Capital Improvement Program

Final
FISCAL YEAR 2014

MASSACHUSETTS WATER RESOURCES AUTHORITY

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August 2013

Katherine Haynes Dunphy, Chairwoman
MWRA Advisory Board
100 First Avenue
Boston, MA 02129

Dear Chairwoman Dunphy:

This letter transmits to the Advisory Board the MWRA's Capital Improvement Program (CIP) for Fiscal Year 2014 as approved by the MWRA's Board of Directors on June 26, 2013.

The FY14 CIP represents an update to the FY13 CIP approved by the Board in June 2012 and includes the latest projected spending estimates and project schedules.

The FY14 CIP represents a significant milestone in that during its development the MWRA also established the next five-year spending cap for the FY14-18 period. Recognizing that capital spending is an important component of the MWRA's long standing multi-year rates management strategy, factors such as: the on-going economic challenges facing our member communities; the Authority's goal to pay down its daunting $5.8 billion of outstanding debt; the evolving nature of the CIP program from major new construction initiatives to asset protection and water redundancy projects; and the Advisory Board recommendations, all contributed to shaping the program.

At $791.7 million, cap spending for the FY14-18 is the lowest in any five-year period since 1990; it is below the Advisory Board recommendation of $800 million, and represents a decrease of $348 million when compared to the average of the past two five-year spending caps. Most importantly, the FY14-18 cap marks a new era for the MWRA in that for the first time MWRA will be reducing its total bonded indebtedness over this cap period by paying off more principal than its annual capital spending.

The FY14 CIP spending is projected at $150.1 million and supports major projects such as infrastructure and equipment upgrades at Deer Island and Field Operations, the construction of the Wachusett Aqueduct Pump Station, the Spot Pond Storage Facility, and the Cambridge and Reserved Channel Sewer Separation projects. Also, MWRA will continue to support both the Infiltration/Inflow Local Financial Assistance Program and the Local Pipeline and Water System Assistance Program by providing grants and interest free loans to communities to aid in updating their local systems.

A copy of the CIP document is available on-line at www.mwra.com. Questions or comments on this document should be directed to the MWRA Budget Department at (617)788-2268.

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

Sincerely,

Frederick A. Laskey
Executive Director

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Overview

The MWRA was created by the Massachusetts legislature in 1985 and since its inception has invested over $7.7 billion to modernize and improve the wastewater and waterworks systems serving its 61 member communities. The system serves 2.5 million people and more than 5,500 businesses. Major initiatives completed include the Boston Harbor Program, the MetroWest Water Supply Tunnel, the Carroll Water Treatment Plant, and nearing completion of the remaining court-mandated projects, most notably the long-term Combined Sewer Overflow (CSO) Control Plan.

The five initiatives below account for over $5.9 billion or 77% of spending to date:

- Boston Harbor Project - $3.8 billion (in use)
- Combined Sewer Overflow - $845 million (31 of 35 projects complete)
- MetroWest Tunnel - $695 million (in use)
- Carroll Water Treatment Plant - $410 million (in use)
- Covered Storage Facilities - $201 million (in use)

The success of the MWRA's capital improvement program is evidenced by the rebirth of the Boston Harbor and the surrounding waterfronts of the City of Boston. The past 30 years have transformed water bodies including the Charles River, Mystic River, and the Neponset River. CSO discharges have fallen 2.5 billion gallons since 1988 and when the CSO program is complete in 2015, CSO discharges are projected to have dropped from 3.3 billion gallons in 1988 to 400 million gallons of which 93% will be treated through CSO facilities.

An Agency in Transition

As the MWRA reaches maturity as an agency, a greater proportion of its capital budget will be designated for Asset Protection, Water System Redundancy, Energy Program related initiatives, and Pipeline Replacement and Rehabilitation. Of the $7.7 billion in capital spending to date, approximately 80% was for court-mandated projects and these mandated initiatives are nearing completion. Capital expenditures for the MWRA have been trending down since the completion of the Boston Harbor project in 2001, but other spending spikes represent other mandated initiatives including the CSO program, Carroll Water Treatment Plant, and MetroWest Tunnel.

The infrastructure modernization and new facilities construction phase of the MWRA is nearing completion and barring new mandates, the agency is approaching a steady-state operations with projected annual spending of approximately $160 million per year for the foreseeable future. Steady state spending will focus on asset protection to preserve the Authority's capital assets and water redundancy to reduce risks of service interruption. As indicated, capital expenditures are projected to be lower over the coming decade and debt levels are expected to decline as repayments exceed new debt funding.

Capital initiatives to date have been primarily funded through long-term borrowings, and the debt service on these outstanding bonds represents a significant and growing portion of the Authority's operating budget. The MWRA's outstanding debt balance as of June 30, 2013 is $5.8 billion and its related debt service requirements account for 60% of the Authority's annual operating budget.

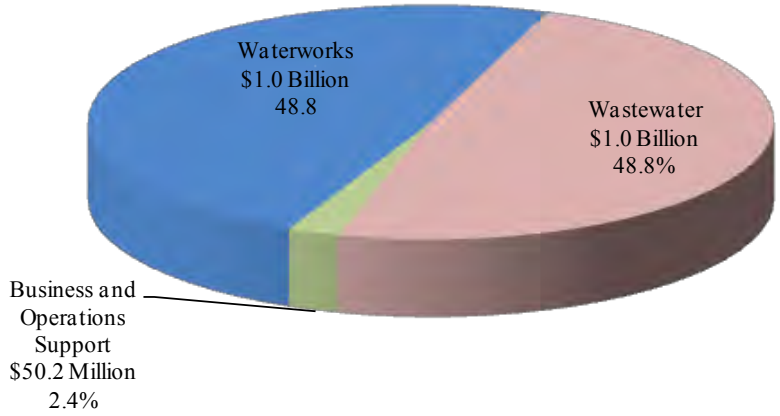
To arrive at the FY14 Final CIP, the Authority identified the needs of the programs taking into account the mandated project timeframes and the recommendations of the Master Plan. The long-term strategy for capital work is identified in the Authority's Master Plan which was published in 2006 and serves as a road map for inclusion of projects in the CIP in every budget cycle. An updated Master Plan is currently under development.

The FY14 Final Capital Improvement Program (CIP) represents a significant milestone in that during the development of the 2014 budget, the MWRA is also developing the next five-year spending cap for the FY14-18 period. Recognizing that capital spending is an important component of the MWRA's long standing multi-year rates management strategy, a variety of factors were considered when establishing future projected spending levels. Factors such as the on-going economic challenges facing our member communities, the Authority's goal to pay down its daunting outstanding debt of $5.8 billion, the evolving nature of the CIP program from major new construction initiatives to more asset protection and water redundancy projects, all contributed to shaping the program.

The spending projections presented represent the prioritization of Master Plan projects, realistic estimates based on the latest information, a balance between maintenance and infrastructure improvements, and the assumption of some risks, while ensuring there is adequate support for the core operations to meet all regulatory operating permit requirements.

The FY14 Final Capital Improvement Program (CIP) budget totals $5.6 billion, of which approximately $3.5 billion has been expended through FY12 with a remaining balance of $2.1 billion. It is important to note that the totals represented above do not include the Boston Harbor Project and some other smaller projects removed from the CIP upon completion. These projects totaled approximately $4.1 billion dollars. As such, the overall Authority CIP budget since inception totals more than $9.7 billion dollars of which $7.7 billion has been spent through FY13.

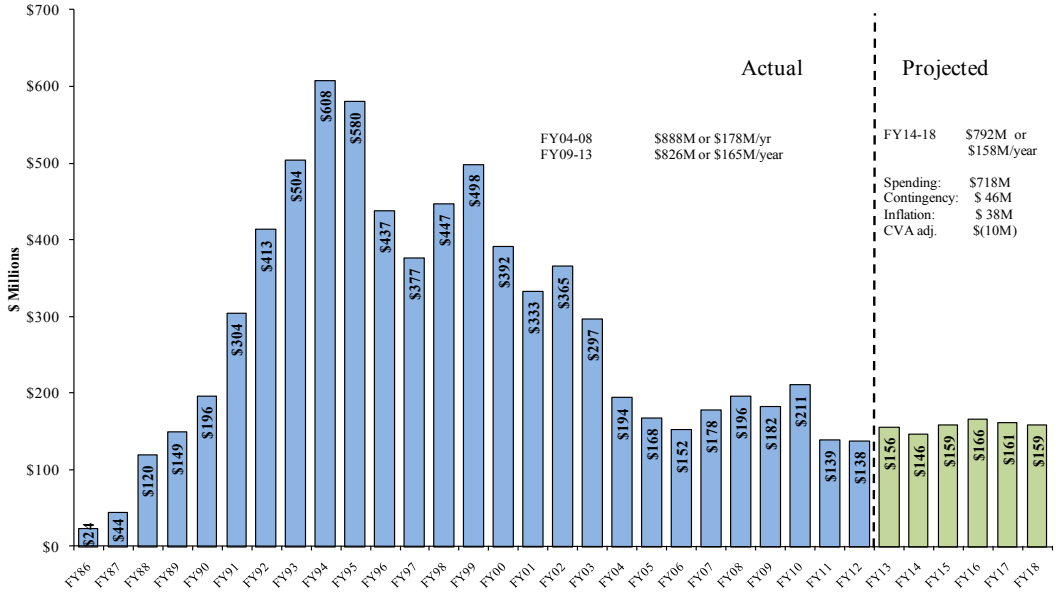
Of the remaining spending, Wastewater System Improvements and Waterworks System Improvements both represent $1.0 billion or 48.8%, and Business and Operations Support are $50.2 million or 2.4%.



It is interesting to note that for the first time, the Waterworks and Wastewater project spending are at about the same level.

Historical Spending

The chart below captures the historical CIP spending through FY12 and projected spending with contingency to FY18 based on the FY14 Final CIP.

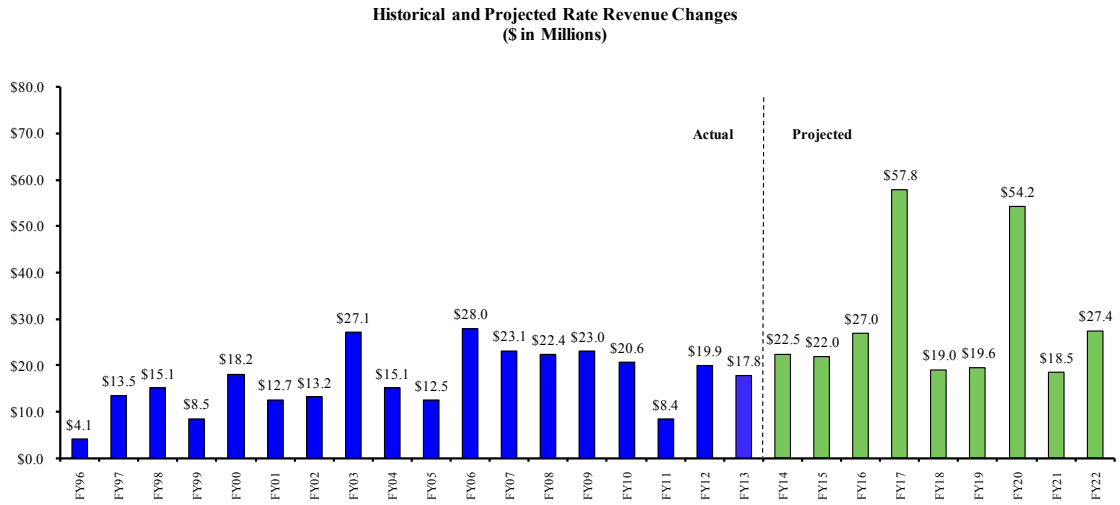


The average spending for FY04-13 was $171 million per year and based on the FY14 Final CIP. We are currently projecting average annual spending during the FY14-18 Cap period will be just over $158 million per year.

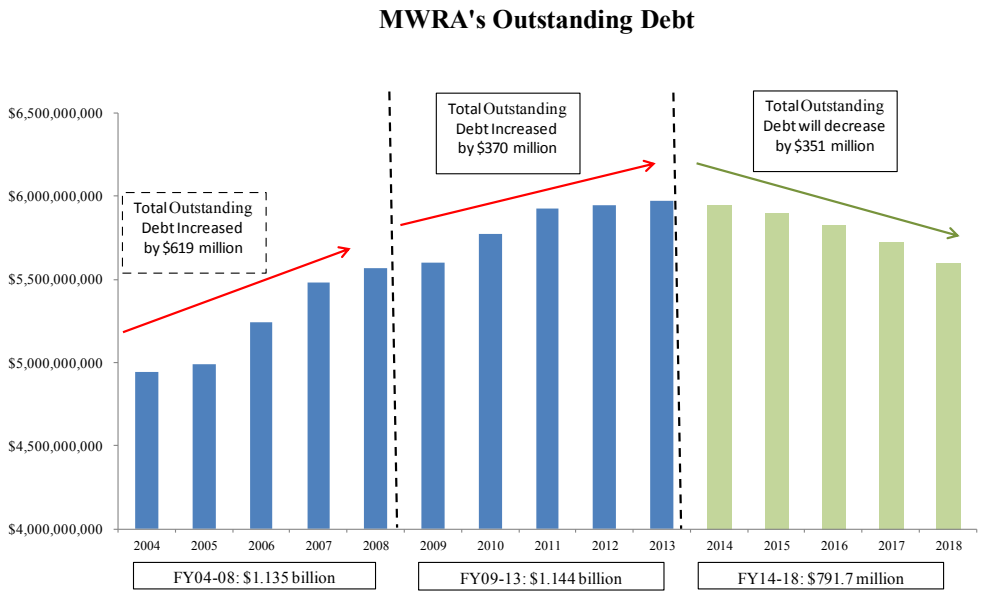
MWRA Capital Improvement Spending versus Debt Service

As of June 30th, MWRA's total debt will be $5.8 billion which results in significant increases in debt service obligations in the upcoming years. The Authority's debt service obligation as a percent of total expenses has increased from 36% in 1990 to 60% in the FY14 Final Current Expense Budget.

The graph below shows the projected Rate Revenue Requirement changes updated with the FY14 CIP spending and debt service projections.



Through FY22, the Rate Revenue Requirement increases an average of $27.0 million per year, mostly driven by Debt Service related expenses. However, for the first time, MWRA will be reducing its total bonded indebtedness over the next cap period.



As shown on the preceding page, MWRA staff projects a $351 million decline in outstanding debt during the FY14-18 Cap period. Despite some challenging years ahead such as 2017 and 2020, the Authority's long-term rates management strategy has been working successfully over the years. Using various financial tools, including restructurings, refundings, defeasances, maximum use of the State Revolving Fund (SRF) program funding, controlling direct and indirect expenses, making voluntary pension payments whenever possible, and renegotiating bond indenture terms; have resulted in reasonable and predictable assessment increases over the years.

As the Authority continues on the path of conservative and responsible fiscal management, the future assessment rates continue to be reasonable and manageable for our member communities.

The Five-Year Spending Cap

MWRA established its first five-year cap in FY03 for the FY04-08 period. The intent of the cap was to create a ceiling or a "not to exceed" amount for spending over a five-year period and serve as a planning tool. The cap goal is to control spending while still ensuring an adequate level of spending to support the core operational needs of the Authority.

Each year, actual spending is compared to the Base-Line Cap. The cap allows annual spending to vary by +/- 20% from the Base-Line Cap as long as total five year spending does not exceed the Base-Line Cap.

FY14-18 Cap Spending

The FY14 Final CIP budget anticipates capital expenditures in the FY14-18 timeframe to total $718.0 million. Including contingency of $46.1 million and inflation of $37.9 million offset by Chicopee Valley Aqueduct adjustments of $10.3 million, the FY14 Final FY14-18 Cap totals $791.7 million which is $348 million less than the average of the prior two five-year caps.

The Base-Line Cap

The FY14 Final CIP establishes the FY14-18 Base-Line Cap at $791.7 million with the following breakdown.

FY14 Final		FY14	FY15	FY16	FY17	FY18	Total FY14-18
	Projected Expenditures	$142.5	$147.6	$149.3	$141.8	$136.8	$718.0
	Contingency	7.6	9.5	10.1	9.8	9.3	46.1
	Inflation on Unawarded Construction	0.8	4.2	8.4	11.1	13.5	37.9
	Less: Chicopee Valley Aqueduct Projects	(5.0)	(2.2)	(1.4)	(1.3)	(0.4)	(10.3)
	FY14 Final FY14-18 Cap	**145.8**	**159.1**	**166.4**	**161.3**	**159.1**	**$791.7**

FY14 Final CIP Cap Comparison to the FY14 Proposed CIP Cap

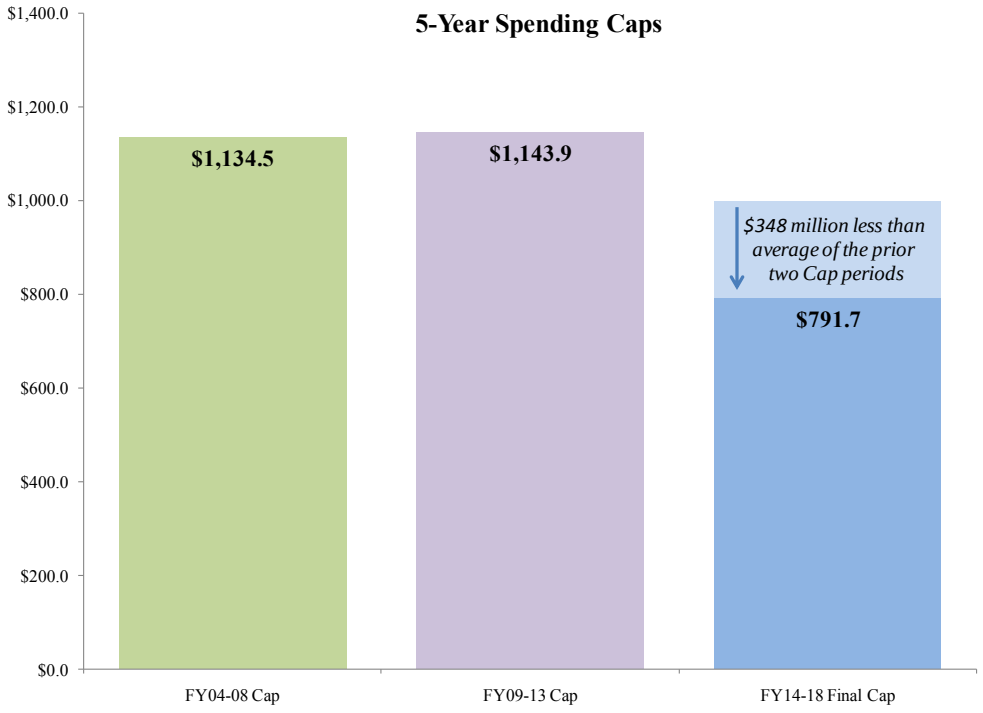
The FY14 Proposed CIP FY14-18 cap cash flow totaled $793.5 million with the following breakdown.

		FY14	FY15	FY16	FY17	FY18	Total FY14-18
FY14 Final	Projected Expenditures	$142.5	$147.6	$149.3	$141.8	$136.8	$718.0
	Contingency	7.6	9.5	10.1	9.8	9.3	46.1
	Inflation on Unawarded Construction	0.8	4.2	8.4	11.1	13.5	37.9
	Less: Chicopee Valley Aqueduct Projects	(5.0)	(2.2)	(1.4)	(1.3)	(0.4)	(10.3)
	FY14 Final FY14-18 Cap	**145.8**	**159.1**	**166.4**	**161.3**	**159.1**	**$791.7**

		FY14	FY15	FY16	FY17	FY18	Total FY14-18
FY14 Proposed	Projected Expenditures	$138.2	$150.1	$166.2	$133.4	$144.1	$732.0
	Contingency	8.4	10.0	11.2	9.2	9.8	48.6
	Inflation on Unawarded Construction	1.3	4.4	9.1	10.3	13.8	39.0
	Less: Chicopee Valley Aqueduct Projects	(4.9)	(4.9)	(8.0)	(7.8)	(0.4)	(26.1)
	FY14 Proposed FY14-18 Cap	**143.0**	**159.6**	**178.5**	**145.1**	**167.3**	**$793.5**

		FY14	FY15	FY16	FY17	FY18	Total
FY14 Final vs. FY14 Proposed	Projected Expenditures	$4.3	($2.5)	($16.9)	$8.4	($7.3)	($14.0)
	Contingency	(0.8)	(0.5)	(1.1)	0.6	(0.5)	(2.5)
	Inflation on Unawarded Construction	(0.5)	(0.2)	(0.7)	0.8	(0.3)	(1.1)
	Less: Chicopee Valley Aqueduct Projects	(0.1)	2.7	6.6	6.5	(0.0)	15.8
	FY14-18 Cap ($ Change)	**$2.8**	**($0.5)**	**($12.1)**	**$16.2**	**($8.2)**	**($1.8)**
	FY14-18 Cap (% Change)	**2.0%**	**-0.3%**	**-6.8%**	**11.2%**	**-4.9%**	**-0.2%**

The FY14 Final CIP FY14-18 Cap totals $791.7 million, a decrease $1.8 million or 0.2% from the FY14 Proposed CIP Cap and is $348.0 million or 31.0% less than the $1,139.2 million average of the prior two cap periods.



The Shift from Mandated Projects

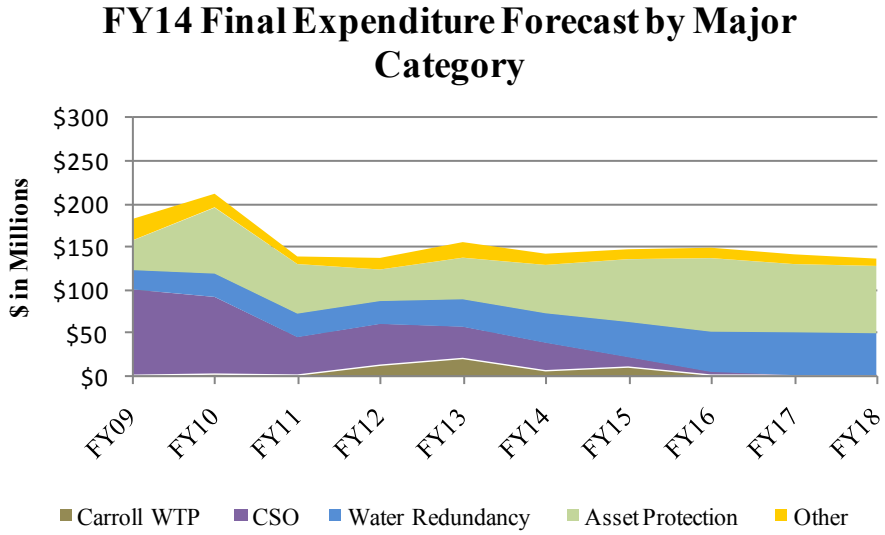
Since 1985, nearly 80% of the Authority's spending has been on court-mandated projects. Going forward, Asset Protection and Water System Redundancy projects will dominate future spending. The Pipeline Replacement and Rehabilitation, Energy program initiatives, and IT infrastructure updates will also be a continuing effort.

The table below captures the changing nature of the program in the future.

	Total Contract	FY09-13	FY14-18	Beyond 18
Asset Protection	$ 1,944.0	$ 252.0	$ 370.1	$ 686.4
Carroll WTP	$ 433.3	$ 39.4	$ 21.0	$ 0.1
Water Redundancy	$ 1,851.2	$ 138.4	$ 223.1	$ 627.0
CSO	$ 863.4	$ 316.5	$ 48.1	$ 1.3
Other	$ 536.7	$ 80.1	$ 55.6	$ (93.7)
Total	**$5,628.5**	**$ 826.4**	**$ 718.0**	**$1,221.2**
Asset Protection	**34.5%**	**30.5%**	**51.6%**	**56.2%**
Carroll WTP	7.7%	4.8%	2.9%	0.0%
Water Redundancy	**32.9%**	**16.7%**	**31.1%**	**51.3%**
CSO	15.3%	38.3%	6.7%	0.1%
Other	9.5%	9.7%	7.7%	-7.7%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

As presented above, Asset Protection and Water Redundancy initiatives account for 30.5% and 16.7% of FY09-13 spending. These percentages will grow substantially to 51.6% and 31.1% respectively for the FY14-18 timeframe.

