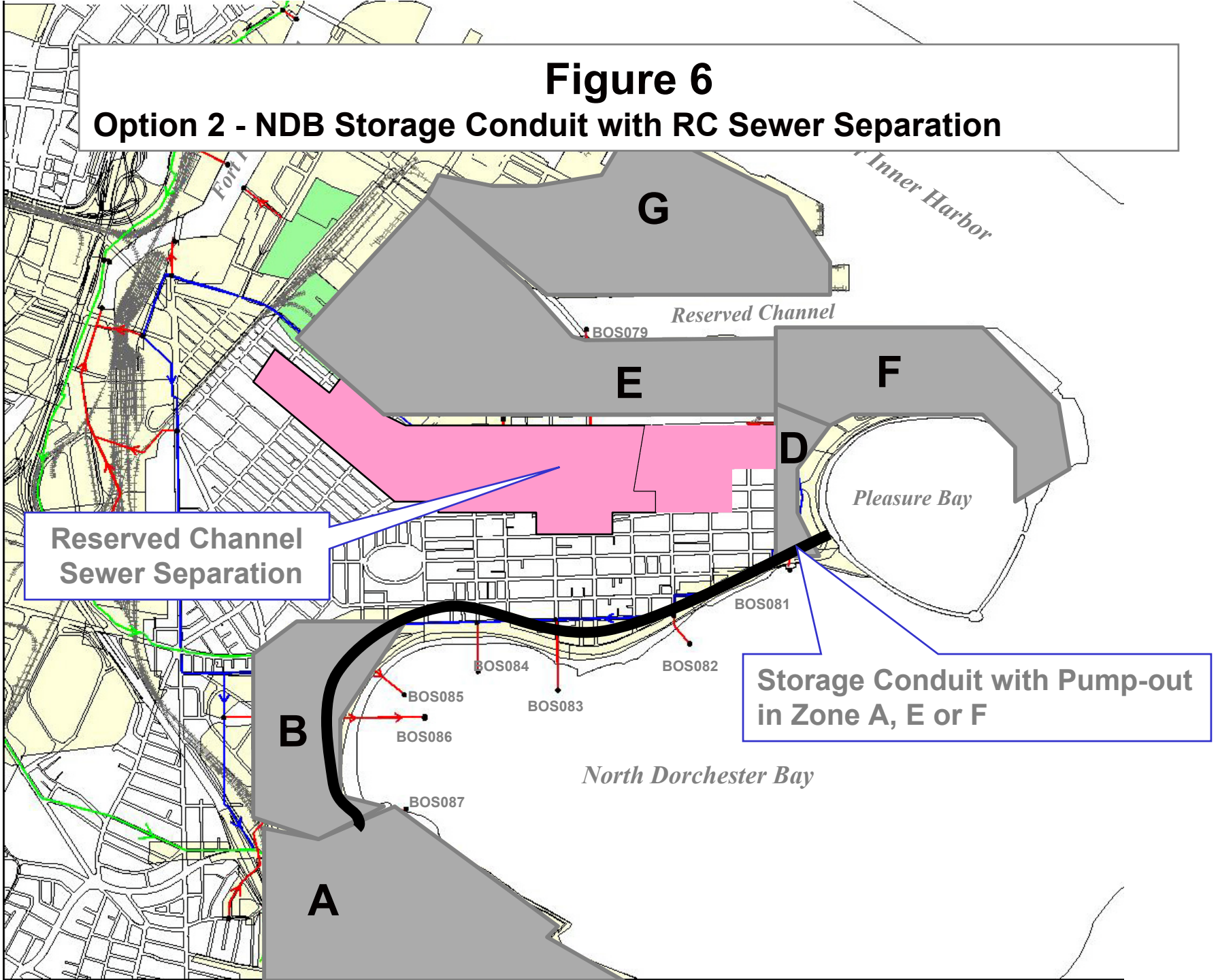
Option 2 (Figure 6) calls for constructing a tunnel along the South Boston beaches, a 10 mgd pumping station to dewater the tunnel to the interceptor system after storms, and an odor control facility at the upstream end of the tunnel. Within this option there are many alternatives, depending on where associated facilities are sited, the size and type of tunnel (from 13-foot diameter in soft ground to 20-foot diameter in deep rock) and the level of CSO and separate stormwater control. Option 2 alternatives offer various levels of control, ranging from 25-year CSO control with no separate stormwater control to 2-year CSO and separate stormwater control.

A range of tunnel alternatives will be evaluated in Phase II, and facility siting options will be considered in Zone A (near UMass Boston), Zone E (along the Reserved Channel and East First St. and Zone F (Conley Terminal), as well as the area immediately adjacent to MWRA's Columbus Park Headworks. MWRA will not consider Zone G (north side of Reserved Channel near the Marine Industrial Park) further, because less costly site options appear to be feasible.

For Reserved Channel, the primary alternative is sewer separation, with performance as described above under Option 1. As a possible alternative to sewer separation, MWRA also plans to consider storage conduit alternatives for Reserved Channel flows.

Figure 6

Option 2 - NDB Storage Conduit with RC Sewer Separation



The estimated capital cost of alternatives within Option 2 now recommended to be carried forward (with Reserved Channel separation) ranges from $160 million to $240 million. In discussions with stakeholders, the following aspects of this option have been raised as warranting further, careful consideration:

- Lowest cost alternative that achieves a high level of CSO control and could include a high level of separate stormwater control.
- Relatively small pumping station and odor control facility at tunnel end may be more easily sited and would have less long-term impacts than the 600 mgd facility associated with Option 4.
- Water quality benefit will be key to selecting levels of CSO and separate stormwater control.
- Does not provide level of CSO control originally recommended and would require changing current water quality standards.
- Can be a building block to future CSO elimination.

Option 3: Storage Tunnel and Phased Sewer Separation for N. Dorchester Bay and Sewer Separation for Reserved Channel

Option 3 is essentially the same as Option 2, except that sewer separation in areas tributary to the beaches would be phased in after tunnel construction, to increase the level of CSO control. By adding sewer separation, CSO flows would decrease over time, allowing the tunnel to contain the flows for larger storms. However, alternatives within this option cost considerably more than Option 2 alternatives with equivalent levels of CSO control and have the additional community impact of construction associated with sewer separation. Again, this would be paired with sewer separation for Reserved Channel. The estimated capital cost of this option ranges from $290 million – $300 million.

After careful evaluation and discussions with stakeholders, MWRA recommends setting Option 3 aside and not further evaluating it in Phase II, for the following reasons:

- Cost is greater than Option 2 with no apparent gain in CSO control or water quality benefit.
- Considerably greater construction impacts than Option 2 by adding sewer separation.

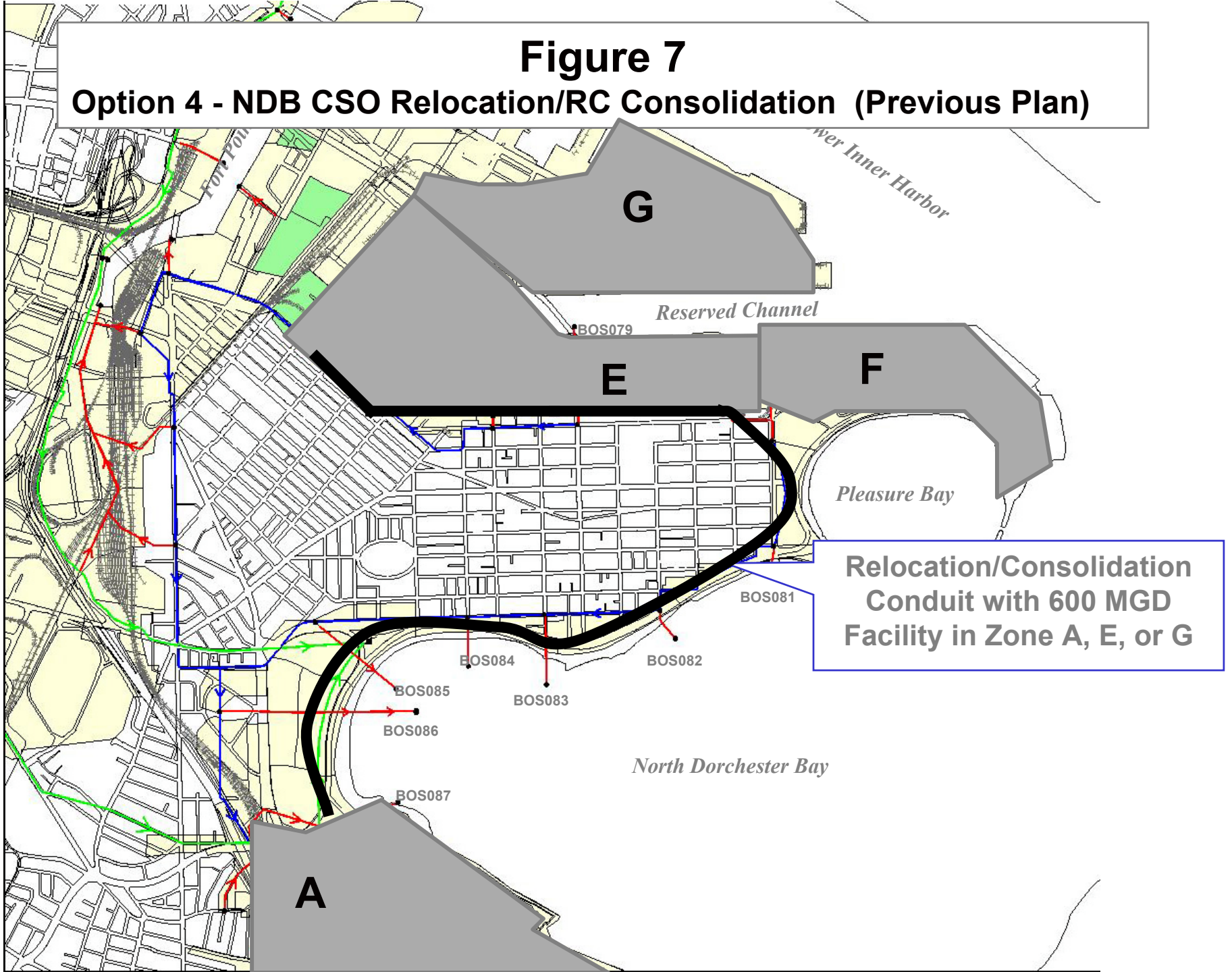
Option 4: Storage/Relocation Tunnel and 600 MGD Pumping Facility for N. Dorchester Bay and Reserved Channel

Option 4 (Figure 7) involves alternatives that are variations of the 1997 recommended plan, which called for the elimination of CSO discharges to North Dorchester Bay and a large reduction in CSO discharge to Reserved Channel by constructing two tunnels (one along the beaches, the other along Reserved Channel), a 600 mgd pumping/treatment station and two odor control facilities (one at the upstream end of each tunnel).

The reassessment will consider alternative sites for the tunnel mining shaft, the 600 mgd facility and the odor control facilities. Option 4 alternatives are the only alternatives that can completely eliminate CSO discharges to the beaches, but are the most expensive and may not result in fewer beach closings than less expensive options, due to the effects of non-CSO pollution sources. The estimated capital cost of Option 4 alternatives ranges from $220 million to $330 million, depending mainly upon the zone in which the large pumping/treatment facility is located.

