Capital Improvement Program

PROPOSED FISCAL YEAR 2007

MASSACHUSETTS WATER RESOURCES AUTHORITY

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together with the participation of MWRA staff.

January 2006

Katherine Haynes Dunphy, Chairwoman
MWRA Advisory Board
11 Beacon Street
Boston, MA 02108

Dear Chairwoman Dunphy:

This letter transmits to the Advisory Board MWRA's Proposed Capital Improvement Program (CIP) for fiscal year 2007. The MWRA Board of Directors approved the transmittal on December 14, 2005.

The proposed capital budget continues to address a necessary reality that the debt service costs associated with the more than $6.3 billion of capital improvements completed by MWRA are a significant burden to MWRA's ratepayers. In FY06, debt service payments to support capital improvements already completed comprise nearly 59% of total expenses. This is further compounded by the significant reduction in the amount of debt service assistance received from the Commonwealth, as well as the continued uncertainty regarding the amount of future debt service assistance.

The Proposed FY07 CIP recommended for transmittal to the Advisory Board projects total spending, including contingency and inflation, of $1.0 billion for fiscal years 2004-2008, $653 million for fiscal years 2009-2013 and net spending of $45 million for fiscal years 2014-2016. This spending is based on a total CIP of $3.6 billion (in FY07 dollars), including contingency, of which $2.3 billion has been spent through FY05.

With the exception of three new projects, (Charles River CSO Controls, Brookline Sewer Separation and Bulfinch Triangle Sewer Separation), the Proposed FY07 CIP meets the 10 year spending cap approved by the Board. Staff will be seeking an exemption from the cap for these projects.

The Proposed FY07 CIP document provides an overview of MWRA's capital program, including projected expenditures by program area, and highlights changes within the cap period. The document also includes detailed descriptions by project, including phases within each project.

Questions or comments on this document or information available on the Internet should be directed to the MWRA Budget Department.

We look forward to working with the Advisory Board members and staff during your review of the Proposed FY07 CIP.

Sincerely,

Frederick A. Laskey
Executive Director

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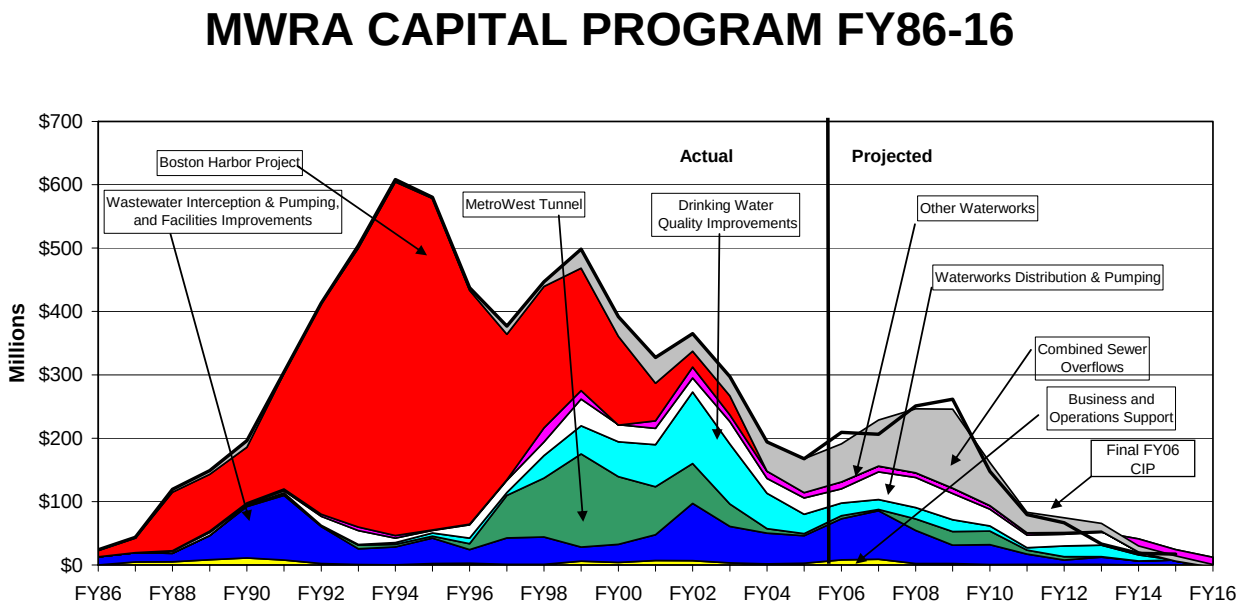
Background

MWRA was created by the Massachusetts legislature in 1985 and since that time has invested over $6.3 billion to modernize and improve the wastewater and waterworks systems serving its member communities. Of the total expenditures to date, nearly three-fourths have supported improvements to the wastewater treatment, interceptor, pumping, and combined sewer overflow systems. The remaining fourth has supported waterworks treatment, transmission, distribution, and water supply protection improvements.

MWRA's sewage treatment system has undergone a nearly complete transformation under the federally mandated, 11 year, $3.8 billion Boston Harbor Project. The project, now complete, included: a new Deer Island Treatment Plant with primary and secondary treatment capabilities; a new 5-mile Inter-Island Tunnel that combined two separate sewer systems (North and South) into one; a new sludge-to-fertilizer facility; and a new 9.5-mile Effluent Outfall Tunnel to discharge treated wastewater away from shallow Boston Harbor waters into deeper waters and the stronger currents of Massachusetts Bay.

MWRA's Integrated Water Supply Improvement program is a 10 year, $1.7 billion series of projects that consists of aggressive watershed protection, modernized water treatment facilities and distribution system improvements that include construction of covered storage facilities and pipeline rehabilitation projects. This program includes the $429 million John J. Carroll Water Treatment Plant, a state-of-the-art ozonation facility with capacity to treat 405 mgd of drinking water, which was completed in 2005 pursuant to the Safe Drinking Water Act (SDWA). The plant treats water delivered from the Wachusett Reservoir (including water transferred to the Wachusett Reservoir from the Quabbin Reservoir) with ozonation and chloramination.

The graph below highlights major capital improvement spending, both completed (actual) and remaining (projected).



PROPOSED FY07 CAPITAL IMPROVEMENT PROGRAM
Actual and Projected Expenditures

Overview

In June 2003, the Board of Directors adopted the Final FY04 Capital Improvement Program (CIP), which established a capital spending cap of $1.1 billion for FY04-08 and identified planned spending of $530 million for FY09-13. As seen in Table 1, for the 5 year cap period FY04-08, the Proposed
FY07 CIP complies with both the total spending cap limit of $1.1 billion, and the annual spending limits.

The Proposed FY07 cap, including contingency and inflation, totals $1.0 billion for FY04-08 and $653 million for FY09-13. This spending is based on a total CIP of $3.6 billion, including contingency, of which $2.3 billion has been spent through FY05. Proposed spending for the ten fiscal years 2004-2013 is $1.68 billion, $21.2 million greater than the spending forecasted in the Final FY04 CIP. This is due to the addition of the court-mandated Charles River Combined Sewer Overflow (CSO) projects that were added at a cost of $21.6 million, including inflation. Excluding the Charles River CSO Controls, Brookline Sewer Separation and Bulfinch Triangle Sewer Separation projects, the ten year spending is $1.66 billion, just below the original spending forecast approved by the MWRA Board of Directors. The MWRA will seek to have these new court-mandated projects exempted from the cap. Additionally, this cap analysis does not include funding for Cambridge CSO projects because the MWRA's share of these costs is yet to be negotiated with Cambridge. Both of these issues will be addressed prior to approval of the Final FY07 CIP.

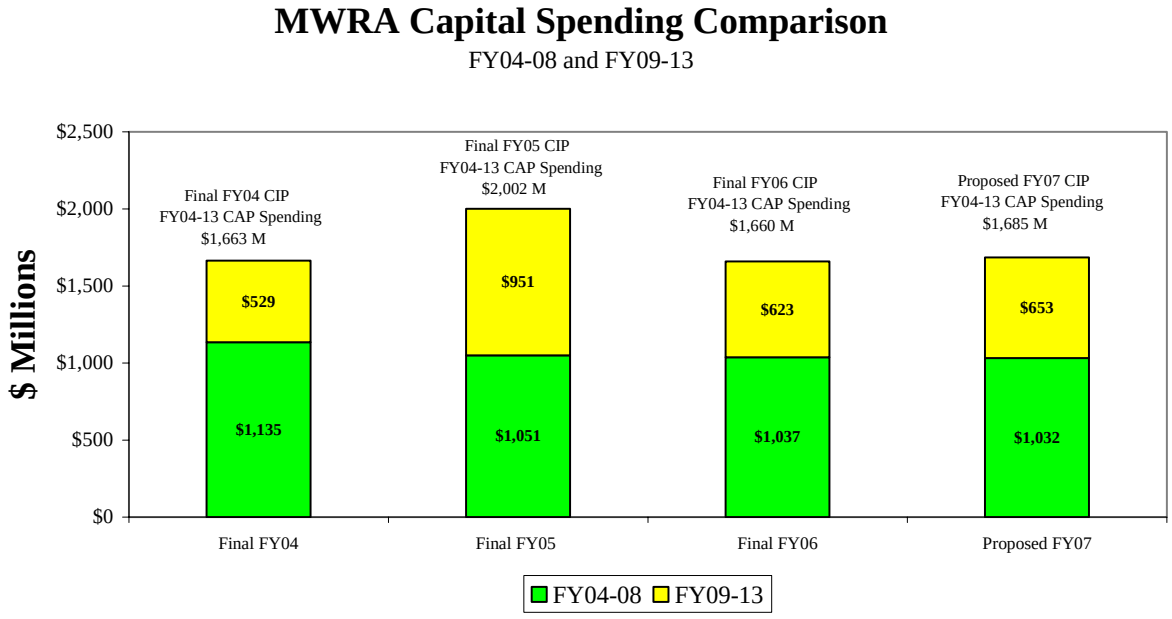
Table 1

Comparison of Capital Spending by CAP Calculation
Proposed FY07 CIP to Final FY04 CIP

Projected CAP Spending	FY04	FY05	FY06	FY07	FY08	Total FY04-08	Total FY09-13	Total FY04-13
Final FY04 CIP - CAP Baseline	$ 250.9	$ 203.5	$ 215.2	$ 250.1	$ 214.8	$ 1,134.5	$ 528.8	$ 1,663.4
Proposed FY07 CIP	$ 193.6	$ 167.2	$ 200.9	$ 223.7	$ 246.2	$ 1,031.6	$ 653.0	$ 1,684.6
Change from FY04 Baseline								
$ Change	$ (57.4)	$ (36.3)	$ (14.2)	$ (26.4)	$ 31.4	**$ (103.0)**	**$ 124.2**	**$ 21.2**
% Change	-23%	-18%	-7%	-11%	15%			

Consistent with the Final FY06 CIP, the Proposed FY07 CIP continues to reflect the shift of approximately $100 million of projected spending into the FY09–13 period. This shift primarily reflects actual, rather than anticipated project schedules. Staff will propose spending limits for the next cap period (FY09-13), as part of the Proposed FY08 CIP submittal.

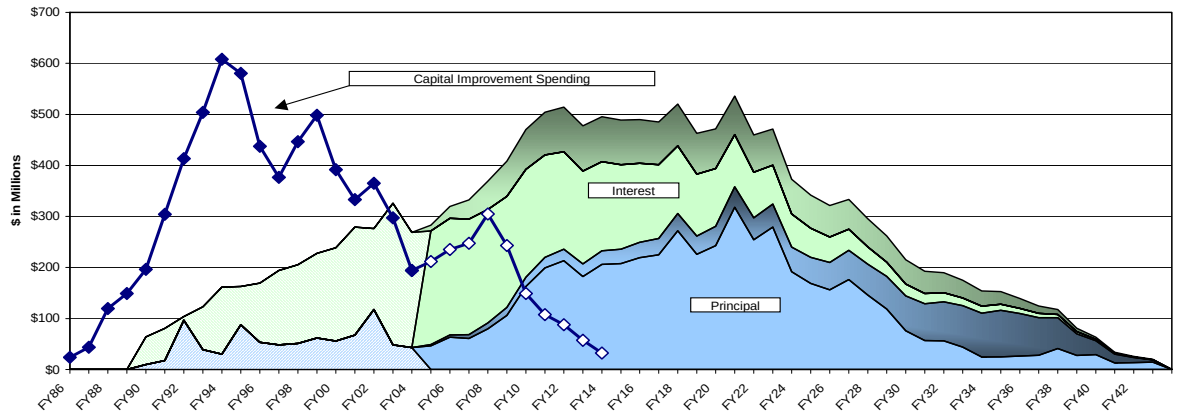
As seen in the bar chart below, total spending for fiscal years 2004-2013 would be reduced to the capital spending levels identified in the FY04 CIP, assuming that the three new court-mandated Charles River CSO projects are excluded from the cap calculation. Proposed FY07 spending for the 10-year period ending FY13 of $1.659 billion nearly matches the Final FY06 budget of $1.660 billion.



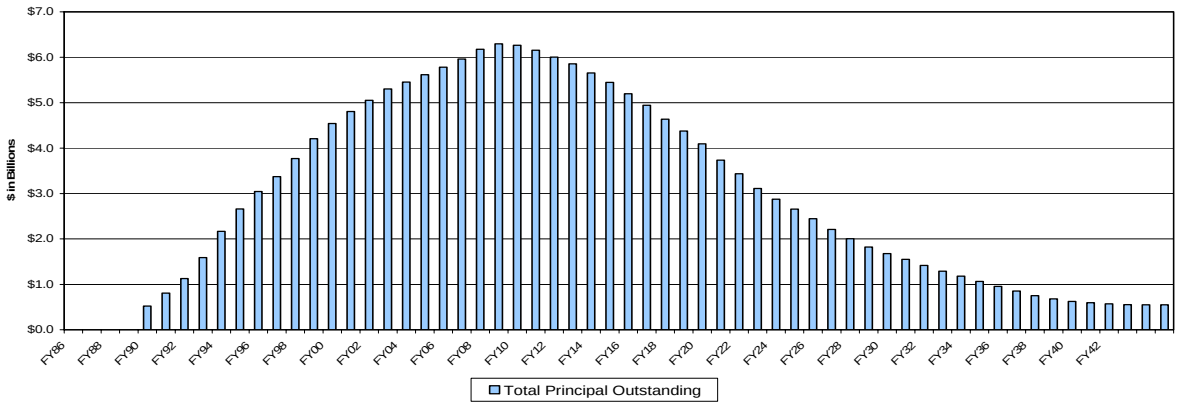
Budgeted debt service accounts for 59% of the FY06 Current Expense Budget and represents a growing proportion of the MWRA's operating budget, increasing from 36% in 1990 to a projected 59% in 2006. Much of this debt service is for completed projects. MWRA's capital spending, from its inception, has been dominated by court-mandated projects, which in total have accounted for 80% of capital spending to date. This debt service burden is compounded by a significant reduction in the amount of debt service assistance provided by the Commonwealth.

By FY10, MWRA's total indebtedness will begin to decline as the amount of principal being paid on outstanding debt is anticipated to exceed new capital spending.

MWRA Capital Improvement Spending
and
Capital Financing (Principal & Interest) Repayment
(Annual)



Total Capital (Principal) Indebtedness



Master Planning efforts underway are anticipated to provide a process that will serve to fully evaluate competing system needs (in terms of potential risks and consequences) and refine the capital program in future years. The full impacts, risks and potential consequences as a result of the changes in the capital plan will continue to be evaluated with each budget cycle.

FY07 Capital Highlights

The Proposed FY07 CIP budget projects total spending (including contingency) of $1.0 billion for FY04-08, $631 million for FY09-13 and net cash inflow of $11 million for fiscal years beyond FY13 reflecting community loan program repayments. The Proposed FY07 CIP includes 92 ongoing and new projects with estimated costs of approximately $3.6 billion in FY07 dollars, of which approximately $2.3 billion was expended through the end of FY05. Projected capital spending for FY07 is $228.7 million, including contingency. The CSO program comprises $315.4 million, or 32% of total spending between FY04-08, and $242.6 million, or 42%, of total spending between FY09-13. Table 2 below provides a summary, by program, of planned spending in the Proposed FY07 CIP.

Table 2

Fiscal Year 2007
CAPITAL IMPROVEMENT PROGRAM
($ in 000'S)

	Total Contract Amount	FY04 Actual	FY05 Actual	Total $ Thru FY05	Balance 6/30/05	FY2006	FY2007	FY2008	Sub-Total 5-Year FY04-08	Sub-Total 5-Year FY09-13	Sub-Total Beyond FY13	Sub-Total 10-Year FY04-13
Wastewater System Improvements[1]	1,566,451	92,163	88,615	849,625	716,826	109,875	118,400	131,306	540,359	320,786	36,460	861,145
Interception & Pumping	507,656	31,853	21,843	396,186	111,469	33,821	39,079	26,759	153,355	10,611	1,200	163,966
Treatment	141,833	3,978	9,240	23,371	118,461	13,661	10,959	12,597	50,435	55,289	25,957	105,724
Residuals	64,523	8,930	-1,700	63,848	675	0	0	0	7,230	0	675	7,230
CSO	783,565	45,867	53,663	304,870	478,694	60,176	65,823	89,829	315,358	242,597	20,269	557,955
Other	68,875	1,535	10,069	61,349	7,526	2,217	2,539	2,122	18,482	12,288	-11,640	30,770
Waterworks System Improvements	1,887,321	100,093	76,276	1,451,999	435,323	73,226	81,388	89,390	420,373	249,104	-57,785	669,477
Drinking Water Quality Improvements	590,897	55,706	30,579	472,539	118,358	19,823	14,392	16,211	136,711	59,642	8,290	196,353
Transmission	749,855	9,221	7,360	636,022	113,833	20,090	18,279	22,644	77,594	52,820	0	130,414
Distribution & Pumping	516,585	23,819	25,472	247,902	268,682	22,420	39,732	43,259	154,703	114,660	48,609	269,363
Other	29,985	11,347	12,864	95,536	-65,551	10,892	8,985	7,275	51,363	21,982	-114,685	73,345
Business & Operations Support	60,388	1,761	2,798	35,160	25,228	8,026	9,166	2,281	24,032	5,628	126	29,660
SUB-TOTAL	3,514,160	194,016	167,689	2,336,784	1,177,377	191,127	208,954	222,977	984,764	575,518	-21,199	1,560,282
Contingency	108,429				108,429	0	19,736	23,351	43,087	55,295	10,047	98,382
Total MWRA w/ Contingency	3,622,589	194,016	167,689	2,336,784	1,285,806	191,127	228,690	246,328	1,027,851	630,813	-11,152	1,658,664

[1] FY05 Total includes $4.5 Million BHP credit

In FY07, staff will be completing the design and progressing to the bid and award stage on several major projects. Major planned awards for FY07 include:

- Award of the **Blue Hills Covered Storage** design/build contract with an estimated contract value of $33.2 million.
- **New Connecting Mains – Shaft 7** Revised North Segment of $25.5 million.
- **Rehabilitation of Other Pump Stations** Rehabilitation of 5 pump stations with an estimated contract value of $20.9 million.
- **Morrisey Boulevard Drain –** Construction of a new storm drain and appurtenant structures along Morrisey Boulevard to Savin Hill Cove, with an estimated contract value of $16.3 million.
- **Reserved Channel Sewer Separation –** Design services for construction contracts to be bid and managed by Boston Water and Sewer Commission (BWSC), with an estimated contract value of $11.5 million.

FY07 Contract Spending

In FY07, significant spending is projected for the following projects:

- **North Dorchester Bay Reserved Channel CSO -** Tunnel Construction – construction of the North Dorchester Bay tunnel, drop shafts, access shafts and CSO/stormwater controls; projected FY07 spending of $30.8 million.
- **Upper Neponset Valley Sewer** - Replace Sewer Sections 685-686 - installation of 16,500 feet of new sewers within public roadways to reduce overflows to adjacent residential areas and water bodies in West Roxbury; projected FY07 spending of $11.3 million.
- **Blue Hills Covered Storage** - design/build; projected FY07 spending of $10.0 million.
- **South Dorchester Bay Sewer Separation** - Construction – construction of 69,000 feet of new storm drains and appurtenant structures and relocation of storm runoff connections from the existing combined sewers to new storm drains; projected FY07 spending of $7.1 million.
- **Braintree-Weymouth Relief Facilities** - Replacement Pump Station - construction of a 28-mgd pump station which will handle flows from Hingham, Weymouth, and portions of Quincy; projected FY07 spending of $7.0 million.

In addition to these major planned awards and significant capital expenditures, other capital spending efforts in FY07 will be focused on the following projects and phases:

Interception & Pumping –

The Interception & Pumping projects will rehabilitate, extend and increase the capacity of the interceptor system and its supporting facilities. These projects are necessary because the systems are aging and are either failing or lack the capacity to serve existing or projected populations. As these projects are completed, the new facilities will alleviate sewer surcharging and overflow problems. Interception and Pumping projects total $507.7 million, of which $342.5 million was expended through FY03 and $153.4 million is expected to be expended in FY04-08. Major planned spending is noted below:

- *Braintree-Weymouth Relief Facilities:* Remaining spending of $11.5 million is projected within the cap period. This supports completion of the project except for rehabilitation of sections 624 & 652 (Contract 5310), which was removed from the capital program last fiscal year as part of the MWRA's efforts to control rate increases.

- *Upper Neponset Valley Relief Sewer:* Remaining spending of $32.8 million is projected mostly within the cap period and supports completion of this project.

- *Wastewater Central Monitoring:* Remaining spending of $12.9 million, mostly within the cap period, to implement a centralized monitoring and control system for MWRA's wastewater transport system.

- *Interception & Pumping Facility Asset Protection:* Remaining spending of $14.7 million for FY07-11 to support replacement of sewer Section 160, begin a headworks condition assessment/facilities plan, and replace screens at critical headworks facilities.

Deer Island Plant Optimization and Asset Protection –

As the Deer Island treatment facilities became operational, plant staff has assumed responsibility for maintenance and ongoing capital improvements. Total Deer Island support costs included in the Proposed FY07 CIP are approximately $141.8 million.

- The Proposed FY07 CIP includes $50.4 million to be expended within the FY04-08 cap period, $55.3 million to be expended in FY09-13, and $26.0 million to be expended beyond FY13 to maintain the Deer Island Treatment Plant.

Combined Sewer Overflow (CSO) Program –

Discharges of combined wastewater and stormwater runoff from the remaining 63 CSO outfalls in MWRA's system and four CSO outfalls in MWRA member community systems (Boston, Cambridge, Chelsea and Somerville) impact water quality in the Charles, Mystic and Neponset Rivers and in Boston Harbor. As part of the federal court order to clean Boston Harbor, the MWRA has responsibility for developing and implementing a long-term plan for CSO control at all discharge locations, including MWRA and community outfalls. MWRA first proposed the current long-term plan in its CSO Conceptual Plan and Sewer System Master Plan in 1994. The CSO Conceptual Plan incorporated then current information about the volume of CSO flows and water quality impacts and was developed in accordance with EPA's National CSO Policy. Schedule Six in the federal court order includes more than 60 milestones directing the design and construction of the recommended projects. A total of 21 outfalls have already been closed; annual discharges have been reduced by over 2.5 billion gallons. The Proposed FY07 CIP includes $783.6 million for planning, design and construction costs of these projects. Major planned spending is noted below:

- Total spending planned within the FY04-08 cap period is projected at $315.4 million and $242.6 million during the five year period FY09-13. This represents an increase in the pace of spending within the FY09-13 period of $35.0 million as compared to the FY06 CIP. The increased rate of spending is largely due to the addition of 3 newly mandated projects as well as inflation on existing projects.

The Proposed FY07 CIP does not include potential cost increases for the recommended CSO control plan for Alewife Brook. The City of Cambridge in the Draft Second Supplemental Preliminary Design Report (December 2004) indicated that significant project cost increases are likely. Cost increases reflect the additional plan changes that resulted from MEPA review, public comments and new field information. MWRA continues to meet with Cambridge officials to fully understand the updated information and resolve outstanding issues to evaluate the cost effectiveness of the revised project plans. The amount of cost that is eligible for MWRA funding will be determined after this review process.

In August 2005, MWRA completed negotiations with EPA and DEP toward agreement on overall CSO control obligations, including long-term plans for the Charles River, East Boston and Alewife Brook. The agreement included increasing the level of CSO control for the Cottage Farm CSO Treatment Facility on the Charles River by adding additional sewer separation and system optimization beyond the FY06 CIP scope and budget, EPA and DEP approval of MWRA's recommendation to implement its hydraulic relief plan for East Boston, as reflected in the FY06 CIP, EPA and DEP approval of MWRA's revised recommended sewer separation plan for Alewife Brook, also as reflected in the FY06 CIP, and EPA and DEP issuance of a 12 year variance including an additional 3 year performance monitoring period before DEP issues water quality standards determinations and considers the need for additional CSO control for the Charles River and Alewife Brook/Upper Mystic River.

Other Wastewater –

- Total net spending of $30.8 million between FY04-13 to support the local financial assistance inflow/infiltration program.

Drinking Water Quality Improvements –

MWRA is implementing an Integrated Water Supply Improvement Program for improvements to the drinking water system. This program consists of aggressive watershed protection, modernized treatment facilities, and distribution system improvements including construction of covered storage facilities and pipeline rehabilitation. As existing uncovered distribution reservoirs were vulnerable to airborne contaminants and allow the growth of bacteria plants and algae, MWRA has eliminated the use of open distribution reservoirs by constructing covered storage facilities. These projects, which have been completed, replace active distribution storage of approximately 2.4 billion gallons of open reservoirs with more than 200 million gallons of covered storage downstream of the John J. Carroll Water Treatment Plant.

Total estimated costs of projects related to water treatment improvements in the Proposed FY07 CIP, provision of covered storage facilities, and aggressive protection of source water quality are approximately $590.9 million, of which $445.1 million is for water treatment and $145.8 million is for covered storage facilities and watershed protection. Approximately $386.3 million was expended through FY03 for these projects, and approximately $136.7 million is expected to be expended during FY04-08. Major planned spending is noted below:

- Planned spending of $136.7 million within the FY04-08 cap period to complete the John J. Carroll Water Treatment Plant and Norumbega Covered Storage projects, as well as to begin the Blue Hills Covered Storage project. Spending beyond FY09 is mostly for the Walnut Hill Ultra Violet (UV) Treatment. The Long-Term 2 Surface Water Treatment Rule (LT2WTR) is expected to require two primary disinfectants be used on unfiltered water by the year 2012.

Transmission –

The Proposed FY07 CIP includes 10 separate transmission related projects. Critical needs of MWRA's aqueduct system include correction of structural conditions to reduce leakage and provision of redundancy for critical sections of the transmission system, such as the Hultman Aqueduct and the Southborough Tunnel, where transmission has depended on a single conduit. The estimated costs for transmission projects included in the Proposed FY07 CIP total $749.9 million, of which approximately $619.4 million was expended through FY03, and approximately $77.6 million is expected to be expended during FY04-08. Major planned spending is noted below:

- Planned spending of $77.6 million within the FY04-08 cap period and $52.8 million between FY09-13. These funds support completing the MetroWest Tunnel, Chicopee Valley Aqueduct Redundancy, Quabbin Transmission and Wachusett Reservoir Spillway.

Distribution & Pumping –

The Proposed FY07 CIP identifies 22 separate projects for rehabilitation, upgrade or new construction of pipelines, pumping facilities, valves and meters. These projects total approximately $516.6 million, of which approximately $198.6 million was expended through FY03, approximately $154.7 million is to be expended within the FY04-08 cap period, and $114.7 million is anticipated to be spent during FY09-13.

- Planned spending of $154.7 million within the FY04-08 cap period and $114.7 million between FY09-13. Expenditures of these funds will support completion of the rehabilitation of the Weston Aqueduct Supply Mains (WASMs), the Heath Hill pipe replacement, a majority of work on the Southern Spine Distribution Mains, completion of the valve replacement program, a majority of work on the Spot Pond Supply Mains, the New Connecting Mains – Shaft 7 to WASM 3 connection, rehabilitation of water pumping stations and short term improvements at Oakdale and to the Sudbury Aqueduct.

Business & Operations Support –

Business and operations support projects are generally directed to improvement of MWRA's centralized services. Total Business & Operations support costs in the Proposed FY07 CIP are approximately $60.4 million.

- Remaining spending of $11.4 million within the current cap period includes $5.6 million to complete security improvements, replace and upgrade management information systems for the support of laboratory and TRAC services.

Contingency –

There are costs associated with the Proposed FY07 CIP that are difficult to predict with any degree of certainty. These costs include legal fees, claims settlements, acquisition of land, and a variety of study, design, and construction change orders and contract amendments. MWRA uses a contingency budget to cover these costs in the event they exceed the approved budget. The contingency budget is calculated as a percentage of expected capital expenditure cash outlays (15% for tunnel construction and approximately 10% for all other projects).

The total contingency budget for the ten-year CIP is $108.4 million. The contingency budget remaining within the FY04-08 cap period is $43.1 million and the contingency planned beyond FY08 is $65.3 million.

Project Budget Summaries and Detail of Changes

Information on individual project budgets and detail of changes is provided in the supplemental appendices, attached to this document.

Capital Improvement Program

PROPOSED FISCAL YEAR 2007

APPENDICES

MASSACHUSETTS WATER RESOURCES AUTHORITY

APPENDIX 1

Project Budget Summaries and Detail of Changes

Project Budget Summaries and Detail of Changes
Project Index

Project Budget Summaries and Detail of Changes
Project Index

S. 102 Quincy Pump Facilities

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Results in a net reduction in operating costs*
☑ *Improves system operability and reliability*

MWRA's three pump facilities in Quincy (Quincy, Squantum, Hough's Neck) were beyond their useful lives and prone to failure. Force mains connected to the stations were corroded and maintained a very low velocity resulting in high-energy losses because of friction and other flow constraints. Under this project MWRA constructed new pump stations and has rehabilitated force mains to ensure continuous pumping of sewage flows to treatment facilities. Operating costs have been reduced as a result of reduced staffing needs following the completion of the automated Quincy Pump Station.

Project History and Background

The Quincy pump facilities, serving the City of Quincy, include:

- Quincy Pump Station, a 21.5 million gallons per day (mgd) facility in operation since 1906.
- Squantum Pump Station, an 8-mgd facility built in the late 1930s.
- Hough's Neck Lift Station, a 1-mgd facility in service since 1942.
- Quincy Force Main, comprised of two 3,000 feet force mains. One main, 24 inches in diameter, was built in 1902. The other, 30 inches in diameter, was built in 1923.
- Squantum Force Main, built in 1972, 19,000 feet long, and ranging in diameter from 24 to 30 inches.

Construction of the Hough's Neck Lift Station, Squantum Force Main, and Quincy Force Main all began in the summer of 1998 and were substantially completed in 1999. Construction of the Quincy Pump Station was completed in December 2002, corrosion mitigation of the Squantum Force Main was completed in April 2003 and construction of the Squantum Pump Station was completed in September 2003.

Scope

Sub-phase	Scope
Facilities Plan/EIR	Evaluation of existing conditions, development of proposed improvements, and assessment of the impacts of those improvements.
Design/CS and Construction - Rehabilitation	Design, construction services, and construction for short-term improvements at the Quincy and Squantum Pump Stations
Design/CS/RI 1	Design, construction services, and resident inspection for Squantum P.S., Quincy P.S., Hough's Neck P.S., Squantum Force Main, and Quincy Force Main.
Squantum P.S. Construction	Construction of new 8-mgd pump station.
Quincy P.S. Construction	Construction of new 26-mgd pump station.
Hough's Neck P.S. Construction	Construction of new 1.5-mgd lift station.
Early Rehabilitation – Squantum Force Main	Rehabilitation of 4,576 linear feet of the Squantum Force Main through installation of a cured-in-place resin-impregnated flexible liner.

Sub-phase	Scope
Squantum Force Main Rehabilitation	Rehabilitation of the remaining 8,100 linear feet of the Squantum Force Main by cleaning and application of a cementitious lining.
Quincy Force Main Rehabilitation	Rehabilitation of the existing 30-inch, 2,700 linear feet Quincy Force Main and abandonment of the existing 24-inch Quincy Force Main.
Corrosion Mitigation	Completion of corrosion mitigation work in the Squantum Force Main to repair corrosion damage discovered during rehabilitation.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$26,120	$25,964	$156	$604	($81)	$151	$5		

Project Status 11/05	99.6%	Status as % is approximation based on project budget and expenditures. The project is complete with only close out items remaining. Pumping stations are operating as intended.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$26,152	$26,120	($32)	Sep 03	Sep 03	-	$710	$679	($32)

Explanation of Changes

- **None.**

CEB Impact: No additional impacts expected at this time.

S. 104 Braintree-Weymouth Relief Facilities

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

In accordance with a DEP administrative consent order, construction of relief facilities and the resulting reduction in community infiltration and inflow will provide capacity for peak sewage flow from Braintree, Hingham, Holbrook, Randolph, Weymouth, and sections of Quincy. This project will reduce surcharging in Braintree and Weymouth, and reduce frequent overflows into the Weymouth Fore River during wet weather.

Project History and Background

The Braintree-Weymouth interceptor system and pump station serves Braintree, Hingham, Holbrook, Randolph, Weymouth, and sections of Quincy. Because of population increases, the sewerage system cannot handle the volume of sewage received. Sewage overflows are severe and frequent along the Weymouth Fore River during wet weather.

Interim rehabilitation work was required to ensure continued operation of the existing Braintree-Weymouth Pump Station during the long-term design and construction period. Rehabilitative work completed to date includes installation of a motorized influent gate and a mechanical bar screen, as well as heating improvements. After initially proceeding with a dual track design approach for part of this project, MWRA decided to construct a deep rock tunnel rather than a marine pipeline from the new pump station to the Nut Island shaft of the Inter-Island Tunnel to Deer Island. Construction of the Emergency Mill Cove Siphon was completed in June 1998. Construction of the deep rock tunnel was completed in September 2003, and the North Weymouth Relief Intercept was completed in June 2002. The Intermediate Pump Station and sludge pumping facilities at Deer Island were completed in April 2005. The Fore River Siphons construction contract was completed in May 2005. Construction of the Replacement Pump Station began in January 2005 and will be completed in June 2007.

Scope

Sub-phase	Scope
Design 1/CS/RI – Tunnel & IPS	Design of the tunnel and IPS. Includes completion of design modifications for sludge pumping facilities at Deer Island and residuals filtrate facilities at Fore River.
Sediment Tests	Tests required as part of the evaluation of marine pipeline option.
Design 2/CS/RI – Surface	Design of remaining construction including siphons and pump station.
Tunnel Construction & Rescue	Construction of a 2.9-mile, 12-feet diameter tunnel beginning at the Nut Island shaft of the Inter-Island Tunnel and ending at the Fore River Staging Area. Two 14-inch sludge pipelines within the tunnel will convey Deer Island sludge from the Inter-Island Tunnel to the pelletizing plant. 0.4 miles of twin 12-inch pipelines within the tunnel will convey filtrate from the pelletizing plant to the Intermediate Pump Station. 2.5 miles of 42-inch force main will carry flows and filtrate to the Inter-Island Tunnel. Also includes a MOA with Quincy, Braintree, and Weymouth for tunnel rescue and fire support services.
Intermediate Pump Station Construction	Construction of a 45-mgd pump station and headworks in North Weymouth. Also includes modifications to the sludge pumping facilities at Deer Island and the filtrate facilities at Fore River.

Sub-phase	Scope
No. Weymouth Relief Interceptor Construction	Construction of 2,000 linear feet of 60-inch gravity sewer running from the Intermediate Pump Station and along the Exelon Energy site.
Fore River Siphons Construction	Construction of 36-inch, 3,900-feet long twin siphons beneath the Fore River from the Idlewell section of Weymouth to the southeast corner of the Exelon Energy site in North Weymouth. Constructing 1,000 linear feet of 36-inch to 54-inch new sewers in Idlewell.
B-W Replacement Pump Station	Construction of a new 28-mgd Braintree-Weymouth Pump Station which will handle flows from Hingham, Weymouth, and portions of Quincy.
Mill Cove Siphon Construction	Installation of 1,700 linear feet of 42-inch siphon pipe between Newell Playground and Aspinwall Street in North Weymouth to act as second barrel of existing Mill Cove Siphon.
Construction – Rehab	Interim rehabilitation of the existing Braintree-Weymouth Pump Station.
Community Tech Assistance	Technical assistance for the Town of Weymouth for hydraulic modeling of its sewer system, leak detection for the water system, and mitigation.
Geotechnical Consultant	Consulting services related to the tunnel shaft excavation.
Communication System	Radio systems for the intermediate and replacement pump stations.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$215,112	$192,785	$22,327	$26,560	$11,452	$10,824	$8,759	$2,744	-

Project Status 11/05	91.7%	Status as % is approximation based on project budget and expenditures. Work that is substantially complete includes the deep rock tunnel, N Weymouth Interceptor, Intermediate Pump Station and the Fore River Siphons contract.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$215,271	$215,112	($159)	April 07	June 07	2	$60,217	$60,340	$123

Explanation of Changes

- Decrease in project cost due to final balancing credit change order on Tunnel Construction/Rescue contract partially offset by additional change order work on the Intermediate Pump Station and Replacement Pump Station contracts.

CEB Impact:

The impacts of the Intermediate Pump Station and Tunnel are reflected in MWRA's FY07 CEB. The start-up of the Replacement Pump Station will result in increased operating costs of $375,000 as of FY08 to run the facility.

S. 131 Upper Neponset Valley Sewer System

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Improves system operability and reliability*

The Upper Neponset Valley Sewer is hydraulically deficient resulting in frequent community system back-ups and interceptor overflows during wet weather to adjacent residential areas and water bodies in Brookline, Boston, Newton, and Dedham. Construction of a new replacement interceptor will reduce chronic wastewater overflows and surcharging during wet weather and improve service and water quality.

Project History and Background

The Upper Neponset Valley Sewer (UNVS), constructed between 1896 and 1902, extends approximately four miles through West Roxbury and Newton, and receives wastewater from West Roxbury, Brookline, Newton, and a small portion of Dedham. Based on the results of the 1994 Combined Sewer Overflow Master Plan, work on Section 530 in Newton and West Roxbury has been added to this project, because the hydraulic improvements are needed in this section.

The 1984 Wellesley Extension Sewer Facilities Plan/Environmental Impact document estimated that the UNVS overflowed an average of six to ten times per year with occurrences lasting as long as ten days. The Facilities Plan/EIR indicated that installation of a new interceptor would be the most cost-effective solution to these problems. With the increased capacity of the new interceptor, chronic wastewater overflows during wet weather will be reduced, improving water quality. The project will increase the hydraulic capacity in the Upper Neponset Valley Sewer by 8 mgd, through the construction of replacement sewers, to the level of service provided to all MWRA sewer member communities. The project will eliminate surcharging and overflows during the one-year, six-hour DEP designated design storm, with no increase in downstream overflows. It will also reduce overflows for 5-year and above storms. The project includes design and construction of sections 685 and 686 replacement sewers for sections 526 to 529. This construction contract was awarded in March 2005 and is scheduled to be completed in April 2008. The project also includes design and construction of Section 687 to replace Section 530.

Scope

Sub-phase	Scope
Designs/CS/RI	Completion of design and provision of construction services and resident inspection during the construction phases.
Boston Paving	Payment to the City of Boston for paving work on city streets.
Replace Sewer Sections 685-686 construction	Installation of 16,500 feet of new sewers within public roadways to reduce overflows to adjacent residential areas and water bodies in West Roxbury.
Replace Section 687	Installation of 8,400 feet of new sewers to reduce overflows to adjacent residential areas and water bodies in West Roxbury and Newton

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$51,711	$5,235	$46,476	$436	$3,115	$13,693	$16,508	$15,757	$518

Project Status 11/05	20.4%	Status as % is approximation based on project budget and expenditures. Design phase approximately 40% complete with completion expected in FY06. Construction on Sections 685 and 686 began in April 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**FY07**	**Change**	**FY06**	**FY07**	**Change**	**FY06**	**FY07**	**Change**
$50,160	$51,711	$1,551	Apr 08	Apr 08	-	$48,349	$49,509	$1,160

Explanation of Changes

- Increase in project cost due to revised estimate for Replacement Sewer Section 687 Construction contract and anticipated additional change order work for Replacement Sewer Sections 685-686 Construction contract.

CEB Impact: None identified at this time.

S. 127 Cummingsville Replacement Sewer

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

Capacity deficiencies in the MWRA system may be associated with overflows of local sewers upstream from the Cummingsville Branch System. Sewer moratoriums are in effect in the upstream communities of Woburn and Burlington. Construction of a replacement sewer and rehabilitation of existing sewers will provide additional capacity to ensure adequate and reliable wastewater service for upstream communities.

Project History and Background

The Cummingsville Branch Sewer System is located in the Town of Winchester and receives wastewater from sections of Winchester and Woburn and all of Burlington. The Cummingsville Branch Sewer System consists of the Cummingsville Branch Sewer, constructed around 1894, and the Cummingsville Branch Relief Sewer, constructed in 1952. The existing system consists of 9,475 linear feet of 15- to 30-inch pipeline and has a capacity of 13 mgd.

In 1995, MWRA published the Cummingsville Branch Sewers Facilities Plan recommending construction of the Cummingsville Branch Replacement Sewer to add a total of 8 mgd of capacity to the system. The facilities plan also recommended the rehabilitation of Section 86 to ensure its continued service.

In June 1999, MWRA filed a Notice of Project Change in accordance with the Massachusetts Environmental Policy Act at the Executive Office of Environmental Affairs, to change the alignment to avoid construction in parkland. The Secretary's Certification of November 1999 found no further Massachusetts Environmental Policy Act review was required. In December 1999, the Town of Winchester files a lawsuit against MWRA and the Executive Office of Environmental Affairs to require preparation of an Environmental Impact Report and cessation of project advancement pending completion of environmental review. The Town's concerns related to the potential effects of the project on pre-existing surcharge and/or overflow problems in the Town.

On September 18, 2002, the Board of Directors approved a Settlement Agreement between the Town of Winchester, MWRA and the Secretary of the Office of Environmental Affairs, which provided closure to the litigation matter. In consideration of the mutual promises contained in the Agreement, MWRA agreed to design and construct a modification of the Section 113 downstream siphon chamber to provide 30-foot wide (above elevation 115) river access across the Aberjona River to alleviate the historical constriction that the Town asserts results in chronic flooding. The construction contract for the Cummingsville Branch Replacement Sewer was awarded in March 2005 and is scheduled to be substantially completed in June 2006.

Scope

Sub-phase	Scope
Facility Plan/EIR	Evaluation of potential adverse impacts associated with additional flows downstream and recommendations for improvements to the system.
Design/CS/RI	Design and construction services during the construction phase.
Construction (new sewer) and Rehab (existing sewers)	Replacement of the Section 47 sewer with a new 4,850 linear feet, 36-inch gravity line and cleaning and repair of the existing 5,000 linear feet Section 86 sewer.
Siphon Modifications	Construction of new downstream chamber for section 113 siphon in Winchester.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$9,431	$2,789	$6,641	$149	$1,369	$5,307	$1,179	$155	$0

Project Status 11/05	63.1%	Status as % is approximation based on project budget and expenditures. Facilities planning complete. Construction of the Cummingsville Branch Replacement Sewer began in April 2005; to be followed by Siphon modifications in Q3 FY06.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$8,270	$9,431	$1,161	Sep 06	Sep 06	-	$6,999	$8,159	$1,160

Explanation of Changes

- Cost – Change orders and expected change orders for the Cummingsville Branch Sewer work escalated project's overall budget.
- FY04 - 08 Spending – See above budget changes.

CEB Impact: None identified.

S. 132 Corrosion and Odor Control

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

High sulfide levels in the Framingham Extension System cause corrosion and odors in that system and downstream in the Wellesley Extension Sewer System and West Roxbury Tunnel. A study has identified the causes of corrosion and odors and recommended corrective measures. Completion of corrosion control measures will extend the useful life of these assets and minimize the impact on the existing wastewater conveyance infrastructure. Improved odor control will mitigate the impact on surrounding areas.

Project History and Background

Hydrogen sulfide produces sewer odors and is highly corrosive of pipes and pump stations. Collapses in the Framingham Extension Sewer (FES) have alerted MWRA to problems in that area. Odor complaints have been received from residents abutting both the FES and the Wellesley Extension Sewer (WES) systems resulting in legal claims totaling several hundred thousand dollars. Severe corrosion has occurred in the West Roxbury Tunnel. This situation has prompted MWRA to add odor control chemicals at various points in the local systems and FES to try to reduce the hydrogen sulfide levels. The results have been mixed; not all of the chemicals were effective even over the short term, and none completely eliminated hydrogen sulfide.

While MWRA attempts to minimize odor and corrosion impacts through chemical intervention and sealing locations where odors escape, a more permanent solution is being sought. MWRA awarded a Planning/Study contract in January 1997. The consultant completed inspections in Ashland, Framingham, and Natick and drafted a report identifying, locating, and categorizing the sources and the extent of odor and corrosion problems. The Odor and Corrosion report indicated that significant levels of sulfides are discharged into the FES from Ashland and Framingham. These sulfide levels increase as the wastewater flows through the FES/FERS system. The report recommends a combination of MWRA and community actions, such as modifications to industrial discharge limits and municipal permits, chemical addition at community pump stations and the FES, and air treatment. The final planning/inspection report was completed in December 1998.

Interim Corrosion Control commenced in July 2000. The design for the modifications to the FERS pump station, FES Tunnel, and air treatment systems started in August 2002 and continued until June 2005.

Scope

Sub-phase	Scope
Planning	Identification of causes and sources of odors; collection of local sewer system information in Ashland, Natick, and Framingham; recommendations for long-term corrective measures.
Design/CS/RI	Design, construction services, and resident inspection for FERS Pump Station, FES tunnel, and air treatment systems. The FERS Pump Station is at 50% Design status, the FES tunnel is at 30% Design status and the air treatment systems are at 100% Design status.
Construction	Improvements to the FERS Pump Station, gravity sewer, rehabilitation of the FES tunnel, and air treatment systems for the FES and FERS.
Interim Corrosion Control	Implementation of chemical addition program at the FERS Pump Station. The program includes the addition of potassium permanganate, and monitoring of the wastewater flows and hydrogen sulfide levels downstream.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$3,004	$3,002	$2	$555	$759	$2	-	-	-

Project Status 11/05	100.0%	Status as % is approximation based on project budget and expenditures. All construction sub-phases, improvements to the FERS Pump Station, rehabilitation of the FES tunnel and air treatment systems for the FES and FERS, have been deleted as of the FY06 CIP as part of the strategy to contain rate increases. The status of these contracts is subject to reevaluation and may change in the FY08 CIP.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$3,315	$3,004	($311)	June 05	June 05	-	$1,627	$1,316	($311)

Explanation of Changes

- Project Cost, Schedule and Spending all reduced due to the elimination of all construction sub-phases, improvements to the FERS Pump Station, rehabilitation of the FES tunnel and air treatment systems for the FES and FERS, from the FY06 CIP as part of MWRA strategy to contain rate increases.

CEB Impact:

MWRA's CEB will continue to include cost for chemical treatment to control odors and corrosion in this part of the sewer system.

S. 137 Wastewater Central Monitoring

Project Purpose and Benefits

☑ *Extends current asset life.*
☑ *Results in a net reduction in operating costs*
☑ *Improves system operability and reliability*

To study, define, design, and implement a centralized monitoring and control system most appropriate for MWRA's wastewater transport system. Through facility automation and remote monitoring and control, SCADA implementation will result in cost savings and improve wastewater system operation and maintenance.

Project History and Background

MWRA has already made substantial progress towards increased automation and central monitoring and control of its water and wastewater systems and facilities. Substantial investments have been made in implementing such systems for the Deer Island Treatment Plant and Nut Island Headworks, and SCADA implementation is ongoing within the water conveyance system. The recommended wastewater SCADA system and associated business practices will support a single philosophy for central monitoring and control of all MWRA facilities and systems.

The SCADA Master Plan, which was completed in July 1999, recommended expansion of the automated control concepts developed for water system operation and identified long-term savings related to staffing reductions and optimization of operations and maintenance. Following the master planning recommendations, a detailed scope of services was prepared to procure professional services contract to provide design, integration, training, construction administration and resident inspection services for various SCADA improvements. Camp Dresser & McKee, Inc. (CDM) was awarded this contract in June 2002. CDM has since been working to design and procure three construction packages for SCADA Implementation. The construction effort on the first and most complex of three construction packages is anticipated to begin in early 2006. This will address SCADA needs at most pumping and CSO facilities, as well as establishing overall data communications improvements. The second construction package will provide for SCADA needs at the remote headworks facilities, taking into consideration future CIP improvements at the older headworks facilities. The primary goal of the third package will to be to improve MWRA's ability to continuously monitor wastewater flows and levels throughout the collection system that are impacted by facility operations or are prone to flooding. The third package will also provide improvements to newer facilities, ensuring consistent data collection from all wastewater facilities.

Scope

Sub-phase	Scope
Planning	Development of a plan for a monitoring and control system for the MWRA wastewater transport system.
Design and Integration Services	Includes design, integration (PLC programming, operator graphics development, MIS/CMMS data transfer), and development and implementation of training. Also covers preparation of documentation and manuals for automating equipment and systems and for remote monitoring and control of the wastewater transport systems and facilities. Includes construction administration, engineering services during and after construction, and resident inspection.
Construction 1 (CP1)	Construction and installation of SCADA equipment and systems at seven pumping facilities, three CSOs and one screen house. Also covers Operation Control Center improvements. Facilities include Alewife, Caruso, Hingham, New Neponset, Hayes, Delauri, Houghs Neck, Chelsea Screen House, Cottage Farm, Prison Point, and Somerville Marginal. This construction package will also include the major components of the SCADA communications infrastructure (microwave radios, routers, etc.).
Construction 2 (CP2)	Construction and installation of SCADA instrumentation and control equipment at the three older headworks facilities and Nut Island Headworks. OCC improvements will also be made to support these additional facilities.

Sub-phase	Scope
Construction 3 (CP3)	Construction of permanent power at up to 35 interceptor monitoring locations and minor instrumentation and control improvements at newly commissioned pumping facilities (IPS, Quincy, Arthur Street, and Squantum).
Equipment Prepurchase	Purchase SCADA system components including computer hardware to ensure consistency with MWRA MIS infrastructure through existing Commonwealth of MA blanket contracts and small quantity system components (ex. fuel tank monitoring units and interfaces, Prison Point Flow meter, CSU/DSUs) to ensure consistency and/or compatibility with installed systems.
Technical Assistance	Technical assistance work to support all subphases.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$17,036	$2,376	$14,660	$1,016	$449	$1,759	$9,092	$3,431	$378

Project Status 11/05	15.1%	Status as % is approximation based on project budget and expenditures. The Planning phase is complete and Design and Integration contract is in process. Budget assumes award of Construction 1 in December 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY07	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$15,616	$17,036	$1,420	Jan-08	Jan-08	-	$14,683	$15,747	$1,064

Explanation of Changes

- Increase in expected change orders for Design & Integration Services contract.
- Revised cost estimates for Construction 1 and Construction 2 contracts.
- Inflation adjustment on Construction 3 contract reflecting new ENR index.

CEB Impact:

The FY07 CEB already reflects staffing reductions in preparation for implementation of remote monitoring. Future operating budgets will reflect any further optimization of chemicals and utility usage as a result of SCADA implementation.

S. 139 South System Relief

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To protect public health and property from sanitary system overflows and back-ups into homes and businesses during extreme wet weather events. Completion of the project will also extend the useful life of system assets and potentially avoid extraordinary costs resulting from system failures.

Project History and Background

Archdale Road Diversion Structure

On October 20, 1996 a 100-year rainstorm caused the MWRA High Level Sewer (HLS) (Section 70) to overflow in the area of Archdale Road in Boston. Following this overflow event, MWRA established a task force to recommend action to mitigate and/or prevent future overflows. The task force developed an emergency response plan and examined several relief alternatives. The first component of the recommended relief plan consisted of construction of a diversion structure that includes two 30-inch by 60-inch sluice gates connecting the HLS to BWSC's Stony Brook drainage conduit. The diversion structure is located at the end of Bradeen Street in Roslindale. If, based on monitoring results, it appears that the High Level Sewer is about to overflow in the Archdale Road area due to an extraordinary storm event, the overflow volume is diverted to the Stony Brook Conduit through the sluice gates. This eliminates the need to deploy large emergency response crews to build temporary sandbag dikes. Construction of the diversion structure was completed in August 1999.

High Level Sewer Repair

Subsequent to the October 1996 storm, MWRA initiated some short-term modifications to the sewer system to reduce overflows. However, during a June 1998 storm, these modifications actually pressurized the HLS. As a result, MWRA began an emergency evaluation of the HLS in June 1998 to analyze its hydraulic capacity and structural integrity. The evaluation, which was completed in January 1999, discovered cracking at a 77-degree bend in the sewer in the Archdale Road area that required immediate attention. Inspection also indicated that approximately 40 feet of the HLS, located in the Arnold Arboretum, needed repair. A construction contract notice to proceed was issued in June 1999 and construction was completed in October 1999.

Outfall 023 Cleaning and Structural Improvements

Following the October 1996 storm, the City of Boston engaged a consultant to review the events and recommend remedial actions to prevent future flooding under similar conditions. One recommendation was to clean sediment and debris from the Stony Brook Conduit. BWSC has cleaned the upstream portion of the conduit and MWRA has cleaned the outfall from the MDC gatehouse at Charlesgate to the Charles River. This part of the project also covers structural repairs to Outfall 023 with work scheduled to commence in July 2007.

Milton Financial Assistance

Two residential areas in the Town of Milton have experienced sewage backups into homes during wet weather events and periods of prolonged wet weather. One area affected is a direct tributary of MWRA's High Level Sewer and the other is a tributary to MWRA's New Neponset Valley Sewer. In September 1999, MWRA and Milton entered into a financial assistance agreement to fund design and construction of new sewers, rehabilitation of an existing pump station, and construction of a new pump station to mitigate downstream impacts from high flow conditions in the improved High Level Sewer.

Pump Station Feasibility

MWRA considered investigating the feasibility of constructing a small pump station to convey wastewater from a small area of Quincy away from the Braintree Howard Street Pump Station. The flow would be rerouted back to the Quincy collection system. The City of Quincy would own and operate the pump station. Upon further evaluation, MWRA has decided to delete this project and instead, will continue an MOU with Braintree to pay the town annually for use of 25 percent capacity of Braintree's Howard Street Pump Station.

Scope

Sub-phase	Scope
Archdale Des/CS/RI and Construction	Design, construction services, and resident inspection for the Archdale Road Diversion Structure. Construction of an underground diversion structure that houses two 30-inch by 60-inch horizontal sluice gates on the sidewall of the HLS. This structure controls flow into BWSC's Stony Brook Conduit.
Sections 70 and 71 HLS Evaluation/ Construction	Initial evaluation and construction of recommended improvements.
Construction and Improvements for Outfall 023	Removal and disposal of sediment and debris from Outfall 023 as well as continuation of structural improvements.
Milton Financial Assistance	Payment to the Town of Milton for local projects to mitigate downstream impacts from high flow conditions.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$4,945	$3,440	$1,505	$0	$0	$1	$4	$800	$700

Project Status 11/05	69.6%	Status as % is approximation based on project budget and expenditures. All sub-phases are complete except for Outfall 023 Structural Improvements which is scheduled to begin in July 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$4,945	$4,945	-	June 09	June 09	-	$805	$805	-

Explanation of Changes

- **None.**

CEB Impact: No additional impacts identified.

S. 141 Wastewater Process Optimization

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To optimize wastewater system operating procedures and make system improvements and modifications to ensure maximum wastewater treatment, minimum operating and maintenance costs, and extension of the useful life of system assets.

Project History and Background

This project was established to support MWRA Business Plan strategies, which recommend the development of a wastewater process optimization plan, central monitoring facilities for the sewerage system, rehabilitation of wastewater interceptors, and the utilization of automation and new technology to increase efficiency.

The completed planning phase included the development of an updated hydrologic and hydraulic model (InfoWorks CS) and the evaluation of optimization alternatives under typical and extreme storm events. MWRA will evaluate several of the alternatives and use hydraulic information gained during this phase to develop facility control logic under the Wastewater Transport SCADA Implementation Project. Two alternatives, which include pipeline modifications, will be taken further as defined below. The model developed under this project continues to be used by MWRA staff for in-house system evaluation and NPDES reporting requirements and by outside consultants to support CSO-related projects.

Scope

Sub-phase	Scope
Planning	Evaluate collection system and facility modification alternatives to maximize wastewater treatment and minimize operating and maintenance costs.
Somerville Sewer	Design and construct a connection between the upstream end of the Somerville Medford Branch Sewer and the North Metropolitan Relief Sewer to reduce surcharge and divert flow away from the Cambridge Branch Sewer and Delauri Pump Station.
Siphon Planning	Further evaluate the benefits of constructing a redundant siphon crossing the Mystic River from the Cambridge Branch Sewer to the Delauri Pump Station.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$2,240	$930	$1,310	$141	$65	$24	$0	$0	$1,286

Project Status 11/05	41.5%	Status as % is approximation based on project budget and expenditures. The Notice-to-Proceed for the Somerville Sewer Design is scheduled for October 2008.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$2,187	$2,240	$53	Aug 11	Aug 11	-	$230	$230	-

Explanation of Changes

- **None.**

CEB Impact: None identified at this time.

S. 142 Wastewater Metering System Equipment Replacement

Project Purpose and Benefits

☑ *Extends current asset life*
☑ *Improves system operability and reliability.*

To improve the accuracy of meter data used to determine wholesale wastewater charges. This will be accomplished by replacing the existing wastewater metering system, including hardware and software utilizing the latest available technology. This technology will reduce confined space entries, making the metering system safer and less costly to maintain. This project will be coordinated with and support SCADA implementation for the wastewater system. Meter replacement is expected to be completed in FY06.

Project History and Background

Installation of MWRA's wastewater metering system began in 1989 and was completed in 1994. Individual meters in 43 customer communities receive routine maintenance on a continuous basis. This initial system is now more than ten years old and has become difficult to maintain due to limited availability of replacement parts. The original meters now require significant rehabilitation and many have been rebuilt from replacement parts. Also, meter technology has continued to advance so the current system is obsolete.

Scope

Sub-phase	Scope
Planning	Development of a long-term plan to upgrade or replace the existing wastewater metering system (hardware, software, telemetry) is complete.
Equipment Purchase/Installation	Purchase and installation of equipment is underway.
Permanent Site Improvements Design and Constr	Supply of power and enhanced wireless communications to approximately 218 permanent wastewater metering sites. MWRA will use data from these key sites to optimize operations and maintenance during normal and wet weather conditions.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$6,578	$4,873	$1,705	$859	$4,015	$84	$136	$171	$1,315

Project Status 11/05	74.1%	Status as % is approximation based on project budget and expenditures. The planning phase is complete. The purchase and installation of new meters is also complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$6,578	$6,578	-	Jan 16	Jan 16	-	$5,130	$5,264	$134

Explanation of Changes

- **None.**

CEB Impact: Potential cost savings associated with this project have not yet been quantified.

S. 145 Interception and Pumping Facility Asset Protection

Project Purpose and Benefits

☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To protect the investment of MWRA ratepayers by ensuring timely replacement of equipment and systems.

Project History and Background

This project was developed to ensure that MWRA maintains ongoing service while optimizing operations in its wastewater facilities. This project in its current form addresses immediate critical facility and equipment issues. This project will eventually include five areas:

1. Equipment replacement (pumps, HVAC equipment, blowers, etc.).
2. Architectural projects (concrete corrosion, etc.).
3. Utilities projects (water, sewer, drainage, electrical wiring, heating system, etc.).
4. Support Projects (process control system upgrades, etc.).
5. Specialty Projects (instrumentation upgrades, fuel storage tanks, etc.).

While the current schedule indicates a completion date of 2010 for construction, the Interception and Pumping Asset Protection project will be ongoing throughout the useful life of the facilities.

Scope

Sub-phase	Scope
Rehab of Section 93A Lexington	Rehabilitation of 4,000 linear feet of pipeline in Lexington (Section 93A). Completed in April 2004.
Sections 80 and 83	Evaluation of the condition of Sections 80 and 83 and design and construct repairs to damaged portions. TV inspection revealed numerous cracks and holes, which impair the structural integrity of the pipe.
Section 160	Evaluation of the condition of Section 160 of the Mystic Valley Sewer and design and construct repairs to damaged portions. TV inspection indicated extensive cracking and possible loss of structural support.
93A Force Main Replacement	Rehabilitation of 1,200 feet of 24-inch ductile iron force main. Recent physical observations and testing have shown that portions of the existing pipe have extensive corrosion from hydrogen sulfide attack.
Mill Brook Valley Sewer Sec 79 & 92	Rehabilitation of a portion of Section 79 pipeline in Arlington. Under MOU trust agreement, MWRA to absorb 50% of total cost of rehabilitation.
Prison Point HVAC Upgrades, Design & Construction	The HVAC system improvements include the replacement of a boiler that has been in operation at Prison Point since 1981 with a more energy efficient unit. The remaining components of the HVAC system, ductwork, air handling equipment, dampers, louvers, and odor control are need of upgrade. The existing equipment will be evaluated as part of the design effort. An assessment will be performed to develop the scope of the project and more accurately estimate the cost of construction. The conversion of the control system for the HVAC to electronic digital control was completed in FY05 and FY06 under the CEB. The diesel engine fuel system modifications at this facility will be completed under the SCADA contract and will include the fuel oil delivery feed to the system boiler.

Sub-phase	Scope
Remote Headworks Heating System Upgrades	Existing boilers at each of the remote headworks require significant maintenance and consume substantial fuel. A preliminary design report was completed and alternative energy-saving systems are recommended to replace the existing heating systems. The contract to replace the existing heating system at the Chelsea Creek Headworks was awarded in April 2005. The remaining systems at Ward Street and Columbus Park are under evaluation and those systems will be replaced based on priority and 'end of useful life' forecasts.
Remote Headworks Screen Replacement	The three Headworks, Chelsea Creek, Ward Street, and Columbus Park have screens that are experiencing a high rate of operational and maintenance failures. There are 12 climber screens installed in 1985 that are at the end of their useful lives. This project will include design and installation of a new state-of-the-art screening system. An in-depth mechanical assessment was prepared to address immediate operations and maintenance needs until the screens are replaced under this CIP.
Headworks Condition Assessment and Facilities Plan	A Facilities Plan will be developed to identify the operational needs of all remote headworks facilities to recommend equipment replacement and upgrades for further design and construction. The Facilities Plan will include a Condition Assessment of all equipment and non-equipment assets to establish a basis for adding process improvements or upgrades to meet business goals and objectives. An RFQ/P process will be used to procure engineering consultant services.
Hingham Pump Station Isolation Gate Design and Construction	The Hingham Pump Station was built without an influent gate. The station services the Town of Hingham and presently has no direct means to isolate the flow to this station. Presently, labor intensive and inefficient means using stop logs, sand bags, sewer plugs and pumps are required to isolate and divert flow. An isolation gate will allow work in the wetwell and on grinders and other related station equipment. This project will include the design and installation of a mechanical means, such as sluice gates in a diversion chamber, to isolate the station and bypass flow if required. This will allow maintenance to take place in the station without interruption of service.
Alewife Brook Pump Replacement Design and Construction	The Alewife Brook Pump Station was built in 1951 and the pumps are original equipment. They are discharging with less efficiency and the check valves are leaking. Staff has replaced rotating parts on the pumps over the past several years and it is difficult to maintain proper tolerances for internal pump components due to the age and wear of the pumps. The replacement is intended to increase pump reliability, efficiency, and pumping capacity at this facility. The Wastewater Optimization Study recommends increasing the capacity for pumping at this station. This project will include replacing the larger pumps and motors, check valves, and VFDs. The fourth pump, the smallest one, will be replaced under the SCADA contract.
Alewife Brook Screen Replacement Design and Construction	Alewife Brook Pump Station has two climber screens currently in need of replacement. The screens jam and do not capture screenings on a regular basis thus causing constant, intensive labor to clean the screens. This project will include an evaluation of screens vs. grinders to improve operations of the pump station.
Caruso Pump Station Generator Replacement	The Caruso Pump Station generator, which is currently 13 years old, is one of only two existing generators of this type made by Wakesha. The manufacturer is no longer making spare parts and there is only a limited quantity of available spare parts at this time, which may not be readily available in the future. This project is to replace the generator, due to obsolescence, with a newer model with readily available parts to ensure reliable back-up power at this facility.
Chelsea Screenhouse Sluice Gate Engineering Study	The Chelsea Screenhouse has seven hydraulic gates used to divert flow from one facility to another, between the Caruso Pump Station and the Chelsea Headworks. One gate in particular is pulling away from the wall during operation which causes it to jam and bind. This may need extensive repairs or even replacement. This project is a study and condition assessment of all seven gates in the facility to include recommendations for replacement.

Sub-phase	Scope
Prison Point & Cottage Farm Washdown System Piping Design and Construction	At both the Prison Point and Cottage Farm CSO Facilities the piping system that provides water for washing down the detention tanks, wet wells and screen room areas after storm activations is made of PVC and cast iron. The glued joints in the plastic pipe are problematic, when the water pressure causes a break or even leaks. The PVC pipe and associated hangers & hardware is twenty years old in some instances, and the replacement of these systems should include an upgrade of the materials, connections, and pressure controls.
Framingham Pump Station Sluice Gates Condition Assessment	There are six 48-inch sluice gates at the Framingham Pump Station that may be experiencing premature corrosion resulting from exposure to high levels of hydrogen sulfide in the influent that occurs from turbulence in the water. The No. 3 gate has experienced severe deterioration and will be repaired in an amendment to the Framingham Pump Station Rehab under the Odor & Corrosion Control project. The sluice gates are 5-6 years in operation. An Inspection/Condition Assessment of all gates is recommended to determine the extent of corrosion and level of damage to all gates. The assessment will help to determine remaining useful life and will result in recommendations to design and replace with appropriate materials. The design could be limited to bid specifications only.
Caruso Pump Station Shaft Replacement Construction	Caruso Pump Station has seven pumps that are fourteen years old. The vertical shafts of the four 21 MGD rated pumps are worn and cannot support mechanical seals. Currently, a 'soft packing' is in place to seal around the shafts. This is due to the extensive leakage from the worn shaft sleeves. Of the seven pumps at this facility, The four (21 MGD) pumps are used 24 hours/day, 7 days/week and are recommended to have mechanical seals installed to replace the conventional pump packing. Mechanical seals will reduce maintenance and operational costs, such as water consumption and energy.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$18,904	$2,217	$16,687	$1,548	$668	$1,976	$3,397	$3,699	$7,615

Project Status 11/05	14.2%	Status as % is approximation based on project budget and expenditures. The Headworks Condition Assessment and Facilities Plan has a Notice to Proceed date of January 2006. This phase will result in prioritized recommendations for upgrade and replacement projects for all the headworks facilities. The Remote Headworks Heating System Upgrade work at the Chelsea Creek Headworks had a NTP date of May 2005. Past assessments of the facilities have identified the immediate need for this upgrade.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$18,611	$18,904	$293	Feb 10	Jan 11	12 mos	$14,957	$11,288	($3,668)

Explanation of Changes

- Cost – Inflation adjustments on unawarded contracts, Sections 80&83 and Section 160, reflecting new ENR index.
- Schedule – Based on findings from Facility Plan/Assessment.

CEB Impact: CEB impacts for this project have not yet been identified.

S. 200 Deer Island Plant Optimization

Project Purpose and Benefits

☑ *Extends current asset life*
☑ *Results in a net reduction in operating costs*
☑ *Improves system operability and reliability*

This series of projects addresses the need for capital investment to optimize plant operations after initial start-up. The projects provide for design, construction, support, and services during construction, for work at the Deer Island Treatment Plant necessary for safe, efficient start-up and/or to optimize the operational functionality in various areas of the facility.

Project History and Background

The Deer Island Treatment Plant consists of an extensive infrastructure of facilities and utility services. Due to the size, scope, and complexity of the Deer Island facility, it was inevitable that unanticipated repairs and/or modifications to various structures and utilities would be necessary following substantial completion of the plant. Contracts under this program are to support these modifications. The projects required to address routine plant operations and maintenance needs are under the *Deer Island Treatment Plant Asset Protection* program.