The graph below displays the projected trend of expenditures by major category for the FY09-18 time period.



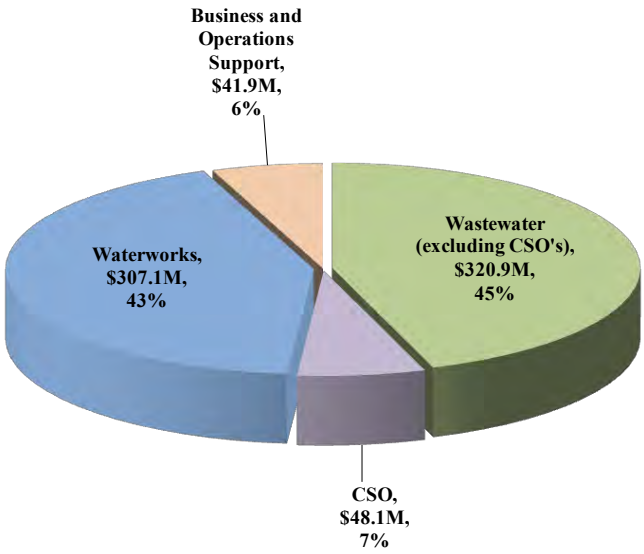
FY14 Final CIP Expenditures

The FY14 Final CIP contains future spending estimated at $2.1 billion. The FY14 Final CIP (without contingency) includes planned expenditures of $142.5 million for FY14 and total projected expenditures of $718.0 million for the FY14-18 timeframe.

The table below represents the projected spending by the major project categories:

	Total Contract Amount	Payments Thru FY12	Remaining Balance	FY13	Total FY09-13	FY14	FY15	FY16	FY17	FY18	Total FY14-18	Beyond 18
Wastewater System Improvements	**$2,685.1**	**$1,661.8**	**$1,023.3**	**$79.9**	**$524.0**	**$84.3**	**$77.8**	**$79.8**	**$64.8**	**$62.3**	**$368.9**	**$574.5**
Interception & Pumping	846.5	518.6	327.9	2.3	32.7	13.1	22.2	28.9	28.8	25.3	118.4	207.3
Treatment	659.6	168.7	490.9	19.7	136.6	39.4	44.4	46.6	34.8	33.9	199.1	272.0
Residuals	168.0	64.2	103.9	0.4	0.8	0.4	0.3	0.2	0.2	0.5	1.5	101.9
CSO	888.1	802.3	85.8	36.4	316.5	32.3	11.3	3.6	0.1	0.8	48.1	1.3
Other Wastewater	122.9	108.1	14.8	21.0	37.4	(0.9)	(0.5)	0.5	1.0	1.7	1.8	(8.0)
Waterworks System Improvements	**$2,821.0**	**$1,799.6**	**$1,021.4**	**$71.6**	**$268.7**	**$49.8**	**$61.0**	**$58.6**	**$68.0**	**$69.7**	**$307.1**	**$642.7**
Drinking Water Quality Improvements	657.2	559.7	97.4	40.0	91.2	32.3	20.6	2.3	1.4	0.6	57.3	0.1
Transmission	1,186.0	737.9	448.1	18.0	83.0	6.4	25.6	23.6	18.9	5.6	80.0	350.1
Distribution & Pumping	948.4	384.1	564.3	4.5	67.5	10.7	13.4	29.3	43.9	57.3	154.6	405.2
Other Waterworks	29.4	117.9	(88.5)	9.0	27.0	0.5	1.4	3.4	3.8	6.2	15.2	(112.7)
Business & Operations Suppport	122.4	72.2	50.2	**4.3**	**$33.6**	**8.4**	**8.8**	**10.9**	**8.9**	**4.9**	**$41.9**	**4.0**
Total MWRA	**$5,628.5**	**$3,533.6**	**$2,094.9**	**$155.8**	**$826.4**	**$142.5**	**$147.6**	**$149.3**	**$141.8**	**$136.8**	**$718.0**	**$1,221.2**

The graph below illustrates a breakdown of the major program spending (in millions) for the FY14-18 timeframe.



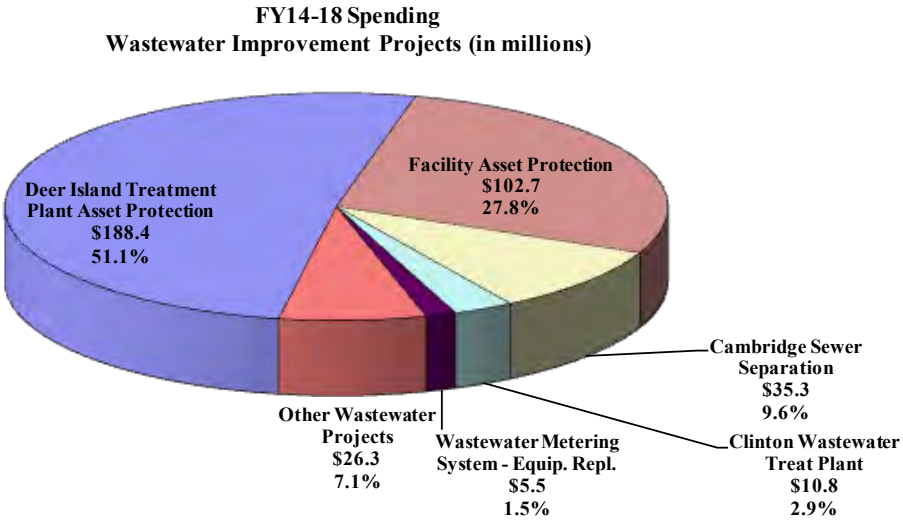
Please refer to Appendix 2 for a more detailed project listing and projected cash flows.

Top 10 Projects – FY14-FY18 Cap Period

It is important to emphasize that the majority of spending within the Wastewater and Water Capital programs is concentrated in several larger projects with significant spending in the FY14-18 timeframe. These projects are either currently under construction or soon to be awarded. The top five projects for the Wastewater program total $342.7 million for the FY14-18 period and represent 92.9% of the $368.9 million total program.

Wastewater Improvement Projects	Total Contract Amount	FY14-18 Spending	% of Program
DI Treatment Pl Asset Protection	$606.8	$188.4	51.1%
Facility Asset Protection	$279.8	$102.7	27.8%
Cambridge Sewer Separation	$85.8	$35.3	9.6%
Clinton Wastewater Treatment Plant	$17.1	$10.8	2.9%
Wastewater Metering System - Equipment Replacement	$26.4	$5.5	1.5%
Top 5 Wastewater Improvement Projects	**$1,015.9**	**$342.7**	**92.9%**
Other Wasterwater Projects	$1,669.2	$26.3	7.1%
Total Wastewater Program Spending	**$2,685.1**	**$368.9**	**100.0%**

The breakdown of the $368.9 million program by the major projects is illustrated below:



The FY14-18 sub-phases of Wastewater projects with spending greater than $20 million along with a brief description of the scope of work are included below:

Chelsea Headworks Construction - $39.3 million ($52.1 million total construction cost) - This is an asset protection project that will replace critical pieces of facility equipment, as well as facility-wide systems. Solids handling systems will be automated and the building's egress and fire suppressions systems will be upgraded.

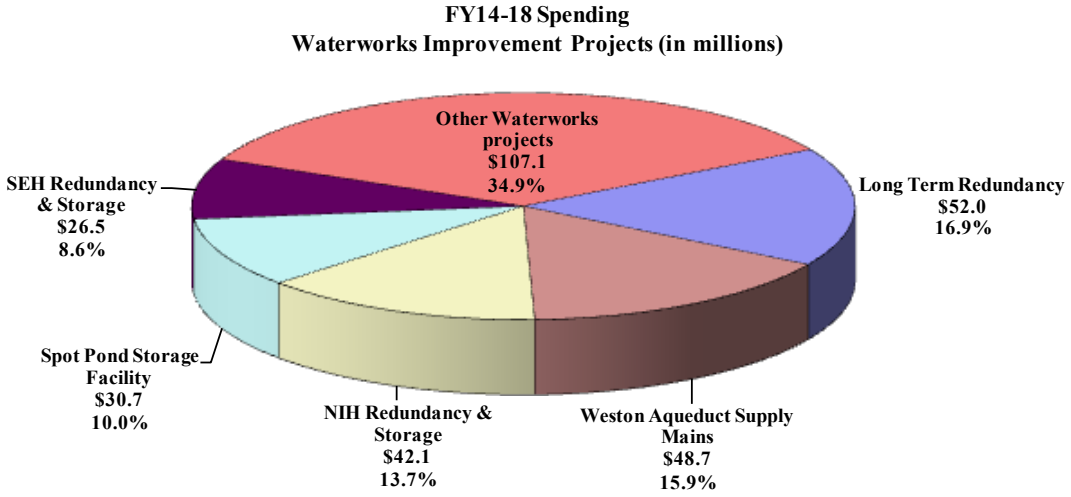
Cambridge Sewer Separation Construction - $28.3 million ($57.6 million total construction) – This is Combined Sewer Overflow (CSO) project to minimize discharges to Alewife Brook by separating combined sewer systems in parts of Cambridge and upgrading local connections to MWRA interceptors.

Deer Island Scum Skimmer Replacement - $20.0 million - This is an asset protection replacement project which proposes to replace degraded carbon steel tip tubes and drive mechanisms for 40 Primary Clarifier tanks and 54 Secondary Clarifier tanks with stainless steel to improve the system reliability and overall maintenance.

Similarly, the top five projects for the Waterworks program total $200.0 million for FY14-18 and represent 65.1% of the $307.1 million total program.

Waterworks Improvement Projects	Total Contract Amount	FY14-18 Spending	% of Program
Long Term Redundancy (Wachusett Pump Station)	$375.4	$52.0	16.9%
Weston Aqueduct Supply Mains	$286.4	$48.7	15.9%
NIH Redundancy & Storage	$85.0	$42.1	13.7%
Spot Pond Storage Facility	$59.1	$30.7	10.0%
SEH Redundancy & Storage	$93.5	$26.5	8.6%
Top 5 Waterworks Improvement Projects	**$899.4**	**$200.0**	**65.1%**
Other Waterworks projects	$1,921.5	$107.1	34.9%
Total Waterworks Program Spending	**$2,821.0**	**$307.1**	**100.0%**

The breakdown of the $307.1 million program by the major projects is illustrated on the following graph:



The FY14-18 sub-phases of Waterworks projects with spending greater than $20 million along with a brief description of the scope of work are included below:

Wachusett Aqueduct Pump Station Construction - $45.6 million - This is a redundancy project for construction of a 240 mgd emergency pump station which will provide redundancy for the Cosgrove Tunnel by pumping raw water from the Wachusett Aqueduct to the Carroll Water Treatment Plant. This project, along with the completion of the Hultman Aqueduct rehabilitation and interconnections project, will provide fully treated water transmission redundancy from the Wachusett Reservoir to the beginning of the metropolitan distribution system in Weston.

Spot Pond Design/Build – $28.4 million ($49.8 million total construction cost) - This project is for the construction of a two 10 million gallon drinking water storage facility and redundant pump station in Stoneham. The underground, concrete tanks will provide drinking water storage for MWRA's Low Service area. Additionally, this project will provide system redundancy for 21 communities in the Northern Intermediate High and Northern High service areas currently served by the Gillis Pump Station.

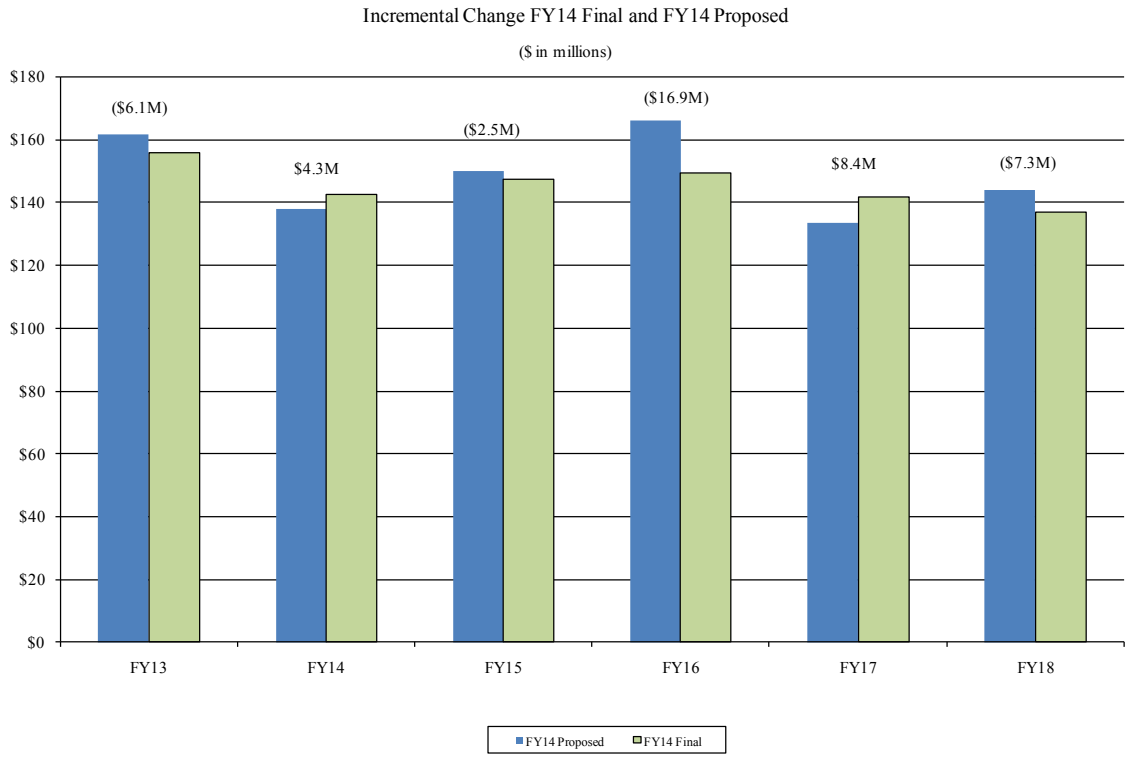
Southern Extra High Redundancy and Storage (SEH) - $26.1 million (total design and construction $43.0 million) – This project will provide redundancy to Section 77 and 88 to the single spine mains serving Canton, Norwood, Stoughton and Dedham-Westwood by construction of a redundant pipeline, also, to increase distribution storage within the service area to improve system operation and reliability**.**

FY14 Final Compared to the FY14 Proposed CIP by Program

The FY14 Final CIP represents updated spending and schedules for projects contained in the FY14 Proposed. The FY14 Final CIP increased by $30.5 million or 0.5% above the FY14 Proposed CIP presented to the Board of Directors in December 2012.

	FY14 Proposed	FY14 Final	$ change	% change	FY14-18 $ change	FY14-18 % change
Wastewater Systems Improvements	$2,655.6	$2,685.1	$29.5	1.1%	-$1.2	-0.3%
Waterworks System Improvements	$2,821.7	$2,821.0	-$0.8	0.0%	-$15.8	-4.9%
Business and Operations Support	$120.7	$122.4	$1.8	1.5%	$2.9	7.5%
Total MWRA without contingency	$5,598.0	$5,628.5	$30.5	0.5%	-$14.0	-1.9%

The table below shows the incremental change by fiscal year between the FY14 Final and FY14 Proposed CIP:



Some of the large changes between the FY14 Proposed and FY14 Final include:

- Increased cost estimates for the remaining Cambridge Combined Sewer Overflow (CSO) projects;
- More realistic award dates for projects based on prior years history;
- Weston Aqueduct Supply Main 3 - six month delay;
- Prison Point Pump & Gear Box/Diesel Engine Upgrades, Alewife Brook Construction, and Siphon Structure Rehabilitation cost increases; and
- MIS structural changes to reflect the IT study recommendations and implementation schedule.

FY14 Budgeted Spending and Major Planned Contract Awards for Fiscal Year 2014:

The FY14 spending is projected at $142.5 million, which will support $84.3 million for Wastewater System Improvements, $49.8 million for Waterworks System Improvements, and $8.4 million for Business and Operations Support.

In Fiscal Year 2014, 49 contracts totaling $133.0 million are projected to be awarded. The largest ten projected contract awards are listed below and account for nearly 66% of expected awards:

Project	Subphase	FY14 Budget Amount
Long Term Redundancy	Wachusett Aqueduct Pump Station Construction	$45.6
Carroll Water Treatment Plant	Existing Facilities Modifications - CP7	6.1
DI Treatment Plant Asset Protection	Gravity Thickener Rehabilitation	5.8
SEH Redundancy & Storage	Redundancy/Storage Phase 1 Final Design/CA/RI	5.7
Facility Asset Protection	Prison Point/Cottage Farm Facilities	5.1
DI Treatment Plant Asset Protection	Digester Sludge Pump Replacement Phase 2	4.7
Carroll Water Treatment Plant	CWTP Storage Tank Roof Drainage System	4.1
Application Improvement Program	Enterprise Content Management	4.0
DI Treatment Plant Asset Protection	Winthrop Terminal Facility VFD Replacement - Construction	4.0
Facility Asset Protection	Rehabilitation of Sects 186 and 4 Construction	3.5
Top Ten Budget Awards in FY14		**$88.4**

Future Risk Factors

There are still potential projects or required spending increases which are not yet funded as part of the FY14 Final CIP which are highlighted below:

- Pelletizing Facility funding to rehabilitate or replace the existing Residuals Plant needs to be determined;
- Sudbury Aqueduct – tunnel vs. surface pipeline;
- North Metropolitan Trunk Sewer Rehabilitation;
- Chelsea Creek Headworks constructability; and
- New regulatory mandates always pose potential risk for increased future spending.

Project Level Budget Summaries and Detail of Changes

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

Capital Improvement Program

FISCAL YEAR 2014

APPENDICES

MASSACHUSETTS WATER RESOURCES AUTHORITY

APPENDIX 1

Project Budget Summaries and Detail of Changes

Project Budget Summaries and Detail of Changes
Project Index

Wastewater System Improvements

Project Budget Summaries and Detail of Changes
Project Index

Interception and Pumping

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 could not 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. 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 was completed in April 2008. Rehabilitation of Section 624 was completed in December 2010. Remaining phases include Wetlands Replication and Braintree-Weymouth Improvements.

Scope

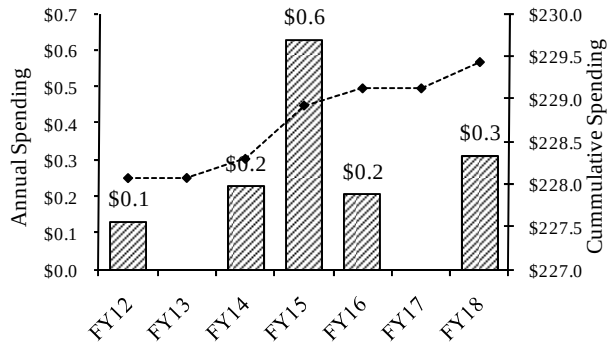
Sub-phase	Scope
Design 1/CS/RI – Tunnel & IPS	Design of the tunnel and IPS. Includes completion of design modifications for sludge pumping facilities at Deer Island and residuals filtrate facilities at Fore River.
Sediment Tests	Tests required as part of the evaluation of marine pipeline option.
Design 2/CS/RI – Surface	Design of remaining construction including siphons and replacement 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.
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.

Sub-phase	Scope
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.
Rehab Section 624	Rehabilitation of 2,000 feet of Section 624 in North Weymouth.
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.
Mill Cove Sluice Gates Construction	Install gates which will allow staff to remotely flush out the site as needed, and will reduce odors.
Braintree-Weymouth Improvements Design CS/RI and Construction	Several facility modifications are needed to improve facility safety, reliability, and performance. Design and construction improvements are required to address deficiencies in odor control, solids handling, and pumping operations. This project includes a study to determine deficiencies and corrections for the grinder room odor control, grinder equipment, and wastewater pumps.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$233,869	$228,064	$5,805	$1	$13,033	$225	$1,364	$4,441

Braintree-Weymouth Relief Facilities



Project Status 5/13	97.4%	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, Fore River Siphons contract, and the Replacement Pump Station. Rehabilitation of Section 624 was completed in December 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$233,735	$233,869	$134	Aug-17	Aug-20	36 mos.	$4,500	$1,364	($3,136)

Explanation of Changes

- Schedule and spending changed due to project priorities for the Braintree-Weymouth Improvements work as well as schedule changes for the Mill Cove Sluice Gates Construction and Wetlands Replication work.

CEB Impact

- None identified at this time.

S. 130 Siphon Structure Rehabilitation

Project Purpose and Benefits

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

Master Plan Project ☑ 2009 Priority Rating 2 (see Appendix 3)

Design and construction of improvements to headhouses and structures.

Project History and Background

Siphon chambers are located at the upstream and downstream ends of depressed sewers. Depressed sewers are constructed to avoid obstructions in sewer alignments such as rivers and subsurface utilities. Upstream siphon chambers allow attainment of proper water elevation so that the depressed sewer flows under pressure. Downstream chambers provide transitions between depressed sewers and downstream gravity sewers.

Connecting structures are facilities at which flows from sewers are redirected to converge with or receive flows from other sewers.

There are 92 siphon chambers and 111 connecting structures in the MWRA wastewater system. Hydraulic flows through many of these siphon chambers and connecting structures are below design capacities. The poor flow conditions, caused by irregular maintenance due to the inaccessibility of many structures, contribute to significant surcharges and overflows. Odor problems have been identified at some siphon chambers and connecting structures due to hydraulic transitions.

MWRA completed a study in 1998 to evaluate rehabilitation of these structures in order to permit greater accessibility to provide regular maintenance to alleviate the above problems. 83 siphon chambers and 63 connecting structures were included in the study which recommended rehabilitation and improvements to 127 of these structures. MWRA has prioritized the design and construction of improvements to these structures. Phase 1 will provide access improvements and rehabilitation at structures at 29 siphon locations that are most inaccessible or in greatest need of repair.

Scope

Sub-phase	Scope
Planning	Identification of methods to improve accessibility and structures. Inspection of the siphon chambers and diversion structures along with recommendations for rehabilitation.
Design/CS/RI	Design, Construction Services and Resident Inspection for improvements at 29 siphon locations.
Construction	Construction of improvements at 29 siphon locations.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$5,603	$940	$4,663	$0	$0	$0	$4,581	$82

Project Status 5/13	16.8%	Status as % is approximation based on project budget and expenditures. Initial Planning subphase was completed in 1998. Design is expected to begin in July 2014.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$2,671	$5,603	$2,932	Mar-16	Jun-17	15 mos.	$1,701	$4,581	$2,880

Explanation of Changes

- Project cost, schedule, and spending changed due to updated cost estimates which include additional structures added to scope of project.

CEB Impact

- No impacts identified at this time.

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 have 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 would be reduced, improving water quality. Through the construction of replacement sewers, the project has increased the hydraulic capacity in the Upper Neponset Valley Sewer by 8 mgd. The project eliminates surcharging and overflows during the one-year, six-hour DEP designated design storm, with no increase in downstream overflows. It also reduces overflows for 5-year and above storms. The project included design and construction of sections 685 and 686 replacement sewers for sections 526 to 529. This construction contract was awarded in March 2005 and was completed in March 2008. The project also included design and construction of Section 687 to replace Section 530 which was awarded in October 2006 and completed in November 2007.

Scope

Sub-phase	Scope
Designs/CS/RI	Completion of design and provision of construction services during the construction phases.
Resident engineering & inspection	Resident engineering and inspection during construction of the two contracts
Boston Paving	Payment to the City of Boston for paving work on city streets.
Replacement Sewer Sections 685-686 construction	Installation of 15,780 feet of new sewers within public roadways to reduce overflows to adjacent residential areas and water bodies in West Roxbury.
Replacement Section 687 construction	Installation of 8,500 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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$54,174	$53,861	$313	$313	$1,024	$0	$0	$0

Project Status 5/13	100%	Status as % is approximation based on project budget and expenditures. Construction on Sections 685 and 686 was completed in March 2008. Section 687 was completed in November 2007.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$54,942	$54,174	($768)	Mar-08	Mar-08	None	$0	$0	$0

Explanation of Changes

- Project cost decreased due to final costs for land easement settlement.