Figure 7

Option 4 - NDB CSO Relocation/RC Consolidation (Previous Plan)



MWRA will continue to evaluate Option 4 alternatives, for any sites that remain available for a 600 mgd facility, in order to comply with federal and state CSO policies and MEPA requirements. At this time, MWRA intends to evaluate Option 4 alternatives with facility sites in Zones A, E and G. As required by MEPA, MWRA will carry the formerly recommended Site J (in Zone E) into the SEIR for comparison purposes and will update the associated cost estimate, although MWRA continues to believe that Site J is unavailable because of community opposition. The project team does *not* plan to evaluate a Conley Terminal site (Zone F) any further, because Massport has indicated that the terminal's operations would be severely and permanently compromised. It must be noted that some stakeholders, including EPA, DOJ and certain advocacy groups, do not agree with this MWRA position and continue to exert pressure to site the large facility at Conley Terminal, in part due to a perceived potential for a land swap involving the Coastal Oil property. MWRA has also dropped from further consideration siting the facility at Moon Island (Zone H), primarily because it is nearly $120 million more expensive than the next most expensive alternative and provides no apparent advantage. Finally, the remaining alternatives will be evaluated with and without separate stormwater control for North Dorchester Bay and with and without treatment attached to the 600 mgd pumping facility.

In discussions with stakeholders, the following aspects of this option have been raised as warranting further, careful consideration:

- Highest cost alternatives.
- Potential for greatest long-term impacts to the community, resulting from the siting of a 600 mgd pumping facility.
- Concern over the operational reliability of large pumps that may activate only once every two years on average.
- Highest level of CSO and separate stormwater control for both North Dorchester Bay and Reserved Channel with the potential for highest water quality improvement.
- Meets current SB water quality classification and does not require changes to water quality standards
- No assurance that beach closings will end; may not reduce beach closings more than other, less expensive options.
- May not be appropriate or affordable as an immediate plan; phasing should be evaluated.

Involving the Public

Through Phase I of the reassessment, MWRA conducted a public outreach program to brief interested parties on the progress of the reassessment. This program has been key to informing the public about the CSO control alternatives and siting options, fostering discussion on issues of public concern and developing areas of consensus. MWRA has held six public meetings, one in December 2001 and five in 2002. At the most recent meeting, held on December 16, 2002, MWRA reported on the conclusions of Phase I and outlined the next steps in the reassessment.

In addition to conducting public meetings, MWRA met with elected officials, regulatory parties, Wastewater Advisory Committee, Save the Harbor/Save the Bay (and its Science Advisory Committee), The Boston Harbor Association, and Conservation Law Foundation. To supplement these efforts and reach a broader audience, MWRA submitted press releases to local papers and prepared three newsletters for wide distribution. The public participation program will continue through Phase II of the reassessment and into the formal MEPA public comment period on the SEIR.

Considering Key Issues Moving Forward

The Phase II evaluations must address some very complex and difficult issues. Water quality impacts and the sources of remaining water quality problems and beach closings will be key, as discussed earlier. One of MWRA's goals is to ensure that the water quality benefits of a selected plan for CSO control are commensurate with cost.

MWRA is not responsible for controlling separate stormwater discharges to North Dorchester Bay. However, MWRA is required to evaluate the cost and benefit of separate stormwater control under its MEPA obligations. For those alternatives that consider controlling separate stormwater to achieve additional water quality benefit under certain storm conditions, appropriate involvement and cost sharing among responsible agencies (e.g. MDC, BWSC) must be addressed.

In order to fully evaluate one or more Option 4 alternatives that eliminate CSOs to the beaches, an acceptable site for a 600 mgd pumping facility must be available. Also, any recommended plan that does not call for elimination of CSO discharges to North Dorchester Bay would likely be opposed by regulatory agencies, regardless of the cost and relative water quality benefits. If MWRA recommends a plan that does not eliminate CSO discharges to the beaches, at a minimum it must present information to support a Use Attainability Analysis (UAA) for revising Class SB standards in North Dorchester Bay.

Finally, for any recommended plan, careful consideration should be given to a project implementation schedule that addresses affordability and other schedule-related impacts.

Progress in First Quarter 2003

MWRA finalized its report on Phase I of the reassessment (*Report on Preliminary Alternatives Evaluation*) in March. On March 12, the MWRA Board of Directors authorized the commencement of Phase II reassessment work. Initial Phase II efforts, now underway, include developing site specific layouts for the remaining alternatives, collecting and analyzing relevant information on geotechnical and hazardous materials conditions, and resuming the water quality sampling program.

MWRA is seeking additional time than originally estimated to complete Phase II work and select a CSO control plan. The additional time is primarily needed to complete the water quality evaluations, which will include continuing the water quality sampling in wet weather and dry weather, assessing the benefits of work by BWSC to remove illicit sewer connections from the storm drains and outfalls analyzing the water quality data, and carefully assessing the water quality benefits of the various CSO control alternatives. Additional time is also needed in bringing the Phase II information and decision making to all stakeholders. If the water quality sampling program is completed by June 2003, MWRA expects to be able to complete Phase II and submit the SEIR, including a new recommended plan for CSO control, by March, 2004.

HYDRAULIC RELIEF PROJECTS AT CAM005 AND BOS017

This contract combined two localized hydraulic relief projects, one in Cambridge to minimize CSO discharges at CAM005 and the other in Charlestown to minimize CSO discharges at BOS017. In Cambridge, the 24-inch, 40-foot long dry weather connection between the CAM005 regulator and MWRA's North Charles Metropolitan Sewer, adjacent to Mt. Auburn Hospital, was relieved with a new 54-inch additional connection. In Charlestown, at BOS017, 190 feet of 36-inch pipe was installed in Sullivan Square to divert two local (BWSC) combined sewers to a more 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. This last improvement was intended to lower hydraulic grade lines in the Charlestown Branch Sewer during wet weather, possibly relieving CSO overflow conditions upstream, at outfall BOS019.

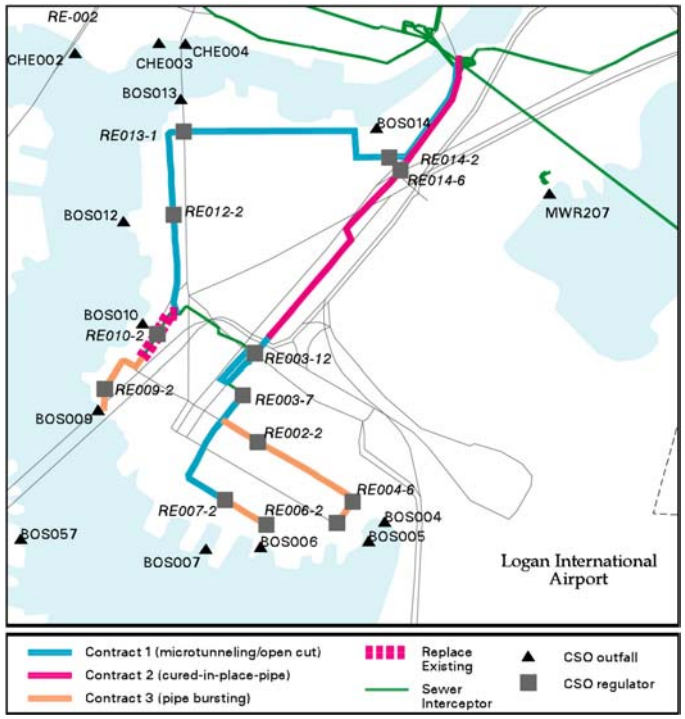
The projects were completed in 2000, on schedule.

EAST BOSTON BRANCH SEWER RELIEF

	Court Milestone	MWRA Schedule
Commence Design	March 2000	March 2000
Commence Construction	March 2003	March 2003
Complete Construction	September 2005	Pending reassessment

This project calls for relief of the MWRA interceptor system serving most of East Boston, to minimize CSO discharges to Boston Harbor and Chelsea Creek through outfalls BOS003-014. A total of 24,750 feet of existing sewers will be replaced, relieved or rehabilitated using a combination of construction methods, including open cut, pipe bursting, microtunneling, and pipe repair or relining (see figure below).

MWRA issued a Notice to Proceed for design services in March 2000. The design work was originally scoped to produce three construction contracts to complete the project. The first contract involves rehabilitation of portions of the existing East Boston Branch Sewer with cured-in-place-pipe liner. The second contract involves installation of a new sewer interceptor along Condor, East Eagle and Border Streets using microtunneling methods, and the third contract would replace and upgrade interceptors in the Jeffries Point area using pipe bursting methods.



In the last Annual Report, MWRA described its need to reevaluate the cost and benefits of the recommended plan in light of new information showing that the estimated construction cost of the project had greatly increased, from $30 million in the 1997 Facilities Plan/EIR (with inflation) to $50 million in the 2001 Preliminary Design Report. In addition, the Preliminary Design Report indicated that the hydraulic performance of the relief project and attendant reduction in CSO discharges may not be achieved to the level predicted in the Facilities Plan/EIR. While design efforts were proceeding in accordance with Schedule Six, MWRA reported its need and intent to reevaluate the project's cost and performance relative to other CSO control options, including alternatives that were evaluated in the 1997 Facilities Plan/EIR.

While final design activities continued, MWRA completed an initial reassessment of the project in early 2002, the results of which it reported to its Board of Directors and the Court in April. The results verified the increased construction cost estimate and confirmed that the CSO control goals of the 1997 Facilities Plan/EIR would not be achieved with the project as scoped. The results also showed a potential for achieving greater CSO reductions at similar or lower cost through combinations of hydraulic relief and sewer separation. Based on this initial reassessment, MWRA recommended that different levels and combinations of hydraulic relief and sewer separation be evaluated in more detail.

In its April 26, 2002, *Special Report Concerning Construction of Interceptor Relief for BOS 003-014*, MWRA reported to the Court that it would move forward with the first construction contract, involving pipeline rehabilitation that was necessary to safeguard the structural integrity of the existing system and offer some hydraulic benefit for CSO control. With this contract MWRA could meet the March 2003 court milestone for commencement of construction. MWRA also reported, however, that it could not move forward with design of the remaining construction contracts pending a full project reassessment and, therefore, would not be able to meet the September 2005 milestone for completion of construction. MWRA expected that it would take several months to complete the reassessment.


The East BostonBranch Sewer Relief Project will reduce CSO discharges at outfall **BOS012** and several other outfalls.

MWRA completed design work on the first construction contract and advertised the contract for bids on November 2, 2002. MWRA received construction bids on December 19, 2002. MWRA was unable to commence the detailed project reassessment in 2002, as it had hoped, and plans to conduct the reassessment in 2003.

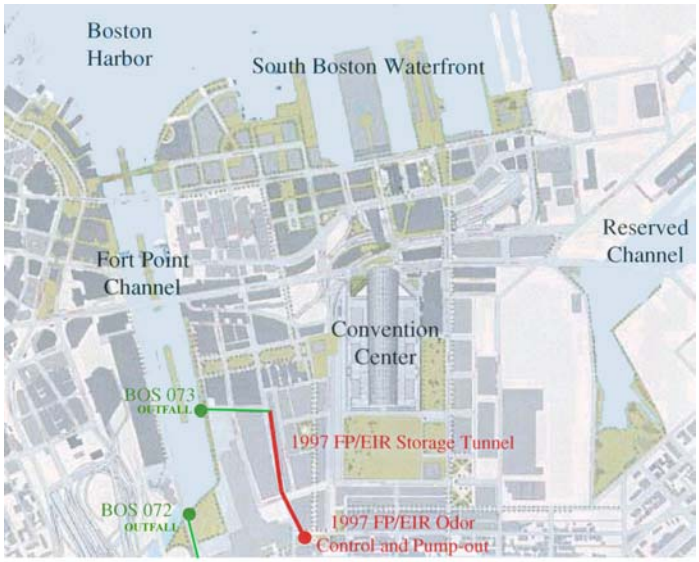
Progress in First Quarter 2003

MWRA's Board of Directors awarded the first construction contract on March 12. MWRA plans to issue a notice to proceed by March 31, 2003, in compliance with Schedule Six. The work primarily involves rehabilitating the existing trunk sewer along Chelsea Street in East Boston and is expected to take ten months to complete.