Scope – New subphases added to the Proposed FY07 CIP are noted in **Bold.**

Sub-phase	Scope
Supplementary Modification Package	Installation of safety railings, primary access hatches, scum screen bypass, and access platforms at the Deer Island grit facility (completed in March 2000).
As-Needed Design Phases 1 through **5**, and Long-Term As-Needed Design	On-going technical design services and/or construction support to supplement existing engineering resources for specialized or complex engineering issues.
CEMS Modifications	Construction of an enclosure and catwalks around the continuous emissions-monitoring system (CEMS) probes on the exhaust stack at the Thermal Power Plant.
BHP Site Completion	Final landscaping and installation of public safety, education, and orientation signage (completed in December 2004).
Ancillary Modifications:	
Design and Construction 1	Design and construction of several improvements in the Winthrop Terminal Facility, including replacement of the catenary screens; replacement of primary scum screens in Residuals; replacement of valves and gas meters at digester modules; corrosion repair; replacement of sump pumps at North Main Pump Station; and telescoping valve work in digester module 3 (all work scheduled for completion by January 2006).
Design and Construction 2-2	Design and construction for installation of Variable Frequency Drives (VFDs) and DC chokes at the South System Pump Station.
Design and Construction 3-1	Design and construction of improvements to the secondary clarifier scum removal system; installation of clarifier access manholes; correction of sludge manifold vibrations; replacement of clarifier intermediate hatches; and other secondary clarifier improvements. (Completed construction in November 2004.)
Preliminary Design, **Final Design**, and Construction 4	Expanded scope to include Preliminary & Final Design phases for Proposed FY07. For design and construction of modifications to the cryogenics facility, plant-wide odor control systems, digester gas systems, and air scrubber improvements.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$43,157	$18,740	$24,417	$3,377	$7,080	$9,336	$4,722	$2,166	$8,194

Project Status 11/05	54.2%	Status as % is an approximation based on project budget and expenditures. Several previously completed phases for this project are included in the Completed Project list. Contracts in process include As-Needed Design 4-1 and 4-2, Ancillary Modifications 1 and 2-2. Expect to award Ancillary Modification Preliminary Design Phase 4 and CEMS Modifications in the fourth quarter of FY06.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**Impact on FY04-08 Cap**		
FY06	**FY07**	**Change**	**FY06**	**FY07**	**Change**	**FY06**	**FY07**	**Change**
$42,672	$43,157	$485	Mar 13	Mar 13	0	$26,920	$26,681	-$239

Explanation of Changes

- Budget increase of $485k due to an expected change order for Ancillary Modifications 2-2, increased inflation for Ancillary Modifications Construction 4, and an increased cost estimate for the Ancillary Modification 4 design phases.
- No schedule changes. The end date coincides with the Long Term As-Needed Design phases scheduled to run through FY13.
- Impact to FY04-08 cap decreased due to extending the schedule for Ancillary Modifications Final Design 4 beyond FY08.

CEB Impact:

The As-Needed Design and Ancillary Modifications phases are expected to improve the operational functionality of various areas of the plant, potentially reducing maintenance costs and utility expenses. The benefits have not been quantified at this time. Any budgetary impacts will be absorbed within the existing budget projections.

S. 206 Deer Island Treatment Plant Asset Protection

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Fulfills a regulatory requirement*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To protect the investment of MWRA ratepayers in the Deer Island treatment facility by ensuring timely replacement of DI's systems, which contain more than 60,000 pieces of equipment with an approximate value of $1 billion. Portions of the plant are now more than ten years old. MWRA will sequentially replace equipment in these areas as the equipment reaches the end of its useful life.

Construction of the Deer Island Treatment Plant (DITP) was one of the largest wastewater projects ever undertaken in the United States. DITP construction was a 12-year, $3.5 billion effort (not including the cost of off-island residuals facilities) started in 1988. MWRA commenced primary disinfection at the new plant in 1995 and secondary disinfection in July 1997. With the completion of the Effluent Outfall Tunnel in September 2000 the plant now discharges treated effluent 9.5 miles offshore in Massachusetts Bay through a series of 55 diffusers spaced along the last 1.5 miles of the tunnel.

Project History and Background

The Deer Island Treatment Plant Asset Protection program was formerly titled "Facilities Asset Management Program" (FAMP). Since the Facilities Asset Management Program has been expanded to include other Operations units throughout MWRA, this Deer Island project has been renamed. A major component of the program, the Inventory and Evaluation phases (previously a part of this project), are currently under the Capital Maintenance Planning and Development project in the *Business Operations and Support* capital budget.

Unanticipated equipment and system failures have the potential to cause operational and maintenance crises. It is prudent industry practice to take a proactive approach by establishing programs to anticipate when equipment and systems are near the end of their reliable service lives, and overhaul, upgrade, or replace the equipment, systems, and structures as needed. This project encompasses five major functional areas:

1. Equipment Replacement (described in more detail below).
2. Architectural projects (expansion joint replacements, concrete corrosion, etc.).
3. Utilities projects (water, sewer, drainage, piping, electrical wiring, heating systems, etc.).
4. Support projects (process control system upgrades, security projects, etc.).
5. Specialty projects (laboratory modifications, chemical and fuels storage tanks, etc.).

Scope – New sub phases added to the Proposed FY07 CIP are noted in **Bold**.

Equipment Replacement:

Sub-phase	Scope
Equipment Replacement Projection	Cost projection placeholder for the full ten-year CIP cycle. Funds needed for projects identified during each CIP development phase are deducted from this total and then shown under the new sub-phases as they are added to the CIP.
Equipment Condition Monitoring	Installation of temperature and vibration-monitoring equipment in areas identified during the Inventory and Evaluation phases. (Completed in FY05.)
Clarifier Chain Replacement	Replacement of longitudinal and cross-collector chains in the primary clarifier tanks.
Cathodic Protection Evaluation	Evaluate the condition of DI's cathodic protection system. Will recommend repair or decommissioning of protection for specific sections of piping system.

Sub-phase	Scope
North Main Pump Station Motor Repairs	Sequentially replace ten 3,500-hp motors experiencing cracks in the end rings. (This scope of work was added to the NMPS VFD replacement job in FY06.)
CEMS Equipment Replacement	Upgrade all the software for system control, data collection and reporting, and replace the related computer equipment needed for the Continuous Emissions Monitoring System on the two high-pressure Zurn boilers.
Pump Packing Replacement	Ongoing program to replace remaining pump packing seals with mechanical seals for six North Main Pump Station pumps, one South System Pump Station pump, and three Winthrop Terminal Pumps.
LOCAT Scrubber Replacement Construction	Replace the Thermal Plant's high-maintenance digester gas wet scrubber system with a dry scrubber system.
Digester Chiller Replacement	Replace the refrigeration-based digester gas chiller with a chilled water system that can perform better at lower operational loads.
Dystor Tank Membrane Replacement	Emergency replacement of torn gas membranes on both digested sludge storage tanks (completed in September 2005).
Grit Blower Replacement Construction	Replace a high-maintenance grit blower with a dedicated air-handling compressor system for improved grit handling.
Thickened Primary Sludge Pump Replacement	Design and construction to replace the thickened primary sludge pumps in order to reduce water use and maintenance costs.
Centrifuge Back-drive Replacements	Replace twelve centrifuge back-drives, which have become obsolete.

Architectural:

Sub-phase	Scope
Coastal Protection	Restoration of Deer Island shoreline if damaged by the weather or construction of the seawall and revetments (zero-funded placeholder).
Wall/Pier/Berths Rehabilitation	Design and completion of repairs to the seawalls, piers, and barge berths as needed (zero-funded placeholder).
Study/Concept Design-Concrete Repairs	Study to be followed by conceptual design (if needed) for installation of a protective coating on concrete below the water line in the secondary clarifiers and disinfection basins.
Expansion Joint Repairs	Continuing program to periodically replace failed expansion joints in the concrete clarifier decks and/or various retaining walls.

Utilities:

Sub-phase	Scope
Outfall Modifications	Inspection of the old outfall tunnels (decommissioned after startup of the new outfall tunnel). Inspection completed in July 2002.
Electrical Equipment Upgrades	On-going program to replace transformers and bus ducts at the end of their useful lives.
VFD Replacements	On-going program to replace obsolete variable frequency drives in the North Main Pump Station, Winthrop Terminal Facility, and throughout the plant.
Power System Improvement Design and Construction	Design and implement modifications to DI's electrical system as recommended in consultant report after FY04 power outages.
DI Electrical Modifications	New for Proposed FY07. Modifications to DI's electrical system recommended after the October 2005 power outage.
Switchgear Replacements	On-going program to sequentially replace obsolete electrical switchgear throughout the plant.

Sub-phase	Scope
PICS Replacement Construction	Replacement or upgrade of components of the Process Information Control System including keypads, consoles, and software due to obsolescence.
Sodium Hypochlorite Pipe Replacement	Replacement of ½ mile of PVC piping that transports sodium hypochlorite from the barge to the storage tanks with a better-suited pipe. This project will address issues with leaks, corrosion, and health and safety hazards.
Pipeline Replacement Design and Construction	Planned periodic replacement of the various chemical pipelines in the odor control and disinfection facilities due to deterioration from corrosion.
Heat Loop Pipe Replacement Construction 1	The first phase of sequential replacement of DITP heat loop piping. Reroute a portion of the piping to reduce corrosion and improve pipe accessibility (scheduled for completion in December 2005).
Fuel Transfer Pipe Replacement	Replace the fuel pipeline from the barge area to the fuel storage tanks in the Thermal Power Plant (as-needed, following the Cathodic Protection Study).
North Main Pump Station Motor Control Center Design and Construction	Sequential replacement of the motor control center equipment in the Pump Station since the components are becoming obsolete and unreliable.
Second Deaerator Design and Construction	Addition of second, smaller deaerator to supply feed water to one Zurn boiler. Presently, both boilers must be shut down if the existing deaerator is off-line thereby causing a loss of plant heating capability.
DI Wind Power Construction	Zero-funded placeholder for wind power turbines, to be constructed contingent upon obtaining applicable regulatory permits and approvals.

Support:

Sub-phase	Scope
DISC Application	Hardware, software, and contract services to implement a Deer Island plant-wide computerized database of all plant systems (electrical, gas, water, etc).
Document Format Conversion	Conversion of Deer Island construction documents into electronic format and completion of document-reference database.

Specialties:

Sub-phase	Scope
Sodium Hypochlorite Tank **Liner Removal** & Repair	Split into two phases for Proposed FY07. Remove the failed lining in one of the four tanks; then repair any underlying wall corrosion prior to tank lining replacement.
Metals Lab Fume Hood Replacement	Added funding for this project in the Proposed FY07 budget, after determining that the scope was not included in other lab projects.
Metals Lab Modification Construction	Metals lab improvements; replacement of metal fixtures that may contaminate metals samples; installation of filtered air supply; and reconfiguration of the workspace to put team members together.
Lab Sample Area Modifications Design and Construction	Design and construction of improvements at the Central Lab at Deer Island. Improvements include changes in the physical layout to improve workflow and to capture fumes from sample containers and bottle-wash process.
Gravity Thickener Improvements Design and Construction	Install catwalks, remove concrete blocks in the effluent channel, and make roofing modifications for the sludge thickeners to improve staff access and operating efficiency of the thickeners.
Clinton Soda Ash Replacement	To replace the obsolete soda ash delivery system required for pH control in the activated sludge process. Added to DITP budget in the Final FY06 cycle.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$98,676	$4,631	$94,044	$601	$2,160	$4,325	$6,237	$10,431	$73,053

Project Status 11/05	6.3%	Status as % is approximation based on project budget and expenditures. Several previously completed phases for this project are included in the Completed Project list. Contracts in process include Pump Packing Replacement, Electrical Equipment Upgrade Construction 2, Heat Loop Pipe Replacement 1, Digester Chiller Replacement, CEMS Equipment Replacement and Miscellaneous VFD Replacements. Expect to award contracts for the Sodium Hypochlorite Tank Liner Removal and Design of Power Consultant Recommendations within the third quarter of FY06, and Clinton Soda Ash Replacement by the end of the fourth quarter.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**Impact on FY04-08 Cap**		
FY06	**FY07**	**Change**	**FY06**	**FY07**	**Change**	**FY06**	**FY07**	**Change**
$94,659	$98,676	$4,017	June 15	June 16	12	$27,648	$23,753	-$3,895

Explanation of Changes

- Budget increase due to the addition of the DI Electrical Modification project ($2M), and the remainder is mainly due to changes in inflation factors.
- Impact to FY04-08 cap decreased due to extending the schedule for several projects beyond FY08.
- The schedule is extended one year every CIP cycle to incorporate the long-term planning for equipment replacements.

CEB Impact:

The majority of the projects are required to replace obsolete equipment and systems. Some of the projects are expected to result in decreased maintenance costs, however the potential benefits are not quantified at this time. Any identifiable impacts will be absorbed within the existing CEB projections.

S. 261 Residuals Management Facilities

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Fulfills a regulatory requirement*

To expand the residuals processing plant at the Fore River Staging Area (FRSA) in Quincy to provide the capacity to process all sludge produced at the Deer Island Treatment Plant.

Project History and Background

MWRA ceased the discharge of sludge and scum into Boston Harbor in December 1991. Interim and long-term treatment alternatives have been developed to manage these residuals of the wastewater treatment process.

An interim sludge processing and disposal phase included the construction and operation of sludge handling facilities at Deer Island, Nut Island, and FRSA. The interim facility at FRSA had four process trains and was equipped with air pollution and odor control equipment. MWRA completed construction of these facilities and began operation at Fore River in December 1991.

MWRA owns the sludge dewatering and drying facilities at FRSA. A private contractor, the New England Fertilizer Company (NEFCO) operates the facility, and markets and/or disposes of the final product. This approach provides MWRA with ownership of the processing facilities and preserves the option to operate the facilities in the future.

Modification and expansion of the sludge processing facilities to accommodate the increased sludge volumes generated by secondary treatment at Deer Island is nearly complete. In addition, to eliminate the need to barge sludge, MWRA is constructing two 14-inch sludge pipelines to convey sludge from Deer Island to the processing facility at FRSA. One pipe is sized to convey peak sludge volume while the second pipe will act as a back up for sludge transport or for filtrate return. The construction budget and schedule for the sludge pipelines from Nut Island to Fore River are included in the Braintree-Weymouth Relief Facilities project.

The need to barge sludge from Deer Island will continue until the new Braintree-Weymouth siphon and intermediate pump stations go on line early in 2005. A contract with NEFCO, which MWRA signed in March 2001, is funded in the Current Expense Budget. Contract work on this project was declared complete in December 2001.

Scope

Sub-phase	Scope
Design/CS/RI Pelletizing Plant	Evaluation of the capacity of the existing pelletizing plant and use of the solids quantity projections derived from the Deer Island pilot plant and other design studies to determine the scope of the expansion. Design of instrumentation and control updates, additional permitting and air emissions requirements, and design of pellet coating, chemical feed, and ventilation/Regenerative Thermal Oxidizer (RTO) manifold systems.
Fast Track Equipment Pre-purchase	Pre-purchase of two pellet coolers and screens.
Fast Track Equipment Installation	Installation of new safety and process equipment, two new screens, and a pelletizer air recirculation and scrubbing system.

Sub-phase	Scope
Outside Construction – Phase 2	Work outside the pelletizing building including Pier 2 rehabilitation, additional rail tracks, an extension to the existing sludge cake loadout garage, additional pellet silos, increased pneumatic transport capacity, demolition of a crane, and hazardous materials clean-up.
Inside Equipment Pre-purchase Phase 3	Pre-purchase of 12 centrifuges for dewatering sludge and two sludge dryer trains. Additional equipment storage insurance costs and acceptance of the equipment upon delivery to MWRA.
Inside Construction-Phase 3	Work inside the facility consisting of dewatering equipment replacement, modifications to the four existing pelletizing trains, and installation of two new pelletizing trains. Some outside building and utility modifications are also included: explosion suppression systems, cooling towers, air compressors, pellet coating, chemical feed, and ventilation/RTO manifold systems.
Fire Related Costs	Repair costs associated with the December 1998 fire at the plant.
Residuals Research	Study of the appropriate application methods, environmental impacts, and agronomic benefits of MWRA's fertilizer in a variety of settings and investigation of the cause of pellet self-heating and other microbial activity in the material. Study results aided in developing recommendations for product use, answering questions about environmental suitability, and developing marketing strategies.
License Fee	License fees may be due to a patent holder, Enviro-gro, when NEFCO stops operating the facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$64,523	$63,848	$675	$8,930	($1,700)	$0	$0	$0	$675

Project Status 11/05	99%	Status as % is approximation based on project budget and expenditures. Facilities are constructed and operational. Legal cost recovery efforts are complete. Future payments are for license fees.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$64,556	$64,523	($33)	Dec-01	Dec-01	None	$7,263	$7,230	($33)

CEB Impact:

Costs for the NEFCo contract are funded in the CEB.

Introduction to Combined Sewer Overflow (CSO) Program

Discharges of combined wastewater and stormwater runoff from 63 remaining CSO outfalls in the MWRA system and four service area community systems (Boston, Cambridge, Chelsea, and Somerville) affect water quality in the Charles, Mystic and Neponset Rivers, and in Boston Harbor. Pursuant to a 1987 stipulation entered in the Clean Water Act case, MWRA has responsibility for developing and implementing a long-term plan for CSO control at all discharge locations, including MWRA and community outfalls. MWRA first proposed the current long-term plan in its CSO Conceptual Plan and Sewer System Master Plan in December 1994. The CSO Conceptual Plan incorporated then-current information about the CSO flows and water quality impacts, and recommended a plan that had been developed in accordance with EPA's National CSO Policy.

In July 1997, MWRA completed its Final CSO Facilities Plan and Environmental Impact Report, based on the 1994 CSO Conceptual Plan. The Final CSO Facilities Plan recommended 25 site-specific projects, including sewer separation, interceptor improvements, CSO treatment upgrades and new CSO treatment facilities, and storage. Fourteen of the projects are complete, parts of nine others are in construction, and the remaining projects are in the planning or design stage. The Proposed FY07 CIP includes $783.6 million for planning, design, and construction of these projects. Design and construction of the CSO projects began in 1995 and is governed by more than 60 CSO milestones first adopted by the Federal District Court in June 1996 (Schedule Six) as part of the Clean Water Act case or subsequently added.

Some of the projects and milestones have been revised since 1997, including those related to North Dorchester Bay and the Reserved Channel, for which revised plans and schedules proposed by MWRA were allowed by the Federal District Court in June 2005. For North Dorchester Bay, the original plan to construct a conveyance tunnel and large pumping and treatment facility was replaced in April 2004 with a plan to construct a larger storage tunnel, small dewatering facility and related stormwater control conduits. A proposed storage tunnel to control CSOs to the Reserved Channel was replaced in 2004 with a plan for sewer separation. MWRA is proposing additional changes to milestones in Schedule Six to account for revised plans and/or schedules for the Charles River, Alewife Brook, and East Boston. For these areas, MWRA, in cooperation with BWSC and Cambridge, completed project reassessments in the period 2003-2005. In 2005, MWRA recommended additional sewer system improvements to further reduce CSO discharges at the Cottage Farm facility on the Charles River. These recommendations were incorporated into the CIP along with sewer separation projects in Brookline and Bulfinch Triangle in Boston pending final regulatory approvals and Court acceptance. For Alewife Brook, MWRA and the City of Cambridge recommended a new plan in 2003 that expanded the sewer separation project to overcome significant stormwater system problems that compromised the original plan's effectiveness to meet CSO control goals. MWRA also reevaluated the East Boston Branch Sewer Relief project in 2003-2004, in response to higher cost estimates, to determine whether it remained cost effective and would meet CSO control goals. These project reassessments, as well as earlier reassessments (e.g. deleting Dorchester Brook Conduit In-System Storage, revising Upgrades to CSO Treatment Facilities and replacing Fort Point Channel Storage Conduit with sewer separation), were conducted to overcome cost and/or siting obstacles that arose with the original plans.

DEP and EPA have approved most of the CSO facilities plan and have made most of the regulatory determinations necessary for the plan to comply with state water quality standards, including revising water quality standards for certain water bodies. The plans for CSOs affecting the Charles River, Upper Mystic River, and Alewife Brook areas have received approval through variances from water quality standards. In 2004, DEP issued the latest extensions to these variances, to the fall of 2007.

Anticipated operating cost impacts of the CSO program are summarized below and will be further developed as part of the planning and design phases for individual projects.

Program

Project	Purpose
MWRA Managed	
North Dorchester Bay & Reserved Channel	Eliminate CSO discharges and a high level of stormwater control to preclude or greatly reduce beach closings along North Dorchester Bay in South Boston. The project is court mandated in accordance with MWRA's approved CSO control plan and is necessary to meet DEP water quality standards.

Project	Purpose
Hydraulic Relief	Eliminate hydraulic restrictions between local and MWRA systems at locations in Boston and Cambridge to improve transport of wet weather flows, thereby reducing CSO discharges into the Mystic and Charles Rivers. Project is court mandated, is in accordance with MWRA's approved long-term CSO plan, and is required to meet DEP water quality standards.
East Boston Branch Sewer Relief	Increase hydraulic capacity and provide long-term structural integrity to MWRA's East Boston Branch Sewer through the replacement or rehabilitation of the existing sewers. Completion of this project will increase wet weather transport capacity and reduce CSO discharges along the East Boston shoreline, minimizing CSO impacts to the Mystic/Chelsea Confluence and Boston Inner Harbor and facilitating the beneficial uses of these receiving water segments most of the time. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
BOS019 Storage Conduit	Control CSO discharges at outfall BOS019 with off-line storage, in accordance with MWRA's approved long-term CSO control plan. Outfall BOS019 discharges to the Little Mystic Channel in Charlestown. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Chelsea Trunk Sewer Relief	Control CSO discharges at outfalls CHE002, CHE003, CHE004, and CHE008, with interceptor relief or replacement projects, in accordance with MWRA's approved long-term CSO control plan. These outfalls discharge to the Mystic River/Chelsea Creek Confluence and Chelsea Creek. In addition, the project provides relief to the MWRA Chelsea Branch Sewer as well as the lower portion of the Revere Extension Sewer to improve service and control surcharging. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Union Park Detention Treatment Facility	Reduce the frequency and impacts of CSO discharges from the BWSC Union Park Pumping Station (CSO outfall BOS070). Outfall BOS070 discharges into the Fort Point Channel. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Upgrade Existing CSO Facilities and MWRA Floatables Control	Minimize CSO impacts to the Lower Charles River, Upper Inner Harbor, Mystic/Chelsea Confluence, and South Dorchester Bay receiving waters by upgrading five MWRA CSO treatment facilities (Fox Point, Commercial Point, Cottage Farm, Prison Point, and Somerville Marginal), and providing floatables control to MWRA CSO outfalls not associated with treatment facilities (located along the Charles River). These projects are court mandated, are in accordance with MWRA's approved long-term CSO control plan, and are required to meet DEP water quality standards.
MWR003 Gate and Siphon	Minimize CSO discharges to Alewife Brook as part of MWRA's Alewife Brook CSO control plan. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards determinations.
Charles River CSO Controls	Bring the MWRA's "Brookline Connection" into service, implement Cottage Farm influent gate controls and other facility inflow controls, and evaluate and implement interceptor optimization measures that may further reduce CSO discharges to the Charles River Basin/ This project is required to meet DEP water quality standards determinations.
Community Managed	
South Dorchester Bay Sewer Separation (Fox Point)	Eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project	Purpose
South Dorchester Bay Sewer Separation (Commercial Point)	Eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Stony Brook Sewer Separation	Minimize CSO discharges to Stony Brook Conduit and the Back Bay Fens, both of which drain to the Charles River, by separating combined sewer systems in parts of Roxbury and Jamaica Plain. Implementation of this sewer separation project will reduce the number of overflows to the Stony Brook Conduit from as many as 22 to zero in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Neponset River Sewer Separation	Elimination of CSO discharges to the Neponset River and protection of water quality at downstream swimming areas in South Dorchester (primarily Tenean Beach) by separating combined sewer sytems in the Neponset section of Dorchester and by permanently closing CSO regulators associated with outfalls BOS093 and BOS095. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Constitution Beach Sewer Separation	Elimination of CSO discharges at the Constitution Beach CSO facility by separating combined sewer systems in parts of East Boston. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Cambridge CAM002-004 Sewer Separation	Minimize CSO discharges to Alewife Brook by separating combined sewer systems and increasing the capacity of community sewer connections to MWRA interceptors in parts of Cambridge. This project is court mandated, is in accordance with MWRA's approved long term CSO control plan, and is required to meet DEP water quality standards.
BWSC Floatables Control	Limit the discharge of floatable materials from five BWSC combined sewer outfalls. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Cambridge Floatables Control	Limit the discharge of floatable materials from eight Cambridge CSO outfalls. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Fort Point Channel Sewer Separation	Minimize CSO discharges to Fort Point Channel by separating sewer systems tributary to outfalls BOS072 and BOS073. Implementation of the recommended sewer separation plan will reduce the number of overflows from these outfalls from as many as 23 to zero in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Morrissey Boulevard Drain	Reroute stormwater from the BOS087 area (and the North Dorchester Bay consolidation storage tunnel) to Savin Cove to increase level of stormwater control to the beaches.
Reserved Channel Sewer Separation	Minimize CSO discharges to Reserved Channel by separating combined sewer systems in parts of South Boston. Implementation of the recommended sewer separation plan will reduce the number of overflows to reserved Channel from as many as 37 to 3 in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.
Brookline Sewer Separation	Separate several areas of Brookline, totaling 72 acres, where there are remaining combined sewers tributary to MWRA's Charles River Valley Sewer. The project is intended to reduce CSO discharges to the Charles River at the Cottage Farm Facility.

Project	Purpose
Bulfinch Triangle Sewer Separation	Separate the combined sewers in the area of Boston bounded by North Station, Haymarket Station, North Washington St, and Cambridge St. The project is intended to reduce CSO discharges to the Charles River, reduce overflows to the Prison Point CSO Facility and close outfall BOS049.
CSO Support	
CSO Planning and Support	The goals of the CSO Program are to minimize CSO discharges, reduce beach closings following wet weather events, and maximize the beneficial use of CSO receiving waters. This project includes CSO conceptual planning, system master planning, and facilities planning/environmental review. It also includes directly related watershed planning activities, development of short-term CSO control measures (known as System Optimization Plans or SOPs), various as-needed technical support activities, and acquisition of land and easements required for CSO control plan implementation.

Expenditure Forecast (in $000s) and Program Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$783,565	$304,870	$478,695	$45,867	$53,663	$60,176	$65,823	$89,829	$262,867

Program Status 11/05	42.7%	Status as % is approximation based on project budget and expenditures. MWRA continues to make significant progress towards implementing the projects in its long-term CSO control plan. (See individual project status and background information).

Changes to Program Scope, Budget, and Schedule

Program Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$755,769	$783,565	$27,796	Dec-15	Dec-15	None	$317,405	$315,358	($2,047)

Explanation of Changes

- **Community Managed +$21.6M**
  Project Increases: Brookline Sewer Separation +$9M, Bulfinch Triangle Sewer Separation +$4M, Reserved Channel Sewer Separation +$3.2M, Fort Point Channel Sewer Separation +$2.4M, Morrissey Boulevard Drain +$1.2M, Cambridge Sewer Separation +$1.3M, South Dorchester Sewer Separation (Commercial Point) +$441K.

- **MWRA Managed +$6.2M**
  Project Increases: Charles River CSO Controls +$5.2M, East Boston Branch Relief Sewer +$5M, Union Park Treatment Facility +$2M.

  Project Decreases: North Dorchester Bay & Reserved Channel ($6.1M).

CEB Impact:

Completion and start-up of these projects will result in a total net increase of $370,000 (in FY07 dollars) by FY12. By year, the CEB impact is as follows:

Fiscal Year	CEB Impact	Explanation
2008	$41,332	Reflects incremental impact of $99k to operate Union Park for full year (FY07 CEB covers nine months operations). Off set by savings of $58k from decommissioning of Fox Point CSO treatment facility.
2009	($74,000)	Savings from decommission of Commercial Point CSO treatment facility.
FY12	$450,000	Estimate $400k/year for operation, maintenance, and odor control for infrastructure associated with North Dorchester Bay project. Also, expect major maintenance work for Union Park.
FY13	($50,000)	Decrease due to periodic nature of major maintenance work at Union Park.

S. 339 North Dorchester Bay CSO Plan

Project Purpose and Benefits

☑ Contributes to improved public health
☑ Provides environmental benefits
☑ Fulfills a regulatory requirement

Elimination of CSO discharges and a high level of stormwater control to greatly reduce beach closings along North Dorchester Bay in South Boston. The project is court mandated and is in accordance with revisions to MWRA's approved long-term CSO control plan recommended in the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel, April 2004. The project is necessary to meet DEP water quality standards, which prohibit CSO discharges to North Dorchester Bay and similar sensitive receiving waters (i.e. swimming and shellfishing areas).

Project History and Background

Under MWRA's original (1997) recommended plan for CSO control in South Boston, CSO flows along North Dorchester Bay and Reserved Channel would be captured by respective consolidation conduits (tunnels). In small storms, the tunnels would be dewatered to the South Boston Interceptor, for transport to the Columbus Park Headworks and Deer Island. In storms when flows would surpass the tunnel capacity, the excess flows would be discharged to Reserved Channel through a 600 mgd CSO treatment and pumping facility that MWRA had proposed to construct on vacant land off East First Street ("Site J"). This preferred site lay adjacent to the former and existing Massachusetts Bay Transportation Authority (MBTA) power plants and the Cardinal Medeiros Pier. The plan called for the excess flows to receive fine screening, chlorination, and dechlorination prior to discharge to the Reserved Channel.

Despite MWRA's belief at the time it filed the related *1999 Notice of Project Change* that the projects could be implemented as outlined in that Notice, opposition by elected officials and some residents to siting the Reserved Channel CSO Facility on Site J intensified. In December 1999, elected officials representing South Boston informed the MWRA's Board of Directors that they would block efforts by MWRA to obtain legislation necessary to build parts of the project on or under designated parkland.

MWRA stopped design work on all elements of the projects in January 2000, and was unable to commence construction by September 2000, as required. In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the project and overall CSO control approach for North Dorchester Bay and Reserved Channel. The reassessment was completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel (the "SEIR"), recommending a new plan.

The new plan recommended in the SEIR calls for a larger diameter tunnel along the North Dorchester Bay beaches sized to provide storage of CSO flows up to the 25-year design storm and, together with a recommended storm drain along Morrissey Boulevard, provide a 5-year level of stormwater control for the beaches. The tunnel would be dewatered with a 15 mgd pumping station to be located on Massport's Conley Terminal. At the upstream end of the tunnel, a remote odor control facility would be constructed adjacent to CSO outfall BOS087 on the State Police building site to provide tunnel ventilation. Surface piping, diversion chambers and control gates would be constructed at each existing outfall to direct CSO and stormwater flows into the tunnel. The Morrissey Boulevard storm drain (included in the CSO CIP under "Community Managed Projects") will allow large stormwater flows at outfall BOS087 to be redirected away from the tunnel to Savin Cove (South Dorchester Bay) in storms greater than the one-year design storm, to further increase the level of stormwater control afforded by the tunnel to the beaches. Finally, the North Dorchester Bay plan also includes improvements to the Department of Conservation and Recreation's stormwater system along Pleasure Bay to redirect stormwater that currently discharges into Pleasure Bay, a beach, to the Reserved Channel, which does not support primary contact recreation.

In June 2005, MWRA filed a motion with the Federal District Court seeking revisions to the court milestones in Schedule Six to substitute the original plan and schedule for North Dorchester Bay and the Reserved Channel with the new plan and a new schedule. The Court allowed the motion on June 30, 2005. MWRA began design of the revised plan for North Dorchester Bay in September 2004. The revised court milestones require MWRA to commence construction by August 2006 and complete the North Dorchester Bay tunnel and related facilities

(including the dewatering pumping station and odor control facility) by May 2011. The revised milestones also require MWRA to complete construction of the Pleasure Bay storm drain improvements by May 2006. For the Morrissey Boulevard storm drain, the revised milestones require MWRA, in cooperation with BWSC, to commence design by June 2005, commence construction by December 2006 and complete construction by June 2009. For Reserved Channel Sewer Separation, the revised milestones require MWRA, in cooperation with BWSC, to commence design by July 2006 and construction by May 2009 and to complete construction by December 2015.

Scope

Sub-phase	Scope
Design/ESDC:Tunnel and Pleasure Bay	Design and engineering services during construction for the North Dorchester Bay tunnel and CSO/stormwater controls and the Pleasure Bay drainage improvements Preliminary design for the dewatering facility and force main.
Tunnel Construction	Construction of the North Dorchester Bay tunnel, drop shafts, access shafts and CSO/stormwater controls.
Dewater/Odor Control Construction	Construction of the 15 mgd dewatering pump station at Conley Terminal, related force main and remote odor control facility at outfall BOS087
Tunnel and Facilities CM Services	Construction management services for the North Dorchester Bay tunnel, dewatering and odor control facilities, related piping and diversion/control structures and Pleasure Bay drainage improvements, including final design review and assistance during facilities start-up and optimization.
Pleasure Bay Construction	Construction of Pleasure Bay drainage improvements.
Design ESDC/CSO Facilities	Design and engineering services during construction for the dewatering pump station, related force main and remote odor control facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$225,604	$18,233	$207,370	$1,266	$3,305	$9,536	$34,083	$61,421	$102,331

Project Status 11/05	8.6%	Status as % is approximation based on project budget and expenditures. The Authority completed 100% design of the tunnel and appurtenances in December 2005. CM services commenced in October 2005. The Authority achieved substantial completion of its negotiations with Massport for a MOU for the Authority's construction on Massport land including the tunnel mining shaft and the dewatering pumping station; Pleasure Bay Drain Improvements construction was awarded in September, 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$231,674	$225,604	($6,070)	May-11	May-11	None	$113,153	$109,612	($3,541)

Explanation of Changes

- Actual award for the Tunnel and Facilities Construction Management Services and Pleasure Bay Construction contracts were less than budget, partially offset by revised cost estimates for Tunnel Construction, Dewater/Odor Control Construction, and Design ESDC/Facilities contracts.

CEB Impact: Estimate $400k/year as of FY12 for operation, maintenance, and odor control for infrastructure associated with this project.

S. 354 Hydraulic Relief

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

Elimination of hydraulic restrictions between local and MWRA systems at locations in Boston and Cambridge to improve transport of wet weather flows, thereby reducing CSO discharges into the Mystic and Charles Rivers. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project combines two local hydraulic relief projects, one in Cambridge to minimize CSO discharges at CAM005 and one in Charlestown to minimize CSO discharges at BOS017.

In Cambridge, the 24-inch, 40-foot long dry weather connection between the CAM005 regulator and the North Charles Metropolitan Sewer, adjacent to Mount Auburn Hospital, was relieved with a new 54-inch connection.

In Charlestown at BOS017, 190 feet of 36-inch pipe were installed in Sullivan Square to divert two local (BWSC) combined sewers to a direct connection with the Cambridge Branch Sewer. In addition, a 10-foot long restriction between the Charlestown and Cambridge Branch Sewers, adjacent to Sullivan Square, was eliminated. This improvement is expected to lower hydraulic grade lines in the Charlestown Branch Sewer during wet weather.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$2,295	$2,295	$0	($7)	$0				

Project Status 11/05	100%	Completed in 2000.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$2,295	$2,295	$0	Aug-01	Aug-01	None	($7)	($7)	$0

Explanation of Changes

- **None.**

CEB Impact: None.

S. 347 East Boston Branch Sewer Relief

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*
☑ *Improves system operability and reliability*

To increase hydraulic capacity and provide long-term structural integrity to MWRA's East Boston Branch Sewer through the replacement or rehabilitation of the existing sewers. Completion of this project will increase wet weather transport capacity and reduce CSO discharges along the East Boston shoreline, minimizing CSO impacts to the Mystic/Chelsea Confluence and Boston Inner Harbor and facilitating the beneficial uses of these receiving water segments. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project will relieve the interceptor system serving most of East Boston, minimizing CSO discharges to Boston Harbor and Chelsea Creek through outfalls BOS003-014. Existing sewers will be replaced using a combination of construction methods including microtunneling, pipe bursting and open cut. Some were rehabilitated using relining method. The rehabilitation construction contract commenced in March 2003 and was substantially completed in May 2004. Other design and construction was delayed pending completion of a project reassessment to assure cost benefit. The reassessment work was substantially completed in December 2003 and resulted in an affirmation of the original hydraulic relief plan. Related discussions with EPA and DEP are ongoing to gain regulatory agreement.

Scope

Sub-phase	Scope
Design/CS/RI	Design, project reassessment, and construction administration/resident inspection for rehabilitation contract.
Design 2	Completion of design for the relief (microtunneling) and replacement (pipebursting) contracts, and construction administration/resident inspection for these contracts.
East Boston Branch Relief Sewer Construction	Construction of 13,100 feet of replacement sewers primarily by microtunneling.
Boston Paving	Payment to City of Boston for paving.
East Boston Branch Sewer Rehab Construction	Rehabilitation of 5,400 feet of existing sewer.
Sections 38 & 207 Replacement Construction	Replacement of 5,300 feet of existing sewers by pipebursting.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$72,950	$8,679	$64,271	$5,293	$341	$323	$1,317	$8,777	$53,853

Project Status 11/05	11.7%	Status as % is approximation based on project budget and expenditures. The rehabilitation contract was substantially complete in May 2004. MWRA has commenced discussions with EPA and DEP regarding a recommended plan to complete the work and plans to resume design efforts for the replacement contracts.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$67,997	$72,950	$4,953	Feb-10	Jun-10	4	$21,056	$16,052	($5,004)

Explanation of Changes

- Cost increase primarily due to inflation adjustments associated with new ENR index. Also, new design contract to be procured.
- Schedule change associated with revised milestone dates presented to regulatory authorities.

CEB Impact: None identified at this time.

1S. 348 BOS019 Storage Conduit

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

This project is intended to reduce CSO activations and annual volume to the Little Mystic Channel (Upper Inner Harbor) from 18 to 2 discharges per year and from 8 million gallons to 0.4 million gallons, respectively, a greater than 90% reduction. The project will bring CSO discharges at outfall BOS019 into compliance with the state receiving water quality designation of B (cso).

Project History and Background

In compliance with its federal court schedule, MWRA issued the notice to proceed with construction to Walsh Construction of Illinois on March 31, 2005. The BOS019 storage conduit comprises two, parallel 10-foot by 17-foot conduits, each 280 feet in length, providing 670,000-gallons of off-line storage that will capture CSO discharges at outfall BOS019 from all but the two largest storms in a typical year. The project will reduce CSO activations to the Little Mystic Channel from 18 to 2 times per year and will reduce annual discharge volume from 8 million gallons to 0.4 million gallons. The new facility will include a small pump station to dewater the stored flows into the collection system when available capacity in MWRA's Charlestown Branch Sewer has returned after storms have passed. Appurtenant equipment also includes an odor control system, diversion chambers and motor control center. The operation of this facility will be conducted remotely from the Operations Control Center via a System Control and Data Acquisition (SCADA) system. The construction schedule for this project is 24-months from the NTP, with a project completion date of March 2007.

Scope

Sub-phase	Scope
Design (Contract 6258)	Project reassessments and preliminary design for BOS019 storage conduit and Fort Point Channel storage conduit/sewer separation. Final design for BOS019 storage conduit only.
BOS019 Storage Conduit Construction (Contract 6260)	Construction of the BOS019 storage conduit, which commenced March 31, 2005 and is expected to be completed March 31, 2007.
Construction Management Services (Contract 7008)	Resident engineering and inspection services for the BOS019 storage conduit

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$13,676	$2,804	$10,872	$1,156	$1,199	$6,145	$4,615	$112	$0

Project Status 11/05	34.9%	Status as % is approximation based on project budget and expenditures. Construction and Construction Management Services contracts were awarded in March 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$13,650	$13,676	$26	Mar-07	Mar-07	None	$13,202	$13,227	$26

Explanation of Changes

- Construction contract change order to install two sewer pipe sleeves partially offset by a design amendment credit close-out.

CEB Impact: None identified at this time.

S. 349 Chelsea Trunk Sewer Relief

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*
☑ *Improves system operability and reliability*

To control CSO discharges at outfalls CHE002, CHE003, CHE004, and CHE008 in accordance with MWRA's approved long-term CSO control plan. These outfalls discharge to the Mystic River/Chelsea Creek Confluence and Chelsea Creek. In addition, the project will relieve the MWRA Chelsea Branch Sewer as well as the lower portion of the Revere Extension Sewer to improve service and control surcharging. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project combines three components recommended in MWRA's long-term CSO control plan: 1) relief of a City of Chelsea-owned trunk sewer to minimize CSO discharges to the Inner Harbor at three outfalls, 2) relief of the MWRA Chelsea Branch Sewer and Revere Extension Sewer to minimize CSO discharges to Chelsea Creek and reduce surcharging in the upstream transport system, and 3) repair of the existing CSO pipe in Chelsea at outfall CHE008. All of the work is complete and the contracts have been closed out.

Scope

Sub-phase	Scope
Design/CS/RI	Design, construction services, and resident inspection for the entire project.
Chelsea Trunk Relief	The existing Chelsea Trunk Sewer, which varies in diameter from eight to 15 inches, was replaced with 2,300 feet of 30-inch diameter pipe. Information obtained during design about the physical conditions of the CHE002, CHE003, and CHE004 outfalls led to a decision to include rehabilitation of sections of the CHE002 and CHE003 outfalls. Underflow baffles were installed at each regulator to provide floatables control.
Chelsea Branch Sewer	The MWRA Chelsea Branch and Revere Extension Sewers, which run in parallel along Eastern Avenue in Chelsea, were replaced and/or relieved with approximately 4,200 feet of 42-inch pipe and 3,500 feet of 66-inch pipe along or near Cabot Street and along Eastern Avenue in Chelsea. The construction also included repairs at outfall CHE008. One underflow baffle was installed at the sole regulator structure associated with this outfall to provide floatables control.
Rehab/Chelsea Branch/Revere Extension	Cured in place pipe rehabilitation methods were used to line approximately 4,200 feet of 36-inch pipe in the Chelsea Branch and 3,000 feet of 54-inch pipe in the Revere Extension Sewer.
Modify Chelsea Screen House	Installations of connection points and provision of flow control at the Chelsea Screen House in support of the Chelsea Branch Sewer rehabilitation.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$29,765	$29,765	$0	$1	$8	$0	$0	$0	$0

Project Status 11/05	100%	Status as % is approximation based on project budget and expenditures. Project is complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$29,765	$29,765	$0	Jun-02	Jun-02	-	$9	$9	$0

Explanation of Changes

- Project completed.

CEB Impact: None.

S. 350 Union Park Detention Treatment Facility

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

To reduce the frequency and impacts of CSO discharges from the BWSC Union Park Pumping Station (CSO outfall BOS070). Outfall BOS070 discharges into the Fort Point Channel. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project will improve water quality in the Fort Point Channel by providing treatment of CSO discharges 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 Final EIR called for the detention/treatment facility to be constructed adjacent to the existing pumping station, on property 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. Construction of the treatment facility commenced in March 2003 and is scheduled for completion by September 2006.

The treatment facility will include fine screens, chlorination with sodium hypochlorite, dechlorination with sodium bisulfite, and below-ground, rapid-settling detention tanks measuring approximately 90 feet by 140 feet and 20 feet deep. The buried tanks, which will have a combined storage capacity of 2.2 million gallons, will reduce the number of pumping station discharges to the Fort Point Channel. While most of the new facility will be below ground, the plan includes an addition to the aboveground structure of the existing pumping station.

Some layout changes within the existing pumping station will optimize use of available space and minimize aboveground construction. The pumping station will remain in service during construction of the treatment facility. Per MWRA and BWSC agreement, operations of the new treatment facility and the existing pumping station will be integrated.

A neighborhood playground operated by the Boston Parks Department covered approximately half of the proposed treatment facility site. As discussed at public meetings during facilities planning and as stipulated in a lease agreement signed by Boston Parks, BWSC, and MWRA in 1997, MWRA removed the playground during construction. A replacement playground will be constructed at a nearby site owned by the Boston Parks Department, and MWRA will fund a passive park over the CSO facility detention basin following construction.

Scope

Sub-phase	Scope
Design	Design and engineering services during construction for the Union Park Detention/Treatment Facility, including storage tanks with a capacity of 2.2 MG, and an addition to the existing above grade pumping station.
Construction	Construction of MWRA's Union Park Detention/Treatment Facility
Construction – Park	Construction of replacement and passive park by Boston Parks & Recreation funded by MWRA during and after construction of the treatment facility.
BWSC Construction	Portions of the construction project involve upgrades to the existing pumping station that will directly support BWSC. To coordinate construction activities, the project was bid jointly and BWSC will pay for its portions of the contract.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$47,564	$32,294	$15,270	$11,522	$15,315	$13,532	$1,635	$104	

Project Status 11/05	78.2%	Status as % is approximation based on project budget and expenditures. Construction contractor has continued forming, reinforcing and placing concrete in the basin's east walls, the East Perimeter wall and the weir troughs

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$45,526	$47,564	$2,028	Apr-06	Sep-06	5	$39,654	$41,682	$2,029

Explanation of Changes

- Additional change orders, expected change orders including additional engineering, overhead, and interim start-up changes, remove and dispose of loose concrete and reinforce steel.

CEB Impact:

The FY07 CEB includes $800k for nine months operation of the facility and additional $99k in FY08 for the full year cost of operations.

S. 353 Upgrade Existing CSO Facilities and MWRA Floatables Control

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*
☑ *Extends current asset life*

To minimize CSO impacts to the Lower Charles River, Upper Inner Harbor, Mystic/Chelsea Confluence, and South Dorchester Bay receiving waters by upgrading five MWRA CSO treatment facilities (Fox Point, Commercial Point, Cottage Farm, Prison Point, and Somerville Marginal), closing outfall MWR010, and providing floatables control at all MWRA CSO outfalls not associated with treatment facilities (located along the Charles River). These projects are court mandated, are in accordance with MWRA's approved long-term CSO control plan, and are required to meet DEP water quality standards.

Project History and Background

Five of the six existing CSO facilities (Commercial Point, Cottage Farm, Fox Point, Prison Point, and Somerville Marginal) were upgraded to improve treatment performance and meet new residual chlorine discharge limits. The work generally included replacement and upgrade 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 took place entirely within the existing facility site bounds. The Commercial Point upgrade called for a remote 36-feet by 36-feet dechlorination building to be constructed nearly one-half mile downstream of the facility on Massachusetts Highway Department (MHD) property adjacent to the Southeast Expressway. The Fox Point upgrade included construction of a new chlorination and dechlorination building next to the existing facility and a 2,700-feet force main from the new building to the dechlorination point, where a 12-feet by 12-feet process control and sampling building was constructed adjacent to Morrissey Boulevard. The plan for 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 feet by 12 feet process control and sampling building was constructed on the Assembly Square Mall property.

By 2002, MWRA completed systems optimization as part of the start-up period referenced in Schedule Six for all five upgraded facilities. Funds for programming process control systems at Cottage Farm were added to the CIP during FY01. Work has been completed.

Based on reevaluations conducted in 2001, MWRA recommended not closing outfall MWR010 and not implementing the second phase of floatables control tributary to outfall MWR018. These recommendations were accepted by DEP in October 2002.

Scope

Sub-phase	Scope
Design	Design and engineering services during construction for upgrades to the five CSO facilities.
Design 2	Design of floatables controls upstream of MWRA outfalls along the Charles River. (eliminated)
Cottage Farm CSO Facility	Replacement/upgrade of the existing disinfection system and construction of a dechlorination system.
Prison Point CSO Facility	Replacement/upgrade of the existing disinfection system and construction of a dechlorination system.

Sub-phase	Scope
Commercial Point, Fox Point, Somerville Marginal	Upgrades including the replacement/upgrade of the existing disinfection systems. A 36 feet by 36 feet dechlorination facility was constructed approximately 0.5 miles downstream of the Commercial Point facility. New chlorination/dechlorination facilities were constructed next to the existing Fox Point and Somerville Marginal facilities. Force mains, 2,700 and 1,800 feet respectively; connect each facility to 12 feet by 12 feet process control/sampling buildings.
Non-Treated Floatables (Beacon)	MWRA non-treated CSO floatables control. Bulkhead and close MWR021 and MWR022 CSO outfalls (completed by MWRA). Construct underflow baffles at four regulators tributary to outfalls MWR019 and MWR020.
Non-Treated Floatables (Other)	Construction of underflow baffles at seven regulators tributary to outfall MWR018. (eliminated)
Closure of Outfall MWR010	Close CSO Outfall MWR010. (eliminated)
Cottage Farm Programming	Program final process control systems.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$22,385	$22,350	$35	$36	$13	$35	$0	$0	$0

Project Status 11/05	100%	Status as % is approximation based on project budget and expenditures. Project is completed.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$22,385	$22,385	$0	Oct-02	Oct-02	None	$84	$84	$0

Explanation of Changes

- Project completed.

CEB Impact: None.

S. 355 MWR003 Gate and Siphon

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

Minimizes CSO discharges to Alewife Brook as part of MWRA's Alewife Brook CSO control plan. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards determinations.

Project History and Background

The MWR003 Gate and Siphon project was recommended in the *Notice of Project Change for the Long Term CSO Control Plan for Alewife Brook, April 2001*, and is part of the revised recommended CSO plan for Alewife Brook. The project consists of the following elements: an automated hydraulic relief gate and associated controls at CSO regulator RE031 upstream of CSO outfall MWR003; an inverted siphon barrel parallel to the existing inverted siphon barrel connecting the Alewife Brook Sewer and Alewife Brook Conduit; and floatables control consisting of an in-line net in outfall MWR003. Also included are improvements to the Alewife Reservation in the immediate project area that are expected conditions of the Department of Conservation and Recreation (DCR) construction permit and license agreement, based on preliminary discussions with DCR. Implementation of this project and other elements of the recommended plan for Alewife Brook is required by the Court Order and by conditions on the Alewife Brook/Upper Mystic River CSO Variance extension, issued by DEP on September 1, 2004.

Scope

Sub-phase	Scope
Design	Design and engineering services during construction.
Construction	Construction of an automated gate and associated controls, 150 feet of new siphon and a floatables control structure.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$1,960	$0	$1,960	$0	$0	$0	$0	$0	$1,960

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Design contract is expected to be awarded in April 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$1,848	$1,960	$112	Jan-12	Jan-12	None	$0	$0	$0

Explanation of Changes

- Inflation adjustment due to new ENR index.

CEB Impact: None.

S. 357 Charles River CSO Controls

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

Implements wastewater system optimization measures, including structural and operational improvements, to further reduce CSO discharges to the Charles River Basin at and near the Cottage Farm CSO Facility. Also, evaluates the cost and benefit of making additional hydraulic interconnections within the interceptor systems related to Cottage Farm. This project is required to minimize CSO discharges to the Charles River Basin in accordance with the Charles River CSO variance to water quality standards, extended by DEP on October 1, 2004.

Project History and Background

In response to the long-term CSO control plan MWRA recommended in 1997, DEP and EPA issued variances to water quality standards for the Charles River. With the variance, DEP approved, and required implementation of, MWRA's plan for the Charles River Basin, and required MWRA to identify and evaluate additional measures that could further reduce CSO discharges to the Basin. In August 2005, MWRA recommended a series of optimization measures and investigations to further lower CSO discharges, including 1) bringing into operation the historically unutilized 54-inch "Brookline Connection" that crosses beneath the Charles River from the Cottage Farm influent chamber (Cambridge side) to an improved connection with the South Charles Relief Sewer (Boston side); 2) developing gate controls and control system to optimize and potentially automate the operation of the existing Cottage Farm influent gates; 3) providing a piped interconnection between the two overflow chambers outside the Cottage Farm facility and optimizing overflow weir settings within each chamber; 4) developing an operational strategy for optimizing the transfer of flows between the Charles River Valley Sewer and the South Charles Relief Sewer using existing gates located at three connections between these interceptors; and 5) evaluating the feasibility of improving hydraulic performance along the North Charles Metropolitan Sewer and the North Charles Relief Sewer by creating new connections or modifying existing connections between these interceptors and by adjusting overflow regulators along these interceptors.

Scope

Sub-phase	Scope
Brookline Connection and Cottage Farm Inflow Controls Design CS/RI and Construction	Design, CS/RI services, and construction to bring into operation the abandoned 54-inch Brookline Connection, develop controls and operational strategy for the existing Cottage Farm influent gates; provide a piped interconnection between the two overflow chambers outside the Cottage Farm facility; and optimize weir settings within each chamber.
Interceptor Optimization Evaluations and Design CS/RI	Study, Design and CS/RI to implement an operational strategy for optimizing the transfer of flows between the Charles River Valley Sewer and the South Charles Relief Sewer using existing gates and to evaluate the feasibility of improving hydraulic performance along the North Charles Metropolitan Sewer and the North Charles Relief Sewer by creating new connections or modifying existing connections these interceptors and by adjusting overflow regulators along these interceptors.
Existing Gate Control System	Construction of the improvements designed above related to existing gates only.
Additional Interceptor Connections Construction	Construction of any additional connections recommended in the study above. Scope, schedule and cost to be determined.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$6,000	$0	$824	$0	$0	$25	$380	$1,130	$4,465

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Design contract is expected to be awarded in May 2006 .

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$824	$6,000	$5,176	Oct-07	Jan-11	40	$823	$1,535	$712

Explanation of Changes

- New project to replace existing project which is consistent with the current discussions among MWRA, EPA, and DEP regarding the long-term CSO control plan for the Charles River, the proposed Schedule Six milestone revisions related to these projects, and the conceptual cost estimates that MWRA has used in its recent discussions with EPA, DEP, BWSC and the Town of Brookline.

CEB Impact:

To be identified upon completion of the design contract.

S. 340 South Dorchester Bay Sewer Separation (Fox Point)

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

This project, together with sewer separation at Commercial Point, will eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project involves the construction of new storm drains and appurtenant structures, relocation of storm runoff connections from the existing combined sewers to the new storm drains, and rehabilitation of existing combined sewers for use as sanitary sewers. The plan calls for construction of approximately 69,000 feet of new storm drains. BWSC is implementing the project with MWRA funds.

A contract for design services was executed by BWSC in June 1996, and a preliminary design report was submitted in December 1997. BWSC executed a separate contract for construction management services in December 1998.

BWSC commenced construction in April 1999. To date, BWSC has completed construction on two separation contracts, totaling more than 31,000 linear feet of new storm drains. The commission has two ongoing separation contracts, which are now approximately 45% and 97% complete, respectively, representing an additional 38,000 linear feet of new storm drain. According to the court ordered schedule, beginning in 1999 work was to progress at 10% per year. Based on this required schedule, 62% of the work should be complete. Actual progress by BWSC is 85% complete, which is ahead of the court ordered schedule. In addition to the separation contracts, BWSC plans a total of seven additional contracts (including sediment removal, downspout disconnection and paving) that cover both the Fox and Commercial Point.

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded, and managed by BWSC.
Construction	Construction of 69,000 feet of new storm drains and appurtenant structures. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$53,014	$46,492	$6,522	$7,900	$12,397	$4,693	$760	$704	$365

Project Status 11/05	92.3%	Status as % is approximation based on project budget and expenditures. BWSC has completed construction on two separation contracts resulting in more than 31,000 feet of new stormdrains. Two contracts are in process which are approximately 45% and 97% complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$53,091	$53,014	($77)	Nov-06	Nov-06	-	$26,531	$26,453	($77)

Explanation of Changes

- Design decrease due to reduced eligibility of some costs per a review by MWRA's Internal Audit Department. Construction decrease due to contract award for police details were less than budget and return of accumulated interest.

CEB Impact:

Expect to decommission the Fox Point Treatment Facility in FY08 resulting in an annual savings of $58,000.

S. 341 South Dorchester Bay Sewer Separation (Commercial Point)

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

This project, together with sewer separation at Fox Point, will eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project involves the construction of new storm drains and appurtenant structures, relocation of storm runoff connections from the existing combined sewers to the new storm drains, and rehabilitation of the existing combined sewers for use as sanitary sewers. The plan calls for construction of approximately 65,000 feet of new storm drains. BWSC is implementing the project with MWRA funds.

A contract for design services was executed by BWSC in June 1996, and a preliminary design report was submitted in December 1997. BWSC executed a separate contract for construction management services in December 1998.

BWSC commenced construction April 1999. To date, BWSC has completed construction on three separation contracts, totaling more than 25,000 linear feet of new storm drains. The commission has two ongoing separation contracts, which are now approximately 10% and 80% complete, representing an additional 40,000 linear feet of new storm drain. According to the court ordered schedule, beginning in 1999 work was to progress at 10% per year. Based on this required schedule, 62% of the work should be complete. Actual progress by BWSC is 71%, ahead of the court ordered schedule. A placeholder for additional inflow removal/off-line capacity (Dorchester Interceptor relief) is maintained in the project schedule and budget. In addition to the separation contracts, BWSC plans a total of seven additional contracts (including sediment removal, downspout disconnection and paving) that cover both the Fox and Commercial Point areas.

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded, and managed by BWSC.
Construction	Construction of 65,000 feet of new storm drains and appurtenant structures. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$62,759	$43,713	$19,046	$6,533	$10,118	$6,454	$7,411	$4,870	$311

Project Status 11/05	75%	Status as % is approximation based on project budget and expenditures. BWSC has completed construction on three separation contracts resulting in more than 25,000 feet of new stormdrains. Two contracts are in process and are approximately 10% and 80% complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$62,318	$62,759	$441	Nov-07	Nov-07	None	$34,941	$35,386	$445

Explanation of Changes

- Budget increase due to updated inflation adjustments on unawarded contracts. Theses were partially offset by actual award for police details, return of accumulated interest, and reduced eligibility for certain costs per review by MWRA's Internal Audit Department.

CEB Impact:

Expect to decommission the Commercial Point CSO Treatment facility in FY09 resulting in an annual savings of $74,000.

S. 344 Stony Brook Sewer Separation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

To minimize CSO discharges to Stony Brook Conduit and the Back Bay Fens, both of which drain to the Charles River, by separating combined sewer systems in parts of Roxbury and Jamaica Plain. Implementation of the recommended sewer separation plan will reduce the number of overflows to the Stony Brook Conduit from as many as 22 to zero in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

This project, which involves constructing approximately 73,000 feet of new storm drains, is being managed by BWSC with MWRA funds and oversight. The CIP reflects the FEIR recommendation for sewer separation. BWSC has agreed to complete the project and fund any costs in excess of $45 million plus appropriate inflation adjustments.

BWSC commenced construction in July 2000. To date, BWSC has completed construction of two contracts totaling 28,000 linear feet of storm drain and work on two additional contracts totaling 45,000 linear feet are approximately 45% and 70% complete. In addition, BWSC has awarded the final paving and downspout disconnection contracts. The Stony Brook Sewer Separation project is approximately 77% complete. The court required 15% of construction per year since July 2000 construction start. Actual progress is in line with the court-required progress. BWSC plans a total of seven construction contracts to complete the project.

Scope

Sub-phase	Scope
Design CS/RI	Design services.
Construction	Construction of 73,000 feet of new storm drains. This work will be managed by BWSC.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$44,612	$33,587	$11,025	$8,843	$8,820	$9,557	$1,467		

Project Status 11/05	87.3%	Status as % is approximation based on project budget and expenditures. BWSC has completed two construction contracts resulting in 28,000 linear feet of stormdrains. Work in process on two additional contracts (total 45,000 lf) which are 30% and 60% complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$44,551	$44,612	$61	Sep-06	Sep-06	None	$28,627	$28,688	$61

Explanation of Changes

- Budget increase due updated inflation adjustment and additional change orders.

CEB Impact: None identified at this time.

S. 342 Neponset River Sewer Separation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

Elimination of CSO discharges to the Neponset River and protection of water quality at downstream swimming areas in South Dorchester (primarily Tenean *Beach) by separating combined sewer systems in the Neponset section of Dorchester and by permanently closing CSO regulators associated with outfalls BOS093 and BOS095. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.*

Project History and Background

This project involved construction of approximately 10,000 feet of new storm drains, and was managed by BWSC with MWRA funds and oversight. It has resulted in closing the last two CSO outfalls to the Neponset River (BOS093 and BOS095).

Scope

Sub-phase	Scope
Design CS/RI	Design services.
Construction	Three contracts for the construction of 10,000 feet of new storm drains.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$2,681	$2,444	$237	$0	$0	$237			

Project Status 11/05	91.2%	Status as % is approximation based on project budget and expenditures. Project was substantially complete in October 2002. MWRA will release remaining balance pending completion of its review of cost eligibility.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$2,681	$2,681	$0	Oct-02	Oct-02	-	$237	$237	$0

Explanation of Changes

- **None.**

CEB Impact: None.

S. 343 Constitution Beach Sewer Separation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

Elimination of CSO discharges at the Constitution Beach CSO facility by separating combined sewer systems in parts of East Boston. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

The separation work involved construction of approximately 14,000 feet of new storm drains. The project was managed by BWSC with MWRA funds and oversight. It resulted in the elimination of the CSO discharge to the Constitution Beach area and the decommissioning of the MWRA's Constitution Beach CSO Facility, which has been surplused.

Scope

Sub-phase	Scope
Design	Design services.
Construction	Construction of 14,000 feet of new storm drains.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$3,769	$3,769	$0						

Project Status 11/05	100%	Status as % is approximation based on project budget and expenditures. Project is completed.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$3,769	$3,769	$0	Apr-02	Apr-02	None			

Explanation of Changes

- Project completed.

CEB Impact: None.

S. 346 Cambridge CAM002-004 Sewer Separation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

To minimize CSO discharges to Alewife Brook by separating combined sewer systems in parts of Cambridge. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

The City of Cambridge is managing the separation work with MWRA funds and oversight.

As reported to the court in 1999, information gathered by the City of Cambridge during the design phase of this project indicated that the physical configurations of the Cambridge sewer and storm drain systems, including the degree to which these systems are interconnected, was significantly different from conditions shown on the city's base plans and older design plans. Both sets of plans were used by MWRA to develop the conceptual plan for the project. As a result, extensive additional work to separate sewers is required to meet CSO control goals. While construction began in 1998 on schedule, completion of construction has been delayed.

MWRA responded to the significant increase in estimated project costs by instructing Cambridge to suspend remaining final design efforts and award of any construction contracts not yet approved, until MWRA and Cambridge could complete a thorough reassessment of project costs and alternatives. At that time, Cambridge had received approval from MWRA to commence four of the ten proposed construction contracts that comprised the original scope.

Based upon an evaluation conducted by MWRA and Cambridge of alternatives that considered cost, performance, and non-monetary factors, the revised recommended plan for controlling CSO discharges to Alewife Brook, like the original plan, is a partial sewer separation alternative that includes the following components:

- Completion of sewer separation in the CAM004 tributary area (similar to the original CSO control plan, but with expanded scope).
- Separation of the CAM400 tributary area (new).
- Relief of dry weather flow connections at CAM002, CAM401B, and SOM01A (new).
- Relief of an existing siphon and installation of a flow control gate at MWR003 (new).
- No further sewer separation in the CAM002 tributary area. (Although this work was included in the original plan and a small, related construction contract was completed by Cambridge in 1999, the revised plan recommends not completing separation in this area.)
- No additional CSO control recommended for the recently discovered outfall at CAM401B.
- Floatables control at remaining CSO outfalls.

On May 24, 2000, the Board of Directors approved a revised CSO Control Plan for Alewife Brook. This budget reflects MWRA's estimate of the cost and MWRA's share of the revised plan. The federal court schedule milestone for completion of construction of sewer separation was January 2000. MWRA previously informed the court and court parties that MWRA would be unable to meet this milestone due to the increased scope of the project. Finalizing proposed changes to the court schedule has been deferred until the public review process has been completed, in part through public review of a Notice of Project Change filed in April 2001, the Response to Comments document submitted in May 2003, and the Final Variance document filed in July 2003, and project scope and cost sharing has been agreed upon by MWRA and the City of Cambridge

Cambridge has submitted a Second Supplemental Preliminary Design Report (SSPDR) for the final recommended plan as presented in the Final Variance Report for the Alewife Brook/Upper Mystic River which is currently being reviewed by MWRA. In the meantime, Cambridge continues to make design progress on Contract 12, involving the new storm drain outfall and stormwater wetland necessary to support future sewer separation in the CAM004 area and closing of the CAM004 regulator

The City of Cambridge executed a contract for design services in January 1997. The first four construction contracts were completed in 2002.

Scope

Sub-phase	Scope
Design CS/RI	Design services.
Construction	Four construction contracts for sewer separation work have been completed The remaining scope of work for this project, outlined above, is still being reviewed by MWRA.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$41,687	$17,417	$24,270	$2,372	$1,111	$1,332	$2,495	$117	$20,326

Project Status 11/05	41.8%	Status as % is approximation based on project budget and expenditures. City of Cambridge continues to prepare the Second Supplemental Preliminary Design Report to update work plans, design and construction requirements, schedules, and costs in order to be consistent with the Final Variance Report.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$40,407	$41,687	$1,280	Dec-12	Dec-12	None	$7,327	$7,327	$0

Explanation of Changes

- Budget increase primarily due to inflation adjustments due to new ENR index on unawarded contracts.

CEB Impact: None identified at this time.

S. 351 BWSC Floatables Control

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

To limit the discharge of floatable materials from five BWSC combined sewer outfalls. The project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

Floatables control at the five BWSC outfalls included in this project involved the installation of underflow baffles in existing CSO regulator structures. The work was managed by BWSC with MWRA funds and oversight. Design began in December 1998, following completion of an MWRA study on the performance of underflow baffles and a preliminary design report, which was completed in November 1999. All work was completed in 2002.

Scope

Sub-phase	Scope
Design	Design services.
Construction	Installation of underflow baffles at ten BWCS combined sewer outfalls.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$933	$933	$0	$0					

Project Status 11/05	100%	Status as % is approximation based on project budget and expenditures. Project is complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$933	$933	$0	Mar-02	Mar-02	None	$0	$0	$0

Explanation of Changes

- Project completed in March 2002.

CEB Impacts: None.

S. 352 Cambridge Floatables Control

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

To limit the discharge of floatable materials from eight Cambridge CSO outfalls. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

Floatables control devices will be installed at each outfall in this project include combing screens, continuous deflective separation devices, brush screens, and underflow baffles. Floatables control at one location (CAM401A) was completed in 2004. The City of Cambridge is managing the work with MWRA funds and oversight

Scope

Sub-phase	Scope
Design	Design for the City of Cambridge construction contract.
Construction	Installation of floatables control devices at eight combined sewer outfalls.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$2,791	$922	$1,869	$0	$545	$346	$686	$538	$299

Project Status 11/05	33%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$2,685	$2,791	$106	Sep-12	Sep-12	None	$2,025	2,115	$90

Explanation of Changes

- Budget increase primarily due to inflation adjustment to reflect new ENR index.

CEB Impact: None.

S. 356 Fort Point Channel Sewer Separation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*
☑ *Extends current asset life*

To minimize CSO discharges to Fort Point Channel by separating combined sewer systems tributary to outfalls BOS072 and BOS 73. Implementation of the recommended sewer separation plan will reduce the number of overflows from these outfalls from as many as 23 to zero in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards.

Project History and Background

On August 14, 2003, MWRA received a Certificate from the Secretary of Environmental Affairs accepting the Notice of Project Change that recommended replacing the Fort Point Channel CSO Storage Conduit project with a plan for sewer separation and system optimization. On September 17, 2003, the Board of Directors authorized the Executive Director to negotiate related revisions to Schedule Six of the Federal Court Order in the Boston Harbor Case. On February 27, 2004 MWRA's motion to revise Schedule Six was approved by the Federal Court.

MWRA and BWSC have agreed that this project, like other sewer separation projects in the CSO control plan, should be implemented within the MOU and FAA, with BWSC performing final design, construction services and construction and MWRA funding eligible costs. BWSC would also own and operate the separated systems upon construction completion.

MWRA received the *Draft Preliminary Design Report on the Sewer Separation and System Optimization for BOS072 - BOS073* from its consultant in March 2004. The preliminary design submission includes a breakdown of eligible and ineligible project costs. BWSC has completed final design and construction was started in March 2005, in compliance with Schedule Six.

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of approximately 4,600 linear feet of new storm drains and appurtenant structures tributary to outfalls BOS072 and BOS073. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$7,956	$637	$7,319	$0	$637	$3,774	$3,533	$13	

Project Status 11/05	21.4%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$5,570	$7,956	$2,386	Mar-07	Mar-07	None	$5,570	$7,956	$2,386

Explanation of Changes

- Budget increase primarily due to construction contract awarded greater than budget due to recent cost increases of storm drains, water and sanitary sewer conduits, and pipe laying production rates in high density congested underground utilities in narrow corridors of the project roadways, and significant contaminated soil and groundwater issues.

CEB Impact: None.

S. 358 Morrissey Boulevard Drain

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

Reroute stormwater from the BOS087 area and the North Dorchester Bay consolidation storage tunnel to Savin Cove, to increase level of stormwater control to the South Boston beaches.

Project History and Background

In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the overall CSO control approach for North Dorchester Bay and Reserved Channel. The Secretary's Certificate, issued in June, approved the reassessment as scoped by MWRA. MWRA began the reassessment in September 2001, which included updating planning assumptions and water quality information and evaluating a full range of CSO control goals and technologies. The reassessment completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel, recommended rerouting stormwater from BOS087 to a new Morrissey Boulevard Drain. Design began in June 2005, and construction is scheduled to start and end in December 2006 and June 2009, respectively.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of a new storm drain and appurtenant structures along Morrissey Boulevard to Savin Hill Cove.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$19,359	$0	$19,359	$0	$0	$577	$3,945	$7,396	$7,441

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Design began in June 2005 and construction is expected to start in December 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$18,186	$19,359	$1,173	Jun-09	Jun-09	None	11,217	$11,918	$701

Explanation of Changes

- Budget increase is primarily due to inflation adjustments on unawarded contracts due to new ENR index.