CEB Impact

- No impacts identified at this time.

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 to 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 Framingham Extension Relief Sewer (FERS) and the Wellesley Extension Sewer (WES) systems resulting in legal claims totaling several hundred thousand dollars. Severe corrosion has occurred in the West Roxbury Tunnel. This situation has prompted MWRA to add odor control chemicals at various points in the local systems and FES to try to reduce the hydrogen sulfide levels. The results have been mixed; not all of the chemicals were effective even over the short term, and none completely eliminated hydrogen sulfide.

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

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

Scope

Sub-phase	Scope
Planning	Identification of causes and sources of odors; collection of local sewer system information in Ashland, Natick, and Framingham; recommendations for long-term corrective measures.
Design/CS/RI	Design, construction services, and resident inspection for FERS Pump Station, FES tunnel, and air treatment systems. By June 2005, the FERS Pump Station achieved 50% Design status, the FES tunnel achieved 30% Design status and the air treatment systems achieved 100% Design status.
FES Tunnel Rehab Design CS/RI and Construction	Rehabilitation of the FES Tunnel.
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.

FES/FERS Biofilters Design & Construction	FES/FERS Corrosion Control (Biofilters) is a design and construction project to make improvements in the MWRA sewers. Three air treatment systems (biolfilters) are recommended to remove and treat hydrogen sulfide in the FES, FERS, WESR and WERS sewer systems. Rehabilitation of hydrogen sulfide meters will be included.
Nut Island Control System Evaluation and Design	Odor control is now being reliably performed using carbon. Modifications to the existing system are required to improve long term performance and ability to quickly transfer to back-up system. Odor control system should be evaluated and redesigned to ensure odor control performance in order to avoid air quality violations and odor complaints.
System-wide Odor Control	The prevalence of Hydrogen Sulfide gas in the collection system has been responsible for system wide odor complaints and infrastructure deterioration. This project will evaluate the system, identify the critical needs, and provide solutions.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$16,260	$3,001	$13,259	$0	($1)	$0	$1,000	$12,259

Project Status 5/13	18.5%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$16,140	$16,260	$120	Jun-19	Jun-20	12 mos.	$5,706	$1,000	($4,706)

Explanation of Changes

- Cost increase is primarily due to inflation adjustments for Framingham Extension Sewer/Framingham Extension Relief Sewer Biofilters Design and Construction contracts.
- Schedule and spending shifted due to project priorities.

CEB Impact

- The FERS Biofilters Project is anticipated to reduce FERS chemicals (Nitrazyme and VX456) in half. The impact of this would be approximately ($100,000) in FY21.

S. 136 West Roxbury Tunnel

Project Purpose and Benefits

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

Master Plan Project ☑ Priority Rating 1 (See Appendix 3)

Investigation and rehabilitation of the West Roxbury Tunnel sewer. This sewer, built in 1964, transports flows from the Wellesley Extension Relief Sewer System through the West Roxbury portion of Boston to the High Level Sewer. A structural failure could result in surcharging and overflows.

Project History and Background

During construction of the Wellesley Extension Replacement Sewer and inspection of the tunnel in 1999, visual observations indicated that severe corrosion due to hydrogen sulfide had occurred in a portion of the sewer directly upstream of the West Roxbury Tunnel (WRT), and that the tunnel entrance structure had lost cement lining, exposing the reinforcing steel. Manholes and other structures had been affected more severely.

A structural failure of the WRT would affect the tributary communities of Ashland, Brookline, Dedham, Framingham, Natick, Needham, Newton, Wellesley, and the Hyde Park and West Roxbury portions of Boston. Local failure of the tunnel could result in the discharge of 53 to 128 mgd of raw sewage into the Charles River until emergency repairs could be made, back-up of sewage into local residences and businesses, and the interruption of service to as many as 125,000 people. Section 138, immediately upstream of the tunnel, crosses beneath the VFW Parkway. Structural failure beneath this major transportation corridor would result in a severe public safety hazard.

Design for structural repairs to Section 138 and the West Portal of the tunnel were completed in June 2001. Construction of these repairs, Contract 6569, repairs to Sections 137 & 138, including the slipline of Section 138, were completed in June 2002. The design contract to rehabilitate the tunnel was awarded in February 2009 and ended in June 2011. The tunnel was inspected in August 2010 and there has been negligible deterioration since the 1999 inspection. Based on these findings and the significant reduction in hydrogen sulfide levels in the tributary sewers over the past decade, it was determined that the tunnel is not in need of immediate repair. In lieu of immediate repair, a tunnel inspection program will be implemented to monitor the conditions of the tunnel.

Scope

Sub-phase	Scope
Inspection	Inspection of Section 137 of the West Roxbury Tunnel, which includes 12,500 linear feet of 84-inch reinforced and unreinforced concrete tunnel. Initial inspection completed in 1999.
Design/CS/RI	Design, construction services, resident inspection for corrective actions to repair/rehabilitate 1,000 feet of Section 138 and the West Portal, and a conceptual design report for the rehabilitation of the tunnel. Design/construction completed in June 2002.
Construction	Rehabilitation of 1,000 feet of Section 138 and the West Portal. Completed in June 2002.
Tunnel Inspection	Inspection contract to monitor the conditions of the tunnel in 10 years

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$11,314	$10,309	$1,004	$4	$1,434	$0	$0	$1,000

Project Status 5/13	91.2%	Status as % is approximation based on project budget and expenditures. The design contract to rehabilitate the tunnel was awarded in February 2009 and ended in June 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$11,309	$11,314	$5	Jun-20	Jun-20	None.	$0	$0	$0

Explanation of Changes

- N/A

CEB Impacts

- No impacts identified at this time.

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 Supervisory Control and Data Acquisition System (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. The construction effort on the first and most complex of two construction packages began in March 2006 and reached substantial completion in January 2008. This construction addressed SCADA needs at most pumping and CSO facilities, as well as establishing overall data communications improvements. The second construction package provided for SCADA needs at the remote headworks facilities, taking into consideration future CIP improvements at the older headworks facilities. This contract reached substantial completion in July 2009.

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 included 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 were also made to support these additional facilities.
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, Prison Point Flow meter, CSU/DSUs), and additional instrumentation and control equipment at the Arthur St. Pump Station to ensure consistency and/or compatibility with installed systems.

Technical Assistance	Technical assistance work to support all subphases.
Wastewater Redundant Communications	To study and implement redundant communications alternatives for Wastewater facilities, with an emphasis on wireless options. It is critical to have alternative communication if an important facility alarm does not reach the Operations Control Center.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$20,482	$19,782	$700	$0	$5,834	$0	$700	$0

Project Status 5/13	96.6%	Status as % is approximation based on project budget and expenditures. Construction 1 contract was substantially complete in December 2007. Construction 2 contract was substantially complete in July 2009. Wastewater Redundant Communications is expected to begin in July 2014.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$20,839	$20,482	($357)	Apr-14	Mar-18	47 mos.	$650	$700	$50

Explanation of Changes

- Project cost decreased due to updated cost estimate for Wastewater Redundant Communications phase.
- Schedule and spending shifted due to project priorities.

CEB Impact

- Future operating budgets will reflect further optimization beyond staffing for chemicals and utility usage as a result of SCADA implementation.

S. 139 South System Relief Project

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. Boston Water & Sewer Commission (BWSC) has cleaned the upstream portion of the conduit and MWRA has cleaned the outfall from the Metropolitan District Commission (MDC) gatehouse at Charlesgate to the Charles River. This part of the project also covers structural modifications to Outfall 023 to permit access points and diversion capabilities for future cleaning. This portion of the project has been moved out to fiscal year 2019. Staff will continue to periodically inspect the outfall for increased sedimentation levels and report if schedule modification need to be made.

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 re-routed 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 to enable future cleaning operations.
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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$4,939	$3,439	$1,500	$0	($1)	$0	$0	$1,501

Project Status 5/13	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 commence in FY19.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$4,939	$4,939	$0	Dec-19	Dec-20	12 mos.	$188	$0	($188)

Explanation of Changes

- Project schedule and spending shifted due to project priorities.

CEB Impact

- No impacts identified at this time.

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 has evaluated several of the alternatives and has using 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 and collection system improvement 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 to assist in frequency of CSO discharges.
North System Hydraulic Study	Review the frequency and extent of sanitary sewer overflows (SSOs) in the area tributary to Chelsea Creek Headworks and to evaluate and recommend alternatives to optimize the performance of the collection system and to eliminate or reduce SSOs or relocate them to minimize potential human health risks or environmental impacts.
Hydraulic Flood Engineering Design and Construction– North System	Future implementation of system optimization measures or more significant system modifications which will be identified during the initial study. Additional follow-up analysis or project implementation may be done under this phase.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$10,328	$1,138	$9,190	$106	$313	$259	$2,542	$6,543

Project Status 5/13	11.7%	Status as % is approximation based on project budget and expenditures. The Notice-to-Proceed for the North System Hydraulic Study was issued in November 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$10,300	$10,328	$28	Jun-19	Jun-24	60 mos.	$5,686	$2,542	($3,144)

Explanation of Changes

- Project schedule and spending changed due to project priorities.

CEB Impact

- No impacts 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 was completed in FY06.

Project History and Background

Installation of MWRA's initial 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 was replaced in 2003-2004. Lessons learned with the initial metering system was that the life expectancy of wastewater meters is approximately 7-10 years and that timely replacement of meters can be scheduled to avoid whole scale replacement. Our current system is approaching its 7th year. Plans will be developed to evaluate new wastewater metering technology for our 3rd generation of meters. Meter replacement will be phased in rather than an entire system replacement. Certain key meters will be supplied with electric power instead of battery resulting in more civil, electrical, and construction costs.

Scope

Sub-phase	Scope
Planning	Development of a long-term plan to upgrade or replace the existing wastewater metering system (technology, hardware, software, telemetry).
Equipment Purchase/Installation	Purchase and installation of equipment.
Permanent Site Improvements Design and Constr	Supply of power and enhanced wireless communications to approximately half of the 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.
Wastewater Metering Asset Protection/Equipment Purchase	Rehabilitation, replacement and upgrades (planning, design and construction) for the Wastewater Metering System to be required every 10 years over the 40 year planning period.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$26,438	$5,138	$21,300	$0	$49	$100	$5,531	$15,767

Project Status 5/13	19.4%	Status as % is approximation on project budget and expenditures. The purchase and installation of 2nd generation of meters is complete. Planning for the next replacement will soon be underway.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$26,578	$26,438	($140)	Jul-26	Jul-28	24 mos.	$8,587	$5,531	($3,056)

Explanation of Changes

- Budget decreased due to updated cost for completed equipment purchase phase.
- Project schedule and spending changed due to updated meter replacement plan.

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 2011 for rehabilitation of interceptors, 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. Contract completed in September 2007.
Section 160	Rehabilitation of 11,000 linear feet of Section 160 of the Mystic Valley Sewer in Winchester due to extensive deterioration of the brick and concrete sewer. Rehabilitation of sewer completed.
93A Force Main Replacement	Replacement of 1,100 feet of 24-inch ductile iron force main due to extensive corrosion from hydrogen sulfide. Contract was substantially complete in January 2007.
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.
Interceptor Renewal #1 Design & Construction	#1 – Rehabilitation of Dorchester Sections 240, 241 and 242.
Interceptor Renewal #2 Design & Construction	#2 – Rehabilitation of portions of Sections 163 and 164 in Brighton.
Interceptor Renewal #3 Cambridge /Somerville Sections 26/27 Design & Construction	#3 – Rehabilitation of portions of Sections 26 and 27 in Cambridge and Somerville.

Sub-phase	Scope
Interceptor Renewal #4 Everett Sections 23/24/Design & Construction	#4 – Rehabilitation of portions of Sections 23 and 24 in Everett.
Malden & Melrose Hydraulics and Structural Study/Design and Construction	#7 – Rehabilitation of Melrose, Malden Sections 41,42,49,54 and 65.
Melrose Sewer	Design and construct an 18-inch diameter sewer extension of an existing MWRA sewer on Melrose St. to reduce MWRA sewer overflows at the Roosevelt School. The construction contract was awarded in January 2010 and completed in September 2010.
Interceptor Renewal #5 Milton Sections 607/609/610	#5 - Rehabilitation of portions of Sections 607/609/610 in Milton.
Interceptor Renewal #6 Chelsea Sections 12/14/15/62	#6 - Rehabilitation of portions of Sections 12/14/15/62 in Chelsea.
Prison Point HVAC Upgrades, Design & Construction	The HVAC system improvements include the replacement of components for the HVAC system. The ductwork, air handling equipment, dampers, louvers, and odor control are in need of upgrade. An assessment was performed to develop the scope of the project and more accurately estimate the cost of construction. The conversion of the control system for the HVAC to electronic digital control was completed in FY05/FY06 under the CEB. The diesel engine fuel system modifications at this facility were completed under the SCADA contract and included the fuel oil delivery feed to the system boiler.
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 replacement of the existing heating system at the Chelsea Creek Headworks was completed. The systems at Ward Street and Columbus Park will be replaced under the Remote Headworks Upgrade Project.
Remote Headworks Concept Design	A Concept Design was performed to identify the needs of the three remote headworks facilities to recommend equipment replacement and upgrades for further design and construction. The Concept Design included a Condition Assessment of all equipment and non-equipment assets to establish a basis for improvements and upgrades to meet business goals and objectives.
Hingham Pump Station Isolation Gate Construction	The Hingham Pump Station was built without an influent gate. The station services the Town of Hingham and has no direct means to isolate the flow to this station. Labor intensive and inefficient means using stop logs, sand bags, sewer plugs and pumps are required to isolate and divert flow. This project included the design and installation of a sluice gate in a diversion chamber, to isolate the station and bypass flow to allow maintenance to take place in the station without interruption of service.
Alewife Brook Pump Station Rehabilitation Design and Construction	The Alewife Brook Pump Station was built in 1951 and the pumps are original equipment. The rehabilitation will include replacing the larger pumps, motors, and piping, increasing pump reliability and efficiency at this facility, replacing the two climber screens and grinders, updating the HVAC system, upgrading the electrical system, PCB remediation and modifying the building interior to meet current building codes.

Sub-phase	Scope
Chelsea Screenhouse Upgrades	The Chelsea Screenhouse has four climber screens and seven hydraulic gates and was built to screen sewerage upstream of the Chelsea Creek Siphons and Caruso Pump Station, and to provide screening of flows diverted from the Chelsea Creek Headworks during wet weather events. Most of the operating equipment has passed its useful lifespan. A preliminary evaluation of the gates in 2007 identified maintenance and operational issues. In November 2011, a conceptual design report for the facility was performed within the Remote Headworks Upgrades Design contract, with recommendations for replacements and upgrades to equipment at the facility. A task order, under the As-Needed Technical Assistance contract, was executed in August 2012 to perform final design of the upgrades.
Nut Island Headworks Fire Alarm/Wire Conduit	This project will replace the existing obsolete and problematic fire alarm system and faulty wiring at Nut Island Headworks. There have been significant repair costs over the past several years to keep the system functional and to correct deteriorated connections and ground faults. An engineering task order was used to design upgrades to the system and upgrades and replacements were completed in FY10.
Nut Island Fire Pump Building Study	Study to identify cause and offer remedy to the settlement of the Fire Pump Building at the Nut Island Headworks. Damage has occurred to the building structure and underground interconnecting utilities. This project is to fully investigate the problem and offer corrective actions for tank settlement mitigation and/or tank replacement.
Nut Island Mechanical & Electrical Replacements	Project to identify the portions of the mechanical and electrical systems that are failing or reached the end of their useful life. Electrical systems will be evaluated through service contract maintenance, which often reveal obsolescence and/or potential for future failure. Mechanical systems have exhibited operational and maintenance difficulties that require close review for design improvement and replacement.
NIH Electrical & Grit/Screenings Conveyance System Design & Construction	This subphase includes the design and construction of improvements to the electrical system, which is subject to groundwater infiltration, and to the grit and conveyance system which has alignment and operations problems, at the Nut Island Headworks. Based on final preliminary design reports completed in July and August 2011, recommendations have been made to improve or replace these systems. These recommendations will be included in one construction contract.
Headworks Effluent Shaft Study	At each of the three remote Headworks, Chelsea Creek, Ward Street and Columbus Park, the wastewater is discharged into a vertical shaft connected to a tunnel that conveys the sewage to the Deer Island Treatment Plant. A past inspection of the shaft at Chelsea Creek indicated that the walls of the shaft are severely deteriorated. Failure of a shaft could incapacitate the Headworks facility. Concrete spawling from the interior of the shaft falls down into the tunnel. There is concern this may cause additional problems at Deer Island. To-date, there has been no reported issues but it is suggested that this material could be detrimental to pumps or other wastewater equipment at Deer Island. This study should also include requirements related to plant and shaft ventilation.
Chelsea Headworks Upgrades Design CA/ESDC/REI and Construction, Columbus Park and Ward St. Headworks Upgrades Design ESDC/REI and Construction	The Remote Headworks Concept Design proposed recommendations to upgrade the Chelsea Creek, Columbus Park, and Ward Street Headworks, which will be included in design and construction contracts. The recommendations include replacement/upgrade to the screens, grit collection system, grit and screenings handling systems, odor control, HVAC, mechanical, plumbing, instrumentation, PCB removal, and electrical systems, as well as antenna towers. The final design and construction for the Chelsea Creek Headworks Upgrade will be followed by a design and construction contract for Ward Street and Columbus Park Headworks.
Pump Station/CSO Condition Assessment	This project would provide professional engineering services including planning, design review, inventory, evaluation, identification and prioritization of rehabilitation/replacement projects and operational processes for the older pump stations and CSO facilities.

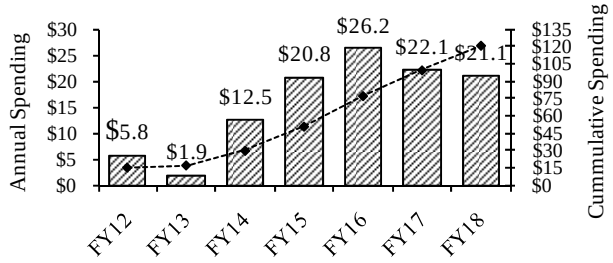
Sub-phase	Scope
Cottage Farm Fuel System Upgrade	Replacement of existing fuel oil system to meet current code requirements, ensure reliable operation, and provide safeguards against accidental oil spills.
Somerville/Marginal Influent Gates and Stop-Log Replacement	The Somerville Marginal facility has two 5'X6' sluice gates that were installed in 1987. These 22-year old gates are used to hold wastewater in the upstream combined sewer system until the level reaches a predetermined elevation, at which point the sluice gates are opened and the facility is activated (chemicals added, screenings removed). The treated CSO is conveyed to the MWRA permitted CSO discharges MWR205 or MWR205A, upstream and downstream of the dam on the Mystic River. During October of 2009, MWRA staff discovered non-continuous, wet weather gate leakage. Repairs to the gates were made and an air barrier was created using stop planks and temporary sump pumps upstream of the gates to minimize gate leakage. However, given the age and frequent problems with these gates and need to create a more permanent and effective barrier between the CSO system and downstream receiving waters, this project was initiated. The project will replace the facility gate, as well as upstream and downstream stop planks and install permanent sump pumps downstream of the gates to create an air void to ensure CSO does not enter the receiving waters until a facility activation is required. Project design was completed under Task Order 20 (contract 7070) and construction was substantially complete in November 2011.
Prison Point/Cottage Farm CSO Preliminary Design/Study	Preliminary design/study to replace and/or upgrade mechanical, electric, chemical feed, and instrumentation equipment. Additionally, evaluate the need to replace diesel driven pumps with VFD electric pumps. This project will look to add more redundancy at Prison Point to ensure proper CSO discharge treatment. A planning report was performed under a Technical Assistance As-Needed task order.
Pump Station Rehab Preliminary Design/Study	Preliminary design/study for upgrades at Hayes, Hingham, Caruso, DeLauri Pump Stations, Wiggins-Castle Island Terminal, and the Somerville-Marginal CSO Facility. The project is to follow contract 7162, Pump Station and CSO Condition Assessment, which may result in other facility improvements. Upgrades to the facilities will ensure design output is met. Failure of a particular piece of equipment could lead to failure of another; such as failure of a grinder could negatively impact a pump. Upgraded facilities should result in fewer corrective maintenance calls. This is a system wide project designed to upgrade multiple facilities to ensure worker safety, equipment integrity, environmental protection, and ensure service is not interrupted. Final Design and Construction phases will be added to a future CIP cycle.
Prison Point Dry Weather Flow & Stripping Pump Improvements	This project is designed to determine the feasibility of replacing two dry weather pumps and adding a second wetwell stripping pump to ensure facility reliability and to pump down the wetwell at a faster rate.
System Relief & Contingency Planning Study	This project will investigate what can be done to avoid serious flooding issues. Increased capacity or controlled relief points must be identified in order to address flooding issues that occur during emergency scenarios. Project will be designed to create increased capacity within the collection system in order to decrease SSO discharges. Scope may also include facility specific plans for a failure at MWRA facilities.
DeLauri Pump Station Upgrades	During wet weather conditions when multiple pumps are operating, the Variable Frequency Drives overheat causing a reduction in pumping capacity. This problem is magnified during summer months, causing undesirable high temperatures in the electrical room. An HVAC evaluation was performed and recommendations made for additional electrical room cooling to eliminate VFD overheating and protect electrical equipment from damage. With the recent installation of a 1.5 megawatt wind turbine at the facility, security related improvements were recommended.

Sub-phase	Scope
Caruso Pump Station Improvements	This project would replace the existing standby generator, HVAC system, fire detection/suppression system and security system at the Caruso Pump Station. The standby generator is 21 years old and is one of a kind of this type of generator. The manufacturer is no longer making spare parts and there is only a limited quantity of available spare parts. The generator will be replaced with a newer model with readily available parts to ensure reliable back-up power. Technical Support evaluated the HVAC system and determined it was in need of replacement. Due to the age of the fire detection /suppression system, frequent problems, the fire protection system needs to be replaced and/or upgraded. The existing security system is outdated and does not meet MWRA requirements.
Prison Point/Cottage Farm Facilities (Diesel Engine Upgr./Prison Point Pump and Gearbox Rebuilds)	Refurbishment of the Prison Point CSO Gearboxes and pumps based on an inspection report performed in May 2010. It is critical during major wet-weather events to have all four pumps operational to provide maximum station capacity and provide redundancy at this critical CSO facility. Also, MWRA Non-emergency Generator Upgrades Required by EPA National Emissions Standards Regulations for Carroll Water Treatment Plant and Prison Point and Cottage Farm CSO facilities.
Section 156 Design/Build	Rehabilitation of sewer Section 156 and a portion of adjacent Sections 17 and 19, and associated structures/manholes located between Air Force Road and the Malden River in the City of Everett. The sewer is a 120-year old, 61-inch by 56-inch rounded horseshoe brick sewer, which conveys flows of up to 40 million gallons per day from Wakefield, Stoneham, Woburn, Winchester, and parts of Medford. The sewer is 1,800 feet long of which 125 feet was repaired in 2001. The design/build contract, including Cured-in-Place lining was completed.
Sections 4,5, and 6 North Metropolitan Sewer Rehabilitation Design CS/RI and Construction	Rehabilitation of 3,300 feet (from total of 13,201 linear feet) of 108-inch sewer pipe. Rehab projects in 1991 and 1997 lined these sections with 3-inches of silica/shotcrete covered with epoxy coating. Recent video and manned inspections for the Section 186 emergency work identified the shotcrete as crumbling and the epoxy lining peeling.
Rehabilitation of Sections 186 and 4 Construction	Emergency removal of delaminated plastic liner from Section 186 was performed in June 2011. This project includes rehabilitation of Section 186 in its entirety including removal of all remaining failed lining and relining of Section 186, and rehabilitation of a portion of Section 4 just upstream of Section 186; for a total of 2,000 linear feet of 108" sewer pipe. The preliminary design report was finalized in October 2012 and the project is currently under final design.
Prison Point Piping Rehabilitation	As a recommendation of the Prison Point/Cottage Farm CSO Preliminary Design/Study, this project will repair weak spots, replace pipe saddle supports, and install a erosion/corrosion liner in the discharge piping.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$279,794	$15,347	$264,447	$1,882	$11,019	$12,489	$102,653	$159,912

I&P Asset Protection



Project Status 5/13	6.1%	Status as % is approximation based on project budget and expenditures. Chelsea Headworks Upgrades Final Design commenced in July 2012. Melrose Sewer work was completed in February 2011. NI Electrical & Grit/Screens Conveyance Design commenced in March 2011 and the construction contract was awarded in June 2013. Somerville/Marginal Influent Gate Replacement was substantially complete in November 2011. DeLauri Pump Station Upgrades Final Design commenced in January 2012. Prison Point HVAC Construction was substantially complete in March 2012. Hingham Pump Station Isolation Gate was substantially complete in April 2012. Alewife Brook PS Final Design/CA/REI Notice to Proceed was issued in July 2012. Caruso PS Improvements Design/CA/REI Notice to Proceed was issued in August 2012. Cottage Farm Fuel System Upgrade was substantially complete in April 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$257,863	$279,794	$21,931	Mar-25	Dec-31	93 mos.	$124,609	$102,653	($21,956)

Explanation of Changes

- Budget increased primarily due to revised cost estimates for Sections 4,5,6 North Metropolitan Trunk Sewer Construction, Alewife Brook Pump Station Rehabilitation Construction, Interceptor Renewal #1 Design, Nut Island Electrical & Grit/Screens Conveyance Construction, Prison Point Cottage Farm Facilities, Reconfigured Headworks Upgrades to be two design and two construction contracts instead of original plan for three contracts for Chelsea Creek, Columbus Park, and Ward St facilities. Also, new phase was added for Prison Point Piping and inflation adjustments.

