Capital Improvement Program

FISCAL YEAR 2006

MASSACHUSETTS WATER RESOURCES AUTHORITY

BOARD OF DIRECTORS

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* Stephen R. Pritchard, newly appointed Chair
in August 2005

December 2005

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 Capital Improvement Program for Fiscal Year 2006. The Capital Improvement Program (CIP) was approved by MWRA's Board of Directors at its June 29, 2005 meeting.

The total capital budget is $3.6 billion, including contingency, of which $1.2 billion remains to be expended. The CIP includes projected spending, including contingency, of $1.0 billion for FY2004-2008, $588 million for FY2009-2013 and net cash inflow of $28 million for fiscal years beyond FY2013 reflecting loan program repayments.

Total projected capital spending for FY2006 is $209.2 million, including contingency. Total spending for FY2004-2013 has been reduced to the capital spending levels identified in the FY2004 CIP. MWRA staff eliminated, scaled down or delayed a net $342 million in capital projects and or phases as compared to the Final FY2005 CIP.

Spending levels in the FY2006 capital budget are reduced in order to address a necessary reality that the debt service costs associated with the capital improvement program are a significant burden to MWRA's ratepayers.

Additional project information and a copy of this document is available online at www.mwra.state.ma.us. Questions or comments on this document or information available on the Internet should be directed to the MWRA Budget Department.

Thank you for your continued support and comments and recommendations to the capital budget.

Sincerely,

Frederick A. Laskey
Executive Director

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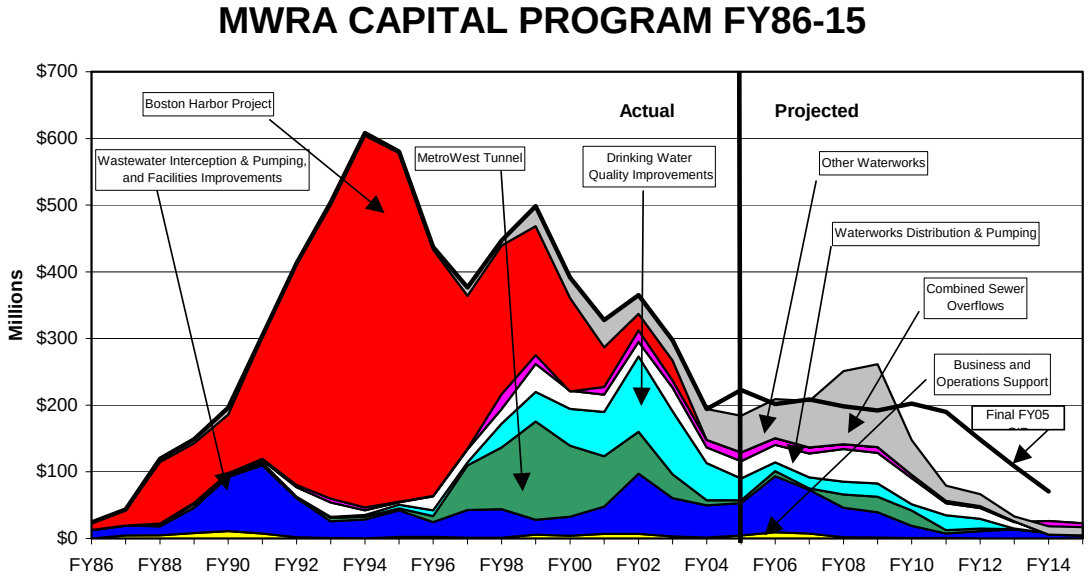
FY06 Capital Improvement Program

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 has supported improvements to the wastewater treatment, interceptor, pumping, and combined sewer overflow systems. The remaining fourth has supported waterworks treatment, transmission, distribution, and water 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, which is now complete, included: a new sludge-to-fertilizer facility; a new Deer Island Treatment Plant with primary and secondary treatment capabilities; a new 5-mile Inter-Island Tunnel that tied together two separate sewer systems (North and South) into one; and a new 9.5-mile Effluent Outfall Tunnel to discharge treated wastewater away from shallow Boston Harbor waters and into the deeper waters and 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 treatment facilities, and distribution system improvements including construction of covered storage facilities and pipeline rehabilitation.

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



FY06 CAPITAL IMPROVEMENT PROGRAM
Actual and Projected Expenditures

Overview

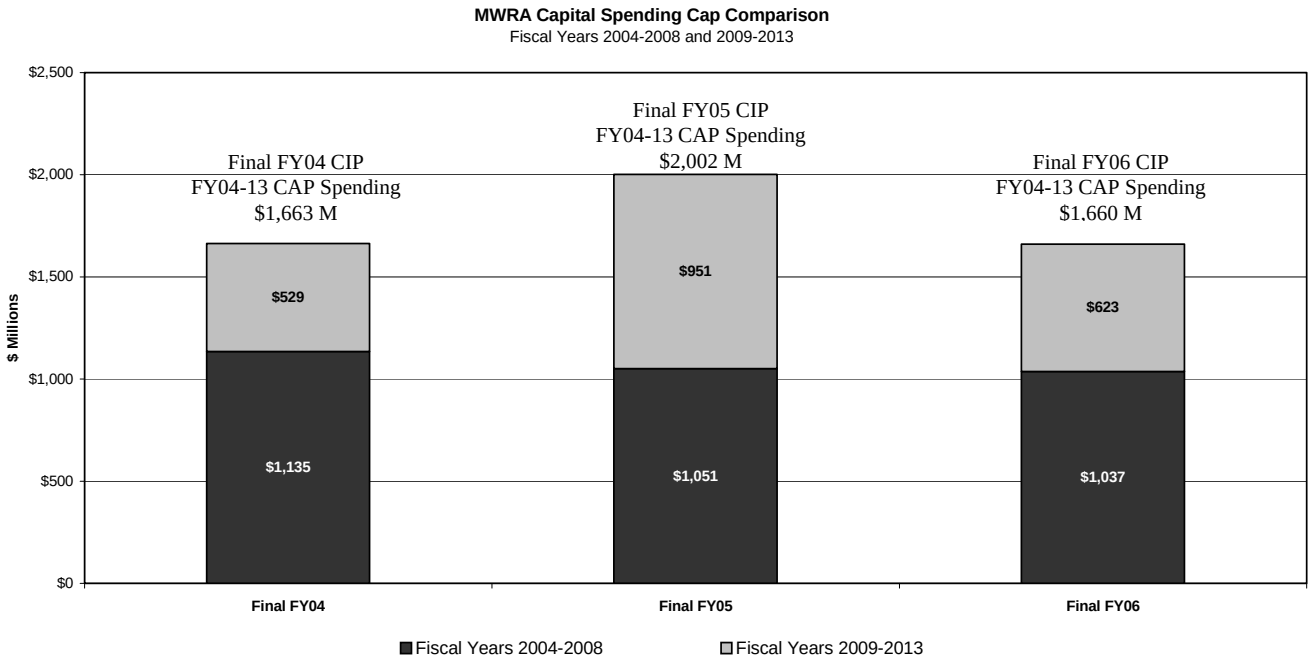
In June 2003, the Board of Directors adopted the Final FY04 CIP, established a capital spending cap of $1.1 billion for fiscal years 2004-2008 and identified planned spending of $530 million for fiscal years 2009-2013. As seen in Table 1 below, for the 5-year cap period FY04-08 the FY06 CIP complies with both the total spending cap limit of $1.1 billion, as well as the annual spending limits.

Table 1

Final FY06 CIP						
	FY04 ACTUAL	FY05	FY06	FY07	FY08	Total FY04-08
Projected Expenditures[1]	$ 194.0	$ 179.8	$ 193.5	$ 188.5	$ 227.2	$ 983.1
Contingency	-	-	15.7	17.6	24.0	57.3
Inflation on Unawarded Construction	-	-	-	1.6	7.7	9.3
Less: Chicopee Valley Aqueduct Projects	(0.4)	(0.6)	(6.3)	(3.9)	(1.1)	(12.3)
FY04-08 CAP	**$ 193.6**	**$ 179.2**	**$ 202.9**	**$ 203.9**	**$ 257.8**	**$ 1,037.3**
CHANGE (Baseline to Final FY06)						
FY04-08 CAP ($ Change)	**$ (57.4)**	**$ (24.3)**	**$ (12.3)**	**$ (46.2)**	**$ 43.0**	**$ (97.2)**
FY04-08 CAP (% Change)	**-23%**	**-12%**	**-6%**	**-18%**	**20%**	**-9%**

[1] Includes $4.5 million credit to BHP in FY05.

Further, as seen in the bar chart below, total spending for fiscal years 2004-2013 has been reduced to the capital spending levels identified in the FY04 CIP, the same time the cap for FY04-08 was set. In order to achieve this significantly reduced level of spending, MWRA staff eliminated, scaled-down or delayed a net $342 million in capital projects and/or phases as compared to the Final FY05 CIP. See Attachment A for a complete list of the projects and phases that have been removed, modified or shifted.

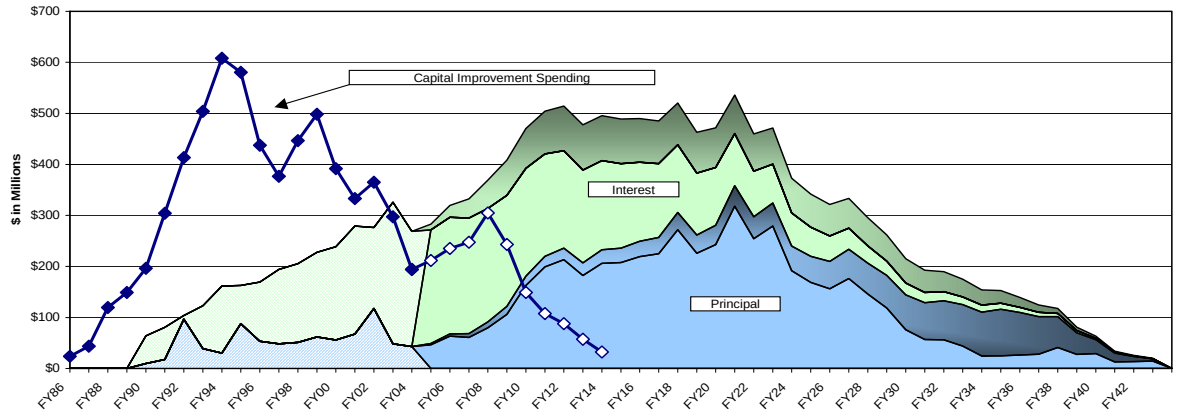


Spending levels in the FY06 capital budget are reduced in order to address a necessary reality that the debt service costs associated with the capital improvement program are a significant burden to MWRA's ratepayers. Budgeted debt service for fiscal year 2006 comprises 58% of total current expenses. Much of this debt service is for completed projects of which little principal has been repaid. This debt service burden is compounded by the significant reduction in the amount of debt service assistance provided by the Commonwealth, as well as the continued uncertainty regarding the actual amount and timing of debt service assistance.

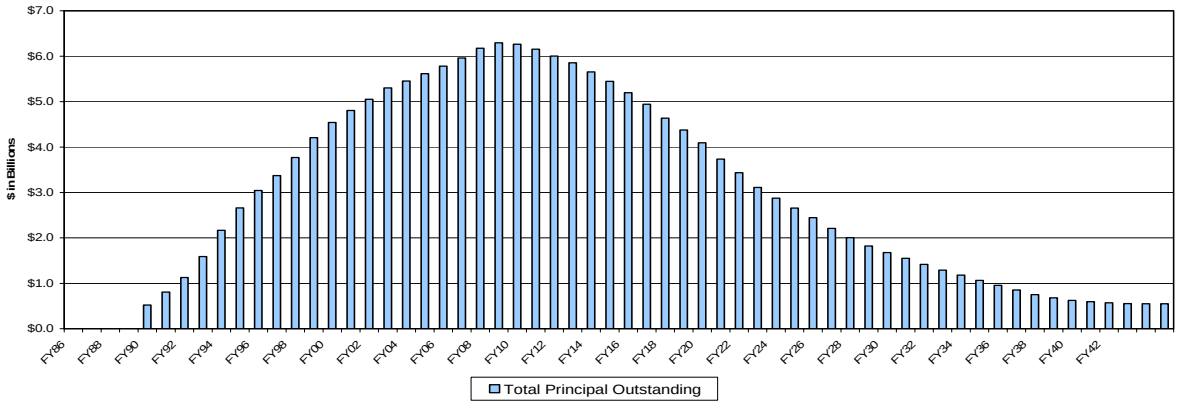
FY06 Expenses			
Total Expenses before Debt Service Offsets	$	549.3	
Less:			
Bond Redemption		(14.4)	
Debt Service Assistance		(10.0)	
Sub-Total Net Expenses	**$**	**524.9**	
Capital Financing		302.1	58%
Direct Expenses		185.7	35%
Indirect Expenses		37.0	7%
Total Expenses	**$**	**524.9**	**100%**

This change in capital spending levels moves the MWRA toward reducing its overall debt burden. By fiscal year 2010, MWRA's total indebtedness will begin to decline as the amount of principal being paid on outstanding debt exceeds new capital spending.

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



Total Capital (Principal) Indebtedness



The master planning efforts underway will provide a process 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 change in the capital plan will continue to be evaluated with each budget cycle.

FY06 Capital Highlights

The FY06 CIP Budget projects total spending (including contingency) of $1.0 billion for fiscal years 2004-2008, $588 million for fiscal years 2009-2013 and net cash inflow of $28 million for fiscal years beyond FY13 reflecting loan program repayments. Projected capital spending for fiscal year 2006 is $209.2 million, including contingency. The CSO program comprises $317 million, or 32% of total spending between fiscal years 2004-2008, and $208 million, or 39% of total spending between fiscal years 2009-2013. Table 2 below provides a summary, by program, of planned spending in the FY06 CIP.

Table 2

Fiscal Year 2006
CAPITAL IMPROVEMENT PROGRAM
($ in 000's)

	Total Contract Amount	FY2004 Actual	FY2005 Estimate	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
Wastewater System Improvements	$ 1,530,709	$ 92,163	$ 99,442	$ 855,952	$ 674,758	$ 110,877	$ 115,871	$ 133,035	$ 551,388	$ 276,339	$ 38,635
S.10 Interception & Pumping	504,177	31,853	23,967	398,310	105,867	39,392	40,737	18,269	154,218	6,270	1,200
S.25 Treatment	137,332	3,978	9,711	23,842	113,489	14,450	10,625	15,804	54,568	48,857	23,753
S.12 Residuals	64,556	8,930	(1,667)	63,881	675	-	-	-	7,263	-	675
S.13 CSO	755,769	45,867	54,871	306,078	449,691	55,647	63,281	97,739	317,405	207,550	25,474
S.14 Other	68,875	1,535	12,560	63,839	5,035	1,388	1,229	1,222	17,934	13,663	(12,467)
Waterworks System Improvements	1,867,479	100,093	80,388	1,456,111	411,368	73,154	65,260	91,968	410,863	255,347	(74,361)
S.16 Drinking Water Quality Improvements	580,885	55,706	32,994	474,954	105,931	11,964	15,251	17,515	133,430	61,201	-
S.17 Transmission	751,906	9,221	8,269	636,931	114,976	27,396	8,584	22,812	76,282	56,134	50
S.18 Distribution And Pumping	504,856	23,819	25,452	247,882	256,974	23,778	32,432	44,441	149,922	116,752	39,572
S.19 Other	29,832	11,347	13,673	96,345	(66,513)	10,017	8,993	7,200	51,230	21,260	(113,983)
Business & Operations Support	60,709	1,761	4,496	36,858	23,851	9,493	7,412	2,152	25,314	4,794	-
SUB-TOTAL	3,458,897	194,017	184,326	2,348,921	1,109,977	193,524	188,543	227,155	987,565	536,480	(35,726)
Contingency	116,314	-	-	-	116,314	15,668	17,608	24,009	57,286	51,558	7,470
Total MWRA w/ Contingency	**$3,575,211**	**$194,017**	**$184,326**	**$2,348,921**	**$1,226,291**	**$209,192**	**$206,151**	**$251,164**	**$1,044,851**	**$588,038**	**-$28,256**

In FY06, staff will be completing the design and progressing to the bid and award stage on several major projects. Major planned awards for fiscal year 2006 include:

- **North Dorchester Bay & Reserve Channel**
  - Pleasure Bay construction planned for September 2005 with an estimated contract value of $3.6 million.
  - Tunnel and Facilities Construction Management Services planned for September 2005 with an estimated contract value of $19.1 million.
  - Tunnel Construction planned for April 2006 with an estimated contract value of $163.3 million.
- Construction of repairs to **Section 160 of the Mystic Valley Sewer** planned for April 2006 with an estimated contract value of $3.1 million.
- Award of the **Blue Hills Covered Storage** design/build contract planned for January 2006 with an estimated contract value of $31.3 million.

- **Southern Spine Distribution Mains** Sections 21 and 43 construction planned for February 2006 with an estimated contract value of $20.4 million.
- **Weston Aqueduct Supply Mains 3** design, construction administration and resident inspection for construction phases CP1-4 planned for January 2006 with an estimated contract value of $9.3 million. This is the first phase to initiate multi-year improvements over several years (FY06 to FY17).

In addition to these major planned awards, capital spending efforts in FY06 will be focused on the following projects and phases:

Interception & Pumping –

The Interception & Pumping projects rehabilitate, extend and increase the capacity of the interceptor system and its supporting facilities. The projects are necessary because these aging systems are either failing or lack the capacity to serve existing or projected populations. As they are completed, the new facilities alleviate sewer surcharging and overflow problems. Interception and Pumping projects total $504.2 million, of which $342.5 million was expended through fiscal year 2003 and $154.2 million is expected to be expended in Fiscal Years 2004 through 2008. Major planned spending is noted below:

- *Braintree-Weymouth Relief Facilities:* Remaining spending of $33.7 million is projected within the FY04-08 cap period. This supports completion of the project except for rehabilitation of sections 624 & 652 (Contract 5310), which was removed from the capital program to comply with annual expenditure limitations imposed by the current established cap. This reduced planned spending by $11 million.

- *Upper Neponset Valley Sewer System:* Remaining spending of $47.9 million is projected within the FY04-08 cap period. Projected spending has increased by $14 million based on revised cost estimates for replacement of sewer sections 685-686 and 687.

- *Cummingsville Replacement Sewer:* Planned spending of $7 million to complete the replacement of this sewer.

- *Wastewater Central Monitoring:* Planned spending of $13.7 million to implement centralized monitoring and control system for MWRA's wastewater transport system.

- *Wastewater Meter Equipment Replacement:* Planned spending of $5.7 million to complete the replacement of all wastewater meters.

- *Interception & Pumping Facility Asset Protection:* Planned spending of $17 million, mostly within the FY04-08 cap period, 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 new Deer Island treatment facilities have become operational, plant staff have assumed responsibility for maintenance and ongoing capital improvements. Total Deer Island support costs included in the FY06 CIP are approximately $137.3 million.

- The FY06 CIP includes $54.6 million to be expended within the FY04-08 cap period, $48.9 million to be expended in fiscal years 2009-2013, and $23.8 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 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. Pursuant to a 1987 stipulation entered in the Clean Water Act, the MWRA has responsibility for developing and implementing a long-term plan for CSO control at all locations. 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 50 milestones directing the design and construction of the recommended projects. The FY06 CIP includes $755.8 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 $317.4 million. This is an increase in the pace of spending within the current cap period of $40.1 million as compared to the FY05 CIP. The increased rate of spending is largely due to changes in the project schedule for the North Dorchester Bay CSO project and due to inflation. In response to comments by the court parties and by the federal court, commencement (and spending) on this project has been accelerated by one year.

The approved 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 (up to $28 million) 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 and additional 3-year performance monitoring period before DEP would issue water quality standards determinations and consider the need for additional CSO control for the Charles River and Alewife Brook/Upper Mystic River.

Other Wastewater –

- Total net spending of $31.5 million between FY04 and FY13 to support the local financial assistance inflow/infiltration program.

Drinking Water Quality Improvements –

MWRA is implementing an Integrated Water Supply Improvement Program for drinking water improvement. This program consists of aggressive watershed protection, modernized treatment facilities, and distribution system improvements including construction of covered storage facilities and pipeline rehabilitation. Pursuant to an administrative consent order entered into with DEP and DCR with respect to the enforcement of the Safe Drinking Water Act (SDWA) and the rules promulgated thereunder, the MWRA is constructing the new John Carroll Water Treatment Plant. The plant will treat water delivered from the Wachusett Reservoir (including water transferred to the Wachusett Reservoir from the Quabbin Reservoir) through ozonation and chloramination. Construction of the treatment plant began in November 2000. When construction and testing are completed in 2005, the Walnut Hill Water Treatment Plant will be able to treat 405 mgd of drinking water.

Because existing uncovered distribution reservoirs are vulnerable to airborne contaminants and allow the growth of bacteria plants and algae, the Authority 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 Carroll Water Treatment Plant.

Total estimated costs of the projects in the FY06 CIP related to water treatment improvements, provision of covered storage facilities, and aggressive protection of source water quality are approximately $580.9 million, of which $437.1 million is for water treatment, and $143.8 million is for covered storage facilities and watershed protection. Approximately $386.3 million was expended through fiscal year 2003 for these projects, and approximately $133.4 million is expected to be expended during Fiscal Years 2004 through 2008. Major planned spending is noted below:

- Planned spending of $133.4 million within the FY04-08 cap period to complete the John 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 –

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 FY06 CIP total $751.9 million, of which approximately $619.4 million was expended through Fiscal Year 2003, and approximately $76.3 million is expected to be expended during Fiscal Years 2004 through 2008. Major planned spending is noted below:

- Planned spending of $76.3 million within the FY04-08 cap period and $56.1 million between FY09-13. These funds support completing the rehabilitation of the Weston Aqueduct Supply Mains (WASMs), Heath Hill pipe replacement, the majority of work on the Southern Spine Distribution Mains, completion of the valve replacement program, the majority of work on the Spot Pond Supply Mains, and 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 the MWRA's centralized services. Total Business & Operations support costs in the FY06 CIP are approximately $60.7 million.

- Planned spending of $25.3 million within the FY04-08 cap period and $5.9 million to complete security improvements, replacement and upgrade of management information systems that support laboratory and TRAC services, and continuation of as-needed water/wastewater design services to support delivery of smaller capital project needs.

Contingency –

There are costs associated with the Capital Improvement Program 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 if 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 $116.3 million. The contingency budget remaining within the FY04-08 cap period is $57.3 million and the contingency planned beyond FY08 is $59.0 million.

Project Budget Summaries and Detail of Changes

Information on individual project budgets and detail of changes is provided in the supplemental appendix budget document.

ATTACHMENT A
Projects and Phases Removed From FY06 CIP

Subphase	Project	NTP	S.C.	Total Contract	FY04-08	FY09-13	Beyond FY13
Interception & Pumping							
S.10060.5310 Rehab Sections 624 & 652	S.104 Braintree-Weymouth Relief Facilities	Apr-05	Mar-06	10,597	10,597	0	0
	S.104 Braintree-Weymouth Relief Facilities Total			**10,597**	**10,597**	**0**	**0**
S.10283.6184 Construction 8	S.106 Wellesley Ext Replacement Sewer	Jul-10	Jul-12	19,371	0	19,371	0
S.10353.6630 Design CS/RI 8	S.106 Wellesley Ext Replacement Sewer	Feb-07	Jul-13	3,877	823	3,054	0
	S.106 Wellesley Ext Replacement Sewer Total			**23,248**	**823**	**22,425**	**0**
S.10294.6225 Construction	S.130 Siphon Structure Rehabilitation	Aug-09	Dec-10	4,365	0	4,365	0
S.10293.6224 Design/CS/RI	S.130 Siphon Structure Rehabilitation	Apr-06	Dec-11	1,292	468	824	0
S.10295.6226 Legal	S.130 Siphon Structure Rehabilitation	Sep-05	Dec-10	5	5	0	0
S.10296.6227 Public Relations	S.130 Siphon Structure Rehabilitation	Jun-97	Dec-10	5	5	0	0
	S.130 Siphon Structure Rehabilitation Total			**5,667**	**478**	**5,189**	**0**
S.10405.6918 FES Tunnel Rehab	S.132 Corrosion & Odor Control	May-07	May-08	8,432	7,784	648	0
S.10326.6552 Arthur St P.S. & FERS Force Main	S.132 Corrosion & Odor Control	Apr-06	Apr-07	1,500	1,500	0	0
S.10406.6919 Air Treatment Systems	S.132 Corrosion & Odor Control	May-06	May-07	1,405	1,405	0	0
S.10324.6550 Public Participation	S.132 Corrosion & Odor Control	Dec-98	May-08	5	6	0	0
	S.132 Corrosion & Odor Control Total			**11,342**	**10,695**	**648**	**0**
S.10286.6187 Planning	S.134 Ashland Extension Sewer	Aug-11	Aug-13	500	0	150	350
S.10376.6788 Design	S.134 Ashland Extension Sewer	Feb-14	Feb-16	500	0	0	500
S.10297.6228 Land Acquisition	S.134 Ashland Extension Sewer	Aug-11	Dec-15	5	0	0	5
S.10363.6684 Legal	S.134 Ashland Extension Sewer	Aug-11	Dec-15	5	0	0	5
S.10364.6685 Hazardous Waste	S.134 Ashland Extension Sewer	Aug-11	Dec-15	5	0	0	5
S.10365.6686 Public Participation	S.134 Ashland Extension Sewer	Aug-11	Dec-15	5	0	0	5
	S.134 Ashland Extension Sewer Total			**1,020**	**0**	**150**	**870**
S.10291.6192 Con-Cambridge Branch 23-25	S.135 System Master Plan Interceptors	Apr-18	Apr-20	4,200	0	0	4,200
S.10289.6190 Con-Revere Branch Sect 62	S.135 System Master Plan Interceptors	Apr-18	Apr-20	1,831	0	0	1,831
S.10303.6413 Design/CS/RI	S.135 System Master Plan Interceptors	Dec-14	Apr-20	1,622	0	0	1,622
S.10287.6188 Planning	S.135 System Master Plan Interceptors	Jan-12	Jan-14	1,173	0	117	1,056
S.10288.6189 Con-Mystic Valley Sewer Sec 153	S.135 System Master Plan Interceptors	Apr-18	Apr-20	1,151	0	0	1,151
S.10292.6193 Con-Malden Branch Sec 65 & 66	S.135 System Master Plan Interceptors	Apr-18	Apr-20	923	0	0	923
S.10338.6575 Public Participation	S.135 System Master Plan Interceptors	Dec-14	Apr-18	5	0	0	5
S.10339.6576 Land Acquistion	S.135 System Master Plan Interceptors	Dec-14	Apr-18	5	0	0	5
S.10340.6577 Legal	S.135 System Master Plan Interceptors	Dec-14	Apr-18	5	0	0	5
	S.135 System Master Plan Interceptors Total			**10,915**	**0**	**117**	**10,798**
S.10401.6898 Tunnel Construction	S.136 West Roxbury Tunnel	Dec-07	Mar-11	63,000	9,250	53,750	0
S.10400.6897 Tunnel Design	S.136 West Roxbury Tunnel	Sep-05	Mar-11	10,500	5,180	5,320	0
S.10329.6566 Public Participation	S.136 West Roxbury Tunnel	Apr-00	Mar-10	5	5	0	0
	S.136 West Roxbury Tunnel Total			**73,505**	**14,435**	**59,070**	**0**
S.10402.6915 Quincy/Braintree Howard St. ...	S.139 South System Relief Project	Jul-05	Jun-07	375	375	0	0
S.10422.6949 Quincy/Braintree Howard St Des	S.139 South System Relief Project	Jul-04	Jun-07	150	150	0	0
	S.139 South System Relief Project Total			**525**	**525**	**0**	**0**
S.10342.6579 Construction	S.140 Neponset Valley Relief Sewer	Jul-16	Jul-18	9,355	0	0	9,355
S.10341.6578 Design/CS/RI	S.140 Neponset Valley Relief Sewer	Dec-12	Jul-18	1,872	0	125	1,747
S.10255.6030 Planning	S.140 Neponset Valley Relief Sewer	Jan-10	Jan-12	1,095	0	1,095	0
S.10343.6580 Public Participation	S.140 Neponset Valley Relief Sewer	Jul-11	Jun-14	5	0	4	1
S.10344.6581 Legal	S.140 Neponset Valley Relief Sewer	Jul-11	Jun-14	5	0	4	1
	S.140 Neponset Valley Relief Sewer Total			**12,332**	**0**	**1,228**	**11,104**
S.10417.6935 Siphon- Construction	S.141 Wastewater Process Optimization	Aug-13	Jul-14	20,030	0	0	20,030
S.10416.6934 Siphon-Design	S.141 Wastewater Process Optimization	Jan-11	Jul-14	2,850	0	2,109	741
	S.141 Wastewater Process Optimization Total			**22,880**	**0**	**2,109**	**20,771**
S.10390.6819 I/I and SSO Reduction	S.143 Regional I/I Management Planning	Apr-02	Jun-05	228	228	0	0
	S.143 Regional I/I Management Planning Total			**228**	**228**	**0**	**0**
S.10418.6936 Interceptor Renewal	S.145 I&P Asset Protection	Mar-06	Jun-19	102,000	3,000	70,000	29,000
	S.145 I&P Asset Protection Total			**102,000**	**3,000**	**70,000**	**29,000**
Treatment							
S.19285.6974 DI Wind Power Constr	S.206 DI Asset Protection	Mar-05	Nov-06	2,956	2,956	0	0
S.19223.6724 Eastern Seawall Construction - 1	S.206 DI Asset Protection	Dec-07	Mar-09	1,374	366	1,008	0
S.19247.6822 Outfall Modif Const 1	S.206 DI Asset Protection	Jan-06	Sep-07	824	824	0	0
S.19228.6729 Closed Circuit Cameras Const	S.206 DI Asset Protection	Dec-06	Sep-07	545	545	0	0
S.19222.6723 Eastern Seawall Design - 1	S.206 DI Asset Protection	May-06	Mar-09	344	212	132	0
S.19248.6823 Outfall Modif Const 1 REI	S.206 DI Asset Protection	Jan-06	Sep-07	275	275	0	0
S.19266.6883 PICS Replacement Des	S.206 DI Asset Protection	Jul-06	Jun-08	224	203	21	0
S.19246.6821 Personnel Dock Rehab	S.206 DI Asset Protection	Mar-06	Oct-06	200	200	0	0
S.19194.6598 Thermal Plant PICS Repl	S.206 DI Asset Protection	Jan-05	Jun-05	184	184	0	0
S.19227.6728 Closed Circuit Cameras Design	S.206 DI Asset Protection	Oct-05	Sep-07	170	170	0	0
	S.206 DI Asset Protection Total			**7,096**	**5,935**	**1,161**	**0**