Efforts to pursue the reassessment are underway. MWRA expects to commence the project reassessment by June 2003 and complete it by the end of the year. Key considerations include determining the potential for removing stormwater flow from the combined sewer system; determining the potential for diverting flows within the East Boston interceptor network; accurately estimating the cost of separating sewers in various parts of East Boston, where many buildings have internal connections between roof drains and sanitary pipes; and modeling the hydraulic performance of the combined sewer system with different levels of hydraulic relief and separation. MWRA expects to work closely with BWSC in this effort, because the MWRA and BWSC sewer systems are extensively interconnected throughout East Boston. MWRA will seek, among other information, any new BWSC plans for sewer separation or other sewer system modifications in East Boston to update the baseline conditions upon which CSO controls will be evaluated. As an example, BWSC is currently evaluating the feasibility of separating sewers in the area of Marginal and Cottage Streets.

FORT POINT CHANNEL (BOS072-073) AND BOS019 STORAGE CONDUITS

This design contract combines two CSO storage projects, one at Fort Point Channel in South Boston and the other adjacent to the Little Mystic Channel in Charlestown. At Fort Point Channel, the 1997 Facilities Plan/EIR recommended a 10-foot diameter, 1,500 foot long conduit to be constructed along A Street in South Boston using tunneling methods, to capture and store CSO flows from outfalls BOS072 and BOS073 for all but the two largest storms in a typical year.



1997 Recommended Plan

In Charlestown, a 380-foot long, 12'x12' box conduit was recommended to be constructed adjacent to the Tobin Bridge to store most of the CSO flows that discharge at outfall BOS019. The flows stored in both conduits would be pumped back to the Deer Island transport system after each storm passes and system capacity becomes available. Above-ground structures to be located directly over the dewatering chambers would house the dewatering equipment and activated carbon odor control systems, which would treat the air that is displaced when the conduit fills with combined sewage.

During larger storms that cause overflows that exceed the storage volume of each conduit, system relief would continue to be provided through the existing outfalls. For this reason, underflow baffles were recommended to be installed within the existing and proposed regulators as part of these projects, in order to provide floatables control.

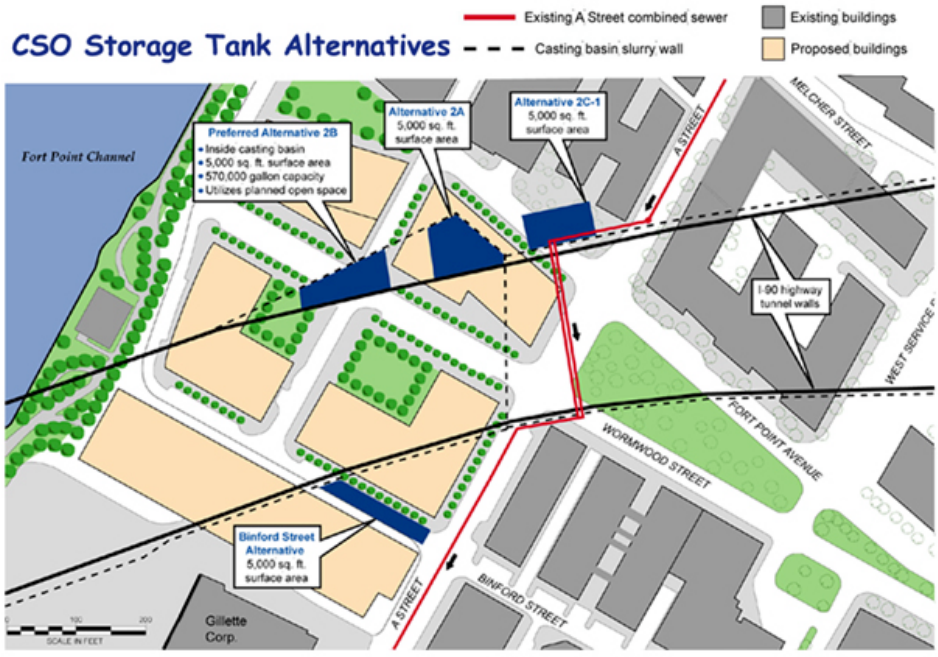
	Court Milestone	MWRA Schedule
Commence Design		
Fort Point Channel Conduit	July 2002	July 2002
BOS019 Storage Conduit	January 2003	July 2002
Commence Construction		
Fort Point Channel Conduit	March 2005	March 2005
BOS019 Storage Conduit	March 2005	March 2005
Complete Construction		
Fort Point Channel Conduit	March 2007	March 2007
BOS019 Storage Conduit	September 2006	September 2006

MWRA commenced the design contract for both the Fort Point Channel storage conduit and the BOS019 storage conduit in July 2002, in compliance with Schedule Six. An updating of baseline flow conditions and other project assumptions and a full reassessment of the cost and performance of the storage conduits were conducted as first efforts in the Preliminary Design phase. The goals of the reassessment were to reevaluate the recommended plan with any new information or changes in assumed conditions and to conduct a value engineering study to determine if there were any less costly project alternatives that could meet CSO control and water quality goals. The reassessment was motivated by new information on

improved system performance, a potential for changes in system flows due to planned development projects, higher soft-ground tunneling costs and risks, and other construction risks, including the presence of subsurface contamination.

The Fort Point Channel changes since 1997 fell into three categories: land use and development, geoenvironmental conditions, and hydraulic performance of the combined sewer system. Much of the reassessment work in 2002 involved a review of plans for the new Boston Convention and Exhibition Center, the proposed Channel Center office development (formerly Midway) and the Central Artery (CA/T) I-90 Extension Tunnel/Casting Basin. Meetings were held with Gillette Corporation, which owns much of the open land in the area, and the Boston Redevelopment Authority to determine the latest master plan proposals for the 100-acre Fort Point Channel Industrial District.

Ongoing and planned changes in land use will have a significant effect on the hydraulic performance of the wastewater system in the Fort Point Channel project area. What was modeled in the 1997 Facilities Plan/EIR as a 144 acre combined sewer area tributary to CSO outfalls BOS072 and BOS073 is now estimated to be 55 acres, through sewer separation work now underway or planned as part of the Convention Center and the other development projects. As a result, the estimate of current annual CSO discharge volume at outfalls BOS072 and BOS073 has been reduced from 7.2 million gallons in the 1997 Facilities Plan/EIR to 3.9 million gallons. In the 1997 Facilities Plan, BOS072 and BOS073 were estimated to activate 15 times each in a typical rainfall year, under existing conditions. These outfalls are now estimated to activate 8 times each.



The value engineering study portion of the reassessment is examining the two most feasible CSO strategies for this area: 1) storage, provided by constructing a tunnel or a tank, and 2) sewer separation. Various storage and sewer separation options are being evaluated. Based on the new flow information, the estimated storage volume necessary to meet CSO control goals at outfalls BOS072 and BOS073 has been reduced from 880,000 gallons to 570,000 gallons. Preliminary results of the evaluation of tunnel and tank storage options with this storage capacity indicate that the cost of constructing a tank storage may be as low as 25% of the cost of a tunnel.

Alternative storage tank locations within the Fort Point Channel development area have been identified and discussed with Gillette and the BRA.

Given the large reduction in combined sewer area tributary to the outfalls since 1997, sewer separation was also reexamined. Sewer separation carries the lowest operations and maintenance costs and does not require aboveground structures, although it does have a longer construction duration and greater construction impacts to the community than either a tunnel storage or tank storage option. The cost of performing enough sewer separation work to meet the 1997 CSO goals may be less than half the cost of the tunnel recommended in 1997.

The reassessment also examined the effects of sewer separation in the Reserved Channel area, which is being considered under the ongoing South Boston CSO Reassessment, on the Fort Point Channel overflows. The Reserved Channel and Fort Point areas are both served by BWSC's South Boston Interceptor – North Branch. Recent hydraulic modeling results indicate that Reserved Channel sewer separation would significantly reduce stormwater flows to the interceptor and relieve overflow conditions at the downstream Fort Point Channel outfalls, in addition to reducing overflows at the Reserved Channel outfalls, further reducing the need for CSO control at Fort Point Channel.

Compared to Fort Point Channel, relatively few sewer system and land use changes have been found in the area tributary to BOS019 since the 1997 Facilities Plan/EIR. Key to the reassessment at BOS019, however, was gaining a more accurate understanding of system performance, especially the performance of MWRA's Charlestown Branch Sewer in response to large storms. Early results of the reassessment, which included flow metering during 2002 and recalibration of the hydraulic model in this area, suggest that overflow frequency and volume at BOS019 may be higher than estimated in 1997. Investigations into the causes of these higher overflow predictions is ongoing.

Progress in First Quarter 2003

MWRA continued to evaluate changed conditions, system performance and project alternatives for the Fort Point Channel and BOS019 storage projects. The results of these investigations are expected to be finalized in May 2003. MWRA will then, with the approval of its Board of Directors, propose final plans and schedules for meeting CSO control goals at outfalls BOS072, BOS073 and BOS019. A possible future decision on the South Boston CSO Reassessment to separate sewers in the Reserved Channel area will be considered in the Fort Point Channel decision.

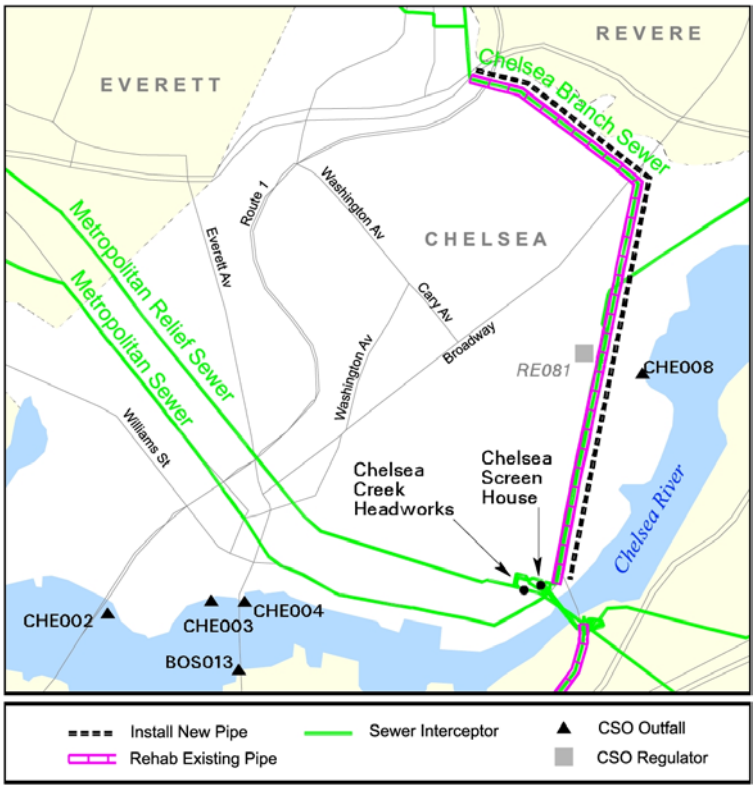
CHELSEA RELIEF SEWERS

Chelsea Trunk Sewer Replacement

This project was recommended to minimize CSO discharges to the Inner Harbor at outfalls CHE002, CHE003 and CHE004. The existing Chelsea Trunk Sewer, which varies in diameter from 8 to 15 inches, was replaced with 2,300 feet of 30-inch diameter pipe using open cut and jacked casing methods. Information obtained during design about the physical conditions of the CHE002, CHE003 and CHE004 outfalls led to a decision to add replacement or rehabilitation of sections of the CHE002 and CHE003 outfalls to the trunk sewer replacement contract. MWRA managed the construction, but the City retains ownership and responsibility for operation and maintenance. This project was completed in 2000, on schedule.