- Schedule and spending changes primarily due to revised schedule and sequencing for the Headworks Upgrades projects, updated cost estimates above, and several schedule changes including Interceptor Renewal #2 Design

and Construction, Interceptor Renewal #4 Everett Section 23/24/156, Interceptor Renewal #5 Milton, Nut Island Mechanical and Electrical Improvements, Malden & Melrose Hydraulics & Structural Construction, Interceptor Renewal #1 Design, and Prison Point/Cottage Farm Facilities contracts.

CEB Impact

- None identified at this time.

S. 146 Inspection of Deer Island Cross Harbor Tunnels

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*

Master Plan Project ☑ 2008 Priority Rating 2 (see Appendix 3)

To inspect, design, and repair MWRA deep rock tunnels to ensure proper wastewater system operation.

Project History and Background

The MWRA sewer system includes three deep rock tunnels that carry wastewater from the headworks to the DITP. The MWRA currently does not have the technology and capability of inspecting deep rock tunnels.

Scope

Sub-phase	Scope
Tunnel Shaft Repairs Design & Construction	The MWRA sewer system includes three deep rock tunnels that carry wastewater from the headworks to the DITP. The MWRA currently does not have the technology and capability of inspecting deep rock tunnels. This subphase includes inspection, design, and construction of repairs.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$5,000	$0	$5,000	$0	$0	$0	$0	$5,000

Project Status 5/13	0.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$5,000	$5,000	$0	Jun-18	Jun-20	24 mos.	$4,375	$0	($4,375)

Explanation of Changes

- Schedule and spending changed due to project priorities.

CEB Impact

- None identified at this time.

S. 147 Randolph Trunk Sewer Relief

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*

Master Plan Project ☑ 2009 Priority Rating 3 (see Appendix 3)

To identify system improvements to reduce sanitary sewer overflows that occur at MWRA's Sewer section 628 and Pearl Street siphon.

Project History and Background

The Randolph Trunk Sewer was constructed in 1958 and consists of three sections: 627, 628 and 628A. Section 628 is a 42-inch diameter reinforced concrete sewer located in Braintree. During extreme wet weather events, Section 628 experiences overflows, particularly at a 50-foot long double-barrel siphon located at Pearl Street next to residential property. A study will be performed to determine the best method of reducing excessive wet weather flows or to provide hydraulic relief to this section of the Randolph Trunk Sewer.

Scope

Sub-phase	Scope
Study	Study to identify system improvements at Sewer Section 628 and Pearl Street Siphon.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$750	$0	$750	$0	$0	$0	$0	$750

Project Status 5/13	0.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$750	$750	$0	Jun-17	Jun-20	36 mos.	$750	$0	($750)

Explanation of Changes

- Schedule and spending changed due to project priorities.

CEB Impact

- No additional impacts identified at this time.

Treatment

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 Plant (DITP) by ensuring timely replacement of DI's systems, which contain more than 60,000 pieces of equipment with an approximate value of $1 billion. Based on the Master Plan developed in 2006 (and subsequent updates), MWRA expects to sequentially replace equipment and structures in the facility as they reach the end of their useful life.

Construction of the Deer Island Treatment Plant 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 1997. With the completion of the Effluent Outfall Tunnel in September 2000, the plant discharges treated effluent 9.5 miles offshore into the 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 was expanded to include other Operations units throughout MWRA, this Deer Island project was renamed. An initial component of the program, Inventory and Evaluation phases 1 and 2 (previously a part of this project), were placed under the Capital Maintenance Planning and Development project in the *Business Operations and Support* capital budget in a prior budget cycle.

At an expansive and complex facility like the Deer Island Treatment Plant, 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 then overhaul, upgrade, or replace the equipment, systems, and structures as needed. This project encompasses five major functional categories:

1. Equipment Replacement (chains, pumps, motors, control systems, discrete process equipment, etc.).
2. Architectural projects (expansion joint replacements, concrete corrosion, etc.).
3. Utilities projects (water, sewer, drainage, piping, electrical wiring, heating systems, etc.).
4. Support projects (Technical Information Center projects, security projects, etc.).
5. Specialty projects (chemical pipelines and storage tanks, fuels storage tanks, etc.).

Scope

Sub-phase *Equipment Replacement:*	**Scope**
Equipment Replacement Projection (ERP)	Long-term placeholder for funding new projects and/or increases to existing projects. Funds for new projects identified during each CIP development phase are deducted from this placeholder and then shown under new sub-phases. In FY09 the funds were depleted due to cost increases in electrical projects and the primary/ secondary clarifier rehab project. Therefore, $25M was added for FY14 – FY18 to fund other projects added during this next cap period. In the FY12 Final CIP, this spending was all moved to the FY19-23 cap period.
Equipment Condition Monitoring	Installation of temperature & vibration-monitoring equipment in NMPS and Winthrop Terminal Facility (WTF). Completed in January 2005.

Sub-phase *Equipment Replacement:*	**Scope**
CEMS Equipment Replacement	Replaced the data collection computers, upgraded the software, and added PLCs to the Continuous Emissions Monitoring Systems on the two high-pressure Zurn boilers. Project was substantially complete in March 2006.
Pump Packing Replacement	Replace pump packing seals with mechanical seals in the North Main, South System, and Winthrop Terminal pump stations. Purchases were complete by the end of FY08 with installations completed by in-house staff in FY09.
LOCAT Scrubber Replacement Design & Construction	Replace the Thermal Power Plant's high-maintenance digester gas wet scrubber system. Work to replace the TPP boiler management systems was pulled from this project for FY13; see the "Utilities" section.
Digester Chiller Replacement	Replaced the refrigeration-based digester gas chiller with a chilled water system that performs better at low operational loads. Completed in May 2006.
Dystor Tank Membrane Replacement	Emergency replacement of a torn gas membrane on one digester storage tank, and preventive replacement on the second. Completed both by October 2005.
Dystor Membrane Replacements	Periodic future replacement of the two gas & sludge storage tank membranes in the digester complex; added in FY08 per the Master Plan. Replaced both membranes in 2005, anticipated to be required every 12-15 years.
Digested Sludge Pump Replacement Design & Construction (Phase 1)	The three positive displacement Abel pumps caused a great deal of pipe vibration and require extensive maintenance. Added per the Master Plan, centrifugal pumps with higher flow rates are being installed to reduce the potential for grit settlement in the pipes. The first phase ran from October 2009 to September 2011, to install one centrifugal pump and a flushing pump. These new pumps will be tested to ensure they work well before the three existing pumps are replaced. See Phase 2 below.
Digested Sludge Pump Replacement Phase 2	New sub-phase added in FY14, to complete replacement of the Abel pumps and include replacement of the thickened primary sludge pumps header manifold. Expected to begin in October 2013, and be completed by October 2015.
Centrifuge Back-drive Replacements	Replace the centrifuge back-drives, which have become obsolete. Commenced in FY13 and will take 2 years to complete.
Grit & East/West Odor Ctrl Air Handler Unit (AHU) Replacements	Replace deteriorated air handlers; added per the Master Plan. Replacements in FY09-16, then every 15 years. Grit AHU replacement was completed in June 2010. The E/W Odor Control AHU Replacements are now included as part of the HVAC Equipment Replacement project, below.
Fire Alarm System Replacement – Design & Construction and REI	Newly identified in FY08, added from the Master Plan. To replace obsolete fire alarm monitoring & control systems. Begin design in FY14, replace in FY16-19 and approximately every 20 years thereafter.
HVAC Equipment Replacement – Design/ESDC & Construction	Newly identified in FY08, added from the Master Plan. To replace two obsolete HVAC control systems with one manufacturer's system, reducing replacement parts and improving automation. Design in FY14, replace in FY16-19 and then every 15 years. Increased the scope to include central lab fume hoods and East/West Odor Control Air Handler replacements in FY11.
Centrifuge Replacements – Design & Construction	Replace the sludge centrifuges when the scrolls/bowls are too worn to repair, or after catastrophic failure. Units have a 20-30 year life but were exposed to a lot of grit after start-up in 1996. Included in the Master Plan; plan to replace four centrifuges every ten years beginning in FY19.

Sub-phase *Equipment Replacement:*	**Scope**
Cryogenics Plant Equipment Replacement – Design & Construction	Design and construction to replace pumps, valves, motors, sensors, switches, programmable controllers and other obsolete equipment as needed. Added in FY08 per the Master Plan. Projects to replace 3 chillers was given a separate sub-phases for FY13; see below. Remaining plant overhaul work to commence in FY15-17 with future rehab and upgrade work occurring every 10 to 15 years.
Cryogenics Chillers Replacement	Project to replace failing air chillers that require frequent maintenance in the oxygen generation plant in FY14-15; new separate sub-phase in FY13.
South System Pump Station Pump Lube System Replacement	Change the pump lubrication system from one using grease to one using oil. Only requires routine maintenance after installation, not replacement. Included in the Master Plan. Construction is scheduled for FY19-21.
Digester Modules 1 & 2 Pipe Replacement Design & Construction	During digester pipe cleaning done in mid-2007, deterioration of the glass lining was noted. This sub-phase was not in the Master Plan; it was added in FY08. The $8M funding was taken from the Equipment Replacement placeholder, so no net CIP increase occurred. Construction is scheduled for FY12-14. Scope also includes plug valve replacements. A new project to complete additional digester storage tank rehab work was added in FY12, and given its own sub-phase in FY13; see the last project under "Specialties".
Butterfly Valve Replacements, North Main Pump Station (NMPS) & Winthrop Terminal Facility (WTF)	There are twenty 60-inch butterfly valves in NMPS and eight 36-inch plug valves in WTF, for isolating the pumps when maintenance is required. One valve in NMPS has been replaced; the removed valve was sent out for evaluation, but the condition was too poor to rebuild. Several others have begun to leak, indicating that the gaskets and seals are failing. Planning for replacements in FY13-15. Scope revisions were made in FY10 to include replacing the magnetic flow meters. Scope revision now includes the replacement of PSL piping and the repair of six SSPS dampeners.

Sub-phase *Architectural:*	**Scope**
Study/Concept Design-Concrete Repairs	For installing a protective coating on concrete in secondary clarifiers and disinfection basins. Data indicates work not needed; dropped in FY11.
Expansion Joint Repairs	The program to periodically replace failed expansion joints in the concrete clarifier decks and/or various retaining walls. The first phase was completed in November 2003; phase 2 began in FY13, phase 3 is scheduled for FY16-18.
Eastern Seawall Design & Construction	Design and construction of repairs to the base of the eastern seawall due to tidal damage, exposing rebar. Removed in FY06, added back in FY09. Wall condition is assessed annually. Work currently scheduled for FY18-19.
Roof Replacement Phase 1	Added to the CIP in FY10, based on decision to capitalize these costs. Replaced the rubber membrane roof on the Winthrop Terminal, the Administration/Warehouse building, the Cryogenics Facility, and the lower roofs on the Digester Modules. Completed March 2010.
DITP Roof Replacements Phase 2	Also added in FY10, project to replace roof membranes at the North & South Main Pump Stations; East & West Odor Control; the Grit Facility; and the Centrifuge Thickener building. Completed July 2011.
Barge Berth and Facility Replacement	Major rehabs of the barge berth & pier facilities due to damage and/or normal wear. Added per the Master Plan. Scheduled for FY14-15 and FY19, then on a 20-year cycle.

Sub-phase *Architectural:*	**Scope**
DITP Roof Replacement Phase 3	Project added in FY13. New roofing is needed at the Grit Facility, North Main Pump Station, Main Switchgear Building, and the gravity thickeners in order to protect the equipment in these buildings. Current roofing is ~ 17 years old and is in need of repair. Scheduled for FY13-14.

Sub-phase *Utilities:*	**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 (EEU) including future cycles from the Master Plan	The program to replace substation components and bus ducts. Bus duct 2&22 replacement completed October 2001, and EEU - 2 completed by March 2007. EEU–3 began in FY08, completed by August 2011. EEU-4 started in FY13; Under the Master Plan, Phase 5 was added and is scheduled to start in FY18.
VFD Replacements, including future cycles from the Master Plan	The program to replace obsolete variable frequency drives (VFDs) in the North Main Pump Station (in FY12-15), South System Pump Station (done in FY07-08), Winthrop Terminal Facility (FY14-16), and miscellaneous smaller VFDs throughout the plant (on-going). Future replacements every 12-15 years.
NMPS Harmonic Filter Replacement	The second phase of NMPS VFD and motor replacement is installation of new harmonic filters in FY18-20.
Power System Improvement Design & Constr. (Contracts 7061, 7061A, 7061B, 7061C, 7061D)	For modifications to DITP's electrical system as recommended in the consultant report after an FY04 power outage. Design completed in FY09-11. Completing the construction in a series of projects in FY09-14; added 7061C, dump condenser replacement and 7061D for NMPS fuel tank removal in FY11. Two awarded in FY09, two in FY11, the last is scheduled for FY14-15.
Thermal Power Plant Modifications – REI	Project covers REI work on one of the 5 projects above, modifications in the Thermal Power Plant. Scheduled to begin in FY14.
TPP Boiler Control Replacement	Replace boiler controls in the Thermal Power Plant that are becoming obsolete. Scheduled to begin in FY14.
Switchgear Replacements including future cycles added per the Master Plan	On-going program to sequentially replace obsolete electrical switchgear. Several buildings scheduled for FY17-19, others in FY19-21. Future cycles beyond that period are not currently funded.
Transformer Replacements	Approximately 42 electrical substations and 87 transformers have been in service an average of 13 years. Transformers are replaced when the routine electrical maintenance program identifies them as being near the failure point. Sub-phase eliminated in FY14; replacements are now included in Electrical Equipment Upgrades.
PICS Replacement including future cycles from the Master Plan	Replacement or upgrade of components of the Process Information Control System (PICS) including keypads, consoles, and software due to obsolescence. To be completed in FY13 followed by two years of warranty; and may need to be repeated every 10-12 years.
PICS Distributed Processing Units (DPU) Replacement	Replace the system "backbone", the 26 DPU cabinets or internal components. Added per the Master Plan, scheduled for FY21-23.
Sodium Hypochlorite Pipe Replacement Design, REI and Construction	Replacement of PVC piping that transports sodium hypochlorite from the storage tanks to the disinfection basins with a better-suited pipe. This project will address issues with leaks, corrosion, and safety hazards in FY15-17.
Chemical Pipe Replacement Design and Construction	Planned periodic replacement of the various chemical pipelines in the odor control and disinfection facilities due to deterioration from corrosion. Scheduled for FY16-18.

Sub-phase *Utilities:*	**Scope**
Heat Loop Pipe Replacement Construction	Rerouting heat loop piping into galleries to reduce underground corrosion and improve accessibility. Phase 1 completed in Dec. 2005, Phase 2 completed in February 2008. Phase 3 completed in March 2011. Includes periodic valve replacements. No other repeat cycles are currently planned.
Fuel Pipe Abandonment	Pulled from the project above. To cement the existing fuel pipeline in place in FY13 instead of removing it. Project completed December 2012.
North Main Pump Station Motor Control Center (MCC) Construction	Sequential replacement of the MCC equipment that has become obsolete and unreliable. Designed under As-Needed Design task order, construction completed in two sequential phases in FY12-13. See Phase 2 below.
North Main Pump Station Motor Control Center (MCC) Phase 2 Construction	New sub-phase, pulled from the project above. Second phase of the work, scheduled to be done in FY15-17.
CTG Rebuilds	Rebuilds of the combustion turbines in the Thermal Power Plant. Added from the Master Plan, scheduled for FY17-19 with repeat cycles every 15 years.
STG System Modifications Design & Construction	Involves adding equipment to the steam turbine generator that will produce additional electricity utilizing the current steam production more efficiently. To help the MWRA meet the energy goals set out by executive order, the project began in FY09. Completed in February 2011.
DI Digester Flare #4 Design and Construction	Install a fourth gas flare to reduce the potential for air permit violations when an existing flare is out of service and the boilers have to be taken off-line. Construction currently scheduled for FY20-21.

Sub-phase *Support:*	**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). Current systems deemed sufficient, remaining project removed in FY14.
Document Format Conversion	Conversion of Deer Island construction documents into electronic format and completion of document-reference database. This work is in process, and has several phases. Expect completion by the end of FY14.
As-Needed Design Phases 5, 6, and 7	On-going technical design services and/or construction support to supplement existing engineering resources for specialized or complex engineering issues. Typically, the contracts are issued in tandem and run for two years each. Starting with Phase 6, the contract length was extended to three years each. Phases 6-1 and 6-2 ended by October 2012, followed by phases 7-1, 7-2, and 7-3 (three contracts awarded in FY13, at $1.6M each over the three years).
Deer Island As-Needed Technical Design	This subphase is a placeholder, used to continue the technical design services and/or construction support in the same fashion as the contracts listed above. Each series of new contracts will be deducted from this placeholder and given their own subphase numbers.

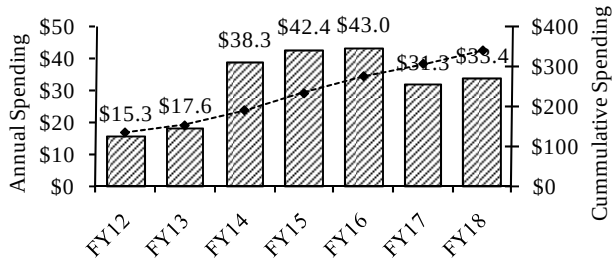
Sub-phase *Specialties:*	**Scope**
Sodium Hypochlorite Tank Liner Removal	Removed the failed lining in tank #1 of the four sodium hypochlorite storage tanks. Completed in September 2006.
Hypochlorite Tanks 1&3 Reline	Renamed the "Sodium Hypo Tank Repair 1" subphase in FY08. Included the stripping, repair and relining of tank 3. Completed in November 2007.
Hypochlorite Tanks 2&4 Reline	Added in FY08 per the Master Plan. Strip & reline the two remaining sodium hypochlorite storage tanks. Scope included removing ladders and replacing safety railings on the tanks. Completed in October 2008.
Future Sodium Hypo Tank Rehabilitation or Replacement	Periodic stripping and relining of the four sodium hypochlorite tanks, based on historical experience to date. Included in the Master Plan. Based on condition, expect to start replacing one tank per year beginning in FY18.
Sodium Bisulfite Tanks Rehabilitation	New sub-phase for FY14 to re-line two Bisulfite tanks. Tank 1 and Tank 2 are in fair condition on the outside (shows staining, rusting, and corrosion). If one tank fails there is no longer any back-up. By FY15, the tanks will have been in service for 19 years. Work expected to begin in FY15.
Primary & Secondary Clarifier Rehab – Design (ESDC/REI)	Consultant to provide ESDC/REI services during the Primary & Secondary Clarifier rehab work described below (design done by As-Needed Design consultant). Project scope expanded to include secondary clarifiers due to deterioration in the longitudinal chains and scum collection systems. Work began once the Construction phase listed below was awarded.
Primary & Secondary Clarifier Rehab Construction	Replace longitudinal and cross collector chains and sprockets, chain drives, wear shoes; modify tip tubes, replace hose bibs; repair wall expansion joints, add more drop boxes, etc. Added the secondary clarifiers to the scope for FY09 and specified a higher-grade stainless steel, which substantially increased the project cost by $30M. Separated out the gravity thickener scope due to the need for separate, distinct schedules. Project awarded at $59.4M, increased due to change orders; work began in February 2009 and construction was completed in February 2012.
Gravity Thickener Rehab - Design	Designing gravity thickener improvements, as discussed further below. Project staff determined that a separate design phase is needed for the major overhaul work.
Gravity Thickener Improvements - Construction	This subphase was eliminated in FY08, and the scope was included with the Primary Clarifier Rehab work above. Made a stand-alone project again in FY09. Multiple phases needed - the first phase (6966) involved replacing some fiberglass covers in FY10-12. 6966A, B, and C were added for emergency repairs to center columns in three tanks in FY11. Project completed in June 2012.
Gravity Thickener Rehabilitation	Sub-phase pulled from the project above. This final phase involves installing catwalks around the perimeter of several tanks, removing concrete blocks in the effluent channels, and modifying the sludge thickener roofing to improve staff access and the operating efficiency beginning in FY14.
Gravity Thickener Center Column Replacement	Complete replacement of the center columns in all 4 tanks with a higher grade steel, due to the failures experienced in FY11. Contract awarded in FY13 and is expected to be completed by January 2014.
Ancillary Modifications Design and Construction 4	Dropped the Preliminary Design phase and added ESDC/REI to the scope in FY11. The project involves modifications to the cryogenics facility and plant-wide odor control systems, including the digester gas systems and wet scrubber improvements. This project was moved here from the *Plant Optimization* project in FY10. Construction currently scheduled for FY18-21.

Sub-phase *Specialties:*	**Scope**
Clarifier W3H Flushing System	Sub-phase initially called Clarifier Rehab Phase 2 (see project description for that work, below). The assigned contract number was used for this part of the overall project, so the sub-phase was renamed for FY13. Project to replace deteriorated water flushing lines in the clarifier batteries, and was completed in July 2013.
Clarifier Rehabilitation Phase 2 Design and Construction	Sub-phase pulled from the project above. This project is needed to correct deficiencies noted during the first Primary & Secondary Clarifier project. Influent gates not sealing off tanks adequately; effluent launders and aeration systems need repair; and concrete corrosion in primary clarifiers above the water line needs repair and coating to prevent future corrosion. The sludge removal system in primary tanks and aeration/recirculation systems in secondary tanks need to be rehabilitated as well. Design/REI contract is scheduled to begin in FY14 and be completed by FY21.
Scum Skimmer (Clarifier Tip Tube) Replacement	Sub-phase also pulled from the W3H flushing project above. Needed a separate project and schedule for replacing the scum tip tubes. Scum tip tubes not working results in scum build-up in primary tanks that has to be manually collected and transported to the gravity thickeners. Scheduled to begin in FY14 and be completed by FY16; secondary tip tubes added to scope, increasing the cost.
DI Digester Storage Tank Design/ESDC and Rehabilitation	The Deer Island residuals facility includes three digester modules and two gas handling/ sludge storage tanks. During the Digester Mods Pipe Replacement contract (7055), it was noted that other digester equipment has problems and needs replacement. Plugged digester recirculation pipes, mixer failures, and overflow box deterioration resulted in increasing the scope of work needed to correct all deficiencies in this area of DITP. Some steel plates in the digesters are also expected to need repair or replacement and the interior of the digesters needs to be coated. Construction scheduled to begin in late FY18.