ATTACHMENT A
Projects and Phases Removed From FY06 CIP

Subphase	Project	NTP	S.C.	Total Contract	FY04-08	FY09-13	Beyond FY13
Drinking Water Quality							
S.53396.6434 Corrosion Control Norumb. Construction	S.542 Walnut Hill Water Treatment Plant	Jul-07	Dec-08	271	168	103	0
	S.542 Walnut Hill Water Treatment Plant Total			**271**	**168**	**103**	**0**
S.53423.6530 Booster Disinfection Construction	S.544 Norumbega Covered Storage	Jan-09	Jan-10	536	523	13	0
	S.544 Norumbega Covered Storage Total			**536**	**523**	**13**	**0**
S.53402.6457 Design/Build	S.550 Low Service Storage Near Spot Pond	Apr-12	Apr-14	24,811	0	13,822	10,989
S.53401.6456 Env Rev Con Des Owners Rep	S.550 Low Service Storage Near Spot Pond	Apr-10	Sep-14	2,500	0	1,714	787
S.53447.6868 Easement/Land Acquisition	S.550 Low Service Storage Near Spot Pond	Apr-10	Apr-14	630	0	475	154
	S.550 Low Service Storage Near Spot Pond Total			**27,941**	**0**	**16,011**	**11,930**
S.60044.6526 Construction	S.597 Winsor Dam Hydroelectric	May-13	Nov-13	1,404	0	0	1,404
S.60033.6277 Detail Design	S.597 Winsor Dam Hydroelectric	Jul-11	Mar-13	46	0	46	0
Transmission							
	S.597 Winsor Dam Hydroelectric Total			**1,450**	**0**	**46**	**1,404**
S.60050.6693 Tunnel Shaft Rehabilitation Project	S.614 Metropolitan Tunnel Loop	Apr-09	Dec-10	2,165	400	1,765	0
S.60052.6710 Design/CA/RI Shaft Rehab	S.614 Metropolitan Tunnel Loop	Jun-07	Jun-10	487	350	137	0
S.60035.6273 Feasibility Study	S.614 Metropolitan Tunnel Loop	Jan-05	Dec-06	245	245	0	0
	S.614 Metropolitan Tunnel Loop Total			**2,897**	**995**	**1,902**	**0**
S.60069.6941 Ph2 Oakdale Valves Fac Constr	S.616 Quabbin Transmission System	Jan-09	Jun-10	8,000	0	8,000	0
S.60068.6940 Ph2 Oakdale Valves Fac Des	S.616 Quabbin Transmission System	Jul-07	Jun-10	625	300	325	0
	S.616 Quabbin Transmission System Total			**8,625**	**300**	**8,325**	**0**
S.60071.6948 Sudbury Aqueduct Constr	S.617 Sudbury /Weston Aqueduct Repairs	Apr-11	Nov-13	32,800	0	26,875	5,925
S.60070.6947 Sudbury Aqueduct Design	S.617 Sudbury /Weston Aqueduct Repairs	Jul-08	Nov-14	6,400	0	5,137	1,263
	S.617 Sudbury /Weston Aqueduct Repairs Total			**39,200**	**0**	**32,012**	**7,188**
S.60061.6893 Construction	S.618 Northern High NW Trans Sect 70-71	Mar-12	Nov-18	28,519	0	2,775	25,744
S.60062.6894 Design CA/RI	S.618 Northern High NW Trans Sect 70-71	Mar-10	Nov-18	5,046	0	2,250	2,796
S.60063.6895 Planning	S.618 Northern High NW Trans Sect 70-71	Mar-09	Mar-10	2,194	0	2,194	0
S.60064.6896 Easements	S.618 Northern High NW Trans Sect 70-71	Jan-12	Jun-12	25	0	25	0
	S.618 Northern High NW Trans Sect 70-71 Total			**35,784**	**0**	**7,244**	**28,540**
Distribution & Pumping							
S.68243.6864 N. Seg (CP1B) C&L Watertown Sect	S.702 New Connecting Mains - Shaft 7 to ...	Jan-07	Oct-08	1,607	1,300	307	0
	S.702 New Connecting Mains - Shaft 7 to ... Total			**1,607**	**1,300**	**307**	**0**
S.68076.6331 Easements	S.706 NHS - Con. Mains from Sec. 91	Sep-99	Oct-01	46	46	0	0
	S.706 NHS - Con. Mains from Sec. 91 Total			**46**	**46**	**0**	**0**
S.67971.6339 Appraisal-Easement	S.708 Nor Extra High Serv - New Pipelines	Sep-94	Jun-01	22	22	0	0
	S.708 Nor Extra High Serv - New Pipelines Total			**22**	**22**	**0**	**0**
S.68227.6786 Riverside Ave Sewer Repair & Sect 57	S.713 Spot Pond Supply Mains - Rehab	Apr-08	Apr-11	17,825	500	17,325	0
S.68223.6782 Construction CP-5 Sec 66 & OMM30	S.713 Spot Pond Supply Mains - Rehab	Apr-07	May-10	6,616	2,300	4,316	0
S.68226.6785 Sewer Design/CA/RI & Sect 57 Des	S.713 Spot Pond Supply Mains - Rehab	Jul-05	Jul-11	3,620	2,000	1,620	0
S.68224.6783 Plan/Des CA/RI Sec 66 OMM30	S.713 Spot Pond Supply Mains - Rehab	Jul-05	Jul-11	1,610	1,000	610	0
	S.713 Spot Pond Supply Mains - Rehab Total			**29,671**	**5,800**	**23,871**	**0**
S.68184.6562 Public Participation	S.714 South. Extra High Sects 41,42 & 74	Jul-99	Oct-02	5	5	0	0
S.68185.6563 Legal	S.714 South. Extra High Sects 41,42 & 74	Jul-99	Oct-02	5	5	0	0
	S.714 South. Extra High Sects 41,42 & 74 Total			**10**	**10**	**0**	**0**
S.68052.6302 Construction- Chp 149	S.719 Chestnut Hill Connecting Mains	Jun-07	Jun-09	5,033	2,750	2,283	0
S.68267.6982 Construction-Chp 30	S.719 Chestnut Hill Connecting Mains	Jun-07	Jun-09	5,033	2,500	2,533	0
S.68268.6995 Final Design CA/RI	S.719 Chestnut Hill Connecting Mains	Jan-06	Jun-09	1,500	1,250	250	0
	S.719 Chestnut Hill Connecting Mains Total			**11,566**	**6,500**	**5,066**	**0**
S.68088.6295 Sec 19 Construction	S.721 Southern Spine Distribution Mains	Mar-12	Nov-13	6,673	0	0	6,673
S.68086.6293 Sec 19 Design	S.721 Southern Spine Distribution Mains	Jul-09	Nov-14	1,415	0	843	572
S.68246.6871 MHD Neponset River Bridge	S.721 Southern Spine Distribution Mains	Sep-02	Sep-04	136	136	0	0
S.68087.6294 Sec 19 Easements	S.721 Southern Spine Distribution Mains	Mar-11	Feb-12	25	0	25	0
	S.721 Southern Spine Distribution Mains Total			**8,249**	**136**	**868**	**7,245**
S.68100.6338 Construction	S.724 Nor High Service - Pipeline Rehab	Feb-10	Nov-11	13,309	0	13,309	0
S.68098.6336 Design/CA/RI	S.724 Nor High Service - Pipeline Rehab	May-07	Nov-11	2,828	736	2,092	0
S.68099.6337 Appraisal/Easement	S.724 Nor High Service - Pipeline Rehab	Jul-08	Jul-09	151	0	151	0
	S.724 Nor High Service - Pipeline Rehab Total			**16,288**	**736**	**15,552**	**0**

ATTACHMENT A
Projects and Phases Removed From FY06 CIP

Subphase	Project	NTP	S.C.	Total Contract	FY04-08	FY09-13	Beyond FY13
Distribution & Pumping (Cont'd)							
S.68136.6445 SEH Redund Loop Construction	S.727 SEH Redundancy & Storage	Dec-12	Mar-16	16,045	0	2,000	14,045
S.53399.6454 SEH Storage Construction	S.727 SEH Redundancy & Storage	Jul-11	Dec-12	4,489	0	4,489	0
S.68135.6444 SEH Red Loop Final Des/CA/RI	S.727 SEH Redundancy & Storage	Jul-08	Jul-12	3,417	0	3,417	0
S.53398.6453 SEH Storage Final Des/CS/RI	S.727 SEH Redundancy & Storage	Jan-08	Dec-12	842	70	772	0
S.53397.6452 Concept Plan/Prelim Des/Env Rev	S.727 SEH Redundancy & Storage	Jul-06	Dec-07	561	561	0	0
	S.727 SEH Redundancy & Storage Total			**25,354**	**631**	**10,678**	**14,045**
S.68191.6588 Construction Phs. 2	S.732 Walnut St. & Fisher Hill Pipeline Rehab.	Jul-09	May-11	2,711	0	2,711	0
	S.732 Walnut St. & Fisher Hill Pipeline Rehab. Total			**2,711**	**0**	**2,711**	**0**
S.68214.6719 Construction	S.733 NHS Pipeline Rehab 13-18 & 48	Jan-15	Nov-16	13,454	0	0	13,454
S.68260.6960 Rehab of Sect 33,49,49A, Const	S.733 NHS Pipeline Rehab 13-18 & 48	Jan-12	Nov-15	6,600	0	3,300	3,300
S.68213.6718 Design/CA/RI	S.733 NHS Pipeline Rehab 13-18 & 48	Apr-12	Nov-16	2,854	0	947	1,907
S.68212.6717 Planning/EIR	S.733 NHS Pipeline Rehab 13-18 & 48	Nov-09	Apr-11	2,055	0	2,055	0
S.68259.6959 Rehab of Sect 33,49,49A,Des	S.733 NHS Pipeline Rehab 13-18 & 48	Apr-09	Nov-16	1,400	0	1,052	348
	S.733 NHS Pipeline Rehab 13-18 & 48 Total			**26,363**	**0**	**7,354**	**19,009**
S.68234.6836 Construction	S.734 SEH Pipelines-Sections 30,40,44,39	Jan-14	Jan-17	6,000	0	0	6,000
S.68233.6835 Design	S.734 SEH Pipelines-Sections 30,40,44,39	Jun-12	Dec-13	1,000	0	750	250
	S.734 SEH Pipelines-Sections 30,40,44,39 Total			**7,000**	**0**	**750**	**6,250**
S.68249.6891 Section 80 Construction	S.735 Section 80 Rehabilitation	Nov-07	Sep-09	7,172	2,458	4,714	0
S.68250.6892 Section 80 Design CS/RI	S.735 Section 80 Rehabilitation	Jan-06	Dec-09	1,521	1,016	505	0
S.68248.6890 Water Supply Contingency ...	S.735 Section 80 Rehabilitation	May-07	Sep-09	1,000	483	517	0
	S.735 Section 80 Rehabilitation Total			**9,693**	**3,957**	**5,736**	**0**
Other Water							
S.75487.6652 Permits Monitoring & Control Comm Net	S.753 Central Monitoring System	Dec-99	Sep-04	100	100	0	0
	S.753 Central Monitoring System Total			**100**	**100**	**0**	**0**
Business & System Operations							
S.19192.6593 Facilities Asset Mgmt Phase 3	S.933 Capital Maintenance Planning/Development	Jul-05	Jul-07	750	750	0	0
	S.933 Capital Maintenance Planning/Development Total			750	750	0	0
Total Project and Phases Removed	**Grand Total**			**$537,489**	**$68,690**	**$300,646**	**$168,154**

Capital Improvement Program

FISCAL YEAR 2006

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 is constructing 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$26,152	$26,046	$106	$604	$106				

Project Status 5/05	99.3%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$26,245	$26,152	($93)	Dec 04	Dec 04	-	$803	$710	($93)

Explanation of Changes

- N/A

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 April 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$215,271	$181,332	$33,939	$26,560	$13,980	$12,685	$5,791	$1,200	$282

Project Status 5/05	89.1%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$226,531	$215,271	($11,260)	May 08	April 08	(1)	$71,271	60,216	($11,055)

Explanation of Changes

- Decrease in Project Cost due to deletion of Rehabilitation of Sections 624 & 652 (formerly 123A & 124) sub-phase as part of MWRA initiative to contain rate increases as well as Replacement Pump Station contract being awarded at less than cost estimate.

CEB Impact

The impacts of the Intermediate Pump Station and Tunnel are reflected in MWRA's FY06 CEB. The start-up of the Replacement Pump Station will result in increased operating costs of $305,000 as of FY08 to run the facility.

S. 105 New Neponset Valley Relief Sewer

Project Purpose and Benefits

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

Construction of relief facilities to correct structural and hydraulic deficiencies in the New Neponset Valley Interceptor Sewer System. This project will reduce surcharging and sewage overflows which, combined with other pollution, threatened the Neponset River Watershed, the water supply for Canton and the Dedham/Westwood Water District. Completion of the facilities will also accommodate an anticipated increase in demand resulting from population growth in the service area.

Project History and Background

The New Neponset Interceptor Sewer System consists of the New Neponset Valley Sewer, the Westwood Extension Sewer, the Walpole Extension Sewer, the Stoughton Extension Sewer, and the Dedham Branch Sewer. The system serves Walpole, Stoughton, Canton, Norwood, Westwood, and parts of Dedham, Hyde Park, and Milton. Structural deficiencies within the system included deteriorated manhole risers, improper castings, structural damage due to superimposed loadings, and segments that required cleaning. Hydraulic problems included a six-mgd deficiency in the downstream segment and an approximately 22-mgd deficiency in several upstream segments during heavy rainfall, resulting in surcharging and sewage overflows to ground surfaces and adjacent water bodies.

Construction of the new relief facilities commenced in 1993. The pump station began operating in March 1996. The interceptor was placed into service in September 1997.

Scope

Sub-phase	Scope
Consultant-Canton	Funding of an environmental monitor for the Canton Conservation Commission to oversee wetlands related work.
Construction 1	Construction of a 46-mgd pump station and 2,850 linear feet of 48-inch force main.
Construction 2	Installation of 5,900 linear feet of 54-inch gravity sewer for the New Neponset Valley Relief Sewer.
Construction 3	Installation of 5,330 linear feet of 36-inch gravity sewer for the downstream section and 4,055 linear feet of 24- to 30-inch gravity sewer for the upstream section of the Stoughton Extension Sewer.
Construction 4	Installation of 6,920 linear feet of 30- to 48-inch gravity sewer for the Walpole Extension Sewer.
Construction 5 and Consultant-Milton	Installation of the remaining 18,544 linear feet of 48-inch force main for the New Neponset Valley Relief System. Funding of an environmental monitor for the Milton Conservation Commission to oversee wetlands related work.
Study Dedham Street	Study to determine if a section of settled sewer line was repaired in the early 1960s and whether it may have contributed to groundwater contamination.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$30,302	$30,297	$5	$0	$5				

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$30,334	$30,302	($32)	Jul-99	Jul-99	None	$37	$5	($32)

Explanation of Changes

- Project completed

CEB Impact

Operating cost impacts from this project are already incorporated into the CEB.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$50,160	$2,120	$48,039	$436	$3,147	$16,867	$17,505	$10,394	$127

Project Status 5/05	9.0%	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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$35,835	$50,160	$14,325	Sept 07	Apr 08	7 Mos	$31,104	$48,349	$17,245

Explanation of Changes

- Cost – Amendment for 29 month contract extension and revised cost estimates for Sections 685-686 and replacement of Section 687 resulted in project cost increase. An additional phase for resident engineering and inspection also contributed to the overall project increase.
- Schedule – Project time frame revised to more realistic schedule.

CEB Impact

None identified at this time.

S. 107 Framingham Extension Relief Sewer

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*

The Framingham Extension Sewer had inadequate capacity to serve current and projected demand, resulting in surcharging and discharging of sewage into local water bodies such as the Charles River and Beaverdam Brook. The installation of a new force main and gravity sewer, construction of a new pump station, and rehabilitation of approximately 23,000 linear feet of existing pipe resulting in sufficient capacity to transport peak flows and reduce overflows. This project is being completed in accordance with an EPA/DEP administrative consent order.

Project History and Background

The Framingham Extension Sewer, constructed in the mid 1950s, is approximately 31,150 feet long, with a diameter varying between 42 and 54 inches. The sewer receives wastewater from the towns of Framingham, Ashland, and Natick and transports these flows to the Wellesley Extension Sewer for eventual conveyance to the Deer Island Treatment Plant. The current peak wet weather flow is approximately 42.8 mgd. Insufficient capacity and aging of the pipes led to deterioration and excessive discharging of the sewer system. The new system is designed for a peak flow of 43.7 mgd. Construction of a new pump station, force main, and gravity sewer was completed in April 1998. Early Sewer Rehabilitation was completed in March 1995 and Late Sewer Rehabilitation was completed in August 2002.

Scope

Sub-phase	Scope
Install Force Main	Installation of 25,000 linear feet of 36-inch force main in Framingham and Natick.
Gravity Sewer	Installation of 11,000 linear feet of 36- to 60-inch gravity sewer in Natick, Wellesley, and Dover. Micro-tunneling under a 150-year old oak tree on Elm Bank.
Pump Station	Construction of a 21-mgd pump station in Framingham.
Early Sewer Rehab	Rehabilitation of 7,439 linear feet of 42- to 48-inch sewer in Framingham and Natick.
Late Sewer Rehab	Rehabilitation of 15,000 feet of sewer in Natick and Dover.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$48,014	$47,896	$117	($3)	$117				

Project Status 5/05	99.8%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$47,996	$48,014	$18	Sept 04	Sept 04	-	$96	$114	$18

Explanation of Changes

- N/A

CEB Impact

No additional impacts expected for this project.

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.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$8,270	$1,420	$6,850	$149	$360	$4,957	$1,297	$235	$0

Project Status 5/05	25%	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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$7,061	$8,270	$1,209	April 07	June 06	(10) mos	$5,788	$6,998	$1,210

Explanation of Changes

- Cost – Award greater than budget for Cummingsville Branch Sewer construction work. Also, amendment for additional design, construction services and resident inspection resulted in overall budget increase.
- Schedule – Schedule accelerated to meet intent of the agreement.

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.

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. By June 2005 it is anticipated the FERS Pump Station will have achieved 50% Design status, the FES tunnel will have achieved 30% Design status and the air treatment systems will have achieved 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$3,315	$2,243	$1,072	$555	$929	$143			

Project Status 5/05	91.2%	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 in 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 FY07 CIP.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$17,215	$3,315	($13,900)	May 09	June 05	(47) mos	$14,369	$1,627	($12.742)

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 sewerage 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. Three construction packages will be developed by CDM to procure construction services for SCADA implementation.

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.
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, 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 low cost small quantity system components (ex. fuel tank monitoring units and interfaces).
Technical Assistance	Technical assistance work to support all subphases.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$15,616	$1,928	$13,688	$1,016	$469	$1,645	$9,171	$2,382	$22

Project Status 5/05	14.6%	Status as % is approximation based on project budget and expenditures. The Planning phase is complete and Design and Integration contract is in process. Expect to award Construction 1 in December 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$14,432	$15,616	$1,184	Jan-07	Dec-07	11	$13,515	$14,683	$1,168

Explanation of Changes

- Revised costs for construction work. Also, CP3 reconfigured to provide electrical power to select interceptor-monitoring sites for continuous data collection and to cover minor modifications to newly constructed facilities.

CEB Impact

The FY06 CEB already reflects staffing reductions in preparation for implementation of remote monitoring. Expect additional reductions totaling $100,000 during FY09 from optimization of chemicals after SCADA start-up.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$4,945	$3,440	$1,505	$0	$1	$2	$1	$801	$700

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$4,546	$4,945	$399	Dec 07	June 09	18 mos	$1,105	$805	($300)

Explanation of Changes

- Increased cost estimate for Outfall 023 Structural Improvements, offset by deletion of Pump Station Feasibility sub-phase.
- Schedule and spending changes reflect more realistic pace of completion.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$2,187	$865	$1,322	$141	$89	$0	$0	$0	$1,233

Project Status 5/05	42.5%	Status as % is approximation based on project budget and expenditures. Planning phase is complete. Expect NTP for the Somerville Sewer Design in October 08.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$24,985	$2,187	-$22,799	Jul 14	Jun 12	-25 mos.	$360	$230	-$130

Explanation of Changes

- Deletion of Siphon Design and Construction sub-phases from the FY06 CIP as part of MWRA strategy to contain rate increases.

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 FY05.

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. The data from these key sites will be used to optimize MWRA operation and maintenance activities during normal and wet weather conditions.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$6,578	$859	$5,720	$859	$4,155	$10	$36	$71	$1,448

Project Status 6/05	70.4%	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$6,578	$6,578	$0	Jan 11	Jan 16	60 mos	$5,378	$5,131	($247)

Explanation of Changes

- Delayed design and construction of Permanent Site Improvements as part of strategy to contain rate increases.

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 is approximately forty years old with a more efficient system. 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 will be completed in FY05 under the CEB.

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 in FY05, 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 is being 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 replace the climber screens possibly with catenary screens and will 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$18,611	$1,550	$17,061	$1,548	$808	$2,760	$6,797	$3,043	$3,653

Project Status 5/05	11.4%	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 Notice-to-Proceed 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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$117,166	$18,611	($98,555)	June 19	Feb 10	(114) mos	$16,321	$14,956	($1,365)

Explanation of Changes

- Deleted the Interceptor Renewal sub-phase from the FY06 budget as part of a strategy to contain rate increases. The future need and funding for this project will be evaluated and considered as part of MWRA's master planning process.
- Revised budgets for Sections 80 & 83, Section 160 and 93A Force Main Replacement based on Preliminary Design estimates.
- Added Mill Brook Valley Sewer Section 79 & 92 sub-phase to the FY06 budget with MOU payment slightly less than award.
- Remote Headworks Heating System Upgrades award less than cost estimate.
- Revised cost estimate for screen replacements at all Headworks facilities.
- Revised estimate for Headworks Condition Assessment and Facilities Plan sub-phase to expand the scope to include a facilities plan for all Headworks facilities.

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

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 4, 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.
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 in November 2004.)
Design and Construction 4	Design and construction of modifications to the cryogenics facility, plant-wide odor control systems, digester gas systems, and scrubber improvements.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$42,672	$11,660	$31,012	$3,377	$6,412	$10,481	$4,286	$2,365	$7,470

Project Status 5/05	39.8%	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 Ancillary Modifications 1 and 2-2. Expect to award Preliminary Ancillary Modification Design Phase 4 by early FY06.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**Impact on FY04-08 Cap**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$33,020	$42,672	$9,652	Sep 08	Mar 13	55	$23,656	$26,921	$3,265

Explanation of Changes

- Budget increase of $5M due to the addition of Long Term As-Needed Design phases through FY13. Increase of $4M also incurred due to scope changes or change orders for Ancillary Modifications 1, 2-2 and 3-1.
- Schedule changed due to the addition of the Long Term As-Needed Design phases through FY13.

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 subphases added to the Proposed FY06 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.
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.
CEMS Equipment Replacement	Upgrade or replace all the gas sampling analyzers, tubing, data collection components, and other related 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	New project for FY06. Replace the Thermal Plant's high-maintenance digester gas wet scrubber system with a dry scrubber system.
Digester Chiller Replacement	New Project for FY06. Replace the refrigeration-based digester gas chiller with a chilled water system that can perform better at lower operational loads.
Dystor Tank Membrane Replacement	New project for FY06. Emergency replacement of a torn gas membrane on a digester storage tank; also includes replacement of the membrane on tank 2.
Grit Blower Replacement Construction	New project for FY06. Replace a high-maintenance grit blower with a dedicated air-handling/compressor system for improved grit handling.
Thickened Primary Sludge Pump Replacement	New Project for FY06. Design and construction to replace the thickened primary sludge pumps in order to reduce water use and maintenance costs.
Centrifuge Back-drive Replacements	New Project for FY06. Replace the 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.
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	New project for FY06. Design and implement modifications to DI's electrical system as recommended in consultant report after FY04 power outage.
Switchgear Replacements	On-going program to sequentially replace obsolete electrical switchgear.
PICS Replacement	Replacement or upgrade of components of the Process Information Control System including keypads, consoles, and software due to obsolescence.

Sub-phase	Scope
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 projects for DITP heat loop piping. This project involves rerouting a portion of the piping system to reduce the corrosion from groundwater contact and to improve pipe accessibility.
Fuel Transfer Pipe Replacement	Replace the diesel 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.

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 Repair	Repair or remove and replace the failed lining in one of the four tanks.
Metals Lab Modification Construction	Metals lab improvements; replacement of metal fixtures and fume hoods which 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 and other modifications around sludge thickeners to improve staff access and operating efficiency of the thickeners.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$94,659	$2,472	$92,187	$601	$3,299	$3,970	$6,339	$13,439	$65,142

Project Status 5/05	4.8%	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, Dystor Membrane Replacement, Electrical Equipment Upgrade Construction 2, Heat Loop Pipe Replacement and Miscellaneous VFD Replacements. Expect to award contracts for Digester Chiller Replacement and Design of Power Consultant Recommendations within the first quarter of FY06.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**Impact on FY04-08 Cap**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$102,697	$94,659	-$8,038	June 14	June 15	12	$34,166	$27,648	-$6,518

Explanation of Changes

- Budget decrease due to the deletion of several projects as part of MWRA efforts to limit rate increases.
- Impact to FY04-08 cap also reduced 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.
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.

Sub-phase	Scope
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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$64,556	$65,549	($993)	$8,930	($1,667)	$0	$0	$0	$675

Project Status 5/05	98.9%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$67,113	$64,556	($2,557)	Dec-01	Dec-01	None	$9,819	$7,263	($2,556)

Explanation of Changes

- Received cost recovery settlement.

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 locations. 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 developed a plan 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 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, five are in construction, and the remaining projects are in the planning or design stage. The Proposed FY06-08 CIP includes $747 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 50 CSO milestones first adopted by the Federal District Court in June 1996 (Schedule Six) as part of the Clean Water Act case.

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 plans to seek 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 are not fully incorporated into the CIP 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 ability 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 if it were 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 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, pending the outcome of ongoing additional studies to determine whether higher levels of CSO control are cost beneficial. In 2004, DEP issued the latest extensions to these variances to the fall of 2007. Additional facilities may be required to address the CSO objectives outlined by regulatory agencies for these areas. Those objectives primarily involve increasing the level of CSO control by removing extraneous flows (stormwater runoff, infiltration, inflow) from the interceptor systems and implementing system optimization measures.

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 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.
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 River. 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	To control CSO discharges at outfall BOS019, 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	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 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	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.
Upgrade Existing CSO Facilities and MWRA Floatables Control	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), 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	To 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.

Project	Purpose
Charles River CSO Controls	Evaluates and implements system optimization measures and evaluates inflow controls that may further reduce CSO discharges to the Charles River Basin, in response to conditions on the extension to the Charles River CSO Variance issued by DEP on October 1, 2004. Also, responds to conditions on the extension to the Alewife Brook/Upper Mystic River CSO Variance, issued by DEP on September 1, 2004. This project is required to meet DEP water quality standards determinations.
Community Managed	
South Dorchester Bay Sewer Separation (Fox Point)	This project 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.
South Dorchester Bay Sewer Separation (Commercial Point)	This project 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.
Stony Brook Sewer Separation	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 this sewer separation 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	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.
BWSC Floatables Control	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.
Cambridge Floatables Control	To 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	To 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	To 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.

Project	Purpose
Reserved Channel Sewer Separation	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.
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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$755,769	$251,207	$504,562	$45,867	$54,871	$55,647	$63,281	$97,739	$233,034

Program Status 5/05	41.1%	Status as % is approximation based on project budget and expenditures. MWRA continues to make significant progress towards completing several projects and gaining regulatory and public acceptance for plans that will allow CSO control to move forward in several areas. (See individual project status and background information).

Changes to Program Scope, Budget, and Schedule

Program Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$701,310	$755,769	$54,459	Jul-20	Dec-15	(55)	$277,294	$317,405	$40,111

Explanation of Changes

- **Community Managed +$80.8M**
  Project Increases: Reserved Channel Sewer Separation +$54.1M and Morrissey Boulevard Drain +$18.2M. For the FY06 CIP, these projects are broken out from North Dorchester Bay Project in the MWRA-managed section and set up as separate Community-managed projects. South Dorchester Sewer Separation (Commercial Point) +$3.8M; Cambridge CAM002-004 Sewer Separation +$2.5M; Stony Brook Sewer Separation +$1.9M; South Dorchester Bay Sewer Separation (Fox Point) +$521K; Fort Point Channel Sewer Separation +$475K.