CEB Impact: None identified at this time.

S. 359 Reserved Channel Sewer Separation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

To minimize CSO discharges to Reserved Channel by separating combined sewer systems in a portion of South Boston. Implementation of the recommended sewer separation plan will reduce the number of overflows to Reserved Channel from as many as 37 to 3 in a typical year. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards

Project History and Background

In April 2001, MWRA filed a Notice of Project Change with MEPA, recommending a reassessment of the overall CSO control approach for North Dorchester Bay and Reserved Channel. The Secretary's Certificate, issued in June, approved the reassessment as scoped by MWRA. MWRA began the reassessment in September 2001, which included updating planning assumptions and water quality information and evaluating a full range of CSO control goals and technologies. The reassessment completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel, recommended a new plan which included sewer separation in the area tributary to Reserved Channel. The schedule calls for design to begin in July 2006, with construction starting and ending in May 2009 and December 2015 respectively.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of new storm drains and appurtenant structures within a 355-acre tributary area to the SBI-NB. Relocation of storm runoff connections from the existing combined sewers to the new storm drains. Rehabilitation of the existing combined sewers for use as sanitary sewers.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$57,394	$0	$57,394	$0	$0	$60	$1,139	$2,157	$54,038

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Design expected to begin in July 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$54,193	$57,394	$3,201	Dec-15	Dec-15	None	$3,182	$3,356	$174

Explanation of Changes

- Budget increase is primarily due to inflation adjustments on unawarded contracts due to new ENR index.

CEB Impact: None identified at this time.

S. 360 Brookline Sewer Separation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

To minimize CSO discharges to the Charles River by separating combined sewer systems in several areas of Brookline. Implementation of the recommended sewer separation plan will reduce the number of overflows to the Charles River. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards

Project History and Background

In response to the long-term CSO control plan MWRA recommended in 1997, DEP and EPA issued variances to water quality standards for the Charles River. With the variance, DEP approved (and required implementation of) MWRA's plan for the Charles River Basin, but maintained the water quality standard Class B pending the collection of additional water quality information and the evaluation of higher levels of CSO control. The original variance, issued in October 1998, and subsequent extensions to the variance required MWRA to prepare a report assessing the performance of the upgraded Cottage Farm CSO treatment facility. The report also evaluated the cost and benefit of constructing additional storage at this facility to lower treated discharges to the Basin. MWRA submitted the Cottage Farm CSO Facility Assessment Report to MEPA and DEP in January 2004. While concluding that additional storage at Cottage Farm would not be cost effective, the report also concluded that further CSO control could be achieved through system optimization and inflow removal, such as with sewer separation projects already underway or planned by the City of Cambridge and the Town of Brookline. This project will separate several areas of Brookline, totaling 72 acres, where there are remaining combined sewers tributary to MWRA'a Charles River Valley Sewer. The project is intended to reduce discharges to the Charles River at the Cottage Farm facility.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by the Town of Brookline.
Construction	Construction of new storm drains and appurtenant structures within a 72-acre tributary to MWRA's Charles River Valley Sewer.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$9,000	$0	$9,000	$0	$0	$0	$135	$265	$8,600

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Design expected to begin in November 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$0	$9,000	$9,000		Jul-13		$0	$400	$400

Explanation of Changes

- New project, which is consistent with the current discussions among MWRA, EPA, and DEP regarding the long-term CSO control plan for the Charles River, the proposed Schedule Six milestone revisions related to these projects, and the conceptual cost estimates that MWRA has used in its recent discussions with EPA, DEP, BWSC and the Town of Brookline.

CEB Impact: None identified at this time.

S. 361 Bulfinch Triangle Sewer Separation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

To minimize CSO discharges to the Charles River by separating combined sewer systems in the part of Boston bounded by North Station, Haymarket Station, North Washington St., and Cambridge St.. Implementation of the recommended sewer separation plan will reduce the number of overflows to the Charles River. This project is court mandated, is in accordance with MWRA's approved long-term CSO control plan, and is required to meet DEP water quality standards

Project History and Background

In response to the long-term CSO control plan MWRA recommended in 1997, DEP and EPA issued variances to water quality standards for the Charles River. With the variance, DEP approved (and required implementation of) MWRA's plan for the Charles River Basin, but maintained the water quality standard Class B pending the collection of additional water quality information and the evaluation of higher levels of CSO control. The original variance, issued in October 1998, and subsequent extensions to the variance required MWRA to prepare a report assessing the performance of the upgraded Cottage Farm CSO treatment facility. The report also evaluated the cost and benefit of constructing additional storage at this facility to lower treated discharges to the Basin. MWRA submitted the Cottage Farm CSO Facility Assessment Report to MEPA and DEP in January 2004. While concluding that additional storage at Cottage Farm would not be cost effective, the report also concluded that further CSO control could be achieved through system optimization and inflow removal, such as with sewer separation projects already underway or planned by the City of Cambridge and the Town of Brookline. This project will separate the combined sewers in the area of Boston bounded by North Station, Haymarket Station, North Washington St, and Cambridge St. The project is intended to reduce discharges to the Charles River, reduce overflows to the Prison Point CSO facility and close outfall BOS049.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction to separate the combined sewers in the area of Boston including North Station, Haymarket Station, North Washington St, Cambridge St and immediate environs

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$4,000	$0	$4,000	$0	$0	$0	$110	$115	$3,775

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Design expected to begin in November 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$0	$4,000	$4,000		Jul-13		$0	$225	$225

Explanation of Changes

- New project, which is consistent with the current discussions among MWRA, EPA, and DEP regarding the long-term CSO control plan for the Charles River, the proposed Schedule Six milestone revisions related to these projects, and the conceptual cost estimates that MWRA has used in its recent discussions with EPA, DEP, BWSC, and the Town of Brookline.

CEB Impact: None identified at this time.

S. 324 CSO Planning and Support

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

The goals of the CSO Program are to minimize CSO discharge and their impacts, eliminate CSO-induced beach closings, and maximize the beneficial use of CSO receiving waters, in accordance with national and state CSO policies and in compliance with state water quality standards. This project includes CSO conceptual planning, system master planning, and facilities planning/environmental review. It also includes directly related watershed planning activities, development of short-term CSO control measures (known as System Optimization Plans or SOPs), various as-needed technical support activities, and acquisition of land, easements and certain permits required for CSO control plan implementation.

Project History and Background

MWRA CSO planning work began in 1986. A revised Final Conceptual Plan and System Master Plan was completed in 1994, and a Final CSO Facilities Plan and Environmental Impact Report were filed with MEPA in August 1997. A MEPA certificate was issued in October 1997. In December 1997, DEP issued water quality determinations that were necessary for final CSO plan approval by DEP and EPA. DEP issued a two-year variance for the Charles River in October 1998 and has extended this variance several times, to October 2007. DEP issued a three-year variance for Alewife Brook and Upper Mystic River CSOs in March 1999 and has extended the term of this variance several times, to September 2007. Consultant services include assisting MWRA in satisfying variance conditions.

As part of CSO Planning and Support, MWRA provided financial and technical assistance to the Charles River Watershed Association in its watershed planning efforts for the Charles River in the 1990s, known as the IM3 Study. MWRA also funded a portion of the costs of a USGS water quality study of the Charles River Basin. Results of these studies provided additional technical information to support the reassessment of the appropriateness of the recommended Charles River controls in MWRA's CSO plan. To comply with its requirements under the Charles River CSO variance, in 1999 MWRA began funding USGS efforts to collect updated information on Charles River water quality. Final payments to the Charles River Watershed Association and USGS were made in the fall of 1998 and the fall of 2001, respectively.

Schedule Six of the federal court order in the Boston Harbor Case required MWRA to develop, by June 1993, a plan for optimizing the existing combined sewer systems to maximize transport and in-system storage capacities, thereby minimizing CSO discharges prior to developing and implementing a long-term control plan. In June 1993, MWRA completed a report entitled System Optimization Plans for CSO Control, which recommended more than 100 relatively low cost and easily implemented projects to optimize operation of existing systems. The projects were designed and constructed primarily by the CSO communities, pursuant to SOP financial assistance agreements executed between MWRA and each CSO community. Under the agreements, MWRA reimbursed the communities for design and construction costs. SOP work also includes two projects that are part of the long-term plan: Somerville Baffle Manhole Separation and Somerville Floatables Control. Short-term plans for CSO SOPs were completed in 1997 and MWRA obtained regulatory approvals for its long-term plan in 1997 and 1998.

The performance of the sewerage system is constantly improving as CSO and non-CSO projects are completed and as maintenance efforts continue to increase the system's capacity. Updated assessments of the system's hydraulic performance and estimates of CSO discharges based on actual field data are essential to verify the predicted benefits of various CSO-related improvements, to recalibrate the system hydraulic model to reflect updated conditions, and to provide up-to-date information to support CSO planning and design efforts. This project provides for temporary flow metering and other efforts to gather and evaluate new data and track system performance.

Various CSO plan reevaluations and systems assessments have been performed under amendments to the CSO Master Planning contract. These include: reevaluation of the Alewife Brook sewer separation plan; assessment of Cottage Farm CSO Facility performance; reevaluation of the need for the Dorchester Brook In-line Storage Project (not included in the CSO Plan or the CIP); reevaluation of the feasibility of closing MWR010; reassessment of CSO

discharges from the Boston Marginal Conduit to reevaluate the need for floatables control; and reevaluation of the cost-effectiveness of the East Boston Branch Sewer Relief project in light of cost increases.

By amendment to the Master Planning contract MWRA also added system modeling services to estimate and report actual CSO discharges on an annual basis (through 2003), in compliance with provisions in MWRA's new NPDES permit.

This project also supports land and easement acquisitions and funds certain permit costs for all MWRA managed projects in the long-term CSO Control Plan.

Scope

Sub-phase	Scope
Technical Assistance	Preliminary planning services prior to and in support of the 1988-90 Facilities Planning/EIR efforts.
Planning/EIR	Facilities planning and environmental review of CSO control alternatives (1990 Recommended CSO Control Plan).
Master Planning	System inspections, flow monitoring, water quality monitoring, and performance assessments to improve MWRA's understanding of the combined sewer and regional wastewater systems, optimize the performance of the existing systems, and reassess CSO control needs in the context of evolving EPA policy and a system master plan. Development of the 1997 Facilities Plan/EIR and subsequent reassessments of, and revisions to, that plan.
Watershed Planning	External watershed planning efforts that may affect CSO control needs, including the Charles River Watershed Association IM3 Study and ongoing USGS water quality studies.
Modeling	Receiving water quality modeling support to the Master Planning efforts.
SOP Program	Development and implementation of System Optimization Plans for short-term CSO control. Implemented by CSO communities. Also includes funding for Somerville Baffle Manhole Separation in the long-term control plan.
System Assessment	Temporary flow metering and other efforts to gather and evaluate new data on system performance.
Technical Review	Technical assistance for the entire CSO control plan including affordability analyses.
Land/Easements	Acquisition of land and easements for construction of MWRA-implemented projects. Also, permits not covered in design and construction contracts.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$51,411	$38,535	$12,877	$952	$279	$3,550	$2,113	$2,110	$5,104

Project Status 11/05	75.2%	Status as % is approximation based on project budget and expenditures. Master Planning was substantially complete in December 2004 and the Final CSO Facilities Plan and EIR was complete in July 1997. On September 14, 2005 the MWRA Board of Directors approved an MOU with Massport that will govern the Authority's construction on land owned by Massport, including the tunnel mining shaft and the dewatering pump station. MWRA costs in the agreement are included in the Land/Easement subphase.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$51,411	$51,411	$0	Dec-09	May-11	17	$9,776	$9,003	($773)

Explanation of Changes

- Schedule pushed out to account for the end of construction for the last North Dorchester Bay construction contract.

CEB Impact: None identified at this time.

S. 128 Infiltration/Inflow Local Financial Assistance Program

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*

Infiltration and inflow (I/I), groundwater and storm water that enter the collection system, contributes significantly to the total wastewater flow treated by MWRA. This depletes capacity that would otherwise be available to transmit sanitary flows, resulting in sewer surcharging, overflows of untreated sewage, more frequent combined sewage overflows, and higher pumping and treatment costs. The I/I Local Financial Assistance Program provides funding assistance for communities to rehabilitate their collection systems with the goal of structurally reducing I/I flows. Funding assistance for local projects complements other MWRA strategies for regional I/I reduction including wastewater metering to support flow based rates, provision of I/I estimates to communities, technical assistance to communities on local projects, regional coordination of I/I policy issues, and interaction with DEP and EPA.

Project History and Background

MWRA's Deer Island Wastewater Treatment Plant receives flow from 43 communities. The collection system encompasses 230 miles of MWRA interceptors and 5,400 miles of community sewers. These sewers are of varying size, shape, age, material, depth, and conditions. All contribute some quantity of infiltration and inflow.

On August 19, 1992, the Board of Directors approved $25 million to fund the initial phase of the I/I Local Financial Assistance Program. On June 28, 1995, the Board approved $38.8 million to fund a second phase of the program. Both Phase I and II funds were distributed as 25% grants and 75% interest-free loans. The Board approved $37 million to fund a third phase of the program on May 6, 1998, an additional $40 million for Phase 4 on June 13, 2001, and an additional $40 million for Phase 5 on June 23, 2004. Because the grant/loan ratio was revised for Phase 3, 4, and 5 to 45% grants and 55% interest-free loans, MWRA decided that a community would need to exhaust its available Phase 2 funds prior to becoming eligible for any Phase 3, 4, and 5 allocations. All program funds are allocated to the 43 sewer service area communities based on their share of MWRA's wholesale sewer assessment. Binding commitments for funds are issued by MWRA in the form of Financial Assistance Agreements. Distribution of funds is authorized through FY2013. Through November 2005, MWRA has distributed $44 million in grants and $82 million in no-interest loans to fund 291 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$68,594	$61,068	$7,526	$1,468	$10,066	$2,217	$2,539	$2,122	$648

Project Distribution Status11/05	70%	Through November 2005, MWRA has distributed $44 million in grants and $82 million in no-interest loans to fund 291 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Project Repayment Status 11/05	50%	Through November 2005 a total of $56 million has been repaid by member communities receiving interest-free loans.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$68,594	$68,594	-	May-18	May-18	-	$17,864	$18,412	$548

Explanation of Changes

- No changes to project scope, budget, and schedule.

CEB Impact: None identified.

S. 138 Sewerage System Mapping Upgrade

Project Purpose and Benefits

☑ *Provides environmental benefits*
☑ *Improves system operability and reliability.*

Completion of this project will enhance the accuracy of existing and newly created GIS maps of sewerage communities to improve the quality of hydraulic analysis and reduce staff time and effort necessary to respond to emergencies within the transport system.

Project History and Background

MWRA maintains geographic data on 44 municipalities: the 43 municipalities in the service area and Dover, which is traversed by MWRA interceptors. The level of data improvement proposed for this project depends on the data available and MWRA facilities in the communities. This project uses data from the waterworks system to create new base maps for 31 towns, develop new base map data for six towns for which new data is not available but in which MWRA has significant lengths of interceptors, and make existing data visually consistent with the new adjacent base maps for seven towns.

MWRA has invested significant amounts of money and staff time to develop the SAMS GIS data used to produce various maps for MWRA and communities within the MWRA service area. Recently, MWRA began development of its own distribution facilities data and maps of the waterworks system. As part of the project, Camp Dresser and McKee (CDM) performed a life cycle cost analysis (LCCA) looking at needs, and at existing base map data within MWRA and from other sources. One critical finding was that operations staff could not always use existing maps to reliably locate facilities, and that the resulting loss of staff time was very costly. Based on the analysis, MWRA purchased a license from Boston Edison (BECo) for a set of high accuracy up-to-date base map data. MWRA staff worked with CDM to overlay the MWRA water distribution system and facilities on these base maps to produce accurate high quality maps. The BECo base map data is not only more accurate than the SAMS data but also provides good feature labeling and elements not now available to MWRA users.

Scope

Sub-phase	Scope
Base Maps	Create new base maps for Norwood and Randolph.
Edit Existing Data	Use existing SAMS data to update the current base maps for 31 towns.
Quincy Data Sharing	Data and map development for the City of Quincy. Quincy will provide MWRA with final base maps.
Weymouth Data Sharing	Data and map development for the Town of Weymouth. Weymouth will provide MWRA with final base maps.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$281	$281	$0	$67	$3	$0	$0	$0	$0

Project Status 11/05	100%	Status as % is approximation based on project budget and expenditures. This project was substantially complete as of April 2004.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$281	$281	-	Apr 04	Apr 04	-	$70	$70	-

Explanation of Changes

- Contract is complete.

CEB Impact: No additional impacts.

Integrated Water Supply Improvement Program

MWRA's Integrated Water Supply Improvement Program is a 10-year, $1.7 billion initiative consisting of a series of projects to protect reservoir watersheds, build new water treatment and transmission facilities, and upgrade distribution storage and MWRA and community pipelines. The program improves each aspect of the water system from the watersheds to the consumer to ensure that high quality water reliably reaches MWRA customers' taps. The program began in 1995 and the principle components have been completed by 2005. The main program components are as follows:

Watershed Protection The watershed areas around Quabbin and Wachusett Reservoirs are pristine areas with 85% of the land covered in forest or wetlands and about 75% protected from development by direct ownership or development restrictions. MWRA works in partnership with the Department of Conservation and Recreation (DCR) to manage and protect the watersheds. MWRA also finances all the operating and capital expenses for the watershed activities of DCR, including CIP funding for a completed sewer project and on-going land acquisition activities.

MetroWest Water Supply Tunnel The 17-mile-long 14-foot diameter tunnel connects the new John J. Carroll Water Treatment Plant at Walnut Hill in Marlborough to the greater Boston area. It is now the main transmission line moving water into the metropolitan Boston area. Once inspection, repairs and interconnections are complete, the old Hultman Aqueduct will be used in parallel as the back-up transmission link. Construction began on the tunnel in 1996 and the completed tunnel was placed in service in October 2003.

John J. Carroll Water Treatment Plant The new water treatment plant in Marlborough began operating in July 2005 and it has a maximum day capacity of 405 million gallons per day. This project consolidates all treatment steps into one plant which uses ozone for primary disinfection because ozone is a strong disinfection agent against pathogens such as *Cryptosporidium* while reducing levels of chlorine disinfection byproducts. The plant also provides corrosion control by adding carbon dioxide and sodium carbonate to raise the pH and alkalinity of the water and thus control lead leaching from home plumbing fixtures. The treatment process concludes with fluoridation and residual disinfection with chloramines. A 45 million gallon storage tank on the site allows for daily variation in demand and flexibility in plant operation.

Water Storage Tanks As required by Massachusetts Department of Environmental Protection (DEP) rules to lessen the risk that contaminants will get into the tap water, MWRA is building covered storage tanks to replace small open reservoirs near cities and towns. A 20 million gallon tank in Stoneham replaced the open Fells Reservoir, two 12.5 million gallon circular tanks in Ludlow replaced the Nash Hill Reservoir and the 20 million gallon Loring Road tank replaced the Weston Reservoir. The largest tank, the 115 million gallon Norumbega Covered Storage Facility replaced the open Norumbega Reservoir in Weston and was placed in full service in 2004. MWRA has completed environmental review of a 20 million gallon tank to replace the currently off-line Blue Hills Reservoir in Quincy and awaits resolution of a citizen lawsuit related to wetland issues before proceeding to final design and construction. MWRA's Water Master Plan also identifies additional storage facilities that are currently scheduled to be built beyond FY13.

Pipeline Rehabilitation An important component of the overall Integrated Water Supply Improvement Program is focus on the long-term rehabilitation of older, unlined cast iron water mains in the MWRA and community systems. Water in direct contact with the iron surface corrodes through both biological and chemical processes resulting in tuberculation, thus narrowing the pipes and providing surfaces for bacteria growth. These processes also often result in consumer complaints about rusty water. To reap the full value of the other investments in the water system, MWRA decided to replace or rehabilitate the poor quality pipe particularly given that more than 80 percent of MWRA pipes were unlined as of 1993. Since then, MWRA has been replacing or rehabilitating (normally through cleaning and lining) between 2 and 3 percent of its own unlined cast iron mains each year. Furthermore, in 1998, almost half (47%) of community pipes were unlined. In 1999, MWRA created a $250 million zero-interest loan program to encourage and facilitate rehabilitation of local mains.

S. 542 John J. Carroll Water Treatment Plant (JJCWTP)

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Fulfills a regulatory requirement*

To provide high quality drinking water to MWRA customers and to ensure that the water delivered from the Wachusett Reservoir meets the drinking water quality standards established by the federal Safe Drinking Water Act (SDWA). Part of this objective will be met by constructing a 405 million-gallon per day (maximum) water ozonation/chloramination treatment plant primarily in Marlborough with portions of the facility located in Southborough and Northborough.

Project History and Background

MWRA provides drinking water to 2.3 million people in 41 metropolitan Boston communities. The source water supply comes from the Quabbin and Wachusett reservoirs; two large, high quality water bodies in Central Massachusetts. About 50% of the water flowing from the Wachusett Reservoir comes first from the Quabbin Reservoir, the larger reservoir to the west. MWRA received a waiver from filtration requirements for the Quabbin Reservoir in 1991 from the Massachusetts Department of Environmental Protection (Mass DEP), the agency granted primacy to enforce the SDWA by the United States Environmental Protection Agency (USEPA) in Massachusetts.

In June 1993, MWRA negotiated an administrative consent order with DEP setting forth the steps needed to comply with the Surface Water Treatment Rule (SWTR). The consent order required MWRA to find a site, design a filtration plant, and build it, unless MWRA along with MDC could demonstrate to Massachusetts DEP no later than 1998 that the system met the criteria for avoiding filtration and therefore that filtration was not required. After an extensive research and decision-making process, the MWRA Board of Directors voted in October 1998 to request a waiver of the filtration requirements from Mass DEP and to build a new water treatment facility using ozonation with chloramination for the water from Wachusett Reservoir as part of the Integrated Water Supply Improvement Program. The decision recognized that an ozonation/chloramination plant would provide appropriate treatment of the MWRA water supply from Wachusett Reservoir and that adding filtration components costing $180 million to the new plant would not provide as much additional benefit as would using funds to rehabilitate old, unlined cast iron pipes in the MWRA and local distribution systems. As part of the treatment technology decision, MWRA's Board also made a commitment to an expanded program of public health surveillance, financial incentives for communities to target rehabilitation of community pipes, and a full review of the need for further treatment including filtration when the plant was complete.

Mass DEP agreed with the MWRA approach in December 1998 and determined that filtration was not required for the MWRA system. Through the Department of Justice, USEPA sued under its SDWA "overfiling" rights, seeking to require MWRA to build a filtration plant and contending that the SDWA allowed no other option. After an extended trial, on May 5, 2000 Judge Stearns issued his decision that MWRA currently complies with all 11 federal criteria for avoiding filtration under the Surface Water Treatment Rule of the Safe Drinking Water Act. He evaluated the current quality of MWRA water and found MWRA's integrated drinking water improvement program including ozonation treatment technology the better approach to "preserving its safety." He found EPA failed to show that filtration of MWRA water was required either as a matter of cost-benefit or scientific necessity. The judge denied EPA's request for injunctive relief but ordered MWRA to give the Court notice of any future violations of the avoidance criteria to allow the consideration of whether the type of relief requested by USEPA might be necessary. No other order was issued. On July 16, 2001, the U.S. Court of Appeals for the First Circuit affirmed Judge Sterns ruling.

The new John J. Carroll Water Treatment Plant (formerly Walnut Hill Treatment Plant) was put in service in July 2005. It provides treatment necessary to fully comply with all current drinking water regulations. EPA issued new regulations in January 2006 for microbial protection (Long Term 2 Enhanced Surface Water Treatment Rule) and disinfection byproduct control (Stage 2 Disinfectants/Disinfection Byproducts Rule). MWRA will not need to make changes to comply with the Stage 2 D/DBP rule, but the LT2ESWTR will require a second primary disinfectant and

a somewhat more stringent inactivation of cryptosporidium that exceeds the plant's current design. This project includes the addition of an ultraviolet light disinfection step at the plant to meet both requirements.

Scope

Sub-phase	Scope
Study 1	Investigation of the potential impacts of SDWA amendments on the MWRA system and evaluation of the need, feasibility, and benefits of improved treatment processes.
Study 2	Evaluation of alternative filtration, disinfection, and corrosion control processes to determine the most appropriate for MWRA source waters. Construction and operation of a pilot plant at the Wachusett Reservoir to allow testing of various treatment technique combinations. Identification of potential locations for treatment facilities.
AWWARF Red Water Control Strategy Study	Evaluation of treatment options for eliminating discolored water caused by unlined cast-iron pipe. Also investigation of the fundamental aspects of iron chemistry and corrosion using unlined cast-iron pipe from the MWRA community distribution system.
Emergency Distribution Reservoir Water Management Study	Investigation of potential impacts on the emergency distribution reservoirs resulting from their replacement by new covered distribution reservoirs, and study of ways to maintain their water quality for emergency supply. Norumbega, Weston, Spot Pond, Fells, and Blue Hills Reservoirs have been studied. A pilot study was conducted to evaluate in-reservoir algae treatment for Wachusett Reservoir.
Cryptosporidium Inactivation Study	Determination of the site-specific efficacy of inactivating *Cryptosporidium* in Wachusett Reservoir source water using disinfectant alternatives (chlorine/chloramine and ozone/chloramine), and then development of design criteria for the full-scale disinfection contacting system.
Construction: Cosgrove Disinfection Facility Phases I and II	Construction of the Cosgrove Disinfection Facility. Free chlorine is applied at the Cosgrove Aqueduct to utilize travel time to achieve primary disinfection prior to corrosion control treatment and secondary disinfection.
Immediate Disinfection-MECo	Massachusetts Electric Co. power line installation to support the disinfection process at the Cosgrove Disinfection Facility.
Distribution Water Consultant	To provide technical assistance related to distribution system management.
EIR/Conceptual Design	Environmental reviews, data collection and analyses, and facility designs to support the dual track compliance approach, evaluation of design criteria, site plans, plant hydraulics, and construction of a small-scale demonstration water treatment plant.
Design/CS/RI: Walnut Hill WTP	Design and Engineering Services During Construction for the water treatment plant and associated components.
WHCP1: Wachusett and Cosgrove Intakes	Upgrade of the Cosgrove Intake and powerhouse to allow automatic, unstaffed operation of the facility. Replacement of the valves and piping in the Wachusett Intake is required to allow this facility to serve as a backup water supply.
WHCP2: Interim Aqueduct Rehabilitation	Shotcrete lining of the Wachusett Aqueduct to ensure supply of water continues to greater Boston during modifications to Shaft C and to enable it to serve as a backup to the Cosgrove Tunnel.
WHCP3: Site Work and Storage Tank	Includes clearing and excavation, site access roads, yard piping, and construction of a 45-million gallon storage tank.

Sub-phase	Scope
WHCP4: Treatment Facilities	Construction of ozonation, corrosion control, chloramination operations and emergency generator buildings, modifications to Shafts B and C, and installation of system wide instrumentation from Wachusett Reservoir to Norumbega Reservoir.
WHCP6: Late Site Work	Final grading, landscaping, and paving of treatment facility site.
Design & Construction WHCP7: Existing Facilities Modifications	Modification to and conversion of the Interim Corrosion Control Facility, Cosgrove Disinfection Facility, Transmission Maintenance Facility, and the space available above the ozone contact tanks at JJCWTPl. These buildings will be converted from water treatment/quality uses to expanded maintenance/storage/warehouse facilities for the new water treatment plant. In addition, the contract includes demolition of pipe loop building, old electrical building, old wooden building at Southboro, some miscellaneous items at Cosgrove Intake Building and replacement of the roof and HVAC system for Water Quality Lab at Southboro.
Design Management Support	Professional services and value engineering support to MWRA in review of the water treatment plant design.
Construction Management/RI	Construction management and resident inspection during construction of the water treatment plant.
Cosgrove Disinfection Facility Underwater Improvements	Installation of underwater piping needed to apply sodium hypochlorite at Shaft A.
Community Chlorine Analyzers	Purchase of free chlorine residual analyzers for eight communities to work in association with interim chloramination facilities.
OCIP	Owner Controlled Insurance Program, providing pollution liability, workers' compensation, general liability, and excess loss coverage during construction of the JJCWTP.
Professional Services	As needed legal, insurance, design, and construction specialty services for the JJCWTP.
Marlborough MOA	Agreement to mitigate the impacts of the construction of the Walnut Hill Water Treatment Plant on Marlborough.
WHWTP – MECo	Relocation of electric power lines.
Site Security Services	Site security services at JJCWTP.
CSX Crossing	Railroad track improvements adjacent to JJCWTP.
Wachusett Algae Design and Construction	Design and Construction of automated chemical dispensing system for algae control.
Public Health Research	With the assistance of public health agencies and researchers, evaluation of the public health impact of the water treatment changes that will occur in 2004.
Security Equipment	Design and installation of card access, improved motion and intrusion alarm systems, video surveillance, and monitoring equipment for MWRA facilities.
WHCP8– Cosgrove Screens Design/CS/RI and Construction	Replace existing manual screens with finer automatically controlled traveling screens.
Cosgrove Tunnel Inspection	Inspection of Cosgrove Tunnel while it is inactivated during construction of the connection to the JJCWTP.
AWWARF-Evaluation Ozone and UV	Study of the effects of ozone and ultraviolet treatment on cryptosporidium to ensure inactivation in Wachusett Reservoir.
Fitout/Construction	Non-construction related items for start-up and operation of the new water treatment plant including furnishings, shop and maintenance equipment, audio/visual supplies, laboratory equipment, and miscellaneous consumable supplies.

Sub-phase	Scope
Walnut Hill Ultra Violet Disinfection Design, and Construction	Design and construction programs to add Ultra Violet (UV) disinfection to the JJCWTP.
As-Needed Technical Assistance #1 and #2	As-needed design services to support the start-up of the JJCWTP including electrical engineering, HVAC engineering, mechanical engineering, civil engineering and a variety of geotechnical, environmental, and architectural technical assistance.
Ancillary Modifications Construction 2	Construction of ancillary modification work designed using the Technical Assistance contracts.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$429,364	$357,407	$71,957	$43,852	$27,533	$16,766	$2,971	$4,705	$47,514

Project Status 11/05	84.8%	Status as % is approximation based on project budget and expenditures. WH CP4 Treatment Plant was substantially complete in July 2005 and JJCWTP CP6 Late Site Work is 88% complete. The Existing Facilities Modifications draft concept finalization report was received in November 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$421,705	$429,364	$7,659	Jun-12	Dec-13	18 mos.	$92,174	$95,827	$3,653

Explanation of Changes

- Cost increase due to additional change orders for JJCWTP CP4 for redundant power and battery back-up, ozone generator changes, HVAC snow infiltration and boiler breaching, eye wash stations, sodium bisulfite system, DEP revisions to scum discharge line, temporary submersible sample pumps and revised pH probes, temporary dehumidifiers and new heat detectors.
- Increases also due to revised cost for actual change orders for Late Sitework CP6 contract including perimeter fence around plant and temporary heat at chemical manholes and Wachusett Lower Gatehouse Ramp, and stabilization of Basin #4.
- These increases were partially offset by deleting Design CS/RI-Wachusett Water Treatment Plant expected amendment for extended operator support.
- Schedule pushed out because regulations for the Ultra Violet Disinfection construction were not issued until January 2006.

CEB Impact:

MWRA's FY06 and Proposed FY07 CEBs include funding for operation and maintenance of the John J. Carroll Water Treatment Plant.

S. 543 Quabbin Water Treatment Plant

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Fulfills a regulatory requirement*

To improve the quality of drinking water delivered to the Chicopee Valley Aqueduct (CVA) communities of Chicopee, Wilbraham, and South Hadley Fire District No. 1, and to ensure that the water delivered meets the drinking water quality standards established by the federal Safe Drinking Water Act. Improvements to the CVA system thus far have included the construction of covered storage at Nash Hill and construction of disinfection and contact time (CT) monitoring facilities.

Project History and Background

MWRA provides water to the three CVA communities under long-term contracts. The three communities pay assessments based on actual capital and operating costs for the CVA system. MWRA expects that these agreements will continue beyond the contract dates. In the event the communities do not choose to extend the contracts, they would be required to reimburse MWRA for the capital investment to improve the CVA system.

Quabbin Reservoir is the source of the water delivered to the CVA communities. Massachusetts DEP has granted a conditional waiver from filtration for Quabbin Reservoir water serving the CVA. MWRA and DEP signed a consent order covering activities to support the continuation of the filtration waiver under the Surface Water Treatment Rule (SWTR) in December 1991. It required new disinfection facilities and the replacement of the open Nash Hill Reservoir with covered storage. The Nash Hill Covered Storage Facilities were constructed and put on-line in March 1999 in compliance with the consent order requirements. In February 1994, MWRA submitted to DEP a consent order schedule for design and construction of permanent disinfection facilities, which were needed to comply with the federal and state drinking water standards. Under the consent order, the approved treatment processes for disinfection were chlorination for primary disinfection, and chloramination for residual disinfection.

The publication of new regulations (Enhanced Surface Water Treatment Rule (ESWTR) and Disinfectant/Disinfection By-Products Rule (D/DBPR)), and discussions regarding a possible *Cryptosporidium* rule raised questions regarding the long-term efficacy of these treatment technologies and whether future modifications would be required. A life cycle cost analysis performed in 1995 as part of an action plan for the CVA system determined that disinfection with chlorine/chloramine was the most cost-effective treatment option, even if the treatment processes had to be upgraded as early as two years later. MWRA issued the notice to proceed for construction of the chlorination and chloramination facilities in November 1998. After commencement of field construction activities in March 1999, citizen opposition arose relative to the siting of the secondary disinfection facility resulting in the cancellation of construction of the secondary disinfection facility in Ludlow. Instead, MWRA built a CT monitoring station at the Ludlow site. Both the primary disinfection facility and the Ludlow monitoring facility went on-line in summer 2000, in compliance with the consent order schedule, which is now closed out.

EPA issued new regulations in January 2006 (LT2ESWTR and Stage 2 D/DBP, see John J. Carroll Water Treatment Plant project description) that will require cryptosporidium inactivation and the addition of a second primary disinfectant to the CVA system. MWRA conducted an evaluation of the application of ultraviolet technology and determined it was the most cost-effective and efficient upgrade for the system. Design and construction of the addition of UV treatment to the existing Ware Disinfection Facility are included in this project.

Scope

Sub-phase	Scope
Quabbin WTP: Design/CA/RI and Construction	System hydraulics study, design, construction administration, resident inspection, and construction of disinfection and CT monitoring facilities.
Ware Fire Department MOA	"First Responder" training and protective clothing for the Ware Fire Department for Quabbin Disinfection Facility emergency scenarios.
WQ Analysis Equipment	Water quality analysis equipment for the Quabbin Disinfection Facility in Ware.
Quabbin Ultraviolet Water Treatment Plant: Study/Pilot, Design SS/RI, and Construction	Evaluation and implementation of ultraviolet technology at the Quabbin Disinfection Facility to meet new regulations requiring cryptosporidium inactivation and two primary disinfectants for unfiltered systems.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$15,730	$10,112	$5,618	$389	$280	$138	$31	$140	$5,309

Project Status 11/05	64.3%	Status as % is approximation based on project budget and expenditures. Completed disinfection and contact time monitoring facilities in September 2000. Expect to complete the Quabbin Study/Pilot by Dec 2005. Expect to begin Quabbin UVWTP Design CS/RI by December 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$15,419	$15,730	$311	Jan-11	Jan-12	12 mos.	$1,293	$978	($315)

Explanation of Changes

- Cost increase due to inflation adjustments as a result of new ENR index.
- Schedule pushed out due to delay in regulations.

CEB Impact:

Annual incremental operating costs for UV treatment are estimated at $26,000 per year as of Q4 FY2012.

S. 544 Norumbega Covered Storage

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Fulfills a regulatory requirement*
☑ *Improves system operability and reliability*

To help provide high quality drinking water to MWRA customers and to ensure that the water meets the drinking water quality standards established by the federal Safe Drinking Water Act (SDWA) by constructing a 115 million gallon covered storage facility at Norumbega Reservoir.

Project History and Background

Norumbega Reservoir is an uncovered distribution storage reservoir that was connected to the Hultman Aqueduct in Weston. It normally providesd active distribution storage and hydraulic control for 100% of the water supplied to the metropolitan Boston area. The reservoir has a capacity of 205 million gallons and a surface area of approximately 40 acres.

DEP, MWRA, and MDC entered into a consent agreement on June 11, 1993 for the Wachusett Reservoir water supply. The consent order requires MWRA to bring Norumbega Reservoir into compliance with state and federal regulations. Based on the fifth amendment to the consent order (dated July 12, 1999), construction of two cells of covered storage facilities must be substantially complete by December 2003. The third tank cell and final site work must be completed by December 2004. MWRA met these milestones by using a design/build project delivery approach to construct distribution storage, connect to the MetroWest Water Supply Tunnel, and provide associated facilities in the vicinity of Norumbega Reservoir. The project site boundaries on the north, east, south, and west are the Massachusetts Turnpike (Mass Pike), Oak Street, the Hultman Aqueduct right-of-way, and Wellesley Street, respectively.

The primary component of the project is construction of a 115 million gallon reinforced concrete storage tank west of Schenk's Pond, between Norumbega Reservoir and the Mass Pike, on land previously owned by the Town of Weston and the Weston Forest and Trail Association. The tank covers approximately 17 acres, and stores water that has been fully treated at the Walnut Hill Water Treatment Plant. Start-up of the new covered reservoir coincided with the start-up of the MetroWest Water Supply Tunnel.

Existing disinfection facilities will be modified for emergency use in the event that it is necessary to draw water directly from the open Norumbega Reservoir and/or Schenck's Pond. Chlorine would be applied at the Norumbega gatehouse during emergency operation.

On January 14, 1998, the Board of Directors authorized staff to proceed with a design/build project delivery approach for the project. The Norumbega Covered Storage Design/Build contract notice to proceed was issued in November 1999. The MWRA took partial utilization of the covered tank in November 2003 and the open reservoir was removed from service in March 2004. The Covered Storage Tank became fully operational in August 2004.

Scope

Sub-phase	Scope
Conceptual Design/EIR	Environmental reviews, data collection and analyses, conceptual designs, and wetland permitting for covered storage at Norumbega Reservoir.
Owner's Representative	Provision of technical program management for the Norumbega covered storage design/build contract procurement, monitoring, and administration.
Design/Build	Design and construction by a single contractor of a 115 million gallon covered storage facility at Norumbega Reservoir.

Sub-phase	Scope
Land	Land Acquisition for Norumbega Covered Storage.
Booster Disinfection Design	Retrofit of disinfection facilities at Norumbega to remove chlorine and ammonia feed systems and install injection ports for sodium hypochlorite which would be delivered by truck in an emergency. This will allow emergency use of the open reservoir.
Professional Services	Technical assistance services for the Norumbega Covered Storage project.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$107,487	$103,219	$4,268	$11,301	$2,644	$2,751	$425	$481	$611

Project Status 11/05	96.8%	Status as % is approximation based on project budget and expenditures. The Covered Storage Tank became fully operational in August 2004. Expect Booster Disinfection Design to begin in July 2007 if needed.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$107,472	$107,487	$15	Jan-10	Jan-10	None	$17,582	$17,602	$19

Explanation of Changes

- Inflation adjustment on unawarded Booster Disinfection design contract.

CEB Impact: No additional operating costs identified at this time.

S. 545 Blue Hills Covered Storage

Project Purpose and Benefits

☑ *Improves system operability and reliability*
☑ *Contributes to improved public health*

To ensure sufficient distribution storage for MWRA's Southern High Service Area. Presently, the area relies on the existing open reservoir for non-potable emergency storage, creating the potential for supply disruption and a boil water order if repairs are needed on a major transmission line for Quincy and other communities in the Southern High Service Area. Covered distribution storage will equalize pressure at the extremities of the Southern High pressure zone and provide potable emergency storage in case of unexpected interruptions of supply. New covered storage facilities at the Blue Hills Reservation will have a capacity of 20 million gallons.

Project History and Background

Blue Hills Reservoir is an inactive, emergency, open distribution reservoir. MWRA's long-term plan is to provide 320 million gallons of enclosed storage at various locations throughout the waterworks system. This quantity represents approximately one day of maximum demand. A covered storage facility in the Southern High Service Area will equalize water pressure during periods of peak demand and work in conjunction with surface mains and the Chestnut Hill emergency pump station to supply water to the Southern High service area in the event that the Dorchester Tunnel requires repairs. In addition, this facility will supply water to Quincy and Milton if the northern portion of Section 22 is shut down because of a break or for repairs. A citizens' working group has been formed to participate in the EIR/Conceptual Design process.

MWRA's consultant began conceptual design and environmental assessment activities in April 1997. The Secretary of Environmental Affairs certified the Final Environmental Impact Report as adequate and complete in December 2001. The DEP Commissioner issued a Wetlands Protection Act Variance for the project in November 2003, which was appealed by a citizens group. After the wetlands appeal is resolved, MWRA plans to award a Design/Build contract to complete the project.

Scope

Sub-phase	Scope
EIR/Conceptual Design/OR	Completion of an Environmental Impact Report, Conceptual Design and wetlands permitting. Preparation of Design/Build contract scope and specifications and technical support throughout Design/Build process.
Design/Build Field Oversight	Field oversight and administration of the Design/Build contract.
Design/Build	Design/Build of a 20 million gallon covered storage facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$38,083	$1,568	$36,515	$165	$121	$168	$10,964	$10,885	$14,998

Project Status 11/05	4.2%	Status as % is approximation based on project budget and expenditures. Design/Build Notice-To-Proceed presently scheduled for July 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$36,056	$38,083	$2,027	Jul 09	Sep 09	5 mos	$22,380	$22,303	($77)

Explanation of Changes

- Cost - Inflation adjustment due to new ENR index for Design/Build contract. Also, budget estimate increase for Design/Build Field Oversight contract due to addition of Construction Management services to scope of this contract.
- Schedule - Due to required final landscaping during summer months.

CEB Impact: None identified at this time.

S. 604 MetroWest Water Supply Tunnel

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Fulfills a regulatory requirement*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To provide transmission redundancy for the Hultman Aqueduct ensuring reliable water delivery and providing sufficient hydraulic capacity to support the new John J. Carroll Water Treatment Plant and covered storage distribution facilities. This project consists of construction of a 17.6-mile deep rock tunnel from Shaft D in Marlborough to Shaft 5 of the City Tunnel in Weston, and to Shaft W in Weston, as well as the construction of a covered storage facility at Loring Road in Weston. Also includes construction of shafts and valve chambers for connections of Shaft 4 in Southborough and to the Norumbega Covered Storage facility.

Project History and Background

Adequate transmission capacity is a critical component of MWRA's Integrated Water Supply Improvement Program. MWRA's water delivery depends on a system of tunnels and aqueducts that transport water from the Quabbin and Wachusett Reservoirs to the distribution reservoirs in western metropolitan Boston. The existing tunnels and aqueducts were deficient in several respects. First, the transmission system was unable to supply sufficient hydraulic capacity during peak flow periods, leading to pressure deficiencies in all high service areas during the summer months. Second, key sections of the transmission system, such as the Hultman Aqueduct and the Southborough Tunnel, rely on a single conduit. In the event of failure of any of the major transmission sections, the remaining waterworks system could not meet the demand for water.

Construction of the MetroWest Water Supply Tunnel and its extension to the Weston Aqueduct Terminal Chamber has provided the critically needed minimum level of transmission redundancy for the Hultman Aqueduct. In the future, enhancements and improvements to the reliability of the City Tunnel and the City Tunnel Extension will be planned as part of the Metropolitan Tunnel Loop project. This will also enhance system maintenance by allowing each major supply conduit to be taken out of service for inspection, cleaning, and repair.

In June 1989, MWRA began engineering work on reconstruction of the Sudbury Aqueduct. On May 9, 1990, the Board of Directors directed staff to put minimum effort into further study of the Sudbury Aqueduct reconstruction alternatives and maximum effort into study of the all-tunnel alternative. The advantages of tunneling included a large reduction in surface activities resulting in a reduced environmental impact, and the potential to obtain a large increase in water transmission capacity to enable the tunnel to supplant the Weston Aqueduct as well as provide redundancy to the Hultman Aqueduct. Other advantages included a higher pressure rating by constructing a tunnel deeper into rock, and the ability to construct along a straight line, reducing the overall length of the project by three miles.

In November 1990, the Board of Directors directed staff to eliminate the planned tunnel from Norumbega Reservoir to the Chestnut Hill Reservoir in favor of connecting to Shaft 5 of the City Tunnel and to the eastern end of the Weston Aqueduct. The connection will allow the Weston Aqueduct and Weston Reservoir to be taken off-line and used only for emergency supply as required by the Safe Drinking Water Act.

In December 1995, the Board of Directors authorized solicitation of bids on the first major construction contract of the MetroWest Tunnel project. In June 1996, a notice to proceed was issued on this contract, beginning the transition from design to construction of the project. In November 2003, the tunnel was placed in service.

Program Elements

The MetroWest Tunnel is 17.6 miles long with a 14-feet finished diameter. The first segment of the tunnel extends from the water treatment plant site at Walnut Hill on the Marlborough/Southborough line to Shaft 4 of the Hultman Aqueduct in Southborough. From there, the tunnel continues to a "WYE" connection east of Norumbega Reservoir,

and continues east from the "WYE" to Shaft 5 of the City Tunnel and northward to the Weston Aqueduct Terminal Chamber. The tunnel depth varies from 200 to 500 feet below ground surface along the alignment.

With the MetroWest Tunnel and the John Carroll Water Treatment Plant now in service, the Hultman Aqueduct will be inspected and rehabilitated. Surface distribution facilities, including piping, valve chambers, and risers will connect the tunnel to the Hultman Aqueduct and local community services. Intermediate connections between the MetroWest Tunnel and the Hultman Aqueduct will permit operation of segments of either the aqueduct or the tunnel interchangeably, allowing flexibility in the maintenance of the two conduits.

Scope

Sub-phase	Scope
Study	Study of the aqueduct/tunnel system to determine the best alternative to improve hydraulic capacity and create redundancy.
Construction-Sudbury Pipe Bridge	Rehabilitation of the Siphon Pipe Bridge at the Weston Aqueduct which experienced significant leakage.
Design/EIR-Tunnel-Engineering Services During Construction	Environmental impact report (EIR) process and design of the 17.6-mile long, 14-feet diameter tunnel. Construction support services, including environmental and safety compliance, claims assistance, contract administration, quality assurance testing, and community relations.
Construction: Western Tunnel Segment – CP1	Construction of the western portion of the tunnel and associated surface facilities. Shaft E was constructed at the Sudbury Dam and a tunnel was excavated 4.9 miles to Shaft D, located adjacent to the clear well of the John J. Carroll Water Treatment Plant (JJCWTP). A riser shaft has been excavated to connect the tunnel to Southborough's Hosmer Pump Station and includes the surface piping facilities necessary to bring water from the Wachusett Reservoir.
Construction: Middle Tunnel Segment – CP2	Construction of approximately 11.9 miles of tunnel between Southborough and Weston. Construction was staged from Shaft L, located at a sand and gravel pit in Framingham, where a permanent connection to the Hultman will be constructed. Along the alignment, four small-diameter shafts have been constructed for community connections to Framingham and Weston. The western reach of the Middle Tunnel Segment portion of the tunnel terminates at Shaft E. The eastern reach terminates at the "WYE" where it meets the East Tunnel Segment. Shafts NE and NW will be constructed on the northwest side of Norumbega Reservoir where surface work will include construction of valve chambers and surface piping to allow connections to the Hultman Aqueduct and Norumbega Reservoir. The design at Shaft N includes provisions for future connections to the Norumbega Covered Storage Facility and the proposed Metropolitan Tunnel Loop.
Construction: Shaft 5A- CP3	Shaft 5A was excavated near the intersection of Route 128 and the Massachusetts Turnpike.
Construction: Eastern Tunnel Segment – CP3A	Construction of the eastern portion of the tunnel. An approximately 4,400-feet long, 12-feet finished diameter tunnel was constructed from the Shaft 5A bottom through the “WYE” where it meets the Middle Tunnel Segment and on to Shaft W where a shaft connection to the Loring Road storage tanks was made.
Construction: MHD Salt Sheds – CP5	Massachusetts Highway Department (MHD) salt storage operations were relocated from the Shaft 5A site to a new, nearby location on MHD property on Recreation Road in Weston. This allowed demolition of the MHD salt sheds at the Shaft 5A site.
Testing and Disinfection – CP7	Pressure testing of the MWWST from Shaft E (west) to Shaft W and 5A, and disinfection and dechlorination of the entire tunnel from Shaft D to Shafts W and 5A, and final disinfection of the Norumbega Covered Storage tanks. Also includes the disinfection and dechlorination of the Wachusett Aqueduct and the piping connections through Walnut Hill to MetroWest Shaft D.

Sub-phase	Scope
Construction: Loring Road Covered Storage-CP8	Construction of surface facilities at the Shaft W site including a 20 million-gallon storage facility that replaces the function of the existing Weston Aqueduct/Weston Reservoir system, allowing the system to be taken off-line and placed on emergency stand-by status. The storage facility has been constructed as two concrete tanks partially buried in a hillside adjacent to Shaft W. Connections will be made under this contract at Shaft W to two WASM (1 and 2) low service mains and the WASM 4 high service main, as well as to the 7-feet diameter branch of the Hultman Aqueduct. Also includes rehabilitation of 4,100 linear feet of 60-inch pipe and four master meters.
Construction Management/RI	Full inspection of all construction activity, as well as provision of construction support services including environmental and safety compliance, claims assistance, contract administration, quality assurance testing, community relations, labor relations, engineering services during construction, and provision of technical assistance.
Hultman Study	Risk analyses to determine which leaks should be repaired now and a monitoring plan for leaks which presently do not threaten the integrity of the aqueduct.
Hultman Leak Repair	Test pit excavation and leak repair on the Hultman Aqueduct.
Hultman Repair Bands	Purchase of external repair bands to be installed as part of Hultman investigation and repair.
Hultman Investigation and Repair	Evaluation of various segments of the Hultman Aqueduct and installation of repair bands at major leak sites.
Land Acquisition	Easements along the 17.5-mile tunnel construction route, as well as land at the Shaft W and Shaft L sites.
Professional Services	Services such as construction safety, contractor audit, legal services, risk management consulting services, and other miscellaneous services.
Framingham MOU	Agreement to mitigate the impacts of the construction on the City of Framingham.
Weston MOU	Agreement to mitigate the impacts of the construction on the Town of Weston.
Southborough MOU	Agreement to mitigate the impacts of the construction on the Town of Southborough.
Local Water Supply Contingency Design/CA/RI and Construction	Design and implementation of a Water Supply Contingency Plan including the installation of new local mains where residential well supplies could be affected by tunnel construction.
Community Technical Assistance	Funds to assist communities with the redesign of utility plans.
Owner Controlled Insurance	Owner controlled insurance program providing workers' compensation, general liability, and pollution liability insurance for MetroWest construction.
Design CA/RI Hultman Interconnect CP6	Design CA/RI of the interconnections between the MetroWest Water Supply Tunnel and the Hultman Aqueduct as well as inspection and design of the rehabilitation of the aqueduct after it has been taken off-line. Inspection of Southboro Tunnel.
Construction: Hultman CP9	Construction of Valve Chamber E-3.
Interim Disinfection	Temporary disinfection related to CP-7 sub-phase.
Equipment prepurchase	Prepurchase one 10 feet diameter butterfly valve.

Sub-phase	Scope
Construction CP6A and 6B	Construction of interconnections between MetroWest Tunnel and the Hultman Aqueduct, and rehabilitation of Hultman Aqueduct including replacement or repair of air relief structures, blow off valves, culverts beneath the aqueduct; replacement of existing valves; and additional items to restore the aqueduct to safe and efficient operation after 60 years of service without an overhaul.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$698,271	$624,733	$73,539	$7,228	$3,439	$4,852	$1,845	$16,504	$50,338

Project Status 11/05	89.5%	Status as % is approximation based on project budget and expenditures. Placed MetroWest Tunnel into service in November 2003. Awarded Design CA/RI CP6 contract and Hultman Rehab CP9 in September 2005 and October 2005, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$703,557	$698,271	($5,286)	Jul-12	Jul-12	None	$38,456	$33,869	($4,587)

Explanation of Changes

- Actual contract award amounts were less than anticipated for the Hultman Interconnect Final Design CA/RI, Equipment Prepurchase, and Hultman Rehab CP9 contracts. Also, deleted litigation claim on the Middle Tunnel Segment CP2 contract.

CEB Impact:

Operating costs are included in the CEB. No additional costs identified at this time.

S. 601 Sluice Gate Rehabilitation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

Completion of this project will improve the condition of and access to sluice gates used to regulate the release of water from upstream reservoirs and streams via aqueducts in accordance with legislative and flood control requirements. Motorized gates will replace manual gates and 12 facilities will be rehabilitated at Sudbury Reservoir, Framingham Reservoir, Spot Pond, and various locations along the Sudbury Aqueduct.

Project History and Background

MWRA operates and maintains sluice gates and facilities that house the gates at reservoirs and aqueducts throughout the waterworks system. The existing gates are typically 80 to 100 years old, are in poor condition, and must be operated by hand. In a Dam Safety Inspection Report by the Army Corps of Engineers, the sluice gates at Wachusett Reservoir and the four Sudbury System Reservoirs were cited as needing repairs to restore operability for flood control use. Failure to make repairs could lead to the Corps downgrading dam safety assessments at these sites. In addition, the structural condition of some of the facilities is such that they are unsafe for access by MWRA personnel for operation and maintenance purposes. To prevent further deterioration and to ensure safe access to and reliable operation of the sluice gates, MWRA is rehabilitating the facilities in conjunction with the replacement of the gates.

Phase 1 included the installation of motorized operators, upgrade of the gate houses and replacement of gates and sliding tracks at Sudbury Reservoir, Spot Pond, and Framingham Reservoir 3. The construction was completed in 1993. Design for Phase 2 rehabilitation began in April 1998, and includes input from the Boston Landmark Commission Order of Conditions and the Massachusetts Historical and Chestnut Hill Historical Commissions. Construction for Phase 2 Rehabilitation began in September 2003 and was completed in June 2005.

Scope

Sub-phase	Scope
Design/CS/RI and Construction 1	Design and construction of the installation of motorized operators, upgrade of the gate houses, and replacement of gates and sliding tracks at Sudbury Reservoir, Spot Pond, and Framingham Reservoir 3.
Design/CS/RI and Construction 2	Design, construction services, and resident inspection for Phase 2. Installation of motorized operators, upgrade of 10 gatehouses, and replacement of 30 gates at various distribution reservoirs.
Design and Construction – Stop Planks	Design and construction of stop planks at all sites required to de-water wet wells before sluice gates can be installed.
Construction – Sudbury Toe Drain Repair	Payment to the DCR for construction of new toe drains, filter blanket, and pressure relief wells, repair or abandonment of existing toe drains, and repair of the stone masonry spillway, dam crest roadway, gate house, and wing walls at the Sudbury Dam.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$9,630	$9,366	$264	$1,937	$3,175	$264			

Project Status 11/05	97.4%	Status as % is approximation based on project budget and expenditures. Sudbury Toe Drain Repair and Stop Plank construction are complete. Phase II construction was completed in June 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$9,630	$9,630	-	Sept 05	Jun -05	(3 mos.)	$5,375	$5,375	-

Explanation of Changes

- Schedule - Substantial completion shifted to actual completion date.

CEB Impact: None identified at this time.

S. 615 Chicopee Valley Aqueduct Redundancy

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To provide redundancy for water service for the three communities supplied by the Chicopee Valley Aqueduct (CVA) in case of a CVA failure or shutdown.

Project History and Background

The Chicopee Valley Aqueduct (CVA) supplies water to South Hadley Fire District No. 1, Chicopee, and Wilbraham. The 48-inch and 36-inch diameter aqueduct was built in 1949 of reinforced concrete pipe with an embedded steel cylinder. It is the only means of supplying these communities with water. The capacity of the aqueduct is 23 million gallons per day, which is sufficient to meet the communities' peak summer demand. It is currently not possible to perform routine maintenance without disrupting supply to these communities. However, if supply through the CVA were shut off upstream of Nash Hill Reservoir, Chicopee would be without water after two days, and South Hadley and Wilbraham would be without water even sooner. If the CVA were shut off downstream of Nash Hill Reservoir, Chicopee would be immediately disconnected from the CVA supply.

New construction under this project consists of a 8,100 feet long second barrel of the CVA from Nash Hill Covered Storage to Chicopee of 30-inch diameter pipe; 3,100 lined feet of 16-inch redundant pipeline between the Nash Hill Covered Storage and the South Hadley takeoff; and 2,400 lined feet of 20-inch redundant pipeline between the Route 21 Valve Chamber and the Wilbraham takeoff. With these new pipelines in place, the three communities will be connected to Quabbin Reservoir, Nash Hill Reservoir, or both in the event of a failure anywhere along the length of the aqueduct. Construction also includes rehabilitation of the Bondsville throttling station and the Route 21 Valve Chamber.

To address the upstream failure scenario, MWRA is implementing emergency response plans that include having quick access to spare materials and a contractor to expedite repairs. This project will complement that effort by providing additional mainline valves along the aqueduct that will help isolate manageable segments of the CVA; and by rehabilitating appurtenances such as meters, air valves, and blow-off valves. CVA meter connection improvements will be made for Wilbraham and South Hadley such that, in the event of an emergency, supply can be maintained from either Quabbin or Nash Hill Reservoir by isolating the damaged downstream or upstream section of the aqueduct for repair.

Scope

Sub-phase	Scope
Pipeline Redundancy – Planning	In-house planning of redundant pipelines and aqueducts for Chicopee, South Hadley Fire District # 1, and Wilbraham, and Bondsville construction.
Pipeline Redundancy – Design and Construction	Design, construction administration, resident inspection, and construction for CVA redundancy facilities.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$11,431	$1,073	$10,359	$53	$197	$4,885	$4,571	$902	

Project Status 11/05	10.2%	Status as % is approximation based on project budget and expenditures. Construction delayed by permitting issues, but expected to begin by September 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$10,926	$11,431	$505	Aug 07	Oct 07	2 mos.	$9,970	$10,607	$637

Explanation of Changes

- Cost – Inflation adjustment for unawarded contracts and expected amendments for training, development of SCADA facility manuals for the two year construction period resulted in overall budget increase.
- Schedule – Revised after amendment for permitting issues.
- FY04 – 08 Spending - See above budget changes.

CEB Impact: None identified at this time.

S. 616 Quabbin Transmission Rehabilitation

Project Purpose and Benefits

☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To ensure continued reliable delivery of high quality water to MWRA customer communities through inspection, evaluations, and rehabilitation as needed of the aging transmission system. Many of the transmission facilities and structures were constructed in the 1930s and 1940s and are in need of repair, routine maintenance, updating, and modifications for code compliance, health and safety, and security. The hydraulic control facilities of the Quabbin Tunnel are 70 to 80 years old and badly in need of renewal and upgrade. This is one of several projects that will upgrade the older working parts of the aqueduct-tunnel system and improve its interconnections with the distribution piping systems it supplies. Based on the findings and recommendations of this inspection phase, MWRA will add design and construction phases at a later date.

Project History and Background

This project will initially provide an engineering assessment of key water transmission facilities, structures and operations. Many of the 44 facilities were constructed in the 1930s and 1940s and are in need of repairs, routine maintenance, and modifications for code compliance, health and safety, and security. The facilities and structures include dams and spillways, structures on tops of shafts, hydraulic diversion facilities, gatehouses, intake buildings, service buildings, and garages. The facilities are spread over a large geographic area ranging from Quabbin Reservoir eastward to the Boston Metropolitan area.

The engineering assessment will utilize existing information and site visits to inventory the condition of each facility. The work will yield a facility report that identifies existing conditions and provides recommendations for needed improvements, rehabilitation, and repairs. The project will also result in the development of a conceptual design for each facility including alternatives, basic design criteria, cost estimates, required permits, and schedules. MWRA will use the final conceptual design report to develop a detailed scope of work for the future procurement of engineering services for subsequent design, construction administration, and resident inspection services. Staff will integrate and coordinate project findings with MWRA's current master planning efforts.

One critical component of the Quabbin Tunnel, the pressure-reducing valves at the Oakdale Power Station, has already been targeted for immediate replacement. These valves are in poor condition. Due to their important function of reducing hydraulic head to allow water from the Quabbin Reservoir to flow into Wachusett Reservoir, replacement of the Oakdale Valves is a high priority.

Scope

Sub-phase	Scope
Facilities Inspection	Assessment of existing conditions; update of infrastructure rehabilitation evaluation; identification of improvements/repairs/upgrades including instrumentation and controls for remote monitoring and operation; establishment of priorities for repairs, and preparation of cost estimates.
Oakdale Valves Phase 1	Study, design, and construction for the rehabilitation/replacement of two valves and miscellaneous support equipment at the Oakdale facility.
Equipment Pre-Purchase	The two large butterfly valves (84 inch and 72 inch) and the fixed orifice valve (48 inch), that will be needed in Phase I Valve Rehabilitation, require 6 to 10 months to fabricate and must be pre-purchased so the valves will be available for installation.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$5,585	$547	$5,038	$0	$547	$3,175	$1,362	$204	$298

Project Status 11/05	15.1%	Status as % is approximation based on project budget and expenditures. Facilities Inspection, Phase I Oakdale Valves study and design, and equipment prepurchase all under way in FY05. Construction commenced in Q2 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$6,031	$5,585	($446)	May 07	June 06	(11 mos.)	$5,775	$5,288	($487)

Explanation of Changes

- Cost - Award for Oakdale Valves less than budget.
- Schedule – Construction schedule accelerated.
- FY04 – 08 Spending – See budget changes.

CEB Impact: None identified at this time.

S. 617 Sudbury Aqueduct Repairs

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To ensure continued reliable delivery of high quality water to MWRA customer communities through study, design, and implementation of repairs to the Sudbury and Weston Aqueducts. These backup systems are both more than 100 years old, and need to be ready for emergency use.

Project History and Background

This project includes the inspection of the Sudbury Aqueduct in preparation for future repairs. This aqueduct is 120 years old and is in need of renewal and upgrade. This is a critical back-up facility for the City Tunnel and the Sudbury Reservoir emergency supply. The project will start with an inspection phase and then progress to short-term repairs required to prepare the aqueduct for short-term use. MWRA will also consider funding additional construction phases in future capital budgets as needed improvements are identified.

This project will also fund inspection of the Weston Aqueduct which is more than 100 years old. The results of the inspection will allow MWRA to evaluate and prioritize future construction and repair work for this aqueduct.

Scope

Sub-phase	Scope
Hazardous Materials	Remove contaminated sediment from aqueduct
Sudbury and Weston Aqueduct Inspection	Inspection of the Sudbury and Weston Aqueducts to identify need for future repair work.
Sudbury Short-Term Repairs	Repairs needed in order to prepare the Sudbury Aqueduct for short-term use (flow test and emergency activation). Recent study indicated that three main issues need to be addressed before any short – term use: remove contaminated sediment, repair heaved inverts and clean out siphon to prepare Aqueduct for flow testing.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$3,954	$265	$3,689	$3	$2	$515	$3,166	$8	-

Project Status 11/05	10.3%	Status as % is approximation based on project budget and expenditures. Phase 1, removal of hazardous on-site materials is complete. Completed inspection of Sudbury Aqueduct in November 2005. Short-term Sudbury repairs beginning in June 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$3,781	$3,954	$173	Jan 06	Dec 06	11 mos.	$3,521	$3,695	$174

Explanation of Changes

- Cost –Inflation adjustment due to new ENR index on Sudbury Short-Term Repairs contract.
- Schedule – Project completion shifted due to delay in NTP on Sudbury Aqueduct Inspection contract.

CEB Impact: None identified at this time.

S. 619 Winsor Dam Repair

Project Purpose and Benefits

☑ *Extends current asset life*
☑ *Improves system operability and reliability*

This project will repair the Winsor Dam to include upgrading the existing flashboards regulating the reservoir water level and improving its water storage capacity.

Project History and Background

The Winsor Dam (Quabbin Reservoir) is more than 60 years old. Previously it was under the care and control of the Department of Conservation and Recreation (DCR), formerly the Metropolitan District Commission (MDC). However, MWRA assumed responsibility for capital improvements to this facility as of April 2004 per legislative approval of a Memorandum of Understanding between the MWRA and the Massachusetts DCR. This project will upgrade the existing flashboards that regulate the reservoir water level and improve its water storage capacity.

This project will provide a review of the recently completed existing design specifications and drawings that were produced by the Department of Conservation and Recreation (DCR), construction of the repairs to the dam, and contract administration and resident inspection during construction. Work will include repairs to the spillways and toe drain area as well as piezometer installation.

Scope

Sub-phase	Scope
Design and Construction	Review, design and construction for repairs to the Winsor Dam.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$1,200	$0	$1,200	$0	$0	$12	$198	$880	$110

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Expect to award Design CA/RI in April 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$1,200	$1,200	$0	Jun-08	Jun-08	None	$1,090	$1,090	$0

Explanation of Changes:

- **None.**

CEB Impact: None identified at this time.

S. 620 Wachusett Reservoir Spillway Improvements

Project Purpose and Benefit

☑ *Extends current asset life*
☑ *Improves system operability and/or reliability.*

Project will provide the necessary spillway improvements to the Wachusett Reservoir Dam including upgrading the existing flashboards regulating the reservoir water level and improving its storage capacity.

Project History and Background

The Wachusett Reservoir Dam is more than 100 years old. Previously it was under the care and control of the Department of Conservation and Recreation (DCR), formerly the Metropolitan District Commission (MDC). However, MWRA assumed responsibility for capital improvements to this facility as of April 2004 per legislative approval of a Memorandum of Understanding between the MWRA and the Massachusetts DCR. This project will upgrade the existing flashboards that regulate the reservoir water level and improve its water storage capacity.

The Wachusett Reservoir Dam is part of the major dam system that will be inspected, tested and repaired if necessary under a separate project. However, more urgently, its spillway and dike on the north side of the reservoir have shown signs of wear and tear since the early 1990s. In 1992, the MDC had contracted GZA Consultant to design the needed repairs to the dike as well as a series of mechanically operated gates to replace the old flashboards (100 ft lower section) that are used to regulate the reservoir level and to control flood. However, MDC postponed this project due to difficulty in issuing bonds to finance the work.

At a minimum, the scope of this project will include inspection and reassessment of the conditions for the entire spillway (100 ft lower section as well as 350 ft upper section) and the North Dike. It will also cover review and revision of the twelve (12) year old design as necessary to bring the existing design plans and specifications up to date for construction. It is likely that the 350 ft long upper section of the spillway will also require rehabilitation so the proposed budget also includes funding for this work.

Scope

Sub-phase	Scope
Design and Construction	Covers inspection and reassessment of the spillway design and rehabilitation of the spillway. Project is to be combined with Winsor Dam Toe Drain and Spillway Repairs.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$8,200	$0	$8,200	$0	$0	$342	$1,638	$4,146	$2,074

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Expect to award design contract in January 2006 and commence construction by January 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$8,200	$8,200	$0	May-09	Dec-08	(5)	$3,550	$6,126	$2,576

Explanation of Changes

- Project expected to be on fast track procurement due to its criticality.

CEB Impact: None identified at this time.

S. 621 Watershed Land

Project Purpose and Benefit

☑ *Fulfills regulatory requirement.*
☑ *Provides water quality benefits.*
☑ *Continues to improve public health.*

Acquire, in the name of the Commonwealth, parcels of real estate or interests in real estate that are important or critical to the maintenance of water quality in MWRA water supply sources and the advancement of watershed protection.

Project History and Background

The Watershed Protection Act (WsPA) regulates land use and activities within critical areas of the Quabbin Reservoir, Ware River and Wachusett Reservoir watersheds for the purpose of protecting the quality of drinking water. Since the passage of WsPA in 1992, watershed lands had been purchased by the Commonwealth through its bond proceeds. The MWRA was then billed for and, over the years, paid increasing percentages of the debt service on those bonds, eventually reaching 100% of the debt service. MWRA also makes Payments In Lieu of Taxes (PILOT) to each watershed community for the land owned for water supply protection.

Since 1992, land acquisition has evolved into program-status and is a significant component of the Watershed Protection Plans for Quabbin Reservoir/Ware River and Wachusett Reservoir. Land in the watersheds undergoes analysis by the Land Acquisition Panel (LAP), which is comprised of Department of Conservation and Recreation (DCR) and MWRA staff. The LAP analyzes critical criteria for protection of the source water resources, including presence of streams and aquifers, steep slopes, forest cover, and proximity to the reservoirs. Parcels are ranked as to their value to the water supply system and, when the desirable parcels become available, are pursued through the LAP for acquisition through a "friendly taking" in fee or conservation restriction. LAP maintains an active list of parcels to pursue as seller and LAP interest, and funding availability, exist to support acquisition.