Chelsea Branch Sewer Relief

The CSO plan recommended relieving MWRA's Chelsea Branch Sewer to minimize CSO discharges to Chelsea Creek at outfall CHE008 and reduce surcharging in the upstream transport system. The construction contract also included repairs to the existing CSO outfall at CHE008. MWRA installed 4,200 feet of 42-inch pipe and 3,500 feet of 66-inch pipe along or near Cabot Street and along Eastern Avenue, to replace or relieve MWRA's Chelsea Branch Sewer and Revere Extension Sewer, which lie parallel along Eastern Avenue. The new pipes were constructed primarily using microtun-neling methods. This project was completed in 2001, on schedule.

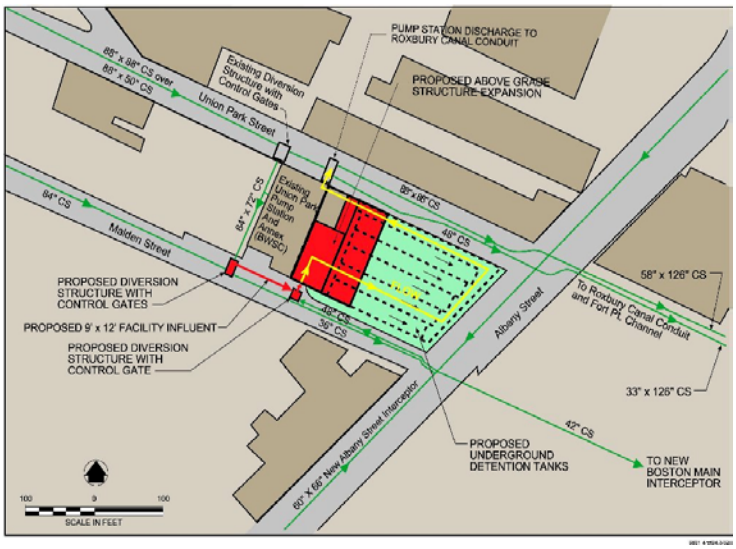


CHE008 Floatables Control and Outfall Repairs

Outfall repairs at CHE008 included relining approximately 540 feet of the existing 42-inch outfall pipe, replacing 35 feet of the pipe at its downstream end, replacing the headwall and laying new riprap shore protection. An underflow baffle was installed at the sole regulator structure associated with this outfall, to provide floatables control. This project was completed in 2001, on schedule.

UNION PARK DETENTION/TREATMENT FACILITY

The proposed Union Park Detention/ Treatment Facility is intended to improve water quality in the Fort Point Channel by providing treatment of CSO flows that are discharged through BWSC's Union Park Pumping Station. The existing pumping station, constructed in 1976, provides flood control for the South End neighborhood of Boston. The Facilities Plan/EIR calls for the detention/treatment facility to be constructed adjacent to the existing pumping station, on property now owned by BWSC at the intersections of Albany, Malden and Union Park Streets in the South End. Flows will pass through the new treatment facility before entering the pumping station wet well.

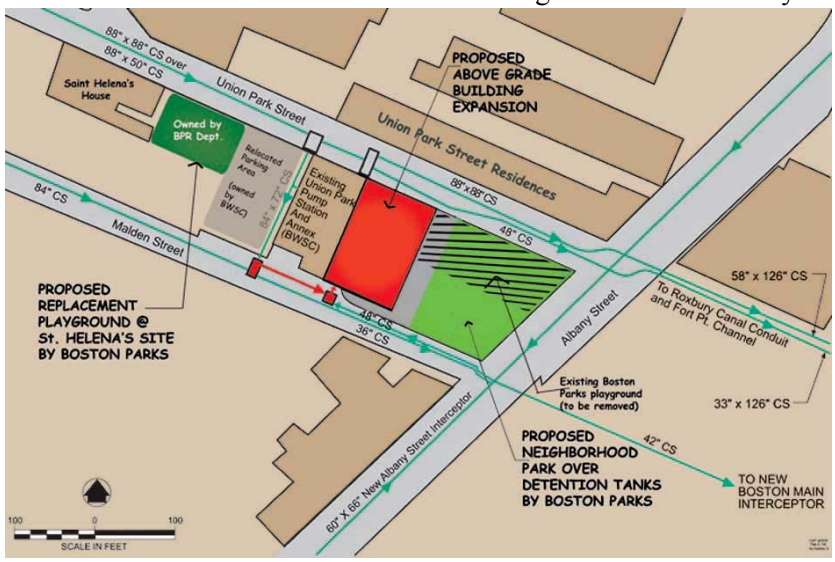


The recommended plan calls for adding finer screens, chlorination with sodium hypochlorite, dechlorination with sodium bisulfite and below-ground detention tanks measuring approximately 90 ft. x 140 ft. and 20 ft. deep. The buried tanks, which will have a combined storage capacity of 2.2 million gallons, are intended to reduce the average annual number of pumping station discharges to the Fort Point Channel (from 25 to 17 per year) and to detain flows that exceed the storage capacity in larger storms, to allow a level of solids removal. While a large portion of the new facility will be below ground, the plan includes a significant addition to the above-ground structure of the existing pumping station, to house treatment system components and accommodate operation space needs.

	Court Milestone	MWRA Schedule
Commence Design	December 1999	December 1999
Commence Construction	March 2003	March 2003
Complete Construction	March 2005	September 2005

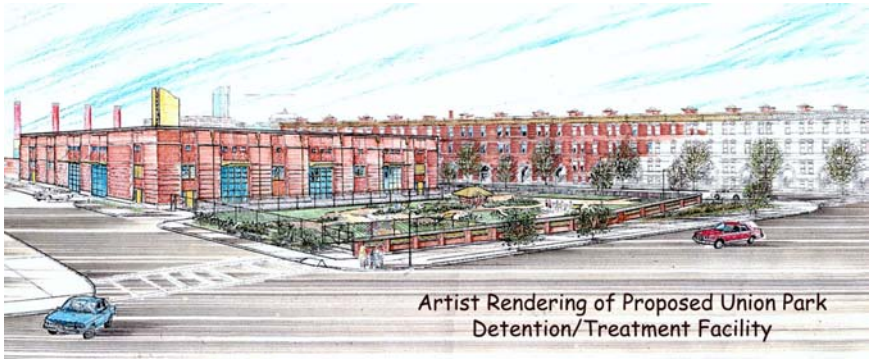
In January 2002, MWRA and BWSC executed a Memorandum of Agreement ("MOA") that identifies the responsibilities of each agency during design, construction and long-term operation of the existing pumping station and proposed treatment facility. Among other provisions of the MOA, MWRA and BWSC agreed to jointly procure a service contract for the combined operation of these facilities, once the treatment facility is completed. Later in 2002, MWRA agreed to incorporate several pumping station improvements into the treatment facility construction contract, at BWSC's request. BWSC is responsible for related design and construction costs. Design then proceeded jointly on the MWRA treatment facility and the BWSC pumping station improvements. Throughout the design period, MWRA conducted a public participation program that addressed odor control, architectural appearance, mitigation of construction impacts and other design and construction issues.

Since the project was first recommended, another key issue has been the replacement of an existing Boston Parks and Recreation Department ("Boston Parks") playground, which covers about half of the proposed treatment facility site and must therefore be removed prior to facility construction. MWRA had agreed, in 1997, to replace the playground in-kind over the buried detention tanks following construction. Early in design, MWRA also agreed to provide a temporary playground during the construction period. In 2002, MWRA continued its discussions with Boston Parks and the Union Park neighborhood and reached tentative agreement on a playground plan. Under the plan, Boston Parks would be responsible for planning, design and construction of a permanent replacement playground on land owned by Boston Parks near the construction site (in lieu of providing a temporary playground), as well as the restoration of land over MWRA's



underground detention tanks (on BWSC property) for passive recreation purposes. To satisfy its commitments, MWRA would fund the planning, design and construction work up to an agreed amount.

In the fall of 2002, final design work was completed, and the construction contract was advertised for bids on December 4, 2002. In December, MWRA notified EPA and DEP that it would not be able to comply with the March 2005 milestone for construction completion. MWRA and its design consultant had completed a detailed analysis of construction activities, based on the final design plans, to assess construction duration and the feasibility of meeting the milestone. Based on this analysis, MWRA recommends a 30-month construction duration, six months longer than provided in Schedule Six, to complete what MWRA estimates will be complicated construction work on a very tight site. Significant changes to the treatment facility have been made, in part to accommodate greatly expanded odor control equipment and to provide additional hydraulic control features to ensure that the pump station's flood abatement purpose would not be compromised by the treatment facility. MWRA expects to ask the Court to revise the milestone for completion of construction from March 2005 to September 2005.



Progress in the First Quarter of 2003

In March, MWRA's Board of Directors awarded the construction contract for the Union Park Detention/Treatment Facility. Construction is scheduled to commence by the end of March, in compliance with Schedule Six. MWRA also executed a Memorandum of Agreement with Boston Parks in March on the plan to provide a replacement playground and a passive recreation area over the proposed detention tanks.

UPGRADES TO EXISTING CSO FACILITIES

MWRA has upgraded five of its six CSO facilities (Commercial Point, Cottage Farm, Fox Point, Prison Point and Somerville Marginal) to improve treatment performance and meet new residual chlorine discharge limits. [The sixth facility, at Constitution Beach in East Boston, was decommissioned by MWRA in 2000, following completion of sewer separation work in that area (see later discussion).] The work generally included replacement and upgrading of the existing chlorine disinfection systems and construction of dechlorination systems, as well as other process control and safety improvements.

At the Cottage Farm and Prison Point facilities, the upgrade work was located entirely within the existing facility site bounds. The Commercial Point upgrade included construction of a remote 36'x36' dechlorination building nearly one-half mile downstream of the facility, on Massachusetts Highway Department property adjacent to the Southeast Expressway.