- **MWRA Managed ($326.9M)**
  Project Decreases: North Dorchester Bay decreased by a net $39M due to shift of $67M for Reserved Channel Sewer Separation and Morrissey Boulevard Drain sub phases to the Community-managed section. Offset by $28M increase for the cost of the remaining work primarily due to revised cost estimates.

  Project Increases: East Boston Branch Relief Sewer +$4.9M; BOS019 Storage Conduit +$3.1M; Union Park Treatment facility +$2.1M; Charles River CSO Controls +$824K.

- Schedule change based Management decision and public comments for the North Dorchester Bay & Reserved Channel related work.

CEB Impact

Completion and start-up of these projects will result in a total net increase of $652,500 (in FY06 dollars) by FY12. By year, the CEB impact is as follows:

Fiscal Year	CEB Impact	Explanation
2007	$617,289	Expect to start-up Union Park Detention Treatment facility during the first six months of 2006 (FY06). Assume MWRA's share of total annual operations and maintenance costs for this facility will be approximately $950,000 of which $330,000 is incorporated into the FY06 CEB and the remainder will affect the FY07 CEB.
2010	($122,242)	Expect to decommission Fox Point and Commercial Point CSO treatment facilities during the summer of 2009. Annual savings of $90,000 for Fox Point and $75,000 for Commercial Point.
2011	($42,547)	Cost savings from decommissioning of Fox Point and Commercial Point facilities.
FY12	$250,000	Estimate $200k/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).

Project History and Background

Under MWRA's original 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 Secretary's Certificate, issued in June 2001, approved the reassessment as scoped by MWRA, and also required MWRA to include a reevaluation of all CSO control alternatives that had previously been considered during earlier CSO planning and environmental review. 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 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 2006and complete the North Dorchester Bay tunnel and related facilities (inc. 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, commence construction by May 2009 and 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.
Tunnel Construction	Construction of the North Dorchester Bay tunnel, drop shafts, access shafts and CSO/stormwater controls.
Dewater/Odor Control Construction	Construction of the 10 mgd dewatering pump station at Conley Terminal and the 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 and remote odor control facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$231,674	$14,928	$216,746	$1,266	$3,746	$8,338	$33,745	$66,057	$104,860

Project Status 5/05	7.9%	Status as % is approximation based on project budget and expenditures. The Authority's design consultant completed most of the field surveys and soil borings necessary to supplement data collected during the original design. The Authority is working on plans and schedules which include interacting with various regulatory agencies for approvals and permits. Expect to award Pleasure Bay Drain Improvements in September, 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$270,663	$231,674	($38,989)	Nov-12	May-11	(18)	$52,564	$113,152	$60,588

Explanation of Changes

- As with the Approved FY05 CIP, this CIP reflects the revised plan for CSO control for North Dorchester Bay as recommended in the April 2004 SEIR. Components of this project in the FY05 CIP that related to the Reserved Channel and the Morrissey Blvd. storm drain are now separate projects in the Community-managed section of this CIP.

- The budget change for this project reflects a shift of $67 million for two projects to the Community-managed section; offset by an increase of $28 for the remaining work primarily due to revised cost estimates.

- Design and construction of the North Dorchester Bay tunnel, related facilities and Pleasure Bay drainage improvements have been accelerated from the schedule in the FY05 CIP in response to concerns raised by regulatory agencies and court parties.

CEB Impact

Estimate $200k/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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$2,295	$2,295	$0	($7)	$0	$0	$0		$0

Project Status 5/05	100%	Completed in 2000.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$2,295	$2,295	$0	Aug-01	Aug-01	None	($7)	($7)	$0

Explanation of Changes

- None.

CEB Impact

N/A

S. 347 East Boston Branch Sewer Relief

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Provides environmental benefits*
☑ *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 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.

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 or were rehabilitated using a combination of construction methods, including microtunneling, pipe bursting, open cut and relining. The rehabilitation construction contract commenced in March 2003 and was substantially completed in May 2004. Other design and construction is delayed pending completion of a project reassessment that commenced in June 2003 to assure cost benefit. The reassessment work was substantially completed in December 2003, but related discussions with regulatory agencies are ongoing towards recommending a new plan.

Scope

Sub-phase	Scope
Design/CS/RI	Design, project reassessment, construction services, and resident inspection.
East Boston Branch Relief Sewer Construction	Construction of 13,500 feet of replacement sewers, primarily by micro-tunneling.
Boston Paving	Payment to City of Boston for paving.
East Boston Branch Sewer Rehab Construction	Rehabilitation of 6,400 feet of existing sewer.
Sections 38 & 207 Replacement Construction	Replacement of 4,900 feet of existing sewers by pipe bursting.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$67,997	$8,338	$59,659	$5,293	$195	$834	$602	$14,132	$43,896

Project Status 5/05	12.7%	Status as % is approximation based on project budget and expenditures. The rehabilitation contract was substantially complete in May 2004. MWRA commenced discussions with EPA and DEP regarding a preferred plan and will then recommend a final plan and resume design efforts for the replacement contracts.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$63,115	$67,997	$4,882	Jun-08	Feb-10	20	$60,023	$21,056	($38,967)

Explanation of Changes

- No scope change, pending agreement with regulatory parties on the results of the reassessment and the recommendation of a new plan.
- Cost increase primarily due to inflation adjustments associated with new ENR index.
- Schedule delay associated with project reevaluation and ongoing negotiations with court parties.

CEB Impact

None identified at this time.

S. 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 Bcso.

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 is comprised of 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 the local BWSC sewer system has returned after storms have past. 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 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$13,650	$1,605	$12,045	$1,156	$1,436	$5,889	$4,691	$29	$0

Project Status 5/05	18.4%	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$10,019	$13,650	$3,631	Sep-06	Mar-07	6	$9,571	$13,201	$3,630

Explanation of Changes

- Construction contract actual award was greater than budget. Also, construction management services were deleted from the design contract and awarded as a separate contract.
- Revised construction duration from 18 months to 24 months.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$29,765	$29,757	$8	$1	$8	$0	$0	$0	$0

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$29,757	$29,765	$8	Jun-02	Jun-02	-	$1	$9	$8

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 January 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$45,536	$17,405	$28,131	$11,522	$15,315	$11,699	$1,117		

Project Status 5/05	68%	Status as % is approximation based on project budget and expenditures. Construction contractor has completed the final excavation of all basins and has resumed forming and placing concrete in the final strip of basin base slabs.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$43,368	$45,536	$2,168	Jan-06	Apr-06	3	$37,486	$39,653	$2,167

Explanation of Changes

- Additional change orders, expected change orders and amendments for greater than expected quantities of contaminated soil, oxidation catalysts and gear reducers, changes in motor room pumps; expected amendment for additional shop drawing submittals, change order support and extended contract duration.

CEB Impact

Expect to start-up Union Park Detention Treatment facility during the first six months of 2006 (FY06). Assume MWRA's share of total annual operations and maintenance costs for this facility will be approximately $950,000 of which $330,000 is incorporated into the FY06 CEB and the remainder will affect the FY07 CEB.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$22,385	$22,337	$48	$36	$48	$0	$0	$0	$0

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$22,301	$22,385	$84	Oct-02	Oct-02	None	$0	$84	$84

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$1,848	$0	$1,848	$0	$0	$0	$0	$0	$1,848

Project Status 5/05	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$1,371	$1,848	$477	Aug-07	Jan-12	53	$1,365	$0	($1,365)

Explanation of Changes

- Revised construction cost estimate.
- Schedule pushed out to coincide with the current scheduled completion of sewer separation by the City of Cambridge in the CAM004 tributary area.

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*

Evaluates and implements system optimization measures and evaluates inflow controls that may further reduce CSO discharges to the Charles River Basin, in response to conditions on the extension to the Charles River CSO Variance issued by DEP on October 1, 2004. Also responds to conditions on the extension to the Alewife Brook/Upper Mystic River CSO Variance, issued by DEP on September 1, 2004. This project is required to meet DEP water quality standards determinations.

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). The report specifically recommended system optimization measures at Cottage Farm, including revising procedures for dewatering the Cottage Farm storage basins, constructing an interconnection between the two overflow chambers that direct overflows to Cottage Farm, and raising overflow weirs within these chambers.

On October 1, 2004, DEP issued a three year extension to the Charles River CSO variance, with conditions requiring MWRA to implement the system optimization measures recommended in the Cottage Farm report and to evaluate the CSO benefits of infiltration and inflow removal and stormwater recharge. MWRA must prepare and submit related reports to DEP each year of the extension. Similar CSO evaluations were also required with the three-year extension to the Alewife Brook/Upper Mystic River variance issued by DEP on September 1, 2004.

MWRA staff believe that other opportunities for reducing CSO discharges through system optimization exist for the Charles River. This project is intended to evaluate and design system optimization measures and to respond to the variance requirements described above.

Scope

Sub-phase	Scope
Design CS/RI	Evaluation of system performance and opportunities for reducing CSO discharges to the Charles River Basin with system optimization measures. Design and engineering services during construction for system optimization measures at and upstream of Cottage Farm. Engineering assistance to respond to the conditions of the Charles River and Alewife Brook/Upper Mystic River variance extensions.
Construction	Construction of system optimization measures for controlling CSOs to the Charles River Basin.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$824	$0	$824	$0	$0	$80	$484	$259	$1

Project Status 5/05	0%	Status as % is approximation based on project budget and expenditures. Design contract is expected to be awarded in January 2006 .

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$0	$824	$824		Oct-07			$823	$823

Explanation of Changes

- New project added in FY06 CIP.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$53,091	$34,095	$18,996	$7,900	$12,424	$4,753	$755	$699	$365

Project Status 5/05	87.5%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$53,612	$53,091	($521)	Nov-06	Nov-06	-	$26,609	$26,531	($78)

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 awards less than budget partially offset by increase due to revised estimates for police details and change orders. Change orders include the need to remove unforeseen structures within existing pipe and to use larger diameter pipes for replacement.

CEB Impact

Expect to decommission the Fox Point Treatment Facility during the summer of 2009 resulting in an annual savings of $90,000.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$62,318	$33,595	$28,723	$6,533	$10,147	$6,381	$7,238	$4,642	$314
Project Status 5/05	70.1%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$58,456	$62,318	$3,862	Nov-07	Nov-07	None	$30,654	$34,941	$4,287

Explanation of Changes

- Budget increase due to additional change orders to address issues with utilities, revised cost estimates, actual awards for the downspout contract, revised estimates of police details, and updated inflation adjustments on unawarded contracts. Theses were partially offset by decrease in Design due to reduced eligibility for certain costs per review by MWRA's Internal Audit Department.

CEB Impact

Expect to decommission the Commercial Point CSO Treatment facility during the summer of 2009 resulting in an annual savings of $75,000.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$44,551	$24,767	$19,784	$8,843	$8,839	$9,515	$1,430		

Project Status 5/05	75.4%	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$42,646	$44,551	$1,905	Sep-06	Sep-06	None	$26,722	$28,627	$1,065

Explanation of Changes

- Budget increase due to actual awards, revised estimates for police details, updated inflation and contingency adjustments on unawarded contracts, and anticipated amendment associated with preparation of as-built drawings.

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

Project Status 5/05	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$3,769	$3,769	$0						

Project Status 5/05	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$40,407	$16,306	$24,101	$2,372	$1,111	$1,269	$2,466	$109	$19,146

Project Status 5/05	43.1%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$37,875	$40,407	$2,532	Jun-11	Dec-12	18	$11,302	$7,327	($3,975)

Explanation of Changes

- Budget increase primarily due to inflation adjustments due to new ENR index and amendment to design contract associated with the supplemental preliminary design and permitting.
- Schedule delayed due to additional preparation of the Second Supplemental Preliminary Design Report and revising construction end dates to avoid overlapping contacts to minimize public disturbances.

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	FY06	FY07	FY08	Beyond FY08
$933	$933	$0	$0					

Project Status 5/05	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$2,685	$377	$2,308	$0	$545	$327	$646	$507	$283

Project Status 5/05	34.3%	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$2,520	$2,685	$165	Dec-06	Sep-12	69	$2,143	2,025	($118)

Explanation of Changes

- Budget increase primarily due to inflation adjustment to reflect new ENR index.
- Schedule delayed due to prolonged preparation of the Second Supplemental Preliminary Design Report and increased design effort and construction complexity of revised plan.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$5,570	$0	$5,570	$0	$637	$2,642	$2,279	$12	

Project Status 5/05	11.4%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$5,095	$5,570	$475	Mar-07	Mar-07	None	$5,095	$5,570	$475

Explanation of Changes

- Budget increase primarily due to change order to commence construction.

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 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 re routing stormwater from BOS087 to a new Morrissey Boulevard Drain. Design is scheduled to begin in June 2005, with construction starting and ending 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$18,186	$0	$18,186	$0	$0	$625	$3,669	$6,923	$6,969

Project Status 5/05	0%	Status as % is approximation based on project budget and expenditures. Expect design to begin in June 2005, with construction starting and ending in December 2006 and June 2009, respectively.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$0	$18,186	$18,186	Dec-10	Jun-09	(18)	$0	$11,217	$11,217

Explanation of Changes

- Shifted $18.8 million from the North Dorchester Bay and Reserved Channel Project to establish this separate project. Net decrease of $604K due to revised cost estimates based on final design.
- Schedule based on SEIR in April 2004.

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. Design is scheduled to begin in January 2007, with construction starting and ending in May 2009 and December 2017 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$54,193	$0	$54,193	$0	$0	$60	$1,081	$2,041	$51,011

Project Status 5/05	0%	Status as % is approximation based on project budget and expenditures. Design expected to begin in January 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$0	$54,193	$54,193	Jul-20	Dec-15	(55)	$0	$3,182	$3,182

Explanation of Changes

- Shifted $48 million from the North Dorchester Bay and Reserved Channel Project to establish this separate project. Net increase of $6.2 million due to inflation adjustments and revised cost estimates.
- Schedule accelerated per negotiations with court parties.

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 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.

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 EIR 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. DEP has extended the Charles River variance three times, to October 2003. A three-year variance for Upper Mystic River and Alewife Brook CSOs was issued in March 1999. In 2002, DEP extended the term of this variance to September 2003. 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, 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 will provide additional technical information to support the reassessment of the appropriateness of the recommended Charles River controls in the 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; 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, in compliance with provisions in MWRA's new NPDES permit. This project also supports land and easement acquisitions and funds 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. Revisions to Facilities Plan/EIR.
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.
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 analysis.
Land/Easements	Acquisition of land and easements for construction of MWRA-implemented projects. Also, permits not covered in existing contracts.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$51,411	$38,256	$13,155	$952	$420	$2,998	$3,077	$2,329	$4,331

Project Status 5/05	75.3%	Status as % is approximation based on project budget and expenditures. Master Planning was substantially complete in September 2004. Expect easement agreement with Massport for land acquisition at Conley Terminal in the second quarter of FY06.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$50,834	$51,411	$577	Dec-09	Dec-09	None	$13,530	$9,776	($3,754)

Explanation of Changes

- Revised Land/Easement costs for North Dorchester, BOS019, and East Boston projects. Also, additional funds to complete CSO Affordability Analysis.

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 June 2005, MWRA has distributed $40 million in grants and $76 million in no-interest loans to fund 273 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$68,594	$51,002	$17,592	$1,468	$12,557	$1,388	$1,229	$1,222	$1,197

Project Status 5/05	89%	Through June 2005, MWRA has distributed $40 million in grants and $76 million in no-interest loans to fund 273 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$68,593	$68,594	$1	May-18	May-18	None	$15,767	$17,864	$2,097

Explanation of Changes

- No changes to project scope, budget, and schedule. Spending shift due to timing of community requests.

CEB Impact

The marginal costs savings from flow reduction are already accounted for in the CEB.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$281	$278	$3	$67	$3	$0	$0	$0	$0

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$284	$281	($3)	Apr 04	Apr 04	-	$73	$70	($3)

Explanation of Changes

- Reduced budget to reflect actual spending. 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 to 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 1986 and the completed tunnel 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 waters' pH and alkalinity 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, MWRA is building covered storage tanks to replace small open reservoirs near cities and towns to lessen the risk that contaminants will get into the tap water. 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. 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 as of 1993, more than 80 percent of MWRA pipes were unlined. 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 Walnut Hill Water Treatment Plant

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 expects to issue new regulations in late 2005 or early 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.
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.

Sub-phase	Scope
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 Walnut Hill. 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 Walnut Hill Water Treatment Plant.
Professional Services	As needed legal, insurance, design, and construction specialty services for the Walnut Hill Water Treatment Plant.
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 Walnut Hill Water Treatment Plant.
CSX Crossing	Railroad track improvements adjacent to WHWTP.
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 Walnut Hill Water Treatment Plant.
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.
Walnut Hill Ultra Violet Disinfection Design, and Construction	Design and construction programs to add Ultra Violet (UV) to the WHWTP.
As-Needed Technical Assistance #1 and #2	As-needed design services to support the start-up of the WHWTP including electrical engineering, HVAC engineering, mechanical engineering, civil engineering and a variety of geotechnical, environmental, and architectural technical assistance.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$421,705	$329,874	$91,831	$43,852	$29,029	$8,992	$4,105	$6,195	$43,539

Project Status 5/05	84%	Status as % is approximation based on project budget and expenditures. Through May 2005, the WHWTP is 98% complete. WH CP4 Treatment Plant is 98% complete and WH CP6 Late Site Work is 48% complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$414,426	$421,705	$7,279	Jun-12	Jun-12	None	$85,192	$92,173	$6,981

Explanation of Changes

- Cost increase due to additional change orders for WHWTP CP4 for ambient air analyzers, conduit and duct banks at Shaft C, fire alarm modifications, water main reconnections, emergency HVAC venting, pressure valves on CO2 system, and ozone generator safety interlocks.
- Increases also due to revised cost for expected amendment for the Construction Management contract and actual award amount for Late Sitework CP6 contract and Design CA/RI CP7 Modification to Existing Facilities.
- These increases were partially offset by deleting Corrosion Control Norumbega Construction and Booster Disinfection Design subphases from the budget as part of MWRA strategy to contain rate increases. Also, budget reduced for Public Health Research.

CEB Impact

The FY06 CEB for the Field Operations Department includes approximately $2.9 million in additional funding for the first full year of operations and maintenance of this facility. The full-year impact of Walnut Hill staffing could result in incremental costs of approximately $350,000 in FY07. In addition, per EPA requirements, MWRA will commence use of UV as a second disinfection method as of FY2012. Staff expects the additional cost of operating UV treatment to be offset by savings achieved by applying ozone at a lower dosage.

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 expects to issue new regulations (LT2ESWTR and Stage 2 D/DBP, see Walnut Hill 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 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 two primary disinfectants for unfiltered systems.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$15,419	$9,832	$5,587	$389	$395	$55	$134	$321	$4,683

Project Status 5/05	66%	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 Jul 2005. Expect to begin Quabbin UVWTP Design CS/RI by December 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$14,983	$15,419	$436	Jul 10	Jan 11	6 mos.	$1,286	$1,294	$8

Explanation of Changes

- Cost increase due to inflation adjustments as a result of new ENR index.
- Schedule pushed out due to project priorities.

CEB Impact

Annual incremental operating costs for UV treatment are estimated at $25,000 per year as of Q4 FY2011.

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 connected to the Hultman Aqueduct in Weston. It normally provides 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 is meeting 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 will cover approximately 17 acres, and will store water that has been fully treated at the Walnut Hill Water Treatment Plant. Start-up of the new covered reservoir will coincide 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.
Land	Land Acquisition for Norumbega Covered Storage.

Sub-phase	Scope
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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$107,472	$100,575	$6,897	$11,301	$3,418	$2,689	$58	$117	$615

Project Status 5/05	95.9%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$106,446	$107,472	$1,026	Jan-10	Jan-10	None	$16,555	$17,583	$1,028

Explanation of Changes

- Cost change primarily due to additional time and labor due to severe weather.
- Offset by removal of Booster Disinfection Construction subphase due to reevaluation of need.

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 Section 22 to supply water 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$36,056	$1,446	$34,610	$165	$152	$228	$10,954	$10,881	$12,394

Project Status 5/05	4%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$32,830	$36,056	$3,226	Jul 08	Jul 09	12 mos	$31,488	$22,380	($9,108)

Explanation of Changes

- Inflation adjustment due to new ENR index and increased level of effort in EIR/Conceptual Design/OR phase due to schedule extension to coordinate with permit appeal process.

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 Walnut Hill 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

Provision of 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 are deficient in several respects. First, the transmission system is 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 will provide 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.

Following start-up of the MetroWest Tunnel and the Walnut Hill Water Treatment Plant, 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 Walnut Hill Water Treatment Plant (WHWTP). 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$703,557	$621,293	$82,264	$7,228	$4,262	$6,750	$2,029	$18,187	$51,036

Project Status 5/05	89%	Status as % is approximation based on project budget and expenditures. Placed MetroWest Tunnel into service in November 2003. Expect to award Design CA/RI CP6 contract in August 2005 and Hultman Rehab CP9 in September 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$676,149	$703,557	$27,408	Dec-11	Jul-12	7	$20,725	$38,456	$17,731

Explanation of Changes

- Updated cost estimates to reflect revised plan, costs and schedule from CP6 Preliminary Design Report.
- Schedule accelerated to utilize benefit of redundancy system reliability.

CEB Impact

Incremental operating costs are included in the FY05 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$9,630	$6,191	$3,439	$1,937	$3,136	$264	$38		

Project Status 5/05	97%	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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$9,621	$9,630	$9	Sept 05	Sept 05	-	$5,366	$5,375	$9

Explanation of Changes

- Cost – Increased inflation index applied to unawarded contracts to adjust to FY06 dollars.
- Other increases due to expected change order to remove and dispose of wood roof truss and replace with steel truss system.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$10,926	$876	$10,050	$53	$169	$5,703	$3,400	$645	$132

Project Status 5/05	9%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$9,609	$10,926	$1,317	Dec 06	Aug 07	8 Mos.	$8,786	$9,970	$1,184

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 – Project delayed due to permitting issues.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$6,031	$0	$6,031	$0	$597	$3,375	$1,653	$150	$256

Project Status 5/05	10%	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 with construction scheduled to begin October 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$13,350	$6,031	($7,319)	June 10	June 10	-	$5,025	$5,775	$750

Explanation of Changes

- Eliminated phases for Phase II Oakdale Valves work as part of strategy to contain rate increases.

CEB Impact

None identified at this time.

S. 617 Sudbury and Weston 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 and Weston Aqueducts in preparation for future repairs. These aqueducts are 120 and 100 years old, respectively, and are in need of renewal and upgrade. They are critical back-up facilities for the City Tunnel and the Sudbury Reservoir emergency supply. The project will start with an inspection phase, with construction phases to be added later as needed improvements are identified. The Sudbury Aqueduct will be inspected first, followed by the Weston. The inspections will identify the need for follow-up work such as repair of aqueduct walls, stream crossings, blow-off valves, and waste weirs in addition to improving security at hatche and building access points.

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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$3,781	$263	$3,517	$3	$60	$3,246	$212		

Project Status 5/05	7%	Status as % is approximation based on project budget and expenditures. Phase 1, removal of hazardous on-site materials is complete. Inspection of Sudbury Aqueduct slated for June 2005 followed by Weston Aqueduct in July 2006 with short-term Sudbury repairs beginning in October 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$40,086	$3,781	($36,305)	Nov 14	Jan 06	(108) mos.	$626	$3,521	$2,895

Explanation of Changes

- Cost – Revised project scope. Eliminated Sudbury Aqueduct design and construction work from the project as part of strategy to contain rate increases. This decrease was partially offset by a new subphase for Sudbury Aqueduct short-term rehab and repairs of $2.5 million which will be completed by January 2006.
- Schedule – Project completion shifted back 108 months to January 06 due to the elimination of longer-term Sudbury Aqueduct work.

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 an 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$1,200	$0	$1,200	$0	$0	$12	$198	$880	$110

Project Status 5/05	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$0	$1,200	$1,200		Jun-08		$0	$1,090	$1,090

Explanation of Changes

- New project in FY06 CIP.

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.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$8,200	$0	$8,200	$0	$0	$46	$554	$2,950	$4,650

Project Status 5/05	0%	Status as % is approximation based on project budget and expenditures. Expect to award design contract in April 2006. Expect to commence construction by October 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$0	$8,200	$8,200		May-09		$0	$3,550	$3,550

Explanation of Changes

- New project in FY06 CIP.

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.

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 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$8,000	$0	$8,000	$0	$0	$8,000	$0	$0	$0

Project Status 5/05	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$0	$8,000	$8,000	-	Jun-06	-	0	$8,000	$9,000

Explanation of Changes

- New Project added in Proposed 06 CIP.

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 the Wachusett Reservoir Bypass.

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 the Wachusett Reservoir Bypass.

Expenditure Forecast (in $000s) and Project Status

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

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$0	$500	$500		May-07		$0	$500	$500

Explanation of Changes

- New project in FY06 CIP.

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 1,160 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. MWRA anticipates completion of Phase 5 Valve Replacement in July 2005 and commencement of Phase 6 construction in March 2006.

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 includes 10 blow-off valve retrofits and 13 main line valve replacements. Phase 6 includes 6 blow-off valve retrofits, 22 main line valve replacements 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$14,710	$6,150	$8,560	$484	$1,172	$1,468	$2,626	$751	$2,543

Project Status 5/05	49%	Status as % is approximation based on project budget and expenditures. Phase I-4 are complete. Final design for Phase 5 complete with NTP for construction issued March 2004 with restoration scheduled for Spring 2005 with substantial completion in July 2005. 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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$14,048	$14,710	$662	May 10	May 10	-	$6,180	$6,501	$321

Explanation of Changes

- Cost – Expected change orders for additional work to replace 36" valve, corrosion control testing and revised estimates based on Preliminary Design combined with a revised cost estimate for Construction 6 produced the overall increase. Inflation adjustments on unawarded contracts reflecting new ENR index also contribute to project increase.

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 1 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 four test 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$1,796	$141	$1,655	$0	$50	$349	$0	$0	$1,256

Project Status 5/05	7.9%	Status as % is approximation based on project budget and expenditures. Project Planning Phase complete with Test Station Installation I to begin October 2005. Test Station Installations 2 – 5 will continue through 2016.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$1,668	$1,796	$128	May-11	May-16	61 Mos.	$387	$399	$12

Explanation of Changes

- Cost – Increase due to updated inflation index applied to unawarded contracts to adjust for new ENR.
- Schedule shifted as part of strategy to contain annual rate increases.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$23,839	$23,616	$223	$288	$160	$64	$0	$0	$0

Project Status 5/05	99.5%	Status as % is approximation based on project budget and expenditures. Project is substantially complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**Proposed FY06**	**Change**	**FY05**	**Proposed FY06**	**Change**	**FY05**	**Proposed FY06**	**Change**
$23,873	$23,839	($34)	Sep-03	Sep-03	None	$545	$512	($33)

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$113,645	$51,566	$62,079	$8,734	$7,780	$2,972	$971	$2,585	$47,772

Project Status 5/05	53%	Status as % is approximation based on project budget and expenditures. Newton WASM 1 and WASM 2, Auburndale WASM 1, 2 & 4 and Newton WASM 2 & 4 are complete. Allston WASM 4 & W. Ave Sewer is substantially complete as of December 2004 and Boston WASM 1 & 2 is 90% complete as of May 2005.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$108,845	$113,645	$4,800	Jan 16	Jan 16	-	$22,577	$23,042	$465

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.
- Also, award of Section PCCP W-12 contract greater than budget estimate.
- Slightly offset by award of WASM 3 SPL 12 PCCP Design contract at less than budget estimate.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$3,141	$1	$3,141	$1	$32	$12	$2,255	$838	$4

Project Status 5/05	1%	Status as % is approximation based on project budget and expenditures. Final design work continues for Phase I. Construction of Phase I to begin in July 2006.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$6,685	$3,141	($3,544)	May-11	May-11	None	$3,972	$3,138	($846)

Explanation of Changes

- Revised cost estimate for Preliminary and the elimination of Construction Phase II reduced overall project costs. The later as part of strategy to contain annual rate increases.

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 design of Rehabilitation of Section 52 is 100% complete.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$20,168	$10,007	$10,161	$520	$298	$3,137	$3,958	$2,696	$72

Project Status 5/05	51%	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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$19,047	$20,168	$1,121	Jun-08	Oct-07	(8) Mos.	$8,971	$10,609	$1,638

Explanation of Changes

- Revised cost estimate for Section 52 Rehabilitation to reflect slip-lining costs combined with additional legal/easement cost during construction resulted in an overall budget increase.
- Accelerated schedule due to the critical function of this project.

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 design for Sections 21 and 43 is 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$60,167	$6,813	$53,355	$3,615	$5,796	$2,108	$7,010	$9,760	28,680

Project Status 5/05	20.5%	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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$62,805	$60,167	($2,650)	Nov-13	May-11	(31 mos.)	$24,130	$28,680	$4,550

Explanation of Changes

- Removed design and construction of Section 19 as part of strategy to contain rate increases partially offset by revised cost estimates for Sections 21, 22, and 43.
- Revised schedule to reflect removal of Section 19.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$3,578	$3,536	$42	$977	$42				

Project Status 5/05	100%	Status as % is approximation based on project budget and expenditures. Construction is complete with only closeout items, including resident inspection, outstanding. Overall project completion expected before end of FY05.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$4,478	$3,578	($900)	Sep-03	Sep-03	-	$1,919	$1,019	($900)

Explanation of Changes

- None

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$17,975	$16,962	$1,013	$1,224	$389	$506	$69	$49	-

Project Status 5/05	95%	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. All other work is complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$29,692	$17,975	-$11,717	Jun 09	Nov 05	-44 mos.	$8,838	$2,237	-$6,601

Explanation of Changes

- Preliminary Engineering contract awarded at less than budget estimate.
- Deleted Construction–Chapter 149, Construction–Chapter 30 and Final Design/CA/RI sub-phases from the FY06 budget as part of strategy to contain annual rate increases.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$27,785	$3,819	$23,966	$144	$392	$944	$4,527	$8,027	$10,076

Project Status 5/05	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	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$22,136	$27,785	$5,649	Sep-09	Jan-10	4 Mos.	$17,465	$14,034	($3,431)

Explanation of Changes

- Revised cost estimates to rehab the five pump stations and updated inflation index applied to unawarded contracts resulted in an overall project increase.
- Partially offset by lower than budgeted award for Design 2 Construction Services and Resident Inspection.
- Adjusted schedule to reflect more likely pace of spending for equipment purchases.