Under the revised Memorandum of Understanding between MWRA and DCR, executed April 2004, MWRA will utilize its own bond issuances for the purpose of acquiring, in the name of the Commonwealth, parcels of real estate or interests in real estate for the purpose of watershed protection. At its December 15th, 2004 meeting, the MWRA Board of Directors approved the use of MWRA bond proceeds for such purpose.

Scope

Sub-phase	Scope
Land acquisition.	Acquire parcels of real estate or interests in real estate critical to protection of the watershed and source water quality.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$11,000	$0	$11,000	$0	$0	$6,000	$5,000	$0	$0

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. MWRA expects to purchase land in FY06.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$8,000	$11,000	$3,000	Jun-06	Jun-07	12	8,000	$11,000	$3,000

Explanation of Changes

- Budget increase to account for the next phase of land purchases.
- Schedule pushed out due to Board of Directors' moratorium on purchase of land pending resolution of Administration and Finance charge issue.

CEB Impact: None identified at this time.

S. 622 Cosgrove/Wachusett Redundancy

Project Purpose and Benefit

☑ *Improves system operability and/or reliability.*
☑ *Provides environmental benefits*
☑ *Extends current asset life*
☑ *Contributes to improved public health*

Provides a detailed risk assessment of the Cosgrove Tunnel and evaluation of pressurizing the Wachusett Aqueduct to provide redundancy.

Project History and Background

The Cosgrove Tunnel was inspected by video in December 2003. Longitudinal and circumferential cracks in the tunnel liner were observed. The inspection report concluded that these cracks should be repaired in the near future. The report further recommended that a detail risk assessment (risks, costs to repair, etc) be undertaken including the evaluation of various tunnel linear repair methods and their associated costs. This project will follow the recommendations of the inspection study and include a detailed risk assessment and evaluation of repair methods. It will also include an evaluation of the level of redundancy needed to provide water to the Walnut Hill Treatment Plant.

Scope

Sub-phase	Scope
Cosgrove Tunnel Alternatives Study	Detailed risk assessment of the Cosgrove Tunnel and evaluation of pressurizing the Wachusett Aqueduct to provide redundancy.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$500	$0	$500	$0	$0	$0	$500	$0	$0

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Expect the study to commence by June 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$500	$500	$0	May-07	May-07	None	$500	$500	$0

Explanation of Changes:

- **None.**

CEB Impact: **None identified at this time.**

S. 677 Valve Replacement

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To retrofit approximately 500 blow-off valves and replace several hundred main line valves within the pipeline distribution system. Blow-off valve retrofits eliminate cross-connections into sewers or drainage piping. Main line valve replacements improve MWRA's ability to respond to emergency situations such as pipe breaks and provide tight shutdown for pipeline construction projects. Faster responses reduce negative impacts on customers. Combining the two valve replacement efforts reduces the need for repeat construction at sites and alleviates traffic impacts, re-paving needs, and other site-specific issues.

Project History and Background

MWRA owns and operates nearly 300 miles of distribution pipeline, which contain approximately 767 blow-off valves and 1,230 main line valves. Some blowoff valves are cross-connected into sewers or drainage piping. To ensure there is no chance of contamination, DEP requires retrofiting of the blow-off valves to provide air gaps to ensure that non-potable water cannot reach the potable water lines. In addition, many of the main line valves in the system are significantly beyond their original design life. Many of these are either inoperable or inadequate and require replacement, repair or retrofitting.

However, significant progress has been made in the last several years in correcting the cross connections at the blowoffs and in replacing defective main line valves and adding new valves to improve operations throughout the system. The valve replacement program continues this process. MWRA utilizes in-house crews and outside contractors to replace several blow off and main line valves every year, both as part of the Valve Replacement Program and pipeline rehabilitation contracts.

Scope

Sub-phase	Scope
Design/Phase 1	Design of valve replacements, setting priorities based on the level of urgency or risk associated with each valve, and scheduling work on valves that would not otherwise be replaced during upcoming pipeline rehabilitation projects.
Construction - Phase 1	Purchase and installation of 27 blow-off valve retrofits.
Construction - Phase 2	Purchase and installation of ten blow-off valve retrofits and ten main line valve replacements.
Construction - Phase 3	Purchase and installation of ten blow-off valve retrofits and 12 main line valve replacements; rehabilitation of two meters.
Construction - Phases 4-6	For each phase, purchase and installation of blow-off valve retrofits and main line valve replacements, and rehabilitation of miscellaneous meters. Phase 4 Contract included 12 main line valves, 10 blow-off retrofits, 2 check valves, and the rehabilitation of 2 meters. Phase 5 Contract included 10 blow-off valve retrofits and 13 main line valve replacements. Phase 6 includes 4 blow-off valve retrofits, 16 main line valve replacements, 9 globe valves (tank isolation), one check valve, and rehabilitation of one meter.
Equipment Purchase	Purchase of approximately 20 main line valves per phase for ten phases for replacement work to be done by in-house staff. Also includes the cost of line stops associated with this work.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$14,952	$7,092	$7,861	$484	$941	$798	$2,320	$1,575	$3,168

Project Status 11/05	49%	Status as % is approximation based on project budget and expenditures. Phases 1-5 are complete. Remaining Phases 6 and 7 scheduled for completion in September 2007 and May 2010, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$14,710	$14,952	$242	May 10	May 10	-	$6,501	$6,118	$383

Explanation of Changes

- Cost –Inflation adjustments on unawarded contracts reflecting new ENR index.

CEB Impact: None identified at this time.

S. 712 Cathodic Protection of Distribution Mains

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To evaluate the condition of approximately 30 miles of steel pipelines and determine the feasibility of upgrading or installing cathodic protection systems to protect pipelines from corrosion.

Project History and Background

Approximately 60 miles or 23% of MWRA's waterworks pipelines ranging from 24 inches to 60 inches in diameter are made of steel and are particularly subject to corrosion from acidic soils, fluctuating groundwater levels (especially where the groundwater is saline), and stray electrical currents. These steel pipelines are located in 26 of MWRA's 46 water communities.

Cathodic protection reduces deterioration of steel pipelines, thereby increasing pipeline life and deferring the need for replacement. Without proper cathodic protection, pipeline leaks and failures increase, causing potentially costly property damage and possible loss of service to customers.

Some sections of MWRA's existing steel pipes were originally equipped with cathodic protection systems intended to reduce the effects of corrosion. Other steel pipelines had cathodic protection systems installed sometime after the original pipe installation. Still other sections of steel pipeline have never received cathodic protection.

Scope

Sub-phase	Scope
Planning	Evaluation of the condition of the steel pipelines, identification of areas of rapid corrosion due to stray currents, and design and installation of corrosion test stations.
Test Station Installation 2 to 4	Installation of approximately 415 test stations at approximately 400-foot intervals. Wires will be attached to the pipes and to reference anodes to collect test data. Upon completion of the three test station contracts, planning and engineering staff will set priorities and determine the scope of rehabilitation work needed to ensure cathodic protection of the pipelines.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$1,472	$141	$1,331	$0	$0	$0	$0	$0	$1,332

Project Status 11/05	9.6%	Status as % is approximation based on project budget and expenditures. Project Planning Phase is complete. Test Station Installation I has been deleted from the CIP. Test Station Installations 2 – 4 will continue through 2016.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$1,796	$1,472	($324)	May-16	May-16	-	$399	-	($399)

Explanation of Changes

- Cost – Project decrease reflects the elimination of Test Station Installation 1.
- FY04 – 08 Spending – See cost changes.

CEB Impact: None identified at this time.

S. 678 Boston Low Service Pipe and Valve Rehabilitation

Project Purpose and Benefit

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To improve the condition and operability of the pipelines comprising the Boston Low Service System. These unlined, cast iron pipelines are more than 120 years old. The mains have numerous non-functional valves, and have experienced frequent breaks. Improvements include some pipeline replacement, cleaning and lining, and selective abandonment of segments that are no longer needed.

Project History and Background

The Boston Low Service network serves downtown Boston and surrounding areas. Water delivered by this network accounts for 15% of MWRA use. The Boston Low Service System includes more than 20 miles of 36 to 48-inch diameter cast iron pipe. The pipes were laid in the 1800s before the advent of heavy vehicles. The pipes are subject to a disproportionate number of major breaks because of their age and surface loading in excess of design strength. Pipe breaks result in service disruptions, loss of water, property damage, and even collapse of street pavement. During a pipeline repair, the broken section is isolated by closing valves on either side of the break to shut off the water and prevent major water loss. More than 40% of the isolation valves on these pipelines are not operational and not repairable because of their age. Their condition inhibits MWRA's ability to shut down the lines quickly during an emergency. Rehabilitation of the pipelines and replacement of the valves will improve service reliability, reduce the risk of property damage, and improve water conservation by reducing leakage.

Scope

Sub-phase	Scope
Study – Pipe	Evaluation of the structural integrity of the pipelines, the condition of the bedding material, and the extent of pipe corrosion. Study revealed that approximately 10.6 miles of pipeline required either cleaning and/or cement-mortar lining with internal seals installed at pipe joints or other rehabilitation. Three pipelines with a total length of 3.7 miles will be filled with a sand and cement slurry and then abandoned.
Design/CS	Design and construction services for the rehabilitation and/or abandonment of Clinton Road and Boylston Street lines.
Design/CS Beacon Street	Design and construction services for the rehabilitation and/or abandonment of Beacon Street lines, the Beacon/Longwood line, the Harvard Street line, and sections of the East and West Spot Pond Supply Mains in Brookline.
Phase 1 – Equipment Pre-purchase	Equipment purchases for the replacement of valves and other appurtenances near the Chestnut Hill Reservoir Gate House.
Construction – Clinton Road and Boylston Street	Sliplining of the Clinton Road line and rehabilitation and/or abandonment of Boylston Street lines.
Construction – Beacon Street	Rehabilitation and/or abandonment of the Beacon Street lines, the Beacon/Longwood line, the Harvard Street line, and sections of the East and West Spot Pond Supply Mains in Brookline.
Test Pits	Exploratory excavations completed in Brookline to expose cast-iron pipes at ten sites considered representative of conditions in the overall Boston Low Service System. MWRA staff completed work.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$23,691	$23,691	$0	$288	$75	$0	$0	$0	$0

Project Status 11/05	100%	Status as % is approximation based on project budget and expenditures. Project is completed.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$23,839	$23,691	($148)	Sep-03	Sep-03	None	$511	$363	($148)

Explanation of Changes

- Project substantially completed.

CEB Impact: No additional impacts identified at this time.

S. 730 Rehabilitation of Weston Aqueduct Supply Mains (WASM)

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To improve the condition and carrying capacity of these major supply lines and the quality of the water supplied to the communities in the Low, High, Intermediate, and Extra High pressure zones. Timely rehabilitation will reduce the costs of replacing corroded pipes, reduce red water and chlorine tastes, and improve water pressure.

Project History and Background

MWRA's tunnels and aqueducts bring water to the metropolitan area from the supply reservoirs in central Massachusetts. In Weston, where the existing Hultman Aqueduct and the MetroWest Tunnel end, the water is still miles away from most customers. Together, the City Tunnel and the four Weston Aqueduct Supply Mains (WASMs) carry the water this final distance. When the rehabilitation of the WASMs is complete, they will transmit about one-third of the water to MWRA's service areas, and the City Tunnel will carry the remaining two-thirds. The WASMs are now the only means of conveying water to the city in the event of a problem with the City Tunnel. The Sudbury Aqueduct can deliver non-potable water during extreme emergency.

WASM 1 is a 48-inch diameter unlined cast iron pipeline about 38,700 feet long that was constructed in 1904. WASM 2, built in 1916, is a 60-inch diameter unlined cast iron pipeline about 34,800 feet long. WASMs 1 and 2 begin in Weston at the Weston Aqueduct Terminal Chamber (WATC) and run parallel through Newton, mostly along Commonwealth Avenue, ending in Boston near Chestnut Hill Reservoir. These pipelines supply water to the Boston Low pressure zone.

WASM 3 is an 11-mile steel pipeline that was installed in 1926 and 1927. This major supply line carries high service water from the 7-feet diameter branch of the Hultman Aqueduct to community connections and MWRA pumping stations serving the Northern High, Intermediate High, and Northern Extra High service systems. It also extends from the Hultman Aqueduct branch in Weston northeast to the Shaft 9 line in Medford and is the sole source of supply to 230,000 customers. WASM 4 was constructed in 1932 and is predominantly a 60-inch diameter pipeline consisting primarily of unlined steel with some pre-stressed concrete cylinder and cast iron sections. It extends 47,000 linear feet from Weston through Newton, Watertown, and Boston, and into Cambridge.

WASM 3 and WASM 4 were originally part of the Low Service System and conveyed water from the Weston Aqueduct to the Spot Pond Supply Mains. Upon completion of the Hultman Aqueduct, and its interconnection to the Weston Aqueduct Terminal Chamber in 1941, WASM 3 became part of the High Service System. With the addition of Newton to the metropolitan service area in the early 1950s, the western portion of WASM 4 was transferred to the High Service System as a temporary means of conveying water from the Hultman to portions of Newton and Watertown while still maintaining supply to the Spot Pond Supply Mains at their east ends through pressure reducing valves.

The WASMs are currently functioning below full capacity because of the build up of rust deposits and other matter along the pipeline walls, and undersized main line valves. Rehabilitation of these pipelines is necessary to restore their original carrying capacity and will include replacement of valves to provide more efficient operations and emergency response, elimination of tuberculation on the interior walls, and application of cement mortar lining to the interior pipe walls to prevent further internal corrosion and improve water quality.

The joints on WASM 1 and WASM 2 are constructed of bells and spigots filled with lead packing. The bell and spigot construction gives the joints some flexibility, but lead packed joints are more prone to failure compared to push-on or mechanical joints with modern synthetic gasket material. The existing joints are subject to potential failure because of deterioration, or pipe movement due to frost, settlement, or adjacent construction. Water leaking

from a failing joint can undermine the pipe, causing catastrophic failure. These failures can cause severe damage and disruption. WASM 2 also has insulating joints consisting of cast-iron pipes with wood fillers. These joints were intended to prevent electrical current from flowing along the pipeline but, in general, have been prone to failure and leakage.

When this project is complete WASM 1 and WASM 2 will connect to the new Loring Road tanks in Weston and will supply the Boston Low mains in Clinton Road, Beacon Street, and Boylston Street, which were rehabilitated as part of the Boston Low Service Rehabilitation project. With the completion of these projects the entire Boston Low Service System, which accounts for 15% of overall MWRA water demand, will have been rehabilitated from Weston to Boston.

There is no back up for WASM 3, which is the sole source of supply for the higher elevation portions of Waltham, Belmont, Arlington, Lexington, Bedford, and Winchester. This pipeline cannot be shut down for maintenance or rehabilitation until the initial segments of the Shaft 7 to WASM 3 connecting mains project are constructed. Next to a failure of the Hultman Aqueduct, analysis has shown that failure of WASM 3 is one of the highest risks in the MWRA distribution system. The Shaft 7 to WASM 3 Connecting Mains project will provide redundancy so that the main can be rehabilitated in phases.

Until recently, the middle portion of WASM 4 along Nonantum Road was shut down due to an excessive leakage rate. Nonantum Road construction (rehabilitation by sliplining and cleaning and lining) was completed in March 1997 and the rehabilitation of the western portion of WASM 4 was completed in March 2001, including meter upgrades. In order to remove the western portion of WASM 4 from service to allow it to be rehabilitated, MWRA provided alternative supplies for Watertown Meter 103 and Newton Meters 104 and 105. Meter 103 was upgraded and local water main improvements were built along Galen Street in Watertown. These efforts allow the other Watertown meters to temporarily supply the area normally served by Meter 103. These improvements were constructed as non-participating bid items (i.e., funded by MWRA) under a contract administered by the Massachusetts Highway Department. Alternative sources for the Newton northern pressure district, normally supplied by Meters 104 and 105, have been constructed. Two pressure reducing valves, one at Chestnut Street and one at Walnut Street, were installed to allow the southern pressure district that is supplied by the Commonwealth Avenue Pumping Station to temporarily serve the northern pressure district. The rehabilitation of the eastern portion of WASM 4 includes fixing a portion of the South Charles River Valley Sewer Sections 163 (D) and 164 (E), a 100+ year old brick sewer that is located directly below the water main. The rehabilitation of the eastern portion of WASM 4 is substantially complete.

WASM 4, when rehabilitated will continue to operate as a high service main from the Hultman Aqueduct Branch connection to Shaft W of the MetroWest Tunnel up to the pressure reducing valve facility at Nonantum Road. It will then continue as a low service main to its connection with the East and West Spot Pond Supply Mains. WASM 4 will also have the capability to operate completely as a low service main. This flexibility in operating conditions will allow WASM 4 to best support the system. When in the split high/low mode, WASM 4 will be able to support WASM 3 through the planned connecting mains during planned shutdowns or emergencies. The availability of this support has significantly reduced the cost of the New Connecting Mains-Shaft 7 to WASM 3 project.

Scope

Sub-phase	Scope
Design/CA/RI–Phases A and B/WASM 1 and WASM 2	Design, construction administration, and resident inspection for the rehabilitation of WASM 1 and WASM 2 (construction contracts 6280 and 6281).
Design/CA/RI-WASM 4	Design, construction administration, and resident inspection for the rehabilitation of WASM 4 (construction contracts 6203, 6175, 6312, 6176, and 6313).
Newton WASM 1 and WASM 2	Construction work on WASM 1 and WASM 2 along Commonwealth Avenue and WASM 1 through Centre Street to the Newton Commonwealth Golf Course (construction contract 6280).

Sub-phase	Scope
Boston WASM 1 & 2	Work on the remaining lengths of WASMs 1 and 2 and Master Meters 50 and 63 consists of rehabilitation of 8,640 linear feet of Section 4 of WASM 1 through the Newton Commonwealth Golf Course to Gatehouse #1, and rehabilitation of 11,450 linear feet of Sections 7 and 8 of WASM 2 between Grant Avenue and Cleveland Circle (construction contract 6281).
Design/CS/RI WASM 3	Design, construction administration and resident inspection for construction phases CP1, CP2, CP3 and CP4.
Waltham WASM3 – CP2	Rehabilitation of the westerly portion of WASM 3 generally located between the Hultman Branch and the Watertown Branch.
Construction – Belmont WASM 3 CP3	Rehabilitation of the middle portion of WASM 3 generally located between the Watertown Branch and the Belmont Pumping Station.
Construction - Arlington WASM 3 CP4	Rehabilitation of the easterly portion of WASM 3 and a short segment of Section 51 generally located between the Belmont Pumping Station connection and the Shaft 9 line.
Section 28, Arlington- CP1	Rehabilitation of Section 28, the suction main to the Brattle Court Pumping Station, from the WASM 3 connection to the pumping station.
Auburndale WASM 1,2 & 4	Cleaning and lining of 5,300 linear feet of 48-inch and 12,300 linear feet of 60-inch diameter mains of WASMs 1, 2 and 4 (Sections 2, 5, 13 and portions of 1) from Weston across the Charles River along Commonwealth Avenue to the Mass Pike in Newton, as well as replacement of existing line valves, air/vacuum valves and blow-off valves.
Newton WASM 2 & 4	Cleaning and cement lining of 21,200 linear feet of 60-inch pipe on WASM 4 (Sections 13 and 14) along Rowe, Webster, Elm and Washington Streets in Newton, and 5,800 linear feet of 60-inch pipe on WASM 2 (Section 2) along Commonwealth Avenue from Bullough Parkway to Grant Avenue. Rehabilitation of Meters 104 and 105, the Nonantum Road PRV and sliplining of 1,600 linear feet of pipe from Brooks Street to North Beacon Street.
Allston WASM 4 & W. Ave Sewer	Sliplining with some limited pipe replacement and cement lining of 10,538 linear feet of 60-inch pipe mostly along Western Avenue, 1,008 linear feet of 42-inch pipe mostly along Memorial Drive, 808 linear feet of twin parallel 30-inch pipes within the Western Avenue Bridge, replacement of Master Meter 100 and rehabilitation of the Charles River Valley Sewer to include installation of a cured-in-place liner in approximately 5,150 feet of sewer, as well as removal and disposal of sediment in the existing brick sewer, power washing, and rehabilitation of existing manholes and installation of new manholes.
Temporary Water Supply Plan	Temporary supply of water during WASM 3 construction work.
Section PCCP W-12	Replacement of approximately 2,100 linear feet of 60-inch Prestressed Concrete Cylinder Pipe (PCCP) on WASM 3 (Section 12) in Arlington. Includes replacement of air release manhole, replacement of two blow-offs and addition of new mainline butterfly valve with chamber and separate air release manhole.
WASM 3 SPL 12 PCCP Design	Design and construction administration services for the replacement of the PCCP pipe portion of WASM 3 (Section 12).

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$116,051	$59,897	$56,153	$8,734	$8,331	$1,128	$1,816	$2,732	$50,477

Project Status 11/05	51.9%	Status as % is approximation based on project budget and expenditures. Newton WASM 1 and WASM 2, Auburndale WASM 1, 2 & 4, Newton WASM 2 & 4 and Allston WASM 4 & W. Ave Sewer are complete. Boston WASM 1 & 2 and Section PCCP W-12 reached substantial completion in June 2005 and July 2005, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$113,645	$116,051	$2,406	Dec-16	Dec-16	None	$23,042	$22,741	($301)

Explanation of Changes

- Project Cost increase due to inflation adjustments to reflect new ENR index for Design/CS/RI WASM 3, Waltham WASM3 – CP2, Construction –Belmont WASM 3 CP3, Construction - Arlington WASM 3 CP4, Section 28, Arlington- CP1.
- Slightly offset by WASM 4 & W. Ave Sewer balancing credit change order.

CEB Impact: None identified at this time.

S. 732 Walnut Street and Fisher Hill Pipeline Rehabilitation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To improve water quality and hydraulic capacity of a pipeline serving the City of Boston. Cleaning and cement mortar lining this cast iron main will enhance water quality, and enable this pipeline to meet maximum demand conditions.

Project History and Background

Through this project MWRA will rehabilitate the Walnut Street Pipeline. The work will include the rehabilitation of approximately 7,900 linear feet of 48-inch cast iron mains installed in 1895. The pipeline is located in Walnut Street in Brookline and serves Boston Meter 5. Due to internal corrosion, the hydraulic carrying capacity has been reduced. The hydraulic grade line at Meter 5 is not adequate at maximum demand conditions. In addition, unlined cast iron mains may be a significant contributor to diminished water quality within the distribution system. Rehabilitation through cleaning and cement mortar lining with internal joint seals will address this condition. The scope of work will include construction of a pressure reducing valve station.

Scope

Sub-phase	Scope
Construction	Design and rehabilitation of approximately 7,900 linear feet of 48-inch cast iron mains located on Walnut Street in Brookline, construction of a pressure reducing valve station, and the rehabilitation and relocation of Meter 5 serving Boston.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$3,354	$33	$3,321	$1	$33	$20	$2,004	$1,297	

Project Status 11/05	1.5%	Status as % is approximation based on project budget and expenditures. Final design work continues for Phase I. Construction of Phase I to begin in November 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$3,141	$3,354	$213	Jan -08	May-08	4 Mos.	$3,136	$3,354	$218

Explanation of Changes

- Cost - Updated inflation to account for more current ENR index for Phase I.
- Schedule – Additional time need to obtain major utility information at the new pressure reducing station and new meter station. Also, construction NTP delayed to better coordinate this work with Section 52 work.
- FY04 – 08 Spending – See budget changes.

CEB Impact: None identified at this time.

S. 683 Heath Hill Road Pipe Replacement

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To repair and improve pipelines and valves in the Southern High and Southern Extra High Service areas which are in poor condition. The targeted pipelines in Brookline and Boston have experienced numerous leaks and breaks, and their hydraulic performance is inadequate. Work includes a fast-track pipe replacement phase, and mostly cleaning and lining along the other pipe segments.

Project History and Background

These sections of pipeline near Heath Hill Road supply water to Brookline, Boston, and the Southern Extra High Service System. The severe corrosion on Sections 19, 20, 52, and 58 has resulted in 23 leaks during the last ten years. This project consists of the rehabilitation and/or replacement of these pipelines. Section 58 is 60 years old, and Sections 19 and 20 are 100 years old. All sections have extensive records of leaks and breaks and warrant rehabilitation or replacement. These 36-inch and 48-inch diameter cast iron and steel mains run parallel to the Dorchester Tunnel and serve as suction mains to the Hyde Park Pump Station which supplies the Southern Extra High System. Section 52, a 70-year old, 54-inch steel main, extends from the Chestnut Hill Pump Station to Sections 19, 20, and 58 and provides suction to the Newton Street Pump Station. The construction contract for Rehabilitation of Section 52 was awarded at the January 2006 MWRA Board meeting.

Scope

Sub-phase	Scope
Design/CS/RI Section 52 Phase 1	Design and related construction services for the replacement of 820 linear feet of pipe with new 54-inch diameter pipe and installation of a new butterfly valve.
Design/CS/RI Section 52 Phase 2	Design, construction services, and resident inspection for rehabilitation of Section 52.
Construction Section 52 New	Replacement of 820 linear feet of pipe with new 54-inch diameter pipe.
Construction Section 52 Rehabilitation	Cement mortar lining and sliplining of 11,500 linear feet of 54-inch steel pipe and removal and replacement of valves.
Design/CS/RI Sections 20 and 58	Design, construction administration, and resident inspection of rehab of sections 20 and 58 in the City of Boston.
Construction Sections 58,20,19	Rehabilitation of approximately 11,000 feet of 48-inch diameter and 10,000 feet of 36-inch diameter segments of Sections 19, 20, and 58. Also includes valve, meter, and vault construction at Shaft 7C to incorporate all hazardous material work at Shaft 7C into one contract.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$20,022	$10,290	$9,732	$520	$283	$2,500	$6,716	$490	$26

Project Status 11/05	51.9%	Status as % is approximation based on project budget and expenditures. Phase I is complete with only design and construction of the Section 52 rehab remaining to be completed.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$20,168	$20,022	($146)	Oct-07	Oct-07	-	$10,609	$10,509	($100)

Explanation of Changes

- Cost - Revised cost estimate for Section 52 Rehabilitation based on updated design report.
- FY04 – FY08 Spending – See budget changes above.

CEB Impact: None identified at this time.

S. 721 Southern Spine Distribution Mains

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To increase carrying capacity and improve valve operability along the large surface mains that run parallel to the Dorchester Tunnel and provide service to the Southern High and Southern Extra High systems. Currently these mains have serious hydraulic deficiencies and many inoperable valves. Hydraulic performance improvements are needed to provide redundancy for the Dorchester Tunnel. Work will include rehabilitation of more than 12 miles of large diameter pipeline.

Project History and Background

The Southern Spine Distribution Mains comprise the surface piping which parallels the Dorchester Tunnel. The mains begin in the vicinity of Shaft 7B in Brookline and end at the Blue Hills Reservoir in Quincy. The mains serve the Southern High and Southern Extra High System communities of Boston, Brookline, Milton, Quincy, Norwood, and Canton.

Because of the poor conditions of the valves, MWRA operations staff must frequently close several valves in order to shut down a line. This practice often results in closing more of the system than is otherwise necessary. Several of these pipelines are currently functioning at approximately 50% of their original carrying capacity due to the build up of rust deposits and other matter along the pipeline walls. In their present condition, these mains could not provide adequate service to users if the Dorchester Tunnel was taken off-line.

Construction of the first two contracts for Section 22 South were completed by June 2005. The designs for Sections 21 and 43, and new Section 107 are 100% complete.

Scope

Sub-phase	Scope
Sections 21,43, 22 Design/CS/RI	Design, construction services, and resident inspection for Phase 1, including 48,000 linear feet of 24- to 48-inch main, and installation of 16,000 linear feet of 36- to 48-inch main. Rehabilitation to consist of cleaning and cement mortar lining of the interior pipeline walls, and replacement of the main line valves, blow-off valves, and appurtenances.
Section 22 South Construction	Rehabilitation of approximately 10,000 linear feet of existing 48-inch Section 22 North, one of four construction contracts Phase 1, and installation of 1,700 linear feet of new pipe.
Adams Street Bridge	Relocation of a pipeline made necessary by the reconstruction of this bridge by the MBTA.
Southern High Ext Study	Study to determine the feasibility of expanding water services to additional communities in the Southern High Service Area. Cost of the study and public participation was fully funded by the Commonwealth of Massachusetts.
Section 22 North Construction	Rehabilitation of 17,300 linear feet of existing 48-inch Section 22 South, one of four construction contracts Phase 1.
Sections 21 & 43 Construction	Rehabilitation of 1,000 feet of 24-inch lines and installation of 14,200 linear feet of new 36 to 48-ince pipe, one of four construction contracts Phase 1.
Contract 1 A Construction	Rehabilitation of 4,400 linear feet of Section 22 South.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$62,580	$12,405	$50,175	$3,615	$5,592	$739	$5,654	$6,113	37,670

Project Status 11/05	20.3%	Status as % is approximation based on project budget and expenditures. The design for Phase 1 began in September 2000 and includes four construction contracts. Construction of Contracts 1 and 1A for Section 22 South are completed.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$60,167	$62,580	$2,413	May-15	May-16	12 mos.	$28,290	$21,713	($6,576)

Explanation of Changes

- Cost - Updated inflation to account for more current ENR index for Sections 20 & 58, Section 22 and Sections 21 & 43.
- Schedule - Revised schedule due to project reconfiguration.
- FY04–08 Spending – Spending shifted with the project reconfiguration.

CEB Impact: None identified at this time.

S. 714 Southern Extra High - Sections 41, 42, and 74

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To increase the hydraulic capacity of the mains that carry water to the Bellevue Tanks, which serve the Southern Extra High System. Because sections 41, 42 (80-year old cast iron mains), and 74 (45-year old pre-stressed concrete cylinder pipe) are severely limited in the pressures and flows they can convey, the Hyde Park Pump Station cannot operate efficiently. Improvements will include pipeline replacement and rehabilitation.

Project History and Background

Sections 41 and 42 were built in 1914 with unlined, cast-iron 20-inch pipe. Section 74 was built in 1951 with pre-stressed concrete cylinder pipe. These mains connect the Hyde Park Pump Station and the Newton Street Pump Station discharge pipeline (Section 77) to Bellevue Tanks 1 and 2. These pipe sections pass through the Hyde Park section of Boston and serve Norwood, Canton, Brookline, Milton, and Boston. They were installed prior to the construction of Bellevue Tank 2, which stands 25 feet higher than Bellevue Tank 1. Sections 41 and 42 and portions of Section 74 were not designed for the increased pressure caused by the higher elevation of Bellevue Tank 2. As a result, the Hyde Park Pump Station cannot be operated at full capacity unless the Tank 2 water level is extremely low. Because the Southern Extra High Service System has limited storage capacity, it is undesirable to have Tank 2 at a low level. Therefore, the pump station operates below capacity despite the fact that pressure in the system is barely sufficient to meet peak demand.

Because of the higher pressures created by Bellevue Tank 2, these pipes are susceptible to breaks. To alleviate this problem, this project will replace approximately 10,600 feet of Sections 41, 42, and 74 and rehabilitate approximately 5,700 feet of Section 74 with new valves and appurtenances. Construction was completed in September 2003.

Scope

Sub-phase	Scope
Design/CS/RI and Construction	Replacement of Sections 41 and 42 with 8,000 feet of new 24-inch diameter main, and a portion of Section 74 with about 2,700 feet of new 24-inch diameter pipe. Rehabilitation of 6,400 feet of 20-inch diameter main of Section 74.
Boston Paving	Payment to the City of Boston for paving work on city streets.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$3,650	$3,577	$72	$977	$41	$72			

Project Status 11/05	100.0%	Status as % is approximation based on project budget and expenditures. Construction is complete with only closeout items, including resident inspection, outstanding.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$3,578	$3,650	$72	Sep-03	Sep-03	-	$1,018	$1,090	$72

Explanation of Changes

- Revised paving costs.

CEB Impact: None identified at this time.

S. 719 Chestnut Hill Connecting Mains

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To simplify the complex arrangement of old pipes near the Chestnut Hill pump stations for safety and operability. Also, create a connection between Shaft 7 of the City Tunnel and the Southern Distribution surface mains to provide redundancy along the Dorchester Tunnel. MWRA is restructuring the piping arrangement through a combination of constructing new pipelines, rehabilitating older pipe lines, sliplining abandoned aqueducts, replacing pressure regulating valves, replacing the emergency pumps at Chestnut Hill, and abandoning pipes and valves which are no longer needed for service.

Project History and Background

At Chestnut Hill the City Tunnel divides into two branches: the City Tunnel Extension going north to supply the Northern High System and the Northern Intermediate High System, and the Dorchester Tunnel, which goes south to supply the Southern High System and the Southern Extra High System. There are two shafts in this area: Shaft 7 on the City Tunnel, located immediately west of the Chestnut Hill Reservoir, and Shaft 7B on the Dorchester Tunnel, located immediately east of the reservoir. At each of these shafts two newer pipes extend to connect to the older pipelines of the Boston Low Service System, the Northern Low Service System, and the Southern High Service System.

The Southern High System can only be supplied from Shaft 7B. If the Dorchester Tunnel were to be out of service, it would be necessary to activate the Sudbury Reservoir System, transport water from there via the Sudbury Aqueduct (currently on standby) to the Chestnut Hill Reservoir (currently on standby) and utilize the newly constructed emergency pump station at Chestnut Hill to pump water from the reservoir to the Southern High System. This water would not be of acceptable quality and its use would require a boil order.

The older pipes in the area were originally designed to be supplied from the Cochituate and Sudbury Aqueducts, the Chestnut Hill Reservoir, or the Chestnut Hill High Service and Low Service pump stations. None of these facilities is presently in normal use, though the new underground pump station has replaced the Chestnut Hill stations. The pipe network is not only old and inordinately complex, but it is not designed to take water from the two tunnel shafts that are the present sources of potable supply. Portions of this pipe network have been rehabilitated and integrated into the present operation of the system. Considerable lengths of pipe with minimal or stagnant flow, which are a source of red water, have been abandoned. Some new pipe was added to better connect the two tunnel shafts with the surface pipe network. The interconnections between the potable water system and standby facilities, which are considered non-potable, have been rebuilt to eliminate the possibility of cross-connections during normal operation.

The High and Low Service pump station buildings at Chestnut Hill housed facilities which served four functions: emergency pumping, surge relief for the Boston Low System, level control for the Chestnut Hill Reservoir, and remote hydraulic operation of large valves on and near the site of the High Service station. Construction of a new underground pump station provides more reliable emergency pumping capacity and has enabled MWRA to abandon the pump station buildings and return them to the Commonwealth. Surge relief was provided in a new Shaft 7B pressure reduction chamber that also interconnects restructured piping. On-going preliminary design will relocate reservoir level control functions. Gate House No. 2 has also been refurbished to provide supply to the new pump station. New valves have been constructed to replace the old hydraulic valves.

Scope

Sub-phase	Scope
Design/CA/RI and Construction – Pump Station Potable Connection	Construction of potable suction and discharge piping to the emergency pump station, restructuring piping to permit surplusing of Chestnut Hill pumping station site, elimination of potential cross connections with non-potable suction and discharge lines, reconstruction of the Shaft 7B PRV Station, upgrade of the Shaft 9A PRV station, rehabilitation of valves at Waban Hill Reservoir, and abandonment of the Ward Street Pumping Station and associated piping. Construction to provide potable low service suction to the new pump station and to restructure piping to permit surplusing of the historic pumping stations site. Completion of upgrades of facilities that also may be used during the Walnut Hill Water Treatment Plant startup at Shaft 7B, Shaft 9, and Ward Street.
Preliminary Engineering	Provide preliminary design services for the rehabilitation and upgrade of facilities so that MWRA is able to operate the water system during normal conditions and specific emergency scenarios.
Design/CS/RI and Construction – Emergency Pump Relocation	Relocation of the emergency pumping function and other minor facilities from the existing High and Low Service pump station buildings to a new 90-mgd underground pump station constructed adjacent to the Low Service building. The relocation enables MWRA to surplus these historic buildings. The new pump station has the capacity to pump 90-mgd from the Sudbury Aqueduct/Chestnut Hill Reservoir to the Southern High Distribution System.
Boston Paving	Payment(s) to the City of Boston for paving work provided.
BECo Emergency Pump Connection	Payment to Boston Edison Company for installation of electrical service to meet special requirements. Provision of the services eliminated the need to install a standby generator.
Equipment Pre-Purchase	Valve pre-purchase to support potable connection construction so that the Chestnut Hill Pump Station site could be returned to the Commonwealth of Massachusetts as surplus property.
Demolition of Garages	Demolition of garages prior to transfer of property to the Commonwealth, at request of state Department of Capital Asset Management.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$17,709	$17,175	$535	$1,224	$213	$535	$0	$0	-

Project Status 11/05	97.9%	Status as % is approximation based on project budget and expenditures. The only remaining work for this project is the preliminary engineering for the final pipe connections which is expected to be completed by Q2 2006. All other work is complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$17,975	$17,709	($266)	Nov-05	Jan-06	2 mos.	$2,237	$1,972	($265)

Explanation of Changes

- Budget for Boston Paving and Utilities reduced to actuals since project is complete.
- Schedule – Actual start date delayed two months.
- FY04 – 08 Spending – See budget changes.

CEB Impact: None identified at this time.

S. 704 Rehabilitation of Other Pump Stations

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Results in a net reduction in operating costs*
☑ *Improves system operability and reliability*

To rehabilitate five active pump stations (Brattle Court, Reservoir Road, Hyde Park, Belmont, and Spring Street). each of which is more than 40 years old, and is overdue for renewal for safety, reliability, and efficiency reasons.

Project History and Background

MWRA's waterworks distribution system includes ten active pump stations. Extensive rehabilitation of the James L. Gillis, Newton Street, Lexington Street, and Commonwealth Avenue pump stations is complete. The Dudley Road Pump Station will not be rehabilitated because the station will be abandoned.

The Brattle Court, Reservoir Road, Hyde Park, Belmont, and Spring Street stations are between 40 and 80 years old and are overdue for major rehabilitation. The Brattle Court Pump Station serves the towns of Arlington, Lexington, Waltham, and Winchester. The Reservoir Road Pump Station serves Brookline. The Hyde Park Pump Station serves Boston, Milton, Norwood, and Canton. The Belmont Pump Station serves Belmont, Arlington, and Watertown. The Spring Street Pump Station serves Lexington, Bedford, part of Waltham, Belmont, Arlington, and Winchester. Some equipment at each pump station is inoperable, and system demand patterns have shifted during the life of the stations, requiring adjustments to pumping capacity. In addition, station improvements have not kept pace with changes in building and safety codes.

MWRA has divided construction into two contracts. The first contract (Construction - Interim Automation), based on a fast-track design and completed in February 2001, involved installation of SCADA systems at each station. Under the second construction contract, MWRA will complete rehabilitation of the five pump stations.

Scope

Sub-phase	Scope
Preliminary Design	Planning and conceptual design including inspection and evaluation of the HVAC systems, buildings, pipes, valves, and other systems at the pump stations; determination of the need for improvements; and preparation of a conceptual design report.
Design 1/CS/RI	Design for rehabilitation of five pump stations, including installation of SCADA systems.
Construction II and C	Installation of instrumentation at five pump stations to enable remote operation and monitoring.
Rehab of 5 Pump Stations	Rehabilitation of Belmont, Brattle Court, Spring Street, Hyde Park, and Reservoir Road pump stations, including installation of new mechanical, electrical, instrumentation, and security systems, and building and site refurbishment, and SCADA installation.
Proprietary Equipment Purchases	Purchase of proprietary materials for SCADA system for Interim Instrumentation and Control.
Design 2 CS/RI	Final Design, construction services, and resident inspection for rehabilitation of five pump stations.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$28,952	$4,048	$24,904	$144	$230	$870	$5,635	$7,283	$11,116

Project Status 11/05	15%	Status as % is approximation based on project budget and expenditures. Construction rehabilitation of 5 pump stations (Belmont, Brattle Court, Spring Street, Hyde Park, and Reservoir Road) to begin in early FY07 and be completed in FY10, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**Proposed FY06**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$27,785	$28,952	$1,167	Sep-09	Sep-09	-	$14,034	$14,162	$128

Explanation of Changes

- **Cost:** Rehab of 5 Pump Stations revised cost estimate includes new scope of work items, additional costs from 100% Design for concrete and steel, and work restrictions on the contractor.

CEB Impact: None identified at this time.

S. 722 NIH Redundancy and Covered Storage

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

The Northern Intermediate High System lacks both pipeline redundancy and sufficient storage. The intent of this project is to identify and take measures that reduce both the risk and impacts of a pipeline failure within the Northern Intermediate High System.

Project History and Background

This system serves Reading, Stoneham, Wakefield, Winchester and Woburn, with an average day demand of 7.8 million gallons. Wilmington is also considering application to MWRA for supplemental water. If Wilmington is included, the population served is approximately 150,000.The current six million gallon capacity of MWRA's Bear Hill Tank in Stoneham is both insufficient to meet MWRA's 1993 Water System Master Plan goal of one day of emergency storage for the service area and is not advantageously placed within the NIH system.

Section 89 is a three mile, four foot diameter PCCP transmission main with no redundancy other than the low capacity, century old Section 29 that parallels its route for a short distance. The 10,500-foot length of Section 89 northwest of Spot Pond is constructed of Class IV wire which is of significant concern given experience with catastrophic failures elsewhere in the country. Section 29 is 96 years old and measures 6,300 feet in length and 24 inches in diameter. Because of its age and the fact that it is unlined, tuberculation has reduced the pipeline carrying capacity to approximately 45% of the original design capacity (C-value: 58). In the event of a shut down in Section 89, Section 29 may not be able to meet the minimum hydraulic needs of the area and additional chlorination to maintain water quality may be required.

Scope

Sub-phase	Scope
Concept Plan	Develop a concept level plan to evaluate options to reduce the risk and the impacts of potential failures in Sections 29 and 89. Measures may include (but are not limited to) valve improvements, pipeline redundancy, targeted emergency response plans, additional storage or other improvements that can be implemented within the NIH system. This phase will also include development and implementation of a pipeline monitoring program for Section 89.
DesignCA/RI and Construction NIH Improvements	**This phase is subject to change pending completion of the Concept Plan.** Staff believes that rehabilitation of Sections 89/29 may be problematic without the construction of a redundant pipeline. The Concept Plan will identify short-term and long-term measures to reduce the risk and impact of pipeline failures. This phase will cover the design and construction of short-term measures identified in the conceptual plan.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$7,390	$0	$7,390	$0	$0	$277	$664	$104	$6,345

Project Status 11/05	0.0%	Status as % is approximation based on project budget and expenditures. Concept planning was awarded in December 2005 followed by design with a start date of April 2008.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$6,943	$7,390	$447	May-12	May-12	None	$1,002	$1,045	$43

Explanation of Changes

- Budget increase - inflation adjustments on unawarded contracts due to new ENR index.

CEB Impact: None identified at this time.

S. 689 James L. Gillis Pump Station Rehabilitation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Fulfills a regulatory requirement*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To improve and modernize pumping facilities and equipment at the 90-year old formerly named Spot Pond Pump Station. These improvements directly benefit the Northern High and Northern Intermediate High systems, and improve MWRA's system-wide emergency response capabilities. Project components included rehabilitation of the pump station, installation of a new suction line, rehabilitation of discharge lines, construction of a sanitary sewer, and remediation of a contaminated land site. Completion of this project also enables MWRA to comply with Safe Drinking Water Act requirements.

Project History and Background

MWRA used the pump station at Spot Pond (built in 1905) to chlorinate and pump water from the pond to the Northern Intermediate High Service Area (Bear Hill Reservoir) and the Northern High Service Area (Fells Reservoir). Due to the age, condition, and critical need for the facility, rehabilitation of the pump station was a top priority for MWRA. Project work included refurbishment of the site, facility, and equipment, electrical and mechanical system upgrades, and installation of new equipment needed for improved facility operation.

In addition, MWRA has installed a new 14,500 feet, 60- to 72-inch diameter suction pipeline from the City Tunnel shaft in Malden to the rehabilitated facility, now known as the James L. Gillis Pump Station. The new suction line provides the station with water at a pressure head greater than the pond, significantly reducing pumping requirements, and eliminating the need to take water from Spot Pond, an uncovered water source, in compliance with the requirements of the Safe Drinking Water Act. As a result of completing this project, MWRA removed the open Spot Pond Reservoir from active service in 1997.

The new pipeline has improved system reliability by providing increased capacity to transfer water between the low and high service systems during emergencies and facilitates use of the new Fells Reservoir covered storage facility as the main distribution reservoir for the Northern High Service System. To provide adequate discharge capability, this project included rehabilitation of 7,525 feet of Sections 13 and 64. These 36-inch diameter mains extend from the pump station to the Fells Reservoir, and deliver water to Melrose and Stoneham. Because the structural integrity of these pipelines was determined to be sound, staff chose rehabilitation rather than replacement to improve carrying capacity, reduce friction and turbulence, and reduce the risk of water quality impairment. This project also included a major improvement to the layout of valves between the pump station and Fells Reservoir.

A 1,500-feet sanitary sewer is also being constructed to replace an existing septic system that serves the pump station and an adjacent house. Sewage from both facilities is pumped by a small ejector station to an MDC sewer on Pond Street in Stoneham. During design of the pump station rehabilitation, several environmental problems were discovered including contamination of soil, groundwater, and an adjacent brook. Under an emergency compliance order MWRA and DEP worked together to eliminate the sources of contamination at the pump station. MWRA is completing the cleanup process at the site, as required by DEP.

The Gillis Pump Station project also involved evaluation of the environmental conditions at the site and the nearby Spot Pond Brook area and the preparation and implementation of a remedial cleanup plan. This portion of the project is comprised of three phases and follows the Massachusetts Contingency Plan as specified by DEP. The first phase (study) consists of an environmental assessment to determine the type and extent of contamination. The second phase (Feasibility Study/Remedial Response Plan) includes a risk assessment to determine the level of risk to the environment and to the public, and the development of a plan of corrective actions. The third phase (Implementation of Remedial Response Plan) consists of performing the corrective action and restorative work specified in the remedial response plan.

The new pump station has been operable since the fall of 1997 and final site restoration was performed in the spring of 1999. Construction of the suction pipeline (Section 99) was completed in July 1998. The only remaining work is remediation of contamination on-site.

Scope

Sub-phase	Scope
Pump Upgrade, and Spot Pond Engine 29	Upgrade of existing units pumping to the Bear Hill Covered Reservoir. Installation of a new electric drive for Pump 29 to improve station reliability during the renovation period. Removal of a 24-inch check valve from the discharge line and replacement of a pipe spool piece.
Electrical Upgrade	Upgrade of electrical system to provide power for the 300-horse power and 500-horse power motors added for pumping to Bear Hill Reservoir. Included site preparation, masonry work, and installation of new conduits and control panels.
Construction Diesel Exhaust	Design and replacement of the exhaust systems on existing diesel pumps.
Design/CS/RI Pump Station	Design, construction services, and resident inspection for rehabilitation of the pump station including installation of new pump units and emergency generators, replacement of building systems, and building and site refurbishment.
Construction Pump Station Phase 1	Immediate rehabilitation of the pump station building including space for a new control facility, and refurbishing of five existing pumps, three diesel engines, and other ancillary equipment to maintain operations until completion of new equipment installation.
Construction Pump Station Phase 2	Installation of eight new pump units and two emergency generators, replacement of all mechanical and electrical systems, and complete building and site refurbishment.
Hydraulic Transient Analysis	Sizing and locating of air release and vacuum valves at points along distribution lines 13 and 29 to relieve potentially damaging pressures occurring during winter hammer.
Oil Control Plan	Development and implementation of an oil control plan to eliminate the sources of contamination in the floor drainage.
Drain Line Cleaning	Cleaning of floor drains to eliminate oil drainage into Spot Pond.
Study, Design/CS/RI, Construction Suction Pipe	Design and construction of a 14,500 linear feet, 60- to 72-inch diameter suction pipeline to pump water from the grade line of the City Tunnel to the Northern High Service System.
Construction Tudor Barn	Payment to the MDC for the restoration of a Tudor Barn located at the pump station site.
Woodland Road Pavement Improvements	Road stabilization along Woodland Road (north of Ravine Road), Pond Street, and South Street that were affected by the Gillis Pump Station and Fells Covered Storage projects
Pavement Highland Ave	Repaving Highland Avenue
Construction Rehab Discharge	Design and rehabilitation of 7,525 linear feet of 36-inch main for Sections 13 and 64.
Construction Sewer Pump Station	Construction of a 1,500 linear feet sanitary sewer conforming to DEP requirements to be constructed to facilitate abandonment of the septic system that serves the pump station and adjacent Botume House

Sub-phase	Scope
Environmental Assessment, Remediation Plan, and Remedial Action Plan	Determination of the nature and extent of contamination at the pump station and brook area, risk assessment to determine the level of risk to the environment and to the public, and development and implementation of a remedial action plan.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$34,146	$33,324	$822	$166	$49	$92	$635	$95	$0

Project Status 11/05	97.6%	Status as % is approximation based on project budget and expenditures. Project is functionally complete with only environmental remediation action remaining.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$34,146	$34,146	-	Sep-07	Sep-07	-	$1,038	$1,038	-

Explanation of Changes

- **None.**

CEB Impact: No additional impacts expected at this time.

S. 713 Spot Pond Supply Mains - Rehabilitation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To improve the condition, carrying capacity, and valve operability of the two long supply mains which extend north from Chestnut Hill to Spot Pond. These cast-iron mains, which are 100 years old, deliver water to the Northern Low Service System. Improvements involve a combination of replacement, cleaning and lining, and valve replacement depending on specific site conditions and needs. Improving these supply lines will reduce the need to take water from the City Tunnel to augment the Low Service System and improve the quality of water delivered to eight user communities. This project also includes the rehabilitation of approximately 10,000 feet of 36-inch steel, and 30-inch cast iron mains on Section 66 and Mystic Main 30.

Project History and Background

The East and West Spot Pond Supply Mains (SPSMs) serve the Northern Low Service Area, including portions of Brighton, East Boston, Charlestown, Chelsea, Malden, Medford, Somerville, and Everett. The lines are also designed to fully supply Cambridge during drought or emergency. The mains have historically supplied Spot Pond and subsequently the James L. Gillis Pump Station (formerly the Spot Pond Pump Station). With the closure of Spot Pond as a water supply source and the construction of the Spot Pond Suction Main (Section 99) as the primary supply to the Gillis Pump Station, the Spot Pond Supply Mains will serve as distribution mains to the eight communities and will provide emergency backup supply to the Gillis Pump Station. In the event Section 99 is out of service, the station would take suction directly from these mains, rather than from Spot Pond.

The East Spot Pond Supply Main consists of 61,000 linear feet of mostly 48-inch diameter pipeline which passes through Brookline, Boston, Cambridge, Somerville, Medford, Malden, Melrose, and Stoneham. The West Spot Pond Supply Main consists of 53,000 linear feet of 48-inch and 60-inch diameter pipeline that passes through Brookline, Boston, Cambridge, Somerville, Medford, and Stoneham. Portions of the SPSMs in Brookline, primarily on Beacon Street, are being rehabilitated under the Boston Low Service Pipe and Valve Rehabilitation project.

The carrying capacities of the 100-year old mains have been significantly reduced as a result of the build up of rust deposits (tubercules) and other matter along the pipeline walls, which also contributes to water quality deterioration in the Low Service System. The ability of the mains to withstand service pressures is drastically reduced in some areas due to exterior corrosion of pipes. In addition, inoperable or poorly operating valves along the line make isolation and re-routing of flow difficult to implement.

Section 67 is included in this project because it has significant operational and geographic overlaps with the East and West Mains at Section 11 in Porter Square, Cambridge and Section 4 in Union Square, Somerville. Section 67 consists of 6,900 linear feet of 48-inch diameter steel pipeline constructed in 1949. Rehabilitation of this main is needed because of the age of the pipe and the critical role of the main in providing flow to the East and West mains during shut downs for maintenance and construction.

For the same reasons rehabilitation of approximately 1,200 linear feet of Section 57 has been transferred to this project. Section 57 also serves as an interconnection between the East and West mains, and is in need of replacement. The majority of Section 57 rehabilitation is not currently budgeted but will be evaluated during water distribution system master planning and prioritized accordingly in a future CIP.

Internal lining of these mains to restore capacity and improve structural integrity, will ensure adequate peak and emergency flow to user communities, alleviate water quality deterioration, and provide emergency back-up capacity for the Northern High System via the Gillis Pump Station. MWRA's planned reconfiguration of the water distribution system provides for the Spot Pond Supply Mains to be fed from the City Tunnel Extension only during periods of peak demand, thus conserving tunnel supply for High Service use. Supply to the Low Service System will be provided by Weston Aqueduct Supply Mains 1 and 2, which will be connected to the new Loring Road

covered storage tanks in Weston that have been constructed as part of MWRA's MetroWest Water Supply Tunnel project. A portion of the supply will be from WASM 4, which connects to the East and West Spot Pond Supply Mains at Western Avenue and North Harvard Avenue and on Memorial Drive at Magazine Beach in Cambridge.

Completion of this project will facilitate consolidation of the Boston Low and Northern Low Service Areas into one service area and will improve pressures to the far reaches of the Northern High Service Area by reducing the demand burden on the City Tunnel Extension. The quality of water delivered to eight communities will improve as a result of the upgrade of 18 miles of deteriorated pipe.

Scope

Sub-phase	Scope
Preliminary Design and Design/CA/RI	Preliminary design, design, construction administration, and resident inspection of the rehabilitation or replacement of Sections 3, 4, 5, 6, 7, 9, 10, 11, 12, 67, and portions of Sections 2, 16W, and 57.
North (Medford/ Melrose) Construction-CP1	Cleaning and lining of 20,300 feet of 48-inch and 60-inch pipe in Medford, Malden, Melrose, and Stoneham (Sections 7 and 12). Replacement of valves and reconfiguration of blow-off valves to eliminate cross-connections with storm drains or sewers. Elimination of connection with Spot Pond (considered a cross connection with a non-potable water source), and configuration to allow emergency reconnection if needed.
Middle (Medford/ Somerville) Construction – CP2	Cleaning and lining of 24,100 feet of the East Spot Pond Main (48-inch pipe) in Somerville and Malden (Sections 4, 5, 6, and 7) including reinforcement at rail and MBTA crossings; cleaning and lining of 14,000 feet of the West Spot Pond Main (48-inch pipe) in Medford and Somerville; and some steel pipe replacement on the Mystic Valley Parkway (800 feet, 60-inch, Section 16W), and Middlesex Fells Parkway (700 feet, 48-inch, Section **6** on land). Cleaning and lining on Somerville Avenue (Section 67, 6,500 feet of 48-inch steel). Replacement of valves throughout the pipelines, including in Medford Square at the interconnections of Sections 12, 16W, and 57.
South (Cambridge/ Boston) CA/RI Construction – CP3	Cleaning and lining of 11,700 linear feet of the East Spot Pond Main in Charles River Crossing and Cambridge (48-inch, Sections 3 and 4) including valve replacement, and cleaning and lining of 16,800 linear feet of the West Spot Pond Main in Harvard St., Franklin St., No. Harvard Avenue, and Massachusetts Avenue (48-inch, Sections 9 and 11 11, Brighton and Cambridge).
Early Valve Replacement Contract	Installation of nine main line valves and associated blow-off valves, as well as permanent by-pass piping to meters and air valves. Also includes removal of pipe at three locations for materials strength testing.
Construction 4 – Trusses	Section 4 Bridge Trusses spanning the Fitchburg Main Line and the New Hampshire-Maine Line are in need of repair, painting and replacement, respectively.
Early Valve Equipment Purchase	Purchase Order for 12 valves that were installed from 1998-1999 as a precursor to the cleaning and lining contracts.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$62,180	$40,730	$21,450	$7,298	$9,344	$12,852	$6,233	$1,612	$754

Project Status 11/05	72.3%	Status as % is approximation based on project budget and expenditures. The final phases of work under CP-2 are wrapping up in Somerville along Walnut Street, Fellsway West and Route 28. In CP-3 work is continuing on Section 9 in Franklin Street and Harvard Avenue in Brighton. Only Section 4 in Cambridge remains.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$60,952	$62,180	$1,228	Dec-09	Dec-09	-	$36,003	$37,339	$1,336

Explanation of Changes

- Cost – Change orders and expected change orders for South and Middle sections.
- FY04 – FY08 Spending – See above budget changes.

CEB Impact: None identified at this time.

S. 723 Northern Low Service Rehabilitation - Section 8

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To improve the condition and reliability of an unlined pipeline serving a portion of the Northern Low System. This pipeline, Section 8, has reduced carrying capacity because of rust build-up, and has experienced leaks at above average rates. Improvements will consist primarily of replacement of a portion of Section 8 and cleaning, lining, and valve repairs along nearly 1.5 miles of water main. Rehabilitation of Sections 37 and 46 will improve the service to East Boston and will allow the shutdown of Section 8 for rehabilitation. The construction of Section 97A will provide needed redundancy to East Boston via the Northern High System.

Project History and Background

Section 8 was installed between 1897 and 1913 and serves Malden, Everett, Chelsea, and East Boston. The Section 8 pipeline is currently functioning at approximately 45% of its original capacity (C-value: 60) due to the build up of rust deposits and other matter along the pipeline walls. Excavations for the installation of new valves along portions of Section 8 have indicated possible severe external corrosion on the pipe wall, which could affect the structural stability of the pipeline.

Before rehabilitating Section 8, the distribution system supplying East Boston must be strengthened. The existing Sections 37 and 46, located in Chelsea, are older 36-inch cast iron mains. These two pipe sections connect between Section 57, previously rehabilitated, and the two Chelsea River crossings to East Boston at Sections 8 and 38. It is anticipated that these two pipelines will need cleaning and a cement mortar lining. Section 97A, a new 20-inch pipeline will provide redundancy to East Boston via Northern High System. The pipeline will connect to a rehabilitated Meter 99 in East Boston and to the Boston low-pressure system through a new pressure-reducing valve.

Scope

Sub-phase	Scope
Survey, Design CA/RI and Construction – Section 8	Cleaning and cement mortar lining of the pipeline interior, replacement of all defective and inoperable valves, and the addition of new valves for 7,500 linear feet of 48-inch pipe on Section 8 in Malden and Everett. Replacement work consists of replacing 9,722 feet of 42-inch pipeline with new 36-inch ductile iron main and replacement of blow-off connections from Second Street in Everett to the Mystic River Bridge in Chelsea.
Rehab Sections 37, 38, and 46 Chelsea, East Boston Construction	Rehabilitation of approximately 3,550 linear feet of 36-inch cast iron main (Section 37) and approximately 2,500 linear feet of 36-inch cast iron main (Section 46). Both sections are located in Chelsea and are critical to the supply of water to East Boston. Section 38, the 36-inch ductile iron pipeline under the Chelsea River, is assumed to not need rehabilitation.
Section 97A Construction	Installation of approximately 2,000 linear feet of 20-inch water main, a rehabilitated metering station, and a new pressure-reducing valve. This new work will be part of the Northern High System and add redundancy to East Boston, including Logan Airport.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$17,140	$0	$17,140	$0	$0	$0	$30	$1,486	$15,624

Project Status 11/05	0.0%	Status as % is approximation based on project budget and expenditures. Project Survey schedule to start in FY07. Section 97Aconstruction will start in August 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$14,581	$17,140	$2,559	Aug-11	Aug-11	-	$1,262	$1,516	$254

Explanation of Changes

- Budget - Increase due to updated inflation based on most current ENR index. Also added funding for Section 97A.
- FY04 – FY08 Spending - Some increased budget spending to occur during the CAP period.

CEB Impact: None identified at this time.

S. 702 New Connecting Mains - Shaft 7 to WASM 3

Project Purpose and Benefits

☑ *Contributes to improved public health *
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To provide redundancy and improve the reliability of WASM 3; provide hydraulic looping and redundancy, enable Intermediate High Sections 59 and 60 to be taken off-line for rehabilitation, and improve water quality by reducing the length of unlined cast iron water mains in the MWRA system. Completion of this project will help provide the basis for a strong hydraulic network of piping among WASM 3, WASM 4, the City Tunnel, and the possible future Metropolitan Tunnel Loop. The future conversion of Sections 23 and 24 to the Intermediate High Service system to create a unified Intermediate High Service area connecting the Belmont and Commonwealth Avenue pump stations will also be possible. This project will involve installation of 18,750 linear feet of new pipeline, and rehabilitation of 59,740 linear feet of pipeline.

Project History and Background

WASM 3 is a 56- to 60-inch diameter steel main installed in 1926, connected to the Hultman Aqueduct at one end and the City Tunnel at its other end. It extends from Weston near Shaft 5 to Somerville at Shaft 9. Most of its flow comes from Shaft 5, with peak flow of 57 million gallons per day. A lesser amount enters the main from Shaft 9. Upon completion of the Hultman Aqueduct and its interconnection to the Weston Aqueduct Terminal Chamber in 1941, WASM 3 became part of the High Service system. There are no connecting mains along the length of this 11-mile pipeline, and no other means available to adequately supply the nine communities it serves.

WASM 3 serves communities northwest of Boston and is the sole source of supply to the Northern Extra High Service Area (Bedford, Lexington, Waltham, Arlington, and Winchester) and the Intermediate High Service Area (Belmont, Arlington, and Watertown). It also supplies a portion of the Northern High Service Area (Waltham, Watertown, Belmont, Arlington, Medford, and Somerville), and is a means of supplying the Spot Pond Reservoir. WASM 3 serves a population of about 238,000.

A break almost anywhere on this pipeline would result in severe service disruptions in Waltham, Watertown, Arlington, Lexington, Bedford, Winchester, and Belmont. Virtually no water would reach Waltham if a break were to occur at the southern end of the pipeline; water normally supplied through the Shaft 5 connection would be forced through the Shaft 9 connection, increasing flows and reducing hydraulic grade lines in both WASM 3 and the City Tunnel. The lack of redundancy also makes routine cleaning and lining of the 74-year old pipeline impossible. The need for maintenance is indicated by a significant number of leaks, particularly on the most vulnerable southern section, which are the result of corrosion pitting through the pipe wall, as well as by the reduced carrying capacity of the line.

Completion of this project will facilitate conveyance of high service water from WASM 4 to WASM 3 and improve the capability to convey water from Shaft 9 of the City Tunnel to WASM 3. This will be accomplished by rehabilitating or replacing existing dead-end mains from the City Tunnel and WASM 3, and connecting these mains by constructing new pipelines, such that transmission loops will be formed between the City Tunnel and WASM 3. The rehabilitation of WASM 4 is also closely related to this project, because WASM 4 will be interconnected to the new connecting mains of the Shaft 7 to WASM 3 project. WASM 4, which can be operated on high or low service, runs from Shaft 5 to Shaft 8, midway between the City Tunnel and WASM 3. Using WASM 4 as a supply means for the new connecting mains will result in cost savings by delaying or eliminating the need for a new pipeline south of WASM 4 to a Shaft 7 connection. This project has evolved from the Shaft 7 to WASM 3 Connecting Mains project to the WASM 3 and WASM 4 Connecting Mains project.

Scope

Sub-phase	Scope
Watertown MOU	Payment to the City of Watertown to fund a portion of its Galen Street project to replace an existing 10-inch diameter pipeline with a new 12-inch diameter water main.
Routing Study	Identification of alternatives to determine the optimum approach for providing additional strong connections to WASM 3.
Design/CS/RI-DP1	Design, construction administration and residential inspection services for CP-1.
Revised North Segment (CP1)	Installation of 13,300 linear feet of new 48-inch connecting main from WASM 4 to WASM 3.
Design/CS/RI DP2/4 Meter 120	Design, construction administration and residential inspection services for CP-2/4 Meter 120.
Design and Construction CP2 C&L Sections 59 & 60	Cleaning and lining of 16,400 linear feet of 20-inch diameter pipe on Sections 59 and 60 from Section 25 in Watertown to Meter 121 in Arlington for Sections 23, 24, and 47 (Intermediate High Segment).
South Segment CP3	Installation of 650 linear feet of 36-inch pipe from Shaft 7 to Section 47. Cleaning and lining of 8,290 linear feet of 20-inch pipe (Section 24) from Meter 120 to WASM 4, 1,957 linear feet of 36-inch (Section 23) and 12,943 linear feet of 20-inch (Sections 24 and 47) pipe, and 2,950 linear feet of 20-inch pipe along Section 24 from WASM 4 to Meter 40.
NE Segment CP5	Rehabilitation of 17,200 linear feet of Sections 18, 50, and 51 for the Northeast Segment.
Replacement of Section 25 Design and Construction	Replacement of existing section 25 (approximately 4,800 linear feet of existing 16" pipe) with a new pipeline.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$51,564	$3,744	$47,819	$355	$339	$1,181	$6,112	$18,012	$22,514

Project Status 11/05	7.4%	Status as % is approximation based on project budget and expenditures. Watertown MOU and Routing Study are complete and design work is in progress. Construction, which includes multiple segments, begins in March 2007 (CP1-A).

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$49,267	$51,564	$2,297	Sep-14	Sep-14	-	$13,716	$25,999	$12,283

Explanation of Changes

- Budget – Updated inflation to account for more current ENR index for North Segment and new design work for Section 59 & 60.
- FY04 – FY08 Spending – Accelerated spending during the CAP period.

CEB Impact: None identified at this time.

S. 692 Northern High Service – Section 27 Improvements

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To rehabilitate/replace a segment of 107-year old pipe in Lynn which suffers from poor hydraulic performance and frequent leakage. Rehabilitate/replacement of approximately 7,200 linear feet of pipeline will improve service to the communities north of Lynn.

Project History and Background

Section 27 is a 12–20 inch diameter cast iron main installed in 1898 that serves the communities north of Lynn. The main has become severely corroded. As a result of this deterioration, various major leaks have occurred since 1966. Because the main runs under major thoroughfares in Lynn, repair of emergency leaks is disruptive and costly. Appropriate corrosion control methods will be employed on the pipeline to minimize corrosion potential in Section 27. During preliminary design, an evaluation determined MWRA should abandon an adjacent pipeline, Section 35.

Scope

Sub-phase	Scope
Construction Sections 27	Rehabilitation/replacement of 7,200 linear feet of pipeline to replace severely corroded pipe.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$2,701	$124	$2,577	$0	$0	$1	$1	$1	$2,576

Project Status 11/05	4.6%	Status as % is approximation based on project budget and expenditures. Construction/rehab of Section 27 schedule to begin in Sept 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$2,554	$2,701	$147	Mar-15	Mar-15	-	$3	$3	-

Explanation of Changes

- Increases due to inflation adjustment on unawarded contracts to reflect more current ENR index.

CEB Impact: None identified at this time.

S. 693 Northern High Service - Revere and Malden Pipeline Improvements

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To improve the delivery capabilities of major distribution lines serving the Northern High System. The existing pipelines are inadequate and suffer from extensive corrosion and leakage. Replacement, rehabilitation, and/or reinforcement will provide a strong and reliable means to convey water from the City Tunnel Extension to communities in the northern and eastern portions of the Northern High Service Area.

Project History and Background

The southeast corner of the Northern High Service Area has experienced pressure deficiencies because of undersized pipes and extensive pipeline corrosion. The corrosion problems have led to numerous leaks and the pressure deficiencies cause fire-fighting difficulties. These deficiencies particularly affect Malden, Revere, Lynn, Winthrop, Deer Island, East Boston, Saugus, Nahant, Peabody, Marblehead, and Swampscott. To correct these problems, MWRA is implementing a series of pipeline improvements.

This project includes installation of pipeline on Sections 97, 97A, 53A, and 68 in Revere and Section 53 in Malden; rehabilitation of Sections 53, and 55 in Revere; and installation of control valves to improve water pressure. All the work for this project, with the exception of the design and construction of Section 53, Revere Section 53A, Section 68 and the Shaft 9A-D Extension is complete. Completion of this construction will improve the pressure and flow of water conveyed to the Northern High Service Area.

A hydraulic study of the distribution system recommended that MWRA install a new pipeline in Revere, beginning at the Everett/Chelsea/Revere border and extending through Revere to the East Boston border. This new pipeline runs parallel with existing pipelines and carries a large portion of the flow formerly carried by the existing system, thereby increasing water pressure and flow to Revere, East Boston, Winthrop, and Deer Island, particularly during periods of high demand. Installation of new control valves was required to regulate water pressure and fill the Winthrop standpipe. The original control valves between Winthrop pipelines and MWRA transmission mains were inadequate. Fluctuations in pressure threatened to rupture the town's pipelines. More efficient valves were required to eliminate the danger. Flow tests performed on Sections 32 and 55 of the existing Revere and Winthrop pipeline revealed that these sections had severe flow problems. The pipeline was only able to carry a fraction of its designed capacity because of internal corrosion. Cleaning and lining the pipeline restored flow capacity.