Expenditure Forecast (in $000s) and Project Status

Total Budget	**Payments thru FY12**	**Remaining Balance**	**FY13**	**FY09-13**	**FY14**	**FY14-18**	**Beyond FY18**
$606,848	$132,410	$474,438	$17,619	$132,668	$38,280	$188,385	$268,434

DI Asset Protection



Project Status 5/13	23.9%	Status as % is approximation based on project budget and expenditures. Several previously completed phases for this project are included in the Completed Project list. Additional contracts completed include: As-Needed Design Phases 6-1 and 6-2, Primary & Secondary Clarifier Rehab Construction, TPP Dump Condenser Replacement, Fuel Transfer Pipe Abandonment, and NMPS MCC Construction. Contracts in process include the following: Miscellaneous VFD Replacements, NMPS VFD Replacement Construction, Digester Modules Pipe Replacement, Electrical Upgrade Construction 4, and Centrifuge Backdrive Replacement. Fire Alarm System Replacement Design is expected to start in FY14.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$580,900	$606,848	$25,948	Jun-48	Jun-48	None	$264,004	$188,385	($75,619)

Explanation of Changes

- The project cost increase is primarily due to the revised scope/cost estimates for Scum Skimmer Replacement (Clarifier Tip Tube Replacement) (+$16M), North Main Pump Station & Winthrop Terminal Facility Butterfly Valve Replacement (+$7.5M). There are lesser increases to Digester Sludge Pump Replacement, Ancillary Modifications Final Design 4, Eastern Seawall Construction, and Expansion Joint Repair Construction 3. Also, greater than budgeted award for Electrical Equipment Upgrade Construction 4 and Centriuge Backdrive replacement contracts. Plus, a new project is added for FY14, for Sodium Bisulfate Tanks Rehabilitation at $2.5M. Increases are offset by lowered cost estimates for Thickened Primary Sludge Pump Construction, Digester Sludge Pump Replacement Construction, Transformer Replacement contracts, a change order for Primary & Secondary Clarifier Rehabilitation, deleted work for Fuel Transfer Pipe Replacement Design, and lower award for the Clarifier W3H Flushing System project.

- Spending shifted primarily due to numerous project schedule changes including Clarifier Rehabilitation 2 Construction, Digester & Storage Tank Rehabilitation Construction, Electrical Equipment Upgrade Phase 5, HVAC Equipment Replacement Construction, Ancillary Modifications Construction 4, NMPS Harmonic Filter Replacement, LOCAT Scrubber Replacement, DI Centrifuge Replacements Design, DI Switchgear Replacement Construction, Future Miscellaneous VFD Replacements, Thickened Primary Sludge Pump Replacement Construction, Fire Alarm Replacement Design and Construction, among others. These were partially offset by the new project added and several updated cost estimates including those listed above.

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 and/or operating costs such as the HVAC equipment replacement. However, the potential benefits from most of the projects are not quantified at this time.

- Benefits of several energy-related projects have been estimated and result in anticipated annual electrical savings of nearly $600,000. Some examples include: Electrical Equipment Upgrades 4 ($120,000 in FY17), NMPS VFDs ($187,000 in FY16), Winthrop Terminal Facility VFD Replacement ($30,000 in FY17), HVAC Equipment Replacement ($126,000 in FY20), and Future SSPS VFD Replacements ($120,000 split between FY21& FY22).

- Projects that are expected to reduce maintenance time and other resources are the Gravity Thickener Rehabilitation, Cryogenic Plant Chiller Replacements, Thickened Primary Sludge Pump Replacements and Digested Sludge Pump Replacements.

S. 210 Clinton Wastewater Treatment Plant

Project Purpose and Benefits

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

Project History and Background

The Clinton Wastewater Treatment Plant Rehabilitation was completed in 1992. The plant is generally in good condition. Some equipment rehabilitation and replacement projects were recommended in past CIP cycles. Operability of mechanical equipment and maintenance of electric/standby power systems are key elements to minimizing the risk of component failure. Any malfunction of mechanical equipment may impact wastewater treatment, particularly during large storm events that stress the hydraulic capacity of the facility. Key decision making to minimize risks includes the cost/benefit of when to replace aging equipment and which/how many spare parts to pre-purchase. Other uncertainties include technology upgrades to meet future regulatory requirements. Clinton WWTP was previously included in DITP's "Asset Protection – Specialties" program category, but was given its own distinct CIP program in FY08.

Scope

Sub-phase	Scope
Clinton Soda Ash Replacement	The soda ash delivery system required for pH control in the activated sludge process is obsolete and needs to be replaced. The contract was awarded in November 2007 and work was complete by August 2008.
Clinton Permanent Standby Generator	Install a permanent standby generator at the Clinton Wastewater Treatment Plant. Completed in November 2007.
Clinton Plant-Wide Concrete Repair	The concrete walls, walkways and structural support beams across the primary clarifiers and secondary trickling filters are deteriorating to the point that rebar is exposed. The project involves repairing the walls and potentially replacing the walkways and equipment support beams that extend across the tops of the tanks. In FY14, this scope of work was added to the digester rehabilitation project listed below.
Clinton Digester Cleaning & Rehabs (and Influent Gates)	Clinton's two digesters are approximately 20% filled with compacted grit which is limiting their efficiency. A new discharge permit to be issued soon includes phosphorous limits requiring both digesters to be used at all times. Need to empty, clean, and rehab the tanks (replace covers, piping, valves, gas lancers, and mixers) to operate under new permit. Cleaning the first digester was completed by July 2010. In FY12, the scope was expanded to include installing two new 36-inch influent gates to control flow from Clinton and Lancaster to prevent flooding and protect plant assets. These gates would allow for throttling back on the plant flow during high flow conditions. The gates would be managed so the plant wet well does not overflow, and upstream back-ups do not occur. As of FY14, the project scope also includes plant-wide concrete repairs. The work is scheduled to begin late in FY13 or early FY14.
Clinton Aeration Efficiency Improvement (and Auxiliary Pumps)	A study completed by FS&T recommended installing fine bubble diffusers in three of the six secondary aeration tanks instead of using mechanical mixers to obtain a better oxygen transfer rate while reducing electricity consumption. In FY12 this project scope was expanded to include the installation of four permanent submersible auxiliary pumps to increase pumping capacity during high flow conditions in the plant. These are needed to avoid the cost of renting additional pumps which was required four times in the past two years. Work began in late FY12 and was substantially complete in February 2013.

Sub-phase	Scope
Phosphorous Reduction Design/ESDC and Construction	Latest draft NPDES permit requires greater phosphorous reduction. The Authority expects the permit to be issued in FY14 with four years allowed to achieve compliance. Current treatment system does not reduce phosphorous to required levels and this new process equipment is needed to achieve this limit.
Clinton Roofing Rehabilitation	Added in FY14. Rehabilitate the tar and gravel roofing on the Administrative Building, Chemical Building, Headworks, and the Dewatering and Maintenance Shop.
Clinton Facilities Rehabilitation	Added in FY14. Rehabilitate or replace the grit removal facilities, two belt filter presses, and close Cell #1 of the landfill.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$17,059	$756	$16,303	$1,956	$2,367	$1,140	$10,753	$3,595

Project Status 5/13	14.9%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$9,538	$17,059	$7,521	Jan-16	Sep-22	80 mos.	$6,119	$10,753	$4,634

Explanation of Changes

- Project cost, schedule and spending changed due to new projects added for FY14: Clinton Facilities Rehabilitation at $4M and Clinton Roofing Rehabilitation at $0.5M. Also, an updated cost estimate for Phosphorus Removal Construction increased costs $2.7M. The reason for the schedule change is due to the Clinton Facilities Rehabilitation project, which is scheduled for FY18-22.

CEB Impact

- The projects are required to replace obsolete equipment and systems. The aeration efficiency project is projected to reduce Clinton's electricity usage. The concrete repair and digester rehab work may result in decreased maintenance and/or operating costs although the potential benefits have not been quantified at this time. The phosphorous removal project is estimated to increase CEB costs for labor, chemicals, utilities and maintenance by approximately $110,000 per year. Assume $28,000 in FY17 and $83,000 in FY18.

S. 211 Laboratory Services

Project Purpose and Benefits

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

Project History and Background

The Central Laboratory at the Deer Island Treatment Plant began operating in 1995. The infrastructure needs to be maintained so that the laboratory operation can keep samples uncontaminated and the staff safe. 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 then overhaul, upgrade, or replace the equipment, systems, and structures as needed.

Scope: These are specialty projects, all related to laboratory modifications. No new projects are added at this time.

Sub-phase	Scope
Metals Lab Fume Hood Replacement Design & Construction	Replace six metals lab fume hoods. Scope not included in other lab projects. Expanded the project to include a design & construction phase in FY09; previously expected the design to be done by As-Needed task order. Design began in January 2009, and the construction Notice-to-Proceed was issued in March of 2011 and was completed in February 2012.
Metals Lab Modification Construction	Build-out of a laboratory room to house the new ICP/MS instrument. This trace metal analyzer needs clean space to function properly. Also, replace a failed fume hood and an obsolete TKN digestion unit in the Wet Chemistry lab. Contract was awarded in April 2007 and work was completed in September 2008.
Central Lab Renovations 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; to capture fumes from sample containers and bottle-wash process; and replace deteriorated lab cabinets, sinks and counters, etc. Scope and funding was added to the DITP "HVAC Equipment Replacement" project in FY12, which is scheduled to begin design in FY14 and construction in late FY16.
Central Lab Fume Hood Replacements Construction	Replacement of approximately 35 fume hoods in the Lab at Deer Island not included in other projects above. This scope of work was added to the "HVAC Equipment Replacement" project under the Deer Island Treatment Plant Asset Protection program in FY11; the project costs were added to that project in the FY12 Final CIP. As stated above, construction work is scheduled to begin in late FY16.
Central Lab Fume Hood Replacements Design	This project was to provide the design services for the project shown above; this scope (and associated funding) was added to the DITP Asset Protection program under the "HVAC Equipment Replacement Design" project, expected to commence in FY14.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
2,235	$2,074	$161	$161	$1,306	$0	$0	$0

Project Status 5/13	99.6%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$2,214	$2,235	$21	Feb-12	Feb-12	None	$0	$0	$0

Explanation of Changes

- Project cost changed due to change orders and amendment for the Metals Lab Fume Hood Replacement contracts.

CEB Impact

- The projects are required to replace obsolete equipment and systems. Some of the projects are expected to result in decreased maintenance and/or operating costs, however the potential benefits are not quantified at this time.

Residuals

S. 271 Residuals Asset Protection

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*

Master Plan Project ☑ 2008 Priority Rating 1 (see Appendix 3)

To protect the investment of MWRA ratepayers by ensuring timely replacement of equipment and systems. MWRA expects to replace equipment and structures in the facility as they reach the end of their useful life.

Project History and Background

The Residuals Asset Protection program was created in FY08 as part of the Master Plan. The program consists of the anticipated contracts for maintaining and improving the operations and infrastructure of the biosolids processing plant in the long term. MWRA's Biosolids Processing Facility (aka the "pellet plant") was built in 1991 and expanded in 2001. By 2015, the major pieces of processing equipment will be 20 - 25 years old. The facility is currently in good condition, but significant reinvestment may be necessary beginning in the FY14-18 timeframe. For this facility, operability of mechanical equipment and maintenance of electric/standby power systems are key elements to minimizing the risk of component failure. Key decisions to minimize risk hinge on results from cost/benefit analyses, to determine when to replace equipment. The residuals pelletizing process is also currently energy-intensive; future uncertainties include long-term energy costs and supply.

Under the terms of the contract for operation of the biosolids processing facility, New England Fertilizer Company (NEFCO) is responsible for all facility operation and maintenance including any necessary capital improvements until December 2015. They are obligated to turn the facility back over to the MWRA in an operable condition. The Asset Protection phase is intended to provide a dual-track planning approach addressing: (1) the existing facility capital improvement needs beyond the year 2015, if the Authority continues with pelletization, and (2) the option of assessing alternative technologies prior to the current contract expiration date; culminating in a decision point sometime in FY14-15.

A comprehensive Residuals Condition Assessment/Reliability Study begun in May 2009 was completed in July 2010. The study found the facility to generally be in good condition with only a few recommendations for improvement. A study to assess the latest technology and regulatory trends planned as a second phase started in FY13 and will finish in FY14. The study is intended to narrow the list of viable options for the agency to consider for long-term implementation. The study will also examine the feasibility of co-digestion which involves digestion of food wastes and/or fats, oils, and greases (in the digesters at Deer Island and Clinton) to generate additional methane, and determine if there are any changes in the sludge characteristics that may impact the pellet plant. This study will also review the adequacy of existing facility components and processes, to provide replacement recommendations based upon the latest existing or alternative technologies. Information developed by these projects will be used by MWRA to produce a prioritized list of recommended design and construction projects that will be scheduled over a 9-year period (FY15-23). Scheduling of upgrade projects will be based on equipment failure risk, construction sequencing to maintain facility operations, and capital expenditure planning.

For the residuals biosolids processing facility, proposed spending of $180.3 million on eighteen projects was identified in the 40-year master plan timeframe of FY07 through FY48. The projects identified are merely placeholders in recognition that some capital improvements will likely be required at Deer Island and/or the pellet plant. Fifteen projects (equaling $148.6M) out of the eighteen were included in the FY08 CIP. The other three (addressing the rehabilitation of the polymer system, building envelope, and thermal oxidizers) have a priority rating of 3, and therefore are not yet included in the CIP.

In the FY14 Proposed CIP cycle, the conceptual plan for future design and construction projects was modified; the overall project cost estimate was reduced and fewer sub-phases are now being included to cover the potential construction projects since the plan for the future will not be fully developed until after the technology study mentioned above is completed and the findings evaluated. See the 'explanation' sections below for additional information.

Scope

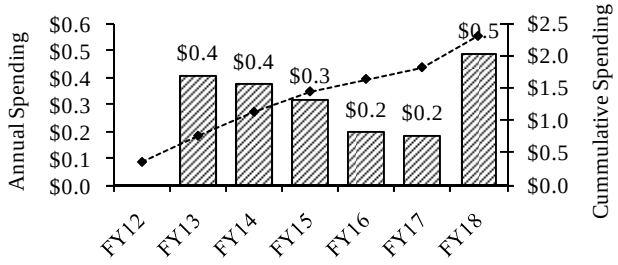
Sub-phase	Scope
Condition Assessment/ Reliability Study	Evaluate the condition of the entire facility at the mid-point of the current contract and then assess other residuals processing options and regulatory changes which may provide cost-saving opportunities. First phase work (present condition assessment) began in May 2009 and finished in July 2010. Work on implementing any short-term recommendations from this phase began in FY11. The 2nd phase, Technology & Regulatory review began in FY13 and is scheduled to finish in January 2014.
Residuals Plant Facility Plan/EIR	The design and construction of improvements to the plant utilities infrastructure (electric, water, sanitary, and drainage) may be necessary. This CIP project slated to start in FY14 will address issues and/or recommendations identified during the initial study.
Residuals Plant Upgrades - Design & Construction	Select a consultant to design and oversee implementation of the first round of needed equipment replacements to coincide with the end of the operations contract. The total project is estimated at $4M for the design/ESDC and $10M for various sub-phases, for the duration of 3 years. Design is expected to begin in January 2018.
Co-Digestion Pilot	New project for FY14, to evaluate the impacts of adding food waste, oils and greases to the digesters at Deer Island, and determine what changes in sludge characteristics may result that could have an impact on the residuals Plant processes.
Residuals Phase 2 Design and Construction	Sub-phase change made in FY14, to broaden the scope and provide more flexibility in completing the work required. For selection of a consultant to design and oversee implementation of a second round of equipment replacements, (possibly encompassing projects from the list of placeholders below). Funded at $15M for design/ESDC and $75M for various unspecified construction phases.
Six Rotary Dryer Replacements-Construction	Replace the rotary dryers. As of FY14, $0 placeholder. The dryers are core equipment, and the most expensive items at the facility in terms of acquisition, installation, and operational costs.
Six Air Scrubber Replacements - Construction	Replacement of the air scrubbers/packed towers. As of FY14, $0 placeholder.
Plant MCC Construction	Replacement of the motor control center (MCC) equipment. As of FY14, $0 placeholder.
FRSA Pier Rehab Design & Construction	To complete a study, and then design for rehabilitation (or demolition) of piers at the Biosolids Processing Facility. This project was deleted in the FY10 cycle.
Rail System Rehab Construction	To rehabilitate portions of the rail system. As of FY14, $0 placeholder.
Replace 9 Pellet Storage Silos - Construction	To replace the pellet storage silos at the end of their expected useful life of 15 years. As of FY14, $0 placeholder.
Sludge Feed Conveyor Replacement - Construction	Replacement of the sludge feed conveyors and weigh scales (from the centrifuges to the rotary dryers). As of FY14, $0 placeholder.

Sub-phase	Scope
Sludge Storage Tank Rehab	Rehabilitation of the sludge storage tanks and related valves. As of FY14, $0 placeholder.
Pumping Systems Upgrade - Construction	For the replacement or rehabilitation of the sludge, centrate, and chemical pumps. As of FY14, $0 placeholder.
Replace 12 Centrifuges – Construction	To replace the sludge thickening centrifuges at the end of their expected 18-year useful life. As of FY14, $0 placeholder.
Utility Upgrades - Construction	Upgrades to the water, sewer, electrical, and telephone systems. As of FY14, $0 placeholder.
Odor Control System Upgrade - Construction	Replacement of the pipelines and odor control equipment for treating the off-gases from the sludge storage tanks prior to release to the atmosphere. As of FY14, $0 placeholder.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$104,209	$345	$103,864	$406	$752	$371	$1,549	$101,909

Residuals Asset Protection



Project Status 5/13	0.7%	Status as % is approximation based on project budget and expenditures. The Residuals Plant Condition Assessment/Reliability Study was completed in July 2010. Notice to Proceed for the Technology & Regulatory Review contract was issued in July 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$147,930	$104,209	($43,721)	Jun-48	Jun-48	None	$54,337	$1,549	($52,788)

Explanation of Changes

- In the FY14 Proposed cycle, the project concept and expenditures were substantially revised to more realistically portray the potential spending that may be needed over the next 10-15 year span of the CIP. The project cost and spending decreased as a result of revised project scope, schedules, and expenditures due to the uncertainty that exists in predicting which projects will be necessary. Projects will be further defined once the Technology and Regulatory Review is done (which may result in the need for additional feasibility studies on possible recommended process changes), and the Facility Plan/EIR and Facility Plan Upgrade Design are underway.

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 and/or operating costs, however the potential benefits are not quantified at this time.

Combined Sewer Overflows

Introduction to Combined Sewer Overflow (CSO) Program

In 1987, MWRA entered a stipulation in the Federal District Court Order in the Boston Harbor Case ("First Stipulation") by which it accepted responsibility for developing and implementing a long-term CSO control plan for all combined sewer overflows hydraulically connected to MWRA's system, including the outfalls owned and operated by the communities of Boston (BWSC), Cambridge, Chelsea and Somerville (the "CSO communities"). In response to the First Stipulation, MWRA conducted site-specific and watershed based planning both to meet short-term CSO control requirements pursuant to federal regulations, including EPA Nine Minimum Controls ("NMC"), and to develop a long-term control plan to bring Boston area CSOs into compliance with the Federal Clean Water Act and Massachusetts Surface Water Quality Standards. MWRA developed these plans in conformance with federal and state CSO policies and associated guidance documents, which evolved during MWRA's nearly 20-year planning period to 2006.

EPA's National CSO Policy (April 1994) requires CSO permitees to develop and implement a set of system optimization measures and reporting procedures intended to quantify and minimize CSO discharges in the short term, in part using detailed system characterization, easily implemented and less expensive system improvements, and optimized operations and maintenance. In compliance with the policy, MWRA submitted its NMC compliance documentation by January 1, 1997, as required. While most of the reported compliance measures involve operations, maintenance and regulatory functions of MWRA that are funded through the Current Expense Budget, system characterization and hydraulic optimization measures described below were funded through the CIP.

The National Policy also requires permitees to develop and implement a long-term control plan in accordance with the provisions of the policy. In the CIP, MWRA undertook two major planning efforts: one in the period 1986 through 1990, which produced the 1990 CSO Facilities Plan primarily in accordance with the EPA CSO Strategy of 1989, and a second and final planning effort in 1992-1997 (and subsequent modifications), which produced a revised long-term plan for CSO control in April 2006.

MWRA's CSO planning efforts were primarily conducted under the System Master Planning phase of the CIP and produced the following components of a broad plan to control CSO discharges and meet water quality standards:

- Through extensive inspections, system monitoring and modeling, MWRA developed a detailed, field-calibrated assessment of its planned collection and treatment system performance in advance of developing a long-term CSO control plan. The performance assessment incorporated major capital investments in the sewer system already underway or planned by MWRA, including upgrades to the transport system, pumping stations, headworks and Deer Island treatment plant. Together with MWRA's and the CSO communities' efforts in the late 1980's and the 1990's to operate and maintain their respective systems more efficiently, these improvements were shown to effectively maximize the system's capacity to control wet weather flows and markedly reduce CSO discharges system-wide. In the period 1988 through 1992, total annual CSO discharge predicted for a typical rainfall year dropped from 3.3 billion gallons to 1.5 billion gallons, with approximately 51% of the remaining discharge treated at five MWRA CSO screening and disinfection facilities. The Charles River especially benefited from these improvements.

- In 1993-1994, MWRA presented a System Optimization Plan ("SOP"), which recommended approximately 160 low cost, easily implemented system modifications to maximize wet weather storage and conveyance. The SOP projects, which were fully implemented by MWRA and the CSO communities by 1997, further reduced CSO discharge by about 20 percent.

- MWRA recommended an extensive set of larger projects covering a range of control technologies to achieve long-term, site-specific CSO control goals using watershed-based assessments of receiving water impacts and uses. MWRA presented a conceptual plan of these improvements in 1994 and refined the recommendations in a facilities plan and environmental impact report it issued in 1997. The long-term plan received initial federal and state approvals in early 1998, allowing MWRA to move the projects into design and construction.

- As MWRA proceeded with implementation of the projects, it evaluated and recommended several adjustments and additions to the long-term plan in the period 1998 through 2006. These adjustments and additions responded to regulatory inquiries seeking higher levels of control (Charles River) or to new information that raised concerns about construction requirements, cost or CSO control performance (North Dorchester Bay, Reserved

Channel, East Boston, and Alewife Brook). A final, comprehensive long-term control plan was approved by EPA and DEP in March 2006 and accepted by the Federal Court in April 2006. This plan and its predicted level of CSO control for each outfall was formally amended in May 2008 to revise the long-term CSO discharges at the Prison Point Facility, based on hydraulic optimization MWRA incorporated into the operations of the facility pursuant to milestones in Schedule Seven. MWRA predicts that the long-term plan, scheduled to be completed in December 2015, will reduce total annual CSO discharge in a typical rainfall year to 0.4 million gallons (an 88% reduction from the 1988 level), with 93% of the remaining discharge to be treated at four MWRA screening and disinfection/dechlorination facilities.

On April 27, 2006, Federal District Judge Richard G. Stearns approved a joint motion of the U.S. Department of Justice (DOJ), EPA, and MWRA that provides a comprehensive resolution of outstanding issues related to MWRA's CSO program. Under the approved motion, MWRA entered a Second CSO Stipulation by which it agreed to implement its previously recommended plans for Alewife Brook/Upper Mystic River and East Boston and to undertake additional work to further reduce CSO discharges to the Charles River from its Cottage Farm CSO Facility. The Cottage Farm facility had been the subject of discussions between EPA and MWRA and related investigations by MWRA since MWRA first issued its long-term control plan in 1997. The additional Charles River work is predicted to reduce CSO discharges from Cottage Farm to 2 activations and 6.3 million gallons in a typical year, from the previous goal of 6 activations and 23.6 million gallons. The scope, milestones, and performance goals of other CSO projects remain unchanged.

The Federal Court ordered schedule had also contained three unmet milestones related to completion of the CSO control plans for Alewife Brook/Upper Mystic River, East Boston, and region-wide floatables control and outfall closings. The accepted joint motion and the Schedule Seven it created revised milestones and also added milestones for the revised Charles River CSO control plan.