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 Stoneham, Wakefield, Winchester and Woburn, with a total population of 200,000 and an average day demand of 8.7 million gallons. Reading and Wilmington are also considering application to MWRA for supplemental water. 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.
Design/CS/RI and Construction Section 89/29 Rehab	**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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$6,943	$0	$6,943	$0	$0	$4	$56	$943	$5,941

Project Status 5/05	0.0%	Status as % is approximation based on project budget and expenditures. Project was combined with NIH Covered Storage. Concept planning will begin January 2006 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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$8,799	$6,943	($1,856)	June-12	May-12	-1 Mo	$2,840	$1,003	($1,837)

Explanation of Changes

- Project repackaged and rescoped after combined with Northern High Intermediate Storage reducing overall project costs. This reduction partially offset by revised cost estimates for design and construction to include Section 89.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$34,146	$33,275	$871	$166	$78	$172	$619	$2	$0

Project Status 5/05	98%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$34,284	$34,146	($138)	Sep-07	Sep-07	-	$1,176	$1,037	($138)

Explanation of Changes

- Paving costs for Woodland Road Improvements $150,000 less than budgeted.

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 provides a connection between the East and the West Supply Mains from Section 11 at Porter Square in Cambridge to Section 4 at Union Square in 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 reason rehabilitation of approximately 8,100 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. In addition, work on a portions of Section 16W (Weston Aqueduct Supply Main 3) and Section 57 are now included with this project because of significant operational and geographic overlaps.

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 5 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) 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$60,952	$31,386	$29,566	$7,298	$8,688	$10,580	$4,697	$4,739	$861

Project Status 5/05	64%	Status as % is approximation based on project budget and expenditures. All the rehabilitated mains in Medford Square have been activated except for Section 16W which continues to be pressure-tested. New 48" water main has been installed on Sections 4, 5 and 6 in Somerville and Medford near the Wellington Bridge. Work is also in process along Massachusetts Avenue in Cambridge and on Medford Street in Malden.

Changes to Project Scope, Budget, and Schedule

Project Cost			**Scheduled Completion Date**			**FY04-08 Spending**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$89,529	$60,952	($28,577)	Apr-11	Jul-13	27 mos.	$40,828	$36,002	($4,826)

Explanation of Changes

- As part of strategy to contain annual rate increases, removed planning, design and construction of Section 66 and OMM 30 and Riverside Avenue Sewer Repair and Section 57 rehabilitation.

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 existing Meter 99 in East Boston and to the Boston low-pressure system through a new pressure-reducing valve.

Scope

Sub-phase	Scope
Survey 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 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 FY04	Remaining Balance	FY05 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$14,581	$0	$14,581	$0	$0	$1	$21	$1,241	$13,320

Project Status 5/05	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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$11,677	$14,581	$2,905	Nov-11	Aug-11	(3) Mos.	$15	$1,263	$1,248

Explanation of Changes

- Increase due to updated inflation based on most current ENR index.
- Also added funding for Section 97A.
- Schedule shifted as project phases resequenced.

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.
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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$49,267	$3,405	$45,862	$355	$531	$1,230	$1,084	$10,516	$32,501

Project Status 5/05	7.5%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$37,842	$49,267	$11,425	Sep-14	Sep-14	-	$19,452	$13,716	($5,736)

Explanation of Changes

- Budget increase - Revised estimate due to more pipeline targeted for replacement. Also, updated inflation to account for more current ENR index.
- Spending – Reflects more likely pace of work and spending.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$2,554	$124	$2,430	$0	$0	$1	$1	$1	$2,429

Project Status 5/05	4.9%	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$2,330	$2,554	$224	Mar-12	Mar-15	36 Mos.	$0	$3	$3

Explanation of Changes

- Increases due to inflation adjustment on unawarded contracts to reflect more current ENR index.
- Schedule change reflects more likely timing for completion given staffing availability, financial constraints, and other capital priorities.

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 26, 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. Work will also include a study to determine the feasibility of abandoning or rehabilitating portions of Section 26. 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$32,917	$23,854	$9,063	$0	$4	$17	$2,778	$833	$5,430

Project Status 5/05	72.5%	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$32,561	$32,917	$356	Nov-10	Nov-15	61 Mos.	$3,279	$3,632	$353

Explanation of Changes

- Increases due to inflation adjustment reflecting more current ENR index.
- Schedule – Project shifted to contain spending within FY04-08 period to comply with spending cap.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$4,000	$0	$4,000	$0	0	$150	$1,750	$1,450	$650

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$4,000	$4,000	$0	Nov-07	Nov-08	12 Mos.	$3,850	$3,350	($500)

Explanation of Changes

- Schedule – Shifted 12 months to comply with FY04-08 Spending Limits.

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, and 45 provide service to the Northern Extra High (NEH) communities of Belmont and Arlington. The existing pipelines are not large enough to meet maximum day plus fire flow service goals. Construction of a new larger pipeline 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 rehabilitated in an earlier phase of this project. The current phase includes rehabilitation of the remaining portion of the pipeline.

Scope

Sub-phase	Scope
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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$8,458	$3,632	$4,825	$69	$2	$12	$11	$11	$4,790

Project Status 5/05	42.9%	Status as % is approximation based on project budget and expenditures. Construction of a portion of Section 45 was rehabilitated in September 2001. In-house design of Sections 34, 36 and 45 followed by construction scheduled to start after FY13.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$8,036	$8,458	$422	Nov-10	Nov-15	60 Mos.	$129	$105	($24)

Explanation of Changes

- Increases due to inflation adjustment on unawarded contracts to reflect more current ENR index.
- Shifted schedule to comply with spending limitations in FY04-FY08.

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	Purchase of software to support MWRA's water quality modeling requirements per discussions with American Waterworks Association Research Foundation and other large utilities performing similar work.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$686	$598	$88	$0	$38	$50	$0	$0	$0

Project Status 5/05	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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$688	$686	($2)	Jun 05	Jun 06	12 mos.	$90	$88	($2)

Explanation of Changes

Schedule shifted 12 months as a result of staffing constraints.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$16,143	$15,456	$687	$598	$172	$130	$98	$150	$136

Project Status 5/05	96.5%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$16,246	$16,143	($103)	June 09	June 09	-	$1,210	$1,148	($62)

Explanation of Changes

- Project Cost – Elimination of *Permits Monitoring & Control Communication Network* sub-phase from the FY06 CIP since it was no longer needed.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$2,232	$1,030	$1,202	$0	$7	$0	$434	$434	$328

Project Status 5/05	46.4%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$2,116	$2,232	$116	Dec 08	Dec 08	-	$868	$875	$7

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 of $250,320,000 by $4.48 million to provide funding for Stoughton, a new water system community.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$0	$58,698	($58,698)	$13,153	$13,249	$9,886	$8,461	$6,541	($96,834)

Project Status 6/05	35 %	Through June 2005, $88 million in loans was distributed to member communities.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	Change
$0	$0	$0	Jun-24	Jun-23	(12)	$51,205	$51,290	$80

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 FY06 CIP includes $4.48 million in loan funds for Stoughton, a new water community.
- 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$3,969	$0	$4,004	$0	$245	$1	$0	$75	$3,647

Project Status 5/05	6%	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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$2,780	$3.969	$1,189	Mar 11	June 17	75 mos.	$700	$321	($379)

Explanation of Changes

- Added new subphases for Cosgrove Turbine Isolation Design, and Cosgrove Valve Seat Replacement Design and Construction.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$8,880	$2,380	$6,500	$206	$376	$750	$875	$750	$3,750

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$4,866	$8,880	$4,014	Jul 07	June 13	72 mos.	$2,693	$2,957	$264

Explanation of Changes

- Project Cost – Addition of Long-Term As-Needed Design sub-phase. Slightly offset by deletion of Facilities Asset Management Phase 3 sub-phase during the Proposed FY06 CIP process as part of MWRA strategy to contain rate increases.

- Schedule - Addition of Long-Term As-Needed Design sub-phase results in extension of overall project's schedule.

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 WRA14 and 046) 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$8,961	$1,351	$7,610	$593	$2,068	$4,440	$1,102	$0	$0

Project Status 5/05	37%	Status as % is approximation based on project budget and expenditures. Expect to purchase several vehicles in FY05 and FY06 and the ICP-MS lab equipment in FY05. 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**		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$10,045	$8,961	($1,084)	June 06	June 06	-	$9,287	$8,203	($1,084)

Explanation of Changes

- Reduced budget for security equipment as part of MWRA initiative to contain rate increases.

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 513 staff work out of the Chelsea facility.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$10,226	$9,130	$1,096	$578	$1,021	$75	$0	$0	$0

Project Status 5/05	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$10,224	$10,226	$3	June 06	June 06	-	$1,672	$1,674	$2

Explanation of Changes

- N/A.

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 FY04	Remaining Balance	FY 04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$ 1,650	$0	$1,650	$0	$0	$550	$550	$550	$0

Changes in Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY04-08 Spending		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$1,650	$1,650	$0	June 07	June 08	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.

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. 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.
	Upgrades and enhancements to the TRAC/IS to support improved enforcement, monitoring, permitting, and integration of information with other systems. Upgrade of the GIS application to industry standards to allow more integration and analysis of data. 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. 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.
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. Network scalability program: Improvement of the data network by increasing data access and retrieval capabilities to meet current and projected demand. 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. 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. 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. 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. 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.

Sub-phase	Scope
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.
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. Laboratory Information Management System: Implementation of software improvements to stay current with industry standards and meet ongoing business needs. 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 currently underway, purchase of new software to improve data and operational efficiencies.
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. 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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$25,157	$18,240	$6,917	$261	$622	$2,425	$3,344	$300	$226

Project Status 5/05	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		
FY05	Proposed FY06	Change	FY05	Proposed FY06	Change	FY05	Proposed FY06	Change
$25,873	$25,157	($716)	June 09	June 09	-	$7,687	$6,925	($762)

Explanation of Changes

- Reduced budget as part of MWRA initiative to contain rate increases.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$1,903	$1,261	$642	$122	$66	$145	$212	$52	$168

Project Status 5/05	70%	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		
FY05	**FY06**	**Change**	**FY05**	**FY06**	**Change**	**FY05**	**FY06**	**Change**
$1,764	$1,903	$139	Dec 04	Jun 07	30 mos.	$509	$597	$88

Explanation of Changes

- Modified schedule to reflect more likely pace of work.

CEB Impact

The Prison Point Remediation Project will result in incremental CEB costs of up to $10,000 per year from FY07 through FY10.

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 FY04	Remaining Balance	FY04 Actual	FY05	FY06	FY07	FY08	Beyond FY08
$3,931	$0	$3,931	$0	$343	$1,109	$1,330	$500	$650

Project Status 5/05	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		
FY05	FY06	Change	FY05	FY06	Change	FY05	FY06	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 – 2015 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 FY06 Capital Improvement Program 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 FY04

Projected Payments through FY04 includes actual and accrued expenditures since the inception of the contract through the end of FY04

Remaining Balance 6/30/04

Remaining Balance 6/30/04 is calculated by subtracting Projected Payments through FY04 from the Total Contract Amount. This amount is then spread in the columns to the right, from FY05 to Beyond FY15.

Expenditure Forecasts

The remaining columns in the spreadsheet contain projections for capital spending by sub-phase across fiscal years 2005 through 2015. Forecasts are presented quarterly for fiscal year 2006 and annually for fiscal years 2007 through 2015.

Attachment A

MWRA CAPITAL IMPROVEMENT PROGRAM SUMMARY BY MAJOR CATEGORY

CAPITAL IMPROVEMENT PROGRAM EXPENDITURE FORECAST FY2004-2008 ($000)													
	Total Contract Amount	Projected Pmts. Thr. FY04	Remaining Balance 6/30/04	FY2004 Actual	FY2005 Estimate	Q1 FY06	Q2 FY06	Q3 FY06	Q4 FY06	FY2006	FY2007	FY2008	5-Year Total FY04-08
Wastewater System Improvements	1,530,709	756,510	774,199	92,163	99,442	34,571	23,561	32,823	19,923	110,877	115,871	133,035	551,388
Waterworks System Improvements	1,867,479	1,375,723	491,756	100,093	80,388	15,263	19,928	15,804	22,159	73,154	65,260	91,968	410,863
Business & Operations Support	60,709	32,362	28,347	1,761	4,496	2,142	2,785	2,578	1,989	9,493	7,412	2,152	25,314
Contingency	116,314	0	116,314	0	0	3,888	4,205	3,727	3,848	15,668	17,608	24,009	57,286
Total MWRA	**$3,575,211**	**$2,164,595**	**$1,410,616**	**$194,016**	**$184,326**	**$55,864**	**$50,479**	**$54,932**	**$47,919**	**$209,192**	**$206,151**	**$251,164**	**$1,044,850**

TEN-YEAR CAPITAL IMPROVEMENT PROGRAM SUMMARY BY MAJOR CATEGORY

CAPITAL IMPROVEMENT PROGRAM EXPENDITURE FORECAST FY2006-2015 ($000)													
	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	10-Year Total FY06-15
Wastewater System Improvements			110,877	115,871	133,035	139,935	63,539	27,323	26,893	18,649	18,754	18,957	673,833
Waterworks System Improvements			73,154	65,260	91,968	94,474	70,522	44,973	34,226	11,153	-4,197	-5,394	476,139
Business & Operations Support			9,493	7,412	2,152	1,678	790	779	797	750	0	0	23,851
Contingency			15,668	17,608	24,009	25,323	12,786	6,272	4,640	2,538	3,922	3,548	116,314
Total MWRA			**$209,192**	**$206,151**	**$251,164**	**$261,410**	**$147,637**	**$79,347**	**$66,556**	**$33,090**	**$18,479**	**$17,111**	**$1,290,137**

Total FY04-08	$194,016	$184,326	$209,192	$206,151	$251,164	**$1,044,850**							
Total FY09-13						$261,410	$147,637	$79,347	$66,556	$33,090	**$588,039**		
Total FY06-15			$209,192	$206,151	$251,164	$261,410	$147,637	$79,347	$66,556	$33,090	$18,479	$17,111	**$1,290,137**

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Total MWRA (without contingency)			**3,458,897**	**194,016**	**2,164,594**	**1,294,303**	**184,326**	**193,525**	**188,543**	**227,154**	**236,087**	**134,851**	**73,075**	**61,916**	**30,552**	**14,557**	**13,562**	**(63,846)**
S.1 Wastewater			**1,530,709**	**92,163**	**756,510**	**774,199**	**99,442**	**110,877**	**115,871**	**133,035**	**139,935**	**63,539**	**27,323**	**26,893**	**18,649**	**18,754**	**18,957**	**925**
S.10 Interception & Pumping			**504,177**	**31,853**	**374,343**	**129,834**	**23,967**	**39,392**	**40,737**	**18,269**	**3,688**	**1,377**	**382**	**698**	**125**	**83**	**442**	**675**
S.102 Quincy Pump Facilities			**26,152**	**604**	**26,046**	**106**	**106**											
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													
S.10033.5843 Land Acq - Squantum	Jan-95	Nov-99	22		22													
S.10027.5404 Design/CS/RI1	Aug-94	Dec-04	5,089	231	4,963	127	127											
S.10028.5405 Squantum P.S. Construction	Oct-00	Sep-03	4,447	365	4,482	(36)	(36)											
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													
S.10031.5409 Early Rehab Squantum F.M.	Mar-93	Feb-95	2,042		2,042													
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	5											
S.10261.6070 Public Relations	Jul-95	Sep-03	5			5	5											
S.10262.6071 Hazardous Waste	Jul-95	Sep-03	5		0	5	5											
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													
S.104 Braintree-Weymouth Relief Facilities			**215,271**	**26,560**	**181,332**	**33,939**	**13,780**	**12,885**	**5,791**	**1,200**	**282**							
S.10045.5311 Facilities Planning Phase 1	Oct-81	Dec-90	331		331													
S.10046.5312 EIR Phase 1	Nov-84	Oct-90	514		514													
S.10057.5324 Final EIR/Fac.Plan	Apr-91	Aug-93	1,111		1,111													
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	17,560	1,430	1,225	206										
S.10251.6016 Sedimentation Testing	Sep-94	Apr-96	96		96													
S.10058.5331 Design 2/CS/RI	Apr-95	Apr-08	15,265	1,160	9,216	6,049	1,767	1,600	1,200	1,200	282							
S.10048.5314 Land Acquisition	Mar-97	Apr-07	3,630	347	3,600	29	29											
S.10049.5315 Tunnel Construction/Rescue	Jun-99	Jul-03	84,613	4,605	83,835	778	378	400										
S.10050.5316 Intermediate P.S. Construction	Dec-00	Apr-05	47,208	7,299	43,304	3,904	3,426	479										
S.10051.5303 No. Weymouth Relief Interceptor	Mar-01	Jun-02	4,705		4,705	(0)												
S.10052.5373 HDD Siphon Construction	Jul-03	May-07	16,357	10,979	10,979	5,378	5,154	123	100									
S.10054.5375 B-W Replacement Pump Station	Jan-05	Apr-07	15,851			15,851	1,780	9,756	4,315									
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													
S.10056.5309 Construction - Rehab	Jan-92	Dec-96	255		255													
S.10265.6074 Hazardous Waste	Jul-95	Apr-07	5		2	3	1	1	1									
S.10263.6072 Legal	Jul-95	Apr-07	400	1	56	344	8	240	95									
S.10264.6073 Public Relations	Jul-95	Apr-07	5			5	1	3	2									
S.10061.5951 Technical Assistance	Nov-84	Apr-07	144		144													
S.10278.6119 Design - Marine Pipeline	Feb-97	Aug-97	1,100		1,100													
S.10354.6631 Community Technical Assistance	Jul-99	Apr-07	1,111		1,111													
S.10375.6766 Geotechnical Consultant	Sep-00	Mar-03	56		56													
S.10378.6792 IPS/RPS Communication System	Dec-02	Apr-07	300	111	132	168	12	78	78									

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S.105 New Neponset Valley Relief Sewer			**30,302**		**30,297**	**5**	**5**											
S.10062.5380 Facilities Plan	Apr-83	Dec-86	594		594													
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													
S.10076.5377 Consultant-Canton	Sep-93	Jul-99	130		125	5	5											
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													
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			**50,160**	**436**	**2,120**	**48,039**	**3,147**	**16,867**	**17,505**	**10,394**	**127**							
S.10256.6031 Design/CS/RI	May-00	Apr-09	4,234	434	2,112	2,122	895	500	350	250	127							
S.10290.6191 Replace Sewer Sections 685-686	Mar-05	Apr-08	35,779			35,779	675	15,000	12,500	7,604								
S.10352.6629 Replacement Sewer Section 687	Jul-06	Oct-07	5,889			5,889			3,500	2,389								
S.10439.7072 Resident Engineering/Inspection	Apr-05	Aug-08	2,347			2,347	250	1,000	1,000	97								
S.10311.6450 Land Acquisition	Jun-00	Jul-06	1,520	3	8	1,512	1,300	210	2									
S.10266.6075 Legal	Jun-00	Nov-07	5	0	0	5	1	2	1	1								
S.10267.6076 Public Relations	Jun-00	Nov-07	5			5	1	3	1	1								
S.10268.6077 Hazardous Waste	Jun-00	Nov-07	5			5	1	3	1	1								
S.10393.6830 Boston Paving	Apr-05	Nov-07	376			376	25	150	150	51								
S.106 Wellesley Ext Replacement Sewer			**64,768**		**64,359**	**410**		**123**	**138**	**143**	**2**	**2**	**2**					
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													
S.10081.5347 Land Acquisition	Aug-88	Jul-07	3,497		3,097	400		123	136	141								
S.10082.5348 Consultant-Needham	Jun-89	Nov-98	171		171													
S.10083.5344 Consultant-Dedham	Jun-89	Jul-98	53		53													
S.10094.5842 Consultant-Dover	Aug-91	Jul-98	5		5													
S.10084.5349 Construction 1	Jun-89	Jul-91	15,069		15,069													
S.10086.5351 Construction 2	Aug-89	Sep-90	5,087		5,087													
S.10087.5434 Construction 3	Mar-90	Jul-91	6,927		6,927													
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													
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													
S.10259.6065 EIC	Sep-95	Mar-01	369		369													
S.10269.6078 Legal	Feb-97	Dec-12	230		225	5			1	1	1	1	1					
S.10270.6079 Public Relations	Feb-97	Dec-12	5			5			1	1	1	1	1					
S.10093.5953 Technical Assistance	Jun-89	Dec-12	193		193	(0)												
S.107 Framingham Extension Relief Sewer			**48,014**	**(3)**	**47,896**	**117**	**117**											
S.10099.5318 Fac Plan Update/EIR	Feb-90	Jul-91	1,397		1,397													
S.10100.5321 Land Acquisition	Jun-91	Aug-02	1,838	5	1,833	5	5											
S.10101.5319 Design/CS/RI	Jul-90	Sep-04	5,889	(3)	5,830	59	59											
S.10102.5320 Install Force Main	May-96	Apr-98	7,256		7,256													
S.10103.5322 Install Gravity Sewer	May-96	Apr-98	6,147		6,147													
S.10104.5323 Pump Station Construction	Jul-96	Apr-98	7,803		7,803													
S.10106.5825 Early Sewer Rehabilitation	Jun-94	Mar-95	4,803		4,803													
S.10107.5342 Late Sewer Rehabilitation	Oct-00	Sep-04	12,680	(2)	12,664	16	16											
S.10105.5954 Technical Assistance	Feb-90	Aug-02	167	(5)	162	5	5											
S.10336.6573 Public Participation	Jul-99	Jun-04	5			5	5											
S.10337.6574 Legal	Jul-99	Jun-02	5	0	0	5	5											
S.10374.6754 Conservation Commission	Oct-00	Sep-02	25	0	3	22	22											

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S.127 Cummingsville Replacement Sewer			**8,270**	**149**	**1,420**	**6,850**	**360**	**4,957**	**1,297**	**235**								
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	817	1,484	324	600	325	235								
S.10285.6186 Cummingsville Branch Sew Const	Mar-05	Jun-06	4,242			4,242		3,500	742									
S.10284.6185 Land Acquisition	Apr-00	Sep-06	102		2	100	30	45	26									
S.10334.6571 Public Participation	Jul-99	Sep-06	5			5	1	2	2									
S.10335.6572 Legal	Jul-99	Sep-06	7			7	7											
S.10403.6916 Siphon Modifications	Feb-06	Sep-06	1,012			1,012		810	202									
S.130 Siphon Structure Rehabilitation			**940**		**940**													
S.10253.6017 Planning	Jan-96	Nov-98	938		938													
S.10280.6165 Land Acquisition	Jun-06	Dec-10	2		2													
S.132 Corrosion & Odor Control			**3,315**	**555**	**2,243**	**1,072**	**929**	**143**										
S.10279.6137 Planning/Study	Jan-97	Dec-98	587	(1)	587													
S.10327.6553 Design/CS/RI	Aug-02	Jun-05	2,100	554	1,028	1,072	929	143										
S.10323.6549 Land Acquisition			3		3													
S.10324.6550 Public Participation																		
S.10325.6551 Legal	Dec-00	Jul-08	2		2													
S.10373.6743 Interim Corrosion Control	Jul-00	Dec-01	622	1	622	0												
S.10406.6919 Air Treatment Systems	Jul-06	Jul-07																
S.136 West Roxbury Tunnel			**8,880**	**(17)**	**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													
S.10332.6569 Construction	Jun-01	Jun-02	6,674	16	6,674	0												
S.10329.6566 Public Participation																		
S.10330.6567 Legal	Apr-00	Mar-10	2	0	2													
S.10331.6568 Land Acquisition	Apr-00	Mar-10	440	(1)	440													
S.10366.6709 Technical Assistance	Nov-99	Mar-10	8		8	(0)												
S.137 Wastewater Central Monitoring			**15,616**	**1,016**	**1,928**	**13,689**	**469**	**1,645**	**9,171**	**2,382**	**22**							
S.10301.6232 Planning	Jan-98	Jul-99	563	(9)	563													
S.10319.6532 Design and Integration Services	Jun-02	Nov-08	5,735	1,025	1,364	4,371	469	1,327	1,622	931	22							
S.10320.6533 Construction 1 (CP1)	Dec-05	Apr-07	5,711			5,711		286	5,140	286								
S.10321.6534 Construction 2 (CP2)	Aug-06	Jul-07	3,176			3,176			2,382	794								
S.10357.6657 Construction 3 (CP3)	Aug-07	Jan-08	351			351				351								
S.10322.6535 Technical Assistance	Sep-02	Aug-08																
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**	**2**	**1**	**801**	**600**	**100**						
S.10309.6419 CS/RI-Archdale	Nov-98	Aug-99	6		6													
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													
S.10349.6611 Sec 70 & 71 HLS Construction	Jun-99	Oct-99	417		417													
S.10345.6595 Design Outfall 023	Jun-99	Sep-99	1		1													
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													
S.10350.6616 Milton Financial Assistance	Oct-99	Jun-00	1,488		1,488													
S.10362.6680 Legal/Permits	Jul-99	Jun-07	5			5	1	2	1	1								
S.10386.6801 Outfall 023 Str Impovements	Jul-07	Jun-09	1,500			1,500				800	600	100						

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S.141 Wastewater Process Optimization			**2,187**	**141**	**865**	**1,322**	**89**				**54**	**76**	**380**	**698**	**25**			
S.10367.6733 Planning	Aug-01	Aug-04	954	141	865	89	89											
S.10412.6930 Somerville Sewer-Planning																		
S.10413.6931 Somerville Sewer-Design	Oct-08	Aug-11	200			200					54	76	60	10				
S.10414.6932 Somerville Sewer-Construction	Mar-11	Aug-11	883			883							320	563				
S.10415.6933 Siphon- Planning	Nov-11	Jun-12	150			150								125	25			
S.142 Wastewater Meter Sys-Equip Replace			**6,578**	**859**	**859**	**5,720**	**4,155**	**10**	**36**	**71**	**148**				**100**	**83**	**442**	**675**
S.10371.6739 Planning/Study	Jan-13	May-13	100			100									100			
S.10379.6793 Equipment Purchase/Installation	Nov-03	Jun-08	5,278	859	859	4,420	4,155	10	36	71	148							
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**													
S.10372.6740 Cmom/Planning	Jan-01	Jun-03	169	5	169													
S.145 I&P Facility Asset Protection			**18,611**	**1,548**	**1,550**	**17,061**	**808**	**2,760**	**6,797**	**3,043**	**2,454**	**1,199**						
S.1400 Interceptors			**6,720**	**1,548**	**1,550**	**5,170**	**608**	**1,258**	**2,252**	**803**	**249**							
S.10383.6798 Rehab of Section 93A Lexington	Jul-03	Apr-04	1,568	1,548	1,548	20	20											
S.10392.6829 Technical Assistance	Jul-02	Nov-07	40			40	2	28	8	2								
S.10394.6842 Sections 80&83	Mar-06	May-07	715			715		123	592									
S.10395.6843 Section 160	Apr-06	Apr-08	3,149			3,149		600	1,500	800	249							
S.10396.6857 Survey	Nov-04	May-05	52			52	42	10										
S.10397.6858 Permits	May-03	Nov-07	6		1	5	1	1	2	1								
S.10440.7073 Land/Easements			150			150		150										
S.10423.6987 93 A Force Main Replacement	Sep-05	Jun-06	497			497		347	150									
S.10424.7004 Mill Brook Valley Sewer Sec 79&92	Jun-04	Mar-05	542			542	542											
S.1410 Facilities			**11,891**			**11,891**	**200**	**1,502**	**4,545**	**2,240**	**2,205**	**1,199**						
S.10380.6795 Prison Point HVAC Upgrades	Mar-09	Feb-10	694			694					167	527						
S.10381.6796 Remote Headworks Heating Sys Upgrade	Apr-05	Oct-05	1,172			1,172	200	972										
S.10382.6797 Alewife Brook Pump Repl	Mar-09	Feb-10	450			450					108	342						
S.10387.6802 Hdwks Screen Replacement	Nov-06	Nov-08	5,000			5,000			2,565	1,335	1,100							
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				50	60	40						
S.10420.6938 Des-Prison Pt HVAC Upgrades	Jul-07	Feb-10	150			150				50	60	40						
S.10427.7033 Hingham PS Isolation Gate Const	Jul-07	Jan-08	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.10431.7037 Caruso PS Replace Generator	Jul-09	Sep-09	250			250						250						
S.10432.7038 Chelsea Sluice Gate Engnr Study	Jan-06	Jul-06	50			50		40	10									
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.10436.7042 Fram PS Sluice Gates Cond Assess	Jan-06	Jul-06	50			50		40	10									
S.10438.7044 Caruso PS Shaft Replac Const	Jul-06	Jan-07	425			425			425									
S.1420 Other																		
S.10421.6942 As Needed Design																		