Section 53 in Malden and Revere was an 18,900-feet long, 30-inch steel pipeline, exceeding 60 years of age. Workers dug four test pits to determine the condition of this pipeline and uncovered 18 holes in the pipe. Investigations into recent failures revealed severe corrosion through the pipe wall in several locations. Replacement of the Malden portion of Section 53 with a new 48-inch main has been completed. The Revere portion of Section 53 will be rehabilitated and/or replaced as necessary. A study was completed during the preliminary design phase of the Section 53 Revere that determined the rehabilitation of Section 26 should be deferred. In addition to feeding into the new 48-inch Saugus/Lynn pipeline, this pipeline will play an important role in the supply network for Deer Island. Section 53A, an old 24-inch pipeline, is used to connect Section 53 to Shaft 9A of the City Tunnel. It is undersized for this purpose and is a severe restriction. A new 3,000-feet, 60-inch diameter pipeline is needed to reinforce Section 53A. An 850-feet portion of Section 68 interconnects Section 53 with the new Saugus/Lynn pipeline. This section needs to be reinforced with 850 feet of 48-inch pipeline. The Shaft 9A-D Extension will provide a more reliable connector to the Section 99 pipeline that serves as the suction line to the Gillis Pump Station.

Construction of the Malden Section 53 and Revere Beach pipelines was substantially completed in September and October 1994 respectively.

Scope

Sub-phase	Scope
Design/CS/RI – Revere/Malden	Design, construction services, and resident inspection for Section 53 in Malden and Sections 97 and 97A in Revere.
Construction Revere Beach	Installation of 5,491 linear feet of 36-inch pipeline and 10,111 linear feet of 30-inch pipeline on Section 97, as well as 3,872 linear feet of 24-inch pipeline, and 1,350 linear feet of 20-inch pipeline on Section 97A in the vicinity of Revere Beach Parkway.
Construction Malden Section 53	Installation of 11,907 feet of 48-inch diameter pipeline in Malden on Section 53.
Construction Linden Square	Construction and construction administration of a 1,000 linear feet segment of Section 53 in the Linden Square area of Malden. The Massachusetts Highway Dept constructed this section as part of its roadway reconstruction project around Linden Square.
Construction Revere Section 53	Rehabilitation of 4,500 linear feet of 30-inch pipe in Revere on Section 53 and replacement of 1,500 linear feet under Route 1 in Revere.
Construction Road Restoration	Design, construction administration, and construction of the full road restoration to ensure a stable road surface without cracking on Eastern Avenue in Malden in compliance with the requirements of the Massachusetts Architectural Access Board. The City of Malden will do this work.
Construction Control Valves	Installation of control valves needed to regulate water pressure and fill the Winthrop standpipe.
Construction DI Pipeline Cleaning & Lining (C&L)	Design and cleaning and lining of the 2,000 linear feet, 8-inch diameter water supply main to Deer Island.
Construction – Winthrop C&L	Rehabilitation of 7,900 linear feet of 16-inch diameter pipe on Section 32 and 20-inch diameter pipe on Section 55 in Revere and Winthrop.
Construction 68 & 53A	Construction of 850 linear feet of new 48-inch pipe (Section 68) and 3,000 linear feet of new 60-inch pipe (Section 53A) in Malden.
Shaft 9A-D Extension Construction	Construction of approximately 2,000 linear feet of new pipeline in Malden connecting the Shaft 9A-D line to Section 99.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$32,052	$23,854	$8,198	$0	$0	$1,115	$1,411	$210	$5,462

Project Status 11/05	74.4%	Status as % is approximation based on project budget and expenditures. Revere Beach, Malden Section 53 and Linden Square construction complete. Revere Section 53 and Sections 68 and 53A to be completed in FY08 and FY15, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$32,917	$32,052	($865)	Nov-15	Nov-15	-	$3,632	$2,736	($896)

Explanation of Changes

- Cost – Revised cost estimate for Section 53.
- FY04 – FY08 Spending – See budget changes above.

CEB Impact: None identified at this time.

S. 731 Lynnfield Pipeline

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Improves system operability and reliability*

To meet high demands in Lynnfield by installing approximately 7,000 linear feet of 16 inch, or larger, water main. The Lynnfield Water District serves a portion of the Town of Lynnfield. The community meter is served by an 8-inch main, approximately 7,000 feet long. The main is undersized and its capacity is inadequate to meet high water demands. Rehabilitation of the main will not increase the capacity sufficiently.

Project History and Background

MWRA supplies Lynnfield Water District via Meter 169 located adjacent to Route 1 at the Saugus/Lynnfield town line. An eight-inch cast iron main, approximately 7,000 feet long, connects Meter 169 to Section 70 in Saugus. This main does not have the hydraulic capacity to serve the meter during high demand periods. This project includes construction of a supplemental main from Section 70 to the meter, possibly parallel to the existing main which, for much of its length, is located along Route 1. The scope of work will include an analysis of pipeline route alternatives to minimize work in heavily traveled Route 1.

Scope

Sub-phase	Change/Explanation
Design and Construction	Replacement of approximately 7,000 linear feet of 8-inch main.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$4,000	$0	$4,000	$0	0	$150	$500	$2,250	$1,100

Project Status 11/05	0.0%	Status as % is approximation based on project budget and expenditures. Expect in-house design to commence in April 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$4,000	$4,000	-	Nov-08	Nov-08	-	$3,350	$2,900	($450)

Explanation of Changes

- FY04 – FY08 Spending – Some spending shifted out of the CAP period.

CEB Impact: None identified at this time.

S. 708 Northern Extra High Service - New Pipelines

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To improve hydraulic service and reliability for major portions of the Northern Extra High System. Existing lines are undersized and frequently experience pressure problems. Improvements will include construction of two new pipe segments and rehabilitation of an existing main.

Project History and Background

Sections 34, 36, 45, 63, and 83 provide service to the Northern Extra High (NEH) communities of Belmont, Arlington, Waltham, Wakefield, and Bedford. The existing pipelines are not large enough to meet maximum day plus fire flow service goals. Construction of new larger pipelines will improve reliability, pressure, and flows, which will result in better fire protection and reduced pumping costs. Section 34, which is an undersized 1,532 linear feet 12-inch diameter cast iron main installed in 1911, may be the source of water quality problems. The pipe is a key component of the NEH Service System and provides service between Brattle Court Pump Station and the distribution system. Section 36 is an undersized 5,136 linear feet 16-inch cast iron main installed in 1911 that serves as a critical portion of the discharge pipe system from the Brattle Court Pump Station. Section 45 is a 16-inch cast iron main 3,374 linear feet long that was installed in 1920. A portion of Section 45 was replaced in an earlier phase of this project. The current phase includes rehabilitation of the remaining portion of the pipeline.

Scope

Sub-phase	Scope
Design/CA/RI and Construction – Sections 45, 63, and 83	Replacement of approximately 2,600 liner feet of Section 45 with 24-inch diameter pipe extending from the connection point at Meter 47 to Section 82 on Park Street at the intersection of Paul Revere Road in Arlington; installation of about 2,100 liner feet of new 24-inch pipeline, parallel to a portion of Section 83, starting from Meter 182 and proceeding to the intersection of Waltham Street (in Lexington and part of Waltham) and Concord Ave (in Lexington). Rehabilitation of Section 63, consisting of about 3,400 linear feet of 20-inch pipeline connecting Section 63 to Meter 136.
Construction Sections 34, 36, 45	Construction of approximately 6,700 linear feet of new 20-inch pipe (Sections 34 & 36) and rehabilitation of approximately 3,400 linear feet of existing 16-inch cast iron main.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$8,746	$3,632	$5,114	$69		$1	$2	$1	$5,111

Project Status 11/05	41.5%	Status as % is approximation based on project budget and expenditures. In 2001 a portion of Section 45 was replaced; Section 83 was reinforced with a parallel main; and Section 63 was rehabilitated. In-house design of Sections 34, 36 and 45 followed by construction is scheduled to start after FY13.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$8,458	$8,746	$288	Nov-15	Nov-15	-	$104	$73	($32)

Explanation of Changes

- Budget - Increases due to inflation adjustment on unawarded contracts to reflect more current ENR index.

CEB Impact: None identified at this time.

S. 725 Hydraulic Model Update

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *Extends current asset life*

To bring MWRA hydraulic and water quality modeling capabilities up to modern standards, and to integrate the water quality model with MWRA's s GIS, SCADA, and Telog systems. Completion of the project will also improve the use of the existing hydraulic model to manage system operations by making screen displays geographically accurate, standardizing model facility naming to coordinate with GIS, and allowing simulations to be conducted to predict changes to disinfection residual levels in the water as it moves through the MWRA system. The project builds on the foundation of the existing model and incorporates improvements already implemented in the GIS system.

Project History and Background

The MWRA Water System Model Study completed in 1991 by Camp, Dresser and McKee included the development of a computer based hydraulic model of the MWRA water system. Transmission and distribution system piping, pump stations, storage facilities, revenue meters, pressure reducing valves, and other system appurtenances were incorporated into the model. The model was developed using software written by Stoner Associates, Inc.

In working towards an updated model, staff have incorporated capital improvements to the waterworks system, updated community demand information using data from the telog data collection system, and updated the model operating environment. The operating system platform was changed from a VAX/VMS environment to a desktop PC Windows operating system to make the interface more user friendly and to make the model more accessible to staff. In addition to hardware and software improvements, current model data files need to be updated and enhanced. Some of these enhancements include improving geographic accuracy, adding the ability to separate the entire water system into smaller subset models (e.g., by pressure zone), implementing changes to the system water quality model, and efficiently updating the system by creating links to other databases. This project also includes development and implementation of field tests to collect system data used to calibrate the computer model and verify its accuracy.

Scope

Sub-phase	Scope
Hydraulic Model Update	Revisions and upgrades to the computer based model of MWRA's water system.
Model Enhancement Support Services	Development of software tools for reviewing and updating hydraulic model data.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$686	$598	$88	$0	$0	$88	$0	$0	$0

Project Status 11/05	87.2%	Status as % is approximation based on project budget and expenditures. Hydraulic Model Update complete with only model enhancements remaining active with completion expected by end of FY05.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$686	$686	-	Jun 06	Jun 06	-	$88	$89	-

Explanation of Changes

- **None.**

CEB Impact: None identified at this time.

S. 753 Central Monitoring System

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Improves system operability and reliability*
☑ *Extends current asset life*
☑ *Results in a net reduction in operating costs*

To provide a modern centralized system for monitoring, coordinating, and controlling critical waterworks functions. Many existing MWRA facilities are monitored and operated using obsolete methods and equipment, which can hinder emergency response capabilities and prevent coordinated system operation. Two operations control centers are already operational, and various field facilities have been equipped with telemetry and communications equipment as part of this project.

Project History and Background

MWRA has been converting to system-wide remote monitoring and control of essentially all hydraulic and hydroelectric operations. The original instrumentation used to measure operating parameters was incomplete, old, and in poor condition. In many cases necessary instrumentation did not exist. The system also lacked telemetry to provide centralized and immediate information on system performance, and the ability to remotely intervene when malfunctions occurred. Without telemetry, operating decisions had to be delayed until field personnel were dispatched to collect measurements. This was a cumbersome and undesirable mode of operation, particularly in emergency situations.

The lack of flow measurement within the water delivery system also impeded identification of sources of unmetered water. When fully implemented, the central monitoring system will generate instantaneous data on water flow and pressure in 18 subsystems beginning with the supply sources and ending at the delivery points to user communities. The data will assist operations staff in detecting and pinpointing leaks in the system. The response time for leak repair work can then be lessened, resulting in significant savings of water and reduction in potential MWRA liability for public safety and property damage.

The central monitoring project has grown from the initial automation of the Reservoir Road Pump Station to include eight other pump stations. Monitoring and control of water treatment facilities has expanded to include the Interim Corrosion Control Facility in Marlborough, the Cosgrove Disinfection Facility, the Norumbega Temporary Disinfection Facility and the Ware Disinfection Facility. In addition, water quality is monitored at seven locations from two Operations Control Centers. Real time SCADA monitoring of Telog data is being established with 150 sites currently active. Operation control centers (OCCs) at the MWRA Chelsea and Clinton facilities provide remote monitoring and control of all the SCADA facilities. Also, as part of its Integrated Water Supply Improvement Program, MWRA is building several new and upgraded facilities. These include the Nash Hill Covered Storage facility and the Loring Road Covered Storage facility, which are complete, and the Walnut Hill Water Treatment Plant, the MetroWest Water Supply Tunnel, , and the Norumbega Covered Storage facility, which are under construction. The existing system-wide backbone microwave communications network has been improved to connect these new facilities to the waterworks communications system.

Scope

Sub-phase	Scope
Study	Study to determine the implementation phases.
Design	Design of the replacement and rehabilitation of 34 existing master meter sites, 22 new master meter sites, 15 western revenue meter sites, 28 reservoir level instrumentation sites, ten pumping stations, eight pressure regulator control sites, four major throttle valve sites, six chemical feed sites, four hydroelectric sites, five weather stations, five sluice gate control sites, one stream gauging station, and other facilities.

Sub-phase	Scope
Communications Structures	Installation of two radio towers, five antennas, one satellite dish, and an equipment shelter.
CS/Start-Up Services	Construction and startup services for the metropolitan Operations Control Center, as well as metering and monitoring construction.
Equipment Pre-Purchase	Purchase of instrumentation equipment, mechanical equipment, and new master meters.
Construction 1 – Reservoir Road and Cosgrove Pilots	Purchase and installation of equipment to automate the Reservoir Road Pump Station and an aqueduct monitoring system for use by the Cosgrove Intake and Shaft 4 operators**.** MWRA staff installed the equipment.
SCADA Implementation	Purchase of Supervisory Control and Data Acquisition System (SCADA) equipment for monitoring and metering sites and pressure reducing valve sites. MWRA staff will install most of this equipment. Connections of SCADA equipment to local utilities.
Microwave Equipment	Purchase of services and equipment necessary to allow MWRA to convert from analog to digital communications to continue to utilize the Commonwealth's Interagency Microwave System.
Construction – Operations Center	Construction of a 5,000 square feet center including an environmentally controlled computer room, a printer room, a control room, office space, and sanitary facilities in Chestnut Hill.
System Wide Backbone C.P. Construction– Monitoring & Control Communications Network	Improvement of the existing Waterworks system wide backbone including upgrades of microwave antennas at MDC Hill and Bellevue water tank and provision of new microwave antennas at five facilities.
Study and Design –Waterworks Monitoring & Control Communications Network	Provision of microwave antennas and radio equipment at twelve facilities.
Microwave Communication for Waterworks Facilities	Furnish and install seventeen microwave antennas (dishes), three 3-legged, 90- to 100-foot towers, one unpowered 80-foot steel monopole, and two prefabricated concrete shelters to house radio equipment with associated racks, cabinets and wiring.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$16,143	$15,571	$572	$598	$115	$182	$100	$150	$140

Project Status 11/05	96.7%	Status as % is approximation based on project budget and expenditures. All contracts are complete except for SCADA Implementation work, which is scheduled for completion in June 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$16,143	$16,143	-	June 09	June 09	-	$1,148	$1,145	($3)

Explanation of Changes

- **None.**

CEB Impact: No additional impacts identified at this time.

S. 763 Distribution Systems Facilities Mapping

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Improves system operability and reliability*

To produce a complete, up-to-date set of appropriate scale maps of all underground waterworks facilities, along with a comprehensive database inventory. Existing maps were outdated and unreliable, complicating emergency response, field repairs, and planning.

Project History and Background

In 1995 MWRA did not have an adequate, updated set of maps of all of its underground waterworks facilities. Existing maps did not consistently show current conditions and were often incompatible or contradictory with MWRA databases. Engineering, operations, and emergency response were all affected by this inadequacy. Outdated maps hampered engineering because maps needed to be re-created. Field operations crews could not predict with certainty the results of valve shut-offs during repair efforts. The planning process was impaired because management did not have authoritative, consolidated data to evaluate pipe condition, age, C-Values, materials, and soil conditions. Additionally, the lack of a comprehensive understanding of the relationships between MWRA and local community pipe systems could result in service delays. The former mapping system created the possibility of incorrect actions, and in critical instances could have resulted in exacerbated property damage.

Reliable engineering records do not exist for certain sections of the distribution system. The Records Development sub-phase will create record drawings and detail records for high priority areas.

Scope

Sub-phase	Scope
Planning/Design	Creation of a complete set of 200 to 400 scale maps of the distribution system with an associated verified inventory of size, material, age, and condition of pipes.
Data Purchase	Purchase of project related data from Boston Edison.
Records Development	Automation of MWRA record drawings.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$2,305	$1,036	$1,268	$0	$7	$0	$423	$507	$338

Project Status 11/05	44.9%	Status as % is approximation based on project budget and expenditures. Records Development is the one outstanding sub-phase and has been delayed due to staffing constraints and competing project priorities. Expect NTP in July 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$2,232	$2,305	$73	Dec 08	Dec 08	-	$875	$937	$62

Explanation of Changes

- Project Cost – Inflation adjustment due to new ENR index for Records Development sub-phase.

CEB Impact: None identified at this time.

S. 765 Local Water Pipeline Assistance Program

Project Purpose and Benefit

☑ *Contributes to improved public health*
☑ *Provides environmental benefits.*

To provide loans to facilitate the rehabilitation or replacement of unlined water pipelines in MWRA communities.

Project History and Background

The Local Pipeline Assistance Program is a critical piece of MWRA's Integrated Water Supply Improvement Program. In November 1999, the Board of Directors approved an MWRA-administered program, supported for ten years through a Tax Exempt Commercial Paper (TECP) program, to make $25 million available annually in loans to MWRA communities for pipeline relining and replacement in proportion to each community's share of total unlined pipe miles. Communities are required to pay back principal for each year's loan during a ten-year time period beginning one year after the project funding is approved. To qualify for funding communities must demonstrate appropriate distribution system management practices including maintenance of a unidirectional flushing program, distribution system improvements, water quality-testing improvements, and cross connection control program development. MWRA recently increased the existing total program budget from $250,320,000 to $255,517,500 to provide funds for three new water system communities: Stoughton ($4,480,000), Reading ($710,000), and Dedham/Westwood ($7,500).

Scope

Sub-phase	Scope
Community Loans	Loans for MWRA water communities to replace and rehabilitate local water pipelines allocated based on each community's share of total unlined pipe miles.
Community Repayments	Principal repayment over a ten-year period beginning one year after origination of the loans.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	Actual FY05	FY06	FY07	FY08	Beyond FY08
$0	$71,219	($71,219)	$13,153	$12,522	$10,686	$8,461	$6,541	($96,908)

Project Status 11/05	38%	Through November 2005, $97 million in loans was distributed to member communities.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$0	$0	$0	Jun-23	Jun-23	-	$51,290	$51,363	$72

Explanation of Changes

- On December 15, 2004, the Board of Directors approved distribution of loans through FY13 (an extension of three years). The Board also adopted a policy for funding new water communities. The Proposed FY07 CIP includes $719,000 in loan funds for Reading and Dedham/Westwood, two new water communities.
- Schedule based on ten-year repayment.

CEB Impact: None.

S. 766 Waterworks Facility Asset and Pumping Facility Asset Protection

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*
☑ *Improves system operability and reliability*

To protect the investment of MWRA ratepayers by ensuring timely replacement of equipment and systems.

Project History and Background

This project was developed to ensure that MWRA maintains ongoing service while optimizing operations in its water facilities. This project in its current form addresses immediate critical facility and equipment issues. This project will eventually include five areas:

1. Equipment replacement (pumps, HVAC equipment, blowers, etc.).
2. Architectural projects (concrete corrosion, etc.).
3. Utilities projects (water, sewer, drainage, electrical wiring, heating system, etc.).
4. Support Projects (process control system upgrades, etc.).
5. Specialty Projects (instrumentation upgrades, fuel storage tanks, etc.).

While the current schedule indicates a completion date of 2017 for construction, the Waterworks Facility Asset Protection project will be ongoing throughout the useful life of the facilities.

Scope

Sub-phase	Scope
Meter Vault Manhole Retrofits	Retrofit approximately 195 meter manholes.
Design and Construction Walnut Hill Tank	Full structural analysis of the Walnut Hill Elevated Tank based on corrosion discovered. Rehab of the tank based on the structural analysis.
Waltham Pipe Bridge Replacement	Replacement of approximately 100 feet of 30-inch steel pipe over commuter rail tracks in Waltham including a bridge crossing.
Design and Construction Cosgrove Valve Seat Replacement	Replacement of isolation sluice gates at Cosgrove Intake to improve reliability for emergency shut down of Cosgrove facility and to isolate new sliding sleeve valves to facilitate preventive maintenance and any future corrective maintenance. Installation of vent structures in draft of new sliding sleeve valves to relieve vacuum conditions when valves are operating and to prevent damage to floor plates and to eliminate an unsafe and unsanitary condition.
Design of Cosgrove Turbine Isolation	Modification of means of downstream isolation of Cosgrove turbines to allow for preventive and corrective maintenance against new tailwater elevation which was increased to allow flow to Walnut Hill water treatment plant.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05 Actual	FY06	FY07	FY08	Beyond FY08
$4,050	$221	$3,828	$0	$245	$24	$1	$77	$3,726

Project Status 11/05	5.5%	Status as % is approximation based on project budget and expenditures. Waltham Pipe/Bridge Replacement project was substantially complete in September 2004. Expect Valve Seat Replacement Design in July 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$3,969	$4,050	$81	Jun-17	June 17	None	$321	$323	$2

Explanation of Changes

- Inflation adjustment on the Meter Vault Manhole Retrofit construction contract due to new ENR index.

CEB Impact: None identified at this time.

S. 933 Capital Maintenance Planning/Development

Project Purpose

To optimize the efficiency and effectiveness of MWRA maintenance practices by developing and implementing a strategic maintenance plan for MWRA assets.

Project History and Background

MWRA is responsible for rehabilitating, repairing, and maintaining the regional water and sewerage system infrastructure. Since its assumption of the ownership and operations of the water and sewer systems in 1985, MWRA has undertaken an ambitious program of capital improvements to the systems, with estimated expenditures of more than $7 billion for fiscal years 1986 through 2013.

Given the significant value and critical nature of these assets, system maintenance is of paramount importance. This project helps MWRA optimize maintenance practices by evaluating alternative approaches to equipment, infrastructure and facility maintenance, recommending a maintenance strategy, implementing a pilot program to test the recommended strategy, and developing a plan to implement the recommended strategy throughout MWRA.

In the FY01-03 CIP the Capital Maintenance Planning/Development project was part of the first phase of the Wastewater Facilities Asset Management Program (FAMP). This initial phase of FAMP consisted of evaluating maintenance strategies for equipment and systems at Deer Island, and led to the adoption of Reliability Centered Maintenance (RCM) as the maintenance strategy for Deer Island and subsequently the rest of MWRA. As a result of the decision to implement RCM throughout MWRA, the Capital Maintenance Planning/Development project was created. The remaining FAMP components, which address equipment system monitoring, Maximo improvements, and improved business practices at Deer Island, have been renamed Deer Island Treatment Plant Asset Protection.

Scope

Sub-phase	Scope
Inventory & Evaluation Phases 1 & 2	Development of a comprehensive, strategic maintenance plan for MWRA. (Completed by July 2005).
As-Needed Design	Contracts for professional design and/or technical assistance services for either wastewater or waterworks system improvement projects to supplement existing engineering resources for specialized and/or complex engineering issues.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$8,893	$2,581	$6,312	$206	$202	$718	$1,028	$740	$3,826

Project Status 11/05	29%	Status as % is approximation based on project budget and expenditures. All tasks in *Inventory & Evaluation Phases 1 & 2* are complete. Use of the first two As-Needed Design contracts started in FY2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$8,880	$8,893	$13	Jun 13	June 13	-	$2,956	$2,894	($62)

Explanation of Changes

- None.

CEB Impact:

One of the final tasks under the *Inventory & Evaluation Phases 1 & 2* contract consisted of REI/ESDC services on the *Equipment Condition Monitoring* subphase, one of the projects under S.206, *Deer Island Treatment Plant Asset Protection.* Condition Monitoring provides DITP staff with real time, non-intrusive means of evaluating equipment performance (through vibration and temperature monitoring). Maintenance tasks are then performed when the trends indicate that a problem exists, saving staff time and reducing unnecessary maintenance. Total budgetary benefits are not quantified at this time.

S. 881 Equipment Purchase

Project Purpose

To provide critical equipment for improved maintenance and operations at MWRA facilities.

Project History and Background

This project includes the purchase of large vehicles, purchase and installation of security equipment at various MWRA facilities, and purchase of an Inductively Coupled Plasma-Mass Spectrometer (ICP-MS) for MWRA's Central Laboratory. The security equipment and installation component of the project includes the design and installation of security systems at MWRA facilities. MWRA is ranking facilities and locations with respect to the critical nature of service delivery, with an emphasis on the waterworks system. This ranking will frame the extent and scheduling of the security improvements for each specific site.

Scope

Sub-phase	Scope
Security Equipment & Installation	Design and installation of security systems at various MWRA facilities and sites.
ICP-MS Lab Testing Equipment	Purchase of Inductively Coupled Plasma – Mass Spectrometer to replace a 14-year-old instrument and expand the laboratory's high sensitivity metals testing capacity.
Vehicles:	
TV Inspection Truck	Purchase of a replacement TV inspection vehicle (WRA36) in June 2001.
Backhoe (Excavator)	Purchase in June 2003 of excavator (WRA310) to support maintenance staff.
Vactor Truck	Purchase in June 2003 of vactor truck (WRA479) used to clean out and jet sewer lines at the site by Field Operations Department personnel.
Water Service Truck	Purchase in June 2004 of water service truck (WRA777) for Field Operations Department.
Bucket Machine	Purchase of bucket machine (will replace WRA272 & 273) to support Field Operations Department maintenance staff.
Excavator	Purchase of equipment (replace WRA532) to support maintenance staff in water pipeline unit of Field Operations Department.
Grove Crane	Purchase of crane (replaces WRA146) to support maintenance staff in Field Operations Department.
Landfill Loader	Purchase landfill loader (WRA124) to support Clinton Wastewater Treatment Plant staff in landfill operations.
Power Sweeper/ Catch Basin	Purchase of equipment (WRA210) in September 2004 to support maintenance staff at Chelsea in Field Operations Department. Will be used agency-wide.
Backhoe	Purchase in January 2005 of equipment (WRA817; replaced WRA 385) to support maintenance staff in Water Pipeline Unit of Field Operations Department.
Closed Circuit TV Inspection Truck	Purchase of TV Inspection Truck (WRA700) to support Wastewater Pipeline Unit of Field Operations Department.
Front-End Loader	Two phases to purchase front-end loaders to support maintenance staff primarily in the Water Pipeline Unit of the Field Operations Department and at Deer Island.
Crane	Purchase of crane (WRA185) to support the Water Pipeline Unit in the Field Operations Department.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$8,703	$2,705	$5,998	$593	$1,355	$3,188	$2,810	$0	$0

Project Status 11/05	37%	Status as % is approximation based on project budget and expenditures. Expect to purchase several vehicles in FY06. Purchase and installation of security equipment is in process and will continue through FY07.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY06	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**	**FY06**	**Proposed FY07**	**Change**
$8,961	$8,703	($258)	Mar 06	June 07	15	$8,203	$7,946	($258)

Explanation of Changes

- Budget reduction reflects actual costs of vehicles and revised cost estimates for vehicles to be purchased.
- Modified schedule for purchase of equipment.

CEB Impact: None identified at this time.

S. 930 MWRA Chelsea Facility

Project Purpose

To improve MWRA operations by consolidating maintenance, operations, administrative, and equipment storage functions into a single facility. This will relieve current overcrowding and adverse traffic impacts on neighborhoods abutting existing facilities.

Project History and Background

When MWRA was created in 1986, 80 employees and 22 vehicles were transferred from MDC to MWRA to support maintenance of the metropolitan waterworks system and the northern sewerage system. During the past 20 years, MWRA has invested in improved maintenance and repair of the systems.

While maintenance programs were updated, the inadequacy of MWRA's maintenance support facilities became a serious constraint. In addition to being inefficiently located, virtually all of the maintenance and support facilities were already decades old when inherited from MDC, in disrepair, and too small to house necessary workforce and equipment. To accommodate the maintenance program, a number of temporary measures were taken to provide support facilities, including creation of temporary quarters in rented trailers, leasing of space, and reuse of space in "retired" buildings like the East Boston Pump Station.

MWRA also designed and constructed facilities to meet some specific maintenance program needs. These facilities included the South Maintenance Yard (1990) created at Fore River to serve the sewerage system maintenance needs south of Boston and the Transmission Maintenance Facility in Southborough (1993) to serve waterworks transmission system needs in central and western Massachusetts. In addition, the Deer Island Maintenance Building opened in 1995 to support the new plant.

The most pressing remaining need was for a maintenance facility to serve sewerage facilities north of Boston and waterworks facilities not efficiently served from Southborough. MWRA's new Chelsea facility consists of two buildings, a 124,000 square feet administration building and a 92,000 square feet maintenance building. There are nearly three acres for outside material and equipment storage, parking for more than 650 MWRA and employee vehicles, an on-site fueling station, and a radio communications tower and 400 square feet radio equipment building. Upon completion of the administration building in June 2001 MWRA relocated staff from the Charlestown Navy Yard and Linden Street. Relocation of staff to the Maintenance building from the Chestnut Hill Pump Station, the East Boston Steam Station, Glenwood Yard, Mystic Shops, Nay Street, Winchester Yard, FRSA, and Charlestown Pump Station began in December and was completed by the end of January 2002. A total of 523 staff work out of the Chelsea facility. Approximately 40 additional staff are scheduled to transfer from the Charlestown Navy Yard to Chelsea prior to FY07.

Scope

Sub-phase	Scope
Planning	Planning for the new MWRA Chelsea facility.
Conceptual Design	Conceptual and schematic architectural programming and design services for development of a Request for Proposals.
Negotiating Support	Real estate consultant to assist with lease negotiations.
Legal Services	Contract for a real estate attorney to assist with lease negotiations and review of lease documents.
Design Review	Architectural review of proposals and verification of specifications.
Fit out/Office Furnishing/ Equipment	Purchase of furnishings and equipment for the new facility.

Sub-phase	Scope
Information/ Telecommunication Consultant	Consultant to implement plan for information and telecommunications systems at the new facility.
Fit out – All other items	Purchase of equipment, furnishings, and specialized items for the Operations Control Center, Emergency Operations Center, water quality laboratory, maintenance shops, data center, warehouse, vehicle maintenance facilities, training rooms, library, TRAC sampling area, and muster room.
Existing Facility Button Up	Closeout of existing facilities and sites that vacated by MWRA and declared surplus.
Moving Expense	Costs associated with moving staff to the Chelsea facility.
Moving Expense-CNY	Costs associated with moving staff from Building 36 to Buildings 39 and 34 in the Charlestown Navy Yard.
CNY Retrofit	Construction and materials to reconfigure Buildings 34 and 39 to accommodate staff vacating Building 36.
MIS Network and Minicomputer Architecture, Performance, and Implementation	Network, minicomputer, and server performance upgrades, and equipment to provide adequate speed and performance to the new data center. This equipment is designed to accommodate future technology requirements.
Communications Tower	Erection of a communications tower at Deer Island to link Deer Island and the Chelsea facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$10,227	$9,703	$524	$578	$572	$524	$0	$0	$0

Project Status 11/05	95%	Status as % is approximation based on project budget and expenditures. This project is substantially complete. Expect remaining balances to be paid in FY06.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$10,227	$10,227	$0	June 06	June 06	-	$1,674	$1,674	$0

Explanation of Changes

- None.

CEB Impact: No additional impacts identified at this time.

S. 925 Technical Assistance

Project Purpose

To ensure ready access on an as needed basis, to professional and technical services not available or not cost-effectively provided by in-house staff.

Project History and Background

Efficient implementation of MWRA's Capital Improvement Program and other projects often requires specialized skills and technical assistance that are not available from in-house staff. This project ensures ready access to a variety of services through a series of task order contracts with pre-set limits. Task orders are used when immediate expertise on projects is required. When a task order is complete, the expense is transferred to the appropriate capital project or Current Expense Budget cost center.

Scope

Sub-phase	Scope
Technical Assistance	MWRA technical assistance contracts include the following: sanitary engineering, electrical/HVAC, mechanical, structural, materials testing, geotechnical, surveying, hazardous materials assessment, asbestos assessment, odor control, architectural, instrumentation control, wetland/environmental, civil engineering, land appraisal, energy, soil boring, and subsurface utility design.

Status MWRA uses technical assistance contracts in support of various CIP and CEB projects.

Expenditure Forecast (in $000s)

Total Budget	Payments thru FY05	Remaining Balance	FY 04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$ 1,650	$0	$1,650	$0	$0	$0	$550	$550	$550

Changes in Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$1,650	$1,650	$0	June 08	June 09	12	$1,650	$1,650	-

Explanation of Changes

- Schedule shift to reflect continuation of some contracts for an additional year.

CEB Impact:

When Technical Assistance contracts are used to support a project in the operating budget, the costs are charged to the CEB.

S. 931 Business Systems Plan

Project Purpose

To develop, improve, and procure management information systems (MIS) to adapt to the changing business needs associated with managing the waterworks and sewerage systems.

Project History and Background

During the process of developing the FY94-96 Capital Improvement Program, it became evident that MWRA needed to invest in the upgrade, enhancement, and expansion of its management information systems (MIS) to adapt to the changing business needs of the waterworks and sewerage systems, and to respond to new regulatory requirements. To address these needs, MWRA initiated and implemented a business system planning effort to determine future MIS support requirements.

The initial business systems plan focused primarily on FY95-97 (Phase 1). Annual plan updates have assisted staff, external constituencies, and the Board of Directors in understanding the critical role of information systems in carrying out MWRA's environmental and economic mission. In addition, the plan provides comprehensive documentation for future resource requirements. Implementation of Phase I improvements was completed in June 1997.

Phase II (FY97-99) built on the progress made during Phase I and continued the development of economies of scale through optimization of existing assets, technology conversion promoting database integration, and infrastructure improvement. Except for improvements to the TRAC Information System, Phase II is complete. The TRAC I/S is scheduled for competitive bid in FY05 and the project is expected to be completed in FY08.

Phase III (FY99-01) focused on implementing a new integrated financial and procurement system (Lawson). This project was substantially completed in May 2000 and met schedule and budgetary targets. Implementation of a Treasury workstation and integration with MAXIMO was completed by the close of FY01. The system reduces duplication of databases, streamlines several business processes, and improves staff ability to perform trend analysis.

Phase IV of the Business Systems Plan supported MWRA's effort in anticipation of the year 2000 to assess systems and applications and implement corrective actions to avoid systems failures. This phase was completed in February 2000, and MWRA did not experience any major system failures or sensitive disruptions. In addition, approximately 65% of Phase IV spending was for items that would have been purchased anyway and have useful lives well beyond 2000.

Phase V (FY01-09) supports MWRA's ongoing program of information system improvements. The focus is on development of a Waterworks Operations Management system similar to the one used to support Deer Island management, implementation of MAXIMO for the Field Operations Department, and improvements to the laboratory information system to keep pace with changing business needs and technology standards. In addition, Phase V includes replacement of obsolete minicomputers and improvements to GIS and TV Inspection systems based on benchmarking results.

Phase VI (FY03-07) supports the replacement of obsolete PBXes at major sites, re-licensing of Microsoft Office products, storage/server improvements for Computer Center operations and the conversion of Lawson portfolio to a current supported operating system.

During the second half of FY06, the MIS Department will launch a new business systems planning effort to address future technology needs, major application enhancements and replacements, and improvements needed for FY09 and beyond. A commitment to restructure the program to be project-based for all future CIP requests will also be done.

Scope

Sub-phase	Scope
Phase I (FY95-97)	Hardware: Upgrade of BHP technical minicomputers; purchase of a Unix-based minicomputer for GIS integration and consolidation and work stations for high-end modeling (SAMS) and mapping functions; upgrade or replacement of PCs; improvements to storage capabilities for TRAC Information Systems (IS) and wastewater flow data; and leasing of three replacement minicomputers for administration and finance systems to address capacity and performance issues. TRAC I/S to be re-bid in FY06. Software: Implementation and enhancement of the Sewerage Analysis and Management System (SAMS) to incorporate improved hydraulic modeling capabilities, condition information, mapping, and GIS data so that CSO Master Plan and Transport data requirements are met. Complete.
	Upgrade of the GIS application to industry standards to allow more integration and analysis of data. Complete; new strategic planning process to kick-off in FY06 will focus on EOC needs, GPS and integration with MAXIMO. Implementation of CADD software and related tools including the establishment of a document management system to index thousands of engineering documents maintained by the Records Management Center and technical information centers at CNY and Deer Island. Complete. Network: Replacement of obsolete software used for access to administration, finance, and technical minicomputer applications. Development of a network plan for Business Systems Plan updates to address industry changes, maintenance/replacement concerns, and functionality needs. Complete
Phase II (FY97-09)	Eight elements key to MWRA staff productivity: (1) server consolidation, (2) network scalability program, (3) database integration program, (4) PBX replacement, (5) electronic records program, (6) procurement replacement, (7) maintenance management, and (8) waterworks programming services. Server consolidation: Improvements to storage capacity, availability, and manageability of the servers used by MWRA staff. Included consolidation of 30 individual, independent file servers to approximately five, while avoiding the cost of hiring several server administrative staff to manage the resources. Completion expected during FY06; future replacement expected as storage demands increase and various server models become obsolete. Network scalability program: Improvement of the data network by increasing data access and retrieval capabilities to meet current and projected demand. NET 2010 project completed with the opening of the Chelsea facility; reinvestment beyond FY09 is expected to keep pace with technology changes. Database integration program: Standardization of the programming/database environment between portfolios by converting to Oracle-based systems (the standard for water and sewer systems) and consolidating/integrating data across MWRA. Complete PBX replacement: Replacement of the Siemens Private Branch Exchange (PBX) switches at the Charlestown Navy Yard with equipment that has a projected useful life of ten years. Completed during FY06. Electronic records program: Establishment of computing resources, procedures, and training necessary to satisfy audit and good practice requirements for security and file management, and expected federal/state regulations regarding electronic public records. Completion expected during FY06.

Sub-phase	Scope
	Maintenance management: Installation of automated maintenance software and corresponding hardware to replace obsolete Hewlett Packard maintenance software, and to provide systems support for areas using manual tracking methods. Complete Waterworks programming services: Programming services to meet the requirements of water quality testing as a result of the water quality work process improvements implemented as part of the business planning process. Complete
Phase III (FY99-01)	Procurement of new integrated financial and procurement system. Network project support. Procurement of replacement Human Resources/Payroll system. Complete Purchase and installation of a back-up generator for Building 36 in the Charlestown Navy Yard. Complete
Phase IV	Year 2000 assessment and improvements. Complete.
Phase V (FY01-09)	Waterworks Operations Management System (OMS): Establishment of a system to integrate SCADA, water quality, flow, and related data for management reporting and analysis. In FY01, the scope was expanded to include replacement of obsolete Open-VMS minicomputers at Deer Island with current servers running Microsoft-NT and also updating OMS software to run on the new platform. Complete Laboratory Information Management System: Implementation of software improvements to stay current with industry standards and meet ongoing business needs. Competitive bid underway in FY06. Geographical Information Management System (GIS): Conversion of GIS from UNIX to NT based on vendor software changes. Also, in anticipation of recommendations from a TV Inspection Benchmarking Project. Complete
Phase VI (FY04 – 09)	Replacement of the Deer Island PBX with a Mitel PBX (completed in FY04). Purchase of a backup UNIX minicomputer to be used for Lawson processing, storage improvements for all MWRA's minicomputer and server resources. Storage and server improvements to address growing data requirements. Re-licensing Microsoft Office products for PC users. Phase The replacement of InfoStar, the MWRA Document Management System was originally part of this phase but it was eliminated in December 2004. MIS staff will do the development. The net savings is $500k.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$25,157	$18,831	$6,326	$261	$591	$2,564	$3,236	$300	$226

Project Status 11/05	75%	Status as % is approximation based on project budget and expenditures. Phases V and VI are in process. The TRAC IS system will be competitively bid in FY06.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$25,157	$25,157	-	June 09	June 09	-	$6,952	$6,952	-

Explanation of Changes

- **None.**

CEB Impact:

The incremental software and/or hardware maintenance costs for the TRAC system, Intrusion Detection System, and other MWRA systems upgrades will be approximately $100,000 in FY07, $223,000 in FY08, and $41,000 in FY09.

S. 932 Environmental Remediation

Project Purpose

To implement remedial programs necessary to protect the environment and to ensure compliance with the Clean State Initiative.

Project History and Background

Fuel tank replacements at Prison Point CSO, Cottage Farm CSO, and Chelsea Creek Headworks will enable MWRA to meet all current regulatory requirements and provide enhanced spill prevention and leak detection capabilities.

In accordance with the Massachusetts Contingency Plan, MWRA installed an oil recovery system to clean up oil contamination at Prison Point in conjunction with the tank replacement. Removed contaminated soil in conjunction with the tank replacement at the Chelsea Creek Headworks.

Many MWRA underground storage tanks (USTs) have been upgraded or replaced to meet current regulations. Two USTs at the Prison Point CSO were replaced in spring 1999, with remediation work remaining to be completed. Chelsea Creek Headworks and Cottage Farm UST replacement construction was completed in December 2002. The Commercial Point CSO and Hingham Pump Station UST Upgrades construction contract began in February 2003 and was completed in March 2003.

Scope

Sub-phase	Scope
Technical Assistance – Environmental Remediation	Design, construction oversight, and waste site clean-up services for Prison Point, Cottage Farm, and Chelsea Creek tank replacements.
Prison Point Tank Replacement – Construction	Removal and replacement of two underground fuel storage tanks at the Prison Point CSO facility. Operation of oil recovery system. Assessment, design and installation of system upgrades.
Cottage Farm Tank Replacement – Construction	Removal and replacement of two underground fuel storage tanks at the Cottage Farm CSO facility.
Cosgrove Power Station – Design/CS and Construction	Design and construction of stormwater collection and surface water discharge system.
Oakdale Power Station – Design and Construction	Design and construction of non-contact cooling water disposal system. Design includes resolution of MCP issues associated with ground water conditions.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$1,826	$1,339	$487	$122	$79	$43	$19	$191	$234

Project Status 11/05	73%	Status as % is approximation based on project budget and expenditures. The Prison Point oil recovery system upgrade assessment is in progress.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$1,903	$1,826	($77)	Jun 07	Jun 07	-	$597	$454	($143)

Explanation of Changes

- Elimination of FY06 pilot testing and delay of design phase while additional assessment is conducted has reduced FY06 costs and deferred most FY07 costs to FY08.

CEB Impact:

The Prison Point Remediation Project will result in incremental CEB costs of up to $10,000 per year from FY08 through FY12.

S. 934 MWRA Facilities Management and Planning

Project Purpose

To improve MWRA operations by consolidating projects and providing a central point of review and decision making for space planning decisions.

Project History and Background

This project consolidates existing MWRA projects (DI Maintenance Facilities and DI CSB Demolition) to provide a central point of review and decision making for space planning decisions. This project will cover work to rehabilitate or demolish the old Administration Building on Deer Island as the building has deteriorated and certain structures need to be upgraded to current standards if it is to remain occupied. Project also includes the installation of the sandblast booth and the paint booth, purchased from the Chelsea Facility developer, in the Maintenance Building at Chelsea for a full functional shop, and funds to construct a washdown area to sanitize tools, equipment, and parts before working on them in the shop area at Chelsea. Of the $4 million project budget, $2.4 million is a transfer of existing phases from DI for maintenance facilities and the remainder is for new work proposed to complete the work in Chelsea.

Scope

Sub-phase	Scope
Design & Engineering Services	Design and engineering services to support space plan.
Facilities Construction	Construction of modifications to MWRA facilities in accordance with space plan.
Facilities Fit-out	Purchase of furniture and other items to fit-out new and/or modified facilities.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY05	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$3,931	$0	$3,931	$0	$0	$990	$1,523	$500	$918

Project Status 11/05	0%	Status as % is approximation based on project budget and expenditures. Planning for this project is in process.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY06	Proposed FY07	Change	FY06	Proposed FY07	Change	FY06	Proposed FY07	Change
$3,931	$3,931	$0	June 09	June 09	$0	$3,931	$3,931	$0

Explanation of Changes

- None

CEB Impact: CEB impacts have not yet been identified for this project.

APPENDIX 2

Fiscal Year 2004 – 2016 Expenditure Forecast Report with Planned NTP and SC dates

Understanding the Expenditure Forecasts

Capital expenditure forecasts, sometimes referred to as project cashflows, are presented in this section of the Proposed FY07 CIP document. Expenditure forecasts are accrual based, i.e., projected expenditures are estimated based on when services are expected to be rendered. Projects appear in this report in the same order they appear on-line, organized by capital program area. Grant and loan receipts for various projects and programs appear in the section following the expenditure forecasts.

The following presents a description of each column in the expenditure forecast tables:

Project and Subphase Names

The first column of the expenditure forecast identifies the organizational hierarchy of the CIP: capital program area (e.g., Wastewater System Improvements), program category (e.g., Interception and Pumping), project (e.g., Quincy Pump Facilities), phase (for BHP only), and sub-phases (e.g., Facilities Plan/EIR). Sub-phases represent awarded and unawarded contracts.

The Five Digit (FMS) and Four Digit (PSI) Numbers

To the left of each project name is a string of nine numbers preceded by an S. These numbers are assigned by the Rates and Budget Department, and are the number reference for the sub-phase in MWRA's capital budgeting database, CAPSTAN.

Following the "S" is a five-digit number representing the MWRA Lawson Activity Management System sub-phase number. Project budgets and expenditures are tracked by this account number.

Following the five-digit sub-phase number is a four-digit number representing the contract reference number in MWRA's contract management system. This reference number is used to access contract information such as the award amount, change order activity, and processed invoices.

Project Participant

The project participant is the consultant, designer, or contractor who has been awarded the contract for the project phase. Non-awarded contracts are identified by "TBS" (to be selected).

Notice to Proceed and Substantial Completion

Project schedules are tracked by two key milestones: Notice to Proceed and Substantial Completion. These milestones indicate the expected start and end dates for contract activity.

Total Contract Amount

The Total Contract Amount represents the budget amount for the program, program category, project, or sub-phase. For unawarded contracts, the contract amount is based on a cost estimate. For awarded contracts, this amount includes the award amount plus any change orders, amendments, and purchase orders accounted for prior to completing the budget.

Projected Payments through FY05

Projected Payments through FY05 includes actual and accrued expenditures since the inception of the contract through the end of FY05.

Remaining Balance 6/30/05

Remaining Balance 6/30/05 is calculated by subtracting Projected Payments through FY05 from the Total Contract Amount. This amount is then spread in the columns to the right, from FY06 to Beyond FY16.

Expenditure Forecasts

The remaining columns in the spreadsheet contain projections for capital spending by sub-phase during FY06-16. Forecasts are presented quarterly for FY07 and annually for FY08-16.

ATTACHMENT A
MWRA CAPITAL IMPROVEMENT PROGRAM SUMMARY BY CATEGORY

CAPITAL IMPROVEMENT PROGRAM
EXPENDITURE FORECAST FY2004-2008
($000)

	Total Contract Amount	Project Payments Thr. FY05	Balance FY05	FY2004 Actual	FY2005 Actual	FY2006 Estimate	QI FY07	QII FY07	QIII FY07	QIV FY07	FY2007	FY2008	5-Year Total FY04-08
Wastewater System Improvements	1,566,451	849,625	716,826	92,163	88,615	109,875	37,545	20,903	33,612	17,816	118,400	131,306	540,359
Waterworks System Improvements	1,887,321	1,451,999	435,323	100,093	76,276	73,226	14,338	17,145	18,551	23,192	81,388	89,390	420,373
Business & Operations Support	60,388	35,160	25,228	1,761	2,798	8,026	551	2,029	2,512	2,935	9,166	2,281	24,032
Contingency	108,429		108,429			0	5,170	4,528	4,527	5,435	19,736	23,351	43,087
Total MWRA w/ Contingency	3,622,589	2,336,784	1,285,806	194,016	167,689	191,127	57,604	44,605	59,202	49,378	228,690	246,328	1,027,851

TEN-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY BY MAJOR CATEGORY

CAPITAL IMPROVEMENT PROGRAM
EXPENDITURE FORECAST FY2007-2016
($000)

			FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	10-Year Total FY07-16
Wastewater System Improvements			118,400	131,306	134,837	90,130	45,034	28,464	22,321	13,948	14,469	7,565	606,474
Waterworks System Improvements			81,388	89,390	84,912	56,518	30,937	39,707	37,030	10,804	-3,147	-8,797	418,742
Business & Operations Support			9,166	2,281	2,486	792	780	769	801	126			17,201
Contingency			19,736	23,351	23,804	14,186	6,523	5,294	5,488	4,939	3,310	1,797	108,429
Total MWRA w/ Contingency			228,690	246,328	246,039	161,626	83,274	74,234	65,640	29,817	14,632	565	1,150,846

	FY2004 Actual	FY2005 Actual	FY2006	FY2007	FY2008	
Total FY04-08 (see FY04-08 Table)	194,016	167,689	191,127	228,690	246,328	1,027,851

				FY2009	FY2010	FY2011	FY2012	FY2013	
Total FY09-13				246,039	161,626	83,274	74,234	65,640	630,813

			FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	
Total FY07-16			228,690	246,328	246,039	161,626	83,274	74,234	65,640	29,817	14,632	565	1,150,846

Massachusetts Water Resources Authority
Capital Expenditure Forecast: FY2007-2016
(000's)

	NTP	SC	Total Contract Amount	Year 04 Actuals	Year 05 Actuals	Projected Pmts Thr. FY05	Remaining Balance 6/30/05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	Beyond FY16
Total MWRA (without contingency)			**3,514,160**	**194,016**	**167,689**	**2,336,784**	**1,177,377**	**191,127**	**208,954**	**222,977**	**222,235**	**147,440**	**76,751**	**68,940**	**60,152**	**24,878**	**11,322**	**-1,232**	**-56,167**
S.1 Wastewater			**1,566,451**	**92,163**	**88,615**	**849,625**	**716,826**	**109,875**	**118,400**	**131,306**	**134,837**	**90,130**	**45,034**	**28,464**	**22,321**	**13,948**	**14,469**	**7,565**	**478**
S.10 Interception & Pumping			**507,656**	**31,853**	**21,843**	**396,186**	**111,469**	**33,821**	**39,079**	**26,759**	**5,080**	**3,130**	**1,525**	**751**	**125**	**83**	**442**	**675**	
S.102 Quincy Pump Facilities			**26,120**	**604**	**-81**	**25,964**	**156**	**151**	**5**										
S.10024.5400 Facilities Plan/EIR	Dec-87	Mar-95	526			526	0												
S.10025.5402 Design/CS Rehab	Aug-88	Jul-91	110			110	0												
S.10026.5403 Construction-Rehab	Jul-89	Sep-95	328			328	0												
S.10033.5843 Land Acq - Squantum	Jan-95	Nov-99	22			22	0												
S.10027.5404 Design/CS/RI1	Aug-94	Dec-04	5,089	231	19	4,981	108	108											
S.10028.5405 Squantum P.S. Construction	Oct-00	Sep-03	4,415	365	-100	4,382	33	33											
S.10029.5407 Quincy P.S. Construction	Nov-00	Dec-02	7,103	8		7,103	0												
S.10030.5408 Hough's Neck P.S. Construction	Jun-98	Nov-99	1,720			1,720	0												
S.10031.5409 Early Rehab Squantum F.M.	Mar-93	Feb-95	2,042			2,042	0												
S.10276.6102 Squantum Force Main Rehab	Jul-98	Jul-99	2,061			2,061	0												
S.10277.6103 Quincy Force Main Rehab	Jun-98	Jul-99	1,489			1,489	0												
S.10260.6069 Legal	Jul-95	Sep-03	82	0		77	5	4	2										
S.10261.6070 Public Relations	Jul-95	Sep-03	5				5	4	2										
S.10262.6071 Hazardous Waste	Jul-95	Sep-03	5			0	5	3	2										
S.10032.5950 Technical Assistance	Dec-87	Sep-03	44			44	0	0											
S.10388.6810 Const Corrosion Mitigation	Sep-02	Apr-03	1,079			1,079	0												
S.104 Braintree-Weymouth Relief Facilities			**215,112**	**26,560**	**11,452**	**192,785**	**22,327**	**10,824**	**8,759**	**2,744**									
S.10045.5311 Facilities Planning Phase 1	Oct-81	Dec-90	331			331	0												
S.10046.5312 EIR Phase 1	Nov-84	Oct-90	514			514	0												
S.10057.5324 Final EIR/Fac.Plan	Apr-91	Aug-93	1,111			1,111	0												
S.10044.5332 Geotechnical - Land	Nov-91	Mar-92	8			8	0												
S.10001.5333 Geotechnical - Marine	Nov-91	Apr-92	443			443	0												
S.10047.5313 Design 1/CS/RI	Nov-94	Jun-06	18,991	2,059	1,150	18,710	281	257	24										
S.10251.6016 Sedimentation Testing	Sep-94	Apr-96	96			96	0												
S.10058.5331 Design 2/CS/RI	Apr-95	Apr-08	15,265	1,160	1,630	10,846	4,419	1,448	1,500	1,471									
S.10048.5314 Land Acquisition	Mar-97	Apr-07	3,630	347	15	3,616	14	6	7										
S.10049.5315 Tunnel Construction/Rescue	Jun-99	Jul-03	84,113	4,605		83,835	278	278											
S.10050.5316 Intermediate P.S. Construction	Dec-00	Apr-05	47,291	7,299	2,814	46,118	1,173	1,173											
S.10051.5303 No. Weymouth Relief Interceptor	Mar-01	Jun-02	4,705	0		4,705	0												
S.10052.5373 HDD Siphon Construction	Jul-03	May-07	16,357	10,979	4,800	15,779	578	578											
S.10054.5375 B-W Replacement Pump Station	Jan-05	Jun-07	16,109		1,015	1,015	15,093	6,860	6,960	1,273									
S.10060.5310 Rehab Sections 624 & 652																			
S.10302.6368 Mill Cove Siphon Construction	Aug-97	Jun-98	2,749			2,749	0												
S.10055.5308 Design - Rehab	Sep-88	Dec-89	24			24	0												
S.10056.5309 Construction - Rehab	Jan-92	Dec-96	255			255	0												
S.10265.6074 Hazardous Waste	Jul-95	Apr-07	5			2	3	1	2										
S.10263.6072 Legal	Jul-95	Apr-07	400	1	28	84	316	150	166										
S.10264.6073 Public Relations	Jul-95	Apr-07	5				5	1	4										
S.10061.5951 Technical Assistance	Nov-84	Apr-07	144			144	0												
S.10278.6119 Design - Marine Pipeline	Feb-97	Aug-97	1,100			1,100	0												
S.10354.6631 Community Technical Assistance	Jul-99	Apr-07	1,111			1,111	0												
S.10375.6766 Geotechnical Consultant	Sep-00	Mar-03	56			56	0												
S.10378.6792 IPS/RPS Communication System	Dec-02	Apr-07	300	111		132	168	72	96										

Massachusetts Water Resources Authority
Capital Expenditure Forecast: FY2007-2016
(000's)

	NTP	SC	Total Contract Amount	Year 04 Actuals	Year 05 Actuals	Projected Pmts Thr. FY05	Remaining Balance 6/30/05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	Beyond FY16
S.105 New Neponset Valley Relief Sewer			**30,301**		**5**	**30,301**	**0**												
S.10062.5380 Facilities Plan	Apr-83	Dec-86	594			594	0												
S.10063.5381 EIR/Supp. Fac. Plan	Jan-88	Dec-91	626			626	0												
S.10064.5382 Design/CS/RI	Feb-89	Jul-99	4,055			4,055	0												
S.10065.5383 Land Acquisition	Dec-90	Nov-93	531			531	0												
S.10076.5377 Consultant-Canton	Sep-93	Jul-99	130		5	130	0												
S.10067.5385 Construction 1	Sep-93	Apr-96	5,203			5,203	0												
S.10068.5390 Construction 2	Dec-93	Nov-94	2,549			2,549	0												
S.10069.5834 Construction 3	Apr-94	May-96	3,265			3,265	0												
S.10070.5835 Construction 4	Dec-93	Oct-95	2,960			2,960	0												
S.10071.5389 Construction 5	Dec-94	Jul-96	9,599			9,599	0												
S.10072.5386 Study Dedham Street	Nov-90	Oct-96	537			537	0												
S.10074.5379 Power Line	Jul-95	Jul-99	64			64	0												
S.10073.5952 Technical Assistance	Apr-88	Mar-96	189			189	0												
S.131 Upper Neponset Valley Sewer System			**51,711**	**436**	**3,115**	**5,235**	**46,476**	**13,693**	**16,508**	**15,757**	**518**								
S.10256.6031 Design/CS/RI	May-00	Apr-09	4,234	434	695	2,806	1,427	435	330	330	332								
S.10290.6191 Replace Sewer Sections 685-686	Mar-05	Apr-08	36,096		1,138	1,138	34,958	12,430	11,256	11,272									
S.10352.6629 Replacement Sewer Section 687	Jul-06	Dec-07	7,124				7,124	0	3,950	3,174									
S.10439.7072 Resident Engineering/Inspection	Apr-05	Aug-08	2,347		32	32	2,314	653	738	738	186								
S.10311.6450 Land Acquisition	Jun-00	Apr-08	1,520	3	1,250	1,258	262	72	96	94									
S.10266.6075 Legal	Jun-00	Apr-08	5	0		0	5	2	2	1									
S.10267.6076 Public Relations	Jun-00	Apr-08	5				5	2	2	2									
S.10268.6077 Hazardous Waste	Jun-00	Apr-08	5				5	2	2	2									
S.10393.6830 Boston Paving	Apr-05	Apr-08	376				376	99	132	145									
S.106 Wellesley Ext Replacement Sewer			**64,359**			**64,359**	**0**												
S.10091.5345 Study	Oct-81	Dec-84	324			324	0												
S.10080.5346 Design/EIR/CS/RI	Dec-84	May-99	8,107			8,107	0												
S.10081.5347 Land Acquisition	Aug-88	Jul-07	3,097			3,097	0												
S.10082.5348 Consultant-Needham	Jun-89	Nov-98	171			171	0												
S.10083.5344 Consultant-Dedham	Jun-89	Jul-98	53			53	0												
S.10094.5842 Consultant-Dover	Aug-91	Jul-98	5			5	0												
S.10084.5349 Construction 1	Jun-89	Jul-91	15,069			15,069	0												
S.10086.5351 Construction 2	Aug-89	Sep-90	5,087			5,087	0												
S.10087.5434 Construction 3	Mar-90	Jul-91	6,927			6,927	0												
S.10085.5350 Construction 4	Aug-89	Sep-90	4,821			4,821	0												
S.10088.5431 Construction 5	Nov-90	Apr-92	5,387			5,387	0												
S.10089.5432 Construction 6	Dec-91	Jul-92	2,070			2,070	0												
S.10090.5433 Construction 7	Sep-93	Jan-96	12,454			12,454	0												
S.10283.6184 Construction 8	Dec-10	Dec-12	0				0												
S.10353.6630 Design CS/RI 8	Jul-07	Dec-13	0				0												
S.10259.6065 EIC	Sep-95	Mar-01	369			369	0												
S.10269.6078 Legal	Feb-97	Dec-12	225			225	0												
S.10270.6079 Public Relations	Feb-97	Dec-12	0				0												
S.10093.5953 Technical Assistance	Jun-89	Dec-12	193			193	0												
S.107 Framingham Extension Relief Sewer			**47,926**	**-3**	**29**	**47,926**	**0**												
S.10099.5318 Fac Plan Update/EIR	Feb-90	Jul-91	1,397			1,397	0												
S.10100.5321 Land Acquisition	Jun-91	Aug-02	1,838	5	5	1,838	0												
S.10101.5319 Design/CS/RI	Jul-90	Sep-04	5,837	-3	7	5,837	0												
S.10102.5320 Install Force Main	May-96	Apr-98	7,256			7,256	0												
S.10103.5322 Install Gravity Sewer	May-96	Apr-98	6,147			6,147	0												
S.10104.5323 Pump Station Construction	Jul-96	Apr-98	7,803			7,803	0												
S.10106.5825 Early Sewer Rehabilitation	Jun-94	Mar-95	4,803			4,803	0												
S.10107.5342 Late Sewer Rehabilitation	Oct-00	Sep-04	12,680	-2	16	12,680	0												
S.10105.5954 Technical Assistance	Feb-90	Aug-02	162	-5		162	0												
S.10336.6573 Public Participation	Jul-99	Jun-04	0			0	0												
S.10337.6574 Legal	Jul-99	Jun-02	0	0		0	0												
S.10374.6754 Conservation Commission	Oct-00	Sep-02	4	0	1	4	0												

Massachusetts Water Resources Authority
Capital Expenditure Forecast: FY2007-2016
(000's)

	NTP	SC	Total Contract Amount	Year 04 Actuals	Year 05 Actuals	Projected Pmts Thr. FY05	Remaining Balance 6/30/05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	Beyond FY16
S.127 Cummingsville Replacement Sewer			**9,431**	**149**	**1,369**	**2,789**	**6,641**	**5,307**	**1,179**	**155**									
S.10217.5826 Facilities Plan/EIR	Jun-92	Jul-95	602			602	0												
S.10275.6092 Design/CS/RI	May-98	Sep-07	2,300	149	435	1,252	1,048	593	300	155									
S.10285.6186 Cummingsville Branch Sew Const	Apr-05	May-06	5,029		879	879	4,150	4,016	134										
S.10284.6185 Land Acquisition	Apr-00	Sep-06	102		40	41	61	45	16										
S.10334.6571 Public Participation	Jul-99	Sep-06	5			0	5	3	2										
S.10335.6572 Legal	Jul-99	Sep-06	15		15	15	0												
S.10403.6916 Siphon Modifications	Jan-06	Sep-06	1,378				1,378	650	728										
S.130 Siphon Structure Rehabilitation			**940**		**0**	**940**	**0**												
S.10253.6017 Planning	Jan-96	Nov-98	938			938	0												
S.10293.6224 Design/CS/RI	Apr-06	Dec-11	0				0												
S.10294.6225 Construction	Aug-09	Dec-10	0				0												
S.10295.6226 Legal	Sep-05	Dec-10	0				0												
S.10296.6227 Public Relations	Jun-97	Dec-10	0				0												
S.10280.6165 Land Acquisition	Jun-06	Dec-10	2		0	2	0												
S.132 Corrosion & Odor Control			**3,004**	**555**	**759**	**3,002**	**2**	**2**	**0**										
S.10279.6137 Planning/Study	Jan-97	Dec-98	587	-1		587	0												
S.10327.6553 Design/CS/RI	Aug-02	Jun-05	1,789	554	759	1,787	2	2	0										
S.10326.6552 Arthur St P.S. & FERS Force Main						0	0												
S.10323.6549 Land Acquisition			3			3	0												
S.10324.6550 Public Participation						0	0												
S.10325.6551 Legal	Dec-00	Jul-08	2			2	0												
S.10373.6743 Interim Corrosion Control	Jul-00	Dec-01	622	1	0	622	0												
S.10405.6918 FES Tunnel Rehab																			
S.10406.6919 Air Treatment Systems	Jul-06	Jul-07																	
S.136 West Roxbury Tunnel			**8,880**	**-17**	**0**	**8,880**	**0**												
S.10299.6230 Inspection	Jul-98	Sep-99	344			344	0												
S.10333.6570 Design/CS/RI	Apr-00	Jun-03	1,412	-33		1,412	0												
S.10332.6569 Construction	Jun-01	Jun-02	6,674	16		6,674	0												
S.10329.6566 Public Participation						0	0												
S.10330.6567 Legal	Apr-00	Mar-10	2	0		2	0												
S.10331.6568 Land Acquisition	Apr-00	Mar-10	440	-1	0	440	0												
S.10366.6709 Technical Assistance	Nov-99	Mar-10	8			8	0												
S.10377.6789 Planning/EIR																			
S.10400.6897 Tunnel Design																			
S.10401.6898 Tunnel Construction																			
S.137 Wastewater Central Monitoring			**17,036**	**1,016**	**449**	**2,376**	**14,660**	**1,759**	**9,092**	**3,431**	**378**								
S.10301.6232 Planning	Jan-98	Jul-99	563	-9		563	0												
S.10319.6532 Design and Integration Services	Jun-02	Nov-08	6,285	1,025	449	1,813	4,472	1,427	1,616	1,052	378								
S.10320.6533 Construction 1 (CP1)	Dec-05	Apr-07	5,990			0	5,990	300	5,388	303									
S.10321.6534 Construction 2 (CP2)	Oct-06	Sep-07	3,745			0	3,745	0	2,060	1,685									
S.10357.6657 Construction 3 (CP3)	Aug-07	Jan-08	372			0	372	0	0	372									
S.10322.6535 Technical Assistance	Sep-02	Aug-08				0	0												
S.10358.6658 Professional Services 1(Data Integration)						0	0												
S.10359.6659 Professional Services (Hydraulic Model)						0	0												
S.10355.6655 Professional Services 3 (Transport)						0	0												
S.10356.6656 Design & Integration Services						0	0												
S.10398.6861 Equipment Prepurchase	Apr-05	Nov-07	80				80	32	28	20									
S.139 South System Relief Project			**4,945**			**3,440**	**1,505**	**1**	**4**	**800**	**600**	**100**							
S.10309.6419 CS/RI-Archdale	Nov-98	Aug-99	6			6	0												
S.10310.6420 Construction-Archdale	May-99	Aug-99	211			211	0												
S.10318.6519 Sec 70&71 HLS Eval.	Sep-98	Oct-99	215			215	0												
S.10349.6611 Sec 70 & 71 HLS Construction	Jun-99	Oct-99	417			417	0												
S.10345.6595 Design Outfall 023	Jun-99	Sep-99	1			1	0												
S.10346.6596 Cleaning Outfall 023	Apr-00	Nov-00	1,098			1,098	0												
S.10347.6605 Land Acquisition/Easements	Apr-99	Apr-05	5			5	0												
S.10350.6616 Milton Financial Assistance	Oct-99	Jun-00	1,488			1,488	0												
S.10362.6680 Legal/Permits	Jul-99	Jun-07	5			0	5	1	4										
S.10386.6801 Outfall 023 Str Impovements	Jul-07	Jun-09	1,500				1,500	0	0	800	600	100							
S.10402.6915 Quincy/Braintree Howard St. ...																			
S.10422.6949 Quincy/Braintree Howard St Des																			

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S.141 Wastewater Process Optimization			**2,240**	**141**	**65**	**930**	**1,310**	**24**			**54**	**76**	**380**	**751**	**25**				
S.10367.6733 Planning	Aug-01	Aug-04	954	141	65	930	24	24											
S.10412.6930 Somerville Sewer-Planning																			
S.10413.6931 Somerville Sewer-Design	Oct-08	Aug-11	200				200	0			54	76	60	10					
S.10414.6932 Somerville Sewer-Construction	Mar-11	Aug-11	936				936	0					320	616					
S.10415.6933 Siphon- Planning	Nov-11	Jun-12	150				150	0						125	25				
S.10416.6934 Siphon-Design																			
S.10417.6935 Siphon- Construction																			
S.142 Wastewater Meter Sys-Equip Replace			**6,578**	**859**	**4,015**	**4,873**	**1,705**	**84**	**136**	**171**	**15**				**100**	**83**	**442**	**675**	
S.10371.6739 Planning/Study	Jan-13	May-13	100			0	100								100				
S.10379.6793 Equipment Purchase/Installation	Nov-03	Jun-08	5,278	859	4,015	4,873	405	84	136	171	15								
S.10410.6928 Design	Jul-13	Jan-16	200				200									83	73	44	
S.10411.6929 Construction	Jan-15	Jan-16	1,000				1,000										369	631	
S.143 Regional I/I Management Planning			**169**	**5**		**169**	**0**												
S.10372.6740 Cmom/Planning	Jan-01	Jun-03	169	5		169	0												
S.10390.6819 I/I and SSO Reduction	Apr-02																		
S.145 I&P Facility Asset Protection			**18,904**	**1,548**	**668**	**2,217**	**16,687**	**1,976**	**3,397**	**3,699**	**3,516**	**2,954**	**1,145**						
S.10383.6798 Rehab of Section 93A Lexington	Jul-03	Apr-04	1,568	1,548	20	1,568	0												
S.10392.6829 Technical Assistance	Jul-02	Nov-08	40		18	18	22	4	12	3	3								
S.10394.6842 Sections 80&83	Mar-06	May-07	763				763	100	600	63									
S.10395.6843 Section 160	Nov-06	Nov-08	3,389				3,389	0	780	1,564	1,045								
S.10396.6857 Survey	Nov-04	May-05	52		11	11	41	41											
S.10397.6858 Permits	May-03	Nov-08	6		1	2	4	0	2	1	1								
S.10440.7073 Land/Easements			150				150	150											
S.10418.6936 Interceptor Renewal																			
S.10423.6987 93 A Force Main Replacement	Feb-06	Oct-06	490				490	108	382										
S.10424.7004 Mill Brook Valley Sewer Sec 79&92	Jun-04	Mar-05	542		542	542	0												
S.10380.6795 Prison Point HVAC Upgrades	Mar-09	Feb-10	694				694	0			167	527							
S.10381.6796 Remote Headworks Heating Sys Upgrade	May-05	Apr-06	1,184		75	75	1,109	1,109											
S.10382.6797 Alewife Brook Pump Repl	Mar-09	Feb-10	450				450	0	0	0	75	375							
S.10387.6802 Hdwks Screen Replacement	Jul-07	Jan-11	5,000				5,000	0	0	1,163	1,395	1,395	1,047						
S.10399.6886 Hdwrks Cond Assess/Facilities Plan	Jan-06	Jun-07	2,000				2,000	450	1,500	50									
S.10419.6937 Alewife Brook Pump Repl Design	Jul-07	Feb-10	150				150	0	0	50	60	40							
S.10420.6938 Des-Prison Pt HVAC Upgrades	Jul-07	Feb-10	150				150	0	0	50	60	40							
S.10426.7032 Hinghham P.S. Isolation Gate Design																			
S.10427.7033 Hingham PS Isolation Gate Const	Sep-08	Mar-09	350				350			350									
S.10428.7034 Alewife Brook P.S. Screen Des	Jan-07	Jul-08	100				100		35	55	10								
S.10429.7035 Alewife Brook P.S. Screen Const	Mar-08	Jul-08	400				400			250	150								
S.10430.7036 Caruso PS Pump/Shaft Rep Des																			
S.10431.7037 Caruso PS Replace Generator	Jul-09	Sep-09	250				250					250							
S.10432.7038 Chelsea Sluice Gate Engnr Study	Apr-06	Oct-06	50				50	7	43										
S.10433.7039 Prision Pt/Cottage Farm Pipe Des	Jul-07	Mar-09	150				150			100	50								
S.10434.7040 Prision Pt/Cottage Farm Pipe Constr	Sep-08	Mar-09	500				500				500								
S.10435.7041 Headworks Renewal-Des/Constr																			
S.10436.7042 Fram PS Sluice Gates Cond Assess	Apr-06	Oct-06	50				50	7	43										
S.10437.7043 Caruso PS Generator Design																			
S.10438.7044 Caruso PS Shaft Replac Const	Jul-09	Jul-10	425				425					327	98						
S.10421.6942 As Needed Design																			