In exchange for MWRA agreeing to implement its revised long-term control plan, DEP agreed to issue a series of five (5), three-year extensions to the water quality variances for the Lower Charles River Basin and the Alewife Brook/Upper Mystic River through 2020. As they relate to MWRA, the terms and conditions of the variance extensions would be limited to the requirements of the Court Order (i.e. MWRA's responsibility is to implement the long-term control plan contained in the revised Schedule Seven). The most recent set of variance extensions was issued by DEP in September 2010 (for Alewife Brook/Upper Mystic River) and October 2010 (for Lower Charles River Basin). These extensions are in effect until September and October 2013, respectively, when it is expected that DEP will issue new three-year extensions.

The Second CSO Stipulation replaces the stipulation entered in 1987 which established MWRA's responsibility to develop and implement a region-wide CSO long-term control plan. The Second CSO Stipulation states that once MWRA has implemented the recommended plan and demonstrated that it meets the specified goals for activation frequency and discharge volumes, each CSO community will be solely responsible for the CSO outfalls it owns and operates. These important conditions provide much greater certainty to the MWRA and its ratepayers relative to the scope and cost of the CSO program through 2020. The elements of the final long-term CSO control plan and the numerical CSO discharge goals for each receiving water segment are presented in Table 1.

The CSO project schedules in Schedule Seven are aggressive and reflect project-specific design, permitting, and construction requirements. The program has and will continue to face cost and schedule challenges, including potential conflicts with other projects in the urban areas, and the need to manage traffic and community impacts in historical, densely populated neighborhoods. Notwithstanding these challenges, MWRA, working in cooperation with the Boston Water and Sewer Commission (BWSC), the Town of Brookline, and the City of Cambridge, will continue to manage the CSO program with the goals of controlling project costs, maintaining schedule, and fully achieving the projects' CSO control objectives.

MWRA commenced implementation of the long-term CSO control plan in 1996. Updated project schedules are presented in Table 2. By June 2013, MWRA and the CSO communities had completed 31 of the 35 projects in the plan, two projects were well into construction, and the remaining two projects were in design. With this level of completion, MWRA has achieved significant progress in reducing CSO discharges to Boston Harbor and tributary rivers. The completed CSO projects, together with improvements to MWRA's wastewater conveyance and treatment systems, including the upgraded Deer Island Treatment Plant and associated pump stations, have reduced the total annual volume of CSO discharge in a typical rainfall year from 3.3 billion gallons in 1988 to 0.5 billion gallons today, an 85% reduction, with 88% of the remaining overflow receiving treatment at MWRA's four long-term CSO facilities. The four remaining projects are scheduled to be complete by December 2015.

Receiving Water	CSO Discharge Goals (typical rainfall year)		Projects*	Capital Cost* ($ million)
	Activations	**Volume (million gallons)**		
Alewife Brook/Upper Mystic River	7 untreated and 3 treated @ Somerville Marginal	7.3 3.5	• Cambridge/Alewife Sewer Separation • MWR003 Gate and Rindge Siphon Relief • Interceptor Connections/Floatables • Connection/Floatables at Outfall SOM01A • Somerville Baffle Manhole Separation • Cambridge Floatables Control (portion)	90.8
Mystic River/Chelsea Creek Confluence and Chelsea Creek	4 untreated and 39 treated @ Somerville Marginal	1.1 57.1	• Somerville Marginal CSO Facility Upgrade • Hydraulic Relief at BOS017 • Chelsea Trunk Sewer Replacement • Chelsea Branch Sewer Relief • CHE008 Outfall Repairs • East Boston Branch Sewer Relief (portion)	78.0
Charles River (including Stony Brook and Back Bay Fens)	3 untreated and 2 treated @ Cottage Farm	6.8 6.3	• Cottage Farm CSO Facility Upgrade • Stony Brook Sewer Separation • Hydraulic Relief at CAM005 • Cottage Farm Brookline Connection and Inflow Controls • Brookline Sewer Separation • Bulfinch Triangle Sewer Separation • MWRA Outfall Closings and Floatables Control • Cambridge Floatables Control (portion)	91.1
Inner Harbor	6 untreated and 17 treated @ Prison Point	9.1 243.0	• Prison Point CSO Facility Upgrade • Prison Point Optimization • BOS019 Storage Conduit • East Boston Branch Sewer Relief (portion)	61.8
Fort Point Channel	3 untreated and 17 treated @ Union Park	2.5 71.4	• Union Park Treatment Facility • BOS072-073 Sewer Separation and System Optimization • BWSC Floatables Control • Lower Dorchester Brook Sewer Modifications	62.5
Constitution Beach	Eliminate		• Constitution Beach Sewer Separation	3.8
North Dorchester Bay	Eliminate		• N. Dorchester Bay Storage Tunnel and Related Facilities • Pleasure Bay Storm Drain Improvements • Morrissey Blvd Storm Drain	255.8
Reserved Channel	3 untreated	1.5	• Reserved Channel Sewer Separation	64.8
South Dorchester Bay	Eliminate		• Fox Point CSO Facility Upgrade (interim improvement) • Commercial Pt. CSO Facility Upgrade (interim improvement) • South Dorchester Bay Sewer Separation	126.8
Neponset River	Eliminate		• Neponset River Sewer Separation	2.4
Regional			• Planning, Technical Support and Land Acquisition	50.3
TOTAL **Treated**		**409.6** **381.3**		**888.1**

*Floatables controls are recommended at remaining outfalls and are included in the listed projects and capital budgets.

MWRA's capital program includes temporary flow metering and other efforts to gather and evaluate new data to track system performance. The performance of the sewerage system is continuously improving as CSO and non-CSO projects are completed. Updated assessments of the system's hydraulic performance and updated estimates of CSO discharges using actual field data and model simulations are essential to verify the predicted benefits of the CSO-related improvements as they are completed, to ensure the system hydraulic model reflects updated conditions, and to support continuing CSO design efforts and long-term goal tracking.

MWRA's NPDES permit and the variances for the Charles River and Alewife Brook/Upper Mystic River require MWRA to estimate CSO discharges at each permitted outfall for all storm events on an annual basis. This is

accomplished by MWRA staff using the InfoWorks collection system model and data from permanent and temporary meters located in the interceptor system, at CSO treatment facilities and at other CSO outfalls. In addition, the Federal Court schedule requires MWRA to conduct a system-wide performance assessment after completing the implementation of the CSO plan in 2015, with a required assessment report due by December 2020.

Project (Shading indicates completed project)		Commence Design	Commence Construction	Complete Construction
North Dorchester Bay Storage Tunnel and Related Facilities		Aug 97	Aug 07	May 11
Pleasure Bay Storm Drain Improvements		Sep 04	Sep 05	Mar 06
Hydraulic Relief Projects	CAM005 Relief	Aug 97	Jul 99	May 00
	BOS017 Relief		Jul 99	Aug 00
East Boston Branch Sewer Relief		Mar 00	Mar 03	Jul 10
BOS019 CSO Storage Conduit		Jul 02	Mar 05	Mar 07
Chelsea Relief Sewers	Chelsea Trunk Sewer Relief	Jun 97	Sep 99	Aug 00
	Chelsea Branch Sewer Relief		Dec 99	Jun 01
	CHE008 Outfall Repairs		Dec 99	Jun 01
Union Park Detention/Treatment Facility		Dec 99	Mar 03	Apr 07
CSO Facility Upgrades and MWRA Floatables Control	Cottage Farm Upgrade	Jun 96	Mar 98	Jan 00
	Prison Point Upgrade		May 99	Sep 01
	Commercial Point Upgrade		Nov 99	Sep 01
	Fox Point Upgrade		Nov 99	Sep 01
	Somerville-Marginal Upgrade		Nov 99	Sep 01
	MWRA Floatables Control and Outfall Closings		Mar 99	Mar 00
Brookline Connection and Cottage Farm Overflow Interconnection and Gate		Sep 06	Jun 08	Jun 09
Optimization Study of Prison Point CSO Facility		Mar 06	Mar 07	Apr 08
South Dorchester Bay Sewer Separation		Jun 96	Apr 99	Jun 07
Stony Brook Sewer Separation		Jul 98	Jul 00	Sep 06
Neponset River Sewer Separation			Apr 96	Jun 00
Constitution Beach Sewer Separation		Jan 97	Apr 99	Oct 00
Fort Pt Channel Conduit Sewer Separation and System Optimization		Jul 02	Mar 05	Mar 07
Morrissey Boulevard Storm Drain		Jun 05	Dec 06	Jul 09
Reserved Channel Sewer Separation		Jul 06	May 09	Dec 15
Bulfinch Triangle Sewer Separation		Nov 06	Sep 08	Jul 10
Brookline Sewer Separation		Nov 06	Nov 08	Apr 13
Somerville Baffle Manhole Separation			Apr 96	Dec 96
Cambridge/Alewife Brook Sewer Separation	CAM004 Stormwater Outfall and Detention Basin		Apr 11	Apr 13
	CAM004 Sewer Separation	Jan 97	Jul 98/Sep 12	Dec 15
	CAM400 Manhole Separation	Oct 08	Jan 10	Mar 11
	Interceptor Connection Relief/Floatables Control at Outfalls CAM002, CAM401B and CAM001	Oct 08	Jan 10	Oct 10
	MWR003 Gate and Rindge Ave. Siphon Relief	Mar 12	Aug 14	Oct 15
	Connection Relief/Floatables Control at SOM01A	Mar 12	Sep 13	Jun 14
Region-wide Floatables Control and Outfall Closings		Sep 96	Mar 99	Dec 07

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

The following projects are court mandated, are recommended in MWRA's approved long-term CSO control plan, and are required to meet Massachusetts Surface Water Quality Standards.

Project	Purpose
MWRA Managed	
North Dorchester Bay & Reserved Channel	Virtually eliminate CSO discharges (25-year storm control) and provide a high level of separate stormwater control to minimize beach closings along North Dorchester Bay in South Boston.
Hydraulic Relief	Eliminate hydraulic restrictions between local and MWRA systems at two locations, in Boston (Outfall BOS017) and Cambridge (Outfall CAM005) to improve collection and conveyance of wet weather flows, thereby reducing CSO discharges into the Mystic and Charles Rivers, respectively.
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, Chelsea Creek and Boston Inner Harbor and facilitating the beneficial uses of these receiving water segments.
BOS019 Storage Conduit	Control CSO discharges at Outfall BOS019, which discharges to the Little Mystic Channel in Charlestown, by storing most of the overflows and pumping them back into the interceptor system after storms.
Chelsea Trunk Sewer Relief	Control CSO discharges at Outfalls CHE002, CHE003, CHE004, and CHE008, which discharge to the Mystic/Chelsea Confluence and Chelsea Creek, by relieving a local trunk sewer and the MWRA Chelsea Branch Sewer and by repairing Outfall CHE008. The Chelsea Branch Sewer relief project also provides relief to the lower portion of the Revere Extension Sewer to improve service and control surcharging.
Union Park Detention Treatment Facility	Reduce the frequency and impacts of CSO discharges from the BWSC Union Park Pumping Station, which discharges into the Fort Point Channel at Outfall BOS070, by providing fine screening, disinfection, dechlorination and a level of detention and solids removal.
Upgrade Existing CSO Facilities and MWRA Floatables Control	Minimize CSO impacts to the Lower Charles River, Upper Inner Harbor, Mystic/Chelsea Confluence and South Dorchester Bay receiving waters by upgrading five MWRA CSO treatment facilities (Fox Point, Commercial Point, Cottage Farm, Prison Point, and Somerville Marginal), and providing floatables control at MWRA CSO outfalls along the Lower Charles River Basin that are not associated with treatment facilities.
MWR003 Gate, Rindge Ave. Siphon Relief and SOM01A	Minimize CSO discharges to Alewife Brook as part of MWRA's Alewife Brook CSO control plan and provide sewer system flood control in extreme storms with a control gate at outfall MWR003 and relief of MWRA's Rindge Ave. Siphon. Upgrade local connection capacity and provide floatables control at the City of Somerville's Outfall SOM01A.
Charles River CSO Controls	Bring the MWRA's "Brookline Connection" into service and implement Cottage Farm influent gate controls and other facility inflow controls to minimize treated discharges to Lower Charles River Basin at the Cottage Farm facility.
Community Managed	
South Dorchester Bay Sewer Separation (Fox Point)	Eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. This project allows MWRA to decommission the Fox Point CSO Facility.
South Dorchester Bay Sewer Separation (Commercial Point)	Eliminate CSO discharges to South Dorchester Bay by separating combined sewer systems in Dorchester. This project allows MWRA to decommission the Commercial Point CSO Facility.

Project	Purpose
Stony Brook Sewer Separation	Minimize CSO discharges to Stony Brook Conduit and the Back Bay Fens, both of which drain to the Lower Charles River Basin, by separating combined sewer systems in parts of Roxbury and Jamaica Plain. Implementation of this project is intended to reduce the number of overflows to the Stony Brook Conduit from as many as 22 to 2 in a typical year and reduce annual CSO discharge volume by 99.7%.
Neponset River Sewer Separation	Eliminate CSO discharges to the Neponset River and protect 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.
Constitution Beach Sewer Separation	Eliminate CSO discharges at the Constitution Beach CSO Facility, allowing decommissioning of the facility, by separating combined sewer systems in parts of East Boston.
Cambridge Alewife Brook Sewer Separation	Minimize CSO discharges to Alewife Brook by separating combined sewer systems in parts of Cambridge and upgrading local system connections to MWRA's Alewife interceptors. Close certain outfalls.
BWSC Floatables Control	Limit the discharge of floatable materials from five BWSC combined sewer outfalls along Boston Inner Harbor and Fort Point Channel.
Cambridge Floatables Control	Limit the discharge of floatable materials from Cambridge CSO outfalls that will remain following completion of MWRA's CSO control plan.
Fort Point Channel Sewer Separation	Minimize CSO discharges to Fort Point Channel by separating sewer systems tributary to Outfalls BOS072 and BOS073. Implementation of the recommended sewer separation plan will reduce the number of overflows from these outfalls from as many as 23 to zero in a typical year. Also, relocate a CSO regulator and perform limited sewer separation to reduce CSO discharges from the Lower Dorchester Brook Sewer to Fort Point Channel with a MWRA funding cap of $2.03 million to BWSC.
Morrissey Boulevard Drain	Reroute stormwater away from the Outfall BOS087 tributary area and the North Dorchester Bay storage tunnel to Savin Hill Cove in large storms, to increase the level of stormwater control along the South Boston beaches provided by the tunnel.
Reserved Channel Sewer Separation	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.
Brookline Sewer Separation	Separate several areas of Brookline, totaling 72 acres, where there are remaining combined sewers tributary to MWRA's Charles River Valley Sewer. The project is intended to reduce treated CSO discharges to the Lower Charles River Basin at the Cottage Farm Facility.
Bulfinch Triangle Sewer Separation	Separate the combined sewers in a 61-acre area of Boston bounded by North Station, Haymarket Station, North Washington St., and Cambridge St. The project is intended to reduce CSO discharges to the Lower Charles River Basin and Upper Inner Harbor, reduce overflows to the Prison Point CSO Facility, and close outfall BOS049.
CSO Support	
CSO Planning and Support	The goals of the CSO Program are to minimize CSO discharges, greatly 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 that support these goals. It also includes directly related watershed planning activities, development of short-term CSO control measures (known as System Optimization Plans,or SOPs), various as-needed technical support activities, and acquisition of land, easements and construction permits required for CSO project implementation.

Expenditure Forecast (in $000s) and Program Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$888,111	$802,275	$85,836	$36,435	$316,492	$32,273	$48,066	$1,334

Program Status 5/13	93.1%	Status as % is approximation based on project budget and expenditures. MWRA and the CSO communities continue to make significant progress towards completing the remaining CSO projects in compliance with Schedule Seven. (See individual project status and background information).

Changes to Program Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$862,140	$888,111	$25,971	Dec-15	Dec-15	None	$31,173	$48,066	$16,893

Explanation of Changes

- **MWRA Managed ($3.4M)**

  Project Changes: North Dorchester Bay CSO ($3.5M).

- **Community Managed +$29.4M**

  Project Changes: Cambridge Sewer Separation +$29.0M, Reserved Channel Sewer Separation +$.50M.

CEB Impact

- Completion and start-up of these projects will result in a total net increase of $350,000 in FY17 for periodic cleaning of the tunnel.

S. 339 North Dorchester Bay CSO Project

Project Purpose and Benefits

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

The project will eliminate CSO discharges and provide 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 filed with MEPA in 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. where swimming and/or shell fishing occur).

Project History and Background

Under MWRA's original (1997) recommended plan for CSO control in South Boston, CSO flows along North Dorchester Bay and the Reserved Channel would be captured by two consolidation conduits (near-surface tunnels). In small storms, the tunnels would hold all CSO and stormwater flows and be dewatered, after each storm, to the South Boston Interceptor for transport to the Columbus Park Headworks and Deer Island. In storms when flows exceed the tunnel storage 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, adjacent to the Massachusetts Bay Transportation Authority (MBTA) power plant. This proposed site and facility was designated "Site J."

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

The new plan 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 will be dewatered with a 15 mgd pumping station to be located at Massport's Conley Terminal. At the upstream end of the tunnel, a ventilation building to provide tunnel ventilation will be constructed adjacent to CSO outfall BOS087 and the State Police building. Surface piping, diversion chambers and control gates will 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 Hill Cove (South Dorchester Bay) in storms greater than the one-year design storm, to further increase the level of stormwater control afforded by the project to the beaches and to dedicate the tunnel to CSO control in the largest storms. 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 discharges into Pleasure Bay Beach to the Reserved Channel, which does not support primary contact recreation.

MWRA began design of the revised plan for North Dorchester Bay in August 2004. In June 2005, MWRA filed a motion with the Federal District Court seeking revisions to the court milestones to substitute the original plan and schedule for North Dorchester Bay and the Reserved Channel with the new plans and a new schedule. The Court allowed the motion on June 30, 2005. In compliance with the revised court milestones, MWRA completed construction of the Pleasure Bay storm drain improvements in March 2006 and commenced construction of the North Dorchester Bay tunnel in August 2006. MWRA completed the North Dorchester Bay tunnel and related facilities (including dewatering pumping station, force main/sewers and ventilation building) in May 2011, in

compliance with Schedule Seven. For the Morrissey Boulevard storm drain, the revised milestones required MWRA, in cooperation with BWSC, to commence design by June 2005, commence construction by December 2006, and complete construction by June 2009.

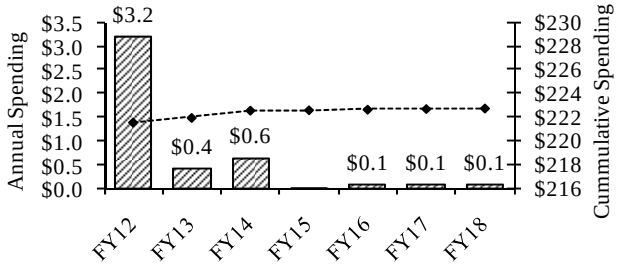
Scope

Sub-phase	Scope
Design/ESDC: Tunnel and Pleasure Bay	Design and engineering services during construction for the North Dorchester Bay tunnel and CSO/stormwater control structures and the Pleasure Bay drainage improvements; preliminary design for the dewatering pump station, sewers and ventilation building.
Tunnel Construction	Construction of the North Dorchester Bay tunnel, drop shafts, access shafts and CSO/stormwater diversion structures.
Dewatering Pump Station & Sewers Construction	Construction of the 15 mgd dewatering pump station at Conley Terminal and connecting sewers.
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. Start-up activities for the CSO tunnel and facilities are included.
Pleasure Bay Construction	Construction of Pleasure Bay drainage improvements.
Final Design ESDC/CSO Facilities	Final Design and engineering services during construction for the dewatering pump station, sewers and ventilation building.
Ventilation Building Construction	Construction of the ventilation building on DCR land at the upstream end of the tunnel.
Communications Systems	Installation of communications systems at the Dewatering Pumping Station and Ventilation Building to include antennas, repeaters and radios.
North Dorchester Outfall Study/Design and Inspection	This project includes periodic inspection at four of the remaining five outfalls that can discharge to the beaches of North Dorchester Bay to maintain service for the North Dorchester Bay CSO Project in the long-term. The four outfalls are potentially prone to sediment deposition and shifting in the long-term.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$223,060	$221,541	$1,519	$399	$82,897	$620	$807	$313

North Dorchester Bay



Project Status 5/13	99.3%	Status as % is approximation based on project budget and expenditures. The CSO storage tunnel, dewatering pump station & sewers and ventilation building were substantially complete and brought into full environmental service in May 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$226,562	$223,060	($3,502)	Feb-13	Jul-24	137 mos.	$3,523	$807	($2,716)

Explanation of Changes

- Project cost, schedule, and spending changed primarily due to revised scope and cost estimate for North Dorchester Outfall Dredging Construction which was changed to Outfall Inspection to be completed each year for 10 years.

CEB Impact

- Estimate of $350,000 in FY17 for periodic cleaning of the tunnel (every five years per the Supplemental Environmental Impact Report).

S. 347 East Boston Branch Sewer Relief

Project Purpose and Benefits

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

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 using a combination of construction methods including microtunneling, pipe bursting and open cut. Some were rehabilitated using relining method. The rehabilitation construction contract commenced in March 2003 and was substantially completed in May 2004. Other design and construction was delayed pending completion of a project reassessment to assure cost benefit. Regulatory agreement that the original hydraulic relief project is the appropriate plan for East Boston CSO control was achieved in March 2006. In June 2006, Design 2/CS was awarded for completion of design and construction administration for the microtunneling and pipebursting contracts. In July 2008, the East Boston Branch Relief Sewer contract (microtunneling) was awarded. In April 2009, Sections 38 & 207 Replacement contract (pipebursting) was awarded. Project was substantially complete in July 2010.

Scope

Sub-phase	Scope
Design/CS/RI	Design, project reassessment, and construction administration/resident inspection for rehabilitation contract.
Design 2/CS	Completion of design for replacement of sewers by microtunneling and pipebursting contracts, and construction administration for these contracts.
Resident Inspection Services	Resident Inspection Services for the Design 2 construction contracts.
East Boston Branch Relief Sewer Construction	Construction of 13,500 feet of replacement sewers primarily by microtunneling.
East Boston Branch Sewer Rehab Construction	Rehabilitation of 5,400 feet of existing sewer.
Sections 38 & 207 Replacement Construction	Replacement of 6,000 feet of existing sewers by pipe bursting.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
85,874	$85,535	$339	$339	$75,168	$0	$0	$0

Project Status 5/13	99.7%	Status as % is approximation based on project budget and expenditures. The rehabilitation contract was substantially complete in May 2004. Design 2/CS was awarded in June 2006. East Boston Branch Relief Sewer and Section 38 & 207 construction contracts were substantially complete in July 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$85,706	$85,874	$168	Jul-10	Jul-10	None	$0	$0	$0

Explanation of Changes

- Project cost increased due to final cost adjustments for resident Inspection Services and Design 2 contracts.

CEB Impact

- No impacts identified at this time.

S. 355 MWR003 Gate and Siphon

Project Purpose and Benefits

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

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,* (the "NPC") and is part of the revised recommended CSO plan for Alewife Brook. The project consists of the following elements recommended in the NPC: an automated hydraulic relief gate and associated controls at CSO regulator RE031 upstream of CSO outfall MWR003; a 150-foot long inverted siphon barrel to relieve the existing inverted siphon barrel that conveys overflows from the Alewife Brook Sewer to Outfall MWR003; and floatables control in outfall MWR003. In 2009, MWRA moved the recommended interceptor connection relief and floatables control at Somerville Outfall SOM01A to this project from the Cambridge Floatables Control project in the CIP. Implementation of this project and other elements of the recommended plan for Alewife Brook are required by the Court Order and by conditions in the Alewife Brook/Upper Mystic River CSO Variance extension, last issued by DEP on September 1, 2010, and expected to be reissued through 2020.