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S.25 Treatment			**137,332**	**3,978**	**14,131**	**123,200**	**9,711**	**14,450**	**10,625**	**15,804**	**23,378**	**8,972**	**2,323**	**5,702**	**8,482**	**11,278**	**10,000**	**2,475**
S.200 DI Plant Optimization			**42,672**	**3,377**	**11,660**	**31,013**	**6,412**	**10,481**	**4,286**	**2,365**	**2,809**	**2,261**	**800**	**800**	**800**			
S.19156.6235 Construction-Plumbing	Apr-96	Apr-98	110		110													
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													
S.18212.6364 Ancil Mods-Des 1	Jun-99	Jan-06	2,160	126	1,127	1,033	472	561										
S.19189.6590 Ancil Mods Des 2-1 (REI)	Aug-01	Jun-03	584	44	584													
S.19190.6591 Ancil Mods - Des 3-1	Feb-01	Nov-05	972	207	707	265	233	32										
S.19191.6592 Ancil Mods - Des 4	Mar-06	Jun-07	965			965		64	772	130								
S.19220.6721 Long Term As Needed Des No.1	Mar-07	Mar-13	2,500			2,500				500	400	400	400	400	400			
S.19183.6499 Ancil Mods-Con 1	Jul-04	Jan-06	10,131			10,131	3,461	6,670										
S.19186.6536 Ancil Mods Constr 2-1	Aug-01	Jun-03	2,825	4	2,819	6	6											
S.19232.6744 Ancil Mods Constr 2-2	May-05	Nov-07	5,231			5,231	15	2,088	2,092	1,035								
S.19187.6537 Ancil Mods-Constr 3-1	Nov-03	Nov-04	3,387	2,197	2,197	1,190	1,190											
S.19188.6538 Ancil Mods-Con 4	May-09	Dec-10	3,470			3,470					2,009	1,461						
S.19221.6722 Long -Term As Needed Des No.2	Mar-07	Mar-13	2,500			2,500				500	400	400	400	400	400			
S.19206.6673 Digester Storage Tank - Repair	Aug-97	Oct-97	275		550	(275)	(275)											
S.19211.6698 As Needed Des Phase 4-1	Mar-05	Mar-07	1,000			1,000	40	435	525									
S.19212.6699 As Needed Des Phase 4-2	Mar-05	Mar-07	1,000			1,000	40	430	530									
S.19215.6702 As-needed Design Phase 2-1	Oct-00	Jan-03	760		760													
S.19234.6753 As-needed design Phase 2-2	Oct-00	Jan-03	695	66	695													
S.19214.6701 As-needed Des. Phase 3-1	Apr-03	May-05	732	390	411	321	321											
S.19240.6768 Ancil Mods Des2-2 (REI/ESDC)	Jun-04	Nov-07	526			526	58	200	201	67								
S.19242.6794 CEMS Modifications	Jun-06	Dec-07	299			299			166	133								
S.19257.6874 As-needed Design Phase 3-2	Mar-03	Mar-05	657	291	304	353	353											
S.19286.6201 BHP Site Completion	Oct-98	Dec-04	284	61	61	223	223											
S.206 DI Treatment Plant Asset Protection			**94,659**	**601**	**2,472**	**92,188**	**3,299**	**3,970**	**6,339**	**13,439**	**20,570**	**6,711**	**1,523**	**4,902**	**7,682**	**11,278**	**10,000**	**2,475**
S.1800 Equipment Replacement			**51,589**	**285**	**1,210**	**50,379**	**2,439**	**846**	**1,284**	**2,756**	**4,767**	**2,363**	**1,200**	**4,750**	**7,500**	**10,000**	**10,000**	**2,475**
S.19182.6478 Equip Replacement Projection	Oct-00	Jun-15	38,025			38,025			400	400	600	700	1,200	4,750	7,500	10,000	10,000	2,475
S.19193.6594 Equipment Condition Monitoring	May-04	Jan-05	1,777	149	149	1,628	1,628											
S.19231.6742 Drive Chain Replacement	Oct-01	Jul-03	264		264													
S.19238.6765 CTG Modifications	Mar-01	May-02	500	(1)	482	18	18											
S.19176.6422 Pump Packing Replacement	Sep-03	Jun-08	750	137	265	485	146	90	110	139								
S.19177.6423 Demineralizer Construction	Jul-00	Dec-00	51		51													
S.19263.6880 Cathodic Protection Evaluation	May-06	May-07	250			250			250									
S.19265.6882 CEMS Equip. Replacement	Sep-05	Mar-06	150			150		150										
S.19268.6899 Clarifier Chain Replac	Apr-08	Sep-09	450			450					315	135						
S.19287.7005 Digester Chiller Replacement	Jul-05	Apr-06	479			479		479										
S.19288.7006 Dystor Tank Membrane Replacement	Sep-04	Sep-05	773			773	647	126										
S.19290.7052 Grit Blower Replac Construction	Apr-08	Apr-09	314			314					314							
S.19291.7053 Thick Prim Sldg Pump Repl Des	Sep-06	Oct-09	578			578			231	130	145	73						
S.19292.7054 TPS Pump Replac Construction	Oct-07	Oct-09	5,531			5,531				1,383	2,766	1,383						
S.19294.7056 LOCAT Scrubber Replac Const	Jul-08	Jul-09	289			289					217	72						
S.19295.7057 Centrifuge Backdrive Replac	Dec-06	Dec-08	1,408			1,408			293	704	411							
S.1810 Architectural			**1,331**	**317**	**729**	**601**	**(0)**		**300**	**151**		**151**						
S.19161.6240 Coastal Protection	Jul-06	Jun-15																
S.19222.6723 Eastern Seawall Design - 1																		
S.19224.6725 Wall,Pier,Berth-Design 2	Jul-06	Jun-15																
S.19223.6724 Eastern Seawall Construction - 1																		
S.19225.6726 Wall,Pier,Berth-Construction 2	Jul-06	Jun-15																
S.19226.6727 Study/Concept Des-Concrete Rpr	May-06	Mar-07	300			300			300									
S.19204.6668 Expansion Joint Repair-Design	Apr-99	Oct-04	149	46	150	(0)	(0)											
S.19205.6669 Expansion Joint Repair- Constr 1	Aug-02	Nov-03	305	270	305													
S.19218.6705 Expansion Joint Repair- Constr 3	May-09	Nov-09	151			151						151						
S.19217.6704 Expansion Joint Repair- Constr 2	May-07	Nov-07	151			151				151								
S.19244.6812 Secondary Clarifier Access	Sep-01	Jul-02	275		275													

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S.1820 Utilities			**37,837**		**407**	**37,430**	**840**	**2,718**	**3,742**	**9,674**	**14,460**	**4,148**	**273**	**116**	**182**	**1,278**		
S.19194.6598 Thermal Plant PICS Repl																		
S.19243.6811 Outfall Modification-Inspection	Dec-01	Jul-02	174		174													
S.19239.6767 Elec Equip Upgrade Constr 2	Apr-05	Sep-06	1,897			1,897	105	1,264	527									
S.19236.6763 Busduct Replacement (2+22)	Jan-01	Oct-01	196		196													
S.19245.6813 Transformer Replacement			38		38													
S.19252.6851 Pipeline Repl #2 Design	Apr-08	Jun-10	364			364					182	152	30					
S.19253.6852 Pipeline Repl #2 - Construction	Jun-09	Jun-10	1,213			1,213						1,010	202					
S.19254.6853 Sodium Hypo Pipe Repl-Des	Jun-08	Jul-09	217			217					167	50						
S.19255.6854 Sodium Hypo Pipe Repl- Constr	Jun-08	Jun-09	2,594			2,594					2,160	434						
S.19256.6855 Elect Equip Upgrade Const 3	Mar-06	Sep-07	1,815			1,815		100	1,210	505								
S.19258.6875 WTF VFD Replace Constr	Dec-07	Jan-09	1,290			1,290				397	893							
S.19259.6876 Heat Loop Pipe Repl Constr 1	Mar-05	Dec-05	615			615	70	545										
S.19260.6877 Misc. VFD Replacements	May-05	May-08	1,050			1,050	664	386										
S.19267.6884 PICS Replacement Const	Jul-08	Jun-09	1,677			1,677					1,372	305						
S.19269.6900 Admin/Whse Switchgear Replac	Sep-06	Sep-07	1,200			1,200			700	500								
S.19270.6901 Elect Equip Upgrade Const 4	Apr-08	Oct-09	2,213			2,213					1,475	738						
S.19271.6902 NMPS VFD Repl Des/ESDC	Jan-06	Sep-09	518			518		84	173	111	111	39						
S.19272.6903 NMPS VFD Replace Constr	Apr-07	Aug-09	6,772			6,772				2,902	2,902	967						
S.19278.6967 Second Deaerator Design	Apr-08	Mar-09	86			86					86							
S.19279.6968 Second Deaerator Constr	Jun-09	Jun-10	243			243						202	40					
S.19280.6969 Fuel Transfer Pipe Repl Des	Nov-11	Apr-14	364			364								116	81	167		
S.19281.6970 Fuel Transfer Pipe Repl Const	Mar-13	Mar-14	1,213			1,213									101	1,112		
S.19282.6971 NMPS Motor Ctrl Ctr Des	Sep-06	Jul-09	578			578			230	118	182	49						
S.19283.6972 NMPS Motor Ctrl Ctr Constr	Oct-07	May-09	2,891			2,891				913	1,826	152						
S.19296.7058 DITP Switchgear Replac Design	Jul-07	Sep-09	231			231				115	67	49						
S.19297.7059 DITP Switchgear Repl Constr	Sep-08	Sep-09	2,313			2,313				1,349	964							
S.19298.7060 Power Consult Recs Design	Sep-05	Jan-09	1,100			1,100		338	280	275	206							
S.19299.7061 Power System Improv Constr	Jan-07	Jan-09	4,978			4,978			622	2,489	1,867							
S.1830 Support			**603**	**(1)**	**125**	**478**	**21**	**52**	**117**	**97**	**55**	**50**	**50**	**36**				
S.19162.6241 DISC Application	Jun-96	Dec-08	250	(1)	125	125	21	42	30	32								
S.19241.6791 Document Format Conversion	Jun-06	Dec-11	353			353		10	87	65	55	50	50	36				
S.1840 Specialties			**3,300**			**3,300**		**354**	**896**	**762**	**1,288**							
S.19237.6764 Sodium Hypo Tank Repair 1	Jan-06	Aug-06	518			518		259	259									
S.19251.6850 Metals Lab Modification Constr	Jan-07	Jan-08	837			837			280	557								
S.19261.6878 Lab Sample Area Mod-Des	Nov-06	Oct-08	87			87			71	16								
S.19262.6879 Lab Sample Area Mod-Const	Oct-07	Oct-08	377			377				188	189							
S.19276.6965 Gravity Thickener Improv Des	Feb-06	Apr-09	188			188		26	68		94							
S.19277.6966 Gravity Thickener Imp Constr	Apr-08	Apr-09	1,006			1,006					1,006							
S.19302.7075 Clinton Soda Ash Replacement	Jan-06	Jan-07	288			288		70	218									
S.12 Residuals			**64,556**	**8,930**	**65,549**	**(992)**	**(1,667)**										**338**	**337**
S.261 Residuals			**64,556**	**8,930**	**65,549**	**(992)**	**(1,667)**										**338**	**337**
S.25941.5667 Design/RI/CS-Pelletizing 1	Dec-94	Dec-03	9,098	(3)	9,098													
S.25948.5669 Fast-Track Equip. Prepurchase	Aug-94	Jul-95	301		301													
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	4,777		4,746	31	31											
S.26058.6012 Phase 3 Inside Construction	Mar-97	Dec-01	29,778	8,491	32,378	(2,600)	(2,600)											
S.26065.6612 Fire Related Costs	May-99	Oct-99	1,694		1,694													
S.25961.5643 Res. Research	Aug-90	Apr-97	419		419													
S.26059.6083 License Fee	Jan-15	Jan-17	675			675											338	337
S.25968.5831 Royalty Payment	Feb-96	Sep-97	575		575													
S.26066.6615 Legal Services for Sludge Processing	Apr-99	Apr-05	2,771	442	1,869	902	902											
S.26067.6694 Claims	Jul-00	Aug-03																
S.26068.6755 Barge Purchase																		

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S.13 CSO			**755,769**	**45,867**	**251,207**	**504,562**	**54,871**	**55,647**	**63,281**	**97,739**	**110,577**	**51,834**	**20,990**	**17,339**	**6,810**	**11,569**	**11,473**	**2,432**
S.3520 MWRA Managed			**415,974**	**19,268**	**96,664**	**319,310**	**20,748**	**26,840**	**40,640**	**80,477**	**97,366**	**40,232**	**11,491**	**1,509**	**7**			
S.339 North Dorch Bay & Reserve Channel			**231,674**	**1,266**	**14,928**	**216,746**	**3,746**	**8,338**	**33,745**	**66,057**	**71,012**	**22,548**	**9,884**	**1,416**				
S.32660.6220 Design ESDC/Tunnel	Sep-04	Apr-11	24,619	1,266	14,928	9,690	3,746	2,398	747	747	747	747	559					
S.32661.6244 Tunnel Construction (Ch30)	Jun-06	Feb-10	163,315			163,315			29,147	60,708	62,828	10,633						
S.32662.6245 Dewater/Odor Control Constr	Mar-09	May-11	17,818			17,818					2,993	7,270	6,753	802				
S.32726.6993 Tunnel & Facilities CM Services	Sep-05	May-11	19,075			19,075		2,300	3,317	3,889	3,732	3,185	2,037	614				
S.32732.7012 Pleasure Bay Construction	Sep-05	May-06	3,640			3,640		3,640										
S.32733.7013 Design ESDC/Facilities	Oct-06	May-11	3,208			3,208			535	713	713	713	535					
S.354 Hydraulic Relief Projects			**2,295**	**(7)**	**2,295**													
S.32692.6250 Design/CS/RI	Aug-97	Aug-01	558	(7)	558													
S.32669.6252 Construction	Jul-99	Aug-00	1,737		1,737													
S.347 East Boston Branch Sewer Relief			**67,997**	**5,293**	**8,338**	**59,659**	**195**	**834**	**602**	**14,132**	**26,323**	**17,565**	**8**					
S.32673.6256 Design	Mar-00	Aug-10	9,577	955	3,151	6,426	159	647	602	1,150	1,773	2,086	8					
S.32674.6257 East Boston Branch Relief Sewer	Jun-07	Aug-09	44,818			44,818				9,419	19,919	15,480						
S.32716.6790 Boston Paving	Feb-08	Aug-09	50			50					50							
S.32719.6840 East Boston Branch Sewer Rehab	Apr-03	May-04	5,409	4,338	5,187	222	35	187										
S.32720.6841 Sections 38 & 207 Replacement	Dec-07	Mar-09	8,143			8,143				3,563	4,580							
S.348 BOS019 Storage Conduit			**13,650**	**1,156**	**1,605**	**12,045**	**1,436**	**5,889**	**4,691**	**29**								
S.32675.6258 Design	Jul-02	Nov-04	2,054	1,156	1,605	450	450											
S.32677.6260 BOS019 Storage Conduit Constr	Mar-05	Mar-07	10,474			10,474	871	5,361	4,243									
S.32728.7008 Construction Management Services	Apr-05	Mar-07	1,122			1,122	115	529	449	29								
S.349 Chelsea Trunk Sewer			**29,765**	**1**	**29,757**	**8**	**8**											
S.32659.6198 Design/CS/RI	Jun-97	Aug-03	3,637	1	3,629	8	8											
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													
S.350 Union Park Detention Treatment Fac			**45,536**	**11,522**	**17,405**	**28,132**	**15,315**	**11,699**	**1,117**									
S.32681.6264 Design	Dec-99	Apr-06	8,224	1,228	4,839	3,385	1,614	1,375	396									
S.32682.6265 Construction	Mar-03	Apr-06	41,833	11,587	13,859	27,974	15,788	11,607	579									
S.32718.6826 Construction - Park	Apr-03	May-06	500	75	75	425	258		167									
S.32721.6909 BWSC Construction ...	Mar-03	Jan-06	(5,021)	(1,368)	(1,368)	(3,653)	(2,345)	(1,283)	(25)									
S.353 Upgrade Existing CSO Facilities			**22,385**	**36**	**22,337**	**48**	**48**											
S.32647.6123 Design	Jun-96	Oct-02	6,499	36	6,451	48	48											
S.32685.6268 Cottage Farm CSO Facility	Mar-98	Jan-00	4,377		4,377													
S.32686.6269 Prision Point CSO Facility	May-99	Feb-01	3,339		3,339													
S.32693.6496 Comm/Fox Point, Som. Marginal	Nov-99	Aug-01	8,029		8,029													
S.32687.6270 Non-Treated Floatable (Beacon)	Mar-99	Dec-99	124		124													
S.32717.6803 Cottage Farm Programing	Dec-00	Dec-01	17		17													

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S.355 MWR003 Gate & Siphon			**1,848**			**1,848**					**30**	**119**	**1,599**	**93**	**7**			
S.32722.6952 Design	Apr-09	Jan-12	308			308					30	119	136	16	7			
S.32723.6953 Construction	Nov-10	Jan-12	1,540			1,540							1,463	77				
S.357 Charles River CSO Controls			**824**			**824**		**80**	**484**	**259**	**1**							
S.32729.7009 Study																		
S.32730.7010 Design CS/RI	Jan-06	Oct-07	383			383		80	264	39	1							
S.32731.7011 Construction	Mar-07	Oct-07	441			441			221	220								
S.3521 Community Managed			**288,384**	**25,648**	**116,287**	**172,097**	**33,703**	**25,809**	**19,564**	**14,933**	**11,011**	**9,538**	**9,432**	**15,830**	**6,803**	**11,569**	**11,473**	**2,432**
S.340 S. Dorch Bay Sew Separ (Fox Pt.)			**53,091**	**7,900**	**34,095**	**18,996**	**12,424**	**4,753**	**755**	**699**	**361**	**4**						
S.32651.6155 Design	Jun-96	Aug-09	11,200	819	10,086	1,114	311	517	143	87	53	4						
S.32664.6247 Construction	Apr-99	Nov-06	41,891	7,081	24,010	17,881	12,113	4,236	612	612	308							
S.341 S. Dorch Bay Sew Separ (Comm. Pt.)			**62,318**	**6,533**	**33,595**	**28,723**	**10,147**	**6,381**	**7,238**	**4,642**	**311**	**3**						
S.32650.6154 Design	Jun-96	Aug-09	13,269	1,607	11,897	1,372	557	135	400	245	32	3						
S.32665.6248 Construction	Apr-99	Nov-07	49,049	4,926	21,699	27,350	9,590	6,246	6,838	4,397	279							
S.344 Stony Brook Sewer Separation			**44,551**	**8,843**	**24,767**	**19,784**	**8,839**	**9,515**	**1,430**									
S.32667.6395 Design/CS/RI	Jul-98	Apr-07	9,718	1,132	7,869	1,849	828	413	607									
S.32668.6251 Construction	Jul-00	Sep-06	34,833	7,711	16,898	17,935	8,011	9,102	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			**40,407**	**2,372**	**16,306**	**24,101**	**1,111**	**1,269**	**2,466**	**109**	**1,128**	**3,626**	**3,573**	**9,971**	**848**			
S.32654.6161 Design/CS/RI	Jan-97	Jun-13	11,917	1,431	6,695	5,222	1,016	788	1,015	25	321	537	741	703	76			
S.32672.6255 Construction	Jul-98	Dec-12	28,490	941	9,611	18,879	95	481	1,451	84	807	3,089	2,832	9,268	772			
S.351 BWSC Floatables Controls			**933**	**(0)**	**933**	**0**												
S.32657.6168 Design	Dec-98	Dec-02	555		555	0												
S.32683.6266 Construction	Aug-00	Mar-02	378	(0)	378													
S.352 Cambridge Floatables Controls			**2,685**		**377**	**2,308**	**545**	**327**	**646**	**507**	**187**				**96**			
S.32655.6162 Design	Jan-97	Sep-12	403		377	26		6	5	5	5				5			
S.32684.6267 Construction	Oct-02	Sep-12	2,282			2,282	545	321	641	502	182				91			
S.356 Fort Point Channel Sewer Separation			**5,570**			**5,570**	**637**	**2,642**	**2,279**	**12**								
S.32725.6992 Construction	Mar-05	Mar-07	4,478			4,478	140	2,249	2,089									
S.32724.6991 Design	May-04	Mar-08	1,092			1,092	497	393	190	12								
S.358 Morrissey Boulevard Drain			**18,186**			**18,186**		**625**	**3,669**	**6,923**	**6,923**	**46**						
S.32713.6696 Construction	Dec-06	Jun-09	15,253			15,253			3,051	6,101	6,101							
S.32735.7015 Design	Jun-05	Dec-09	2,933			2,933		625	618	822	822	46						
S.359 Reserved Channel Sewer Separation			**54,193**			**54,193**		**60**	**1,081**	**2,041**	**2,101**	**5,859**	**5,859**	**5,859**	**5,859**	**11,569**	**11,473**	**2,432**
S.32727.6994 Construction	May-09	Dec-15	43,268			43,268					832	4,993	4,993	4,993	4,993	10,219	10,219	2,026
S.32734.7014 Design	Jan-07	Jun-16	10,925			10,925		60	1,081	2,041	1,269	866	866	866	866	1,350	1,254	406

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S.324 CSO Support			**51,411**	**952**	**38,256**	**13,155**	**420**	**2,998**	**3,077**	**2,329**	**2,199**	**2,064**	**68**					
S.32400.5790 Technical Assistance	Feb-94	Dec-95	228		228													
S.32407.5970 Tech. Assistance-Geotech			61		61													
S.32401.5791 Planning/EIR	Mar-88	Sep-90	10,769		10,769													
S.32403.5716 Master Planning	Mar-92	Sep-04	22,007	566	21,872	135	105	30										
S.32645.6036 Watershed Planning	Dec-94	Apr-01	877		877													
S.32409.5795 Modeling	May-92	Mar-95	300		300													
S.32411.5767 SOP Program	Jan-94	May-01	1,957		1,957	0	0											
S.32691.6372 System Assessment	May-97	Dec-08	476	23	27	449		156	180	113								
S.32648.6150 Technical Review	Jul-96	Dec-09	794	247	449	344	82	38	56	60	60	48						
S.32658.6169 Land/Easement	Jul-96	Jul-08	13,943	116	1,716	12,227	233	2,774	2,841	2,156	2,139	2,016	68					
S.14 Other			**68,875**	**1,535**	**51,280**	**17,595**	**12,560**	**1,388**	**1,229**	**1,222**	**2,292**	**1,356**	**3,628**	**3,155**	**3,232**	**(4,176)**	**(3,296)**	**(4,994)**
S.128 I/I Local Financial Assistance			**68,594**	**1,468**	**51,002**	**17,592**	**12,557**	**1,388**	**1,229**	**1,222**	**2,292**	**1,356**	**3,628**	**3,155**	**3,232**	**(4,176)**	**(3,296)**	**(4,994)**
S.10232.5300 Community I/I Grants				(119)	5,783	(5,783)	(5,783)											
S.10233.5393 Community I/I Loans				(357)	17,226	(17,226)	(17,226)											
S.10234.5394 Community I/I Loan Repayment				74	(17,181)	17,181	17,181											
S.10273.6084 Grants - Phase II	May-93	May-06	15,938	658	9,480	6,458	6,458											
S.10274.6085 Loans - Phase II	May-93	May-06	47,664	1,974	28,439	19,225	19,225											
S.10282.6170 Repayment - Phase II	May-94	May-11	(47,664)	(5,614)	(23,744)	(23,920)	(18,737)	(1,701)	(1,508)	(1,098)	(476)	(400)						
S.10315.6505 Grants-Phase III				905	11,507	(11,507)	(11,507)											
S.10316.6506 Loans-Phase III				379	14,064	(14,064)	(14,064)											
S.10317.6507 Repayment-Phase III				(418)	(6,910)	6,910	6,910											
S.10368.6736 Grants - Phase IV	Nov-99	May-13	34,650	2,233	6,203	28,447	16,550	1,909	1,800	1,800	1,800	1,350	1,350	1,125	764			
S.10369.6737 Loans - Phase IV	Nov-99	May-13	42,350	2,722	7,581	34,769	20,227	2,333	2,200	2,200	2,200	1,650	1,650	1,375	933			
S.10370.6738 Repayment - Phase IV	Nov-00	May-18	(42,350)	(969)	(1,452)	(40,898)	(10,406)	(4,743)	(4,913)	(4,335)	(3,447)	(3,019)	(2,117)	(1,980)	(1,815)	(1,562)	(1,122)	(1,440)
S.10348.6609 Public Participation	Feb-99	Jun-02	6		6													
S.10407.6925 Grants-Phase V	Aug-04	May-13	18,000			18,000	1,679	1,800	2,025	1,800	1,800	1,800	2,250	2,250	2,597			
S.10408.6926 Loans-Phase V	Aug-04	May-13	22,000			22,000	2,052	2,200	2,475	2,200	2,200	2,200	2,750	2,750	3,174			
S.10409.6927 Repayments-Phase V	Aug-05	May-18	(22,000)			(22,000)		(410)	(850)	(1,345)	(1,785)	(2,225)	(2,255)	(2,365)	(2,420)	(2,615)	(2,175)	(3,554)
S.138 Sewerage System Mapping Upgrade			**281**	**67**	**278**	**3**	**3**											
S.10307.6417 Contract 1-Base Maps	Mar-99	Feb-01	67		67													
S.10308.6418 Contract 2-Existing Data	Jun-99	Apr-04	174	67	171	3	3											
S.10360.6666 Quincy Data Sharing	Jan-00	Dec-02	20		20													
S.10361.6667 Weymouth Data Sharing	Jan-00	Jun-01	20		20													

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S.2 Waterworks System Improvements			**1,867,479**	**100,093**	**1,375,723**	**491,756**	**80,388**	**73,154**	**65,260**	**91,968**	**94,474**	**70,522**	**44,973**	**34,226**	**11,153**	**(4,197)**	**(5,394)**	**(64,770)**
S.16 Drinking Water Quality Improvements			**580,885**	**55,706**	**441,960**	**138,925**	**32,994**	**11,964**	**15,251**	**17,515**	**17,949**	**8,922**	**20,287**	**13,274**	**770**			
S.542 Walnut Hill Water Treatment Plant			**421,705**	**43,852**	**329,874**	**91,831**	**29,029**	**8,992**	**4,105**	**6,195**	**4,646**	**6,026**	**18,793**	**13,274**	**770**			
S.53293.5023 Study 1	Jan-88	Feb-89	444		444													
S.53294.5024 Study 2	Jul-90	Mar-94	2,368		2,368													
S.53375.6182 AWWARF Study	Dec-96	Sep-03	650	67	624	26	26											
S.53376.6206 Emerg Dis Res Water Mgmt Study	Nov-98	Sep-02	1,454	(23)	1,454													
S.53367.6118 Crypto. Inactivation Study	Feb-97	May-00	150		150													
S.53390.6365 Cosgrove Disinfection Ph II	Apr-98	May-99	2,169		2,169													
S.53391.6397 Cosgrove Disinfection Ph I	Jul-97	Oct-97	150		150													
S.53393.6406 Immediate Disinf. MECO	Jul-97	Jul-97	10		10													
S.53392.6401 Distribution Water Consultant	Jul-97	Jun-98	3		3													
S.53304.5157 Permit Fees	Jul-93	Dec-05	59	4	46	13	4	10										
S.53300.5997 Technical Assistance	Jan-88	Jun-00	72		72													
S.53296.5042 EIR/Conceptual Design	Nov-93	Jul-95	5,808		5,800	8	8											
S.53301.5017 Design/CS/RI - Wachusett WTP	Oct-96	Jun-06	49,159	3,888	44,199	4,959	3,171	1,780	8									
S.53377.6207 WHCP1 Wachusett Cosgrove Intakes	Jun-00	Jun-03	15,391	370	15,378	13	13											
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	137,987	28,559	120,029	17,958	16,054	1,904										
S.53416.6491 WHCP6 Late Sitework	Jul-04	Nov-05	3,824	40	40	3,784	2,737	1,048										
S.53426.6650 WHCP7 Existing Facilities Mods	Sep-06	Jan-09	5,000			5,000			1,480	2,220	1,300							
S.53371.6134 Design Management Support	Apr-97	Apr-00	1,730		1,730													
S.53378.6208 Construction Management/RI	Aug-98	Jun-06	31,907	5,662	23,729	8,178	5,733	2,445										
S.53406.6479 Cosgrove Disinf.-Fac. Underwater Imps.	Jan-98	Jun-98	217		217													
S.53410.6485 Community Chlorine Analyzers	Apr-98	Jun-98	49		49													
S.53418.6494 OCIP	Mar-99	Dec-07	5,802	1,055	5,847	(45)	(92)	42	5									
S.53419.6495 Professional Services	Sep-98	Oct-05	2,857	14	2,622	235	157	78										
S.53420.6497 Marlboro MOA	Sep-98	Jun-05	5,859	43	5,859													
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	1,023	243	243											
S.53427.6670 CSX Crossing	Aug-01	Dec-01	65		65													
S.53428.6671 Wachusetts Algae Design CS/RI	Apr-06	Jul-09	450			450		17	208	90	122	13						
S.53432.6691 Public Health Research	Jul-00	Jun-07	2,273	289	987	1,286	286	400	600									
S.53435.6756 Security Equipment	Jun-00	Jun-00	571		571													
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	3,026	212	212											
S.53438.6774 Wachusett UV Treatment Facility Study	May-02	Mar-05																
S.53443.6815 AWWARF-Evaluation Ozone & UV	Jul-01	Jan-04	302	102	302													
S.53445.6827 Fitout/Construction	Oct-03	Dec-08	1,350	13	13	1,337	429	400	350	108	50							
S.53448.6889 Wachusetts Algae ...	Sep-07	Jun-09	1,800			1,800				720	980	100						
S.53450.6923 WH Ultra Violet Dis Des ESDC/RI	Jan-07	Jun-12	9,500			9,500			730	2,192	1,828	713	2,280	1,615	142			
S.53451.6924 WH Ultra Violet Disinfect Cons	Jan-10	Jun-12	34,000			34,000						5,200	16,513	11,659	628			
S.53452.6939 As needed Tech Assistance #1	Jan-06	Dec-07	750			750		187	375	188								
S.53453.6951 Des WH CP7 Existing Fac Mods	Jun-05	Jan-09	1,373			1,373	49	589	255	302	178							
S.53455.6989 As needed Tech Assistance ...	Jan-06	Dec-07	750			750		93	94	375	188							
S.543 Quabbin Water Treatment Plant			**15,419**	**389**	**9,832**	**5,587**	**395**	**55**	**134**	**321**	**640**	**2,549**	**1,494**					
S.53363.6043 Quabbin WTP Des/CA/RI	May-95	Aug-01	3,823		3,823													
S.53382.6212 Construction	Nov-98	Sep-00	5,080		5,080	(0)												
S.53381.6211 Utilities	Aug-98	Sep-09	13		13													
S.53380.6210 Permit Fees	Jan-98	Sep-09	10	1	7	3			1	1	1							
S.53433.6706 Ware Fire Dept. MOA	Oct-99	Jul-00	25		25													
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-06	Jan-11	906			906			133	320	63	245	145					
S.53440.6776 Quabbin UVWTP: Construction	Feb-09	Jan-11	4,229			4,229					576	2,304	1,349					
S.53442.6804 Quabbin UVWTP:Study/Pilot	May-02	Jul-05	1,283	372	835	448	393	55										