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S.25 Treatment			**141,833**	**3,978**	**9,240**	**23,371**	**118,461**	**13,661**	**10,959**	**12,597**	**16,145**	**17,230**	**10,704**	**3,107**	**8,103**	**9,364**	**9,000**	**5,000**	**2,593**
S.200 DI Plant Optimization			**43,157**	**3,377**	**7,080**	**18,740**	**24,417**	**9,336**	**4,722**	**2,166**	**930**	**3,048**	**2,616**	**700**	**900**				
S.19156.6235 Construction-Plumbing	Apr-96	Apr-98	110			110	0												
S.19170.6369 Supplementary Mod Pkg #1	Jun-99	Mar-00	488			213	275	275											
S.19154.6233 As-Needed Des. Phase 1	Jul-98	May-03	1,122	-9		1,122	0												
S.18212.6364 Ancil Mods-Des 1	Jun-99	Dec-06	2,160	126	540	1,667	493	340	153										
S.19189.6590 Ancil Mods Des 2-1 (REI)	Aug-01	Jun-03	584	44		584	0												
S.19190.6591 Ancil Mods - Des 3-1	Feb-01	Nov-05	951	207	234	942	9	9											
S.19191.6592 Ancil Mods - Prelim Des 4	Apr-06	Jan-07	360			0	360	55	305										
S.19303.7088 Ancils Mods Final Des 4	Oct-07	Feb-09	719				719			180	180	208	151						
S.19220.6721 Long Term As Needed Des No.1	Mar-09	Mar-13	1,600			0	1,600					350	450	350	450				
S.19183.6499 Ancil Mods-Con 1	Jul-04	Jan-06	10,131		4,076	4,076	6,054	6,054											
S.19186.6536 Ancil Mods Constr 2-1	Aug-01	Jun-03	2,834	4	12	2,832	2	2											
S.19232.6744 Ancil Mods Constr 2-2	May-05	Oct-07	5,331		26	26	5,305	1,780	2,630	895									
S.19187.6537 Ancil Mods-Constr 3-1	Nov-03	Nov-04	3,387	2,197	1,190	3,387	0												
S.19216.6703 Ancil Mods Cons 3-2						0	0												
S.19188.6538 Ancil Mods-Con 4	May-09	Dec-10	3,704			0	3,704					2,140	1,564						
S.19221.6722 Long -Term As Needed Des No.2	Mar-09	Mar-13	1,600			0	1,600					350	450	350	450				
S.19206.6673 Digester Storage Tank - Repair	Aug-97	Oct-97	275			550	-275	-275											
S.19215.6702 As-needed Design Phase 2-1	Oct-00	Jan-03	760			760	0												
S.19234.6753 As-needed design Phase 2-2	Oct-00	Jan-03	695	66		695	0												
S.19214.6701 As-needed Des. Phase 3-1	Apr-03	May-05	796	390	295	706	90	90											
S.19257.6874 As-needed Design Phase 3-2	Mar-03	Mar-05	631	291	328	631	0												
S.19211.6698 As Needed Des Phase 4-1	Mar-05	Mar-07	1,000		41	41	959	452	506										
S.19212.6699 As Needed Des Phase 4-2	Mar-05	Mar-07	1,000		77	77	923	338	585										
S.19305.7090 As-needed Des Phase 5-1	Mar-07	Mar-09	900				900		75	450	375								
S.19306.7091 As-needed Des Phase 5-2	Mar-07	Mar-09	900				900		75	450	375								
S.19213.6700 Plumbing/Mechanical Services			0			0	0												
S.19219.6720 Polymer Area- Construction			0			0	0												
S.19240.6768 Ancil Mods Des2-2 (REI/ESDC)	Jun-04	Jan-08	526		37	37	489	215	220	54									
S.19242.6794 CEMS Modifications	Jun-06	Dec-07	311				311		173	138									
S.19286.6201 BHP Site Completion	Oct-98	Dec-04	284	61	223	284	0												

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S.206 DI Treatment Plant Asset Protection			**98,676**	**601**	**2,160**	**4,631**	**94,044**	**4,325**	**6,237**	**10,431**	**15,215**	**14,182**	**8,089**	**2,407**	**7,203**	**9,364**	**9,000**	**5,000**	**2,593**
S.19182.6478 Equip Replacement Projection	Oct-00	Jun-16	35,593				35,593			400	400	500	1,200	1,500	7,000	8,000	9,000	5,000	2,593
S.19193.6594 Equipment Condition Monitoring	May-04	Jan-05	1,777	149	1,628	1,777	0												
S.19231.6742 Drive Chain Replacement	Oct-01	Jul-03	264	0		264	0												
S.19238.6765 CTG Modifications	Mar-01	May-02	482	-1		482	0												
S.19176.6422 Pump Packing Replacement	Sep-03	Jun-08	750	137		265	485	247	143	95									
S.19177.6423 Demineralizer Construction	Jul-00	Dec-00	51			51	0												
S.19263.6880 Cathodic Protection Evaluation	Aug-06	Dec-07	250				250		141	109									
S.19264.6881 NMPS Motor Repairs																			
S.19265.6882 CEMS Equip. Replacement	Nov-05	Mar-06	77				77	77											
S.19268.6899 Clarifier Chain Replac	Apr-08	Sep-09	450				450				225	225							
S.19273.6904 CEMS Equip Rep Des/REI																			
S.19287.7005 Digester Chiller Replacement	Sep-05	May-06	574				574	574											
S.19288.7006 Dystor Tank Membrane Replacement	Sep-04	Oct-05	670		317	317	353	353											
S.19289.7051 Grit Blower Replac Design																			
S.19290.7052 Grit Blower Replac Construction	Apr-08	Apr-09	335				335				335								
S.19291.7053 Thick Prim Sldg Pump Repl Des	Sep-07	Oct-10	549				549			210	125	140	74						
S.19292.7054 TPS Pump Replac Construction	Oct-08	Oct-10	5,240				5,240				1,300	2,620	1,320						
S.19293.7055 LOCAT Scrubber Replac Design																			
S.19294.7056 LOCAT Scrubber Replac Const	Jul-08	Jul-09	309				309				220	89							
S.19295.7057 Centrifuge Backdrive Replac	Dec-06	Dec-08	2,013				2,013		335	1,006	671								
S.19161.6240 Coastal Protection	Jul-07	Jun-16	0				0												
S.19222.6723 Eastern Seawall Design - 1						0	0												
S.19224.6725 Wall,Pier,Berth-Design 2	Jul-07	Jun-16	0			0	0												
S.19223.6724 Eastern Seawall Construction - 1						0	0												
S.19225.6726 Wall,Pier,Berth-Construction 2	Jul-07	Jun-16	0			0	0												
S.18045.6196 Maintenance Facilities Design			0				0												
S.19152.6197 Maintenance Facilities Const			0				0												
S.19229.6730 CSB Design/ESDC			0			0	0												
S.19230.6731 CSB Demolition/Construction						0	0												
S.19226.6727 Study/Concept Des-Concrete Rpr	May-07	Mar-08	300			0	300		30	270									
S.19204.6668 Expansion Joint Repair-Design	Apr-99	Oct-04	149	46	0	149	0												
S.19205.6669 Expansion Joint Repair- Constr 1	Aug-02	Nov-03	305	270		305	0												
S.19218.6705 Expansion Joint Repair- Constr 3	May-09	Nov-09	156			0	156					156							
S.19217.6704 Expansion Joint Repair- Constr 2	May-07	Nov-07	156			0	156			156									
S.19244.6812 Secondary Clarifier Access	Sep-01	Jul-02	275			275	0												
S.19246.6821 Personnel Dock Rehab																			
S.19274.6963 Old Admin Bldg Rehab Des			0				0												
S.19275.6964 Old Admin Bldg Rehab Constr			0				0												
S.19284.6973 NMPS & SSPS Hardening			0				0												
S.19194.6598 Thermal Plant PICS Repl																			
S.19243.6811 Outfall Modification-Inspection	Dec-01	Jul-02	174			174	0												
S.19247.6822 Outfall Modif Const 1																			
S.19248.6823 Outfall Modif Const 1 REI																			
S.19307.7094 DI Electrical Modifications	Dec-06	Jun-08	2,000				2,000		750	1,250									
S.19239.6767 Elec Equip Upgrade Constr 2	Apr-05	Sep-06	1,897		105	105	1,792	1,367	425										
S.19236.6763 Busduct Replacement (2+22)	Jan-01	Oct-01	196			196	0												
S.19245.6813 Transformer Replacement			38			38	0												
S.19252.6851 Pipeline Repl #2 Design	Apr-09	Jun-11	386				386				15	178	160	33					
S.19253.6852 Pipeline Repl #2 - Construction	Jun-10	Jun-11	1,286				1,286						1,070	216					
S.19254.6853 Sodium Hypo Pipe Repl-Des	Jun-10	Jul-11	232				232						175	57					
S.19255.6854 Sodium Hypo Pipe Repl- Constr	Jun-10	Jun-11	2,751				2,751						2,290	461					
S.19256.6855 Elect Equip Upgrade Const 3	Jul-06	Feb-08	1,815				1,815		850	965									
S.19258.6875 WTF VFD Replace Constr	Dec-07	Jan-09	1,368				1,368			400	968								
S.19259.6876 Heat Loop Pipe Repl Constr 1	Mar-05	Dec-05	615		110	110	505	505											
S.19260.6877 Misc. VFD Replacements	May-05	May-08	2,100				2,100	664	957	479									
S.19266.6883 PICS Replacement Des																			
S.19267.6884 PICS Replacement Const	Jul-09	Jul-10	1,582				1,582					1,180	402						
S.19269.6900 Admin/Whse Switchgear Replac	Sep-07	Sep-08	1,288				1,288			750	538								
S.19270.6901 Elect Equip Upgrade Const 4	Jul-08	Jan-10	2,362				2,362				1,180	1,182							
S.19271.6902 NMPS VFD Repl Des/ESDC	Jul-06	Apr-10	518				518		216	97	107	98							
S.19272.6903 NMPS VFD Replace Constr	Oct-07	Mar-10	7,182				7,182			1,486	2,972	2,724							

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S.19278.6967 Second Deaerator Design	Apr-08	Mar-09	96				96			12	84								
S.19279.6968 Second Deaerator Constr	Jun-09	Jun-10	257				257					214	43						
S.19280.6969 Fuel Transfer Pipe Repl Des	Nov-11	Apr-14	386				386							105	103	178			
S.19281.6970 Fuel Transfer Pipe Repl Const	Mar-13	Mar-14	1,286				1,286								100	1,186			
S.19282.6971 NMPS Motor Ctrl Ctr Des	Jun-07	Apr-10	617				617			309	160	149							
S.19283.6972 NMPS Motor Ctrl Ctr Constr	Jul-08	Dec-09	3,087				3,087				1,630	1,457							
S.19285.6974 DI Wind Power Constr	Jan-08	Dec-08	0				0												
S.19296.7058 DITP Switchgear Replac Design	Jul-08	Oct-10	247				247				110	72	65						
S.19297.7059 DITP Switchgear Repl Constr	Oct-09	Oct-10	2,470				2,470					1,230	1,240						
S.19298.7060 Power Consult Recs Design	Feb-06	Jan-10	2,200				2,200	236	864	341	455	303							
S.19299.7061 Power System Improv Constr	Jul-07	Dec-09	5,315				5,315			1,649	2,199	1,466							
S.19300.7062 Substation 7 Repl Design																			
S.19301.7063 Substation 7 Replac Constr																			
S.19162.6241 DISC Application	Jun-96	Dec-08	250	-1		125	125	42	32	51									
S.19241.6791 Document Format Conversion	Jun-06	Dec-11	353				353	10	87	65	55	50	50	36					
S.19227.6728 Closed Circuit Cameras Design						0	0												
S.19228.6729 Closed Circuit Cameras Const						0	0												
S.19304.7089 Sodium Hypo Tk Lnr Removal	Mar-06	May-06	250				250	250											
S.19237.6764 Sodium Hypo Tank Repair 1	Sep-06	Jun-07	288				288		288										
S.19249.6848 Metals Lab Fume Hood Repl	Dec-06	Jun-07	134				134		134										
S.19250.6849 Metals Lab Modification-Des																			
S.19251.6850 Metals Lab Modification Constr	Jul-06	Jul-07	888				888		664	224									
S.19261.6878 Lab Sample Area Mod-Des	Jul-07	Sep-09	92				92			46	31	15							
S.19262.6879 Lab Sample Area Mod-Const	Aug-08	Aug-09	400				400				267	133							
S.19276.6965 Gravity Thickener Improv Des	Feb-07	Apr-09	188				188		34	60	94								
S.19277.6966 Gravity Thickener Imp Constr	Apr-08	Apr-09	1,074				1,074				1,074								
S.19302.7075 Clinton Soda Ash Replacement	Jun-06	Oct-06	288				288		288										
S.12 Residuals			**64,523**	**8,930**	**-1,700**	**63,848**	**675**										**338**	**337**	
S.261 Residuals			**64,523**	**8,930**	**-1,700**	**63,848**	**675**										**338**	**337**	
S.25941.5667 Design/RI/CS-Pelletizing 1	Dec-94	Dec-03	9,098	-3		9,098	0												
S.25948.5669 Fast-Track Equip. Prepurchase	Aug-94	Jul-95	301			301	0												
S.26055.6009 Fast-Track Equip. Installation	Oct-94	Apr-96	1,450			1,450	0												
S.26056.6010 Phase 2 Outside Construction	Jan-96	Aug-98	13,019			13,019	0												
S.26057.6011 Phase 3 Equip. Prepurchase	Feb-95	Jul-98	4,746			4,746	0												
S.26058.6012 Phase 3 Inside Construction	Mar-97	Dec-01	29,778	8,491	-2,600	29,778	0												
S.26065.6612 Fire Related Costs	May-99	Oct-99	1,694			1,694	0												
S.25961.5643 Res. Research	Aug-90	Apr-97	419			419	0												
S.26059.6083 License Fee	Jan-15	Jan-17	675				675										338	337	
S.25968.5831 Royalty Payment	Feb-96	Sep-97	575			575	0												
S.26066.6615 Legal Services for Sludge Processing	Apr-99	Apr-05	2,768	442	900	2,768	0												
S.26067.6694 Claims	Jul-00	Aug-03	0			0	0												
S.26068.6755 Barge Purchase			0				0												

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S.13 CSO			**783,565**	**45,867**	**53,663**	**304,870**	**478,694**	**60,176**	**65,823**	**89,829**	**111,043**	**68,213**	**29,899**	**21,895**	**11,547**	**8,479**	**7,787**	**4,003**	
S.339 North Dorch Bay & Reserve Channel			**225,604**	**1,266**	**3,305**	**18,233**	**207,370**	**9,536**	**34,083**	**61,421**	**65,021**	**25,863**	**11,085**	**362**					
S.32660.6220 Design ESDC/Tunnel	Sep-04	Apr-11	24,619	1,266	3,305	18,233	6,385	2,963	720	720	720	720	542						
S.32661.6244 Tunnel Construction (Ch30)	Jun-06	Feb-10	163,910			0	163,910	2,403	30,819	57,628	61,123	11,937							
S.32662.6245 Dewater/Odor Control Constr	Mar-09	May-11	19,504			0	19,504				198	10,549	8,757						
S.32726.6993 Tunnel & Facilities CM Services	Oct-05	May-11	11,244				11,244	1,356	1,955	2,293	2,200	1,877	1,201	362					
S.32732.7012 Pleasure Bay Construction	Sep-05	May-06	2,817				2,817	2,814	3										
S.32733.7013 Design ESDC/Facilities	Sep-06	May-11	3,511				3,511		586	780	780	780	585						
S.354 Hydraulic Relief Projects			**2,295**	**-7**		**2,295**	**0**												
S.32692.6250 Design/CS/RI	Aug-97	Aug-01	558	-7		558	0												
S.32669.6252 Construction	Jul-99	Aug-00	1,737			1,737	0												
S.347 East Boston Branch Sewer Relief			**72,950**	**5,293**	**341**	**8,679**	**64,271**	**323**	**1,317**	**8,777**	**27,654**	**26,151**	**48**						
S.32673.6256 Design	Mar-00	Sep-06	3,490	955	119	3,271	219	171	47										
S.32742.7087 Design 2 CS/RI	Apr-06	Jun-10	8,000				8,000	317	1,270	1,937	2,426	2,002	48						
S.32674.6257 East Boston Branch Relief Sewer	Mar-08	Jun-10	47,532				47,532			6,790	20,371	20,371							
S.32716.6790 Boston Paving	Oct-07	Nov-07	50				50			50									
S.32719.6840 East Boston Branch Sewer Rehab	Apr-03	May-04	5,243	4,338	222	5,409	-166	-166											
S.32720.6841 Sections 38 & 207 Replacement	Oct-08	Jan-10	8,636				8,636				4,858	3,778							
S.348 BOS019 Storage Conduit			**13,676**	**1,156**	**1,199**	**2,804**	**10,872**	**6,145**	**4,615**	**112**									
S.32675.6258 Design	Jul-02	Nov-04	2,045	1,156	409	2,014	31	31											
S.32677.6260 BOS019 Storage Conduit Constr	Mar-05	Mar-07	10,509		679	679	9,830	5,602	4,228										
S.32728.7008 Construction Management Services	Apr-05	Mar-07	1,122		111	111	1,011	512	387	112									
S.349 Chelsea Trunk Sewer			**29,765**	**1**	**8**	**29,765**	**0**												
S.32659.6198 Design/CS/RI	Jun-97	Aug-03	3,637	1	8	3,637	0												
S.32679.6262 Chelsea Trunk Relief	Sep-99	Aug-00	3,577			3,577	0												
S.32680.6263 Chelsea Branch Sewer	Dec-99	Jul-01	19,141			19,141	0												
S.32689.6370 Rehab/Chelsea Brnch/Revere Ext	Aug-01	Jun-02	3,125			3,125	0												
S.32690.6371 Modify Chelsea Screen House	Aug-00	Dec-00	284			284	0												
S.350 Union Park Detention Treatment Fac			**47,564**	**11,522**	**14,889**	**32,294**	**15,270**	**13,532**	**1,635**	**104**									
S.32681.6264 Design	Dec-99	Sep-06	8,224	1,228	1,372	6,211	2,014	1,360	550	104									
S.32682.6265 Construction	Mar-03	Sep-06	44,138	11,587	15,605	29,464	14,674	12,758	1,916										
S.32718.6826 Construction - Park	Apr-03	Sep-06	500	75	258	333	167		167										
S.32721.6909 BWSC Construction ...	Mar-03	Jan-06	-5,298	-1,368	-2,345	-3,713	-1,584	-586	-998										
S.353 Upgrade Existing CSO Facilities			**22,385**	**36**	**13**	**22,350**	**35**	**35**											
S.32647.6123 Design	Jun-96	Oct-02	6,499	36	13	6,464	35	35											
S.32714.6734 Design 2			0			0	0												
S.32685.6268 Cottage Farm CSO Facility	Mar-98	Jan-00	4,377			4,377	0												
S.32686.6269 Prision Point CSO Facility	May-99	Feb-01	3,339			3,339	0												
S.32693.6496 Comm/Fox Point, Som. Marginal	Nov-99	Aug-01	8,029			8,029	0												
S.32687.6270 Non-Treated Floatable (Beacon)	Mar-99	Dec-99	124			124	0												
S.32695.6626 Non-Treated Floatable (Other)			0			0	0												
S.32715.6735 Closure of Outfall MWR010			0			0	0												
S.32717.6803 Cottage Farm Programing	Dec-00	Dec-01	17			17	0												
S.355 MWR003 Gate & Siphon			**1,960**				**1,960**				**32**	**127**	**1,696**	**99**	**7**				
S.32722.6952 Design	Apr-09	Jan-12	327				327				32	127	144	17	7				
S.32723.6953 Construction	Nov-10	Jan-12	1,633				1,633						1,551	82					
S.357 Charles River CSO Controls			**6,000**				**6,000**	**25**	**380**	**1,130**	**2,825**	**660**	**970**	**10**					
S.32729.7009 Brookline Connection/Cottage Farm E/D	May-06	Feb-09	1,000				1,000	25	380	330	255	10							
S.32740.7080 Brookline Connect/Cott Farm Inf Contr	Feb-08	Feb-09	3,000				3,000			700	2,300								
S.32730.7010 Interceptor Optimization Eng/Des	Jan-08	Jan-11	800				800			100	270	250	170	10					
S.32741.7081 Additional Interceptor Connect																			
S.32731.7011 Existing Gate Controls System	Jan-10	Jan-11	1,200				1,200					400	800						
S.340 S. Dorch Bay Sew Separ (Fox Pt.)			**53,014**	**7,900**	**12,397**	**46,492**	**6,522**	**4,693**	**760**	**704**	**363**	**2**							
S.32651.6155 Design	Jun-96	Aug-09	11,172	819	283	10,369	803	486	156	99	60	2							
S.32664.6247 Construction	Apr-99	Nov-06	41,842	7,081	12,113	36,123	5,719	4,207	604	605	303								
S.341 S. Dorch Bay Sew Separ (Comm. Pt.)			**62,759**	**6,533**	**10,118**	**43,713**	**19,046**	**6,454**	**7,411**	**4,870**	**307**	**4**							
S.32650.6154 Design	Jun-96	Aug-09	13,240	1,607	528	12,425	815	255	280	246	31	4							
S.32665.6248 Construction	Apr-99	Nov-07	49,519	4,926	9,590	31,289	18,230	6,199	7,131	4,624	276								

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	NTP	SC	Total Contract Amount	Year 04 Actuals	Year 05 Actuals	Projected Pmts Thr. FY05	Remaining Balance 6/30/05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	Beyond FY16
S.344 Stony Brook Sewer Separation			**44,612**	**8,843**	**8,820**	**33,587**	**11,025**	**9,557**	**1,467**										
S.32667.6395 Design/CS/RI	Jul-98	Apr-07	9,755	1,132	810	8,679	1,076	432	644										
S.32668.6251 Construction	Jul-00	Sep-06	34,857	7,711	8,011	24,908	9,949	9,126	823										
S.342 Neponset River Sewer Separation			**2,681**			**2,444**	**237**	**237**											
S.32652.6156 Design/CS/RI	Apr-96	Dec-03	480			470	10	10											
S.32653.6160 Construction	Aug-96	Oct-02	2,201			1,975	226	226											
S.343 Constitution Beach Sewer Separation			**3,769**			**3,769**	**0**												
S.32649.6153 Design/CS/RI	Oct-96	Dec-02	673			673	0												
S.32666.6249 Construction	May-98	Apr-02	3,096			3,096	0												
S.346 Cambridge CAM002-004 Sew.Separation			**41,687**	**2,372**	**1,111**	**17,417**	**24,270**	**1,332**	**2,495**	**117**	**1,231**	**3,837**	**3,787**	**10,573**	**898**				
S.32654.6161 Design/CS/RI	Jan-97	Jun-13	12,090	1,431	1,016	7,711	4,379	851	1,000	25	335	561	784	744	79				
S.32672.6255 Construction	Jul-98	Dec-12	29,597	941	95	9,706	19,891	481	1,495	92	896	3,276	3,003	9,829	819				
S.351 BWSC Floatables Controls			**933**	**0**		**933**	**0**												
S.32657.6168 Design	Dec-98	Dec-02	555	0		555	0												
S.32683.6266 Construction	Aug-00	Mar-02	378	0		378	0												
S.352 Cambridge Floatables Controls			**2,791**		**545**	**922**	**1,869**	**346**	**686**	**538**	**198**				**101**				
S.32655.6162 Design	Jan-97	Sep-12	404			377	27	6	6	5	5				5				
S.32684.6267 Construction	Oct-02	Sep-12	2,387		545	545	1,842	340	680	533	193				96				
S.356 Fort Point Channel Sewer Separation			**7,956**		**637**	**637**	**7,319**	**3,774**	**3,533**	**13**									
S.32724.6991 Design	May-04	Mar-08	1,098		497	497	601	399	189	13									
S.32725.6992 Construction	Mar-05	Mar-07	6,858		140	140	6,718	3,374	3,344										
S.358 Morrissey Boulevard Drain			**19,359**			**0**	**19,359**	**577**	**3,945**	**7,396**	**7,396**	**45**							
S.32735.7015 Design	Jun-05	Dec-09	3,052				3,052	577	684	873	873	45							
S.32713.6696 Construction	Dec-06	Jun-09	16,307			0	16,307		3,261	6,523	6,523								
S.359 Reserved Channel Sewer Separation			**57,394**				**57,394**	**60**	**1,139**	**2,157**	**2,515**	**7,971**	**7,971**	**7,971**	**7,971**	**7,869**	**7,767**	**4,003**	
S.32734.7014 Design	Jan-07	Jun-16	11,507				11,507	60	1,139	2,157	1,368	1,088	1,088	1,088	1,088	986	884	561	
S.32727.6994 Construction	May-09	Dec-15	45,887				45,887				1,147	6,883	6,883	6,883	6,883	6,883	6,883	3,442	
S.360 Brookline Sewer Separation			**9,000**				**9,000**		**135**	**265**	**1,025**	**1,780**	**1,780**	**1,780**	**1,780**	**445**	**10**		
S.32736.7076 Design CS/RI	Jul-06	Jul-13	1,800				1,800		135	265	265	265	265	265	265	65	10		
S.32737.7077 Construction	Jul-08	Jul-13	7,200				7,200				760	1,515	1,515	1,515	1,515	380			
S.361 Bulfinch Triangle Sewer Separation			**4,000**				**4,000**		**110**	**115**	**440**	**790**	**790**	**790**	**790**	**165**	**10**		
S.32738.7078 Design CS/RI	Jul-06	Jul-13	800				800		110	115	90	115	115	115	115	15	10		
S.32739.7079 Construction	Jul-08	Jul-13	3,200				3,200				350	675	675	675	675	150			
S.324 CSO Support			**51,411**	**952**	**279**	**38,535**	**12,877**	**3,550**	**2,113**	**2,110**	**2,036**	**984**	**1,773**	**311**					
S.32400.5790 Technical Assistance	Feb-94	Dec-95	228			228	0												
S.32407.5970 Tech. Assistance-Geotech			61			61	0												
S.32401.5791 Planning/EIR	Mar-88	Sep-90	10,769			10,769	0												
S.32403.5716 Master Planning	Mar-92	Sep-04	22,007	566	5	21,877	130	90	40										
S.32645.6036 Watershed Planning	Dec-94	Apr-01	877			877	0												
S.32409.5795 Modeling	May-92	Mar-95	300			300	0												
S.32411.5767 SOP Program	Jan-94	May-01	1,957	0	0	1,957	0												
S.32691.6372 System Assessment	May-97	May-11	476	23		27	449	83	83	83	83	83	18	15					
S.32648.6150 Technical Review	Jul-96	May-11	794	247	80	529	265	44	44	44	44	44	44						
S.32658.6169 Land/Easement	Jul-96	May-11	13,943	116	194	1,910	12,033	3,333	1,945	1,983	1,908	857	1,711	296					
S.14 Other			**68,875**	**1,535**	**10,069**	**61,349**	**7,526**	**2,217**	**2,539**	**2,122**	**2,570**	**1,557**	**2,905**	**2,710**	**2,546**	**-3,978**	**-3,098**	**-2,450**	**-2,114**
S.128 I/I Local Financial Assistance			**68,594**	**1,468**	**10,066**	**61,068**	**7,526**	**2,217**	**2,539**	**2,122**	**2,570**	**1,557**	**2,905**	**2,710**	**2,546**	**-3,978**	**-3,098**	**-2,450**	**-2,114**
S.10232.5300 Community I/I Grants				-119	0	5,783	-5,783	-5,783											
S.10233.5393 Community I/I Loans				-357	0	17,226	-17,226	-17,226											
S.10234.5394 Community I/I Loan Repayment				74	-15	-17,196	17,196	17,196											
S.10273.6084 Grants - Phase II	May-93	May-06	15,938	658	191	9,670	6,267	6,267											
S.10274.6085 Loans - Phase II	May-93	May-06	47,664	1,974	572	29,011	18,653	18,653											
S.10282.6170 Repayment - Phase II	May-94	May-11	-47,664	-5,614	-1,697	-25,441	-22,223	-22,223											
S.10315.6505 Grants-Phase III				905	3,315	14,822	-14,822	-14,822											
S.10316.6506 Loans-Phase III				379	4,052	18,116	-18,116	-18,116											
S.10317.6507 Repayment-Phase III				-418	-2,191	-9,101	9,101	9,101											
S.10368.6736 Grants - Phase IV	Nov-99	May-13	34,650	2,233	1,787	7,989	26,661	17,123	1,800	1,800	1,800	1,350	1,125	900	763				
S.10369.6737 Loans - Phase IV	Nov-99	May-13	42,350	2,722	2,184	9,765	32,585	20,928	2,200	2,200	2,200	1,650	1,375	1,100	932				
S.10370.6738 Repayment - Phase IV	Nov-00	May-18	-42,350	-969	-1,492	-2,944	-39,406	-13,674	-5,023	-4,445	-3,557	-3,130	-2,212	-1,925	-1,705	-1,451	-1,011	-700	-573
S.10348.6609 Public Participation	Feb-99	Jun-02	6			6	0												
S.10407.6925 Grants-Phase V	Aug-04	May-13	18,000		1,512	1,512	16,488	2,324	2,025	1,800	1,800	1,800	2,250	2,250	2,239				
S.10408.6926 Loans-Phase V	Aug-04	May-13	22,000		1,848	1,848	20,152	2,840	2,475	2,200	2,200	2,200	2,750	2,750	2,737				
S.10409.6927 Repayments-Phase V	Aug-05	May-18	-22,000				-22,000	-370	-938	-1,433	-1,873	-2,313	-2,383	-2,365	-2,420	-2,527	-2,087	-1,750	-1,541
S.138 Sewerage System Mapping Upgrade			**281**	**67**	**3**	**281**	**0**												
S.10307.6417 Contract 1-Base Maps	Mar-99	Feb-01	67			67	0												
S.10308.6418 Contract 2-Existing Data	Jun-99	Apr-04	174	67	3	174	0												
S.10360.6666 Quincy Data Sharing	Jan-00	Dec-02	20			20	0												
S.10361.6667 Weymouth Data Sharing	Jan-00	Jun-01	20			20	0												

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S.2 Waterworks System Improvements			**1,887,321**	**100,093**	**76,276**	**1,451,999**	**435,323**	**73,226**	**81,388**	**89,390**	**84,912**	**56,518**	**30,937**	**39,707**	**37,030**	**10,804**	**-3,147**	**-8,797**	**-56,645**
S.16 Drinking Water Quality Improvements			**590,897**	**55,706**	**30,579**	**472,539**	**118,358**	**19,823**	**14,392**	**16,211**	**16,845**	**7,317**	**3,443**	**15,427**	**16,610**	**8,290**			
S.542 Walnut Hill Water Treatment Plant			**429,364**	**43,852**	**27,533**	**357,407**	**71,957**	**16,766**	**2,971**	**4,705**	**5,262**	**2,771**	**731**	**13,850**	**16,610**	**8,290**			
S.53293.5023 Study 1	Jan-88	Feb-89	444			444	0												
S.53294.5024 Study 2	Jul-90	Mar-94	2,368			2,368	0												
S.53375.6182 AWWARF Study	Dec-96	Sep-03	650	67	26	650	0												
S.53376.6206 Emerg Dis Res Water Mgmt Study	Nov-98	Sep-02	1,454	-23		1,454	0												
S.53367.6118 Crypto. Inactivation Study	Feb-97	May-00	150			150	0												
S.53390.6365 Cosgrove Disinfection Ph II	Apr-98	May-99	2,169			2,169	0												
S.53391.6397 Cosgrove Disinfection Ph I	Jul-97	Oct-97	150			150	0												
S.53393.6406 Immediate Disinf. MECO	Jul-97	Jul-97	10			10	0												
S.53392.6401 Distribution Water Consultant	Jul-97	Jun-98	3			3	0												
S.53304.5157 Permit Fees	Jul-93	Dec-05	59	4	1	46	13	6	4	3									
S.53300.5997 Technical Assistance	Jan-88	Jun-00	72			72	0												
S.53296.5042 EIR/Conceptual Design	Nov-93	Jul-95	5,808		8	5,808	0												
S.53301.5017 Design/CS/RI - Wachusett WTP	Oct-96	Sep-06	48,880	3,888	3,195	47,395	1,485	1,212	273										
S.53377.6207 WHCP1 Wachusett Cosgrove Intakes	Jun-00	Jun-03	15,391	370	13	15,391	0												
S.53412.5522 WHCP2 Interim Rehab. Wach. Aque.	Dec-00	Oct-02	23,400	5		23,400	0												
S.53413.6488 WHCP3 Sitework & Storage Tanks	Mar-99	Nov-02	67,369	499		67,369	0												
S.53414.6489 WHCP4 Treatment Facility	Dec-00	Jul-05	145,599	28,559	15,538	135,567	10,032	9,391	641										
S.53416.6491 WHCP6 Late Sitework	Jul-04	Nov-05	4,149	40	2,665	2,705	1,444	1,394	50										
S.53426.6650 WHCP7 Existing Facilities Mods	May-07	Jan-09	5,000			0	5,000			3,156	1,844								
S.53371.6134 Design Management Support	Apr-97	Apr-00	1,730			1,730	0												
S.53378.6208 Construction Management/RI	Aug-98	Sep-06	31,907	5,662	5,234	28,963	2,944	2,831	113										
S.53395.6433 Corrosion Control-Norumbega																			
S.53396.6434 Corrosion Control Norumb. Construction																			
S.53409.6431 Booster Disinfection Design																			
S.53394.6432 Booster Disinfection Construction																			
S.53406.6479 Cosgrove Disinf.-Fac. Underwater Imps.	Jan-98	Jun-98	217			217	0												
S.53410.6485 Community Chlorine Analyzers	Apr-98	Jun-98	49			49	0												
S.53418.6494 OCIP	Mar-99	Dec-07	5,802	1,055	-168	5,679	123	28	95										
S.53419.6495 Professional Services	Sep-98	Oct-05	2,857	14	100	2,721	136	95	41										
S.53420.6497 Marlboro MOA	Sep-98	Jun-05	5,859	43		5,859	0												
S.53421.6520 WHWTP- MECO	Sep-98	Mar-05	128			128	0												
S.53425.6613 Site Security Services	May-99	Mar-05	1,266	240	241	1,264	2	2											
S.53427.6670 CSX Crossing	Aug-01	Dec-01	65			65	0												
S.53428.6671 Wachusetts Algae Design CS/RI	Sep-06	Dec-09	450			0	450		128	129	128	65							
S.53432.6691 Public Health Research	Jul-00	Dec-06	2,273	289	302	1,289	984	275	325	384									
S.53435.6756 Security Equipment	Jun-00	Jun-00	571			571	0												
S.53436.6772 WHCP8 Cosgrove Screens Des	Feb-02	Mar-04																	
S.53437.6773 WHCP8 Cosgrove Screens Con	Aug-03	Aug-04	3,238	3,026	212	3,238	0												
S.53438.6774 Wachusett UV Treatment Facility Study	May-02	Mar-05																	
S.53441.6778 Cosgrove Tunnel Inspection			0				0												
S.53443.6815 AWWARF-Evaluation Ozone & UV	Jul-01	Jan-04	302	102		302	0												
S.53444.6817 ComGas Pipeline																			
S.53445.6827 Fitout/Construction	Oct-03	Dec-08	1,350	13	166	179	1,171	621	108	108	334								
S.53448.6889 Wachusetts Algae ...	Feb-08	Dec-09	1,800				1,800			257	1,029	514							
S.53449.6922 WH Ultra Violet Disinfect Study																			
S.53450.6923 WH Ultra Violet Dis Des ESDC/RI	Jun-08	Dec-13	9,500				9,500				1,827	2,192	731	1,710	2,042	998			
S.53451.6924 WH Ultra Violet Disinfect Cons	Jul-11	Dec-13	34,000				34,000							12,140	14,568	7,292			
S.53452.6939 As needed Tech Assistance #1	Jan-06	Dec-07	750				750	187	375	188									
S.53456.7084 Ancillary Mods Constr 1																			
S.53453.6951 Des WH CP7 Existing Fac Mods	Jul-05	Jan-09	1,373				1,373	629	444	200	100								
S.53455.6989 As needed Tech Assistance ...	Jan-06	Dec-07	750				750	94	375	281									
S.53457.7085 Ancillary Mods Const 2																			

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S.543 Quabbin Water Treatment Plant			**15,730**	**389**	**280**	**10,112**	**5,618**	**138**	**31**	**140**	**337**	**683**	**2,712**	**1,577**					
S.53363.6043 Quabbin WTP Des/CA/RI	May-95	Aug-01	3,823			3,823	0												
S.53382.6212 Construction	Nov-98	Sep-00	5,080			5,080	0												
S.53381.6211 Utilities	Aug-98	Jan-12	13			13	0												
S.53380.6210 Permit Fees	Jan-98	Jan-12	10	1		7	3				1	2							
S.53405.6468 CVA CT Facilities																			
S.53433.6706 Ware Fire Dept. MOA	Oct-99	Jul-00	25			25	0												
S.53434.6711 W Q Analysis Equipment	Jan-01	Jun-06	50	15		49	1		1										
S.53439.6775 Quabbin UVWTP: Des/CA/RI	Dec-07	Jan-12	961				961			140	336	72	264	149					
S.53440.6776 Quabbin UVWTP: Construction	Feb-10	Jan-12	4,485				4,485					609	2,448	1,428					
S.53442.6804 Quabbin UVWTP:Study/Pilot	May-02	Dec-05	1,283	372	280	1,115	168	138	30										
S.544 Norumbega Covered Storage			**107,487**	**11,301**	**2,644**	**103,219**	**4,268**	**2,751**	**425**	**481**	**511**	**100**							
S.53297.5041 Conceptual Design/EIR	Sep-92	Oct-99	2,873		12	2,873	0												
S.53364.6057 Owners Representative	Apr-98	Dec-05	4,636	500	496	4,413	223	223											
S.53383.6213 Design/Build	Nov-99	Aug-05	96,647	10,801	2,136	92,897	3,750	2,520	400	400	430								
S.53372.6145 Land	Mar-97	Dec-97	3,000			3,000	0												
S.53365.6115 Appraisal	Nov-95	Dec-97	17			17	0												
S.53403.6466 Permits	Jun-99	Dec-09	5	0		1	4		1	1	1	1							
S.53424.6606 Professional Services	Sep-98	Jun-07	51			19	32	8	24										
S.53422.6529 Booster Disinfection Design	Jul-07	Jan-10	259			0	259			80	80	99							
S.53423.6530 Booster Disinfection Construction						0	0												
S.53430.6677 Water Quality Protection Fence																			
S.53431.6678 Communications Pilot Installation																			
S.53446.6837 Emergency Disinfection Constr																			
S.545 Blue Hills Covered Storage			**38,083**	**165**	**121**	**1,568**	**36,515**	**168**	**10,964**	**10,885**	**10,735**	**3,763**							
S.68025.6139 EIR/Preliminary Design/OR	May-97	Sep-09	2,257	165	114	1,561	697	141	200	200	100	56							
S.53384.6214 DB Field Oversight	May-06	Sep-09	2,522				2,522	0	724	655	635	508							
S.53386.6216 Design Build	Jul-06	Sep-09	33,199				33,199	0	10,000	10,000	10,000	3,199							
S.53385.6215 Tech Support/Permit Comp	Apr-02	Dec-07	104		7	7	97	27	40	30									
S.550 Low Service Storage Near Spot Pond			**233**			**233**	**0**												
S.53400.6455 Env Rev	Apr-02	Feb-03	233			233	0												
S.53401.6456 Env Rev Con Des Owners Rep																			
S.53402.6457 Design/Build	Apr-12	Apr-14																	
S.53447.6868 Easement/Land Acquisition																			

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S.17 Transmission			**749,855**	**9,221**	**7,360**	**636,022**	**113,833**	**20,090**	**18,279**	**22,644**	**21,981**	**19,793**	**5,748**	**4,763**	**535**				
S.604 MetroWest Tunnel			**698,271**	**7,228**	**3,439**	**624,733**	**73,539**	**4,852**	**1,845**	**16,504**	**19,647**	**19,645**	**5,748**	**4,763**	**535**				
S.59794.5043 Study	Jun-84	Oct-89	415			415	0												
S.59796.5048 Construction-Sudbury Pipe Bridge	Nov-91	Jun-92	296			296	0												
S.59795.5044 Design/EIR - Tunnel/ESDC	Apr-92	Mar-07	37,984	1,032	410	37,797	186	150	36										
S.59798.6054 West Tunnel Segment - CP1	Apr-97	Apr-03	147,787	2,592	2,850	147,787	0												
S.60013.6055 Midd.Tunnel Segment - CP2	Jun-96	Apr-03	245,809	366	-10	245,809	0												
S.60015.6059 Shaft 5A - CP3	Aug-97	Aug-98	5,872			5,872	0												
S.60040.6374 East Tunnel Segment-CP3A	Nov-98	Sep-02	56,054	-31		56,054	0												
S.60014.6056 MHD Salt Sheds - CP5	Sep-96	Jun-97	1,314			1,314	0												
S.60031.6205 CP6B Upper Hultman Rehab	Jul-10	Jul-12	6,300				6,300						2,740	3,288	272				
S.60030.6204 Testing & Disinfection-CP7	Jan-03	Oct-03	3,612	1,566	0	3,612	0												
S.60029.6203 Loring Road Storage Tanks CP-8	Sep-97	Nov-00	41,368			41,368	0												
S.59799.5284 Const. Mgmt/Resident Inspect	May-95	Apr-04	39,412	1,202	35	39,156	257	257											
S.59806.5141 Hultman Study	Apr-95	Mar-05	1,864			1,864	0												
S.60022.6128 Hultman Leak Repair	Aug-96	May-97	307			307	0												
S.60026.6140 Hultman Repair Band	Aug-96	Dec-96	28			28	0												
S.60042.6430 Hultman Investigation and Repair	Jun-99	Nov-00	1,604			1,604	0												
S.60043.6492 Hultman Repair Bands 98-99	Apr-99	Jun-99	116			116	0												
S.60083.7082 Hultman Interconnect RI/Svcs	Jun-07	Jun-12	4,000				4,000			655	787	787	787	787	197				
S.59805.5139 Land Acquisition	Oct-95	Mar-08	6,259	244		6,259	0	0											
S.59804.5976 Technical Assistance	Jun-84	Jun-98	131			131	0												
S.60012.6037 DEP Permit Fees	Oct-94	Jun-02	50			45	5		2	1	2								
S.60020.6117 Prof. Services	Nov-95	Dec-03	814	27	7	731	83	10	40	10	10	10	3						
S.60023.6129 Framingham MOU	May-96	Dec-03	2,444		-95	2,444	0												
S.60039.6367 Weston MOA	Apr-96	Oct-04	1,018			1,018	0												
S.60038.6366 Southboro MOA	May-97	Jun-03	322	3		322	0												
S.60053.6762 Wayland MOA	Jun-00	Dec-02	35			35	0												
S.60017.6063 Local Sup Cont Des/CA/RI	May-96	Oct-99	859			859	0												
S.60024.6130 Loc. Support Cont. Constr	Jun-97	Dec-03	4,308	110	19	4,270	37	15	22										
S.60025.6131 Loc. Sup Cont. Legal/Easement	Apr-97	Jun-02	9			9	0												
S.60018.6067 Community Technical Assistance	Jun-95	Apr-99	297			297	0												
S.60021.6122 OCIP	Jun-96	May-06	24,515	-782	143	23,666	849	690	159										
S.60054.6777 Equipment Prepurchase	Jun-05	Mar-06	250				250	250											
S.60058.6856 Hultman Rehab CP9	Oct-05	Jun-06	3,184				3,184	2,786	398										
S.60059.6872 Interim Disinfection	Jan-03	Oct-05	1,245	900	81	1,245	0												
S.60066.6911 Hultman Interconnect/Fin Des/CA Insp	Sep-05	Jul-13	5,388				5,388	694	888	788	788	788	688	688	66				
S.60072.6950 Valve Chamber Modifications	Jul-06	Sep-06	300				300		300										
S.60073.6975 CP6A Lower Hultman Rehab	Jul-07	Jul-10	52,700				52,700			15,050	18,060	18,060	1,530						
S.601 Sluice Gate Rehabilitation			**9,630**	**1,937**	**3,175**	**9,366**	**264**	**264**											
S.59757.5255 Design/CS/RI	Aug-88	Jun-93	177			177	0												
S.59758.5256 Construction 1	Apr-91	Jul-93	1,529			1,529	0												
S.60034.6272 Design CS/RI 2	Apr-98	Sep-06	1,298	138	196	1,037	261	261											
S.59760.5258 Construction 2	Sep-03	Jun-05	4,771	1,799	2,979	4,778	-7	-7											
S.59761.5259 Constr-Stop Planks	Dec-88	Jun-89	444			444	0												
S.60027.6158 Const-Sudbury Toe Drain Repair	Sep-96	Jun-97	1,400			1,400	0												
S.60049.6681 Public Participation	Jul-99	Sep-05	5			0	5	5											
S.60047.6564 Legal	Jul-99	Sep-05	5	0		0	5	5											
INHSE.PLKS Design-Stop Planks																			
S.615 Chicopee Valley Aqued. Redundancy			**11,431**	**53**	**197**	**1,073**	**10,359**	**4,885**	**4,571**	**902**									
S.60048.6597 Pipeline Redundancy Planning	Sep-98	May-99																	
S.60045.6527 Pipeline Redundancy Des/CA/RI	Apr-00	Apr-08	2,383	53	190	1,064	1,319	518	500	301									
S.60046.6528 Pipeline Redundancy Construction	Nov-05	Oct-07	8,851			0	8,851	4,250	4,000	601									
S.60065.6908 Construction Easements	Apr-03	Oct-06	147		4	6	141	85	56										
S.60074.7002 Permits	May-04	Jan-06	50		2	2	48	33	15										
S.597 Winsor Dam Hydroelectric			**83**			**38**	**45**	**45**											
S.60032.6276 Preliminary Permit Study & Licensing	Nov-97		83			38	45	45											
S.60033.6277 Detail Design																			
S.60044.6526 Construction						0	0												

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S.616 Quabbin Transmission System			**5,585**		**547**	**547**	**5,038**	**3,175**	**1,362**	**204**	**150**	**148**							
S.75491.6690 Phase 1 Oakdale Valves Const.	Oct-05	Jun-06	1,787			0	1,787	1,700	87										
S.60055.6828 Facilities Inspection	Jul-05	Dec-06	1,250				1,250	650	600										
S.75496.6831 Ph 1 Oakdale Valves Study/Des	Apr-04	May-07	1,475		521	521	954	425	475	54									
S.60068.6940 Ph2 Oakdale Valves Fac Des	Jul-07	Jun-10	0				0												
S.60069.6941 Ph2 Oakdale Valves Fac Constr	Jan-09	Jun-10	0				0												
S.60075.7007 Equipment Pre-purchase	Feb-05	Jun-10	1,074		26	26	1,048	400	200	150	150	148							
S.617 Sudbury / Weston Aqueduct Repairs			**3,954**	**3**	**2**	**265**	**3,689**	**515**	**3,166**	**8**									
S.75486.6617 Haz Material Sudbury Aqueduct	Apr-99	May-05	300	3	2	265	35	35											
S.60056.6838 Sudbury Aqueduct Inspection	Aug-05	Feb-06	887				887	480	407										
S.60057.6839 Weston Aqueduct Inspection	Jul-06	Jun-07	50				50		42	8									
S.60070.6947 Sudbury Aqueduct Design			0				0												
S.60071.6948 Sudbury Aqueduct Constr			0				0												
S.60076.7016 Sudbury Short-Term Repairs	Jun-06	Dec-06	2,718				2,718	0	2,718										
S.619 Winsor Dam Repair			**1,200**				**1,200**	**12**	**198**	**880**	**110**								
S.60077.7017 Design CA/RI	Apr-06	Jun-08	200				200	12	98	80	10								
S.60078.7018 Construction	Mar-07	Jun-08	1,000				1,000		100	800	100								
S.620 Wachusetts Reservoir Spillway Improvement			**8,200**				**8,200**	**342**	**1,638**	**4,146**	**2,074**								
S.60079.7019 Design	Jan-06	Dec-08	1,200				1,200	342	366	330	162								
S.60080.7020 Construction	Jan-07	Dec-08	7,000				7,000		1,272	3,816	1,912								
S.621 Watershed Land			**11,000**				**11,000**	**6,000**	**5,000**										
S.60081.7069 Land Acquisition	Apr-06	Jun-07	11,000				11,000	6,000	5,000										
S.622 Cosgrove/Wachusett Redundancy	**38869**	**39203**	**500**				**500**		**500**										
S.60082.7071 Cosgrove Tunnel Alternative Study	Jun-06	May-07	500				500		500										
S.18 Distribution And Pumping			**516,585**	**23,819**	**25,472**	**247,902**	**268,682**	**22,420**	**39,732**	**43,259**	**37,641**	**24,056**	**18,095**	**16,677**	**18,191**	**23,076**	**15,196**	**7,260**	**3,077**
S.677 Valve Replacement			**14,952**	**484**	**941**	**7,092**	**7,861**	**798**	**2,320**	**1,575**	**1,592**	**1,452**	**124**						
S.67559.5126 Construction 1	Nov-95	Nov-96	718			718	0												
S.68012.6105 Construction 2	Nov-97	Jul-99	1,385			1,385	0												
S.68039.6278 Construction 3	Feb-00	Aug-01	1,338			1,338	0												
S.68079.6345 Construction 4	May-02	Oct-03	1,540	100		1,540	0												
S.68080.6346 Construction 5	Mar-04	Jul-05	1,386	360	941	1,302	84	84											
S.68126.6435 Construction 6	Jul-06	Sep-07	2,236				2,236	0	1,490	746									
S.68127.6436 Construction 7	Oct-08	May-10	2,195				2,195	0	0	0	763	1,308	124						
S.68005.6088 Equip. Purchase	Oct-95	Jun-09	4,036	22		698	3,338	710	828	828	828	144							
S.67560.5124 Technical Assistance	Oct-95	May-10	110	1		106	4	4											
INHSE.DES1 Design/Phase 1																			
S.68239.6859 Permits	Jan-02	May-10	5	0		0	5	1	2	1	1								
S.68240.6860 Easements	Jan-02	May-10	5			5	0												
S.712 Cathodic Protection Of Distr.Mains			**1,472**			**141**	**1,331**									**380**	**444**	**444**	**64**
S.68002.6058 Planning Phase I	Apr-95	Dec-97	108			108	0												
S.68128.6437 Test Station Installation 1			0				0												
S.68129.6438 Test Station Installation 2	May-13	May-14	444				444									380	64		
S.68130.6439 Test Station Installation 3	May-14	May-15	444				444										380	64	
S.68131.6440 Test Station Installation 4	May-15	May-16	444				444											380	64
S.68132.6441 Test Station Installation 5																			
S.68216.6751 Technical Assistance	Jan-00	May-09	33			33	0												
S.678 Boston Low Serv.-Pipe & Valve Rehab			**23,691**	**288**	**75**	**23,691**	**0**												
S.67570.5120 Study - Pipe	Sep-84	Feb-91	297			297	0												
S.67571.5122 Design/CS	Jul-92	Feb-05	1,604	66	48	1,604	0												
S.67572.5123 Ph 1 Equip Prepurchase	Feb-95	Dec-95	892			892	0												
S.68000.6045 Const Clinton Rd & Boylston St	Apr-98	Jul-99	7,933			7,933	0												
S.67999.6044 Construction Beacon Street	Jun-00	Sep-03	12,964	222	27	12,964	0												
INHSE.PITS Test Pits																			
INHSE.BEAC Design/CS - Beacon St.																			
S.68217.6769 Technical Assistance	Jun-00	Aug-03	1			1	0												

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S.730 Weston Aqueduct Supply Mains (WASMs)			**116,051**	**8,734**	**8,331**	**59,897**	**56,153**	**1,128**	**1,816**	**2,732**	**4,600**	**5,307**	**8,906**	**7,233**	**6,077**	**6,077**	**4,505**	**5,181**	**2,591**
S.68027.6142 Design/CA/RI-PhA/W1&2	Jun-97	Jul-06	5,374	540	353	4,853	522	369	152										
S.67865.5147 Design/CA/RI - W4	Mar-95	Dec-06	6,149	252	159	5,832	317	247	70										
S.68041.6280 Newton WASM 1&2	Mar-00	Jun-02	9,219			9,219	0												
S.68042.6281 Boston WASM 1&2	Feb-03	Jun-05	7,092	3,380	3,217	6,854	238	238											
S.68166.6539 Design/CA/RI WASM3	Jun-06	Dec-17	8,961			0	8,961		1,202	1,311	1,311	970	896	762	627	627	448	538	269
S.68167.6540 Design/CA/RI-Phs B/3			0			0	0												
S.68168.6541 Design/CA/RI-Phs C/3			0			0	0												
S.68169.6542 Design/CA/RI-Phs D/3			0			0	0												
S.68285.7083 Design/CA/RI Section 28	Jun-06	Jan-11	850				850		309	213	220	108							
S.68170.6543 Waltham WASM 3-CP2	Jan-10	Mar-12	16,561			0	16,561					2,650	7,949	5,962					
S.68171.6544 Belmont WASM 3 - CP3	Apr-12	Sep-14	12,577			0	12,577							449	5,390	5,390	1,348		
S.68172.6545 Arlington WASM 3 - CP4	Oct-14	Dec-16	9,674			0	9,674										2,709	4,643	2,322
S.68173.6546 Section 28, Arlington-CP1	Jan-08	Dec-09	4,086			0	4,086			743	2,229	1,114							
S.68031.6175 Auburndale WASM 1,2&4	Jun-97	Nov-98	4,001			4,001	0												
S.68069.6312 Newton WASM 2&4	Apr-98	Mar-01	8,282			8,282	0												
S.68070.6313 Allston WASM 4 & W. Ave. Sewer	Feb-02	Dec-04	17,331	4,298	2,228	17,325	6	6											
S.68032.6176 Construction Meter 103	Oct-96	Jul-98	61			61	0												
S.68071.6314 MDC Const-Bridge Crossing			0				0												
S.59774.5034 Construction Newton Water Mains	Apr-95	Oct-96	669			669	0												
S.59776.5975 Technical Assistance	Mar-95	Dec-16	186	67	13	186	0												
S.68030.6174 Appraisal/Easement	Mar-95	Jan-14	750	118	118	292	459	6	33	60	60	60	60	60	60	60			
INHSE.DES2 Design 2																			
S.68245.6870 Survey	Dec-01	Dec-08	210	79	10	89	121		30	30	30	30	1						
S.68269.6996 Temporary Water Supply Plan	Jan-08	Dec-09	1,500				1,500			375	750	375							
S.68272.7000 Section PCCP W-12 ...	Oct-04	Jul-05	2,167		1,978	1,978	190	190											
S.68273.7001 WASM3 SPL12 PCCP Des	May-04	May-06	349		257	257	92	73	19										
S.720 Warren Cottage Line Rehab			**1,205**	**3**		**1,205**	**0**												
S.68081.6285 Construction	Sep-01	Dec-02	1,158			1,158	0												
S.68082.6286 Easements	Oct-99	Jan-03	3	3		3	0												
S.68195.6618 Technical Assistance	Mar-99	Jan-03	43			43	0												
INHSE.DESN Design																			
S.732 Walnut St. & Fisher Hill Pipeline Rehab.			**3,354**	**1**	**33**	**33**	**3,321**	**20**	**2,004**	**1,297**									
S.68189.6586 Construction Phs. 1	Nov-06	May-08	3,294			0	3,294		2,000	1,294									
S.68191.6588 Construction Phs. 2			0			0	0												
S.68220.6779 Technical Assistance	Jan-04	May-08	21	1	3	3	17	17	0	0									
S.68221.6780 Survey	May-04	May-08	35		30	30	5	2	2	2									
S.68270.6998 Permits	Jul-04	May-08	5				5	2	2	2									
S.683 Heath Hill Road Pipe Replacement			**20,022**	**520**	**283**	**10,290**	**9,732**	**2,500**	**6,716**	**490**	**26**								
S.67639.5192 Design/CS/RI-Sec 52 Ph 1	May-89	Apr-92	218	48		218	0												
S.68047.6288 Design Sec 52 Ph 2	Sep-02	Oct-08	2,408	471	276	1,332	1,076	393	608	50	25								
S.67645.6042 Const-Sect 52 New	Apr-96	Jun-97	745			745	0												
S.67642.5194 Construction Section 52 Rehab	Jan-06	Oct-07	8,334				8,334	2,000	6,000	334									
S.67640.5206 Design/CS/RI - Sec 58,20	Jan-91	Jan-01	1,595	-1	7	1,595	0												
S.67643.5102 Construction Sect 58,20,19	Jun-97	Nov-99	6,362			6,362	0												
S.67644.5985 Technical Assistance	May-89	Jun-08	19			19	0												
S.68008.6100 Legal/Easements-New	Jan-95	Dec-95	17			17	0												
S.68048.6289 Legal/Easements Rehab	Mar-02	Oct-07	303	0		2	301	100	100	101									
S.68201.6648 Public Participation	Mar-02	Oct-07	5			0	5	3	2										
S.68202.6649 Legal	Mar-02	Oct-07	5			0	5	2	2	1	0								
S.68241.6862 Boston Paving	Dec-05	Oct-08	12	0		0	12	3	4	4	1								

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S.721 Southern Spine Distribution Mains			**62,580**	**3,615**	**5,592**	**12,405**	**50,175**	**739**	**5,654**	**6,113**	**6,150**	**6,115**	**608**	**1,119**	**6,020**	**10,267**	**6,100**	**868**	**423**
S.68083.6290 Sec 21,43,22 Design	Sep-00	Mar-12	8,076	650	765	4,201	3,875	543	564	564	564	564	564	512					
S.68084.6291 Sec 21,43,22 Easements	Mar-02	Feb-09	170	68		68	102	21	28	28	24								
S.68085.6292 Section 22 South Construction	Jul-03	Jun-05	5,014	2,217	2,645	4,862	152	152											
S.68086.6293 Sec 19 Design		Nov-14	0			0	0												
S.68087.6294 Sec 19 Easements			0				0												
S.68088.6295 Sec 19 Construction			0				0												
S.68089.6296 Sec 20 & 58 Design	Feb-12	May-17	2,106				2,106	0	0	0	0	0	0	99	396	396	396	396	423
S.68090.6297 Sec 20 & 58 Easements	Sep-08	Sep-14	46				46	0	0	0	5	8	8	8	8	8	3		
S.68091.6298 Sec 20 & 58 Construction	Sep-14	May-16	9,912				9,912	0	0	0	0	0	0	0	0	3,776	5,664	472	
S.68122.6396 Adams Street Bridge	Jul-98	Dec-99	154			154	0												
S.68193.6601 Southern High Public Part	Oct-98	May-99	15			15	0												
S.68194.6602 Southern High Ext Study	Sep-98	May-99	242			242	0												
S.68228.6787 Boston Paving	Jul-03	Mar-12	256	3	0	3	253	0	0	0	36	36	36	36	36	36	37		
S.68235.6844 Section 22 North Construction	Apr-12	Apr-14	12,097				12,097	0	0	0	0	0	0	465	5,580	6,052			
S.68236.6845 Sections 21&43 Construction	Jun-06	Apr-10	21,607				21,607	0	5,060	5,520	5,520	5,507							
S.68237.6846 Legal			5	0	0	0	5	1	2	1	1								
S.68238.6847 Technical Assistance			22	0	2	2	20	20											
S.68246.6871 MHD Neponset River Bridge			0				0												
S.68247.6885 Contract 1A Construction	Nov-03	Jun-05	2,859	677	2,180	2,857	1	1											
S.714 South. Extra High Sects 41,42 & 74			**3,650**	**977**	**41**	**3,577**	**72**	**72**											
S.68014.6107 Design/CA/RI	Apr-97	Jan-05	763	17	41	763	0												
S.68049.6299 Easements	Apr-97	Jun-03	46			46	0												
S.68050.6300 Construction	Dec-00	Sep-03	2,345	537		2,345	0												
S.68183.6561 Boston Paving	Sep-98	Oct-02	496	423		423	72	72											
S.68184.6562 Public Participation	Jul-99	Oct-02	0			0	0												
S.68185.6563 Legal	Jul-99	Oct-02	0			0	0												
S.719 Chestnut Hill Connecting Mains			**17,709**	**1,224**	**213**	**17,175**	**535**	**535**											
S.68026.6141 Des/CA/RI PS Potable Connection	Mar-00	Dec-04	1,403	235	63	1,362	41	41											
S.68051.6301 Preliminary Engineering	Jan-05	Jan-06	613		143	143	470	470											
S.68157.6503 Design/CA/RI - Emer. Pump Relocation	May-98	May-01	1,121	25		1,121	0												
S.68052.6302 Construction- Chp 149																			
S.68155.6501 Const - Emer. Pump Relocation	Feb-99	Mar-01	6,502			6,502	0												
S.68053.6303 Easements	Apr-03	Dec-07	81			81	0												
S.68180.6558 Boston Paving	Jul-99	Dec-07	133	133		133	0												
S.68181.6559 Public Participation	Jul-99	Jun-08				0	0												
S.68182.6560 Legal	Jul-99	Jun-08	1	0		1	0												
S.68199.6623 BECO Emergency Pump Construction	Sep-99	Jun-00	431			431	0												
S.68203.6651 Const.- Pump Station Potable Connection	Apr-02	Dec-03	7,132	831	7	7,132	0												
S.68218.6770 Shaft 7 & Meter 120 Des/CA/RI																			
S.68230.6814 Equipment pre-purchase	Apr-01	Oct-01	178			154	24	24											
S.68231.6820 Demolition of Garages	Feb-02	May-02	72			72	0												
S.68244.6869 Utilities	Jun-02	Aug-02	44			44	0												
S.68267.6982 Construction-Chp 30																			
S.68268.6995 Final Design CA/RI																			
S.704 Rehab of Other Pumping Stations			**28,952**	**144**	**230**	**4,048**	**24,904**	**870**	**5,635**	**7,283**	**7,283**	**3,452**	**381**						
S.67885.5153 Preliminary Design	Aug-94	Mar-96	351			351	0												
S.68017.6110 Design/CS/RI	May-97	Nov-04	2,710	144	-124	2,546	164	164											
S.68072.6304 Construction II&C	Jan-00	Feb-01	639			639	0												
S.68102.6375 Rehab of 5 Pump Stations	Aug-06	Sep-09	20,926				20,926	0	4,950	6,600	6,600	2,776							
S.68178.6556 Public Participation	Jul-99	Jan-10	5			0	5	1	2	1	1	1							
S.68179.6557 Legal	Jul-99	Jan-10	5			0	5	1	2	1	1	1							
S.68204.6676 Proprietary Equipment Purchases	Jun-99	Jan-10	285			158	127	21	28	28	28	22							
S.68266.6980 Design 2 CS/RI	Dec-04	Nov-10	4,030		354	354	3,676	684	653	653	653	653	381						

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S.722 NIH Redundancy & Covered Storage			**7,390**				**7,390**	**277**	**664**	**104**	**386**	**483**	**2,853**	**2,603**	**20**				
S.68093.6306 Easements	Jul-07	Apr-12	300				300			60	60	60	60	60					
INHSE.DSCS Design/CS/RI Sec 29A																			
S.68252.6906 Section 29A Construction			0				0												
S.53454.6954 Concept Plan	Dec-05	Jun-07	947				947	277	660	10									
S.68276.7026 NIH Improvements Const	Apr-10	May-12	5,046				5,046					210	2,520	2,316					
S.68277.7045 Design CA/RI NIH Improvements	Apr-08	Apr-12	1,074				1,074			27	322	209	269	227	20				
S.68278.7047 Permits	Jan-06	Apr-12	5				5		1	1	1	1	1						
S.68279.7048 Technical Assistance	Jan-06	Apr-12	18				18		3	6	3	3	3						
S.68282.7066 Sec 89&29 Redundancy Constr			0				0												
S.68283.7067 NIH Storage Fin Des/CS/RI	Jan-14	Dec-19	0				0												
S.68284.7068 NIH Storage Construction	Jan-17	Dec-19	0				0												
S.689 James L. Gillis Pump Station Rehab.			**34,146**	**166**	**49**	**33,324**	**822**	**92**	**635**	**95**									
S.67701.5249 Pump	Aug-86	Aug-86	70			70	0												
S.67702.5076 Electrical Upgrade	May-84	Sep-87	200			200	0												
S.67709.5074 Construction Diesel Exhaust	Apr-88	Dec-88	60			60	0												
S.67703.5077 Design/CS-Pump Station	Feb-88	Jun-99	2,308			2,308	0												
S.67707.5078 Construction-PS-Phase 1	May-90	Jul-91	630			630	0												
S.67708.5051 Const-P.S.-Ph2	May-95	Dec-98	12,890			12,890	0												
S.67998.6038 Hydraulic Transient Analysis	Apr-95	Sep-95	61			61	0												
S.67716.5047 Oil Control Plan	Aug-92	Dec-92	171			171	0												
S.67717.5050 Drain Line Cleaning	Nov-92	Jan-93	268			268	0												
S.67704.5072 Design/CS/RI-Suction Pipe	Jul-90	Apr-01	1,379	16	16	1,379	0												
S.67705.5071 Study-Suction Pipe	Nov-89	Nov-90	603			603	0												
S.67706.5073 Construction-Suction Pipe	Oct-95	Nov-97	11,265			11,265	0												
S.68054.6307 Construction-Tudor Barn	Oct-98	Dec-99	88			88	0												
S.68105.6378 Woodland Road Pavement Improvements	Aug-99	Jun-04	396			396	0												
S.67994.6030 Pavement Highland Ave	Oct-94	Nov-94	86			86	0												
S.67720.5219 Constr-Rehab Discharge	May-02	Nov-03	2,041	132		2,041	0												
S.67719.5144 Construction Sewer P.S.	May-96	Dec-96	203			203	0												
S.67714.5983 Technical Assistance	May-84	Dec-95	163			163	0												
S.67718.5053 Environ Assess & Remedial Plan	Oct-94	Sep-07	634	18	32	433	201	83	100	18									
S.68055.6308 Remedial Action Plan	Feb-07	Apr-07	600			0	600	0	525	75									
S.67991.6027 DEP Review Fees	Jul-94	Dec-07	30	0	1	9	21	9	10	2									
INHSE.DIES Design-Diesel Exhaust																			
INHSE.DISC Design-Rehabilitation Discharg																			
INHSE.SEWR Design-Sewer																			
S.713 Spot Pond Supply Mains - Rehab			**62,180**	**7,298**	**9,344**	**40,730**	**21,450**	**12,852**	**6,233**	**1,612**	**500**	**254**							
S.68038.6223 Prelim Design & Design/CA/RI	Sep-98	Apr-08	10,874	1,317	778	9,871	1,003	583	400	20									
S.68059.6316 Easements/Paving CP1	May-00	Mar-02	143			143	0												
S.68106.6379 Easements CP2	May-02	Jun-06	149	34	0	49	100	100											
S.68107.6380 Easements CP3	Apr-04	Nov-07	258	1	18	19	239	88	100	51									
S.68151.6476 Easements CP4	Sep-06	May-09	1			1	0												
S.68060.6317 North (Medford/Melrose)	May-00	Jan-02	6,597			6,597	0												
S.68108.6381 Middle (Medford/Somerville)	May-02	Jun-06	22,149	5,946	3,968	16,921	5,229	5,146	83										
S.68109.6382 South (Cambridge/Boston)	Oct-04	Apr-08	17,242		4,370	4,370	12,872	6,482	5,250	1,140									
S.68150.6475 Early Valve Replacement Contract	Sep-98	Jan-00	2,387			2,387	0												
S.68209.6697 Construction 4-Trusses	Apr-08	Dec-09	929			0	929			175	500	254							
S.68153.6483 Early Valve Equip. Purchase	May-98	Nov-01	161			161	0												
S.68223.6782 Construction CP-5 Sec 66 & OMM30			0				0												
S.68224.6783 Plan/Des CA/RI Sec 66 OMM30			0				0												
S.68225.6784 Easements CP-5	Jan-06	Dec-09	0				0												
S.68226.6785 Sewer Design/CA/RI & Sect 57 Des			0				0												
S.68227.6786 Riverside Ave Sewer Repair & Sect 57			0				0												
S.68274.7003 CA/RI CP3	Sep-04	Apr-08	1,289		210	210	1,079	453	400	226									