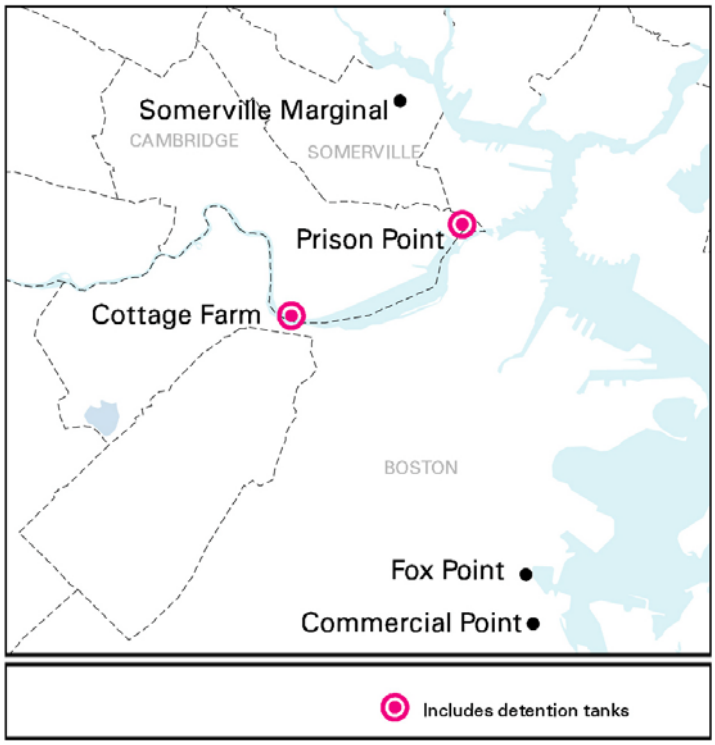
The Fox Point upgrade included construction a new chlorination and dechlorination building next to the existing facility and installation of a 2,700 foot force main from the new building to the dechlorination

point on the existing outfall, where a 12'x12' process control and sampling building was constructed adjacent to Morrissey Boulevard. The work at Somerville-Marginal was similar to that for Fox Point. A new chlorination and dechlorination building was constructed adjacent to the existing facility under the elevated portion of Route 93. A force main was installed to the dechlorination point 1,800 feet downstream of the facility, where a 12'x12' process control and sampling building was constructed on the Assembly Square Mall property.

By mid-2002, MWRA completed acceptance testing at all five upgraded facilities. MWRA operations staff continued to optimize treatment processes and finalize standard operating procedures, during the periods of "startup and system optimization" referenced in footnote 35 of Schedule Six. By the end of the year, the startup and optimization periods for the Prison Point and Cottage Farm facilities had come to an end, and these facilities are now subject to the discharge limits in MWRA's NPDES permit. Startup and optimization periods for Commercial Point, Fox Point and Somerville Marginal continued into 2003.

Progress in the First Quarter of 2003

MWRA continues to monitor and adjust new systems at all five upgraded facilities, and it continues to be in the period of startup and optimization at Commercial Point, Fox Point and Somerville-Marginal.



5.2 Community Managed Projects

SOUTH DORCHESTER BAY SEWER SEPARATION

This project is intended to eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. Separation work will primarily involve the construction of new storm drains and appurtenant structures, relocation of storm runoff connections from the existing combined sewer to the new storm drains, and rehabilitation of the existing combined sewers for use as sanitary sewers. The plan calls for approximately 140,000 feet of new storm drains. BWSC is implementing the project with MWRA funds.

	Court Milestone	Project Schedule
Commence Design	June 1996	June 1996
Commence Construction	April 1999	April 1999
Complete Construction	November 2008	November 2008

Table 3 shows project design and construction progress. As of March 2003, construction is about 39% complete, measured by linear feet of installed storm drain. Schedule Six requires construction to progress at 10% per year from the commencement of construction in April 1999 (i.e. 40% complete by April 2003). Since 1999, awarded contracts have progressively increased in size, and the amount of construction on the streets increased rapidly in 2002 and early 2003. The largest of the contracts awarded to date (Contract 7) commenced in January 2003. Actual progress is expected to surpass court mandated progress later in 2003.

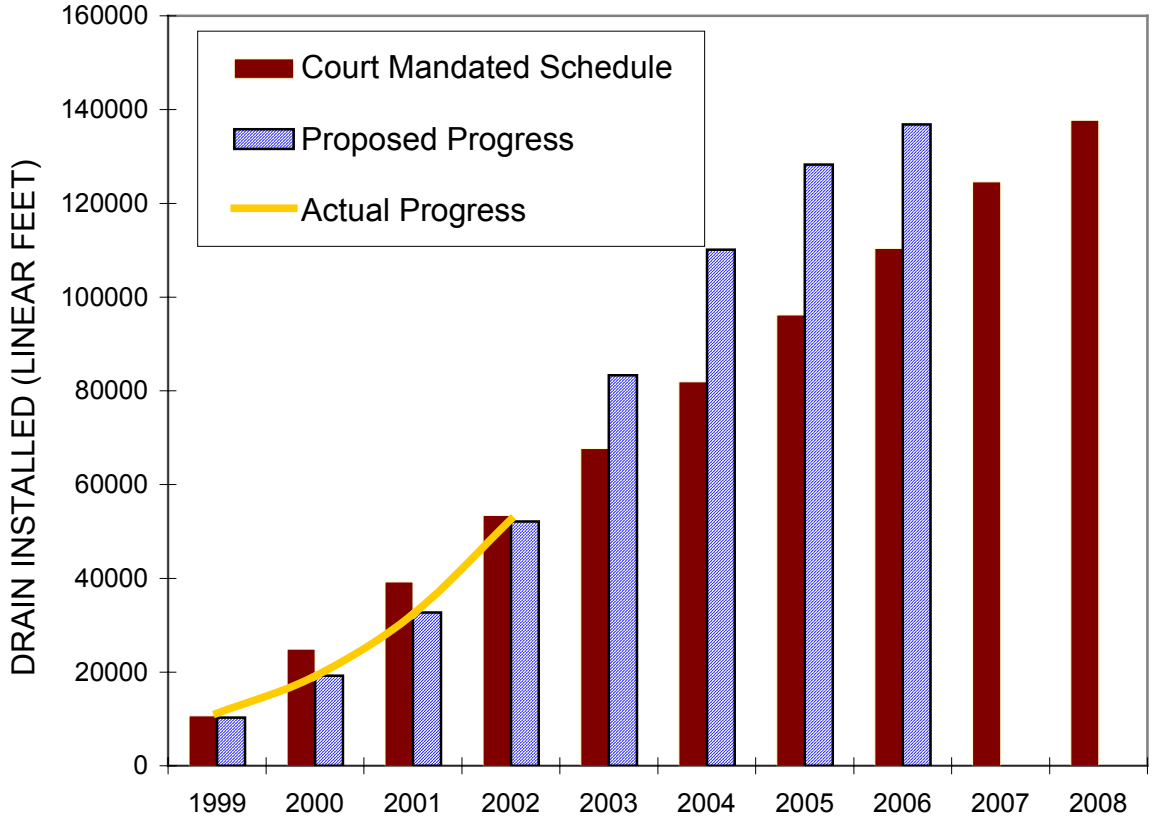

South Dorchester Bay Sewer Separation
Construction on Dorechester Ave.

As shown in Table 3, BWSC has completed the initial street paving contract and plans to award an additional paving contract in April 2003. The sediment cleaning contract (Contract 10), necessary to restore the hydraulic capacity of the outfall pipes (which pass through MWRA's Commercial Point and Fox Point CSO Treatment Facilities) to convey the new separated stormwater flows, commenced in November 2002 and is scheduled for completion by the end of 2003. The initial downspout disconnection contract for Dorchester, which also includes downspout disconnection work in other CSO project areas, such as Jamaica Plain (Stony Brook project), Neponset and East Boston (Constitution Beach), was bid in 2002 and is expected to be awarded by BWSC in the spring of 2003. The disconnection of downspouts from the combined sewer systems is necessary to remove enough stormwater from the sewers to meet CSO project goals.

BWSC plans a total of 16 construction contracts to complete the South Dorchester Bay Sewer Separation project. Once complete, and all CSO regulators are confirmed to be closed, MWRA plans to decommission its Commercial Point and Fox Point CSO treatment facilities.

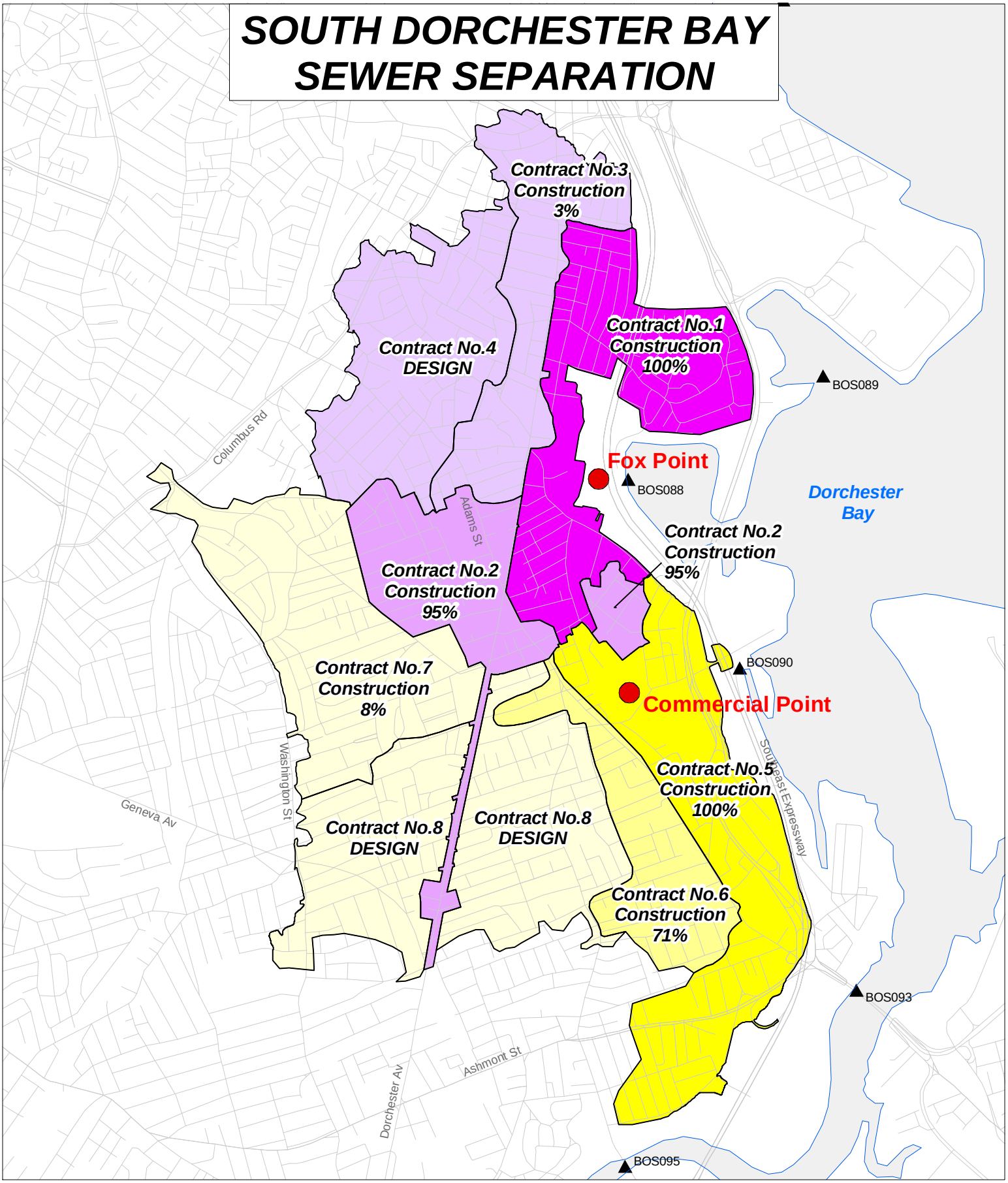
TABLE 3

South Dorchester Bay Sewer Separation Project
Annual Progress of MWRA/BWSC Drain Installation



Construction Contract	Total Linear Ft. Storm Drain	NTP	Percent Complete							
			Thru 2000		Thru 2001		Thru 2002		1st Q 2003	
			Design	Construction	Design	Construction	Design	Construction	Design	Construction
1	15,770	Apr-99	100	64	100	98	100	100	100	100
2	16,803	Sep-00	100	0	100	36	100	91	100	95
3	17,070	Dec-02	75	0	90	0	100	0	100	3
4	21,125	Jun-03	10	0	20	0	75	0	75	0
5A	1,091	May-00	100	95	100	100	100	100	100	100
5	7,956	Apr-99	100	100	100	100	100	100	100	100
6	18,280	Aug-01	90	0	100	10	100	68	100	71
7	19,510	Jan-03	10	0	20	0	100	0	100	8
8	23,600	Oct-03	10	0	20	0	20	0	45	0
TOTAL	141,205		66%	14%	72%	23%	88%	37%	90%	39%
Related Contracts										
9	-	2006-2007	10	0	15	0	15	0	15	0
10	-	Nov-02	50	0	50	0	100	0	100	13
Paving 1	-	Jun-99	100	50	100	75	100	90	100	100
Paving 2	-	Apr-03	50	0	75	0	100	0	100	0
Paving 3	-	Apr-06	50	0	75	0	75	0	75	0
Downspout Removal	-	Mar-03	50	0	75	0	100	0	100	0

SOUTH DORCHESTER BAY SEWER SEPARATION



Contract 1 - Sewer separation complete
Contract 2 - Sewer separation 95% complete
Contract 3 - Sewer separation 3% complete
Contract 4 - To be bid in 2003
Contract 5 - Sewer separation complete
Contract 6 - Sewer separation 71% complete
Contract 7 - Sewer separation 8% complete
Contract 8 - To be bid in 2003

STONY BROOK SEWER SEPARATION

This project is intended to minimize CSO discharges to the Stony Brook Conduit and the Back Bay Fens, both of which drain to the Charles River, by separating combined systems in parts of Roxbury and Jamaica Plain. The separation work involves constructing approximately 73,300 feet of new storm drain pipe. BWSC is implementing the project with MWRA funds.