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S.544 Norumbega Covered Storage			**107,472**	**11,301**	**100,575**	**6,897**	**3,418**	**2,689**	**58**	**117**	**522**	**93**						
S.53297.5041 Conceptual Design/EIR	Sep-92	Oct-99	2,873		2,861	12	12											
S.53364.6057 Owners Representative	Apr-98	Dec-05	4,636	500	3,917	719	545	174										
S.53383.6213 Design/Build	Nov-99	Aug-05	96,647	10,801	90,760	5,886	2,861	2,500	40	40	445							
S.53372.6145 Land	Mar-97	Dec-97	3,000		3,000													
S.53365.6115 Appraisal	Nov-95	Dec-97	17		17													
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		15	17									
S.53422.6529 Booster Disinfection Design	Jul-07	Jan-10	244			244				76	76	92						
S.545 Blue Hills Covered Storage			**36,056**	**165**	**1,446**	**34,610**	**152**	**228**	**10,954**	**10,881**	**12,140**	**254**						
S.68025.6139 EIR/Preliminary Design/OR	May-97	Jul-09	2,457	165	1,446	1,011	133	200	200	200	200	79						
S.53384.6214 DB Field Oversight	May-06	Jul-09	2,189			2,189			724	655	635	175						
S.53386.6216 Design Build	Jul-06	Apr-09	31,305			31,305			10,000	10,000	11,305							
S.53385.6215 Tech Support/Permit Comp	Apr-02	Dec-07	104			104	20	28	30	26								
S.550 Low Service Storage Near Spot Pond			**233**		**233**	**(0)**												
S.53400.6455 Env Rev	Apr-02	Feb-03	233		233	(0)												
S.53402.6457 Design/Build	Apr-12	Apr-14																
S.53447.6868 Easement/Land Acquisition																		
S.17 Transmission			**751,906**	**9,221**	**628,661**	**123,245**	**8,269**	**27,396**	**8,584**	**22,812**	**26,285**	**21,016**	**4,722**	**3,675**	**436**	**50**		
S.604 MetroWest Tunnel			**703,557**	**7,228**	**621,293**	**82,263**	**4,262**	**6,750**	**2,029**	**18,187**	**21,355**	**20,798**	**4,722**	**3,675**	**436**	**50**		
S.59794.5043 Study	Jun-84	Oct-89	415		415													
S.59796.5048 Construction-Sudbury Pipe Bridge	Nov-91	Jun-92	296		296													
S.59795.5044 Design/EIR - Tunnel/ESDC	Apr-92	Mar-07	37,984	1,032	37,388	596	512	80	4									
S.59798.6054 West Tunnel Segment - CP1	Apr-97	Apr-03	147,787	2,592	144,937	2,850	2,850											
S.60013.6055 Midd.Tunnel Segment - CP2	Jun-96	Apr-03	246,209	366	245,819	390	(10)	400										
S.60015.6059 Shaft 5A - CP3	Aug-97	Aug-98	5,872		5,872													
S.60040.6374 East Tunnel Segment-CP3A	Nov-98	Sep-02	56,054	(31)	56,054													
S.60014.6056 MHD Salt Sheds - CP5	Sep-96	Jun-97	1,314		1,314													
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	3,612	0	0											
S.60029.6203 Loring Road Storage Tanks CP-8	Sep-97	Nov-00	41,368		41,368													
S.59799.5284 Const. Mgmt/Resident Inspect	May-95	Apr-04	39,435	1,202	39,121	314	305	9										
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													
S.60042.6430 Hultman Investigation and Repair	Jun-99	Nov-00	1,604		1,604													
S.60043.6492 Hultman Repair Bands 98-99	Apr-99	Jun-99	116		116	(0)												
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	3										
S.60020.6117 Prof. Services	Nov-95	Dec-03	814	27	724	90	25	50	15									
S.60023.6129 Framingham MOU	May-96	Dec-03	2,539		2,539													
S.60039.6367 Weston MOA	Apr-96	Oct-04	1,018		1,018													
S.60038.6366 Southboro MOA	May-97	Jun-03	322	3	322	(0)												
S.60053.6762 Wayland MOA	Jun-00	Dec-02	107		35	72	72											
S.60017.6063 Local Sup Cont Des/CA/RI	May-96	Oct-99	859		859													
S.60024.6130 Loc. Support Cont. Constr	Jun-97	Dec-03	4,308	110	4,251	56	31	26										
S.60025.6131 Loc. Sup Cont. Legal/Easement	Apr-97	Jun-02	9		9													
S.60018.6067 Community Technical Assistance	Jun-95	Apr-99	297		297													
S.60021.6122 OCIP	Jun-96	May-06	24,515	(782)	23,523	992	194	798										
S.60054.6777 Equipment Prepurchase	Apr-05	Sep-05	500			500	200	300										
S.60058.6856 Hultman Rehab CP9	Sep-05	Jun-06	4,100			4,100		3,850	250									
S.60059.6872 Interim Disinfection	Jan-03	Oct-05	1,261	900	1,163	98	81	17										
S.60066.6911 Design CA/RI CP6	Aug-05	Jul-13	12,900			12,900		1,217	1,460	3,137	3,295	2,738	452	387	164	50		
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					

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S.601 Sluice Gate Rehabilitation			**9,630**	**1,937**	**6,191**	**3,439**	**3,136**	**264**	**38**									
S.59757.5255 Design/CS/RI	Aug-88	Jun-93	177		177													
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	841	457	199	220	38									
S.59760.5258 Construction 2	Sep-03	Sep-05	4,771	1,799	1,799	2,972	2,936	36										
S.59761.5259 Constr-Stop Planks	Dec-88	Jun-89	444		444													
S.60027.6158 Const-Sudbury Toe Drain Repair	Sep-96	Jun-97	1,400		1,400													
S.60049.6681 Public Participation	Jul-99	Sep-05	5			5	1	4										
S.60047.6564 Legal	Jul-99	Sep-05	5	0	0	5	1	4										
INHSE.PLKS Design-Stop Planks																		
S.614 Metropolitan Tunnel Loop																		
S.60035.6273 Feasibility Study	Jan-05	Dec-06																
S.60050.6693 Tunnel Shaft Rehabilitation Project	Apr-09	Dec-10																
S.60052.6710 Design/CA/RI Shaft Rehab	Jun-07	Jun-10																
S.60067.6913 Field Investigations/Fac Plan																		
S.615 Chicopee Valley Aqued. Redundancy			**10,926**	**53**	**876**	**10,050**	**169**	**5,703**	**3,400**	**645**	**132**							
S.60048.6597 Pipeline Redundancy Planning	Sep-98	May-99																
S.60045.6527 Pipeline Redundancy Des/CA/RI	Apr-00	Aug-08	2,383	53	874	1,509	127	550	400	300	132							
S.60046.6528 Pipeline Redundancy Construction	Sep-05	Aug-07	8,345			8,345		5,000	3,000	345								
S.60065.6908 Construction Easements	Apr-03	Oct-06	147		2	146	25	120										
S.60074.7002 Permits	May-04	Jan-06	50			50	17	33										
S.597 Winsor Dam Hydroelectric			**83**		**38**	**45**	**45**											
S.60032.6276 Preliminary Permit Study & Licensing	Nov-97		83		38	45	45											
S.616 Quabbin Transmission System			**6,031**			**6,031**	**597**	**3,375**	**1,653**	**150**	**150**	**106**						
S.75491.6690 Phase 1 Oakdale Valves Const.	Oct-05	May-07	2,300			2,300		1,600	700									
S.60055.6828 Facilities Inspection	Jul-05	Dec-06	1,250			1,250		800	450									
S.75496.6831 Ph 1 Oakdale Valves Study/Des	Apr-04	May-07	1,475			1,475	547	575	353									
S.60068.6940 Ph2 Oakdale Valves Fac Des	Jul-07	Jun-10																
S.60069.6941 Ph2 Oakdale Valves Fac Constr	Jan-09	Jun-10																
S.60075.7007 Equipment Pre-purchase	Feb-05	Jun-10	1,006			1,006	50	400	150	150	150	106						
S.617 Sudbury / Weston Aqueduct Repairs			**3,781**	**3**	**263**	**3,517**	**60**	**3,246**	**212**									
S.75486.6617 Haz Material Sudbury Aqueduct	Apr-99	May-05	300	3	263	37	10	27										
S.60056.6838 Sudbury Aqueduct Inspection	Jun-05	Dec-05	887			887		675	212									
S.60057.6839 Weston Aqueduct Inspection	Jul-06	Jun-07	50			50	50											
S.60076.7016 Sudbury Short-Term Repairs	Oct-05	Jan-06	2,544			2,544		2,544										
S.618 Northern High NW Trans Sect 70-71																		
S.60061.6893 Construction	Mar-16	Nov-22																
S.60062.6894 Design CA/RI	Mar-16	Nov-22																
S.60063.6895 Planning	Mar-13	Mar-14																
S.60064.6896 Easements	Jan-16	Jun-16																
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**		**46**	**554**	**2,950**	**4,538**	**112**						
S.60079.7019 Design	Apr-06	May-09	1,200			1,200		46	554	228	360	12						
S.60080.7020 Construction	Oct-07	May-09	7,000			7,000				2,722	4,178	100						
S.621 Watershed Land			**8,000**			**8,000**		**8,000**										
S.60081.7069 Land Acquisition	Apr-04	Jun-06	8,000			8,000		8,000										
S.622 Cosgrove/Wachusett Redundancy	**Jun-06**	**May-07**	**500**			**500**			**500**									
S.60082.7071 Cosgrove Tunnel Alternative Study	Jun-06	May-07	500			500			500									

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S.18 Distribution And Pumping			**504,856**	**23,819**	**222,430**	**282,426**	**25,452**	**23,778**	**32,432**	**44,441**	**41,805**	**35,236**	**16,313**	**14,436**	**8,962**	**16,244**	**12,825**	**10,503**
S.677 Valve Replacement			**14,710**	**484**	**6,150**	**8,560**	**1,172**	**1,468**	**2,626**	**751**	**1,024**	**1,519**						
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													
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													
S.68080.6346 Construction 5	Mar-04	Jul-05	1,433	360	360	1,073	1,006	67										
S.68126.6435 Construction 6	Mar-06	Sep-07	2,075			2,075		700	1,375									
S.68127.6436 Construction 7	Oct-08	May-10	2,069			2,069					550	1,519						
S.68005.6088 Equip. Purchase	Oct-95	Jun-09	4,036	22	698	3,338	166	700	1,250	750	473							
S.67560.5124 Technical Assistance	Oct-95	May-09	106	1	106													
INHSE.DES1 Design/Phase 1																		
S.68239.6859 Permits	Jan-02	May-09	5	0	0	5	0	1	1	1	1							
S.68240.6860 Easements	Jan-02	May-09	5		5	(0)												
S.712 Cathodic Protection Of Distr.Mains			**1,796**		**141**	**1,655**	**50**	**349**							**50**	**369**	**100**	**737**
S.68002.6058 Planning Phase I	Apr-95	Dec-97	108		108													
S.68128.6437 Test Station Installation 1	Sep-05	Sep-06	399			399	50	349										
S.68129.6438 Test Station Installation 2	May-13	May-14	419			419									50	369		
S.68130.6439 Test Station Installation 3	May-14	May-15	419			419											50	369
S.68131.6440 Test Station Installation 4	May-15	May-16	419			419											50	369
S.68216.6751 Technical Assistance	Jan-00	May-09	33		33	(0)												
S.678 Boston Low Serv.-Pipe & Valve Rehab			**23,839**	**288**	**23,616**	**223**	**160**	**64**										
S.67570.5120 Study - Pipe	Sep-84	Feb-91	297		297													
S.67571.5122 Design/CS	Jul-92	Feb-05	1,752	66	1,556	196	132	64										
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	12,937	27	27											
INHSE.PITS Test Pits																		
INHSE.BEAC Design/CS - Beacon St.																		
S.68217.6769 Technical Assistance	Jun-00	Aug-03	1		1	0												
S.730 Weston Aqueduct Supply Mains (WASMs)			**113,645**	**8,734**	**51,566**	**62,079**	**7,780**	**2,972**	**971**	**2,585**	**4,490**	**10,543**	**5,290**	**5,906**	**7,540**	**2,521**	**2,860**	**8,622**
S.68027.6142 Design/CA/RI-PhA/W1&2	Jun-97	Jul-06	5,374	540	4,500	875	313	400	161									
S.67865.5147 Design/CA/RI - W4	Mar-95	Dec-05	6,149	252	5,673	476	151	325										
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	7,535	3,380	3,638	3,898	2,903	994										
S.68166.6539 Design/CA/RI WASM3	Jan-06	Jan-17	9,250			9,250		375	750	1,175	1,700	1,250	750	750	500	500	500	1,000
S.68167.6540 Design/CA/RI-Phs B/3																		
S.68168.6541 Design/CA/RI-Phs C/3																		
S.68169.6542 Design/CA/RI-Phs D/3																		
S.68170.6543 Waltham WASM 3-CP2	Jan-10	Mar-12	15,616			15,616						8,000	4,500	3,116				
S.68171.6544 Belmont WASM 3 - CP3	Apr-12	Sep-14	11,860			11,860								2,000	7,000	2,000	860	
S.68172.6545 Arlington WASM 3 - CP4	Oct-14	Dec-16	9,122			9,122											1,500	7,622
S.68173.6546 Section 28, Arlington-CP1	Jan-08	Dec-09	3,853			3,853				800	1,900	1,153						
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													
S.68070.6313 Allston WASM 4 & W. Ave. Sewer	Feb-02	Dec-04	17,597	4,298	15,097	2,500	2,500											
S.68032.6176 Construction Meter 103	Oct-96	Jul-98	61		61	0												
S.68071.6314 MDC Const-Bridge Crossing																		
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	174	13	13											
S.68030.6174 Appraisal/Easement	Mar-95	Jan-14	708	118	174	533	133	60	60	60	40	40	40	40	40	21		
INHSE.DES2 Design 2																		
S.68245.6870 Survey	Dec-01	Jul-05	210	79	79	131	33	98										
S.68269.6996 Temporary Water Supply Plan	Jan-08	Jul-09	1,500			1,500				550	850	100						
S.68272.7000 Section PCCP W-12 ...	Sep-04	Jul-05	2,104			2,104	1,483	621										
S.68273.7001 WASM3 SPL12 PCCP Des	May-04	May-06	349			349	250	99										

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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													
S.68195.6618 Technical Assistance	Mar-99	Jan-03	43		43	(0)												
INHSE.DESN Design																		
S.732 Walnut St. & Fisher Hill Pipeline Rehab.			**3,141**	**1**	**1**	**3,141**	**32**	**12**	**2,255**	**838**	**4**	**0**	**0**					
S.68189.6586 Construction Phs. 1	Jul-06	Jan-08	3,083			3,083			2,250	833								
S.68191.6588 Construction Phs. 2	Jul-09	May-11																
S.68220.6779 Technical Assistance	Jan-04	Jul-08	18	1	1	17	1	7	3	3	3							
S.68221.6780 Survey	May-04	May-11	35			35	31	3	0	0	0	0	0					
S.68270.6998 Permits	Jul-04	Jul-09	5			5	0	2	1	1	1							
S.683 Heath Hill Road Pipe Replacement			**20,168**	**520**	**10,007**	**10,161**	**298**	**3,137**	**3,958**	**2,696**	**72**							
S.67639.5192 Design/CS/RI-Sec 52 Ph 1	May-89	Apr-92	218	48	218													
S.68047.6288 Design Sec 52 Ph 2	Sep-02	Oct-08	2,408	471	1,056	1,352	280	750	175	75	72							
S.67645.6042 Const-Sect 52 New	Apr-96	Jun-97	745		745													
S.67642.5194 Construction Section 52 Rehab	Jan-06	Oct-07	8,516			8,516		2,150	3,750	2,616								
S.67640.5206 Design/CS/RI - Sec 58,20	Jan-91	Jan-01	1,595	(1)	1,587	7	7											
S.67643.5102 Construction Sect 58,20,19	Jun-97	Nov-99	6,362		6,362													
S.67644.5985 Technical Assistance	May-89	Jun-08	19		19													
S.68008.6100 Legal/Easements-New	Jan-95	Dec-95	17		17													
S.68048.6289 Legal/Easements Rehab	Mar-02	Oct-07	266	0	2	264	10	230	24									
S.68201.6648 Public Participation	Mar-02	Oct-07	5			5	1	2	2	1								
S.68202.6649 Legal	Mar-02	Oct-07	5			5	1	2	2	1								
S.68241.6862 Boston Paving	Dec-05	Oct-08	12	0	0	12		3	6	3								
S.721 Southern Spine Distribution Mains			**60,167**	**3,615**	**6,813**	**53,355**	**5,796**	**2,108**	**7,010**	**9,760**	**9,954**	**7,243**	**1,831**	**306**		**5,600**	**3,746**	
S.68083.6290 Sec 21,43,22 Design	Sep-00	Mar-12	8,076	650	3,436	4,640	693	800	1,000	750	650	350	250	147				
S.68084.6291 Sec 21,43,22 Easements	Mar-02	Feb-09	160	68	68	92	8	30	20	20	14							
S.68085.6292 Section 22 South Construction	Jul-03	Jun-05	5,159	2,217	2,217	2,942	2,853	89										
S.68086.6293 Sec 19 Design		Nov-14																
S.68087.6294 Sec 19 Easements																		
S.68088.6295 Sec 19 Construction																		
S.68089.6296 Sec 20 & 58 Design	Jan-07	May-12	1,986			1,986			450	450	450	350	150	136				
S.68090.6297 Sec 20 & 58 Easements	Sep-08	Aug-09	43			43					25	18						
S.68091.6298 Sec 20 & 58 Construction	Sep-13	May-15	9,346			9,346										5,600	3,746	
S.68122.6396 Adams Street Bridge	Jul-98	Dec-99	154		154													
S.68193.6601 Southern High Public Part	Oct-98	May-99	15		15													
S.68194.6602 Southern High Ext Study	Sep-98	May-99	242		242													
S.68228.6787 Boston Paving	Jul-03	Mar-12	242	3	3	239	5	40	40	40	40	25	25	24				
S.68235.6844 Section 22 North Construction	Feb-09	Mar-11	11,406			11,406					3,500	6,500	1,406					
S.68236.6845 Sections 21&43 Construction	Feb-06	Dec-08	20,374			20,374		1,100	5,500	8,500	5,274							
S.68237.6846 Legal			5	0	0	5	5											
S.68238.6847 Technical Assistance			2	0	0	2	2											
S.68246.6871 MHD Neponset River Bridge																		
S.68247.6885 Contract 1A Construction	Nov-03	Jun-05	2,957	677	677	2,280	2,231	49										
S.714 South. Extra High Sects 41,42 & 74			**3,578**	**977**	**3,536**	**42**	**42**											
S.68014.6107 Design/CA/RI	Apr-97	Jan-05	763	17	722	42	42											
S.68049.6299 Easements	Apr-97	Jun-03	46		46													
S.68050.6300 Construction	Dec-00	Sep-03	2,345	537	2,345	(0)												
S.68183.6561 Boston Paving	Sep-98	Oct-02	423	423	423	(0)												
S.68184.6562 Public Participation	Jul-99	Oct-02																
S.68185.6563 Legal	Jul-99	Oct-02	0		0	(0)												
S.727 SEH Redundancy & Storage																		
S.53397.6452 Concept Plan/Prelim Des/Env Rev																		
S.53398.6453 SEH Storage Final Des/CS/RI	Jan-08	Dec-12																
S.53399.6454 SEH Storage Construction	Jul-11	Dec-12																
S.68135.6444 SEH Red Loop Final Des/CA/RI	Jul-08	Mar-16																
S.68136.6445 SEH Redund Loop Construction	Dec-12	Mar-16																

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S.719 Chestnut Hill Connecting Mains			**17,975**	**1,224**	**16,962**	**1,013**	**389**	**506**	**69**	**49**								
S.68026.6141 Des/CA/RI PS Potable Connection	Mar-00	Dec-04	1,403	235	1,299	104	104											
S.68051.6301 Preliminary Engineering	Dec-04	Nov-05	613			613	174	438										
S.68157.6503 Design/CA/RI - Emer. Pump Relocation	May-98	May-01	1,121	25	1,121													
S.68052.6302 Construction- Chp 149																		
S.68155.6501 Const - Emer. Pump Relocation	Feb-99	Mar-01	6,502		6,502	0	0											
S.68053.6303 Easements	Apr-03	Dec-07	131		81	50	3	18	15	14								
S.68180.6558 Boston Paving	Jul-99	Dec-07	313	133	133	180	50	50	50	30								
S.68181.6559 Public Participation	Jul-99	Jun-08	5			5			3	3								
S.68182.6560 Legal	Jul-99	Jun-08	5	0	1	4			2	2								
S.68199.6623 BECO Emergency Pump Construction	Sep-99	Jun-00	431		431													
S.68203.6651 Const.- Pump Station Potable Connection	Apr-02	Dec-03	7,132	831	7,125	7	7											
S.68218.6770 Shaft 7 & Meter 120 Des/CA/RI	Dec-01	Dec-03																
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													
S.68244.6869 Utilities	Jun-02	Aug-02	70		44	26	26											
S.68267.6982 Construction-Chp 30																		
S.68268.6995 Final Design CA/RI																		
S.704 Rehab of Other Pumping Stations			**27,785**	**144**	**3,819**	**23,966**	**392**	**944**	**4,527**	**8,027**	**6,521**	**3,211**	**344**					
S.67885.5153 Preliminary Design	Aug-94	Mar-96	351		351													
S.68017.6110 Design/CS/RI	May-97	Nov-04	2,691	144	2,671	20	20											
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	19,779			19,779			3,500	7,500	6,000	2,779						
S.68178.6556 Public Participation	Jul-99	Jan-10	5			5	1	2	1	1	1	0						
S.68179.6557 Legal	Jul-99	Jan-10	5			5	1	2	1	1	1	0						
S.68204.6676 Proprietary Equipment Purchases	Jun-99	Jan-10	285		158	127	10	40	25	25	20	7						
S.68266.6980 Design 2 CS/RI	Dec-04	Nov-10	4,030			4,030	361	900	1,000	500	500	425	344					
S.722 NIH Redundancy & Covered Storage			**6,943**			**6,943**		**4**	**56**	**943**	**205**	**303**	**2,306**	**3,021**	**106**			
S.68093.6306 Easements	Jul-07	Apr-12	300			300			50	50	50	50	50	50				
INHSE.DSCS Design/CS/RI Sec 29A																		
S.53454.6954 Concept Plan	Jul-07	Jul-08	887			887				887								
S.68276.7026 Sec 89 & Sec 29 Rehab Constr	Apr-10	May-12	4,727			4,727							2,006	2,721				
S.68277.7045 Design CA/RI Sec 89/29 Rehab	Apr-08	Apr-12	1,006			1,006					150	250	250	250	106			
S.68278.7047 Permits	Jan-06	Nov-09	5			5		1	2	2	1							
S.68279.7048 Technical Assistance	Jan-06	Nov-09	18			18		3	4	4	4	3						
S.68282.7066 Sec 89&29 Redundancy Constr																		
S.68283.7067 NIH Storage Fin Des/CS/RI	Jan-14	Dec-19																
S.68284.7068 NIH Storage Construction	Jan-17	Dec-19																
S.689 James L. Gillis Pump Station Rehab.			**34,146**	**166**	**33,275**	**871**	**78**	**172**	**619**	**2**								
S.67701.5249 Pump	Aug-86	Aug-86	70		70													
S.67702.5076 Electrical Upgrade	May-84	Sep-87	200		200													
S.67709.5074 Construction Diesel Exhaust	Apr-88	Dec-88	60		60													
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													
S.67708.5051 Const-P.S.-Ph2	May-95	Dec-98	12,890		12,890													
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													
S.67717.5050 Drain Line Cleaning	Nov-92	Jan-93	268		268													
S.67704.5072 Design/CS/RI-Suction Pipe	Jul-90	Apr-01	1,379	16	1,364	16	16											
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													

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S.68105.6378 Woodland Road Pavement Improvements	Aug-99	Jun-04	396		396													
S.67994.6030 Pavement Highland Ave	Oct-94	Nov-94	86		86													
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													
S.67714.5983 Technical Assistance	May-84	Dec-95	163		163													
S.67718.5053 Environ Assess & Remedial Plan	Oct-94	Sep-07	634	18	401	233	58	160	15									
S.68055.6308 Remedial Action Plan	Feb-07	Apr-07	600		0	600			600									
S.67991.6027 DEP Review Fees	Jul-94	Dec-07	30	0	7	23	4	12	4	2								
INHSE.DIES Design-Diesel Exhaust																		
INHSE.DISC Design-Rehabilitation Discharg																		
INHSE.SEWR Design-Sewer																		
S.713 Spot Pond Supply Mains - Rehab			**60,952**	**7,298**	**31,386**	**29,566**	**8,688**	**10,580**	**4,697**	**4,739**	**728**	**133**						
S.68038.6223 Prelim Design & Design/CA/RI	Sep-98	Apr-08	10,874	1,317	9,093	1,781	794	690	250	47								
S.68059.6316 Easements/Paving CP1	May-00	Mar-02	143		143													
S.68106.6379 Easements CP2	May-02	Jun-06	141	34	49	91	15	60	16									
S.68107.6380 Easements CP3	Apr-04	Nov-07	243	1	1	242	20	80	75	67								
S.68151.6476 Easements CP4	Sep-06	May-09	1		1													
S.68060.6317 North (Medford/Melrose)	May-00	Jan-02	6,597		6,597													
S.68108.6381 Middle (Medford/Somerville)	May-02	Jun-06	21,390	5,946	12,952	8,438	4,702	3,250	486									
S.68109.6382 South (Cambridge/Boston)	Oct-04	Apr-08	16,777			16,777	2,971	6,250	3,500	4,056								
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	876			876				250	500	126						
S.68153.6483 Early Valve Equip. Purchase	May-98	Nov-01	161		161													
S.68223.6782 Construction CP-5 Sec 66 & OMM30	Jul-07	Jul-10																
S.68224.6783 Plan/Des CA/RI Sec 66 OMM30	Jul-05	Jul-11																
S.68225.6784 Easements CP-5	Jan-06	Dec-09	72			72		10	20	20	15	7						
S.68226.6785 Sewer Design/CA/RI & Sect 57 Des	Jul-08	Jul-14																
S.68227.6786 Riverside Ave Sewer Repair & Sect 57	Jul-10	Jul-13																
S.68274.7003 CA/RI CP3	Sep-04	Apr-08	1,289			1,289	186	240	350	300	213							
S.723 Nor Low Service Rehab Secs. 8			**14,581**			**14,581**	**0**	**1**	**21**	**1,241**	**821**	**2,501**	**6,421**	**3,577**				
S.68094.6321 Sec 8 Survey	Nov-06	Aug-08	80			80			20	40	20							
S.68095.6322 Sec 8 Construction	Aug-09	Aug-11	9,296			9,296						2,500	4,500	2,296				
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	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 ...			**49,267**	**355**	**3,405**	**45,862**	**531**	**1,230**	**1,084**	**10,516**	**17,325**	**9,771**	**115**	**1,615**	**1,261**	**1,500**	**914**	
S.68035.6199 Watertown MOU	Jun-94	Sep-97	167		167													
S.67846.5163 Routing Study	Aug-94	Nov-96	397		397	(0)												
S.68110.6383 Design/CA/RI DP1	Sep-98	Dec-09	5,310	41	2,331	2,980	317	800	575	575	400	312						
S.68118.6391 Revised N. Segment (CP1A) New 48"	Mar-07	Dec-09	24,076			24,076				5,250	10,340	8,486						
S.68114.6387 Easements CP1 A&B	Jan-06	Oct-06	90	17	17	73		30	43									
S.68111.6384 Des/CA/RI DP2/4 Meter 120	Aug-02	Jun-09	2,943	297	493	2,450	214	400	400	470	800	166						
S.68174.6548 Constr CP2 C&L Sec 59&60	Nov-12	Sep-14	2,964			2,964									550	1,500	914	
S.68175.6547 Easements CP2	May-11	Nov-12	41			41							15	15	11			
S.68119.6392 South Segment (CP3)	Feb-08	Jun-09	4,957			4,957				750	3,500	707						
S.68115.6388 Easements CP3	Mar-07	Aug-07	63			63			20	43								
S.68112.6385 Design/CA/RI DP3																		
S.68121.6394 Northeast Segment (CP5)	Oct-07	Jun-09	5,713			5,713				3,428	2,285							
S.68117.6390 Easements CP5	Dec-06	Jun-07	46			46			46									
S.68242.6863 Belmont & Watertown MOA	Sep-02	Apr-06																
S.68243.6864 N. Seg (CP1B) C&L Watertown Sect	Aug-07	Aug-09																
S.68255.6955 Repl of Sect 25-Design CA/RI	Jul-09	Nov-12	400			400						100	100	100	100			
S.68256.6956 Repl of Sect 25-Construction	Jul-11	Nov-12	2,100			2,100								1,500	600			
S.706 NHS - Con. Mains from Sec. 91			**2,342**	**(59)**	**2,342**													
S.67930.5165 Design/CA/RI	Jun-95	Oct-01	711	31	711													
S.68076.6331 Easements	Sep-99	Oct-01																
S.68077.6332 Construction	Nov-00	Jun-02	1,631	(90)	1,631													
S.692 NHS - Section 27 Improvements			**2,554**		**124**	**2,430**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**11**	**5**	**1,755**	**655**	
S.67769.6333 Construction Sect 27	Sep-13	Mar-15	2,429		27	2,403										1,750	653	
S.68192.6589 Easements	Apr-12	Mar-15	23			23								10	5	5	3	
S.68211.6712 Technical Assistance	Oct-99	Mar-12	64		60	5	0	1	1	1	1	1	1	1				
S.68229.6809 Surveying	Jun-01	Dec-01	37		37													