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S.723 Nor Low Service Rehab Secs. 8			**17,140**				**17,140**	**0**	**30**	**1,486**	**3,236**	**3,281**	**4,801**	**4,210**	**96**				
S.68094.6321 Sec 8 Survey	Nov-06	Aug-08	80				80		30	35	15	0	0						
S.68287.7092 Design CA/RI Sec 8	Aug-07	Aug-12	1,996				1,996			250	500	500	400	250	96				
S.68095.6322 Sec 8 Construction	Aug-09	Aug-11	9,859				9,859				0	1,500	4,400	3,959					
INHSE.DES8 Design Section 8																			
INHSE.SC57 Design Section 57																			
S.68262.6962 Rehab Sects 37,38 Chel/EB Con	Aug-08	Aug-09	3,200				3,200				1,920	1,280							
S.68263.6977 Permits	Jul-05	Aug-11	5				5	0		1	1	1	1	1					
S.68264.6979 Technical Assistance	Jul-05	Aug-11																	
S.68275.7021 Section 97A Construction	Aug-07	Aug-08	2,000				2,000			1,200	800								
S.702 New Connecting Mains - Shaft 7 to ...			**51,564**	**355**	**339**	**3,744**	**47,819**	**1,181**	**6,112**	**18,012**	**12,766**	**3,711**	**415**	**1,495**	**3,159**	**625**	**343**		
S.68035.6199 Watertown MOU	Jun-94	Sep-97	167			167	0												
S.67846.5163 Routing Study	Aug-94	Nov-96	397			397	0												
S.68110.6383 Design/CA/RI DP1	Sep-98	Dec-09	4,810	41	219	2,550	2,260	763	600	400	250	247							
S.68118.6391 Revised N. Segment (CP1A) New 48"	Mar-07	Dec-09	25,533				25,533		5,000	10,000	7,500	3,033							
S.68114.6387 Easements CP1 A&B	Jan-06	Oct-06	96	17		17	79	40	39										
S.68111.6384 Des/CA/RI DP2/4 Meter 120	Aug-02	Jun-09	2,943	297	120	613	2,330	379	400	470	800	281							
S.68286.7086 Design CA/RI Sec 59&60	Nov-10	Sep-14	500				500						250	100	75	50	25		
S.68174.6548 Constr CP2 C&L Sec 59&60	Nov-12	Sep-14	3,143			0	3,143								2,250	575	318		
S.68175.6547 Easements CP2	May-11	Nov-12	44			0	44						15	20	9				
S.68119.6392 South Segment (CP3)	Feb-08	Jun-09	5,257				5,257			3,100	2,157								
S.68115.6388 Easements CP3	Mar-07	Aug-07	67				67		25	42									
S.68112.6385 Design/CA/RI DP3																			
S.68121.6394 Northeast Segment (CP5)	Oct-07	Jun-09	6,058				6,058			4,000	2,058								
S.68117.6390 Easements CP5	Dec-06	Jun-07	49				49		49										
S.68242.6863 Belmont & Watertown MOA	Sep-02	Apr-06	0				0												
S.68243.6864 N. Seg (CP1B) C&L Watertown Sect			0				0												
S.68255.6955 Repl of Sect 25-Design CA/RI	Jul-09	Nov-12	400				400				0	150	150	75	25				
S.68256.6956 Repl of Sect 25-Construction	Jul-11	Nov-12	2,100				2,100							1,300	800				
S.706 NHS - Con. Mains from Sec. 91			**2,342**	**-59**		**2,342**	**0**												
S.67930.5165 Design/CA/RI	Jun-95	Oct-01	711	31		711	0												
S.68076.6331 Easements	Sep-99	Oct-01																	
S.68077.6332 Construction	Nov-00	Jun-02	1,631	-90		1,631	0												
S.692 NHS - Section 27 Improvements			2,701			124	2,577	1	1	1	1	1	1	5	8	1,758	802		
S.67769.6333 Construction Sect 27	Sep-13	Mar-15	2,576			27	2,550									1,750	800		
S.68192.6589 Easements	Apr-12	Mar-15	23			0	23							5	8	8	3		
S.68211.6712 Technical Assistance	Oct-99	Mar-12	64			60	5	1	1	1	1	1	1						
S.68229.6809 Surveying	Jun-01	Dec-01	37			37	0												

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S.693 NHS - Revere & Malden Pipeline Impr			**32,052**			**23,854**	**8,198**	**1,115**	**1,411**	**210**	**1**	**1**	**0**	**0**	**2,800**	**1,208**	**1,244**	**208**	
S.67780.5185 Design/CS/RI-Revere/Malden	May-88	Sep-94	1,786			1,786	0												
S.67781.5186 Constr-Revere Beach	Aug-92	Oct-94	6,314			6,314	0												
S.67782.5176 Constr-Malden Sect 53	Apr-92	Sep-94	10,026			10,026	0												
S.68020.6113 Landscaping Malden Section 53	Apr-96	Jun-96	20			20	0												
S.67792.5238 Construction - Linden Square	Apr-91	Nov-91	1,849			1,849	0												
S.67793.5239 Construction Admin.-Linden Squar	Apr-91	Nov-91	125			125	0												
S.67784.5177 Const-Revere Sect 53	Nov-06	Dec-07	2,707				2,707	1,100	1,400	207									
S.68078.6334 Easements Revere 53	Sep-02	Dec-07	27				27	15	10	2									
S.67996.6033 Des/CA/RI-Rd Restoration	Nov-94	Dec-95	77			77	0												
S.67997.6034 Construction Road Restoration	Jul-95	Jun-96	1,714			1,714	0												
S.68033.6183 Sidewalk Restoration	Sep-96	Oct-96	54			54	0												
S.67785.5191 Constr-Control Valves	Jun-88	Aug-89	949			949	0												
S.67786.5179 Const.-DI Pipeline C&L	Jun-90	Sep-90	158			158	0												
S.67787.5178 Constr-Win C&L	Jun-90	Aug-90	575			575	0												
S.67790.6335 Constr 68 & 53A	Jul-13	Nov-14	4,229				4,229								2,800	1,000	429		
S.67791.5986 Technical Assistance	Jul-06	Nov-15	206			206	0												
INHSE.SC53 Design-Revere Section 53																			
INHSE.VALV Design-Control Valves																			
INHSE.PIPE Design-DI Pipe Cleaning and Li																			
INHSE.DE53 Design/CS/RI -53A & 68																			
INHSE.WINT Design-Winthrop Cleaning and L																			
S.68257.6957 Shaft 9A-D Ext Design CA/RI			0				0												
S.68258.6958 Shaft 9A-D Ext Construction	Apr-14	Nov-15	1,200				1,200									200	800	200	
S.68265.6978 Survey	Jul-06	Nov-15	30				30	0								8	15	8	
S.68280.7049 Permits	Apr-05	Nov-15	5				5	0	1	1	1	1	0	0	0	0	0	0	
S.731 Lynnfield Pipeline			**4,000**			**0**	**4,000**	**150**	**500**	**2,250**	**1,100**								
INHSE.DELP Design						0	0												
S.68187.6584 Construction	Sep-07	Nov-08	3,000			0	3,000			2,000	1,000								
S.68196.6619 Easem/Legal/License/Permits	Apr-06	Apr-07	200			0	200	50	150										
S.68251.6905 Design CA/RI	Apr-06	Jul-09	800				800	100	350	250	100								
S.708 Nor Extra High Serv - New Pipelines			**8,746**	**69**		**3,632**	**5,114**	**1**	**2**	**1**	**1**	**1**	**6**	**12**	**12**	**2,762**	**1,757**	**560**	
S.67970.5242 Design/CA/RI	Sep-94	Jun-01	588	69		588	0												
S.67971.6339 Appraisal-Easement	Sep-94	Jun-01	0			0	0												
S.67972.6340 Construction	Aug-99	Sep-01	3,032			3,032	0												
INHSE.SC34 Design Sec 34-36-45																			
S.68162.6522 Construction-Sections 34,36,45	Jan-14	Nov-15	5,053			0	5,053									2,750	1,750	553	
S.68010.6099 Regulatory Compliance	Nov-95	Oct-00	0			0	0												
S.68208.6692 Section 83 Drop Hole Repairs			0			0	0												
S.68176.6554 Public Participation	Jul-99	Nov-15	5			0	5	1	1	0	0	0	0	0	0	0	0	0	
S.68177.6555 Legal	Jul-99	Nov-15	5			0	5	1	1	0	0	0	0	0	0	0	0	0	
S.68210.6707 Technical Assistance	Nov-10	Nov-15	54			8	46						5	10	10	10	5	6	
S.68215.6749 PLC Equipment Purchases	Dec-99	Dec-00	4			4	0												
S.68281.7050 Permits	Nov-10	Nov-15	5				5						1	1	1	1	1	1	
S.725 Hydraulic Model Update			**686**	**0**	**0**	**598**	**88**	**88**											
S.68101.6342 Hydraulic Model Update	Jun-99	Dec-02	563	0	0	563	0												
S.68165.6531 Model Enhancement Support Services	Jul-00	Jun-06	123			35	88	88											
S.734 SEH Pipelines-Sections 30,40,44,39			0				0												
S.68232.6834 Planning	Jan-11	May-12																	
S.68233.6835 Design	Jun-13	Dec-14	0				0												
S.68234.6836 Construction	Jan-14	Jan-17	0				0												

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	NTP	SC	Total Contract Amount	Year 04 Actuals	Year 05 Actuals	Projected Pmts Thr. FY05	Remaining Balance 6/30/05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	Beyond FY16
S.19 Other			**29,985**	**11,347**	**12,864**	**95,536**	**-65,551**	**10,892**	**8,985**	**7,275**	**8,446**	**5,352**	**3,651**	**2,839**	**1,694**	**-20,562**	**-18,343**	**-16,058**	**-59,722**
S.753 Central Monitoring System			**16,143**	**598**	**115**	**15,571**	**572**	**182**	**100**	**150**	**110**	**30**							
S.75300.5025 Study	Mar-84	Sep-86	190			190	0												
S.75301.5026 Design	Oct-87	Jan-92	2,651			2,651	0												
S.75304.5160 Communications Structures	Nov-92	May-93	161			161	0												
S.75305.5173 CS/Start Up Services	Jul-92	Aug-98	352			352	0												
S.75302.5027 Equipment Prepurchase	Oct-87	Dec-93	2,162			2,162	0												
S.75306.5171 Construction 1	Nov-97	Nov-98	209			209	0												
S.75303.5028 SCADA Implementation	Aug-96	Jun-09	2,201	8	74	1,687	514	124	100	150	110	30							
S.75474.6125 Microwave Equipment	Mar-96	Dec-01	782			782	0												
S.75308.5849 Operations Center Construction	Sep-92	Jun-94	1,499			1,499	0												
S.75309.5987 Technical Assistance	Jul-92	Dec-97	386			386	0												
S.75310.5218 Utility Installation																			
S.75487.6652 Permits Monitoring & Control Comm Net	Dec-99		0			0	0												
S.75488.6653 Microwave Comm System-Wide Backbone	Sep-01	Jun-02	1,694			1,694	0												
S.75489.6654 Study & Design Monitoring & Control	Dec-99	Sep-04	1,858	272	23	1,801	57	57											
INHSE.OPER Design - Operations Center																			
S.75494.6816 Microwave Comm for Waterworks Facil	Sep-02	Jul-04	1,957	318	18	1,957	0												
S.75495.6825 Ludlow Communications	Sep-01	Oct-01	41			41	0												
S.763 Distribution Systems Facs. Mapping			**2,305**		**7**	**1,036**	**1,268**		**423**	**507**	**338**								
S.75458.5162 Planning Design	Feb-95	Dec-98	936		7	936	0												
S.75476.6152 Data Purchase	Nov-95	Aug-96	100			100	0												
S.75484.6525 Records Development	Jul-06	Dec-08	1,268			0	1,268		423	507	338								
S.764 Local Water Infrastr Rehab Ast Progr			**7,488**	**-2,404**		**7,488**	**0**												
S.75477.6343 Loans	Aug-97	Jun-99	22,304			22,304	0												
S.75478.6344 Loan Repayment	Aug-98	Jun-04	-22,304	-2,404		-22,304	0												
S.75479.6408 Grants	Aug-97	Jun-99	7,488			7,488	0												
S.765 Local Water Pipeline Imp. Loan Program			**0**	**13,153**	**12,522**	**71,219**	**-71,219**	**10,686**	**8,461**	**6,541**	**7,421**	**5,221**	**3,021**	**2,318**	**1,694**	**-20,562**	**-18,697**	**-16,760**	**-60,564**
S.75485.6608 Community Loans	Aug-00	Jun-13	255,510	18,647	19,375	87,913	167,597	19,478	19,200	19,200	22,000	22,000	22,000	22,000	21,719				
S.75493.6759 Community Repayment	Aug-01	Jun-23	-255,510	-5,494	-6,854	-16,694	-238,816	-8,791	-10,739	-12,659	-14,579	-16,779	-18,979	-19,682	-20,025	-20,562	-18,697	-16,760	-60,564

Massachusetts Water Resources Authority
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	NTP	SC	Total Contract Amount	Year 04 Actuals	Year 05 Actuals	Projected Pmts Thr. FY05	Remaining Balance 6/30/05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	Beyond FY16
S.766 Waterworks Facility Asset Protection			**4,050**		**221**	**221**	**3,828**	**24**	**1**	**77**	**577**	**101**	**630**	**521**			**354**	**702**	**841**
S.75490.6689 Meter Vault Manhole Retrofits	Sep-14	Jun-17	1,417			0	1,417										354	531	532
S.75497.6832 Design-Walnut Hill Tank	Sep-08	Oct-10	300				300				50	100	104	46					
S.75498.6833 Construction-Walnut Hill Tank	Oct-10	Mar-12	1,000				1,000						525	475					
S.75500.6888 Lab Southboro Replace Roof																			
S.75501.6910 Waltham Pipe/Bridge Repl	Mar-04	Sep-04	238		221	221	16	16											
S.75502.6920 Permits/Legal Fees	Mar-04	Mar-12	15	8			15	8	1	2	2	1	1						
S.75503.6921 Technical Assistance																			
S.75504.6943 As Needed Design																			
S.75505.7022 Cosgrove Intake Turbine Isolation																			
S.75506.7023 Design Cosgrove Turbine Isolation	Jul-15	Dec-17	480				480											171	309
S.75507.7024 Newton St PS Pump Unit-Design																			
S.75508.7025 Newton St PS Pump Unit Constr																			
S.75509.7064 Cosgrove Valve Seat Repl	Jul-08	Dec-08	500				500				500								
S.75510.7065 Des Cosgrove Valve Seat Repl	Jul-07	Dec-08	100				100			75	25								
S.3 Business & Operations Support			**60,388**	**1,761**	**2,798**	**35,160**	**25,228**	**8,026**	**9,166**	**2,281**	**2,486**	**792**	**780**	**769**	**801**	**126**	**0**	**0**	**0**
S.23 Other			**60,388**	**1,761**	**2,798**	**35,160**	**25,228**	**8,026**	**9,166**	**2,281**	**2,486**	**792**	**780**	**769**	**801**	**126**			
S.933 Capital Maintenance Planning/Development			**8,893**	**206**	**202**	**2,581**	**6,312**	**718**	**1,028**	**740**	**740**	**740**	**740**	**740**	**740**	**126**			
S.19175.6421 Inventory & Evaluation-1&2	Apr-00	Jul-05	2,581	206	202	2,581	0												
S.19192.6593 Facilities Asset Mgmt Phase 3						0	0												
S.92387.6976 As-needed Design Contract 1	Feb-05	Feb-07	750				750	355	395										
S.92393.6988 As Needed Des/TA Contract	Feb-05	Feb-07	750				750	363	387										
S.92399.7070 Long-Term As-Needed Design	Jan-07	Jun-13	4,812				4,812		246	740	740	740	740	740	740	126			
S.881 Equipment Purchase			**8,703**	**593**	**1,355**	**2,705**	**5,998**	**3,188**	**2,810**										
S.92367.6732 TV Inspection Truck	Jul-00	Mar-01	175			175	0												
S.92374.6760 Security Equip & Installation	Jan-01	Jun-07	6,112	479	966	1,677	4,435	2,054	2,380										
S.92379.6808 ICP-MS Lab Testing Equip	Apr-06	Jun-06	150				150	150											
S.92381.6866 Back Hoe	Apr-03	Jun-04	130			130	0												
S.92382.6867 Vactor Truck	Apr-03	Jun-03	220	0		220	0												
S.92383.6907 Water Service Truck	Apr-04	Jun-04	114	114		114	0												
S.92384.6944 Bucket Machine	Oct-04	Dec-04	137		137	137	0												
S.92385.6945 Excavator	Apr-07	Jun-07	265				265		265										
S.92386.6946 Grove Crane	May-05	Aug-05	311				311	311											
S.92388.6981 Land Fill Loader	May-05	Aug-05	113				113	113											
S.92392.6986 PowerSweeper/Catch Basin ...	Apr-04	Jun-04	155		155	155	0												
S.92394.6990 Back Hoe (WRA385)	Oct-04	Dec-04	97		97	97	0												
S.92395.7027 Closed Circuit TV Insp Truck	Apr-07	Jun-07	165				165		165										
S.92396.7028 Front-End Loader	Jul-05	Mar-06	240				240	240											
S.92397.7029 Dump Truck (WRA 192)					0	0	0												
S.92398.7030 Dump Truck (WRA 522)					0	0	0												
S.92400.7074 Crane (WRA-185)	Apr-06	Jun-06	320				320	320											
S.930 MWRA Facility - Chelsea			**10,227**	**578**	**572**	**9,703**	**524**	**524**											
S.92321.5052 Planning	Jan-95	Jun-97	30			30	0	0											
S.92320.5886 Conceptual Design	Sep-97	Dec-98	49			49	0												
S.92360.6603 Negotiating Support	Jul-98	Dec-98				0	0												
S.92354.6510 Design Review	Sep-99	Mar-05	379	11	37	378	1	1											
S.92355.6511 Fitout - Office Furnish/Equip	Feb-01	Jun-04	644	18	0	644	0												
S.92356.6512 Inform./Telecom. Consultant	Aug-00	Jun-01	382			382	0												
S.92357.6513 Existing Facility "Button Up"	Dec-01	Dec-05	380	3	3	379	1	1											
S.92358.6514 Moving Expense	Dec-01	Jun-04	362	8	0	362	0												
S.92362.6624 Legal	Mar-99	Dec-99	14			14	0												
S.92363.6713 Moving Expenses CNY	Mar-01	Jun-01	237	0	0	237	0												
S.92364.6714 CNY Retrofit	Jul-00	Jun-01	1,577	0	0	1,566	11	11											
S.92365.6715 MIS Network	Mar-01	Jun-06	1,639	525	144	1,555	84	84											
S.92366.6716 Fitout - All Other	Feb-01	Jun-06	4,507	14	388	4,105	402	402											
S.92375.6757 Communication Tower	Jul-01	Dec-01	25				25	25											
S.92373.6758 Technical Assistance	Jul-00	Jun-06	0				0												

Massachusetts Water Resources Authority
Capital Expenditure Forecast: FY2007-2016
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	NTP	SC	Total Contract Amount	Year 04 Actuals	Year 05 Actuals	Projected Pmts Thr. FY05	Remaining Balance 6/30/05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	Beyond FY16
S.925 Technical Assistance			**1,650**				**1,650**		**550**	**550**	**550**								
S.30000.MECH Mechanical			150				150		50	50	50								
S.50000.MATT Material Testing			150				150		50	50	50								
S.80000.SURV Surveying			150				150		50	50	50								
S.90000.HAZM Hazardous Material			900				900		300	300	300								
S.33000.INST Instrument Control			150				150		50	50	50								
S.44000.WETP Wetland/Permitting			150				150		50	50	50								
S.931 Business Systems Plan			**25,157**	**261**	**591**	**18,831**	**6,326**	**2,564**	**3,236**	**300**	**226**								
S.92338.6014 Phase I (FY95-97)	Jul-94	Mar-03	1,146			1,146	0												
S.92339.6013 Hardware-Phase I	Jul-94	Dec-96	441			441	0												
S.92322.6015 Network-Phase I	Jul-94	Dec-96	142			142	0												
S.92343.6177 Phase II FY97-99	Jul-96	Jun-07	4,274			2,156	2,118	750	1,368										
S.92347.6362 Phase III (FY99-01)	Dec-97	Jun-04	10,807	-102	0	10,807	0												
S.92352.6508 Phase IV / Year 2000 Imp.	Jul-98	Jan-00	3,051	0	0	3,051	0												
S.92353.6509 Phase V	Jul-01	Jun-09	2,957	-4		131	2,826	1,150	1,150	300	226								
S.92380.6865 Phase VI	Jan-03	Jun-07	2,339	367	591	957	1,382	664	718										
S.932 Environmental Remediation			**1,826**	**122**	**79**	**1,339**	**487**	**43**	**19**	**191**	**52**	**52**	**40**	**29**	**61**				
S.92368.6741 FRSA Hazardous Materials			0			0	0												
S.92369.6745 Tech Asst./ Env. Remediation	Feb-99	Jun-07	540	105	75	540	0												
S.92370.6746 Prision Point Tank Removal - Const.	Feb-99	Aug-99	777	17	3	330	447	3	19	191	52	52	40	29	61				
S.92371.6747 Cottage Farm Tank Replace - Const	Jun-02	Dec-02	428			428	0												
S.92372.6748 Chelsea Creek Tank Removal	May-02	Nov-02	0			0	0												
S.92376.6805 Oakdale Power Station	Sep-03	Dec-04	73			33	40	40											
S.92377.6806 Cosgrove Power Station			8			8	0												
S.92378.6807 Design/CS/Cosgrove P.S.	Nov-00	Jun-03	0				0												
S.934 MWRA Facilities Management & Planning			**3,931**				**3,931**	**990**	**1,523**	**500**	**918**								
S.92389.6983 Design/Engineering Services	Mar-05	Jun-08	763				763	240	523										
S.92390.6984 Facilities Construction	Apr-05	Jun-09	3,168				3,168	750	1,000	500	918								
S.92391.6985 Facilities Fitout																			

MASSACHUSETTS WATER RESOURCES AUTHORITY
CONTINGENCY FUND FORECAST FY2007 - 2016
($000)

	Total Contingency Budget FY07-16	Q1 FY2007	Q2 FY2007	Q3 FY2007	Q4 FY2007	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Wastewater System Improvements															
FY2007	11,738	3,591	2,514	2,758	2,876	11,738									
FY2008	14,969						14,969								
FY2009	15,882							15,882							
FY2010	8,984								8,984						
FY2011	3,663									3,663					
FY2012	1,489										1,489				
FY2013	1,878											1,878			
FY2014	1,793												1,793		
FY2015	1,757													1,757	
FY2016	1,002														1,002
Total Wastewater System Improvements	**$63,154**	**$3,591**	**$2,514**	**$2,758**	**$2,876**	**$11,738**	**$14,969**	**$15,882**	**$8,984**	**$3,663**	**$1,489**	**$1,878**	**$1,793**	**$1,757**	**$1,002**
Waterworks System Improvements															
FY2007	7,175	1,357	1,839	1,620	2,359	7,175									
FY2008	8,209						8,209								
FY2009	7,728							7,728							
FY2010	5,122								5,122						
FY2011	2,782									2,782					
FY2012	3,728										3,728				
FY2013	3,530											3,530			
FY2014	3,134												3,134		
FY2015	1,554													1,554	
FY2016	796														796
Total Waterworks System Improvements	**$43,759**	**$1,357**	**$1,839**	**$1,620**	**$2,359**	**$7,175**	**$8,209**	**$7,728**	**$5,122**	**$2,782**	**$3,728**	**$3,530**	**$3,134**	**$1,554**	**$796**
Business & Operations Support	**$1,516**	**$223**	**$175**	**$187**	**$238**	**$823**	**$173**	**$194**	**$79**	**$78**	**$77**	**$80**	**$13**	**$0**	**$0**
Total MWRA	**$108,429**	**$5,170**	**$4,528**	**$4,565**	**$5,473**	**$19,736**	**$23,351**	**$23,804**	**$14,186**	**$6,523**	**$5,294**	**$5,488**	**$4,939**	**$3,310**	**$1,797**

Proposed 07 contingency

APPENDIX 3

Project Status Overview

Appendix 3
Project Status Overview

The following information presented below provides an approximation of status for design and construction phases in the current capital budget. Planned end dates are provided for ongoing phases. Planned start dates are provided for future phases. These dates are anticipated Notice-to-Proceed dates after the bid period. All dates are subject to change.

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.102 Quincy Pump Facilities	**26,120**	**26,116**	**Complete**	**100.0%**		
S.10024.5400 Facilities Plan/EIR	526	526	Complete	100.0%		
S.10025.5402 Design/CS Rehab	110	110	Complete	100.0%		
S.10026.5403 Construction-Rehab	328	328	Complete	100.0%		
S.10033.5843 Land Acq - Squantum	22	22	Complete	100.0%		
S.10027.5404 Design/CS/RI1	5,089	5,089	Complete	100.0%		
S.10028.5405 Squantum P.S. Construction	4,415	4,415	Complete	100.0%		
S.10029.5407 Quincy P.S. Construction	7,103	7,103	Complete	100.0%		
S.10030.5408 Hough's Neck P.S. Construction	1,720	1,720	Complete	100.0%		
S.10031.5409 Early Rehab Squantum F.M.	2,042	2,042	Complete	100.0%		
S.10276.6102 Squantum Force Main Rehab	2,061	2,061	Complete	100.0%		
S.10277.6103 Quincy Force Main Rehab	1,489	1,489	Complete	100.0%		
S.10260.6069 Legal	82	81	Complete	98.8%		
S.10261.6070 Public Relations	5	4	80.0%	80.0%		Sep-03
S.10262.6071 Hazardous Waste	5	4	80.0%	80.0%		Sep-03
S.10032.5950 Technical Assistance	44	44	Complete	100.0%		
S.10388.6810 Const Corrosion Mitigation	1,079	1,079	Complete	100.0%		
S.104 Braintree-Weymouth Relief Facilities	**215,112**	**203,609**	**94.7%**	**94.7%**		
S.10045.5311 Facilities Planning Phase 1	331	331	Complete	100.0%		
S.10046.5312 EIR Phase 1	514	514	Complete	100.0%		
S.10057.5324 Final EIR/Fac.Plan	1,111	1,111	Complete	100.0%		
S.10044.5332 Geotechnical - Land	8	8	Complete	100.0%		
S.10001.5333 Geotechnical - Marine	443	443	Complete	100.0%		
S.10047.5313 Design 1/CS/RI	18,991	18,967	Complete	99.9%		
S.10251.6016 Sedimentation Testing	96	96	Complete	100.0%		
S.10058.5331 Design 2/CS/RI	15,265	12,295	80.5%	80.5%		Apr-08
S.10048.5314 Land Acquisition	3,630	3,622	Complete	99.8%		
S.10049.5315 Tunnel Construction/Rescue	84,113	84,113	Complete	100.0%		
S.10050.5316 Intermediate P.S. Construction	47,291	47,291	Complete	100.0%		
S.10051.5303 No. Weymouth Relief Interceptor	4,705	4,705	Complete	100.0%		
S.10052.5373 HDD Siphon Construction	16,357	16,357	Complete	100.0%		
S.10054.5375 B-W Replacement Pump Station	16,109	7,875	48.9%	48.9%		Jun-07
S.10302.6368 Mill Cove Siphon Construction	2,749	2,749	Complete	100.0%		
S.10055.5308 Design - Rehab	24	24	Complete	100.0%		
S.10056.5309 Construction - Rehab	255	255	Complete	100.0%		
S.10265.6074 Hazardous Waste	5	3	60.0%	60.0%		Apr-07
S.10263.6072 Legal	400	234	58.5%	58.5%		Apr-07
S.10264.6073 Public Relations	5	1	20.0%	20.0%		Apr-07
S.10061.5951 Technical Assistance	144	144	Complete	100.0%		
S.10278.6119 Design - Marine Pipeline	1,100	1,100	Complete	100.0%		
S.10354.6631 Community Technical Assistance	1,111	1,111	Complete	100.0%		
S.10375.6766 Geotechnical Consultant	56	56	Complete	100.0%		
S.10378.6792 IPS/RPS Communication System	300	204	68.0%	68.0%		Apr-07

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.105 New Neponset Valley Relief Sewer	**30,301**	**30,301**	**Complete**	**100.0%**		
S.10062.5380 Facilities Plan	594	594	Complete	100.0%		
S.10063.5381 EIR/Supp. Fac. Plan	626	626	Complete	100.0%		
S.10064.5382 Design/CS/RI	4,055	4,055	Complete	100.0%		
S.10065.5383 Land Acquisition	531	531	Complete	100.0%		
S.10076.5377 Consultant-Canton	130	130	Complete	100.0%		
S.10067.5385 Construction 1	5,203	5,203	Complete	100.0%		
S.10068.5390 Construction 2	2,549	2,549	Complete	100.0%		
S.10069.5834 Construction 3	3,265	3,265	Complete	100.0%		
S.10070.5835 Construction 4	2,960	2,960	Complete	100.0%		
S.10071.5389 Construction 5	9,599	9,599	Complete	100.0%		
S.10072.5386 Study Dedham Street	537	537	Complete	100.0%		
S.10074.5379 Power Line	64	64	Complete	100.0%		
S.10073.5952 Technical Assistance	189	189	Complete	100.0%		
S.131 Upper Neponset Valley Sewer System	**51,711**	**18,928**	**36.6%**	**36.6%**		
S.10256.6031 Design/CS/RI	4,234	3,242	76.6%	76.6%		Apr-09
S.10290.6191 Replace Sewer Sections 685-686	36,096	13,568	37.6%	37.6%		Apr-08
S.10352.6629 Replacement Sewer Section 687	7,124	0	Future	0.0%	Jul-06	
S.10439.7072 Resident Engineering/Inspection	2,347	685	29.2%	29.2%		Aug-08
S.10311.6450 Land Acquisition	1,520	1,330	87.5%	87.5%		Apr-08
S.10266.6075 Legal	5	2	40.0%	40.0%		Apr-08
S.10267.6076 Public Relations	5	2	40.0%	40.0%		Apr-08
S.10268.6077 Hazardous Waste	5	2	40.0%	40.0%		Apr-08
S.10393.6830 Boston Paving	376	99	26.3%	26.3%		Apr-08
S.106 Wellesley Ext Replacement Sewer	**64,359**	**64,359**	**Complete**	**100.0%**		
S.10091.5345 Study	324	324	Complete	100.0%		
S.10080.5346 Design/EIR/CS/RI	8,107	8,107	Complete	100.0%		
S.10081.5347 Land Acquisition	3,097	3,097	Complete	100.0%		
S.10082.5348 Consultant-Needham	171	171	Complete	100.0%		
S.10083.5344 Consultant-Dedham	53	53	Complete	100.0%		
S.10094.5842 Consultant-Dover	5	5	Complete	100.0%		
S.10084.5349 Construction 1	15,069	15,069	Complete	100.0%		
S.10086.5351 Construction 2	5,087	5,087	Complete	100.0%		
S.10087.5434 Construction 3	6,927	6,927	Complete	100.0%		
S.10085.5350 Construction 4	4,821	4,821	Complete	100.0%		
S.10088.5431 Construction 5	5,387	5,387	Complete	100.0%		
S.10089.5432 Construction 6	2,070	2,070	Complete	100.0%		
S.10090.5433 Construction 7	12,454	12,454	Complete	100.0%		
S.10259.6065 EIC	369	369	Complete	100.0%		
S.10269.6078 Legal	225	225	Complete	100.0%		
S.10093.5953 Technical Assistance	193	193	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.107 Framingham Extension Relief Sewer	**47,926**	**47,926**	**Complete**	**100.0%**		
S.10099.5318 Fac Plan Update/EIR	1,397	1,397	Complete	100.0%		
S.10100.5321 Land Acquisition	1,838	1,838	Complete	100.0%		
S.10101.5319 Design/CS/RI	5,837	5,837	Complete	100.0%		
S.10102.5320 Install Force Main	7,256	7,256	Complete	100.0%		
S.10103.5322 Install Gravity Sewer	6,147	6,147	Complete	100.0%		
S.10104.5323 Pump Station Construction	7,803	7,803	Complete	100.0%		
S.10106.5825 Early Sewer Rehabilitation	4,803	4,803	Complete	100.0%		
S.10107.5342 Late Sewer Rehabilitation	12,680	12,680	Complete	100.0%		
S.10105.5954 Technical Assistance	162	162	Complete	100.0%		
S.10374.6754 Conservation Commission	4	4	Complete	100.0%		
S.127 Cummingsville Replacement Sewer	**9,431**	**8,097**	**85.9%**	**85.9%**		
S.10217.5826 Facilities Plan/EIR	602	602	Complete	100.0%		
S.10275.6092 Design/CS/RI	2,300	1,845	80.2%	80.2%		Sep-07
S.10285.6186 Cummingsville Branch Sew Const	5,029	4,895	97.3%	97.3%		May-06
S.10284.6185 Land Acquisition	102	86	84.3%	84.3%		Sep-06
S.10334.6571 Public Participation	5	3	60.0%	60.0%		Sep-06
S.10335.6572 Legal	15	15	Complete	100.0%		
S.10403.6916 Siphon Modifications	1,378	650	47.2%	47.2%		Sep-06
S.130 Siphon Structure Rehabilitation	**940**	**940**	**Complete**	**100.0%**		
S.10253.6017 Planning	938	938	Complete	100.0%		
S.10280.6165 Land Acquisition	2	2	Complete	100.0%		
S.132 Corrosion & Odor Control	3,004	3,004	Complete	100.0%		
S.10279.6137 Planning/Study	587	587	Complete	100.0%		
S.10327.6553 Design/CS/RI	1,789	1,789	Complete	100.0%		
S.10323.6549 Land Acquisition	3	3	Complete	100.0%		
S.10325.6551 Legal	2	2	Complete	100.0%		
S.10373.6743 Interim Corrosion Control	622	622	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.136 West Roxbury Tunnel	**8,880**	**8,880**	**Complete**	**100.0%**		
S.10299.6230 Inspection	344	344	Complete	100.0%		
S.10333.6570 Design/CS/RI	1,412	1,412	Complete	100.0%		
S.10332.6569 Construction	6,674	6,674	Complete	100.0%		
S.10330.6567 Legal	2	2	Complete	100.0%		
S.10331.6568 Land Acquisition	440	440	Complete	100.0%		
S.10366.6709 Technical Assistance	8	8	Complete	100.0%		
S.137 Wastewater Central Monitoring	**17,036**	**4,135**	**24.3%**	**24.3%**		
S.10301.6232 Planning	563	563	Complete	100.0%		
S.10319.6532 Design and Integration Services	6,285	3,240	51.6%	51.6%		Nov-08
S.10320.6533 Construction 1 (CP1)	5,990	300	5.0%	5.0%		Apr-07
S.10321.6534 Construction 2 (CP2)	3,745	0	Future	0.0%	Oct-06	
S.10357.6657 Construction 3 (CP3)	372	0	Future	0.0%	Aug-07	
S.10398.6861 Equipment Prepurchase	80	32	40.0%	40.0%		Nov-07
S.139 South System Relief Project	**4,945**	**3,441**	**69.6%**	**69.6%**		
S.10309.6419 CS/RI-Archdale	6	6	Complete	100.0%		
S.10310.6420 Construction-Archdale	211	211	Complete	100.0%		
S.10318.6519 Sec 70&71 HLS Eval.	215	215	Complete	100.0%		
S.10349.6611 Sec 70 & 71 HLS Construction	417	417	Complete	100.0%		
S.10345.6595 Design Outfall 023	1	1	Complete	100.0%		
S.10346.6596 Cleaning Outfall 023	1,098	1,098	Complete	100.0%		
S.10347.6605 Land Acquisition/Easements	5	5	Complete	100.0%		
S.10350.6616 Milton Financial Assistance	1,488	1,488	Complete	100.0%		
S.10362.6680 Legal/Permits	5	1	20.0%	20.0%		Jun-07
S.10386.6801 Outfall 023 Str Impovements	1,500	0	Future	0.0%	Jul-07	
S.141 Wastewater Process Optimization	**2,240**	**954**	**42.6%**	**42.6%**		
S.10367.6733 Planning	954	954	Complete	100.0%		
S.10413.6931 Somerville Sewer-Design	200	0	Future	0.0%	Oct-08	
S.10414.6932 Somerville Sewer-Construction	936	0	Future	0.0%	Mar-11	
S.10415.6933 Siphon- Planning	150	0	Future	0.0%	Nov-11	
S.142 Wastewater Meter Sys-Equip Replace	**6,578**	**4,957**	**75.4%**	**75.4%**		
S.10371.6739 Planning/Study	100	0	Future	0.0%	Jan-13	
S.10379.6793 Equipment Purchase/Installation	5,278	4,957	93.9%	93.9%		Jun-08
S.10410.6928 Design	200	0	Future	0.0%	Jul-13	
S.10411.6929 Construction	1,000	0	Future	0.0%	Jan-15	
S.143 Regional I/I Management Planning	**169**	**169**	**Complete**	**100.0%**		
S.10372.6740 Cmom/Planning	169	169	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.145 I&P Facility Asset Protection	**18,904**	**4,193**	**22.2%**	**22.2%**		
S.10383.6798 Rehab of Section 93A Lexington	1,568	1,568	Complete	100.0%		
S.10392.6829 Technical Assistance	40	22	55.0%	55.0%		Nov-08
S.10394.6842 Sections 80&83	763	100	13.1%	13.1%		May-07
S.10395.6843 Section 160	3,389	0	Future	0.0%	Nov-06	
S.10396.6857 Survey	52	52	Complete	100.0%		
S.10397.6858 Permits	6	2	33.3%	33.3%		Nov-08
S.10440.7073 Land/Easements	150	150	Complete	100.0%		
S.10423.6987 93 A Force Main Replacement	490	108	22.0%	22.0%		Oct-06
S.10424.7004 Mill Brook Valley Sewer Sec 79&92	542	542	Complete	100.0%		
S.10380.6795 Prison Point HVAC Upgrades	694	0	Future	0.0%	Mar-09	
S.10381.6796 Remote Headworks Heating Sys Upgrade	1,184	1,184	Complete	100.0%		
S.10382.6797 Alewife Brook Pump Repl	450	0	Future	0.0%	Mar-09	
S.10387.6802 Hdwks Screen Replacement	5,000	0	Future	0.0%	Jul-07	
S.10399.6886 Hdwrks Cond Assess/Facilities Plan	2,000	450	22.5%	22.5%		Jun-07
S.10419.6937 Alewife Brook Pump Repl Design	150	0	Future	0.0%	Jul-07	
S.10420.6938 Des-Prison Pt HVAC Upgrades	150	0	Future	0.0%	Jul-07	
S.10427.7033 Hingham PS Isolation Gate Const	350	0	Future	0.0%	Sep-08	
S.10428.7034 Alewife Brook P.S. Screen Des	100	0	Future	0.0%	Jan-07	
S.10429.7035 Alewife Brook P.S. Screen Const	400	0	Future	0.0%	Mar-08	
S.10431.7037 Caruso PS Replace Generator	250	0	Future	0.0%	Jul-09	
S.10432.7038 Chelsea Sluice Gate Engnr Study	50	7	14.0%	14.0%		Oct-06
S.10433.7039 Prision Pt/Cottage Farm Pipe Des	150	0	Future	0.0%	Jul-07	
S.10434.7040 Prision Pt/Cottage Farm Pipe Constr	500	0	Future	0.0%	Sep-08	
S.10436.7042 Fram PS Sluice Gates Cond Assess	50	7	14.0%	14.0%		Oct-06
S.10438.7044 Caruso PS Shaft Replac Const	425	0	Future	0.0%	Jul-09	
S.200 DI Plant Optimization	**43,157**	**28,076**	**65.1%**	**65.1%**		
S.19156.6235 Construction-Plumbing	110	110	Complete	100.0%		
S.19170.6369 Supplementary Mod Pkg #1	488	488	Complete	100.0%		
S.19154.6233 As-Needed Des. Phase 1	1,122	1,122	Complete	100.0%		
S.18212.6364 Ancil Mods-Des 1	2,160	2,008	93.0%	93.0%		Dec-06
S.19189.6590 Ancil Mods Des 2-1 (REI)	584	584	Complete	100.0%		
S.19190.6591 Ancil Mods - Des 3-1	951	951	Complete	100.0%		
S.19191.6592 Ancil Mods - Prelim Des 4	360	55	15.3%	15.3%		Jan-07
S.19303.7088 Ancils Mods Final Des 4	719	0	Future	0.0%	Oct-07	
S.19220.6721 Long Term As Needed Des No.1	1,600	0	Future	0.0%	Mar-09	
S.19183.6499 Ancil Mods-Con 1	10,131	10,131	Complete	100.0%		
S.19186.6536 Ancil Mods Constr 2-1	2,834	2,834	Complete	100.0%		
S.19232.6744 Ancil Mods Constr 2-2	5,331	1,806	33.9%	33.9%		Oct-07
S.19187.6537 Ancil Mods-Constr 3-1	3,387	3,387	Complete	100.0%		
S.19188.6538 Ancil Mods-Con 4	3,704	0	Future	0.0%	May-09	
S.19221.6722 Long -Term As Needed Des No.2	1,600	0	Future	0.0%	Mar-09	
S.19206.6673 Digester Storage Tank - Repair	275	275	Complete	100.0%		
S.19215.6702 As-needed Design Phase 2-1	760	760	Complete	100.0%		
S.19234.6753 As-needed design Phase 2-2	695	695	Complete	100.0%		
S.19214.6701 As-needed Des. Phase 3-1	796	796	Complete	100.0%		
S.19257.6874 As-needed Design Phase 3-2	631	631	Complete	100.0%		
S.19211.6698 As Needed Des Phase 4-1	1,000	494	49.4%	49.4%		Mar-07
S.19212.6699 As Needed Des Phase 4-2	1,000	415	41.5%	41.5%		Mar-07
S.19305.7090 As-needed Des Phase 5-1	900	0	Future	0.0%	Mar-07	
S.19306.7091 As-needed Des Phase 5-2	900	0	Future	0.0%	Mar-07	
S.19240.6768 Ancil Mods Des2-2 (REI/ESDC)	526	252	47.9%	47.9%		Jan-08
S.19242.6794 CEMS Modifications	311	0	Future	0.0%	Jun-06	
S.19286.6201 BHP Site Completion	284	284	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.206 DI Treatment Plant Asset Protection	**98,676**	**8,956**	**9.1%**	**9.1%**		
S.19182.6478 Equip Replacement Projection	35,593	0	Future	0.0%		
S.19193.6594 Equipment Condition Monitoring	1,777	1,777	Complete	100.0%		
S.19231.6742 Drive Chain Replacement	264	264	Complete	100.0%		
S.19238.6765 CTG Modifications	482	482	Complete	100.0%		
S.19176.6422 Pump Packing Replacement	750	512	68.3%	68.3%		Jun-08
S.19177.6423 Demineralizer Construction	51	51	Complete	100.0%		
S.19263.6880 Cathodic Protection Evaluation	250	0	Future	0.0%	Aug-06	
S.19265.6882 CEMS Equip. Replacement	77	77	Complete	100.0%		
S.19268.6899 Clarifier Chain Replac	450	0	Future	0.0%	Apr-08	
S.19287.7005 Digester Chiller Replacement	574	574	Complete	100.0%		
S.19288.7006 Dystor Tank Membrane Replacement	670	670	Complete	100.0%		
S.19290.7052 Grit Blower Replac Construction	335	0	Future	0.0%	Apr-08	
S.19291.7053 Thick Prim Sldg Pump Repl Des	549	0	Future	0.0%	Sep-07	
S.19292.7054 TPS Pump Replac Construction	5,240	0	Future	0.0%	Oct-08	
S.19294.7056 LOCAT Scrubber Replac Const	309	0	Future	0.0%	Jul-08	
S.19295.7057 Centrifuge Backdrive Replac	2,013	0	Future	0.0%	Dec-06	
S.19226.6727 Study/Concept Des-Concrete Rpr	300	0	Future	0.0%	May-07	
S.19204.6668 Expansion Joint Repair-Design	149	149	Complete	100.0%		
S.19205.6669 Expansion Joint Repair- Constr 1	305	305	Complete	100.0%		
S.19218.6705 Expansion Joint Repair- Constr 3	156	0	Future	0.0%	May-09	
S.19217.6704 Expansion Joint Repair- Constr 2	156	0	Future	0.0%	May-07	
S.19244.6812 Secondary Clarifier Access	275	275	Complete	100.0%		
S.19243.6811 Outfall Modification-Inspection	174	174	Complete	100.0%		
S.19239.6767 Elec Equip Upgrade Constr 2	1,897	1,472	77.6%	77.6%		Sep-06
S.19236.6763 Busduct Replacement (2+22)	196	196	Complete	100.0%		
S.19245.6813 Transformer Replacement	38	38	Complete	100.0%		
S.19252.6851 Pipeline Repl #2 Design	386	0	Future	0.0%	Apr-09	
S.19253.6852 Pipeline Repl #2 - Construction	1,286	0	Future	0.0%	Jun-10	
S.19254.6853 Sodium Hypo Pipe Repl-Des	232	0	Future	0.0%	Jun-10	
S.19255.6854 Sodium Hypo Pipe Repl- Constr	2,751	0	Future	0.0%	Jun-10	
S.19256.6855 Elect Equip Upgrade Const 3	1,815	0	Future	0.0%	Jul-06	
S.19258.6875 WTF VFD Replace Constr	1,368	0	Future	0.0%	Dec-07	
S.19259.6876 Heat Loop Pipe Repl Constr 1	615	615	Complete	100.0%		
S.19260.6877 Misc. VFD Replacements	2,100	664	31.6%	31.6%		May-08
S.19267.6884 PICS Replacement Const	1,582	0	Future	0.0%	Jul-09	
S.19269.6900 Admin/Whse Switchgear Replac	1,288	0	Future	0.0%	Sep-07	
S.19270.6901 Elect Equip Upgrade Const 4	2,362	0	Future	0.0%	Jul-08	
S.19271.6902 NMPS VFD Repl Des/ESDC	518	0	Future	0.0%	Jul-06	
S.19272.6903 NMPS VFD Replace Constr	7,182	0	Future	0.0%	Oct-07	
S.19278.6967 Second Deaerator Design	96	0	Future	0.0%	Apr-08	
S.19279.6968 Second Deaerator Constr	257	0	Future	0.0%	Jun-09	
S.19280.6969 Fuel Transfer Pipe Repl Des	386	0	Future	0.0%	Nov-11	
S.19281.6970 Fuel Transfer Pipe Repl Const	1,286	0	Future	0.0%	Mar-13	
S.19282.6971 NMPS Motor Ctrl Ctr Des	617	0	Future	0.0%	Jun-07	
S.19283.6972 NMPS Motor Ctrl Ctr Constr	3,087	0	Future	0.0%	Jul-08	
S.19296.7058 DITP Switchgear Replac Design	247	0	Future	0.0%	Jul-08	
S.19297.7059 DITP Switchgear Repl Constr	2,470	0	Future	0.0%	Oct-09	
S.19298.7060 Power Consult Recs Design	2,200	236	10.7%	10.7%		Jan-10
S.19299.7061 Power System Improv Constr	5,315	0	Future	0.0%	Jul-07	
S.19162.6241 DISC Application	250	167	66.8%	66.8%		Dec-08
S.19241.6791 Document Format Conversion	353	10	2.8%	2.8%		Dec-11
S.19304.7089 Sodium Hypo Tk Lnr Removal	250	250	Complete	100.0%		
S.19237.6764 Sodium Hypo Tank Repair 1	288	0	Future	0.0%	Sep-06	
S.19249.6848 Metals Lab Fume Hood Repl	134	0	Future	0.0%	Dec-06	
S.19251.6850 Metals Lab Modification Constr	888	0	Future	0.0%	Jul-06	
S.19261.6878 Lab Sample Area Mod-Des	92	0	Future	0.0%	Jul-07	
S.19262.6879 Lab Sample Area Mod-Const	400	0	Future	0.0%	Aug-08	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.19276.6965 Gravity Thickener Improv Des	188	0	Future	0.0%	Feb-07	
S.19277.6966 Gravity Thickener Imp Constr	1,074	0	Future	0.0%	Apr-08	
S.19302.7075 Clinton Soda Ash Replacement	288	0	Future	0.0%	Jun-06	
S.261 Residuals	**64,523**	**63,848**	**Complete**	**99.0%**		
S.25941.5667 Design/RI/CS-Pelletizing 1	9,098	9,098	Complete	100.0%		
S.25948.5669 Fast-Track Equip. Prepurchase	301	301	Complete	100.0%		
S.26055.6009 Fast-Track Equip. Installation	1,450	1,450	Complete	100.0%		
S.26056.6010 Phase 2 Outside Construction	13,019	13,019	Complete	100.0%		
S.26057.6011 Phase 3 Equip. Prepurchase	4,746	4,746	Complete	100.0%		
S.26058.6012 Phase 3 Inside Construction	29,778	29,778	Complete	100.0%		
S.26065.6612 Fire Related Costs	1,694	1,694	Complete	100.0%		
S.25961.5643 Res. Research	419	419	Complete	100.0%		
S.26059.6083 License Fee	675	0	Future	0.0%	Jan-15	
S.25968.5831 Royalty Payment	575	575	Complete	100.0%		
S.26066.6615 Legal Services for Sludge Processing	2,768	2,768	Complete	100.0%		
S.339 North Dorch Bay & Reserve Channel	**225,604**	**27,769**	**12.3%**	**12.3%**		
S.32660.6220 Design ESDC/Tunnel	24,619	21,197	86.1%	86.1%		Apr-11
S.32661.6244 Tunnel Construction (Ch30)	163,910	2,403	1.5%	1.5%		Feb-10
S.32662.6245 Dewater/Odor Control Constr	19,504	0	Future	0.0%	Mar-09	
S.32726.6993 Tunnel & Facilities CM Services	11,244	1,356	12.1%	12.1%		May-11
S.32732.7012 Pleasure Bay Construction	2,817	2,814	Complete	99.9%		
S.32733.7013 Design ESDC/Facilities	3,511	0	Future	0.0%	Sep-06	
S.354 Hydraulic Relief Projects	**2,295**	**2,295**	**Complete**	**100.0%**		
S.32692.6250 Design/CS/RI	558	558	Complete	100.0%		
S.32669.6252 Construction	1,737	1,737	Complete	100.0%		
S.347 East Boston Branch Sewer Relief	**72,950**	**9,003**	**12.3%**	**12.3%**		
S.32673.6256 Design	3,490	3,442	Complete	98.6%		
S.32742.7087 Design 2 CS/RI	8,000	317	4.0%	4.0%		Jun-10
S.32674.6257 East Boston Branch Relief Sewer	47,532	0	Future	0.0%	Mar-08	
S.32716.6790 Boston Paving	50	0	Future	0.0%	Oct-07	
S.32719.6840 East Boston Branch Sewer Rehab	5,243	5,243	Complete	100.0%		
S.32720.6841 Sections 38 & 207 Replacement	8,636	0	Future	0.0%	Oct-08	
S.348 BOS019 Storage Conduit	**13,676**	**8,949**	**65.4%**	**65.4%**		
S.32675.6258 Design	2,045	2,045	Complete	100.0%		
S.32677.6260 BOS019 Storage Conduit Constr	10,509	6,281	59.8%	59.8%		Mar-07
S.32728.7008 Construction Management Services	1,122	623	55.5%	55.5%		Mar-07
S.349 Chelsea Trunk Sewer	**29,765**	**29,765**	**Complete**	**100.0%**		
S.32659.6198 Design/CS/RI	3,637	3,637	Complete	100.0%		
S.32679.6262 Chelsea Trunk Relief	3,577	3,577	Complete	100.0%		
S.32680.6263 Chelsea Branch Sewer	19,141	19,141	Complete	100.0%		
S.32689.6370 Rehab/Chelsea Brnch/Revere Ext	3,125	3,125	Complete	100.0%		
S.32690.6371 Modify Chelsea Screen House	284	284	Complete	100.0%		
S.350 Union Park Detention Treatment Fac	**47,564**	**45,826**	**96.3%**	**96.3%**		
S.32681.6264 Design	8,224	7,571	92.1%	92.1%		Sep-06
S.32682.6265 Construction	44,138	42,222	95.7%	95.7%		Sep-06
S.32718.6826 Construction - Park	500	333	66.6%	66.6%		Sep-06
S.32721.6909 BWSC Construction ...	-5,298	-4,299	81.1%	81.1%		Jan-06
S.353 Upgrade Existing CSO Facilities	**22,385**	**22,385**	**Complete**	**100.0%**		
S.32647.6123 Design	6,499	6,499	Complete	100.0%		
S.32685.6268 Cottage Farm CSO Facility	4,377	4,377	Complete	100.0%		
S.32686.6269 Prision Point CSO Facility	3,339	3,339	Complete	100.0%		
S.32693.6496 Comm/Fox Point, Som. Marginal	8,029	8,029	Complete	100.0%		
S.32687.6270 Non-Treated Floatable (Beacon)	124	124	Complete	100.0%		
S.32717.6803 Cottage Farm Programing	17	17	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.355 MWR003 Gate & Siphon	**1,960**	**0**	**Future**	**0.0%**		
S.32722.6952 Design	327	0	Future	0.0%	Apr-09	
S.32723.6953 Construction	1,633	0	Future	0.0%	Nov-10	
S.357 Charles River CSO Controls	**6,000**	**25**	**0.4%**	**0.4%**		
S.32729.7009 Brookline Connection/Cottage Farm E/D	1,000	25	2.5%	2.5%		Feb-09
S.32740.7080 Brookline Connect/Cott Farm Inf Contr	3,000	0	Future	0.0%	Feb-08	
S.32730.7010 Interceptor Optimization Eng/Des	800	0	Future	0.0%	Jan-08	
S.32731.7011 Existing Gate Controls System	1,200	0	Future	0.0%	Jan-10	
S.340 S. Dorch Bay Sew Separ (Fox Pt.)	**53,014**	**51,185**	**96.5%**	**96.5%**		
S.32651.6155 Design	11,172	10,855	97.2%	97.2%		Aug-09
S.32664.6247 Construction	41,842	40,330	96.4%	96.4%		Nov-06
S.341 S. Dorch Bay Sew Separ (Comm. Pt.)	**62,759**	**50,167**	**79.9%**	**79.9%**		
S.32650.6154 Design	13,240	12,679	95.8%	95.8%		Aug-09
S.32665.6248 Construction	49,519	37,488	75.7%	75.7%		Nov-07
S.344 Stony Brook Sewer Separation	**44,612**	**43,145**	**96.7%**	**96.7%**		
S.32667.6395 Design/CS/RI	9,755	9,111	93.4%	93.4%		Apr-07
S.32668.6251 Construction	34,857	34,034	97.6%	97.6%		Sep-06
S.342 Neponset River Sewer Separation	**2,681**	**2,681**	**Complete**	**100.0%**		
S.32652.6156 Design/CS/RI	480	480	Complete	100.0%		
S.32653.6160 Construction	2,201	2,201	Complete	100.0%		
S.343 Constitution Beach Sewer Separation	**3,769**	**3,769**	**Complete**	**100.0%**		
S.32649.6153 Design/CS/RI	673	673	Complete	100.0%		
S.32666.6249 Construction	3,096	3,096	Complete	100.0%		
S.346 Cambridge CAM002-004 Sew.Separation	**41,687**	**18,749**	**45.0%**	**45.0%**		
S.32654.6161 Design/CS/RI	12,090	8,562	70.8%	70.8%		Jun-13
S.32672.6255 Construction	29,597	10,187	34.4%	34.4%		Dec-12
S.351 BWSC Floatables Controls	**933**	**933**	**Complete**	**100.0%**		
S.32657.6168 Design	555	555	Complete	100.0%		
S.32683.6266 Construction	378	378	Complete	100.0%		
S.352 Cambridge Floatables Controls	**2,791**	**1,268**	**45.4%**	**45.4%**		
S.32655.6162 Design	404	383	94.8%	94.8%		Sep-12
S.32684.6267 Construction	2,387	885	37.1%	37.1%		Sep-12
S.356 Fort Point Channel Sewer Separation	**7,956**	**4,411**	**55.4%**	**55.4%**		
S.32724.6991 Design	1,098	896	81.6%	81.6%		Mar-08
S.32725.6992 Construction	6,858	3,514	51.2%	51.2%		Mar-07
S.358 Morrissey Boulevard Drain	**19,359**	**577**	**3.0%**	**3.0%**		
S.32735.7015 Design	3,052	577	18.9%	18.9%		Dec-09
S.32713.6696 Construction	16,307	0	Future	0.0%	Dec-06	
S.359 Reserved Channel Sewer Separation	**57,394**	**60**	**0.1%**	**0.1%**		
S.32734.7014 Design	11,507	60	0.5%	0.5%		Jun-16
S.32727.6994 Construction	45,887	0	Future	0.0%	May-09	
S.360 Brookline Sewer Separation	**9,000**	**0**	**Future**	**0.0%**		
S.32736.7076 Design CS/RI	1,800	0	Future	0.0%	Jul-06	
S.32737.7077 Construction	7,200	0	Future	0.0%	Jul-08	
S.361 Bulfinch Triangle Sewer Separation	**4,000**	**0**	**Future**	**0.0%**		
S.32738.7078 Design CS/RI	800	0	Future	0.0%	Jul-06	
S.32739.7079 Construction	3,200	0	Future	0.0%	Jul-08	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.324 CSO Support	**51,411**	**42,085**	**81.9%**	**81.9%**		
S.32400.5790 Technical Assistance	228	228	Complete	100.0%		
S.32407.5970 Tech. Assistance-Geotech	61	61	Complete	100.0%		
S.32401.5791 Planning/EIR	10,769	10,769	Complete	100.0%		
S.32403.5716 Master Planning	22,007	21,967	Complete	99.8%		
S.32645.6036 Watershed Planning	877	877	Complete	100.0%		
S.32409.5795 Modeling	300	300	Complete	100.0%		
S.32411.5767 SOP Program	1,957	1,957	Complete	100.0%		
S.32691.6372 System Assessment	476	110	23.1%	23.1%		May-11
S.32648.6150 Technical Review	794	573	72.2%	72.2%		May-11
S.32658.6169 Land/Easement	13,943	5,243	37.6%	37.6%		May-11
S.128 I/I Local Financial Assistance	**68,594**	**63,285**	**92.3%**	**92.3%**		
S.10273.6084 Grants - Phase II	15,938	15,938	Complete	100.0%		
S.10274.6085 Loans - Phase II	47,664	47,664	Complete	100.0%		
S.10282.6170 Repayment - Phase II	-47,664	-47,664	Complete	100.0%		
S.10368.6736 Grants - Phase IV	34,650	25,112	72.5%	72.5%		May-13
S.10369.6737 Loans - Phase IV	42,350	30,693	72.5%	72.5%		May-13
S.10370.6738 Repayment - Phase IV	-42,350	-16,618	39.2%	39.2%		May-18
S.10348.6609 Public Participation	6	6	Complete	100.0%		
S.10407.6925 Grants-Phase V	18,000	3,836	21.3%	21.3%		May-13
S.10408.6926 Loans-Phase V	22,000	4,688	21.3%	21.3%		May-13
S.10409.6927 Repayments-Phase V	-22,000	-370	1.7%	1.7%		May-18
S.138 Sewerage System Mapping Upgrade	**281**	**281**	**Complete**	**100.0%**		
S.10307.6417 Contract 1-Base Maps	67	67	Complete	100.0%		
S.10308.6418 Contract 2-Existing Data	174	174	Complete	100.0%		
S.10360.6666 Quincy Data Sharing	20	20	Complete	100.0%		
S.10361.6667 Weymouth Data Sharing	20	20	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.542 Walnut Hill Water Treatment Plant	**429,364**	**374,173**	**87.1%**	**87.1%**		
S.53293.5023 Study 1	444	444	Complete	100.0%		
S.53294.5024 Study 2	2,368	2,368	Complete	100.0%		
S.53375.6182 AWWARF Study	650	650	Complete	100.0%		
S.53376.6206 Emerg Dis Res Water Mgmt Study	1,454	1,454	Complete	100.0%		
S.53367.6118 Crypto. Inactivation Study	150	150	Complete	100.0%		
S.53390.6365 Cosgrove Disinfection Ph II	2,169	2,169	Complete	100.0%		
S.53391.6397 Cosgrove Disinfection Ph I	150	150	Complete	100.0%		
S.53393.6406 Immediate Disinf. MECO	10	10	Complete	100.0%		
S.53392.6401 Distribution Water Consultant	3	3	Complete	100.0%		
S.53304.5157 Permit Fees	59	52	88.1%	88.1%		Dec-05
S.53300.5997 Technical Assistance	72	72	Complete	100.0%		
S.53296.5042 EIR/Conceptual Design	5,808	5,808	Complete	100.0%		
S.53301.5017 Design/CS/RI - Wachusett WTP	48,880	48,607	Complete	99.4%		
S.53377.6207 WHCP1 Wachusett Cosgrove Intakes	15,391	15,391	Complete	100.0%		
S.53412.5522 WHCP2 Interim Rehab. Wach. Aque.	23,400	23,400	Complete	100.0%		
S.53413.6488 WHCP3 Sitework & Storage Tanks	67,369	67,369	Complete	100.0%		
S.53414.6489 WHCP4 Treatment Facility	145,599	144,958	Complete	99.6%		
S.53416.6491 WHCP6 Late Sitework	4,149	4,099	Complete	98.8%		
S.53426.6650 WHCP7 Existing Facilities Mods	5,000	0	Future	0.0%	May-07	
S.53371.6134 Design Management Support	1,730	1,730	Complete	100.0%		
S.53378.6208 Construction Management/RI	31,907	31,794	Complete	99.6%		
S.53406.6479 Cosgrove Disinf.-Fac. Underwater Imps.	217	217	Complete	100.0%		
S.53410.6485 Community Chlorine Analyzers	49	49	Complete	100.0%		
S.53418.6494 OCIP	5,802	5,707	98.4%	98.4%		Dec-07
S.53419.6495 Professional Services	2,857	2,816	Complete	98.6%		
S.53420.6497 Marlboro MOA	5,859	5,859	Complete	100.0%		
S.53421.6520 WHWTP- MECO	128	128	Complete	100.0%		
S.53425.6613 Site Security Services	1,266	1,266	Complete	100.0%		
S.53427.6670 CSX Crossing	65	65	Complete	100.0%		
S.53428.6671 Wachusetts Algae Design CS/RI	450	0	Future	0.0%	Sep-06	
S.53432.6691 Public Health Research	2,273	1,564	68.8%	68.8%		Dec-06
S.53435.6756 Security Equipment	571	571	Complete	100.0%		
S.53437.6773 WHCP8 Cosgrove Screens Con	3,238	3,238	Complete	100.0%		
S.53443.6815 AWWARF-Evaluation Ozone & UV	302	302	Complete	100.0%		
S.53445.6827 Fitout/Construction	1,350	800	59.3%	59.3%		Dec-08
S.53448.6889 Wachusetts Algae ...	1,800	0	Future	0.0%	Feb-08	
S.53450.6923 WH Ultra Violet Dis Des ESDC/RI	9,500	0	Future	0.0%	Jun-08	
S.53451.6924 WH Ultra Violet Disinfect Cons	34,000	0	Future	0.0%	Jul-11	
S.53452.6939 As needed Tech Assistance #1	750	187	24.9%	24.9%		Dec-07
S.53453.6951 Des WH CP7 Existing Fac Mods	1,373	629	45.8%	45.8%		Jan-09
S.53455.6989 As needed Tech Assistance ...	750	94	12.5%	12.5%		Dec-07
S.543 Quabbin Water Treatment Plant	**15,730**	**10,250**	**65.2%**	**65.2%**		
S.53363.6043 Quabbin WTP Des/CA/RI	3,823	3,823	Complete	100.0%		
S.53382.6212 Construction	5,080	5,080	Complete	100.0%		
S.53381.6211 Utilities	13	13	Complete	100.0%		
S.53380.6210 Permit Fees	10	7	70.0%	70.0%		Jan-12
S.53433.6706 Ware Fire Dept. MOA	25	25	Complete	100.0%		
S.53434.6711 W Q Analysis Equipment	50	49	98.0%	98.0%		Jun-06
S.53439.6775 Quabbin UVWTP: Des/CA/RI	961	0	Future	0.0%	Dec-07	
S.53440.6776 Quabbin UVWTP: Construction	4,485	0	Future	0.0%	Feb-10	
S.53442.6804 Quabbin UVWTP:Study/Pilot	1,283	1,253	97.7%	97.7%		Dec-05