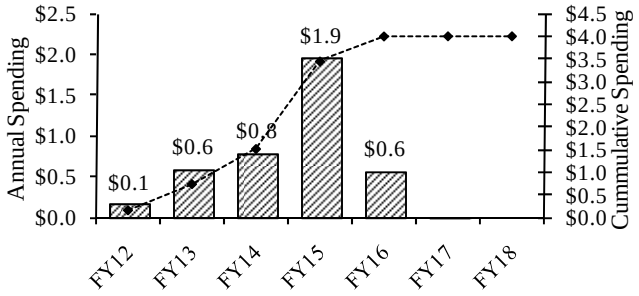
Scope

Sub-phase	Scope
Design	Design and engineering services during construction.
Construction 1	Interceptor connection relief and floatables controls at outfall SOM01A.
Construction 2	Hydraulic gate and controls at MWR003, relief of MWRA's Rindge Ave siphon, and floatables control.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$4,005	$149	$3,856	$579	$727	$779	$3,278	$0

MWR003 Gate and Siphon



Project Status 5/13	14.8%	Status as % is approximation based on project budget and expenditures. Design contract was awarded in March 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$4,098	$4,005	($93)	Oct-15	Oct-15	None	$3,260	$3,278	$18

Explanation of Changes

- Budget and spending changed due to updated construction cost estimates and revised design cash flow.

CEB Impact

- No impacts identified at this time.

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 71,000 feet of new storm drains. BWSC is implementing the project with MWRA funds.

A contract for design services was executed by Boston Water & Sewer Commission (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 and commenced construction in April 1999. BWSC completed all of the sewer separation contracts and closed all of the CSO regulators tributary to South Dorchester Bay by June 2007, and MWRA decommissioned the Fox Point CSO Facility in November 2007.

Scope

Sub-phase	Scope
Design	Design services for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of 71,000 feet of new storm drains and appurtenant structures, managed by BWSC. 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, individual building downspout removal and street paving are also included.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$54,169	$54,152	$16	$0	$390	$0	$16	$0

Project Status 5/13	100%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$54,187	$54,169	($19)	Nov-06	Nov-06	None	$35	$16	($19)

Explanation of Changes

- Project and spending changed due to updated cost estimates from Boston Water & Sewer Commission.

CEB Impact

- No impacts identified at this time.

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 Boston Water & Sewer Commission (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 and commenced construction in April 1999. BWSC completed all of the sewer separation contracts and closed all of the CSO regulators tributary to South Dorchester Bay by June 2007, and MWRA decommissioned the Commercial Point CSO Facility in November 2007. BWSC is conducting flow monitoring and hydraulics model evaluations to verify that sufficient inflow has been removed from the sewer system, and the project performance objectives for the sewer system have been achieved. Downspout disconnection and inflow removal are expected to continue through June 2016.

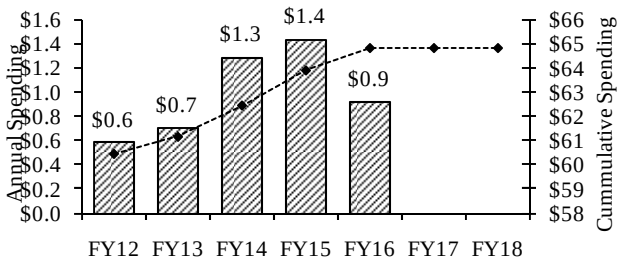
Scope

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, managed by BWSC. 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, individual building downspout removal and street paving are also included.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$64,776	$60,451	$4,324	$696	$6,257	$1,282	$3,628	$0

South Dorchester Bay
Sewer Separation -Commercial Point



Project Status 5/13	93.5%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$64,725	$ 64,776	$51	Jun-14	Jun-16	24 mos.	$3,363	$3,628	$265

Explanation of Changes

- Schedule and spending changed due to inflation on unawarded contracts and updated spending projections from Boston Water & Sewer Commission.
- Schedule changed to account for the Dorchester Interceptor Relief work.

CEB Impact

- No impacts identified at this time.

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 managed by Boston Water & Sewer Commission (BWSC) with MWRA funds and oversight. The CIP reflects the 1997 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 and completed the sewer separation work in September 2006, in compliance with Schedule Seven. Street paving, flow metering, and analyses to verify the project's intended hydraulic performance and level of CSO control was performed in 2007 and 2008.

Scope

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$44,333	$44,198	$134	$134	($721)	$0	$0	$0

Project Status 5/13	99.7%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$44,333	$44,333	$0	Sep-06	Sep-06	None	$134	$0	($134)

Explanation of Changes

- Spending changed due to updated spending projections from Boston Water & Sewer Commission.

CEB Impact

- No impacts identified at this time.

S. 346 Cambridge 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 and upgrading local connections to MWRA's interceptors. 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. The City of Cambridge executed a contract for design services in January 1997, and completed the first four, early construction contracts in 2002.

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 common manholes in 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 the 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. In April, 2006 the court schedule was amended to incorporate milestones for each of the components of the revised recommended plan.

Cambridge 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. However, Cambridge was unable to move forward with construction of the new stormwater outfall and constructed stormwater wetland of Contract 12 due to delays in obtaining relief from the citizens' appeal of the Superseding Order of Conditions that was issued by Massachusetts Department of Environmental Protection ("DEP") in March, 2005, pursuant to the Wetlands Protection Act. The stormwater outfall and constructed stormwater wetland are critical early components of the long-term CSO control plan for the Alewife Brook and are necessary to support planned sewer separation in the CAM004 area and the closing of the CAM004 regulator. Administrative law decisions were issued in the spring

of 2007, allowing DEP to issue a final superseding order of conditions. On June 1, 2007, the Acting DEP Commissioner issued a final decision sustaining the earlier superseding order DEP had issued. On June 12, 2007, the citizens group that had appealed the earlier orders filed a request for reconsideration of the DEP final decision, but DEP formally declined this request on October 16, 2007. On November 14, 2007, the appellants appealed this final DEP decision to Superior Court. Notwithstanding the Superior Court filing, the City of Cambridge now has wetlands approval to construct Contract 12. Design and construction activities related to the revised Alewife Brook CSO control plan were delayed by at least 27 months beyond the Schedule Seven milestones due to the wetlands appeals.

On July 16, 2008, MWRA's Board of Director's approved full funding of MWRA's estimated cost share for the Alewife Brook (CAM002-004) Sewer Separation project and Cambridge Floatables Control at $60 million and authorized the City of Cambridge to move forward with design and construction. In October 2008, the City of Cambridge resumed design of the CAM004 stormwater basin and outfall, commenced design of CAM400 manhole separation, and commenced design of the interconnections relief and floatables control work. The City of Cambridge commenced construction of the CAM400 manhole separation project and the interconnections relief and floatables project under one construction contract in January 2010 and completed all work in March 2011. Cambridge issued notice to proceed with Contract 12, stormwater basin and outfall in April 2011 and completed construction of CSO related components in April 2013 in compliance with Schedule Seven. In September 2012, Cambridge issued the notice to proceed with the first of three construction contracts to complete the CAM004 sewer separation project, in compliance with Schedule Seven.

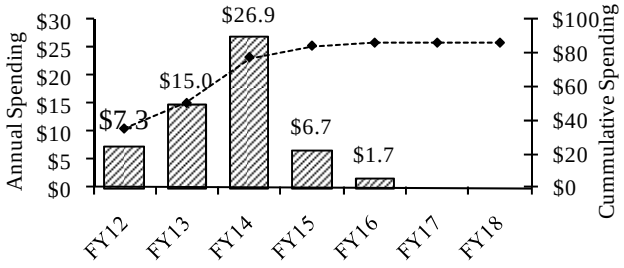
Scope

Sub-phase	Scope
Design CS/RI	Design services.
Construction	Four early construction contracts for CAM004 sewer separation work were completed in 2004. The remaining construction scope of work for this project is outlined above.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$85,834	$35,489	$50,345	$14,996	$32,034	$26,875	$35,349	$0

Cambridge CAM002-004
Sewer Separation



Project Status 5/13	58.8%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$56,791	$85,834	$29,043	Dec-15	Dec-15	None	$9,131	$35,349	$26,218

Explanation of Changes

- Project cost and spending changed primarily due to award of Contract 8A being greater than the original cost estimate and updated cost estimates for Contracts 8B and 9, and change orders for Contract 12. Also, design cost changed due to updated design eligibility and force account estimates and revised engineering services during construction costs for Contract 8A, 8B, and design and ESDC costs for Contract 9.

CEB Impact

- No impacts identified at this time.

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 2001, approved the reassessment as scoped by MWRA. MWRA began the reassessment in September 2001, which included updating the 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 revised recommended plan included rerouting stormwater away from the North Dorchester Bay storage tunnel to Savin Hill Cove in storms greater than the 1 year design storm, in order to provide a 5-year level of stormwater control along the South Boston beaches. Boston Water & Sewer Commission (BWSC) began design in June 2005 and commenced the first construction contract in December 2006. BWSC awarded a second and much larger construction contract in July 2007. BWSC substantially completed all work associated with this project in July 2009 and conducted post-construction water quality monitoring in Savin Hill Cove through June 2013.

Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts 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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$32,815	$32,347	$468	$0	$17,671	$0	$468	$0

Project Status 5/13	98.6%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in July 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$32,905	$32,815	($90)	Jun-09	Jun-09	None	$220	$468	$248

Explanation of Changes

- Project cost and spending changed due to updated costs and spending plans from BWSC.

CEB Impact

- No impacts 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 the Reserved Channel by separating combined sewer systems in an area of South Boston. Implementation of the recommended sewer separation plan will reduce the number of overflows to the 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 the Reserved Channel. The reassessment was completed in April 2004, when MWRA filed the Supplemental Facilities Plan and Environmental Impact Report for North Dorchester Bay and the Reserved Channel, which recommended a new plan for controlling CSO discharges to the Reserved Channel, by separating sewers in a 355 acre drainage area tributary to the Channel. Schedule Seven in the Federal District Court Order requires MWRA, in cooperation with Boston Water & Sewer Commission (BWSC), to commence design by July 2006, commence construction by May 2009 and complete construction by December 2015. In May 2009, BWSC issued the Notice to Proceed for the first of nine planned construction contracts for this project and has since issued notices to proceed for four additional construction contracts. The outfall cleaning contract (BWSC Contract 1), two sewer separation contracts (Contracts 2 and 3A) and the initial paving contract (Contract 7) are all substantially complete, and a major sewer separation contract is well under way (Contract 3B). In October 2012, BWSC issued the Notice to Proceed for Contracts 4 and 8. Contract 4 is the last of the major sewer separation contracts for this project. Contract 8 is the second of the two paving contracts.

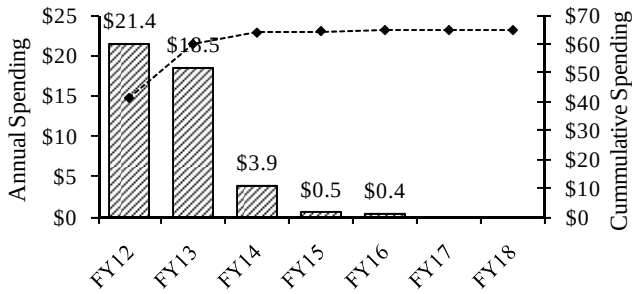
Scope

Sub-phase	Scope
Design CS/RI	Design services managed by BWSC for construction contracts to be bid, awarded and managed by BWSC.
Construction	Construction of new storm drains and appurtenant structures within a 355-acre area tributary 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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$64,809	$41,530	$23,279	$18,510	$57,323	$3,860	$4,769	$0

Reserved Channel Sewer Separation



Project Status 5/13	76.9%	Status as % is approximation based on project budget and expenditures. BWSC began design in July 2006 and completed Contract 2 in December 2010, Contract 1 in December 2011, Contract 7 in April 2012 and Contract 3A in October 2012. BWSC awarded Contracts 3B in FY11and Contracts 4 and 8 in FY13.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$64,330	$64,809	$479	Dec-15	Dec-15	None	$10,837	$4,769	($6,068)

Explanation of Changes

- Project cost increased primarily due to updated cost estimate for Contract 6 based on bids received, change orders for contracts 3A and B, final costs associated with contract 7 and updated estimates for police associated with contracts 3B and 8. This was partially offset by Contract 4 award being less than the engineer's estimate, revised estimate for police details associated with Contract 4 and 3A, and construction management/resident inspection costs being less than anticipated. Spending changed due to updated spending projections from BWSC.

CEB Impact

- No impacts identified at this time.

S. 360 Brookline Sewer Separation

Project Purpose and Benefits

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

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

Project History and Background

In response to the long-term CSO control plan MWRA recommended in 1997, DEP and EPA issued variances to water quality standards for the Charles River. With the variance, DEP approved (and required implementation of) MWRA's plan for the Charles River Basin, but maintained the water quality standard Class B pending the collection of additional water quality information and the evaluation of higher levels of CSO control. The original variance, issued in October 1998, and subsequent extensions to the variance required MWRA to prepare a report assessing the performance of the upgraded Cottage Farm CSO treatment facility. The report also evaluated the cost and benefit of constructing additional storage at this facility to lower treated discharges to the Basin. MWRA submitted the Cottage Farm CSO Facility Assessment Report to MEPA and DEP in January 2004. While concluding that additional storage at Cottage Farm would not be cost effective, the report also concluded that further CSO control could be achieved through system optimization and inflow removal such as with sewer separation projects already underway or planned by the City of Cambridge and the Town of Brookline. This project will separate several areas of Brookline, totaling 72 acres, where there are remaining combined sewers tributary to MWRA's Charles River Valley Sewer. The project is intended to reduce discharges to the Charles River at the Cottage Farm facility. The Town of Brookline completed the sewer separation in April 2013, ahead of the July 2013 milestone in Schedule Seven.

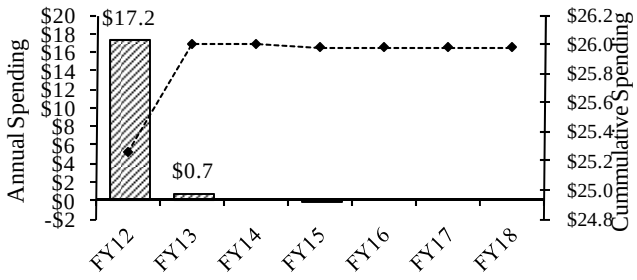
Scope

Sub-phase	Scope
Design CS/RI	Design services for construction contracts to be bid, awarded and managed by the Town of Brookline.
Construction	Construction of new storm drains and appurtenant structures within a 72-acre tributary to MWRA's Charles River Valley Sewer, managed by the Town of Brookline. Cleaning of Outfall MWR010 managed by MWRA.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$25,977	$25,263	$714	$734	$24,726	$0	($20)	$0

Brookline Sewer Separation



Project Status 5/13	100%	Status as % is approximation based on project budget and expenditures. The Town of Brookline began design in November 2006, completed the first construction contract in November 2009 and completed the second and final construction contract in April 2013. MWRA cleaning of outfall MWR010 began in June 2012 and was completed in August 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$25,998	$25,563	($21)	Nov-12	Jul-13	8 mos.	$0	($20)	($20)

Explanation of Changes

- Project cost and schedule changed primarily due to updated information received from Brookline.

CEB Impact

- No impacts identified at this time.

S. 361 Bulfinch Triangle Sewer Separation

Project Purpose and Benefits

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

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

Project History and Background

In response to the long-term CSO control plan MWRA recommended in 1997, DEP and EPA issued variances to water quality standards for the Charles River. With the variance, DEP approved (and required implementation of) MWRA's plan for the Charles River Basin, but maintained the water quality standard Class B pending the collection of additional water quality information and the evaluation of higher levels of CSO control. The original variance, issued in October 1998, and subsequent extensions to the variance required MWRA to prepare a report assessing the performance of the upgraded Cottage Farm CSO treatment facility. The report also evaluated the cost and benefit of constructing additional storage at this facility to lower treated discharges to the Basin. MWRA submitted the Cottage Farm CSO Facility Assessment Report to MEPA and DEP in January 2004. While concluding that additional storage at Cottage Farm would not be cost effective, the report also concluded that further CSO control could be achieved through system optimization and inflow removal, such as with sewer separation projects already underway or planned by the City of Cambridge and the Town of Brookline. In 2005, MWRA identified and recommended a set of system optimization measures and inflow removal projects to further reduce treated CSO discharges at Cottage Farm. This project will separate the combined sewers in the area of Boston bounded by North Station, Haymarket Station, North Washington St, and Cambridge St. The project is intended to reduce discharges to the Charles River, reduce overflows to the Prison Point CSO facility and allow BWSC to permanently close outfall BOS049. BWSC attained substantial completion of this project in July 2010, in compliance with Schedule Seven.

Scope

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$9,944	$9,857	$86	$0	$9,360	$0	$86	$0

Project Status 5/13	99.1%	Status as % is approximation based on project budget and expenditures. Construction was substantially complete in July 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$9,986	$9,944	($42)	Jul-10	Jul-10	None	$0	$86	$86

Explanation of Changes

- Project cost and spending changed due to final costs and updated spending projections from BWSC.

CEB Impact

- No impacts 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 and their impacts, eliminate beach closings caused by CSOs, and maximize the beneficial use of CSO receiving waters, in accordance with national and state CSO policies and in compliance with state water quality standards. This project includes CSO conceptual planning, system master planning, and facilities planning/environmental review. It also includes directly related watershed planning activities, development of short-term CSO control measures (known as System Optimization Plans or SOPs), various as-needed technical support activities, and acquisition of land 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 were completed in 1994, and a Final CSO Facilities Plan and Environmental Impact Report were filed with MEPA in August 1997. A MEPA certificate was issued in October 1997. In December 1997, DEP issued water quality determinations that were necessary for final CSO plan approval by DEP and EPA. DEP issued a two-year variance for the Charles River in October 1998 and has extended this variance several times. DEP issued a three-year variance for Alewife Brook and Upper Mystic CSOs in March 1999 and has extended the term of the variance several times. Consultant services have included assistance to MWRA in satisfying variance conditions.

As part of CSO Planning and Support, MWRA provided financial and technical assistance to the Charles River Watershed Association in its watershed planning efforts for the Charles River in the 1990s, known as the IM3 Study. MWRA also funded a portion of the costs of a U.S. Geological Survey (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 MWRA's CSO plan. To comply with its requirements under the Charles River CSO variance, in 1999 MWRA began funding USGS efforts to collect updated information on Charles River water quality. Final payments to the Charles River Watershed Association and USGS were made in the fall of 1998 and the fall of 2001, respectively.

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 (SOP) for CSO Control, which recommended more than 100 relatively low cost and easily implemented projects to optimize operation of existing systems. The projects were designed and constructed primarily by the CSO communities, pursuant to SOP financial assistance agreements executed between MWRA and each CSO community. Under the agreements, MWRA reimbursed the communities for design and construction costs. SOP work also includes two projects that are part of the long-term plan: Somerville Baffle Manhole Separation and Somerville Floatables Control. Short-term plans for CSO SOPs were completed in 1997 and MWRA obtained regulatory approvals for its long-term plan in 1997 and 1998.

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

Various CSO plan reevaluations and systems assessments have been performed under amendments to the CSO Master Planning contract. These include: reevaluation of the Alewife Brook sewer separation plan; assessment of Cottage Farm CSO Facility performance: reevaluation of the need for the Dorchester Brook In-line Storage Project (not included in the CSO Plan or the CIP); reevaluation of the feasibility of closing MWR010; reassessment of CSO discharges from the Boston Marginal Conduit to reevaluate the need for floatables control; and reevaluation of the cost-effectiveness of the East Boston Branch Sewer Relief project in light of cost increases.

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

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

Scope

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$50,315	$49,559	$755	$49	$4,520	($1,143)	($315)	$1,021

Project Status 5/13	98.1%	Status as % is approximation based on project budget and expenditures. Master Planning was substantially complete in September 2004. On September 14, 2005, the MWRA Board of Directors approved an MOU with Massport that governs the Authority's construction and long-term operation on land owned by Massport, including the North Dorchester Bay tunnel mining shaft and dewatering pump station. Payments to Massport for temporary and permanent easements are complete.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$50,316	$50,315	($1)	Dec-20	Dec-20	None	$670	($315)	($985)

Explanation of Changes

- Spending changed due to updated accrual for System Optimization Plan partially offset by updated cost and cash flow for Technical Review.

CEB Impact

- No impacts identified at this time.

Other Wastewater

S. 128 Infiltration/Inflow (I/I) 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 over 5,000 miles of community sewers. These sewers are of varying size, shape, age, material, depth, and conditions. All contribute some quantity of infiltration and inflow.

In August 1992, the Board of Directors approved $25 million to fund the initial phase of the I/I Local Financial Assistance Program. In June 1995, the Board approved $38.8 million to fund a second phase of the program. Both Phase1 and 2 funds were distributed as 25% grants and 75% interest-free loans. The Board approved $37 million to fund a third phase of the program in June 1998, an additional $40 million for Phase 4 in June 2001, an additional $40 million for Phase 5 in June 2004, an additional $40 million for Phase 6 in June 2006, an additional $40 million for Phase 7 and an additional $40 million for Phase 8 in June 2009. The grant/loan ratio was revised for Phases 3 through 8 to 45% grants and 55% interest-free loans. All program funds are allocated to the 43 member 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 FY2021.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$122,585	$107,779	$14,806	$21,006	$37,385	($885)	$1,806	($8,005)

Project Distribution Status 5/13	82.6%	Through May 2013, MWRA has distributed $99.1 million in grants and $149.3 million in interest-free loans to fund over 444 separate projects in 43 communities under the I/I Local Financial Assistance Program.

Project Repayment Status 5/13	67.5%	Through May 2013, a total of $120.2 million has been repaid by member communities receiving interest-free loans.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$122,585	$122,585	$0	Jun-26	Jun-26	None	$21,564	$1,806	($19,758)

Explanation of Changes

- Spending decreased due to the timing of loan distributions and repayments.

CEB Impact

- No impacts identified at this time.

Drinking Water Improvements

S. 542 Carroll 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 was 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. Ultraviolet light disinfection facilities will be added to comply with new drinking water regulations.

Project History and Background

MWRA provides drinking water to 2.3 million people in 44 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 Safe Drinking Water Act (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 Carroll Water Treatment Plant (formerly Walnut Hill Treatment Plant) was placed in service in July 2005. It provides treatment necessary to fully comply with all current drinking water regulations. EPA issued new regulations in January 2006 for microbial protection (Long Term 2 Enhanced Surface Water Treatment Rule) and

disinfection byproduct control (Stage 2 Disinfectants/Disinfection Byproducts Rule). MWRA will not need to make changes to comply with the Stage 2 D/DBP rule, but the LT2ESWT rule will require a second primary disinfectant and a somewhat more stringent inactivation of cryptosporidium than the plant's current design. This project includes the addition of an ultraviolet light disinfection treatment process at the plant to meet requirements of the LT2ESWT rule.

Scope

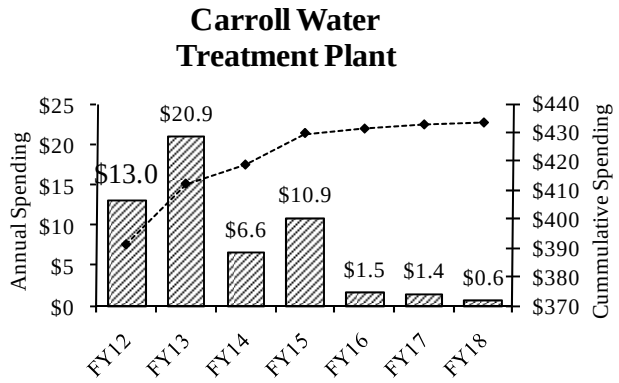
Sub-phase	Scope
Study 1	Investigation of the potential impacts of SDWA amendments on the MWRA system and evaluation of the need, feasibility, and benefits of improved treatment processes.
Study 2	Evaluation of alternative filtration, disinfection, and corrosion control processes to determine the most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

Sub-phase	Scope
WHCP4: Treatment Facilities	Construction of ozonation, corrosion control, chloramination operations and emergency generator buildings, modifications to Shafts B and C, and installation of system wide instrumentation from Wachusett Reservoir to Norumbega Reservoir.
WHCP6: Late Site Work	Final grading, landscaping, and paving of treatment facility site.
Design & Construction WHCP7: Existing Facilities Modifications	Modification to and conversion of the Interim Corrosion Control Facility, Cosgrove Disinfection Facility, Transmission Maintenance Facility. These buildings will be converted from water treatment/quality uses to expanded maintenance shops and SCADA technicians shop facilities for the new water treatment plant. In addition, the contract includes demolition of old electrical building, some miscellaneous items at Cosgrove Intake Building and replacement of the roof and HVAC system for Water Quality Lab at Southboro. Also, buildings rehab will incorporate achievable LEED (Leadership on Energy & Environmental Design) goals.
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 CWTP.
Professional Services	As needed legal, insurance, design, and construction specialty services for the Carroll Water Treatment Plant.
Marlborough MOA	Agreement to mitigate the impacts of the construction of the Carroll Water Treatment Plant on Marlborough.
WHWTP – MECo	Relocation of electric power lines.
Site Security Services	Site security services at the Carroll Water Treatment Plant.
CSX Crossing	Railroad track improvements adjacent to CWTP.
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 occurred 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 Carroll 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.