Table 4 reports project design and construction progress. As of March 2003, construction is about 31% complete, measured as linear feet of installed storm drain. Schedule Six requires construction to progress at 15% per year from the commencement of construction in July 2000 (i.e. 45% complete by July 2003). Contract 1, which includes 42% of the project's total proposed storm drain construction, was awarded in April 2001 and is 68% complete. Contract 2, which includes another 34% of the storm drain construction, commenced in March 2003. With the commencement of Contract 2, construction activity will soon reach a peak, and actual progress is expected to surpass court mandated progress by the end of the year. BWSC has also advertised the initial paving and downspout disconnection contracts, which are expected to commence soon. BWSC plans a total of seven construction contracts to complete the Stony Brook Sewer Separation project.

	Court Milestone	Project Schedule
Commence Design	July 1998	July 1998
Commence Construction	July 2000	July 2000
Complete Construction	September 2006	September 2006

NEPONSET RIVER SEWER SEPARATION

This project involved sewer separation in the Neponset section of Dorchester, to eliminate CSO discharges to the Neponset River at outfalls BOS093 and BOS095. The separation work included construction of approximately 10,000 feet of new storm drains. BWSC performed the work with MWRA funds.

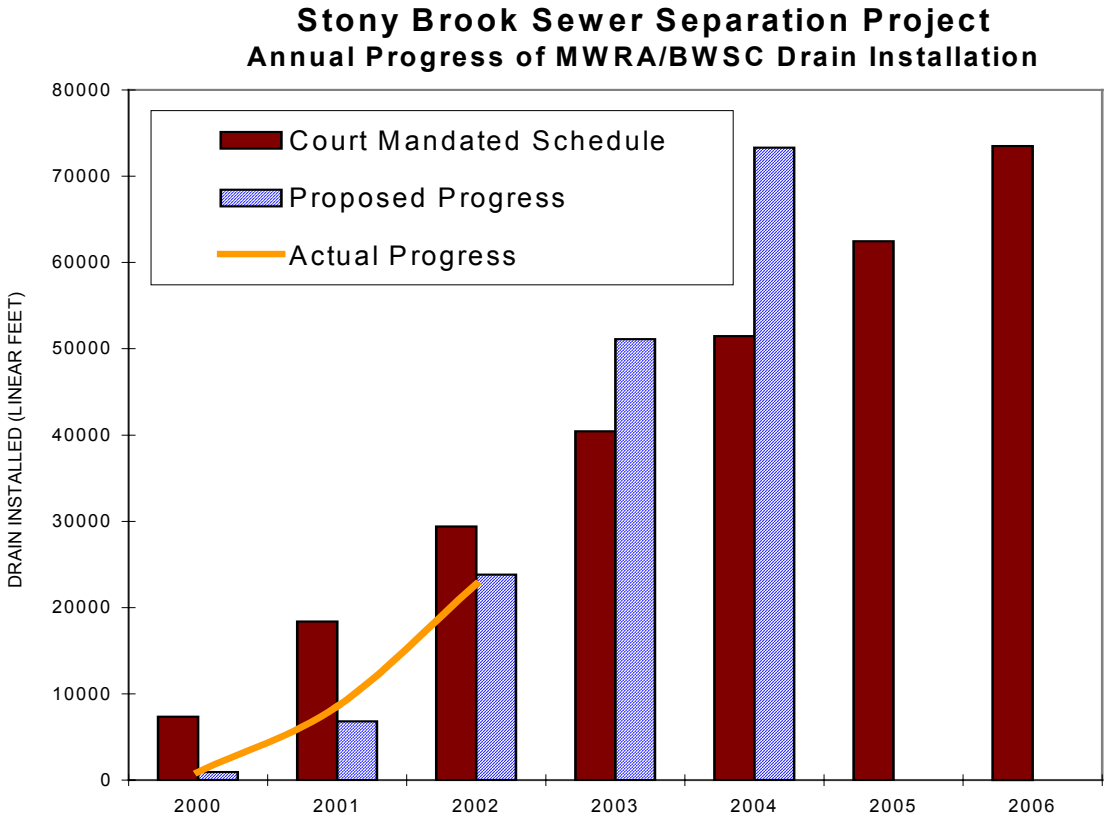
BWSC completed storm drain construction and closed the last remaining CSO outfall to the Neponset River in June 2000. It continues to perform downspout disconnections and other work to remove additional stormwater inflow from the sewer system, in order to minimize the risk of surcharging and flooding. In December 2002, BWSC commenced contract to remove additional inflow sources from sewer systems in the Neponset area as well as other CSO project areas. This contract will further reduce the amount of stormwater flow into the sewer system by removing non-residential, private drainage connections, such as connections from private parking lots.

CONSTITUTION BEACH SEWER SEPARATION

This project involved sewer separation in a section of East Boston, to eliminate CSO discharges at the Constitution Beach CSO facility (outfall BOS002/MWR207). The separation work included construction of approximately 14,000 feet of new storm drains. BWSC performed the work with MWRA funds.

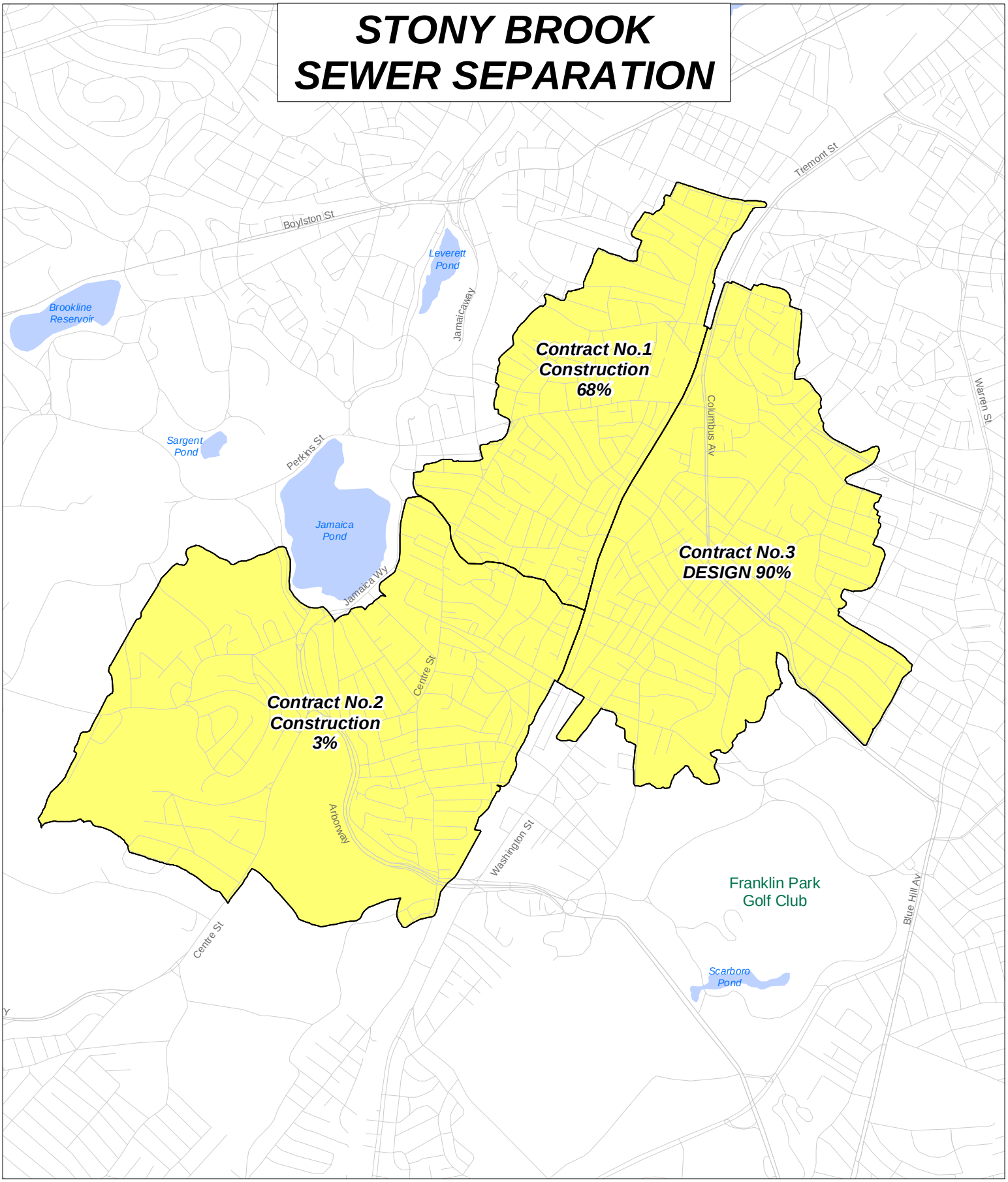
BWSC completed storm drain construction and closed the last remaining CSO regulator in September 2000, allowing MWRA to decommission the Constitution Beach CSO Facility. The removal of stormwater from the sewer system will continue, under the same downspout disconnection contract discussed above.

TABLE 4



Construction Contract	Total Linear Ft. Storm Drain	NTP	Percent Complete							
			Thru 2000		Thru 2001		Thru 2002		1st Q 2003	
			Design	Construction	Design	Construction	Design	Construction	Design	Construction
1	27,230	Apr-01	100	0	100	8	100	66	100	68
2	26,810	Dec-02	75	0	90	0	100	0	100	3
3	17,985	Apr-04	50	0	90	0	90	0	90	0
4	1,288	Jul-00	100	100	100	100	100	100	100	100
TOTAL	73,313		81%	2%	95%	12%	98%	29%	98%	31%
Related Contracts										
Downspout Removal	-	Jul-02	50	0	75	0	100	0	100	3
Paving 1	-	Jul-02	50	0	75	0	100	0	100	3
Paving 2	-	Jun-04	-	-	-	-	90	0	90	0

STONY BROOK SEWER SEPARATION



Stony Brook
Sewer Separation CIP-344

Contract 1 - Sewer separation 68% complete

Contract 2 - Sewer separation 3% complete

Contract 3 - To be bid in 2003

Contract 4 - DONE

01/16/2003

MwraGIS 401-9bw

DORCHESTER BROOK CONDUIT IN-LINE STORAGE

The 1994 CSO Conceptual Plan recommended this project to minimize CSO discharges from the Dorchester Brook Conduit to Fort Point Channel. MWRA's final plan for CSO control (1997) deleted this recommendation, based on updated hydraulic modeling results showing that the CSO discharges to Dorchester Brook Conduit were less than earlier estimated and that further reductions would occur by bringing the full planned pumping capacity at Deer Island on-line.