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.544 Norumbega Covered Storage	**107,487**	**105,970**	**Complete**	**98.6%**		
S.53297.5041 Conceptual Design/EIR	2,873	2,873	Complete	100.0%		
S.53364.6057 Owners Representative	4,636	4,636	Complete	100.0%		
S.53383.6213 Design/Build	96,647	95,417	Complete	98.7%		
S.53372.6145 Land	3,000	3,000	Complete	100.0%		
S.53365.6115 Appraisal	17	17	Complete	100.0%		
S.53403.6466 Permits	5	1	20.0%	20.0%		Dec-09
S.53424.6606 Professional Services	51	27	52.9%	52.9%		Jun-07
S.53422.6529 Booster Disinfection Design	259	0	Future	0.0%	Jul-07	
S.545 Blue Hills Covered Storage	**38,083**	**1,736**	**4.6%**	**4.6%**		
S.68025.6139 EIR/Preliminary Design/OR	2,257	1,702	75.4%	75.4%		Sep-09
S.53384.6214 DB Field Oversight	2,522	0	Future	0.0%	May-06	
S.53386.6216 Design Build	33,199	0	Future	0.0%	Jul-06	
S.53385.6215 Tech Support/Permit Comp	104	34	32.7%	32.7%		Dec-07
S.550 Low Service Storage Near Spot Pond	**233**	**233**	**Complete**	**100.0%**		
S.53400.6455 Env Rev	233	233	Complete	100.0%		
S.604 MetroWest Tunnel	**698,271**	**629,585**	**90.2%**	**90.2%**		
S.59794.5043 Study	415	415	Complete	100.0%		
S.59796.5048 Construction-Sudbury Pipe Bridge	296	296	Complete	100.0%		
S.59795.5044 Design/EIR - Tunnel/ESDC	37,984	37,947	Complete	99.9%		
S.59798.6054 West Tunnel Segment - CP1	147,787	147,787	Complete	100.0%		
S.60013.6055 Midd.Tunnel Segment - CP2	245,809	245,809	Complete	100.0%		
S.60015.6059 Shaft 5A - CP3	5,872	5,872	Complete	100.0%		
S.60040.6374 East Tunnel Segment-CP3A	56,054	56,054	Complete	100.0%		
S.60014.6056 MHD Salt Sheds - CP5	1,314	1,314	Complete	100.0%		
S.60031.6205 CP6B Upper Hultman Rehab	6,300	0	Future	0.0%	Jul-10	
S.60030.6204 Testing & Disinfection-CP7	3,612	3,612	Complete	100.0%		
S.60029.6203 Loring Road Storage Tanks CP-8	41,368	41,368	Complete	100.0%		
S.59799.5284 Const. Mgmt/Resident Inspect	39,412	39,412	Complete	100.0%		
S.59806.5141 Hultman Study	1,864	1,864	Complete	100.0%		
S.60022.6128 Hultman Leak Repair	307	307	Complete	100.0%		
S.60026.6140 Hultman Repair Band	28	28	Complete	100.0%		
S.60042.6430 Hultman Investigation and Repair	1,604	1,604	Complete	100.0%		
S.60043.6492 Hultman Repair Bands 98-99	116	116	Complete	100.0%		
S.60083.7082 Hultman Interconnect RI/Svcs	4,000	0	Future	0.0%	Jun-07	
S.59805.5139 Land Acquisition	6,259	6,259	Complete	100.0%		
S.59804.5976 Technical Assistance	131	131	Complete	100.0%		
S.60012.6037 DEP Permit Fees	50	45	90.0%	90.0%		Jun-02
S.60020.6117 Prof. Services	814	741	91.0%	91.0%		Dec-03
S.60023.6129 Framingham MOU	2,444	2,444	Complete	100.0%		
S.60039.6367 Weston MOA	1,018	1,018	Complete	100.0%		
S.60038.6366 Southboro MOA	322	322	Complete	100.0%		
S.60053.6762 Wayland MOA	35	35	Complete	100.0%		
S.60017.6063 Local Sup Cont Des/CA/RI	859	859	Complete	100.0%		
S.60024.6130 Loc. Support Cont. Constr	4,308	4,286	Complete	99.5%		
S.60025.6131 Loc. Sup Cont. Legal/Easement	9	9	Complete	100.0%		
S.60018.6067 Community Technical Assistance	297	297	Complete	100.0%		
S.60021.6122 OCIP	24,515	24,356	Complete	99.4%		
S.60054.6777 Equipment Prepurchase	250	250	Complete	100.0%		
S.60058.6856 Hultman Rehab CP9	3,184	2,786	87.5%	87.5%		Jun-06
S.60059.6872 Interim Disinfection	1,245	1,245	Complete	100.0%		
S.60066.6911 Hultman Interconnect/Fin Des/CA Insp	5,388	694	12.9%	12.9%		Jul-13
S.60072.6950 Valve Chamber Modifications	300	0	Future	0.0%	Jul-06	
S.60073.6975 CP6A Lower Hultman Rehab	52,700	0	Future	0.0%	Jul-07	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.601 Sluice Gate Rehabilitation	**9,630**	**9,630**	**Complete**	**100.0%**		
S.59757.5255 Design/CS/RI	177	177	Complete	100.0%		
S.59758.5256 Construction 1	1,529	1,529	Complete	100.0%		
S.60034.6272 Design CS/RI 2	1,298	1,298	Complete	100.0%		
S.59760.5258 Construction 2	4,771	4,771	Complete	100.0%		
S.59761.5259 Constr-Stop Planks	444	444	Complete	100.0%		
S.60027.6158 Const-Sudbury Toe Drain Repair	1,400	1,400	Complete	100.0%		
S.60049.6681 Public Participation	5	5	Complete	100.0%		
S.60047.6564 Legal	5	5	Complete	100.0%		
S.615 Chicopee Valley Aqued. Redundancy	**11,431**	**5,958**	**52.1%**	**52.1%**		
S.60045.6527 Pipeline Redundancy Des/CA/RI	2,383	1,582	66.4%	66.4%		Apr-08
S.60046.6528 Pipeline Redundancy Construction	8,851	4,250	48.0%	48.0%		Oct-07
S.60065.6908 Construction Easements	147	91	61.9%	61.9%		Oct-06
S.60074.7002 Permits	50	35	70.0%	70.0%		Jan-06
S.597 Winsor Dam Hydroelectric	**83**	**83**	**Complete**	**100.0%**		
S.60032.6276 Preliminary Permit Study & Licensing	83	83	Complete	100.0%		
S.616 Quabbin Transmission System	**5,585**	**3,722**	**66.6%**	**66.6%**		
S.75491.6690 Phase 1 Oakdale Valves Const.	1,787	1,700	95.1%	95.1%		Jun-06
S.60055.6828 Facilities Inspection	1,250	650	52.0%	52.0%		Dec-06
S.75496.6831 Ph 1 Oakdale Valves Study/Des	1,475	946	64.1%	64.1%		May-07
S.60075.7007 Equipment Pre-purchase	1,074	426	39.7%	39.7%		Jun-10
S.617 Sudbury / Weston Aqueduct Repairs	**3,954**	**780**	**19.7%**	**19.7%**		
S.75486.6617 Haz Material Sudbury Aqueduct	300	300	Complete	100.0%		
S.60056.6838 Sudbury Aqueduct Inspection	887	480	54.1%	54.1%		Feb-06
S.60057.6839 Weston Aqueduct Inspection	50	0	Future	0.0%	Jul-06	
S.60076.7016 Sudbury Short-Term Repairs	2,718	0	Future	0.0%	Jun-06	
S.619 Winsor Dam Repair	**1,200**	**12**	**1.0%**	**1.0%**		
S.60077.7017 Design CA/RI	200	12	6.0%	6.0%		Jun-08
S.60078.7018 Construction	1,000	0	Future	0.0%	Mar-07	
S.620 Wachusetts Reservoir Spillway Improvement	8,200	342	4.2%	4.2%		
S.60079.7019 Design	1,200	342	28.5%	28.5%		Dec-08
S.60080.7020 Construction	7,000	0	Future	0.0%	Jan-07	
S.621 Watershed Land	**11,000**	**6,000**	**54.5%**	**54.5%**		
S.60081.7069 Land Acquisition	11,000	6,000	54.5%	54.5%		Jun-07
S.622 Cosgrove/Wachusett Redundancy	**500**	**0**	**Future**	**0.0%**	**Jun-06**	
S.60082.7071 Cosgrove Tunnel Alternative Study	500	0	Future	0.0%	Jun-06	
S.677 Valve Replacement	**14,952**	**7,890**	**52.8%**	**52.8%**		
S.67559.5126 Construction 1	718	718	Complete	100.0%		
S.68012.6105 Construction 2	1,385	1,385	Complete	100.0%		
S.68039.6278 Construction 3	1,338	1,338	Complete	100.0%		
S.68079.6345 Construction 4	1,540	1,540	Complete	100.0%		
S.68080.6346 Construction 5	1,386	1,386	Complete	100.0%		
S.68126.6435 Construction 6	2,236	0	Future	0.0%	Jul-06	
S.68127.6436 Construction 7	2,195	0	Future	0.0%	Oct-08	
S.68005.6088 Equip. Purchase	4,036	1,408	34.9%	34.9%		Jun-09
S.67560.5124 Technical Assistance	110	110	Complete	100.0%		
S.68239.6859 Permits	5	1	20.0%	20.0%		May-10
S.68240.6860 Easements	5	5	Complete	100.0%		
S.712 Cathodic Protection Of Distr.Mains	**1,472**	**141**	**9.6%**	**9.6%**		
S.68002.6058 Planning Phase I	108	108	Complete	100.0%		
S.68129.6438 Test Station Installation 2	444	0	Future	0.0%	May-13	
S.68130.6439 Test Station Installation 3	444	0	Future	0.0%	May-14	
S.68131.6440 Test Station Installation 4	444	0	Future	0.0%	May-15	
S.68216.6751 Technical Assistance	33	33	Complete	100.0%		

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.678 Boston Low Serv.-Pipe & Valve Rehab	**23,691**	**23,691**	**Complete**	**100.0%**		
S.67570.5120 Study - Pipe	297	297	Complete	100.0%		
S.67571.5122 Design/CS	1,604	1,604	Complete	100.0%		
S.67572.5123 Ph 1 Equip Prepurchase	892	892	Complete	100.0%		
S.68000.6045 Const Clinton Rd & Boylston St	7,933	7,933	Complete	100.0%		
S.67999.6044 Construction Beacon Street	12,964	12,964	Complete	100.0%		
S.68217.6769 Technical Assistance	1	1	Complete	100.0%		
S.730 Weston Aqueduct Supply Mains (WASMs)	**116,051**	**61,025**	**52.6%**	**52.6%**		
S.68027.6142 Design/CA/RI-PhA/W1&2	5,374	5,222	97.2%	97.2%		Jul-06
S.67865.5147 Design/CA/RI - W4	6,149	6,079	Complete	98.9%		
S.68041.6280 Newton WASM 1&2	9,219	9,219	Complete	100.0%		
S.68042.6281 Boston WASM 1&2	7,092	7,092	Complete	100.0%		
S.68166.6539 Design/CA/RI WASM3	8,961	0	Future	0.0%	Jun-06	
S.68285.7083 Design/CA/RI Section 28	850	0	Future	0.0%	Jun-06	
S.68170.6543 Waltham WASM 3-CP2	16,561	0	Future	0.0%	Jan-10	
S.68171.6544 Belmont WASM 3 - CP3	12,577	0	Future	0.0%	Apr-12	
S.68172.6545 Arlington WASM 3 - CP4	9,674	0	Future	0.0%	Oct-14	
S.68173.6546 Section 28, Arlington-CP1	4,086	0	Future	0.0%	Jan-08	
S.68031.6175 Auburndale WASM 1,2&4	4,001	4,001	Complete	100.0%		
S.68069.6312 Newton WASM 2&4	8,282	8,282	Complete	100.0%		
S.68070.6313 Allston WASM 4 & W. Ave. Sewer	17,331	17,331	Complete	100.0%		
S.68032.6176 Construction Meter 103	61	61	Complete	100.0%		
S.59774.5034 Construction Newton Water Mains	669	669	Complete	100.0%		
S.59776.5975 Technical Assistance	186	186	Complete	100.0%		
S.68030.6174 Appraisal/Easement	750	297	39.6%	39.6%		Jan-14
S.68245.6870 Survey	210	89	42.4%	42.4%		Dec-08
S.68269.6996 Temporary Water Supply Plan	1,500	0	Future	0.0%	Jan-08	
S.68272.7000 Section PCCP W-12 ...	2,167	2,167	Complete	100.0%		
S.68273.7001 WASM3 SPL12 PCCP Des	349	330	94.6%	94.6%		May-06
S.720 Warren Cottage Line Rehab	**1,205**	**1,205**	**Complete**	**100.0%**		
S.68081.6285 Construction	1,158	1,158	Complete	100.0%		
S.68082.6286 Easements	3	3	Complete	100.0%		
S.68195.6618 Technical Assistance	43	43	Complete	100.0%		
S.732 Walnut St. & Fisher Hill Pipeline Rehab.	**3,354**	**54**	**1.6%**	**1.6%**		
S.68189.6586 Construction Phs. 1	3,294	0	Future	0.0%	Nov-06	
S.68220.6779 Technical Assistance	21	21	Complete	100.0%		
S.68221.6780 Survey	35	32	91.4%	91.4%		May-08
S.68270.6998 Permits	5	2	40.0%	40.0%		May-08
S.683 Heath Hill Road Pipe Replacement	**20,022**	**12,790**	**63.9%**	**63.9%**		
S.67639.5192 Design/CS/RI-Sec 52 Ph 1	218	218	Complete	100.0%		
S.68047.6288 Design Sec 52 Ph 2	2,408	1,725	71.6%	71.6%		Oct-08
S.67645.6042 Const-Sect 52 New	745	745	Complete	100.0%		
S.67642.5194 Construction Section 52 Rehab	8,334	2,000	24.0%	24.0%		Oct-07
S.67640.5206 Design/CS/RI - Sec 58,20	1,595	1,595	Complete	100.0%		
S.67643.5102 Construction Sect 58,20,19	6,362	6,362	Complete	100.0%		
S.67644.5985 Technical Assistance	19	19	Complete	100.0%		
S.68008.6100 Legal/Easements-New	17	17	Complete	100.0%		
S.68048.6289 Legal/Easements Rehab	303	101	33.3%	33.3%		Oct-07
S.68201.6648 Public Participation	5	3	60.0%	60.0%		Oct-07
S.68202.6649 Legal	5	2	40.0%	40.0%		Oct-07
S.68241.6862 Boston Paving	12	3	25.0%	25.0%		Oct-08

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.721 Southern Spine Distribution Mains	**62,580**	**13,143**	**21.0%**	**21.0%**		
S.68083.6290 Sec 21,43,22 Design	8,076	4,744	58.7%	58.7%		Mar-12
S.68084.6291 Sec 21,43,22 Easements	170	89	52.4%	52.4%		Feb-09
S.68085.6292 Section 22 South Construction	5,014	5,014	Complete	100.0%		
S.68089.6296 Sec 20 & 58 Design	2,106	0	Future	0.0%	Feb-12	
S.68090.6297 Sec 20 & 58 Easements	46	0	Future	0.0%	Sep-08	
S.68091.6298 Sec 20 & 58 Construction	9,912	0	Future	0.0%	Sep-14	
S.68122.6396 Adams Street Bridge	154	154	Complete	100.0%		
S.68193.6601 Southern High Public Part	15	15	Complete	100.0%		
S.68194.6602 Southern High Ext Study	242	242	Complete	100.0%		
S.68228.6787 Boston Paving	256	3	1.2%	1.2%		Mar-12
S.68235.6844 Section 22 North Construction	12,097	0	Future	0.0%	Apr-12	
S.68236.6845 Sections 21&43 Construction	21,607	0	Future	0.0%	Jun-06	
S.68237.6846 Legal	5	1	20.0%	20.0%		
S.68238.6847 Technical Assistance	22	22	Complete	100.0%		
S.68247.6885 Contract 1A Construction	2,859	2,859	Complete	100.0%		
S.714 South. Extra High Sects 41,42 & 74	**3,650**	**3,650**	**Complete**	**100.0%**		
S.68014.6107 Design/CA/RI	763	763	Complete	100.0%		
S.68049.6299 Easements	46	46	Complete	100.0%		
S.68050.6300 Construction	2,345	2,345	Complete	100.0%		
S.68183.6561 Boston Paving	496	496	Complete	100.0%		
S.719 Chestnut Hill Connecting Mains	**17,709**	**17,709**	**Complete**	**100.0%**		
S.68026.6141 Des/CA/RI PS Potable Connection	1,403	1,403	Complete	100.0%		
S.68051.6301 Preliminary Engineering	613	613	Complete	100.0%		
S.68157.6503 Design/CA/RI - Emer. Pump Relocation	1,121	1,121	Complete	100.0%		
S.68155.6501 Const - Emer. Pump Relocation	6,502	6,502	Complete	100.0%		
S.68053.6303 Easements	81	81	Complete	100.0%		
S.68180.6558 Boston Paving	133	133	Complete	100.0%		
S.68182.6560 Legal	1	1	Complete	100.0%		
S.68199.6623 BECO Emergency Pump Construction	431	431	Complete	100.0%		
S.68203.6651 Const.- Pump Station Potable Connection	7,132	7,132	Complete	100.0%		
S.68230.6814 Equipment pre-purchase	178	178	Complete	100.0%		
S.68231.6820 Demolition of Garages	72	72	Complete	100.0%		
S.68244.6869 Utilities	44	44	Complete	100.0%		
S.704 Rehab of Other Pumping Stations	**28,952**	**4,918**	**17.0%**	**17.0%**		
S.67885.5153 Preliminary Design	351	351	Complete	100.0%		
S.68017.6110 Design/CS/RI	2,710	2,710	Complete	100.0%		
S.68072.6304 Construction II&C	639	639	Complete	100.0%		
S.68102.6375 Rehab of 5 Pump Stations	20,926	0	Future	0.0%	Aug-06	
S.68178.6556 Public Participation	5	1	20.0%	20.0%		Jan-10
S.68179.6557 Legal	5	1	20.0%	20.0%		Jan-10
S.68204.6676 Proprietary Equipment Purchases	285	179	62.8%	62.8%		Jan-10
S.68266.6980 Design 2 CS/RI	4,030	1,038	25.8%	25.8%		Nov-10
S.722 NIH Redundancy & Covered Storage	**7,390**	**277**	**3.7%**	**3.7%**		
S.68093.6306 Easements	300	0	Future	0.0%	Jul-07	
S.53454.6954 Concept Plan	947	277	29.3%	29.3%		Jun-07
S.68276.7026 NIH Improvements Const	5,046	0	Future	0.0%	Apr-10	
S.68277.7045 Design CA/RI NIH Improvements	1,074	0	Future	0.0%	Apr-08	
S.68278.7047 Permits	5	0	Future	0.0%	Jan-06	
S.68279.7048 Technical Assistance	18	0	Future	0.0%	Jan-06	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.689 James L. Gillis Pump Station Rehab.	**34,146**	**33,416**	**97.9%**	**97.9%**		
S.67701.5249 Pump	70	70	Complete	100.0%		
S.67702.5076 Electrical Upgrade	200	200	Complete	100.0%		
S.67709.5074 Construction Diesel Exhaust	60	60	Complete	100.0%		
S.67703.5077 Design/CS-Pump Station	2,308	2,308	Complete	100.0%		
S.67707.5078 Construction-PS-Phase 1	630	630	Complete	100.0%		
S.67708.5051 Const-P.S.-Ph2	12,890	12,890	Complete	100.0%		
S.67998.6038 Hydraulic Transient Analysis	61	61	Complete	100.0%		
S.67716.5047 Oil Control Plan	171	171	Complete	100.0%		
S.67717.5050 Drain Line Cleaning	268	268	Complete	100.0%		
S.67704.5072 Design/CS/RI-Suction Pipe	1,379	1,379	Complete	100.0%		
S.67705.5071 Study-Suction Pipe	603	603	Complete	100.0%		
S.67706.5073 Construction-Suction Pipe	11,265	11,265	Complete	100.0%		
S.68054.6307 Construction-Tudor Barn	88	88	Complete	100.0%		
S.68105.6378 Woodland Road Pavement Improvements	396	396	Complete	100.0%		
S.67994.6030 Pavement Highland Ave	86	86	Complete	100.0%		
S.67720.5219 Constr-Rehab Discharge	2,041	2,041	Complete	100.0%		
S.67719.5144 Construction Sewer P.S.	203	203	Complete	100.0%		
S.67714.5983 Technical Assistance	163	163	Complete	100.0%		
S.67718.5053 Environ Assess & Remedial Plan	634	516	81.4%	81.4%		Sep-07
S.68055.6308 Remedial Action Plan	600	0	Future	0.0%	Feb-07	
S.67991.6027 DEP Review Fees	30	18	60.0%	60.0%		Dec-07
S.713 Spot Pond Supply Mains - Rehab	**62,180**	**53,582**	**86.2%**	**86.2%**		
S.68038.6223 Prelim Design & Design/CA/RI	10,874	10,455	96.1%	96.1%		Apr-08
S.68059.6316 Easements/Paving CP1	143	143	Complete	100.0%		
S.68106.6379 Easements CP2	149	149	Complete	100.0%		
S.68107.6380 Easements CP3	258	107	41.5%	41.5%		Nov-07
S.68151.6476 Easements CP4	1	1	Complete	100.0%		
S.68060.6317 North (Medford/Melrose)	6,597	6,597	Complete	100.0%		
S.68108.6381 Middle (Medford/Somerville)	22,149	22,067	Complete	99.6%		
S.68109.6382 South (Cambridge/Boston)	17,242	10,852	62.9%	62.9%		Apr-08
S.68150.6475 Early Valve Replacement Contract	2,387	2,387	Complete	100.0%		
S.68209.6697 Construction 4-Trusses	929	0	Future	0.0%	Apr-08	
S.68153.6483 Early Valve Equip. Purchase	161	161	Complete	100.0%		
S.68274.7003 CA/RI CP3	1,289	663	51.4%	51.4%		Apr-08
S.723 Nor Low Service Rehab Secs. 8	**17,140**	**0**	**Future**	**0.0%**		
S.68094.6321 Sec 8 Survey	80	0	Future	0.0%	Nov-06	
S.68287.7092 Design CA/RI Sec 8	1,996	0	Future	0.0%	Aug-07	
S.68095.6322 Sec 8 Construction	9,859	0	Future	0.0%	Aug-09	
S.68262.6962 Rehab Sects 37,38 Chel/EB Con	3,200	0	Future	0.0%	Aug-08	
S.68263.6977 Permits	5	0	Future	0.0%	Jul-05	
S.68275.7021 Section 97A Construction	2,000	0	Future	0.0%	Aug-07	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.702 New Connecting Mains - Shaft 7 to ...	**51,564**	**4,925**	**9.6%**	**9.6%**		
S.68035.6199 Watertown MOU	167	167	Complete	100.0%		
S.67846.5163 Routing Study	397	397	Complete	100.0%		
S.68110.6383 Design/CA/RI DP1	4,810	3,313	68.9%	68.9%		Dec-09
S.68118.6391 Revised N. Segment (CP1A) New 48"	25,533	0	Future	0.0%	Mar-07	
S.68114.6387 Easements CP1 A&B	96	57	59.4%	59.4%		Oct-06
S.68111.6384 Des/CA/RI DP2/4 Meter 120	2,943	991	33.7%	33.7%		Jun-09
S.68286.7086 Design CA/RI Sec 59&60	500	0	Future	0.0%	Nov-10	
S.68174.6548 Constr CP2 C&L Sec 59&60	3,143	0	Future	0.0%	Nov-12	
S.68175.6547 Easements CP2	44	0	Future	0.0%	May-11	
S.68119.6392 South Segment (CP3)	5,257	0	Future	0.0%	Feb-08	
S.68115.6388 Easements CP3	67	0	Future	0.0%	Mar-07	
S.68121.6394 Northeast Segment (CP5)	6,058	0	Future	0.0%	Oct-07	
S.68117.6390 Easements CP5	49	0	Future	0.0%	Dec-06	
S.68255.6955 Repl of Sect 25-Design CA/RI	400	0	Future	0.0%	Jul-09	
S.68256.6956 Repl of Sect 25-Construction	2,100	0	Future	0.0%	Jul-11	
S.706 NHS - Con. Mains from Sec. 91	**2,342**	**2,342**	**Complete**	**100.0%**		
S.67930.5165 Design/CA/RI	711	711	Complete	100.0%		
S.68077.6332 Construction	1,631	1,631	Complete	100.0%		
S.692 NHS - Section 27 Improvements	**2,701**	**124**	**4.6%**	**4.6%**		
S.67769.6333 Construction Sect 27	2,576	27	1.0%	1.0%		Mar-15
S.68192.6589 Easements	23	0	Future	0.0%	Apr-12	
S.68211.6712 Technical Assistance	64	61	95.3%	95.3%		Mar-12
S.68229.6809 Surveying	37	37	Complete	100.0%		
S.693 NHS - Revere & Malden Pipeline Impr	**32,052**	**24,969**	**77.9%**	**77.9%**		
S.67780.5185 Design/CS/RI-Revere/Malden	1,786	1,786	Complete	100.0%		
S.67781.5186 Constr-Revere Beach	6,314	6,314	Complete	100.0%		
S.67782.5176 Constr-Malden Sect 53	10,026	10,026	Complete	100.0%		
S.68020.6113 Landscaping Malden Section 53	20	20	Complete	100.0%		
S.67792.5238 Construction - Linden Square	1,849	1,849	Complete	100.0%		
S.67793.5239 Construction Admin.-Linden Squar	125	125	Complete	100.0%		
S.67784.5177 Const-Revere Sect 53	2,707	1,100	40.6%	40.6%		Dec-07
S.68078.6334 Easements Revere 53	27	15	55.6%	55.6%		Dec-07
S.67996.6033 Des/CA/RI-Rd Restoration	77	77	Complete	100.0%		
S.67997.6034 Construction Road Restoration	1,714	1,714	Complete	100.0%		
S.68033.6183 Sidewalk Restoration	54	54	Complete	100.0%		
S.67785.5191 Constr-Control Valves	949	949	Complete	100.0%		
S.67786.5179 Const.-DI Pipeline C&L	158	158	Complete	100.0%		
S.67787.5178 Constr-Win C&L	575	575	Complete	100.0%		
S.67790.6335 Constr 68 & 53A	4,229	0	Future	0.0%	Jul-13	
S.67791.5986 Technical Assistance	206	206	Complete	100.0%		
S.68258.6958 Shaft 9A-D Ext Construction	1,200	0	Future	0.0%	Apr-14	
S.68265.6978 Survey	30	0	Future	0.0%	Jul-06	
S.68280.7049 Permits	5	0	Future	0.0%	Apr-05	
S.731 Lynnfield Pipeline	**4,000**	**150**	**3.8%**	**3.8%**		
S.68187.6584 Construction	3,000	0	Future	0.0%	Sep-07	
S.68196.6619 Easem/Legal/License/Permits	200	50	25.0%	25.0%		Apr-07
S.68251.6905 Design CA/RI	800	100	12.5%	12.5%		Jul-09

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.708 Nor Extra High Serv - New Pipelines	**8,746**	**3,634**	**41.6%**	**41.6%**		
S.67970.5242 Design/CA/RI	588	588	Complete	100.0%		
S.67972.6340 Construction	3,032	3,032	Complete	100.0%		
S.68162.6522 Construction-Sections 34,36,45	5,053	0	Future	0.0%	Jan-14	
S.68176.6554 Public Participation	5	1	20.0%	20.0%		Nov-15
S.68177.6555 Legal	5	1	20.0%	20.0%		Nov-15
S.68210.6707 Technical Assistance	54	8	14.8%	14.8%		Nov-15
S.68215.6749 PLC Equipment Purchases	4	4	Complete	100.0%		
S.68281.7050 Permits	5	0	Future	0.0%	Nov-10	
S.725 Hydraulic Model Update	**686**	**686**	**Complete**	**100.0%**		
S.68101.6342 Hydraulic Model Update	563	563	Complete	100.0%		
S.68165.6531 Model Enhancement Support Services	123	123	Complete	100.0%		
S.753 Central Monitoring System	**16,143**	**15,753**	**97.6%**	**97.6%**		
S.75300.5025 Study	190	190	Complete	100.0%		
S.75301.5026 Design	2,651	2,651	Complete	100.0%		
S.75304.5160 Communications Structures	161	161	Complete	100.0%		
S.75305.5173 CS/Start Up Services	352	352	Complete	100.0%		
S.75302.5027 Equipment Prepurchase	2,162	2,162	Complete	100.0%		
S.75306.5171 Construction 1	209	209	Complete	100.0%		
S.75303.5028 SCADA Implementation	2,201	1,811	82.3%	82.3%		Jun-09
S.75474.6125 Microwave Equipment	782	782	Complete	100.0%		
S.75308.5849 Operations Center Construction	1,499	1,499	Complete	100.0%		
S.75309.5987 Technical Assistance	386	386	Complete	100.0%		
S.75488.6653 Microwave Comm System-Wide Backbone	1,694	1,694	Complete	100.0%		
S.75489.6654 Study & Design Monitoring & Control	1,858	1,858	Complete	100.0%		
S.75494.6816 Microwave Comm for Waterworks Facil	1,957	1,957	Complete	100.0%		
S.75495.6825 Ludlow Communications	41	41	Complete	100.0%		
S.763 Distribution Systems Facs. Mapping	**2,305**	**1,036**	**44.9%**	**44.9%**		
S.75458.5162 Planning Design	936	936	Complete	100.0%		
S.75476.6152 Data Purchase	100	100	Complete	100.0%		
S.75484.6525 Records Development	1,268	0	Future	0.0%	Jul-06	
S.764 Local Water Infrastr Rehab Ast Progr	**7,488**	**7,488**	**Complete**	**100.0%**		
S.75477.6343 Loans	22,304	22,304	Complete	100.0%		
S.75478.6344 Loan Repayment	-22,304	-22,304	Complete	100.0%		
S.75479.6408 Grants	7,488	7,488	Complete	100.0%		
S.765 Local Water Pipeline Imp. Loan Program	**0**	**81,906**		**#DIV/0!**		
S.75485.6608 Community Loans	255,510	107,391	42.0%	42.0%		Jun-13
S.75493.6759 Community Repayment	-255,510	-25,485	10.0%	10.0%		Jun-23
S.766 Waterworks Facility Asset Protection	**4,050**	**245**	**6.0%**	**6.0%**		
S.75490.6689 Meter Vault Manhole Retrofits	1,417	0	Future	0.0%	Sep-14	
S.75497.6832 Design-Walnut Hill Tank	300	0	Future	0.0%	Sep-08	
S.75498.6833 Construction-Walnut Hill Tank	1,000	0	Future	0.0%	Oct-10	
S.75501.6910 Waltham Pipe/Bridge Repl	238	238	Complete	100.0%		
S.75502.6920 Permits/Legal Fees	15	8	53.3%	53.3%		Mar-12
S.75506.7023 Design Cosgrove Turbine Isolation	480	0	Future	0.0%	Jul-15	
S.75509.7064 Cosgrove Valve Seat Repl	500	0	Future	0.0%	Jul-08	
S.75510.7065 Des Cosgrove Valve Seat Repl	100	0	Future	0.0%	Jul-07	
S.933 Capital Maintenance Planning/Development	**8,893**	**3,299**	**37.1%**	**37.1%**		
S.19175.6421 Inventory & Evaluation-1&2	2,581	2,581	Complete	100.0%		
S.92387.6976 As-needed Design Contract 1	750	355	47.3%	47.3%		Feb-07
S.92393.6988 As Needed Des/TA Contract	750	363	48.4%	48.4%		Feb-07
S.92399.7070 Long-Term As-Needed Design	4,812	0	Future	0.0%	Jan-07	

Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY06	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.881 Equipment Purchase	**8,703**	**5,893**	**67.7%**	**67.7%**		
S.92367.6732 TV Inspection Truck	175	175	Complete	100.0%		
S.92374.6760 Security Equip & Installation	6,112	3,732	61.1%	61.1%		Jun-07
S.92379.6808 ICP-MS Lab Testing Equip	150	150	Complete	100.0%		
S.92381.6866 Back Hoe	130	130	Complete	100.0%		
S.92382.6867 Vactor Truck	220	220	Complete	100.0%		
S.92383.6907 Water Service Truck	114	114	Complete	100.0%		
S.92384.6944 Bucket Machine	137	137	Complete	100.0%		
S.92385.6945 Excavator	265	0	Future	0.0%	Apr-07	
S.92386.6946 Grove Crane	311	311	Complete	100.0%		
S.92388.6981 Land Fill Loader	113	113	Complete	100.0%		
S.92392.6986 PowerSweeper/Catch Basin ...	155	155	Complete	100.0%		
S.92394.6990 Back Hoe (WRA385)	97	97	Complete	100.0%		
S.92395.7027 Closed Circuit TV Insp Truck	165	0	Future	0.0%	Apr-07	
S.92396.7028 Front-End Loader	240	240	Complete	100.0%		
S.92400.7074 Crane (WRA-185)	320	320	Complete	100.0%		
S.930 MWRA Facility - Chelsea	**10,227**	**10,227**	**Complete**	**100.0%**		
S.92321.5052 Planning	30	30	Complete	100.0%		
S.92320.5886 Conceptual Design	49	49	Complete	100.0%		
S.92354.6510 Design Review	379	379	Complete	100.0%		
S.92355.6511 Fitout - Office Furnish/Equip	644	644	Complete	100.0%		
S.92356.6512 Inform./Telecom. Consultant	382	382	Complete	100.0%		
S.92357.6513 Existing Facility "Button Up"	380	380	Complete	100.0%		
S.92358.6514 Moving Expense	362	362	Complete	100.0%		
S.92362.6624 Legal	14	14	Complete	100.0%		
S.92363.6713 Moving Expenses CNY	237	237	Complete	100.0%		
S.92364.6714 CNY Retrofit	1,577	1,577	Complete	100.0%		
S.92365.6715 MIS Network	1,639	1,639	Complete	100.0%		
S.92366.6716 Fitout - All Other	4,507	4,507	Complete	100.0%		
S.92375.6757 Communication Tower	25	25	Complete	100.0%		
S.925 Technical Assistance	**1,650**	**0**	**Future**	**0.0%**		
S.30000.MECH Mechanical	150	0	Future	0.0%		
S.50000.MATT Material Testing	150	0	Future	0.0%		
S.80000.SURV Surveying	150	0	Future	0.0%		
S.90000.HAZM Hazardous Material	900	0	Future	0.0%		
S.33000.INST Instrument Control	150	0	Future	0.0%		
S.44000.WETP Wetland/Permitting	150	0	Future	0.0%		
S.931 Business Systems Plan	**25,157**	**21,395**	**85.0%**	**85.0%**		
S.92338.6014 Phase I (FY95-97)	1,146	1,146	Complete	100.0%		
S.92339.6013 Hardware-Phase I	441	441	Complete	100.0%		
S.92322.6015 Network-Phase I	142	142	Complete	100.0%		
S.92343.6177 Phase II FY97-99	4,274	2,906	68.0%	68.0%		Jun-07
S.92347.6362 Phase III (FY99-01)	10,807	10,807	Complete	100.0%		
S.92352.6508 Phase IV / Year 2000 Imp.	3,051	3,051	Complete	100.0%		
S.92353.6509 Phase V	2,957	1,281	43.3%	43.3%		Jun-09
S.92380.6865 Phase VI	2,339	1,621	69.3%	69.3%		Jun-07
S.932 Environmental Remediation	**1,826**	**1,382**	**75.7%**	**75.7%**		
S.92369.6745 Tech Asst./ Env. Remediation	540	540	Complete	100.0%		
S.92370.6746 Prision Point Tank Removal - Const.	777	333	42.9%	42.9%		
S.92371.6747 Cottage Farm Tank Replace - Const	428	428	Complete	100.0%		
S.92376.6805 Oakdale Power Station	73	73	Complete	100.0%		
S.92377.6806 Cosgrove Power Station	8	8	Complete	100.0%		
S.934 MWRA Facilities Management & Planning	**3,931**	**990**	**25.2%**	**25.2%**		
S.92389.6983 Design/Engineering Services	763	240	31.5%	31.5%		Jun-08
S.92390.6984 Facilities Construction	3,168	750	23.7%	23.7%		Jun-09

APPENDIX 4

Municipality and Project Reference by Municipality

APPENDIX 4

PROJECT/MUNICIPALITY(s)

Project Number/ Project		Community(s) Served
102	Quincy Pump Facilities	Quincy
104	Braintree-Weymouth Relief Facilities	Braintree, Hingham, Holbrook, Randolph, Weymouth, Quincy
105	New Neponset Valley Relief Sewer	Canton, Dedham, Hyde Park, Milton, Norwood, Stoughton, Walpole, Westwood
106	Wellesley Extension Replacement Sewer	Dedham, Needham, Wellesley, Dover
107	Framingham Extension Relief Sewer	Ashland, Framingham, Natick
127	Cummingsville Replacement Sewer	Burlington, Winchester, Woburn
128	Infiltration/Inflow Local Financial Assistance Program.	All Wastewater Communities
131	Upper Neponset Valley Sewer System	Brookline, Dedham, Newton, West Roxbury
132	Corrosion and Odor Control Study	All Wastewater Communities
136	West Roxbury Tunnel	Boston
137	Wastewater Central Monitoring	All Wastewater Communities
138	Sewerage System Mapping Upgrade	All Wastewater Communities
139	South System Relief Project	Boston, Milton
141	Wastewater Process Optimization	All Wastewater Communities
142	Wastewater Metering System Equipment Replacement	All Wastewater Communities
143	Regional I/I Management Study	All Wastewater Communities
145	Interception & Pumping Facility Asset Protection	All Wastewater Communities
200	Deer Island Plant Optimization	All Wastewater Communities
206	Deer Island Treatment Plant Asset Protection	All Wastewater Communities
261	Residuals Management Facilities	All Wastewater Communities
324	CSO Support	Boston, Cambridge, Chelsea, Revere, Somerville
339	North Dorchester Bay & Reserve Channel Conduits/CSO	Boston
340	South Dorchester Bay Sewer Separation (Fox Point)	Boston
341	South Dorchester Bay Sewer Separation (Commercial Pt.)	Boston
342	Neponset River Sewer Separation	Boston
343	Constitution Beach Sewer Separation	Boston
344	Stony Brook Sewer Separation	Boston
346	Cambridge CAM002-004 Sewer Separation	Cambridge
347	East Boston Branch Sewer Relief	Boston, Chelsea, Everett
348	Fort Point Channel & BOS019 Conduits	Boston
349	Chelsea Trunk Sewer	Chelsea, Revere
350	Union Park Detention Treatment Facility	Boston
351	BWSC Floatables Control	Boston
352	Cambridge Floatables Control	Cambridge
353	Upgrade Existing CSO Facilities	Boston, Cambridge, Revere, Somerville
354	Hydraulic Relief Projects	Boston, Cambridge
355	MWR003 Gate and Siphon	Boston, Cambridge
356	Fort Point Channel Sewer Separation	Boston
357	Charles River CSO Controls	Boston, Brookline, Cambridge
358	Morrisey Boulevard Drain	Boston
359	Reserved Channel Sewer Separation	Boston
360	Brookline Sewer Separation	Brookline
361	Bulfinch Triangle Sewer Separation	Boston
542	Walnut Hill Treatment Plant	All Water Customers (except Chicopee, Wilbraham, South Hadley Fire District #1, Worcester, Clinton, and Leominster)
543	Quabbin Water Treatment Plant	South Hadley, Chicopee, Wilbraham
544	Norumbega Covered Storage	Arlington, Bedford, Belmont, Boston, Brighton, Cambridge, Chestnut Hill, Lexington, Malden, Medford, Somerville, Waltham, Watertown, Weston, Winchester
545	Blue Hills Covered Storage	Boston, Canton, Milton, Norwood, Quincy
601	Sluice Gate Rehabilitation	All Water Communities
604	MetroWest Tunnel	All Water Communities (except South Hadley, Chicopee, Wilbraham, Worcester, Clinton, and Leominster)
615	Chicopee Valley Aqueduct Redundancy	Chicopee, South Hadley Fire District, Wilbraham
616	Quabbin Transmission System	Chicopee, South Hadley, Wilbraham
617	Sudbury/Weston Aqueduct Repairs	Framingham, Natick, Sudbury, Weston
619	Winsor Dam Repair	All Water Communities
620	Wachusetts Reservior Spillway	All Water Communities
621	Watershed Land	All Water Communities
622	Cosgrove/Wachusett Redundancy	All Water Communities
677	Valve Replacement	All Water Communities
678	Boston Low Service Pipe and Valve Rehab.	Boston, Brookline
683	Heath Hill Road Pipe Replacement	Boston, Brookline
689	James L. Gillis Pump Station Rehabilitation	Lynn, Lynnfield, Malden, Marblehead, Medford, Melrose, Nahant, Peabody, Saugus, Stoneham, Swampscott, Wakefield, Winchester, Woburn
690	Northern Low Service Pipeline Replacement	Chelsea, Everett, Malden
692	Northern High Service Section 27 Improvements	Lynn, Marblehead, Nahant, Peabody, Swampscott

APPENDIX 4

PROJECT/MUNICIPALITY(s)

Project Number/ Project		Community(s) Served
693	Northern High Service Pipe Improvements - Revere/Malden	East Boston, Lynn, Malden, Marblehead, Nahant, Peabody, Revere, Saugus, Winthrop
702	New Connecting Mains - Shaft 7 to WASM 3	Arlington, Bedford, Belmont, Boston, Lexington, Medford, Newton, Somerville, Waltham, Watertown, Winchester
704	Rehabilitation of Other Pump Stations	Arlington, Bedford, Belmont, Boston, Brookline, Canton, Lexington, Milton, Norwood, Waltham, Watertown, Winchester
706	Northern High Service Connecting Mains from Sec. 91	Lynn, Lynnfield, Marblehead, Nahant, Revere, Saugus, Swampscott
708	Northern Extra High Service - New Pipelines	Arlington, Bedford, Lexington, Waltham
712	Cathodic Protection of Distribution Mains	All Water Communities
713	Spot Pond Supply Mains Rehabilitation	Arlington, Boston, Cambridge, Chelsea, Everett, Malden, Medford, Somerville
714	Southern Extra High - Sections 41, 42, and 74	Boston, Brookline, Canton, Milton, Norwood
719	Chestnut Hill Connecting Mains	Boston, Brookline, Newton
720	Warren Cottage Line Rehabilitation	Boston, Brookline
721	Southern Spine Distribution Mains	Boston, Brookline, Canton, Milton, Norwood, Quincy
722	Bear Hill Improvements - Section 29 Rehabilitation	Stoneham, Wakefield, Winchester, Woburn
723	Northern Low Service Rehab. - Sections 8 & 57	Chelsea, East Boston, Everett, Malden, Medford
725	Hydraulic Model Update	All Water Communities
730	Weston Aqueduct Supply Mains	Weston, Newton, Boston, Watertown, Cambridge, Waltham, Belmont, Arlington, Somerville
731	Lynnfield Pipeline	Lynnfield
732	Walnut St. & Fisher Hill Pipeline Rehabilitation	Brookline, Chestnut Hill
753	Central Monitoring System	All Water Communities
763	Distribution Systems Facilities Mapping	All Water Communities
764	Local Water Infrastructure Rehab Assistance Program.	All Water Communities
766	Waterworks Facility Asset Protection	All Water Communities
881	Centralized Equipment Purchase	All MWRA Customers
925	Technical Assistance	All MWRA Customers
930	North Maintenance Facility - Chelsea	All MWRA Customers
931	Business Systems Plan	All MWRA Customers
932	Environmental Remediation	All MWRA Customers
933	Capital Maintenance Planning/Development	All MWRA Customers
934	MWRA Facilities Management	All MWRA Customers

APPENDIX 5

Municipality and Project Reference by Project

APPENDIX 5

MUNICIPALITY/PROJECT(s)

Municipality / Project Number	Project
All MWRA COMMUNITIES	
881	Equipment Purchase
925	Technical Assistance
930	MWRA Facility - Chelsea
931	Business Systems Plan
932	Environmental Remediation
933	Capital Maintenance Planning/Development
934	MWRA Facilities Management
ALL WASTEWATER COMMUNITIES	
128	Infiltration/Inflow Local Financial Assistance Program
132	Corrosion & Odor Control Study
137	Wastewater Central Monitoring
141	Wastewater Process Optimization
142	Wastewater Metering System Equipment Replacement
145	Interception & Pumping Facilities Asset Protection
200	Deer Island Plant Optimization
206	Deer Island Treatment Plant Asset Protection
261	Residuals Management Facilities
ALL WATER COMMUNITIES	
541	Watershed Protection
597	Winsor Dam Hydroelectric
601	Sluice Gate Rehabilitation
619	Winsor Dam Repair
620	Wachusetts Reservoir Spillway
621	Watershed Land
622	Cosgrove/Wachusett Redundancy
677	Valve Replacement
712	Cathodic Protection of Distribution Mains
725	Hydraulic Model Update
753	Central Monitoring System
758	Rehabilitation of Existing Facilities
763	Distribution Systems Facilities Mapping
765	Local Water Pipeline Improvement Loan Program
766	Waterworks Facility Asset Protection
ALL WATER COMMUNITIES (except South Hadley, Chicopee,	
542	Walnut Hill Treatment Plant
604	MetroWest Tunnel
Arlington	
544	Norumbega Covered Storage
702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
708	Northern Extra High Service - New Pipelines
713	Spot Pond Supply Mains Rehabilitation
730	Weston Aqueduct Supply Mains
Ashland	
107	Framingham Extension Relief Sewer
Bedford	
544	Norumbega Covered Storage
702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
708	Northern Extra High Service - New Pipelines
Belmont	
544	Norumbega Covered Storage
702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
730	Weston Aqueduct Supply Mains
Boston	
136	West Roxbury Tunnel
139	South System Relief Project
324	CSO Support
339	North Dorchester Bay & Reserve Channel Conduits/CSO
340	South Dorchester Bay Sewer Separation (Fox Point)
341	South Dorchester Bay Sewer Separation (Commercial Pt.)
342	Neponset River Sewer Separation
344	Stony Brook Sewer Separation
347	East Boston Branch Sewer Relief
348	BOS019 Storage Conduit
350	Union Park Detention Treatment Facility
351	BWSC Floatables Control
353	Upgrade Existing CSO Facilities
354	Hydraulic Relief Facilities
355	MWR003 Gate and Siphon
356	Fort Point Channel Sewer Separation
357	Charles River CSO Controlls
358	Morrisey Boulevard Drain
359	Reserved Channel Sewer Separation
361	Bulfinch Triangle Sewer Separation
544	Norumbega Covered Storage
545	Blue Hills Covered Storage
549	SEH Additional Storage
678	Boston Low Service Pipe And Valve Rehabilitation
683	Heath Hill Road Pipe Replacement
702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
713	Spot Pond Supply Mains Rehabilitation
714	Southern Extra High - Sections 41, 42, and 74
719	Chestnut Hill Connecting Mains
721	Southern Spine Distribution Mains
730	Weston Aqueduct Supply Mains
Braintree	
104	Braintree-Weymouth Relief Facilities

APPENDIX 5

MUNICIPALITY/PROJECT(s)

Municipality	Project Number	Project
Brighton		
	544	Norumbega Covered Storage
Brookline		
	131	Upper Neponset Valley Sewer System
	357	Charles River CSO Controls
	360	Brookline Sewer Separation
	678	Boston Low Service Pipe And Valve Rehabilitation
	681	Southern Service Improvements
	683	Heath Hill Road Pipe Replacement
	704	Rehabilitation of Other Pump Stations
	714	Southern Extra High - Sections 41, 42, and 74
	719	Chestnut Hill Connecting Mains
	721	Southern Spine Distribution Mains
	732	Walnut St. & Fisher Hill Pipeline Rehabilitation
Burlington		
	127	Cummingsville Replacement Sewer
Cambridge		
	324	CSO Support
	346	Cambridge CAM002-004 Sewer Separation
	352	Cambridge Floatables Control
	353	Upgrade Existing CSO Facilities
	354	Hydraulic Relief Projects
	355	MWR003 Gate and Siphon
	357	Charles River CSO Controls
	544	Norumbega Covered Storage
	713	Spot Pond Supply Mains Rehabilitation
	730	Weston Aqueduct Supply Mains
Canton		
	101	Wastewater Metering System Upgrade
	105	New Neponset Valley Relief Sewer
	545	Blue Hills Covered Storage
	549	SEH Additional Storage
	704	Rehabilitation of Other Pump Stations
	714	Southern Extra High - Sections 41, 42, and 74
	721	Southern Spine Distribution Mains
Chelsea		
	101	Wastewater Metering System Upgrade
	324	CSO Support
	347	East Boston Branch Sewer Relief
	349	Chelsea Trunk Sewer
	713	Spot Pond Supply Mains Rehabilitation
	723	Northern Low Service Rehab. - Sections 8 & 57
Chestnut Hill		
	544	Norumbega Covered Storage
	732	Walnut St. & Fisher Hill Pipeline Rehabilitation
Chicopee		
	543	Quabbin Water Treatment Plant
	548	Nash Hill Covered Storage
	615	Chicopee Valley Aqueduct Redundancy
	616	Quabbin Transmission System
Dedham		
	105	New Neponset Valley Relief Sewer
	106	Wellesley Extension Replacement Sewer
	131	Upper Neponset Valley Sewer System
Dover		
	106	Wellesley Extension Replacement Sewer
East Boston		
	693	Northern High Service Pipe Improvements - Revere/Malden
	716	Water Main Relocation In Chelsea River
	723	Northern Low Service Rehab. - Sections 8 & 57
Everett		
	347	East Boston Branch Sewer Relief
	690	Northern Low Service Pipeline Replacement
	713	Spot Pond Supply Mains Rehabilitation
	723	Northern Low Service Rehab. - Sections 8 & 57
Framingham		
	107	Framingham Extension Relief Sewer
	617	Sudbury/Weston Aqueduct
Hingham		
	104	Braintree-Weymouth Relief Facilities
Holbrook		
	104	Braintree-Weymouth Relief Facilities
	617	Sudbury/Weston Aqueduct

APPENDIX 5

MUNICIPALITY/PROJECT(s)

Municipality	Project Number	Project
Hyde Park		
	105	New Neponset Valley Relief Sewer
Lexington		
	544	Norumbega Covered Storage
	702	New Connecting Mains - Shaft 7 to WASM 3
	704	Rehabilitation of Other Pump Stations
	708	Northern Extra High Service - New Pipelines
Logan Airport		
	716	Water Main Relocation In Chelsea River
Lynn		
	689	James L. Gillis Pump Station Rehabilitation
	692	Northern High Service Section 27 Improvements
	693	Northern High Service Pipe Improvements - Revere/Malden
Lynnfield		
	689	James L. Gillis Pump Station Rehabilitation
	731	Lynnfield Pipeline
Malden		
	544	Norumbega Covered Storage
	547	Fells Covered Storage
	689	James L. Gillis Pump Station Rehabilitation
	693	Northern High Service Pipe Improvements - Revere/Malden
	713	Spot Pond Supply Mains Rehabilitation
	723	Northern Low Service Rehab. - Sections 8 & 57
Marblehead		
	689	James L. Gillis Pump Station Rehabilitation
	692	Northern High Service Section 27
	693	Northern High Service Pipe Improvements - Revere/Malden
Medford		
	544	Norumbega Covered Storage
	547	Fells Covered Storage
	689	James L. Gillis Pump Station Rehabilitation
	690	Northern Low Service Pipeline Replacement
	702	New Connecting Mains - Shaft 7 to WASM 3
	713	Spot Pond Supply Mains Rehabilitation
	723	Northern Low Service Rehab. - Sections 8 & 57
Melrose		
	547	Fells Covered Storage
	689	James L. Gillis Pump Station Rehabilitation
Milton		
	105	New Neponset Valley Relief Sewer
	139	South System Relief Project
	545	Blue Hills Covered Storage
	549	SEH Additional Storage
	681	Southern Service Improvements
	704	Rehabilitation of Other Pump Stations
	714	Southern Extra High - Sections 41, 42, and 74
	721	Southern Spine Distribution Mains
Nahant		
	689	James L. Gillis Pump Station Rehabilitation
	692	Northern High Service Section 27
	693	Northern High Service Pipe Improvements - Revere/Malden
Natick		
	107	Framingham Extension Relief Sewer
	617	Sudbury/Weston Aqueduct Repairs
Needham		
	106	Wellesley Extension Replacement Sewer
Newton		
	131	Upper Neponset Valley Relief Sewer
	549	SEH Additional Storage
	684	Commonwealth Ave. Pump Station Modernization
	702	New Connecting Mains - Shaft 7 to WASM 3
	715	Newton Service Improvements
	719	Chestnut Hill Connecting Mains
	730	Weston Aqueduct Supply Mains
Norwood		
	105	New Neponset Valley Relief Sewer
	545	Blue Hills Covered Storage
	549	SEH Additional Storage
	681	Southern Service Improvements
	704	Rehabilitation of Other Pump Stations
	714	Southern Extra High - Sections 41 and 42
	721	Southern Spine Distribution Mains
Peabody		
	689	James L. Gillis Pump Station Rehabilitation
	692	Northern High Service Section 27
	693	Northern High Service Pipe Improvements - Revere/Malden

APPENDIX 5

MUNICIPALITY/PROJECT(s)

Municipality	Project Number	Project
Quincy		
	102	Quincy Pump Facilities
	104	Braintree-Weymouth Relief Facilities
	545	Blue Hills Covered Storage
	681	Southern Service Improvements
	721	Southern Spine Distribution Mains
Randolph		
	104	Braintree-Weymouth Relief Facilities
Revere		
	324	CSO Support
	349	Chelsea Trunk Sewer
	353	Upgrade Existing CSO Facilities
	693	Northern High Service Pipe Improvements - Revere/Malden
Saugus		
	547	Fells Covered Storage
	689	James L. Gillis Pump Station Rehabilitation
	693	Northern High Service Pipe Improvements - Revere/Malden
Somerville		
	324	CSO Support
	353	Upgrade Existing CSO Facilities
	544	Norumbega Covered Storage
	702	New Connecting Mains - Shaft 7 to WASM 3
	713	Spot Pond Supply Mains Rehabilitation
	730	Weston Aqueduct Supply Mains
South Hadley		
	543	Quabbin Water Treatment Plant
	548	Nash Hill Covered Storage
	615	Chicopee Valley Aqueduct Redundancy
	616	Quabbin Transmission System
Stoneham		
	546	Northern Intermediate High Covered Storage
	689	James L. Gillis Pump Station Rehabilitation
	722	Bear Hill Improvements - Section 29 Rehabilitation
Stoughton		
	105	New Neponset Valley Relief Sewer
Sudbury		
	617	Sudbury/Weston Aqueduct Repairs
Swampscott		
	689	James L. Gillis Pump Station Rehabilitation
	692	Northern High Service Section 27
Wakefield		
	546	Northern Intermediate High Covered Storage
	547	Fells Covered Storage
	689	James L. Gillis Pump Station Rehabilitation
	722	Bear Hill Improvements - Section 29 Rehabilitation
Walpole		
	105	New Neponset Valley Relief Sewer
Waltham		
	544	Norumbega Covered Storage
	702	New Connecting Mains - Shaft 7 to WASM 3
	704	Rehabilitation of Other Pump Stations
	708	Northern Extra High Service - New Pipelines
	730	Weston Aqueduct Supply Mains
Watertown		
	544	Norumbega Covered Storage
	702	New Connecting Mains - Shaft 7 to WASM 3
	704	Rehabilitation of Other Pump Stations
	730	Weston Aqueduct Supply Mains
	704	Rehabilitation of Other Pump Stations
	708	Northern Extra High Service - New Pipelines
	730	Weston Aqueduct Supply Mains
Wellesley		
	106	Wellesley Extension Sewer Replacement
	617	Sudbury/Weston Aqueduct Repairs
West Roxbury		
	131	Upper Neponset Valley Relief Sewer
Weston		
	544	Norumbega Covered Storage
	617	Sudbury/Weston Aqueduct Repairs
	730	Weston Aqueduct Supply Mains

APPENDIX 5

MUNICIPALITY/PROJECT(s)

Municipality	Project Number/Project	
Westwood		
	105	New Neponset Valley Relief Sewer
Weymouth		
	104	Braintree-Weymouth Relief Facilities
Wilbraham		
	543	Quabbin Water Treatment Plant
	548	Nash Hill Covered Storage
	615	Chicopee Valley Aqueduct Redundancy
	616	Quabbin Transmission System
Winchester		
	127	Cummingsville Replacement Sewer
	544	Norumbega Covered Storage
	546	Northern Intermediate High Covered Storage
	689	James L. Gillis Pump Station Rehabilitation
	702	New Connecting Mains - Shaft 7 to WASM 3
	704	Rehabilitation of Other Pump Stations
	722	Bear Hill Improvements - Section 29 Rehabilitation
Winthrop		
	693	Northern High Service Pipe Improvements - Revere/Malden
Woburn		
	127	Cummingsville Replacement Sewer
	546	Northern Intermediate High Covered Storage
	689	James L. Gillis Pump Station Rehabilitation
	722	Bear Hill Improvements - Section 29 Rehabilitation

APPENDIX 6

MWRA Completed Projects

APPENDIX 6

MWRA Completed Projects
(as of December 31, 2005)

Project	Total Cost ($000)	Completion Date	Summary
Wastewater	$3,998,920		
Waterworks	$167,781		
Business and Operations Support	$33,644		
MWRA Total	$4,200,345		

Wastewater			
Residuals Management – Interim Phase	$109,407	Feb-92	Construction of the Residual Treatment Facility at the FRSA. Termination of sludge discharge to Boston Harbor.
S.106 Wellesley Extension Replacement Sewer	*$64,359*	*Jan-96*	*Construction of a replacement sewer and rehabilitation of sections of existing sewer lines to alleviate capacity restraints, improve the water quality of the Charles River, protect aquifers, and reduce back-ups in Needham and Dedham.*
S.110 East Boston Pump Facilities	$48,304	Jan-93	Constructed to eliminate sewage back-ups.
S.185 Clinton Wastewater Treatment Plant	$36,747	Sep-92	Upgrade existing plant to improve water quality and met standards by rehabbing and new equipment.
S.112 Charlestown Pump Station Replacement	$32,529	Apr-93	New 93 mgd pump station to increase pumping efficiency and eliminate overflows to the Mystic River.
S.178 Deer Island Pump and Power Station Upgrade	$32,943	Feb-91	Constructed to prevent sewage surcharges and overflows in the upstream sewer system by improving flows to Deer Island Tunnel System and Plant.
S.179 Deer Island Remote Headworks Improvements	$27,450	Jul-99	Facility rehabilitation restored headworks capacity.
S.180 D.I. Sedimentation Tank System Improvements	$1,657	Jul-89	Restoration of operating efficiency by replacing 80 inlet sluice gates and baffles, rehabilitation of control building and other improvements.
Residuals Management Walpole Landfill	$15,025	Sep-93	Development of minor residuals landfill plan.
Boston Harbor Project	$3,519,253	Nov-01	BHP constructed to minimize the pollution of Boston Harbor. The new Deer Island Primary and Secondary Treatment Facilities are the largest components of the Project to comply with the requirements of the federal Clean Water Act and to improve the harbor for recreational and commercial uses.
S.198 Boston Harbor Performance Certification	$1,276	Dec-02	Certification required for continuous federal grant and loan programs during construction.
S.129 North Metropolitan Trunk Sewer	$11,997	Mar-99	Rehabilitation of a 19,700 linear-foot 100-year old sewer line.
S.922 Fore River Preservation	$4,946	Nov-97	Modify FRSA for on-going construction and operational support.
S.184 Nut Island Immediate Upgrade	$1,254	Dec-86	Upgrade or replacement of equipment, including switch gear, sludge cross collectors and replacement of electric distribution substation to accommodate increased flows to Deer Island Treatment Plant.
S.181 Deer Island Intermediate Upgrade	$9,490	Jun-92	Upgrade of the old Deer Island treatment plant.
S.101 Wastewater Metering	$7,516	Dec-93	Construction of system to provide accurate flow data.
S.195 Deer Island Digester Rehabilitation	$7,354	Oct-86	Restoration of digester operating efficiency.

APPENDIX 6

MWRA Completed Projects
(as of December 31, 2005)

Project	Total Cost ($000)	Completion Date	Summary
S.326 Commercial Point CSO Facility	$7,117	Feb-91	Improvements to water quality by reducing wet weather overflows via construction of a screening and disinfection facility.
S.113 Millbrook Valley Interceptor Relief Sewer	$6,176	Mar-88	Increase in flow capacity to eliminate surcharges.
S.115 Reading Pump Station Replacement and Extension Relief Sewer	$412	Sep-87	Elimination of surcharges, reduction in staff requirements, and correction of safety hazards.
S.259 Interim Scum Management	$22	Jul-89	Provision of an interim scum processing solution.
S.325 Fox Point CSO Facility	$160	Apr-89	Elimination of untreated sewage discharges.
S.103 Hingham Pump Station	$3,027	Apr-92	Elimination of untreated sewage discharges.
S.178 Deer Island Duel Fuel Engine/Generator	$32,943	Dec-89	Provision of uninterrupted electricity supply for Deer Island.
S.114 Southern System Modeling	$2,607	Jun-88	Collection and study of flow data needed for system capacity assessment.
S.191 Deer Island Chlorination Facility Rehabilitation	$4	Mar-89	Provision of effective disinfection operation and safe working environment.
S.190 Deer Island Electrical Equipment Upgrade	$27	Mar-88	Restoration of system operating efficiency.
S.187 Deer Island Sludge Thickeners Rebuilding	$114	Sep-88	Ensuring efficient operation of Deer Island treatment plant digesters.
S.118 Bell Isle Siphon Rehabilitation	$78	Apr-89	Reduction of salt water infiltration and increase in system capacity.
S.403 Sewerage Division Management Services	$1,930	Dec-86	Provision of engineering design and construction advice.
S.332 Somerville Marginal CSO Rehabilitation	$98	Feb-89	Elimination of inadequately treated sewage discharges.
S.924 Harbor Environmental Studies	$1,666	Jun-92	Collection and study of harbor water quality data.
S.108 Alewife Brook Parkway Pump Station Rehabilitation	$1,455	May-95	Replacement of equipment, construction of building addition and wetwell modifications.
S.197 Deer Island Treatment Plant Outfall Repair	$1,300	Sep-97	Repair of effluent discharge Outfall 002.
S.194 Nut Island Intermediate Upgrade	$2,686	Dec-92	Improvements to ensure effective operation of the Nut Island treatment plant.
S.402 Comprehensive Safety Action Project	$891	Nov-90	Correction of safety hazards at MWRA facilities and establishment ongoing safety management program.
S.331 Constitution Beach CSO Facility	$1,265	Sep-87	Elimination of untreated sewage discharges into Boston Harbor.
S.117 Slade's Siphon	$1	Sep-88	Elimination of seawater inflows and sewage overflows.
S.192 Deer Island Operation and Construction Coordination Program	$733	Jan-89	Provision of coordination services for operations and construction activities.
S.332 Cottage Farm CSO and Charlestown Pump Repair	$133	Dec-87	Restoration of system capacity.
S.193 Deer Island Odor Monitoring	$334	Feb-89	Provision of data needed to develop odor management plan for Deer Island.
Watertown Siphon Reconstruction	$328	May-88	Extension of Watertown sewer system useful life.
Deer Island Sludge Grinding	$291	Jun-87	Improvements to Deer Island sludge grinding system.
S.327 Southwest Corridor CSO	$290	Fall 86	Elimination of combined sewer overflows.

APPENDIX 6

MWRA Completed Projects
(as of December 31, 2005)

Project	Total Cost ($000)	Completion Date	Summary
S.335 Moon Island CSO Facility	$269	Sep-86	Examination of options for treatment of CSO discharges.
Deer Island Microwave Equipment Replacement	$235	Nov-86	Replacement of obsolete equipment.
Porter Street Construction	$136	Sep-93	Reimbursement to Central Artery project for CSO related construction.
S.328 Industrial Discharge Limitations	$215	Aug-86	Development of industrial discharge limitation guidelines.
S.338 Cottage Farm CSO Ventilation System Repairs	$133	Sep-94	Rehabilitation of HVAC duct work.
S.111 Bremen Street Siphon Replacement	$102	Mar-90	Evaluation of current siphon condition and development of a system for improved waste disposal.
Chelsea CSO Facility	$90	Jan-91	Elimination of sewage overflows.
Boston Gatehouses	$65	Dec-86	Identification of alternatives to minimize construction impacts.
Industrial Waste-Technical Support	$63	Oct-86	Provision of laboratory services for the Toxic Reduction and Control Department.
S.330 St. Mary's Street CSO Modifications	$17	Feb-87	Identification of solution for storm water detention.
Sub-Total Wastewater	**$3,998,920**		
Waterworks			
S.715 Newton Service Improvements	$5,762	Nov-99	New supply to Newton's Oak Hill Tank replacing an antiquated pump station and providing some system redundancy in the area.
S.720 Warren Cottage Line Rehab	*$1,205*	*Dec-02*	*To improve the carrying capacity and internal condition of the Warren Cottage Line.*
S.706 NHS - Con. Mains from Section 91	*$2,342*	*Jun-02*	*To integrate the new Section 91 pipeline with the existing grid network, improving service pressures and reliability to community meters.*
S.764 Local Water Infrastructure Rehab Asst. Program	*$7,488*	*Jun-04*	*To provide financial support to MWRA waterworks communities to replace, rehabilitate, and maintain their waterworks system infrastructures.*
S.681 Southern Service Improvements	$14,458	Oct-99	Reliability and capability improvements to pipelines and pump stations serving the Southern service area.
S.716 Water Main Relocation in Chelsea River	$10,648	Nov-00	Relocation of the Section 8 water main over the Chelsea River.
S.547 Fells Covered Storage	$17,995	Jun-00	Covered storage for Northern High Service System.
S.548 Nash Hill Covered Storage	$14,297	Jul-99	To improve the quality of drinking water to the three Chicopee Valley Aqueduct communities.
S.541 Watershed Protection	$8,500	Dec-03	To develop watershed protection measures for the MWRA/MDC reservoir system.
S.691 Northern High Service Improvements - Lynn Pipeline	$13,483	Jun-99	Installation of a new primary supply line for the northeast section of the Northern High Service System.
S.688 Northern Intermediate High Pipelines	$927	Nov-88	Increase in pipe capacity and pressure.

APPENDIX 6

MWRA Completed Projects
(as of December 31, 2005)

Project	Total Cost ($000)	Completion Date	Summary
S.754 Domestic Device Retrofit	$10,319	Dec-93	Installation of water saving devices to reduce demand.
S.532 Long-Range Water Supply	$5,579	Apr-89	Identification of water supply programs.
S.603 Transmission Maintenance Facility	$5,025	May-93	Construction of new waterworks maintenance facility in Southborough.
S.602 Hultman – Weston Aqueduct Transfer for Hydropower	$4,506	May-89	Production of approximately 3,700,000 kW hours per year of electricity.
S.687 Lexington St Pump Station Rehabilitation	$3,985	Jun-99	Installation of larger capacity pumping units, backup power generation, and various electrical upgrades.
S.607 Weston Reservoir Chlorination Facility	$2,539	Jun-93	Replacement of obsolete facility with new 4,000 sq.ft. chlorination and ammonia feed facility.
S.679 Nonantum Road Pipe Rehabilitation	$2,138	Mar-97	Rehabilitation and/or replacement of deteriorated pipeline.
S.533 Local Sources of Supply	$2,108	Jul-95	Provision of assistance to communities to promote effective protection of existing local water supply sources and encourage development of additional local sources where feasible.
S.755 Leak Detection Survey	$751	Aug-90	Provision of data on the magnitude and location of water leaks.
S.723 Northern Low Service – Section 57	$1,814	Oct-87	Restoration of pipe capacity and pressure.
S.599 Dam Control Valve Replacement	$1,751	Jul-98	Valve replacement at Sudbury Reservoir in Southborough and Wachusett Dam.
S.606 Norumbega Chlorination Facility	$10	Mar-89	Provision of a new water disinfection facility.
S.675 Water Distribution Master Plan	$1,178	Mar-93	Development of data base and recommendations for master plan.
S.688 Northern Immediate High Service	$1,026	Aug-92	Increase in water treatment capacity.
S.600 Oakdale Power Station Generator Repair	$881	Sep-91	Repair of substation metering and transformer systems.
S.535 Reservoir Risk Assessment	$647	Jun-92	Development of maps and data to determine at risk areas.
S.756 Asbestos Abatement	$562	Aug-90	Elimination of asbestos in MWRA facilities.
S.538 Sudbury Reservoir Treatment Plant Study and EIR	$513	Sep-92	Evaluation of alternative uses of the Sudbury Reservoir.
S.757 PCB Abatement	$432	Aug-91	Replacement of equipment with unacceptable levels of PCB concentrations.
S.605 Echo Bridge Rehabilitation	$356	Sep-92	Repair and cleaning of bridge façade and construction of new surface topping.
Cosgrove Intake Screens	$317	Dec-87	Prevention of debris entering the aqueducts.
Cosgrove Intake Turbine Repair	$225	Jul-86	Full resumption of hydroelectric power generation.
S.759 Municipal Toilet Replacement	$127	Dec-90	Reduction in water consumption.
Air Release Valves	$82	Apr-90	Removal of excess air to maintain the carrying capacity of pipes.
S.694 General Edwards Bridge Pipe Replacement	$74	Nov-89	Repair of pipe leaks.

APPENDIX 6

MWRA Completed Projects
(as of December 31, 2005)

Project	Total Cost ($000)	Completion Date	Summary
S.701 Northern Extra High Service – Bedford Pipeline	$71	Jan-92	Development of a plan to supply water to Bedford.
S.926 Chestnut Hill Low Service Pump Station	$72	May-88	Repair of the front granite steps of the station.
S.686 Dudley Road Pump Station	$55	Jun-91	Evaluation of the feasibility of pump station rehabilitation.
S.685 Ward Street Pump Station	$35	Aug-89	Evaluation of the feasibility of pump station rehabilitation.
S.758 Rehab of Existing Facilities	$14,205	Nov-02	Upgrade various facilities in need of significant capital improvement.
S.690 Northern Low Service Pipeline Replacement	$714	Aug-99	Repair of Section 16W with replacement and pipe slip lining methods.
S.684 Commonwealth Ave	$8,509	Dec-99	Modernize and improve station serving a major portion of
S.717 Blue Hills Reservoir Cover – Quincy	$31	Dec-86	Identification of solutions to a seagull contamination problem.
Instrumentation Telemetry	$24	Sep-86	Development of a future operation plan for the water distribution system.
S.598 Wachusett Reservoir By-pass Tunnel	$15	Jan-89	Evaluation of the option of constructing a tunnel by-pass.
Sub-Total Water	**$167,781**		
Business & Operations Support			
S.921 Management Information Systems	$24,117	Dec-92	Enhancement to information systems to support more effective management of MWRA business activities.
S.901 Charlestown Headquarters	$6,827	Jun-91	Provision of office equipment at MWRA headquarters.
S.882 Radio Communications System	$1,000	Sep-89	Enhancement of communication among geographically dispersed facilities.
S.928 MWRA Mitigation Program	$475	Oct-88	Mitigation of the construction impacts of the Deer Island Treatment Plant on Winthrop.
S.903 Vehicle Maintenance Garage	$412	Mar-89	Improved management and maintenance control of the vehicle fleet.
S.929 Affirmative Action Study	$403	Mar-91	Evaluation of minority participation in the MWRA procurement process.
S.923 Engineering Feasibility Study	$249	Jun-89	Evaluation of the integrity of the water and wastewater systems.
S.902 Permanent Headquarters	$161	Jun-87	Examination and evaluation of options for relocation of office space.
Sub-Total BOS	**$33,644**		