Massachusetts Water Resources Authority

Waterworks System Improvements

Capital Expenditure Forecast: FY2006-2015

(000's)

	NTP	SC	Total Budget Amount	Year 04 Actuals	Actuals Thru FY04	Remaining Balance 6/30/04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Beyond FY 15
S.693 NHS - Revere & Malden Pipeline Impr			**32,917**		**23,854**	**9,063**	**4**	**17**	**2,778**	**833**	**1**	**0**	**0**			**2,750**	**2,300**	**379**
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													
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													
S.67792.5238 Construction - Linden Square	Apr-91	Nov-91	1,849		1,849													
S.67793.5239 Construction Admin.-Linden Squar	Apr-91	Nov-91	125		125													
S.67784.5177 Const-Revere Sect 53	Jul-06	Sep-07	3,572			3,572			2,750	822								
S.68078.6334 Easements Revere 53	Sep-02	Dec-06	27			27	4	16	7									
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													
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													
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										2,500	1,500	229
S.67791.5986 Technical Assistance	Jul-06	Apr-08	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																		
S.68258.6958 Shaft 9A-D Ext Construction	Apr-14	Nov-15	1,200			1,200										250	800	150
S.68265.6978 Survey	Jul-06	Apr-08	30			30			20	10								
S.68280.7049 Permits	Apr-05	Nov-10	5			5	0	1	1	1	1	0	0					
S.733 NHS Pipeline Rehab 13-18 & 48																		
S.68212.6717 Planning/EIR	Nov-12	Apr-14																
S.68213.6718 Design/CA/RI	Apr-15	Nov-19																
S.68214.6719 Construction	Jan-18	Nov-19																
S.68259.6959 Rehab of Sect 33,49,49A,Des	Apr-12	Nov-19																
S.68260.6960 Rehab of Sect 33,49,49A, Const	Jan-15	Nov-18																
S.731 Lynnfield Pipeline			**4,000**			**4,000**		**150**	**1,750**	**1,450**	**650**							
INHSE.DELP Design																		
S.68187.6584 Construction	Sep-07	Nov-08	3,000			3,000			1,200	1,250	550							
S.68196.6619 Easem/Legal/License/Permits	Apr-06	Apr-07	200			200		50	150									
S.68251.6905 Design CA/RI	Apr-06	Jul-09	800			800		100	400	200	100							
S.708 Nor Extra High Serv - New Pipelines			**8,458**	**69**	**3,632**	**4,825**	**2**	**12**	**11**	**11**	**11**	**10**	**5**			**1,750**	**2,250**	**764**
S.67970.5242 Design/CA/RI	Sep-94	Jun-01	588	69	588													
S.67971.6339 Appraisal-Easement	Sep-94	Jun-01	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	4,764			4,764										1,750	2,250	764
S.68010.6099 Regulatory Compliance	Nov-95	Oct-00	0		0													
S.68208.6692 Section 83 Drop Hole Repairs																		
S.68176.6554 Public Participation	Jul-99	Nov-11	5			5						3	3					
S.68177.6555 Legal	Jul-99	Nov-11	5			5						3	3					
S.68210.6707 Technical Assistance	Mar-04	Nov-10	54		8	46	2	10	10	10	10	5						
S.68215.6749 PLC Equipment Purchases	Dec-99	Dec-00	4		4	(0)												
S.68281.7050 Permits	Nov-05	Nov-10	5			5	0	2	1	1	1	0	0					
S.725 Hydraulic Model Update			**686**	**0**	**598**	**88**	**38**	**50**										
S.68101.6342 Hydraulic Model Update	Jun-99	Dec-02	563	0	563	0	0											
S.68165.6531 Model Enhancement Support Services	Jul-00	Jun-06	123		35	88	38	50										

Massachusetts Water Resources Authority

Waterworks System Improvements

Capital Expenditure Forecast: FY2006-2015

(000's)

	NTP	SC	Total Budget Amount	Year 04 Actuals	Actuals Thru FY04	Remaining Balance 6/30/04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Beyond FY 15
S.19 Other			**29,832**	**11,347**	**82,671**	**(52,840)**	**13,673**	**10,017**	**8,993**	**7,200**	**8,435**	**5,348**	**3,651**	**2,841**	**985**	**(20,491)**	**(18,219)**	**(75,273)**
S.753 Central Monitoring System			**16,143**	**598**	**15,456**	**687**	**172**	**130**	**98**	**150**	**110**	**26**						
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	1,613	588	74	130	98	150	110	26						
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.75487.6652 Permits Monitoring & Control Comm Net	Dec-99																	
S.75488.6653 Microwave Comm System-Wide Backbone	Sep-01	Jun-02	1,694		1,694													
S.75489.6654 Study & Design Monitoring & Control	Dec-99	Sep-04	1,858	272	1,778	80	80											
INHSE.OPER Design - Operations Center																		
S.75494.6816 Microwave Comm for Waterworks Facil	Sep-02	Jul-04	1,957	318	1,939	18	18											
S.75495.6825 Ludlow Communications	Sep-01	Oct-01	41		41													
S.763 Distribution Systems Facs. Mapping			**2,232**		**1,030**	**1,203**	**7**		**434**	**434**	**328**							
S.75458.5162 Planning Design	Feb-95	Dec-98	936		930	7	7											
S.75476.6152 Data Purchase	Nov-95	Aug-96	100		100													
S.75484.6525 Records Development	Jul-06	Dec-08	1,196			1,196			434	434	328							
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													
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													
S.765 Local Water Pipeline Imp. Loan Program				**13,153**	**58,698**	**(58,698)**	**13,249**	**9,886**	**8,461**	**6,541**	**7,421**	**5,221**	**3,021**	**2,318**	**984**	**(20,491)**	**(18,626)**	**(76,682)**
S.75485.6608 Community Loans	Aug-00	Jun-13	254,800	18,647	68,538	186,262	20,103	18,750	19,200	19,200	22,000	22,000	22,000	22,000	21,009			
S.75493.6759 Community Repayment	Aug-01	Jun-23	(254,800)	(5,494)	(9,840)	(244,960)	(6,854)	(8,864)	(10,739)	(12,659)	(14,579)	(16,779)	(18,979)	(19,682)	(20,025)	(20,491)	(18,626)	(76,682)
S.766 Waterworks Facility Asset Protection			**3,969**			**3,969**	**245**	**1**		**75**	**576**	**101**	**630**	**523**	**1**		**407**	**1,409**
S.75490.6689 Meter Vault Manhole Retrofits	Sep-14	Jun-17	1,336			1,336											407	929
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	237			237	237											
S.75502.6920 Permits/Legal Fees	Mar-04	Mar-12	15			15	8	1			1	1	1	2	1			
S.75506.7023 Design Cosgrove Turbine Isolation	Jul-15	Dec-17	480			480												480
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							

Massachusetts Water Resources Authority

Business and Operations Support

Capital Expenditure Forecast: FY2006-2015

(000's)

	NTP	SC	Total Budget Amount	Year 04 Actuals	Actuals Thru FY04	Remaining Balance 6/30/04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Beyond FY 15
S.3 Business & Operations Support			**60,709**	**1,761**	**32,362**	**28,347**	**4,496**	**9,493**	**7,412**	**2,152**	**1,678**	**790**	**779**	**797**	**750**			
S.933 Capital Maintenance Planning/Development			**8,880**	**206**	**2,380**	**6,500**	**376**	**750**	**875**	**750**	**750**	**750**	**750**	**750**	**750**			
S.19175.6421 Inventory & Evaluation-1&2	Apr-00	Jul-05	2,568	206	2,380	188	188											
S.19192.6593 Facilities Asset Mgmt Phase 3																		
S.92387.6976 As-needed Design Contract 1	Feb-05	Feb-07	750			750	94	375	281									
S.92393.6988 As Needed Des/TA Contract	Feb-05	Feb-07	750			750	94	375	281									
S.92399.7070 Long-Term As-Needed Design	Jan-07	Jun-13	4,812			4,812			312	750	750	750	750	750	750			
S.881 Equipment Purchase			**8,961**	**593**	**1,351**	**7,610**	**2,068**	**4,440**	**1,102**									
S.92367.6732 TV Inspection Truck	Jul-00	Mar-01	175		175													
S.92374.6760 Security Equip & Installation	Jan-01	Dec-02	6,112	479	712	5,400	998	3,300	1,102									
S.92379.6808 ICP-MS Lab Testing Equip	Jan-02	Mar-02	150			150	150											
S.92381.6866 Back Hoe	Apr-03	Jun-04	130		130													
S.92382.6867 Vactor Truck	Apr-03	Jun-03	220		220													
S.92383.6907 Water Service Truck	Apr-04	Jun-04	114	114	114													
S.92384.6944 Bucket Machine	Oct-04	Dec-04	137			137	137											
S.92385.6945 Excavator	Apr-06	Jun-06	250			250		250										
S.92386.6946 Grove Crane	Oct-04	Dec-04	250			250	250											
S.92388.6981 Land Fill Loader	Oct-04	Dec-04	280			280	280											
S.92392.6986 PowerSweeper/Catch Basin ...	Apr-04	Jun-04	155			155	155											
S.92394.6990 Back Hoe (WRA385)	Oct-04	Dec-04	98			98	98											
S.92395.7027 Closed Circuit TV Insp Truck	Jan-06	Mar-06	200			200		200										
S.92396.7028 Front-End Loader	Jul-05	Mar-06	390			390		390										
S.92400.7074 Crane (WRA-185)	Apr-06	Jun-06	300			300		300										
S.930 MWRA Facility - Chelsea			**10,227**	**578**	**9,130**	**1,096**	**1,021**	**75**										
S.92321.5052 Planning	Jan-95	Jun-97	30		30	0	0											
S.92320.5886 Conceptual Design	Sep-97	Dec-98	49		49													
S.92360.6603 Negotiating Support	Jul-98	Dec-98																
S.92354.6510 Design Review	Sep-99	Mar-05	379	11	341	38	38											
S.92355.6511 Fitout - Office Furnish/Equip	Feb-01	Jun-04	644	18	644	(0)												
S.92356.6512 Inform./Telecom. Consultant	Aug-00	Jun-01	382		382	(0)												
S.92357.6513 Existing Facility "Button Up"	Dec-01	Jun-05	380	3	376	4	4											
S.92358.6514 Moving Expense	Dec-01	Jun-04	362	8	362	0												
S.92362.6624 Legal	Mar-99	Dec-99	14		14													
S.92363.6713 Moving Expenses CNY	Mar-01	Jun-01	237		237	0												
S.92364.6714 CNY Retrofit	Jul-00	Jun-01	1,577		1,566	11	11											
S.92365.6715 MIS Network	Mar-01	Jun-06	1,639	525	1,411	227	152	75										
S.92366.6716 Fitout - All Other	Feb-01	Jun-06	4,507	14	3,717	790	790											
S.92375.6757 Communication Tower	Jul-01	Dec-01	25			25	25											
S.92373.6758 Technical Assistance	Jul-00	Jan-02																
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								

Massachusetts Water Resources Authority

Business and Operations Support

Capital Expenditure Forecast: FY2006-2015
(000's)

	NTP	SC	Total Budget Amount	Year 04 Actuals	Actuals Thru FY04	Remaining Balance 6/30/04	Year 05	Year 06	Year 07	Year 08	Year 09	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Beyond FY 15
S.931 Business Systems Plan			**25,157**	**261**	**18,240**	**6,917**	**622**	**2,425**	**3,344**	**300**	**226**							
S.92338.6014 Phase I (FY95-97)	Jul-94	Mar-03	1,146		1,146													
S.92339.6013 Hardware-Phase I	Jul-94	Dec-96	441		441													
S.92322.6015 Network-Phase I	Jul-94	Dec-96	142		142													
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)	10,806	0	0											
S.92352.6508 Phase IV / Year 2000 Imp.	Jul-98	Jan-00	3,051		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	367	1,973	622	525	826									
S.932 Environmental Remediation			**1,903**	**122**	**1,261**	**642**	**66**	**145**	**212**	**52**	**52**	**40**	**29**	**47**				
S.92368.6741 FRSA Hazardous Materials																		
S.92369.6745 Tech Asst./ Env. Remediation	Feb-99	Jun-07	512	105	465	47	47											
S.92370.6746 Prision Point Tank Removal - Const.	Feb-99	Aug-99	882	17	326	556	18	106	212	52	52	40	29	47				
S.92371.6747 Cottage Farm Tank Replace - Const	Jun-02	Dec-02	428		428													
S.92372.6748 Chelsea Creek Tank Removal	May-02	Nov-02																
S.92376.6805 Oakdale Power Station	Sep-03	Dec-04	73		33	40		40										
S.92377.6806 Cosgrove Power Station			8		8													
S.92378.6807 Design/CS/Cosgrove P.S.	Nov-00	Jun-03																
S.934 MWRA Facilities Management & Planning			**3,931**			**3,931**	**343**	**1,108**	**1,330**	**500**	**650**							
S.92389.6983 Design/Engineering Services	Mar-05	Jun-08	763			763	343	90	330									
S.92390.6984 Facilities Construction	Apr-05	Jun-09	3,168			3,168		1,018	1,000	500	650							
S.92391.6985 Facilities Fitout																		

MASSACHUSETTS WATER RESOURCES AUTHORITY
CONTINGENCY FUND FORECAST FY2006 - 2015
($000)

	Total Contingency Budget FY06-15	Q1 FY2006	Q2 FY2006	Q3 FY2006	Q4 FY2006	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015
Wastewater System Improvements															
FY2006	8,519	2,285	2,245	2,212	1,776	8,519									
FY2007	11,370						11,370								
FY2008	15,391							15,391							
FY2009	16,493								16,493						
FY2010	6,185									6,185					
FY2011	2,005										2,005				
FY2012	1,377											1,377			
FY2013	1,447												1,447		
FY2014	2,293													2,293	
FY2015	2,225														2,225
Total Wastewater System Improvements	**$67,306**	**$2,285**	**$2,245**	**$2,212**	**$1,776**	**$8,519**	**$11,370**	**$15,391**	**$16,493**	**$6,185**	**$2,005**	**$1,377**	**$1,447**	**$2,293**	**$2,225**
Waterworks System Improvements															
FY2006	6,293	1,412	1,705	1,281	1,896	6,293									
FY2007	5,580						5,580								
FY2008	8,458							8,458							
FY2009	8,662								8,662						
FY2010	6,522									6,522					
FY2011	4,189										4,189				
FY2012	3,183											3,183			
FY2013	1,015												1,015		
FY2014	1,629													1,629	
FY2015	1,323														1,323
Total Waterworks System Improvements	**$46,854**	**$1,412**	**$1,705**	**$1,281**	**$1,896**	**$6,293**	**$5,580**	**$8,458**	**$8,662**	**$6,522**	**$4,189**	**$3,183**	**$1,015**	**$1,629**	**$1,323**
Business & Operations Support	**$2,155**	**$191**	**$255**	**$235**	**$176**	**$857**	**$658**	**$160**	**$168**	**$79**	**$78**	**$80**	**$75**	**$0**	**$0**
Total MWRA	**$116,314**	**$3,888**	**$4,205**	**$3,727**	**$3,848**	**$15,668**	**$17,608**	**$24,009**	**$25,323**	**$12,786**	**$6,272**	**$4,640**	**$2,538**	**$3,922**	**$3,548**

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. FY05	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.102 Quincy Pump Facilities	**26,152**	**26,152**	**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.10027.5404 Design/CS/RI1	5,089	5,089	Complete	100.0%		
S.10028.5405 Squantum P.S. Construction	4,447	4,447	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.10388.6810 Const Corrosion Mitigation	1,079	1,079	Complete	100.0%		
S.104 Braintree-Weymouth Relief Facilities	**215,271**	**195,113**	**90.6%**	**90.6%**		
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.10001.5333 Geotechnical - Marine	443	443	Complete	100.0%		
S.10047.5313 Design 1/CS/RI	18,991	18,785	Complete	98.9%		
S.10251.6016 Sedimentation Testing	96	96	Complete	100.0%		
S.10058.5331 Design 2/CS/RI	15,265	10,983	71.9%	71.9%		Apr-08
S.10048.5314 Land Acquisition	3,630	3,630	Complete	100.0%		
S.10049.5315 Tunnel Construction/Rescue	84,613	84,213	Complete	99.5%		
S.10050.5316 Intermediate P.S. Construction	47,208	46,730	Complete	99.0%		
S.10051.5303 No. Weymouth Relief Interceptor	4,705	4,705	Complete	100.0%		
S.10052.5373 HDD Siphon Construction	16,357	16,133	Complete	98.6%		
S.10054.5375 B-W Replacement Pump Station	15,851	1,780	11.2%	11.2%		Apr-07
S.10302.6368 Mill Cove Siphon Construction	2,749	2,749	Complete	100.0%		
S.10056.5309 Construction - Rehab	255	255	Complete	100.0%		
S.10263.6072 Legal	400	65	16.3%	16.3%		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.10378.6792 IPS/RPS Communication System	300	144	48.0%	48.0%		Apr-07
S.105 New Neponset Valley Relief Sewer	**30,302**	**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.10073.5952 Technical Assistance	189	189	Complete	100.0%		

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.131 Upper Neponset Valley Sewer System	**50,160**	**5,267**	**10.5%**	**10.5%**		
S.10256.6031 Design/CS/RI	4,234	3,007	71.0%	71.0%		Apr-09
S.10290.6191 Replace Sewer Sections 685-686	35,779	675	1.9%	1.9%		Apr-08
S.10352.6629 Replacement Sewer Section 687	5,889	0	Future	0.0%	Jul-06	
S.10439.7072 Resident Engineering/Inspection	2,347	250	10.7%	10.7%		Aug-08
S.10311.6450 Land Acquisition	1,520	1,308	86.1%	86.1%		Jul-06
S.10393.6830 Boston Paving	376	25	6.6%	6.6%		Nov-07
S.106 Wellesley Ext Replacement Sewer	**64,768**	**64,359**	**Complete**	**99.4%**		
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	3,497	3,097	88.6%	88.6%		Jul-07
S.10082.5348 Consultant-Needham	171	171	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	230	225	97.8%	97.8%		Dec-12
S.10093.5953 Technical Assistance	193	193	Complete	100.0%		
S.107 Framingham Extension Relief Sewer	**48,014**	**48,014**	**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	5,889	5,889	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	167	167	Complete	100.0%		
S.127 Cummingsville Replacement Sewer	**8,270**	**1,781**	**21.5%**	**21.5%**		
S.10217.5826 Facilities Plan/EIR	602	602	Complete	100.0%		
S.10275.6092 Design/CS/RI	2,300	1,140	49.6%	49.6%		Sep-07
S.10285.6186 Cummingsville Branch Sew Const	4,242	0	Future	0.0%	Mar-05	
S.10284.6185 Land Acquisition	102	31	30.4%	30.4%		Sep-06
S.10403.6916 Siphon Modifications	1,012	0	Future	0.0%	Feb-06	
S.130 Siphon Structure Rehabilitation	**940**	**940**	**Complete**	**100.0%**		
S.10253.6017 Planning	938	938	Complete	100.0%		
S.132 Corrosion & Odor Control	**3,315**	**3,172**	**95.7%**	**95.7%**		
S.10279.6137 Planning/Study	587	587	Complete	100.0%		
S.10327.6553 Design/CS/RI	2,100	1,957	93.2%	93.2%		Jun-05
S.10373.6743 Interim Corrosion Control	622	622	Complete	100.0%		

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	**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.10331.6568 Land Acquisition	440	440	Complete	100.0%		
S.137 Wastewater Central Monitoring	**15,616**	**2,397**	**15.3%**	**15.3%**		
S.10301.6232 Planning	563	563	Complete	100.0%		
S.10319.6532 Design and Integration Services	5,735	1,834	32.0%	32.0%		Nov-08
S.10320.6533 Construction 1 (CP1)	5,711	0	Future	0.0%	Dec-05	
S.10321.6534 Construction 2 (CP2)	3,176	0	Future	0.0%	Aug-06	
S.10357.6657 Construction 3 (CP3)	351	0	Future	0.0%	Aug-07	
S.139 South System Relief Project	**4,945**	**3,441**	**69.6%**	**69.6%**		
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.10346.6596 Cleaning Outfall 023	1,098	1,098	Complete	100.0%		
S.10350.6616 Milton Financial Assistance	1,488	1,488	Complete	100.0%		
S.10386.6801 Outfall 023 Str Improvements	1,500	0	Future	0.0%	Jul-07	
S.141 Wastewater Process Optimization	**2,187**	**954**	**43.6%**	**43.6%**		
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	883	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**	**5,014**	**76.2%**	**76.2%**		
S.10371.6739 Planning/Study	100	0	Future	0.0%	Jan-13	
S.10379.6793 Equipment Purchase/Installation	5,278	5,014	95.0%	95.0%		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%		
S.145 I&P Facility Asset Protection	**18,611**	**2,357**	**12.7%**	**12.7%**		
S.1400 Interceptors	**6,720**	**2,157**	**32.1%**	**32.1%**		
S.10383.6798 Rehab of Section 93A Lexington	1,568	1,568	Complete	100.0%		
S.10394.6842 Sections 80&83	715	0	Future	0.0%	Mar-06	
S.10395.6843 Section 160	3,149	0	Future	0.0%	Apr-06	
S.10440.7073 Land/Easements	150	0	Future	0.0%		
S.10423.6987 93 A Force Main Replacement	497	0	Future	0.0%	Sep-05	
S.10424.7004 Mill Brook Valley Sewer Sec 79&92	542	542	Complete	100.0%		
S.1410 Facilities	**11,891**	**200**	**1.7%**	**1.7%**		
S.10380.6795 Prison Point HVAC Upgrades	694	0	Future	0.0%	Mar-09	
S.10381.6796 Remote Headworks Heating Sys Upgrade	1,172	200	17.1%	17.1%		Oct-05
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%	Nov-06	
S.10399.6886 Hdwrks Cond Assess/Facilities Plan	2,000	0	Future	0.0%	Jan-06	
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%	Jul-07	
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.10433.7039 Prison Pt/Cottage Farm Pipe Des	150	0	Future	0.0%	Jul-07	
S.10434.7040 Prison Pt/Cottage Farm Pipe Constr	500	0	Future	0.0%	Sep-08	
S.10438.7044 Caruso PS Shaft Replac Const	425	0	Future	0.0%	Jul-06	

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.200 DI Plant Optimization	**42,672**	**18,071**	**42.3%**	**42.3%**		
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	1,599	74.0%	74.0%		Jan-06
S.19189.6590 Ancil Mods Des 2-1 (REI)	584	584	Complete	100.0%		
S.19190.6591 Ancil Mods - Des 3-1	972	940	96.7%	96.7%		Nov-05
S.19191.6592 Ancil Mods - Des 4	965	0	Future	0.0%	Mar-06	
S.19220.6721 Long Term As Needed Des No.1	2,500	0	Future	0.0%	Mar-07	
S.19183.6499 Ancil Mods-Con 1	10,131	3,461	34.2%	34.2%		Jan-06
S.19186.6536 Ancil Mods Constr 2-1	2,825	2,825	Complete	100.0%		
S.19232.6744 Ancil Mods Constr 2-2	5,231	15	0.3%	0.3%		Nov-07
S.19187.6537 Ancil Mods-Constr 3-1	3,387	3,387	Complete	100.0%		
S.19188.6538 Ancil Mods-Con 4	3,470	0	Future	0.0%	May-09	
S.19221.6722 Long -Term As Needed Des No.2	2,500	0	Future	0.0%	Mar-07	
S.19206.6673 Digester Storage Tank - Repair	275	275	Complete	100.0%		
S.19211.6698 As Needed Des Phase 4-1	1,000	40	4.0%	4.0%		Mar-07
S.19212.6699 As Needed Des Phase 4-2	1,000	40	4.0%	4.0%		Mar-07
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	732	732	Complete	100.0%		
S.19240.6768 Ancil Mods Des2-2 (REI/ESDC)	526	58	11.0%	11.0%		Nov-07
S.19242.6794 CEMS Modifications	299	0	Future	0.0%	Jun-06	
S.19257.6874 As-needed Design Phase 3-2	657	657	Complete	100.0%		
S.19286.6201 BHP Site Completion	284	284	Complete	100.0%		

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Subphase/Project	Total Contract Amount	Projected Pmts. Thr. FY05	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
S.206 DI Treatment Plant Asset Protection	**94,659**	**5,771**	**6.1%**	**6.1%**		
S.1800 Equipment Replacement	**51,589**	**3,650**	**7.1%**	**7.1%**		
S.19182.6478 Equip Replacement Projection	38,025	0	Future	0.0%	Oct-00	
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	500	500	Complete	100.0%		
S.19176.6422 Pump Packing Replacement	750	411	54.8%	54.8%		Jun-08
S.19263.6880 Cathodic Protection Evaluation	250	0	Future	0.0%	May-06	
S.19265.6882 CEMS Equip. Replacement	150	0	Future	0.0%	Sep-05	
S.19268.6899 Clarifier Chain Replac	450	0	Future	0.0%	Apr-08	
S.19287.7005 Digester Chiller Replacement	479	0	Future	0.0%	Jul-05	
S.19288.7006 Dystor Tank Membrane Replacement	773	647	83.7%	83.7%		Sep-05
S.19290.7052 Grit Blower Replac Construction	314	0	Future	0.0%	Apr-08	
S.19291.7053 Thick Prim Sldg Pump Repl Des	578	0	Future	0.0%	Sep-06	
S.19292.7054 TPS Pump Replac Construction	5,531	0	Future	0.0%	Oct-07	
S.19294.7056 LOCAT Scrubber Replac Const	289	0	Future	0.0%	Jul-08	
S.19295.7057 Centrifuge Backdrive Replac	1,408	0	Future	0.0%	Dec-06	
S.1810 Architectural	**1,331**	**729**	**54.8%**	**54.8%**		
S.19226.6727 Study/Concept Des-Concrete Rpr	300	0	Future	0.0%	May-06	
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	151	0	Future	0.0%	May-09	
S.19217.6704 Expansion Joint Repair- Constr 2	151	0	Future	0.0%	May-07	
S.19244.6812 Secondary Clarifier Access	275	275	Complete	100.0%		
S.1820 Utilities	**37,837**	**1,247**	**3.3%**	**3.3%**		
S.19243.6811 Outfall Modification-Inspection	174	174	Complete	100.0%		
S.19239.6767 Elec Equip Upgrade Constr 2	1,897	105	5.5%	5.5%		Sep-06
S.19236.6763 Busduct Replacement (2+22)	196	196	Complete	100.0%		
S.19252.6851 Pipeline Repl #2 Design	364	0	Future	0.0%	Apr-08	
S.19253.6852 Pipeline Repl #2 - Construction	1,213	0	Future	0.0%	Jun-09	
S.19254.6853 Sodium Hypo Pipe Repl-Des	217	0	Future	0.0%	Jun-08	
S.19255.6854 Sodium Hypo Pipe Repl- Constr	2,594	0	Future	0.0%	Jun-08	
S.19256.6855 Elect Equip Upgrade Const 3	1,815	0	Future	0.0%	Mar-06	
S.19258.6875 WTF VFD Replace Constr	1,290	0	Future	0.0%	Dec-07	
S.19259.6876 Heat Loop Pipe Repl Constr 1	615	70	11.4%	11.4%		Dec-05
S.19260.6877 Misc. VFD Replacements	1,050	664	63.2%	63.2%		May-08
S.19267.6884 PICS Replacement Const	1,677	0	Future	0.0%	Jul-08	
S.19269.6900 Admin/Whse Switchgear Replac	1,200	0	Future	0.0%	Sep-06	
S.19270.6901 Elect Equip Upgrade Const 4	2,213	0	Future	0.0%	Apr-08	
S.19271.6902 NMPS VFD Repl Des/ESDC	518	0	Future	0.0%	Jan-06	
S.19272.6903 NMPS VFD Replace Constr	6,772	0	Future	0.0%	Apr-07	
S.19279.6968 Second Deaerator Constr	243	0	Future	0.0%	Jun-09	
S.19280.6969 Fuel Transfer Pipe Repl Des	364	0	Future	0.0%	Nov-11	
S.19281.6970 Fuel Transfer Pipe Repl Const	1,213	0	Future	0.0%	Mar-13	
S.19282.6971 NMPS Motor Ctrl Ctr Des	578	0	Future	0.0%	Sep-06	
S.19283.6972 NMPS Motor Ctrl Ctr Constr	2,891	0	Future	0.0%	Oct-07	
S.19296.7058 DITP Switchgear Replac Design	231	0	Future	0.0%	Jul-07	
S.19297.7059 DITP Switchgear Repl Constr	2,313	0	Future	0.0%	Sep-08	
S.19298.7060 Power Consult Recs Design	1,100	0	Future	0.0%	Sep-05	
S.19299.7061 Power System Improv Constr	4,978	0	Future	0.0%	Jan-07	