In 2000 and 2001, MWRA performed hydraulic analyses (including flow metering) to update and confirm the estimated activation frequency and annual volume of CSO discharges to the Dorchester Brook Conduit, and submitted reports on the results to EPA and DEP in January 2001, in compliance with Schedule Six, and in May 2001. The evaluations confirmed that CSO discharges were in line with the 1997 predictions and could be further reduced with a set of relatively low cost system optimization measures, including raising a weir at one CSO regulator, cleaning the dry weather connection at another regulator, and installing a new tide gate.

With DEP and EPA's assent, MWRA filed a motion in July 2001 requesting revisions to Schedule Six deleting the design and construction milestones for the Dorchester Brook Conduit In-Line Storage project, contingent upon a commitment to raise the weir. The motion was allowed by the Court on August 8, 2001.

In 2002, BWSC conducted additional system inspections and evaluations to determine the design and construction requirements for raising the weir, to verify the level of sediment deposition in the dry weather connection, and to further evaluate the hydraulic benefits and construction requirements of the proposed tide gate. BWSC completed the recommended pipeline cleaning work in the spring of 2002, but the work to design the weir and tide gate improvements and procure construction services took longer than expected. BWSC procured the construction services in January 2003, and construction is scheduled to be completed this spring.

CAMBRIDGE/ALEWIFE BROOK SEWER SEPARATION

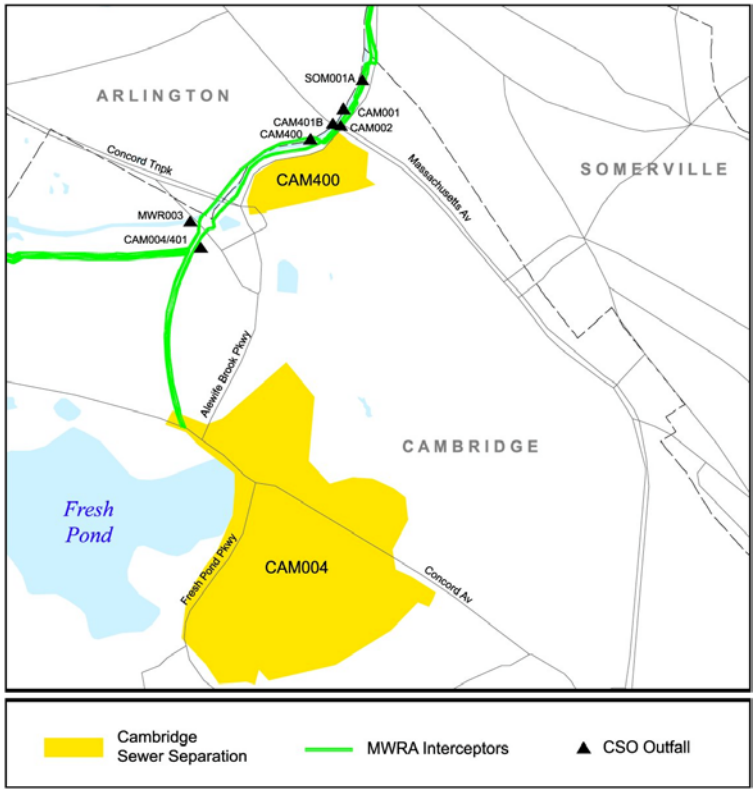
This project is intended to minimize CSO flows to Alewife Brook, primarily by separating combined sewer systems in parts of Cambridge. The separation work is being done by the City of Cambridge with MWRA funds.

	Court Milestone	Cambridge Schedule
Commence Design	January 1997	January 1997
Commence Construction	July 1998	July 1998
Complete Construction	January 2000	Under review

On April 30, 2001, MWRA and the City of Cambridge submitted a Notice of Project Change recommending an expanded and more costly sewer separation plan to control CSO discharges to Alewife Brook (the "Alewife NPC") than had been recommended in the 1997 plan. Prior to filing the Alewife NPC, MWRA and Cambridge performed considerable work in an attempt to ensure that the document would be fully responsive to concerns raised at earlier public meetings, especially concerns related to flooding impacts and construction within the Metropolitan District Commission (MDC) Alewife Brook Reservation.

Many public comments were received, and the Secretary of Environmental Affairs issued a Certificate on the Alewife NPC on June 15, 2001. The Secretary's Certificate required the MWRA and Cambridge to prepare a document responding to all public comments, including comments related to the feasibility of obtaining necessary federal and state permits and other approvals to build the project. Since that time, MWRA and Cambridge staff have had discussions with several regulatory agencies at the federal, state and local levels, in an attempt to assure responsiveness and consistency with all regulatory requirements.

The key issues raised in the public comments and the subject of Cambridge and MWRA's efforts over the past year include 1) the appropriateness of the recommended level of CSO control, which would necessitate changing water quality standards, and the public health impacts of remaining CSO discharges; 2) the impacts of separated stormwater flows on flood elevations along the Little River and Alewife Brook; 3) the impacts of a proposed stormwater detention basin on the MDC Alewife Reservation; and 4) the appropriateness of using public parkland for stormwater management purposes (foreseeing a potential requirement for legislative approval under Article 97).



Most of the work by Cambridge and MWRA on this project in 2002 involved additional hydraulic investigations, preliminary design modifications and discussions with regulatory agencies to address the public comments and concerns and ensure regulatory compliance. Cambridge and MWRA plan to submit a Response to Comments Document to MEPA in March, 2003.

In 2002, Cambridge conducted additional hydraulic analyses using a more detailed computer model to further evaluate the potential for flooding impacts. Cambridge revised the stormwater basin design in coordination with the progress of MDC's master planning efforts and reduced the size of its proposed stormwater outfall to the basin. These changes to the project have eliminated any expected adverse effects of the project's stormwater flows on Alewife Brook flood elevations and may enhance the ecological and recreational benefits of the stormwater basin in keeping with the goals of MDC's master plan.

Cambridge and MWRA held three public meetings on their Alewife plan in 2002: on January 24, November 6 and November 12. Briefings and workshops during model development and basin design were held with various stakeholders and regulatory agencies, including court parties, the Department of Environmental Management, DEP, the Federal Emergency Management Agency, MDC, the Cambridge and Arlington Conservation Commissions, Mystic River Watershed Association, Tufts University's Mystic/Alewife project team, the EOEA Basin Team.

Upon submission of the Response to Comments document, MWRA expects MEPA to notice the document in the Environmental Monitor, commencing a public comment period.

Location of MWR003, one of the seven outfalls along Alewife Brook.

Cambridge began construction of the original (1997) plan for sewer separation in July 1998, in compliance with Schedule Six, and has completed all four of the construction contracts awarded to date, with the fourth construction contract (Contract 2B) completed in July 2002. The construction work already completed has significantly reduced CSO discharges to Alewife Brook. Hydraulic model simulations show that CSO discharges have been reduced from 63 times per year on average with 50 million gallons annual volume to 25 times per year on average with 33 million gallons annual volume. Remaining design and construction cannot move forward until regulatory approvals are obtained on the revised plan for sewer separation.

On a related subject, DEP extended the Alewife Brook/Upper Mystic River variance by eighteen months, from March 2002 to September 2003. The additional time will allow more water quality information to be collected and should provide enough time for MWRA and Cambridge to complete MEPA review and propose a final plan for CSO control. Until all regulatory determinations, including a decision on water quality standards, are made, MWRA believes there will be continued uncertainty about the risks the City of Cambridge and MWRA face in moving the Alewife Brook project forward.

5.3 Region-wide Floatables Control and Outfall Closing Projects

The Facilities Plan/EIR calls for the control of floatable materials in all remaining CSO discharges in accordance with the National CSO Policy. Floatables controls will be installed at many of the CSO outfalls as part of the larger CSO control projects described above. For instance, the Chelsea Trunk Sewer Relief project included the installation of underflow baffles for floatables control at outfalls CHE002, CHE003 and CHE004. The Region-wide Floatables Control and Outfall Closing Projects described in the following sections involve floatables controls and regulator or outfall closings that are independent of the larger projects.

MWRA, BWSC, Cambridge and Somerville are responsible for implementing these controls in their respective systems. MWRA met the March 1999 milestone for commencement of construction with work at outfalls MWR018-022. Schedule Six required the completion of all related construction work by May 2001.

	Court Milestone	Project Schedule
Commence Design	September 1996	September 1996
Commence Construction	March 1999	March 1999
Complete Construction	May 2001	(see text below for MWRA, BWSC and Cambridge schedules)

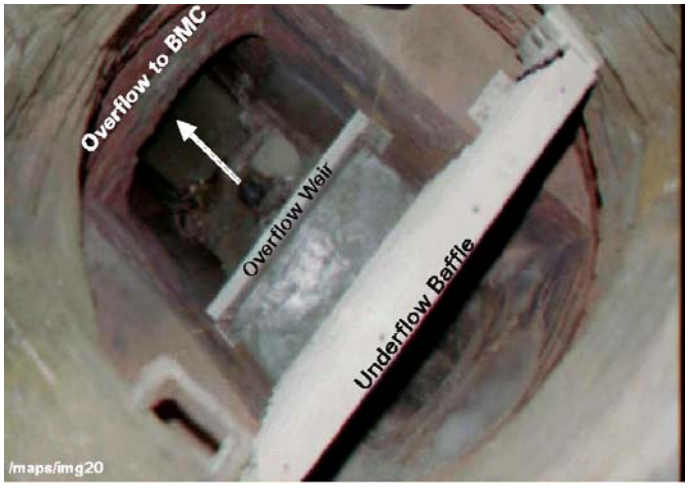
MWRA FLOATABLES CONTROL AT OUTFALLS MWR018–020 AND OUTFALL CLOSINGS AT MWR021-022

CSO outfalls MWR018, 019, 020, 021 and 022 conveyed overflows from MWRA's Boston Marginal Conduit ("BMC") to the Lower Charles River Basin in very large storms. The project called for closing outfalls 021 and 022 and providing floatables control at the remaining locations. The plan for floatables control involved the installation of underflow baffles at eleven CSO regulator structures upstream of outfalls 018-020.

MWRA completed the installation of underflow baffles in four of the eleven BWSC regulators (MC-12, MC-15, MC-19 and MC-25) in late 1999. In March 2000, MWRA closed outfalls MWR021 and MWR022 to CSO discharges.

During preliminary design of floatables control at the seven remaining CSO regulators, which were located in the Old Stony Brook Conduit System, it was determined that the installation of underflow baffles at these regulators would be difficult and potentially prohibitive due to extensive construction requirements, construction impacts and cost. Outfalls MWR018, 019 and 020 only rarely activated. The main problem at each location was the lack of physical space to permit the installation of the baffle and weir in the existing structures while maintaining the capacity of the regulator structure to relieve the system and control upstream flooding during very large storms. In most cases, the existing regulator structures would have to be replaced with much larger structures, requiring major and difficult construction in busy streets and intersections and within railroad rights of way at certain locations.