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S.206 DI Treatment Plant Asset Protection (Cont'd)	**94,659**	**5,771**	**6.1%**	**6.1%**		
S.1830 Support	**603**	**146**	**24.2%**	**24.2%**		
S.19162.6241 DISC Application	250	146	58.4%	58.4%		Dec-08
S.19241.6791 Document Format Conversion	353	0	Future	0.0%	Jun-06	
S.1840 Specialties	**3,300**	**0**	**Future**	**0.0%**		
S.19237.6764 Sodium Hypo Tank Repair 1	518	0	Future	0.0%	Jan-06	
S.19251.6850 Metals Lab Modification Constr	837	0	Future	0.0%	Jan-07	
S.19262.6879 Lab Sample Area Mod-Const	377	0	Future	0.0%	Oct-07	
S.19276.6965 Gravity Thickener Improv Des	188	0	Future	0.0%	Feb-06	
S.19277.6966 Gravity Thickener Imp Constr	1,006	0	Future	0.0%	Apr-08	
S.19302.7075 Clinton Soda Ash Replacement	288	0	Future	0.0%	Jan-06	
S.261 Residuals	**64,556**	**63,881**	**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	4,777	4,777	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	2,771	2,771	Complete	100.0%		
S.339 North Dorch Bay & Reserve Channel	**231,674**	**18,674**	**8.1%**	**8.1%**		
S.32660.6220 Design ESDC/Tunnel	24,619	18,674	75.9%	75.9%		Apr-11
S.32661.6244 Tunnel Construction (Ch30)	163,315	0	Future	0.0%	Jun-06	
S.32662.6245 Dewater/Odor Control Constr	17,818	0	Future	0.0%	Mar-09	
S.32726.6993 Tunnel & Facilities CM Services	19,075	0	Future	0.0%	Sep-05	
S.32732.7012 Pleasure Bay Construction	3,640	0	Future	0.0%	Sep-05	
S.32733.7013 Design ESDC/Facilities	3,208	0	Future	0.0%	Oct-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	**67,997**	**8,533**	**12.5%**	**12.5%**		
S.32673.6256 Design	9,577	3,311	34.6%	34.6%		Aug-10
S.32674.6257 East Boston Branch Relief Sewer	44,818	0	Future	0.0%	Jun-07	
S.32719.6840 East Boston Branch Sewer Rehab	5,409	5,222	96.5%	96.5%		
S.32720.6841 Sections 38 & 207 Replacement	8,143	0	Future	0.0%	Dec-07	
S.348 BOS019 Storage Conduit	**13,650**	**3,040**	**22.3%**	**22.3%**		
S.32675.6258 Design	2,054	2,054	Complete	100.0%		
S.32677.6260 BOS019 Storage Conduit Constr	10,474	871	8.3%	8.3%		Mar-07
S.32728.7008 Construction Management Services	1,122	115	10.2%	10.2%		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%		

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S.350 Union Park Detention Treatment Fac	**45,536**	**32,720**	**71.9%**	**71.9%**		
S.32681.6264 Design	8,224	6,453	78.5%	78.5%		Apr-06
S.32682.6265 Construction	41,833	29,647	70.9%	70.9%		Apr-06
S.32718.6826 Construction - Park	500	333	66.6%	66.6%		May-06
S.32721.6909 BWSC Construction ...	-5,021	-3,713	73.9%	73.9%		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.355 MWR003 Gate & Siphon	**1,848**	**0**	**Future**	**0.0%**		
S.32722.6952 Design	308	0	Future	0.0%	Apr-09	
S.32723.6953 Construction	1,540	0	Future	0.0%	Nov-10	
S.357 Charles River CSO Controls	**824**	**0**	**Future**	**0.0%**		
S.32730.7010 Design CS/RI	383	0	Future	0.0%	Jan-06	
S.32731.7011 Construction	441	0	Future	0.0%	Mar-07	
S.340 S. Dorch Bay Sew Separ (Fox Pt.)	**53,091**	**46,519**	**87.6%**	**87.6%**		
S.32651.6155 Design	11,200	10,396	92.8%	92.8%		Aug-09
S.32664.6247 Construction	41,891	36,123	86.2%	86.2%		Nov-06
S.341 S. Dorch Bay Sew Separ (Comm. Pt.)	**62,318**	**43,742**	**70.2%**	**70.2%**		
S.32650.6154 Design	13,269	12,454	93.9%	93.9%		Aug-09
S.32665.6248 Construction	49,049	31,289	63.8%	63.8%		Nov-07
S.344 Stony Brook Sewer Separation	**44,551**	**33,606**	**75.4%**	**75.4%**		
S.32667.6395 Design/CS/RI	9,718	8,698	89.5%	89.5%		Apr-07
S.32668.6251 Construction	34,833	24,908	71.5%	71.5%		Sep-06
S.342 Neponset River Sewer Separation	**2,681**	**2,444**	**91.2%**	**91.2%**		
S.32652.6156 Design/CS/RI	480	470	97.9%	97.9%		
S.32653.6160 Construction	2,201	1,975	89.7%	89.7%		
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	**40,407**	**17,417**	**43.1%**	**43.1%**		
S.32654.6161 Design/CS/RI	11,917	7,711	64.7%	64.7%		Jun-13
S.32672.6255 Construction	28,490	9,706	34.1%	34.1%		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	**2,685**	**922**	**34.3%**	**34.3%**		
S.32655.6162 Design	403	377	93.5%	93.5%		Sep-12
S.32684.6267 Construction	2,282	545	23.9%	23.9%		Sep-12
S.356 Fort Point Channel Sewer Separation	**5,570**	**637**	**11.4%**	**11.4%**		
S.32725.6992 Construction	4,478	140	3.1%	3.1%		Mar-07
S.32724.6991 Design	1,092	497	45.5%	45.5%		Mar-08
S.358 Morrissey Boulevard Drain	**18,186**	**0**	**Future**	**0.0%**		
S.32713.6696 Construction	15,253	0	Future	0.0%	Dec-06	
S.32735.7015 Design	2,933	0	Future	0.0%	Jun-05	

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S.359 Reserved Channel Sewer Separation	**54,193**	**0**	**Future**	**0.0%**		
S.32727.6994 Construction	43,268	0	Future	0.0%	May-09	
S.32734.7014 Design	10,925	0	Future	0.0%	Jan-07	
S.324 CSO Support	**51,411**	**38,676**	**75.2%**	**75.2%**		
S.32400.5790 Technical Assistance	228	228	Complete	100.0%		
S.32401.5791 Planning/EIR	10,769	10,769	Complete	100.0%		
S.32403.5716 Master Planning	22,007	21,977	Complete	99.9%		
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	27	5.7%	5.7%		Dec-08
S.32648.6150 Technical Review	794	532	67.0%	67.0%		Dec-09
S.32658.6169 Land/Easement	13943	1949	14.0%	14.0%		Jul-08
S.128 I/I Local Financial Assistance	**68,594**	**63,559**	**92.7%**	**92.7%**		
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	-42,481	89.1%	89.1%		May-11
S.10368.6736 Grants - Phase IV	34,650	22,752	65.7%	65.7%		May-13
S.10369.6737 Loans - Phase IV	42,350	27,808	65.7%	65.7%		May-13
S.10370.6738 Repayment - Phase IV	-42,350	-11,859	28.0%	28.0%		May-18
S.10407.6925 Grants-Phase V	18,000	1,679	9.3%	9.3%		May-13
S.10408.6926 Loans-Phase V	22,000	2,052	9.3%	9.3%		May-13
S.10409.6927 Repayments-Phase V	-22,000	0	Future	0.0%	Aug-05	
S.138 Sewerage System Mapping Upgrade	**281**	**281**	**Complete**	**100.0%**		
S.10308.6418 Contract 2-Existing Data	174	174	Complete	100.0%		

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S.542 Walnut Hill Water Treatment Plant	**421,705**	**358,903**	**85.1%**	**85.1%**		
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.53296.5042 EIR/Conceptual Design	5,808	5,808	Complete	100.0%		
S.53301.5017 Design/CS/RI - Wachusett WTP	49,159	47,370	96.4%	96.4%		Jun-06
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	137,987	136,083	Complete	98.6%		
S.53416.6491 WHCP6 Late Sitework	3,824	2,777	72.6%	72.6%		Nov-05
S.53426.6650 WHCP7 Existing Facilities Mods	5,000	0	Future	0.0%	Sep-06	
S.53371.6134 Design Management Support	1,730	1,730	Complete	100.0%		
S.53378.6208 Construction Management/RI	31,907	29,462	92.3%	92.3%		Jun-06
S.53406.6479 Cosgrove Disinf.-Fac. Underwater Imps.	217	217	Complete	100.0%		
S.53418.6494 OCIP	5,802	5,755	Complete	99.2%		
S.53419.6495 Professional Services	2,857	2,779	97.3%	97.3%		Oct-05
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.53428.6671 Wachusetts Algae Design CS/RI	450	0	Future	0.0%	Apr-06	
S.53432.6691 Public Health Research	2,273	1,273	56.0%	56.0%		Jun-07
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	442	32.7%	32.7%		Dec-08
S.53448.6889 Wachusetts Algae ...	1,800	0	Future	0.0%	Sep-07	
S.53450.6923 WH Ultra Violet Dis Des ESDC/RI	9,500	0	Future	0.0%	Jan-07	
S.53451.6924 WH Ultra Violet Disinfect Cons	34,000	0	Future	0.0%	Jan-10	
S.53452.6939 As needed Tech Assistance #1	750	0	Future	0.0%	Jan-06	
S.53453.6951 Des WH CP7 Existing Fac Mods	1,373	49	3.6%	3.6%		Jan-09
S.53455.6989 As needed Tech Assistance ...	750	0	Future	0.0%	Jan-06	
S.543 Quabbin Water Treatment Plant	**15,419**	**10,227**	**66.3%**	**66.3%**		
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.53439.6775 Quabbin UVWTP: Des/CA/RI	906	0	Future	0.0%	Dec-06	
S.53440.6776 Quabbin UVWTP: Construction	4,229	0	Future	0.0%	Feb-09	
S.53442.6804 Quabbin UVWTP:Study/Pilot	1,283	1,228	95.7%	95.7%		Jul-05

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S.544 Norumbega Covered Storage	**107,472**	**103,993**	**96.8%**	**96.8%**		
S.53297.5041 Conceptual Design/EIR	2,873	2,873	Complete	100.0%		
S.53364.6057 Owners Representative	4,636	4,462	96.2%	96.2%		Dec-05
S.53383.6213 Design/Build	96,647	93,621	96.9%	96.9%		Aug-05
S.53372.6145 Land	3,000	3,000	Complete	100.0%		
S.53422.6529 Booster Disinfection Design	244	0	Future	0.0%	Jul-07	
S.545 Blue Hills Covered Storage	**36,056**	**1,598**	**4.4%**	**4.4%**		
S.68025.6139 EIR/Preliminary Design/OR	2,457	1,579	64.3%	64.3%		Jul-09
S.53384.6214 DB Field Oversight	2,189	0	Future	0.0%	May-06	
S.53386.6216 Design Build	31,305	0	Future	0.0%	Jul-06	
S.53385.6215 Tech Support/Permit Comp	104	20	19.2%	19.2%		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	**703,557**	**625,555**	**88.9%**	**88.9%**		
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	37,900	Complete	99.8%		
S.59798.6054 West Tunnel Segment - CP1	147,787	147,787	Complete	100.0%		
S.60013.6055 Midd.Tunnel Segment - CP2	246,209	245,809	Complete	99.8%		
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	39,435	39,426	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.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.59805.5139 Land Acquisition	6,259	6,259	Complete	100.0%		
S.59804.5976 Technical Assistance	131	131	Complete	100.0%		
S.60020.6117 Prof. Services	814	749	92.0%	92.0%		
S.60023.6129 Framingham MOU	2,539	2,539	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	107	107	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	4,282	Complete	99.4%		
S.60018.6067 Community Technical Assistance	297	297	Complete	100.0%		
S.60021.6122 OCIP	24,515	23,717	96.7%	96.7%		May-06
S.60054.6777 Equipment Prepurchase	500	200	40.0%	40.0%		Sep-05
S.60058.6856 Hultman Rehab CP9	4,100	0	Future	0.0%	Sep-05	
S.60059.6872 Interim Disinfection	1,261	1,245	Complete	98.7%		
S.60066.6911 Design CA/RI CP6	12,900	0	Future	0.0%	Aug-05	
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	

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S.601 Sluice Gate Rehabilitation	**9,630**	**9,327**	**96.9%**	**96.9%**		
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	1,040	80.1%	80.1%		Sep-06
S.59760.5258 Construction 2	4,771	4,734	Complete	99.2%		
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.615 Chicopee Valley Aqued. Redundancy	**10,926**	**1,045**	**9.6%**	**9.6%**		
S.60045.6527 Pipeline Redundancy Des/CA/RI	2,383	1,001	42.0%	42.0%		Aug-08
S.60046.6528 Pipeline Redundancy Construction	8,345	0	Future	0.0%	Sep-05	
S.60065.6908 Construction Easements	147	27	18.4%	18.4%		Oct-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	**6,031**	**597**	**9.9%**	**9.9%**		
S.75491.6690 Phase 1 Oakdale Valves Const.	2,300	0	Future	0.0%	Oct-05	
S.60055.6828 Facilities Inspection	1,250	0	Future	0.0%	Jul-05	
S.75496.6831 Ph 1 Oakdale Valves Study/Des	1,475	547	37.1%	37.1%		May-07
S.60075.7007 Equipment Pre-purchase	1,006	50	5.0%	5.0%		Jun-10
S.617 Sudbury / Weston Aqueduct Repairs	**3,781**	**323**	**8.5%**	**8.5%**		
S.75486.6617 Haz Material Sudbury Aqueduct	300	273	91.0%	91.0%		May-05
S.60056.6838 Sudbury Aqueduct Inspection	887	0	Future	0.0%	Jun-05	
S.60076.7016 Sudbury Short-Term Repairs	2,544	0	Future	0.0%	Oct-05	
S.619 Winsor Dam Repair	**1,200**	**0**	**Future**	**0.0%**		
S.60077.7017 Design CA/RI	200	0	Future	0.0%	Apr-06	
S.60078.7018 Construction	1,000	0	Future	0.0%	Mar-07	
S.620 Wachusetts Reservoir Spillway Improvement	**8,200**	**0**	**Future**	**0.0%**		
S.60079.7019 Design	1,200	0	Future	0.0%	Apr-06	
S.60080.7020 Construction	7,000	0	Future	0.0%	Oct-07	
S.621 Watershed Land	**8,000**	**0**	**Future**	**0.0%**		
S.60081.7069 Land Acquisition	8,000	0	Future	0.0%		Jun-06
S.622 Cosgrove/Wachusett Redundancy	**500**	**0**	**Future**	**0.0%**		
S.60082.7071 Cosgrove Tunnel Alternative Study	500	0	Future	0.0%	Jun-06	
S.677 Valve Replacement	**14,710**	**7,322**	**49.8%**	**49.8%**		
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	1,433	1,366	95.3%	95.3%		Jul-05
S.68126.6435 Construction 6	2,075	0	Future	0.0%	Mar-06	
S.68127.6436 Construction 7	2,069	0	Future	0.0%	Oct-08	
S.68005.6088 Equip. Purchase	4,036	864	21.4%	21.4%		Jun-09
S.67560.5124 Technical Assistance	106	106	Complete	100.0%		
S.712 Cathodic Protection Of Distr.Mains	**1,796**	**191**	**10.6%**	**10.6%**		
S.68002.6058 Planning Phase I	108	108	Complete	100.0%		
S.68128.6437 Test Station Installation 1	399	50	12.5%	12.5%		Sep-06
S.68129.6438 Test Station Installation 2	419	0	Future	0.0%	May-13	
S.68130.6439 Test Station Installation 3	419	0	Future	0.0%	May-14	
S.68131.6440 Test Station Installation 4	419	0	Future	0.0%	May-15	

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S.678 Boston Low Serv.-Pipe & Valve Rehab	**23,839**	**23,776**	**Complete**	**99.7%**		
S.67570.5120 Study - Pipe	297	297	Complete	100.0%		
S.67571.5122 Design/CS	1,752	1,688	96.3%	96.3%		Feb-05
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.730 Weston Aqueduct Supply Mains (WASMs)	**113,645**	**59,346**	**52.2%**	**52.2%**		
S.68027.6142 Design/CA/RI-PhA/W1&2	5,374	4,813	89.6%	89.6%		Jul-06
S.67865.5147 Design/CA/RI - W4	6,149	5,824	94.7%	94.7%		Dec-05
S.68041.6280 Newton WASM 1&2	9,219	9,219	Complete	100.0%		
S.68042.6281 Boston WASM 1&2	7,535	6,541	86.8%	86.8%		Jun-05
S.68166.6539 Design/CA/RI WASM3	9,250	0	Future	0.0%	Jan-06	
S.68170.6543 Waltham WASM 3-CP2	15,616	0	Future	0.0%	Jan-10	
S.68171.6544 Belmont WASM 3 - CP3	11,860	0	Future	0.0%	Apr-12	
S.68172.6545 Arlington WASM 3 - CP4	9,122	0	Future	0.0%	Oct-14	
S.68173.6546 Section 28, Arlington-CP1	3,853	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	17,597	17,597	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	708	307	43.4%	43.4%		Jan-14
S.68245.6870 Survey	210	112	53.3%	53.3%		Jul-05
S.68269.6996 Temporary Water Supply Plan	1,500	0	Future	0.0%	Jan-08	
S.68272.7000 Section PCCP W-12 ...	2,104	1,483	70.5%	70.5%		Jul-05
S.68273.7001 WASM3 SPL12 PCCP Des	349	250	71.6%	71.6%		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.732 Walnut St. & Fisher Hill Pipeline Rehab.	**3,141**	**33**	**1.1%**	**1.1%**		
S.68189.6586 Construction Phs. 1	3,083	0	Future	0.0%	Jul-06	
S.683 Heath Hill Road Pipe Replacement	**20,168**	**10,305**	**51.1%**	**51.1%**		
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	1,336	55.5%	55.5%		Oct-08
S.67645.6042 Const-Sect 52 New	745	745	Complete	100.0%		
S.67642.5194 Construction Section 52 Rehab	8,516	0	Future	0.0%	Jan-06	
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.68048.6289 Legal/Easements Rehab	266	12	4.5%	4.5%		Oct-07

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S.721 Southern Spine Distribution Mains	**60,167**	**12,608**	**21.0%**	**21.0%**		
S.68083.6290 Sec 21,43,22 Design	8,076	4,129	51.1%	51.1%		Mar-12
S.68084.6291 Sec 21,43,22 Easements	160	76	47.5%	47.5%		Feb-09
S.68085.6292 Section 22 South Construction	5,159	5,070	98.3%	98.3%		Jun-05
S.68089.6296 Sec 20 & 58 Design	1,986	0	Future	0.0%	Jan-07	
S.68091.6298 Sec 20 & 58 Construction	9,346	0	Future	0.0%	Sep-13	
S.68122.6396 Adams Street Bridge	154	154	Complete	100.0%		
S.68194.6602 Southern High Ext Study	242	242	Complete	100.0%		
S.68228.6787 Boston Paving	242	8	3.3%	3.3%		Mar-12
S.68235.6844 Section 22 North Construction	11,406	0	Future	0.0%	Feb-09	
S.68236.6845 Sections 21&43 Construction	20,374	0	Future	0.0%	Feb-06	
S.68247.6885 Contract 1A Construction	2,957	2,908	98.3%	98.3%		Jun-05
S.714 South. Extra High Sects 41,42 & 74	**3,578**	**3,578**	**Complete**	**100.0%**		
S.68014.6107 Design/CA/RI	763	763	Complete	100.0%		
S.68050.6300 Construction	2,345	2,345	Complete	100.0%		
S.68183.6561 Boston Paving	423	423	Complete	100.0%		
S.719 Chestnut Hill Connecting Mains	**17,975**	**17,350**	**96.5%**	**96.5%**		
S.68026.6141 Des/CA/RI PS Potable Connection	1,403	1,403	Complete	100.0%		
S.68051.6301 Preliminary Engineering	613	174	28.4%	28.4%		Nov-05
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	131	84	64.1%	64.1%		Dec-07
S.68180.6558 Boston Paving	313	183	58.5%	58.5%		Dec-07
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.704 Rehab of Other Pumping Stations	**27,785**	**4,211**	**15.2%**	**15.2%**		
S.67885.5153 Preliminary Design	351	351	Complete	100.0%		
S.68017.6110 Design/CS/RI	2,691	2,691	Complete	100.0%		
S.68072.6304 Construction II&C	639	639	Complete	100.0%		
S.68102.6375 Rehab of 5 Pump Stations	19,779	0	Future	0.0%	Aug-06	
S.68204.6676 Proprietary Equipment Purchases	285	168	58.9%	58.9%		Jan-10
S.68266.6980 Design 2 CS/RI	4,030	361	9.0%	9.0%		Nov-10
S.722 NIH Redundancy & Covered Storage	**6,943**	**0**	**Future**	**0.0%**		
S.68093.6306 Easements	300	0	Future	0.0%	Jul-07	
S.53454.6954 Concept Plan	887	0	Future	0.0%	Jul-07	
S.68276.7026 Sec 89 & Sec 29 Rehab Constr	4,727	0	Future	0.0%	Apr-10	
S.68277.7045 Design CA/RI Sec 89/29 Rehab	1,006	0	Future	0.0%	Apr-08	

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S.689 James L. Gillis Pump Station Rehab.	**34,146**	**33,353**	**97.7%**	**97.7%**		
S.67702.5076 Electrical Upgrade	200	200	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.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.68105.6378 Woodland Road Pavement Improvements	396	396	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	459	72.4%	72.4%		Sep-07
S.68055.6308 Remedial Action Plan	600	0	Future	0.0%	Feb-07	
S.713 Spot Pond Supply Mains - Rehab	**60,952**	**40,074**	**65.7%**	**65.7%**		
S.68038.6223 Prelim Design & Design/CA/RI	10,874	9,888	90.9%	90.9%		Apr-08
S.68059.6316 Easements/Paving CP1	143	143	Complete	100.0%		
S.68106.6379 Easements CP2	141	64	45.4%	45.4%		Jun-06
S.68107.6380 Easements CP3	243	21	8.6%	8.6%		Nov-07
S.68060.6317 North (Medford/Melrose)	6,597	6,597	Complete	100.0%		
S.68108.6381 Middle (Medford/Somerville)	21,390	17,654	82.5%	82.5%		Jun-06
S.68109.6382 South (Cambridge/Boston)	16,777	2,971	17.7%	17.7%		Apr-08
S.68150.6475 Early Valve Replacement Contract	2,387	2,387	Complete	100.0%		
S.68209.6697 Construction 4-Trusses	876	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	186	14.4%	14.4%		Apr-08
S.723 Nor Low Service Rehab Secs. 8	**14,581**	**0**	**Future**	**0.0%**		
S.68095.6322 Sec 8 Construction	9,296	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.68275.7021 Section 97A Construction	2,000	0	Future	0.0%	Aug-07	
S.702 New Connecting Mains - Shaft 7 to ...	**49,267**	**3,936**	**8.0%**	**8.0%**		
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	5,310	2,648	49.9%	49.9%		Dec-09
S.68118.6391 Revised N. Segment (CP1A) New 48"	24,076	0	Future	0.0%	Mar-07	
S.68111.6384 Des/CA/RI DP2/4 Meter 120	2,943	707	24.0%	24.0%		Jun-09
S.68174.6548 Constr CP2 C&L Sec 59&60	2,964	0	Future	0.0%	Nov-12	
S.68119.6392 South Segment (CP3)	4,957	0	Future	0.0%	Feb-08	
S.68121.6394 Northeast Segment (CP5)	5,713	0	Future	0.0%	Oct-07	
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	2100	0	Future	0.0%	Jul-11	

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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	**2,554**	**124**	**4.9%**	**4.9%**		
S.67769.6333 Construction Sect 27	2,429	27	1.1%	1.1%		Mar-15
S.693 NHS - Revere & Malden Pipeline Impr	**32,917**	**23,858**	**72.5%**	**72.5%**		
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.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	3,572	0	Future	0.0%	Jul-06	
S.67997.6034 Construction Road Restoration	1,714	1,714	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.731 Lynnfield Pipeline	**4,000**	**0**	**Future**	**0.0%**		
S.68187.6584 Construction	3,000	0	Future	0.0%	Sep-07	
S.68196.6619 Easem/Legal/License/Permits	200	0	Future	0.0%	Apr-06	
S.68251.6905 Design CA/RI	800	0	Future	0.0%	Apr-06	
S.708 Nor Extra High Serv - New Pipelines	**8,458**	**3,634**	**43.0%**	**43.0%**		
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	4,764	0	Future	0.0%	Jan-14	
S.725 Hydraulic Model Update	**686**	**636**	**92.7%**	**92.7%**		
S.68101.6342 Hydraulic Model Update	563	563	Complete	100.0%		
S.68165.6531 Model Enhancement Support Services	123	73	59.3%	59.3%		Jun-06

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S.753 Central Monitoring System	**16,143**	**15,628**	**96.8%**	**96.8%**		
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	1,687	76.6%	76.6%		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 Backbo	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.763 Distribution Systems Facs. Mapping	**2,232**	**1,036**	**46.4%**	**46.4%**		
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	1,196	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**	**71,947**				
S.75485.6608 Community Loans	254,800	88,641	34.8%	34.8%		Jun-13
S.75493.6759 Community Repayment	-254,800	-16,694	6.6%	6.6%		Jun-23
S.766 Waterworks Facility Asset Protection	**3,969**	**245**	**6.2%**	**6.2%**		
S.75490.6689 Meter Vault Manhole Retrofits	1,336	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	237	237	Complete	100.0%		
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	**8,880**	**2,755**	**31.0%**	**31.0%**		
S.19175.6421 Inventory & Evaluation-1&2	2,568	2,568	Complete	100.0%		
S.92387.6976 As-needed Design Contract 1	750	94	12.5%	12.5%		Feb-07
S.92393.6988 As Needed Des/TA Contract	750	94	12.5%	12.5%		Feb-07
S.92399.7070 Long-Term As-Needed Design	4,812	0	Future	0.0%	Jan-07	

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S.881 Equipment Purchase	**8,961**	**3,419**	**38.2%**	**38.2%**		
S.92367.6732 TV Inspection Truck	175	175	Complete	100.0%		
S.92374.6760 Security Equip & Installation	6,112	1,710	28.0%	28.0%		Dec-02
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	250	0	Future	0.0%	Apr-06	
S.92386.6946 Grove Crane	250	250	Complete	100.0%		
S.92388.6981 Land Fill Loader	280	280	Complete	100.0%		
S.92392.6986 PowerSweeper/Catch Basin ...	155	155	Complete	100.0%		
S.92394.6990 Back Hoe (WRA385)	98	98	Complete	100.0%		
S.92395.7027 Closed Circuit TV Insp Truck	200	0	Future	0.0%	Jan-06	
S.92396.7028 Front-End Loader	390	0	Future	0.0%	Jul-05	
S.92400.7074 Crane (WRA-185)	300	0	Future	0.0%	Apr-06	
S.930 MWRA Facility - Chelsea	**10,227**	**10,151**	**Complete**	**99.3%**		
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.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	1,563	95.4%	95.4%		Jun-06
S.92366.6716 Fitout - All Other	4,507	4,507	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**	**18,862**	**75.0%**	**75.0%**		
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	2,156	50.4%	50.4%		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	131	4.4%	4.4%		Jun-09
S.92380.6865 Phase VI	2,339	989	42.3%	42.3%		Jun-07
S.932 Environmental Remediation	**1,903**	**1,326**	**69.7%**	**69.7%**		
S.92369.6745 Tech Asst./ Env. Remediation	512	512	Complete	100.0%		
S.92370.6746 Prision Point Tank Removal - Const.	882	345	39.1%	39.1%		Aug-99
S.92371.6747 Cottage Farm Tank Replace - Const	428	428	Complete	100.0%		
S.934 MWRA Facilities Management & Planning	**3,931**	**343**	**8.7%**	**8.7%**		
S.92389.6983 Design/Engineering Services	763	343	45.0%	45.0%		Jun-08
S.92390.6984 Facilities Construction	3168	0	Future	0.0%	Apr-05	

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
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
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

APPENDIX 4

PROJECT/MUNICIPALITY(s)

Project Number/ Project		Community(s) Served
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
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
	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 June 30, 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.
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.

APPENDIX 6

MWRA Completed Projects
(as of June 30, 2005)

Project	Total Cost ($000)	Completion Date	Summary
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 June 30, 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 June 30, 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 June 30, 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**		

$75.4 million in completed capital projects moved to Appendix A as part of the FY06 budget. These projects are in italics.