In 2000, MWRA conducted modeling evaluations to update and confirm the predictions of annual CSO activation frequencies and volumes at outfalls MWR018, 019 and 020 and reassess floatables control options.



In April 2001, MWRA submitted a report entitled *Re-assessing Long Term Floatables Control for Outfalls MWR018, 019, and 020* to EPA and DEP, with final recommendations for reducing CSO discharges at these outfalls. Earlier in the year, MWRA raised weirs at each of the three outfalls and completed installation of a permanent level monitoring

system in the upstream end of the BMC, to allow MWRA to identify hydraulic grade line changes and overflow conditions for each storm. MWRA has used the data to evaluate the performance of the Prison Point CSO Facility and the BMC during significant storms, although few storms occurred through the latter half of 2001. In addition, the standard operating procedures at Prison Point were changed. MWRA operations staff now allow flows to enter the facility earlier, when a large storm is predicted, in an attempt to control the level of backwater in the BMC and reduce untreated overflows into the Charles River Basin.

MWRA's April 2001 report also concluded that removing sediments in the BMC could further reduce CSO discharges at these outfalls. In January 2002, MWRA maintenance staff completed work to clean the BMC, optimizing the conveyance capacity of this conduit and further lowering CSO discharges. MWRA plans to monitor sediment deposition in the BMC, in part to identify routine cleaning needs.

In June 2002, MWRA wrote to EPA and DEP seeking their approvals to delete the remaining underflow baffle installations from the long-term CSO control plan. On October 29, 2002, DEP issued its approval, subject to MWRA maintaining the BMC free of sediments, continuing to operate the Prison Point CSO facility as recommended, and submitting a report to EPA and DEP on the data from the depth sensor in the BMC and the results of MWRA's evaluations to optimize weir heights at MWR018, 019 and 020. MWRA plans to submit the evaluation report later this spring.

MWR010 OUTFALL CLOSING

The recommended plan for eliminating CSOs at MWR010 was to seal off the four CSO regulators tributary to this outfall and keep the outfall pipe in service to convey separate stormwater to the Charles River. The CSO regulators were previously believed to be the only sources of CSO to the MWR010 outfall. However, in November 1999, the Town of Brookline released a Wastewater Master Plan, which identified that flow MWRA had believed was separate stormwater from an area of Brookline tributary to the MWR010 outfall was in fact combined sewage. In addition, Brookline's Master Plan concluded that these flows could not be separated cost-effectively. In light of this new information, MWRA began work in 2000 to update the MWRA system hydraulic model, for the purposes of accurately representing hydraulic conditions and reevaluating the feasibility of closing the MWR010 regulators.

MWRA completed recalibration of the updated model in February 2001, allowing the evaluations to proceed. In April 2001, MWRA submitted its *Report on ReAssessment of CSO Activation Frequency and Volume for Outfall MWR010* to EPA and DEP. The results of the reassessment included an updated model prediction that outfall MWR010 does not discharge CSO in a typical rainfall year under present system conditions. In May 2001, MWRA submitted to EPA and DEP the results of supplemental evaluations to determine the size of storm that would cause a CSO overflow and to assess the potential upstream impacts of closing the outfall. Based on these additional evaluations, MWRA concluded that CSO discharges could be reduced to the level of not occurring up to a 5-year storm by bringing back into service a blocked connection between the Town of Brookline and MWRA systems. MWRA also concluded that MWR010 should not be permanently closed, since closure of the outfall was predicted to result in upstream flooding during extreme storms.

In January 2002, MWRA crews cleaned the blocked 18-inch Brookline connection, providing for system conditions that eliminate the potential for CSO discharge at MWR010 in up to a 5-year storm. In June, MWRA wrote to EPA and DEP seeking their approvals to remove the closing of this outfall from the long-term CSO control plan. On October 29, 2002, DEP issued its approval, subject to MWRA and Brookline

maintaining the dry weather connection in an operable condition, evaluating further system optimization measures to minimize CSO discharges at MWR010 and at the hydraulically connected Cottage Farm CSO facility (currently underway by MWRA) and implementing Best Management Practices in the tributary area to minimize wet weather pollutant loadings.

BWSC FLOATABLES CONTROL

Floatables control included in this project involves the installation of underflow baffles in ten existing CSO regulator structures. BWSC is implementing the project with MWRA funds.

In 2002, through an agreement with the Central Artery/Third Harbor Tunnel project, BWSC completed construction of underflow baffles at the last two regulators (RE057-6 and RE064-5), completing the plan to install floatables controls at ten BWSC regulator structures.

CAMBRIDGE FLOATABLES CONTROL

Floatables control at nine outfalls located in the City of Cambridge are included in this project (including one MWRA outfall, MWR003). Under its CSO Financial Assistance Agreement with MWRA, Cambridge will also design and construct floatables control for outfall SOM001A (see "Somerville Floatables Controls," below). Since Cambridge will be responsible for the operation and maintenance of its floatables control devices, MWRA has agreed to allow Cambridge to install devices of its choice, provided they meet or exceed the level of floatables control that would be achieved by MWRA's recommended plan. At five locations along Alewife Brook, the floatables controls are being designed and installed in conjunction with the Cambridge/Alewife Brook Sewer Separation Project. Controls at four other locations, along the Charles River, are being designed and installed by Cambridge independent of any large project. At these locations, Cambridge discovered structural problems with the existing outfalls, which have increased the scope of its work and delayed installation of floatables control. All work is scheduled to be completed by 2005.

Design work on floatables control is approximately 80% complete, and Cambridge expects to complete construction at all locations by June 2005, considerably later than expected a year ago because of further delay in resuming design and construction work for Alewife Brook CSO control and because of competing wastewater improvement projects throughout the city. Floatables controls at outfalls along the Alewife Brook are part of the revised Alewife Brook CSO control plan and Notice of Project Change. MWRA and Cambridge plan to resume design work at these locations only after final MEPA approval of the revised Alewife plan is issued. However, in October, Cambridge commenced construction of floatables control at outfall CAM401A as part of a Cambridge storm drainage contract titled "Bellis Circle Improvements."


Outfall SOM001A (Tannery Brook)

SOMERVILLE FLOATABLES CONTROLS

The final CSO plan called for the control of floatable materials in the CSO discharges at outfall SOM001A (Tannery Brook outfall) by installing an in-line net.

This project, like much of the Cambridge Floatables Control project, is directly associated with the Alewife Brook Sewer Separation project. The revised Alewife plan in part calls for enlarging the local system connection to the MWRA interceptor at SOM001A. As part of the larger plan, MWRA and the City of Cambridge plan to commence final design, and then construction, after MEPA approval of the revised plan. In the meantime, the City of Somerville continues to maintain a boom as an interim floatables control measure at this outfall.

6. Milestones and Key Program Activities Scheduled in 2003

Schedule Six of the Federal Court Order in the Boston Harbor Case includes four CSO milestones in 2003.

Date	Milestone	MWRA Schedule
Jan 2003	*MWRA to commence design of hydraulic relief for BOS017 and storage conduit for BOS019.*	MWRA commenced design of hydraulic relief for BOS017 in August 1997 (construction at BOS017 was completed in August 2000). MWRA commenced design of a storage conduit for BOS019 in July 2002.
Mar 2003	*MWRA to submit annual report on CSO progress.*	MWRA submitted this Annual Report for 2002 on March 17, 2003.
	MWRA to complete construction of CSO relocation to Reserved Channel and associated treatment facility.	In 2000, MWRA reported that it would be unable to complete construction of CSO relocation to Reserved Channel and associated treatment facility pending completion of the South Boston reassessment and subsequent design work on a new CSO plan for North Dorchester Bay.
	MWRA to commence construction of detention/treatment facility at Union Park Pump Station; consolidation facilities for BOS076-080; and interceptor relief for BOS003-014.	MWRA awarded the construction contract for the Union Park facility on March 12, 2003. MWRA plans to commence construction by the end of March 2003. MWRA is unable to commence construction of the consolidation facilities for BOS076-080 (Reserved Channel) pending completion of the South Boston reassessment and subsequent design work on a new CSO plan for Reserved Channel. MWRA awarded the first construction contract for BOS003-014 (East Boston) interceptor relief on March 12, 2003. MWRA plans to commence construction by the end of March 2003.

CSO Variances

MWRA will continue to comply with the conditions of the Charles River and Alewife Brook/Upper Mystic River Variances. MWRA plans to conduct water quality sampling at the Cottage Farm CSO facility and in the Charles River in the spring of 2003. MWRA will also continue to collect receiving water quality data under its long-term harbor monitoring program. MWRA plans to submit the final report evaluating additional storage at Cottage Farm and the final report evaluating the costs and benefits of higher levels of

CSO control for the Alewife Brook and Upper Mystic River by July 1. MWRA expects that DEP will make determinations on the appropriate water quality standard and level of CSO control for these receiving waters in the fall, when the variances end.

MWRA-Managed Projects

The first construction contract (pipeline rehabilitation) for the East Boston Branch Sewer Relief project and the construction contract for the Union Park Detention/Treatment Facility will are scheduled to commence by the end of March 2003. MWRA expects to issue preliminary design recommendations for the Fort Point Channel and BOS019 storage conduits this spring. In addition, MWRA will continue its efforts related to the remaining start-up and optimization periods for its upgraded CSO facilities, to ensure optimized treatment performance and compliance with NPDES permit limits. These efforts will be dependent upon rainfall conditions and facility activations.

Community-Managed Projects

MWRA will continue to administer the provisions of the MOUs and Financial Assistance Agreements with BWSC and Cambridge and work with the communities on the CSO projects that the communities are responsible for implementing. In 2003, the South Dorchester Bay and Stony Brook Sewer Separation projects are scheduled to enter periods of peak construction. Cambridge plans to continue to make progress in completing floatables controls.

South Boston CSO Reassessment

MWRA plans to complete its water quality sampling program by June, weather permitting. Phase II work, including submission of a Supplemental Environmental Impact Report recommending a new CSO control plan for North Dorchester Bay and Reserved Channel, is expected to be completed by December 2003. Through the year, MWRA will continue its public participation program and coordination efforts with EPA and DEP.

Revised Plan for Cambridge/Alewife Brook Sewer Separation

MWRA and the City of Cambridge will continue to work with regulatory agencies and the public to support the preparation of a document that responds to the public comments on the April 2001 Notice of Project Change. MWRA expects to submit the Response to Comments document to MEPA by the end of April 2003, for public review and MEPA certification. MWRA and Cambridge will continue to coordinate the project plan with ongoing development of the MDC's Alewife Master Plan.

East Boston Reassessment

MWRA plans to commence a detailed reassessment of the remaining work for CSO control at outfalls BOS003-014 (East Boston) by June 2003 and complete the reassessment by the end of the year.

Other Plan and Schedule Changes

MWRA will continue to work with EPA to gain full regulatory approval to remove the requirements to close outfall MWR010 and construct floatables controls for outfalls MWR018, 019 and 020 from the Facilities Plan and the court order. MWRA will continue to monitor the effectiveness of system

optimization measures it has implemented, including monitoring flow elevations in the BMC to assess the feasibility of raising weirs at the outfalls.

Annual CSO Discharge Reporting

In compliance with its NPDES permit as modified, MWRA plans to submit its report on CSO discharge estimates for storms in 2002 to EPA and DEP by April 15, 2003. MWRA will continue to conduct flow monitoring and hydraulic modeling to estimate CSO discharges during storms in 2003.

The End