Sub-phase	Scope
Walnut Hill Ultra Violet Disinfection Design, and Construction	Design and construction programs to add Ultra Violet (UV) to the CWTP.
As-Needed Technical Assistance #1 and #2	As-needed design services to support the start-up of the CWTP including electrical engineering, HVAC engineering, mechanical engineering, civil engineering and a variety of geotechnical, environmental, and architectural technical assistance.
Ancillary Modifications Construction 1	Follow-up construction from the As-Needed Technical Assistance contracts.
Ancillary Modifications Construction 2	Address improvements in reliability, optimization of plant performance and/or reduce plant operating costs.
Ancillary Mods Design 3 and 4	Additional As-Needed design services as a follow-up for additional improvements at the Carroll Water Treatment Plant.
Technical Assistance #5 and #6	Continuation of as-needed engineering technical assistance for ancillary modifications design and plant optimization.
Carroll Water Treatment Plant Storage Tank Roof Drainage System Repair	Design and construct a solution that addresses trench drainage system's poor performance. Poor roof drainage could possibly result in water quality problems.
Technical Assistance #7 and #8	The next two phases of as-needed engineering technical assistance for ancillary modifications design and plant optimization.
CWTP Asset Protection	A consultant's evaluation of CWTP's capital assets and recommendations for upgrades or modifications to ensure operational efficiency of theses assets.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$433,253	$391,220	$42,033	$20,927	$39,435	$6,578	$21,026	$79



Project Status 5/13	94.7%	Status as % is approximation based on project budget and expenditures. The Ultraviolet Design contract was awarded in April 2008 and substantial completion is scheduled for February 2014. Closed Loop Cooling System, a contract of Ancillary Modifications Construction 2 subphase, was substantially complete in April 2010. Technical Assistance contracts 5 and 6 commenced in September 2010. Carroll Ultraviolet Disinfection Facility Construction was awarded in April 2011. Second Gaseous Oxygen Line was substantially complete in May 2012. Wachusett Emergency Connection Valves Construction was awarded in July 2012 and substantial completion is scheduled for August 2013. .

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$430,036	$433,253	$3,217	Dec-16	Dec-17	12 mos.	$16,031	$21,026	$4,995

Explanation of Changes

- Project cost increase due to updated cost estimates for Carroll Water Treatment Plant (CWTP) Roof Drainage System, Existing Facilities Modifications CP-7, new project added for CWTP Asset Protection, and change orders for Ultraviolet construction. This was partially offset by updated cost estimate for Ancillary Modifications Construction 2 phase.

- Schedule shifted for updated schedule for Wachusett Algae Construction due to project priorities.

- Spending increased primarily due to updated cost estimate and schedule change for the CWTP Storage tank Roof Drainage System, new project for CWTP Asset Protection, and schedule changes for Existing Facilities Modifications CP-7 Design and Construction, and Fit-Out Construction.

CEB Impact

- Expect $150,000 in FY15 for utilities, maintenance, labor and chemicals for UV Disinfection. Expect $28,000 for Wachusett Algae Facility in FY18 and $28,000 in FY19 for utilities.

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. This project also includes the addition of ultraviolet treatment as a second primary disinfectant.

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 sitting of the secondary disinfection facility resulting in the cancellation of construction of the secondary disinfection facility in Ludlow. Instead, MWRA built a CT monitoring station at the Ludlow site. Both the primary disinfection facility and the Ludlow monitoring facility went on-line in summer 2000, in compliance with the consent order schedule, which is now closed out.

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

Scope

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$17,393	$10,833	$6,560	$1,525	$2,214	$4,194	$5,035	$0

Project Status 5/13	70.2%	Status as % is approximation based on project budget and expenditures. The Quabbin Study/Pilot was completed in December 2005. Quabbin UVWTP Design CS/RI notice-to-proceed issued in December 2008. Construction commenced in January 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$17,667	$17,39	($274)	Mar-14	Aug-14	5 mos.	$4,170	$5,035	$865

Explanation of Changes

- Project cost, schedule and spending changed primarily due to updated cost estimate based on actual award amount and schedule for Quabbin Ultra Violet Disinfection Construction.

CEB Impact

- Annual incremental operating costs for UV treatment are estimated at approximately $25,000. Assume $21,000 in FY15 and $4,000 in FY16.

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. Prior to this project, the area relied on the old open reservoir for non-potable emergency storage, creating the potential for supply disruption and a boil water order if repairs were needed on a major transmission line for Quincy and other communities in the Southern High Service Area. Covered distribution storage equalizes pressure at the extremities of the Southern High pressure zone and provides potable emergency storage in case of unexpected interruptions of supply. New covered storage facilities at the Blue Hills Reservation has a capacity of 20 million gallons.

Project History and Background

Blue Hills Reservoir was constructed in the 1950's and was removed from active service in 1981 due to contamination from birds and animals. The reservoir was used as non-potable emergency supply. The new covered storage facility in the Southern High Service Area equalizes water pressure during periods of peak demand and works in conjunction with surface mains and the Chestnut Hill emergency pump station to supply water to the Southern High service area in the event that the Dorchester Tunnel requires repairs. Two 10 million-gallon buried drinking water storage tanks have been constructed in the east end of the existing Blue Hills Reservoir. 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 was formed to participate in the EIR/Conceptual Design process.

The Blue Hills Working Group was formed in 1997 to review alternatives and met periodically for 3-1/2 years to provide input to the MWRA. MWRA has worked closely with various interested parties to include features that have mitigated environmental impacts and improved the look of the finished site. The new covered tank was put into service in August 2009.

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.
Roadway Resurfacing Design & Construction	Design and Construction for Roadway paving adjacent to the site.
Design/Build Field Oversight	Field oversight and administration of the Design/Build contract will be performed by in-house staff.
Design/Build	Design/Build of a 20 million gallon covered storage facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$40,704	$39,970	$734	$134	$21,215	$178	$600	$0

Project Status 5/13	98.2%	Status as % is approximation based on project budget and expenditures. Design/Build contract was awarded on November 15, 2006. The new tanks were put into service in August 2009. Construction contract reached substantial completion in April 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$40,687	$40,704	$17	Jan-15	Jan-16	12 mos.	$436	$600	$164

Explanation of Changes

- Project cost changed due to inflation adjustments.
- Spending and schedule changed due to Roadway Resurfacing work being pushed out one year.

CEB Impact

- The storage facilities will require periodic inspection, maintenance, and water quality testing.

S. 550 Spot Pond Storage Facility

Project Purpose and Benefits

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

Master Plan Project ☑ 2008 Priority Rating 2 (see Appendix 3)

A new storage facility is required to meet the state and federal drinking water guidelines and MWRA's goal of providing a one-day supply of storage. With the Weston and Spot Pond Reservoirs removed from service, MWRA no longer meets the one-day supply goal.

Project History and Background

The Low Service System, which supplies 25% of the total metropolitan area demand, formerly had Weston Reservoir at its western end, where water was introduced into the system, and Spot Pond as its terminal reservoir at the northeast extremity. Due to transmission problems caused by old, corroded pipe with significantly reduced carrying capacity, this system gradually ceased to function properly and it became necessary, as a makeshift measure, to break this system into segments and transfer water from high service in order to serve large portions of the Low Service area.

The principal low service mains (Weston Aqueduct Supply Mains (WASM), Boston Low, and East and West Spot Pond Mains) have been rehabilitated and their capacity has been restored to as-new condition. Once Spot Pond is replaced with a covered distribution reservoir it will be possible to operate the system as it was originally designed. The new Weston Covered Storage Facility at Loring Road (constructed as part of the MetroWest Tunnel project) replaced the open Weston Reservoir. Spot Pond Storage Facility will replace Spot Pond Reservoir.

The new Spot Pond Storage Facility will be supplied through a pressure reducing valve on WASM 4 via the West Spot Pond Supply Main. At night, when water demand is low, the capacity of the Low Service transmission mains will be used to fill the Spot Pond tanks by gravity. During peak demand periods of the day, water will flow into the Low Service System from both Loring Road and Spot Pond storage tanks.

At 20 million gallon capacity, the Spot Pond Storage Facility, comprised of two 10 million gallon storage tanks, will be the same size as that at Loring Road. Just as pressure reducing valves allow the tanks at Loring Road to be supplied from the high service Norumbega Covered Storage, the Spot Pond Storage tank will be supplied with water reduced in pressure from the WASM 4 Transmission Main.

The Spot Pond Storage Facility will also include a buried backup pump station to provide redundancy to the Gillis Pump Station supplying the Northern High and Northern Intermediate High service areas.

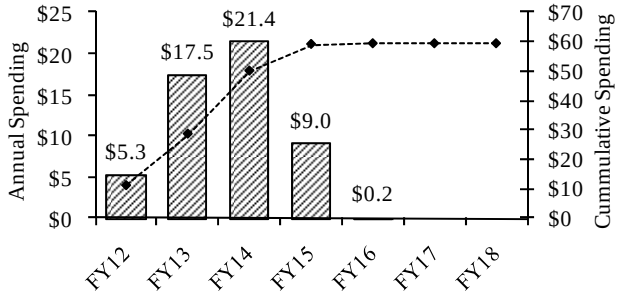
Scope

Sub-phase	Scope
Environmental Reviews and Conceptual Design	Preliminary engineering for tank siting, environmental reviews and conceptual design.
Design/Build	Design and construction by a single contractor of a 20 million gallon water storage tank and pump station.
Owner's Representative	Provision of technical program management for the design/build contract procurement, monitoring, and administration.
Easements/Land Acquisition	To provide adequate land for construction of the water storage tank.
Early Construction Water Connection	Construction of piping and meter connection to replace existing water supply to be removed as part of tank construction.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$59,149	$11,035	$48,113	$17,463	$28,266	$21,386	$30,650	$0

Spot Pond Storage Facility



Project Status 5/13	37.7%	Status as % is approximation based on project budget and expenditures. Design/ Build contract was awarded in October 2011 and the NTP was issued in November 2011. Early Construction Water Connection was substantially complete in February 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$59,032	$59,149	$117	Nov-14	Nov-14	None	$25,474	$30,650	$5,176

Explanation of Changes

- Project cost and spending increased primarily due to change orders and updated cash flow for the Design/Build contract. Project cost was partially offset by balancing change order for Early Construction Water Connection.

CEB Impact

- Assume incremental impacts of $75,000 in FY15 and $75,000 in FY16 for higher electrical and telephone/data charges.

Transmission

S. 597 Winsor Station/Pipeline Improvements

Project Purpose and Benefits

☑ *Extends current asset life* ☑ *Results in a net reduction in operating costs*

Master Plan Project ☑ 2008 Priority Rating 1 (See Appendix 3)

To investigate the licensing and rehabilitation of the turbine generator at the Winsor Station in Belchertown to produce hydroelectric power to be used to sell to the electric grid, or to potentially provide power to other MWRA facilities. Also, to consider station piping improvements which would allow water to go to the Swift River without going through the isolation valve and determine means to control flow in the Quabbin Aqueduct. Quabbin Release Pipeline work is also included.

Project History and Background

Winsor Dam impounds the Quabbin Reservoir. At the dam, an intake feeds two conduits that are interconnected at a powerhouse below the dam. One conduit discharges to the Chicopee Valley Aqueduct; the other conduit feeds a hydroelectric turbine/generator unit that is inoperative due to a fire in 1991 that destroyed the electrical switchgear. A bypass valve at the Winsor Station house also allows flow to be discharged directly to the Swift River.

Around the time that the fire occurred, hydropower re-development was not a priority given the low value of energy and the capital costs of station rehabilitation (in addition to switchgear replacement, turbine/generator repairs were also required). Another factor that forestalled hydropower development was that the Winsor dam hydroelectric facilities were never licensed by the Federal Energy Regulatory Commission (FERC). Shortly before the fire occurred, FERC directed MWRA to license the facilities. Given that the Swift River hosts a valued trout fishery, fishery concerns promised to complicate an already onerous federal licensing process.

Efforts to rehabilitate the Winsor Station facilities began in 1995 when MWRA obtained a preliminary permit from FERC, the first step in the FERC process. The FERC preliminary permit secures the applicant a priority position to file a license application for development - it does not authorize development, however. The permit's conditions required MWRA to consult with resource agencies and to conduct environmental and engineering studies to assess the project's feasibility and to support a license application. Therefore, MWRA consulted with resource agencies and conducted a number of environmental studies required for a license application. Some specialized fisheries studies were conducted by a consultant; various other studies were prepared in-house by MWRA with assistance from MDC staff.

Engineering and economic feasibility studies and concept design were also required to develop information to satisfy FERC's license requirements and to develop preliminary cost information to support financial analysis and decisions regarding whether or not to proceed with hydropower re-development. Accordingly, in 1997, MWRA procured the services of Duke Engineering and Services (DE&S) to conduct certain technical evaluations.

The first phase of work was completed in mid-1998. DE&S evaluated two alternatives for redeveloping Winsor Dam hydropower facilities. The study found that it would be feasible to 1) rehabilitate the existing turbine/generator; or 2) install a new turbine generator that would operate at higher efficiencies due to modern technology and a design optimized for minimum flow conditions and 24-hour/day operations.

Funding of the hydroelectric sub-phase for an updated feasibility study to address permitting and energy economics at the Winsor Station has been deleted.

The water supply infrastructure within the Winsor Station is in need of major repair and upgrade as much of it is over 75 years old. Several other subphases are needed to address the extensive work on the Quabbin Transmission System and the Swift River bypasses. These subphases include:

- Winsor Station Chapman Valve Repair & Purchase of Sleeve Valves: Immediate replacement of the existing damaged Chapman Valve with sleeve valves.
- Pipeline Replacement Phase 1 – To repair and upgrade large-diameter piping and valving in the basement of the Winsor Station including the bypasses.
- Quabbin Aqueduct and Winsor Station Upgrades - To replace the antiquated and unreliable shutter system at Shaft 12 with a roller gate to control flow in the Quabbin Aqueduct and inspect the Quabbin Tunnel and recommend maintenance or repairs. Also, rehabilitate Winsor Power Station, Shaft 12 buildings and equipment, and make structural repairs to Shaft 2.
- Hatchery Pipeline- To convey cold, well-oxygenated hypolimnetic water from Quabbin Reservoir to the downstream trout hatchery via a new pipeline. A hydro turbine will be located in a vault near the connection of the pipeline to the CVA that would capture some of the hydraulic energy contained in the pipeline as the water is conveyed to the hatchery. The power generated will be utilized at the Ware Disinfection Facility and surplus power will be sold back to the grid.
- Shaft 12 Power and Communications Construction – To provide electricity and communications to the Shaft 12 Intake to the Quabbin Aqueduct.

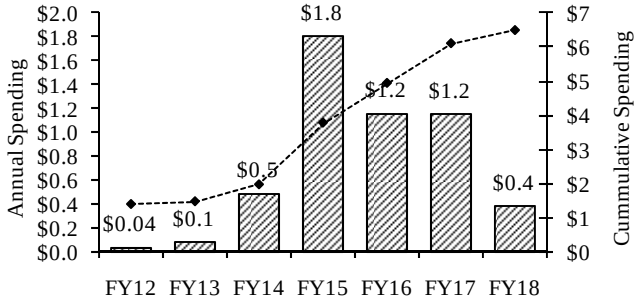
Scope

Sub-phase	Scope
Preliminary Permit Study	Study to determine project feasibility.
Design and Construction Quabbin Aqueduct and Winsor Station Upgrades	Design to address station piping improvements for water supply and Swift River discharge. The work also includes rehabilitation and improvements at Shafts 2 and 12, and inspection of the Quabbin Aqueduct. Installation of a roller gate to control flow at Shaft 12, the intake to the Quabbin Aqueduct, thereby improving safety and reliability of the transmission system. Construction to address piping improvements and building rehabilitation for water supply and Swift River discharge.
Hatchery Pipeline Design and Construction	Design and construction of approximately 5,000 feet of pipeline to convey 6 MGD of water from the CVA to the downstream trout hatchery. The project would provide a consistent and reliable source of high quality cold water to the hatchery, as well as supplement flows to the Swift River. The project will also include a hydro turbine that would capture some of the hydraulic energy contained in the pipeline as the water is conveyed to the hatchery for use at the Ware Disinfection Facility and surplus sold back to the grid. The hydro turbine portion is funded under the Alternative Energy Initiatives project and Massachusetts Leading by Example Program.
Winsor Station Chapman Valve Repair	Construction of replacement valving for the existing 36” Chapman Butterfly Valve (design by Technical Assistance consultant).
Purchase of Sleeve Valves	For replacing the damaged Chapman Butterfly Valve.
Shaft 12 Power/Comm. Construction	Design and construction of 2.4 miles of power and communication to Quabbin Aqueduct Shaft 12.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$27,256	$1,389	$25,867	$82	$1,433	$494	$5,007	$20,778

Winsor Station/Pipeline Improvements



Project Status 5/13	5.1%	Status as % is approximation based on project budget and expenditures. Winsor Station Chapman Valve Repair was completed in November 2009. Design for Quabbin Aqueduct and Winsor Station Upgrades Notice-to-Proceed was issued in February 2010. Hatchery Pipeline Design/ESDC/RI is expected to commence in November 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$26,427	$27,256	$829	Apr-16	Jan-21	57 mos.	$24,314	$5,007	(19,307)

Explanation of Changes

- Project cost increased primarily due to inflation adjustments for Winsor Station Rehabilitation & Improvements, Shaft 12 Construction, Quabbin Aqueduct TV Inspection, and Hatchery Pipeline Construction. This increase was partially offset by updated estimated amendment for Quabbin Aqueduct and Winsor Station Upgrade Design/CA/RI contract.

- Schedule shift to allow additional time to evaluate scope of project.

- Planned spending shift primarily due to revised schedules for Winsor Station Rehabilitation & Improvements, Shaft 12 Construction, and Quabbin Aqueduct TV Inspection contracts.

CEB Impact

- None identified at this time.

S. 604 MetroWest Water Supply Tunnel

Project Purpose and Benefits

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

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

Project History and Background

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

Construction of the MetroWest Water Supply Tunnel and its extension to the Weston Aqueduct Terminal Chamber has provided the critically needed minimum level of transmission redundancy for the Hultman Aqueduct. Enhancements and improvements to the reliability of the City Tunnel and the City Tunnel Extension are being planned as part of the Long-Term Redundancy 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. In May 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 allowed 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.

In September 2005, the Board of Directors authorized an engineering services contract to rehabilitate the existing Hultman Aqueduct and to interconnect the MetroWest Tunnel with the Hultman Aqueduct. In the interim, Valve Chamber E-3 at Southborough was constructed in order to facilitate system operations and the demolition of an existing chlorine building was completed in preparation for construction of the interconnections.

In May 2013 construction was substantially complete on Contract CP6A to interconnect the MetroWest Tunnel with the Hultman Aqueduct and to rehabilitate the Hultman Aqueduct from Shaft 4 in Southborough to Shaft 5 of the City Tunnels and to Shaft W of the MetroWest Tunnel in Weston. A second construction contract (CP6B) was substantially complete to rehabilitate the remainder of the Hultman Aqueduct from Shaft C of the Cosgrove Tunnel to Shaft l of the Southborough Tunnel, and to rehabilitate the top-of-shaft facilities at Shaft 4 of the Southborough Tunnel in Southborough.

Program Elements

The MetroWest Tunnel is 17.6 miles long with a 14-foot finished diameter. The first segment of the tunnel extends from the water treatment plant site at Walnut Hill on the Marlborough/Southborough line to Shaft 4 of the Hultman Aqueduct in Southborough. From there, the tunnel continues to a "WYE" connection east of Norumbega Reservoir, and continues east from the "WYE" to Shaft 5 of the City Tunnel and northward to the Weston Aqueduct Terminal Chamber. The tunnel depth varies from 200 to 500 feet below ground surface along the alignment.

With the MetroWest Tunnel and the John Carroll Water Treatment Plant now in service, the Hultman Aqueduct is being 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.

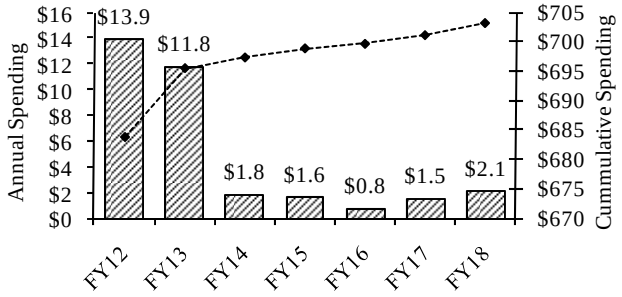
Sub-phase	Scope
Construction: Eastern Tunnel Segment – CP3A	Construction of the eastern portion of the tunnel. An approximately 4,400-feet long, 12-feet finished diameter tunnel was constructed from the Shaft 5A bottom through the "WYE" where it meets the Middle Tunnel Segment and on to Shaft W where 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.
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 Town 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.

Sub-phase	Scope
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 of the Southboro Tunnel and rehabilitation of the Hultman Aqueduct.
Construction: Hultman CP9	Construction of Valve Chamber E-3.
Interim Disinfection	Temporary disinfection related to CP-7 sub-phase.
Equipment prepurchase	Pre-purchased one 10-foot diameter butterfly valve for installation in Valve Chamber E3.
Construction CP6ALower Hultman Rehab. and 6B Upper Hultman Rehab.	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 more than 70 years of service without an overhaul.
Construction 6A Demolition	Demolition of existing chlorine storage building to allow for construction of a new valve chamber on the Hultman Aqueduct.
CP6 Easements	Easements for CP-6 Contract.
Valve Chamber and Storage Tank Access Improvements	Provide better and safer access to valve chambers for Water Quality and Maintenance personnel. Provide secure hatches at Loring Road Tanks.
Valve Chamber Modifications	Design and construction of an additional isolation valve on the Hultman Aqueduct to improve operational flexibility and reliability; and security hardening of key valve chambers.
Shaft 5A/5 Surface Piping Inspection/Restor-ation	Inspection and testing of cathodic protection system for surface piping in the Shaft 5A / Shaft 5 area. Restore cathodic protection systems.
Shaft 5 Electrical Upgrade	Upgrade of electrical service, switchgear, and motor control centers. Existing electrical system is approaching the end of its useful life and will need to be replaced. Maintenance of the current system will become increasingly more difficult due to the lack of available spare parts.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$708,786	$683,665	$25,121	$11,764	$61,628	$1,821	$7,697	$5,660

Metro West Tunnel



Project Status 5/13	98.0%	Status as % is approximation based on project budget and expenditures. MetroWest Tunnel was placed into service in November 2003. Hultman Interconnect Final Design/CA contract was awarded in September 2005. CP6A Lower Hultman Rehab was substantially complete in May 2013. Upper Hultman CP6B contract was substantially complete in June 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$709,477	$708,786	($691)	Jan-20	Jan-20	None	$15,513	$7,697	($7,816)

Explanation of Changes

- Project cost decrease is primarily due to adjusted amendment estimate for the Hultman Interconnections Final Design/Construction Administration contract, updated costs for Resident Inspection Services, and adjusted change order estimates for Lower Hultman Rehabilitation (CP-6A).

- Spending changed primarily due revised schedule for Valve Chamber Modifications Construction and cost changes noted above. This decrease was partially offset by accelerated schedule for CP6B Upper Hultman Rehabilitation.

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 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. Based on the findings and recommendations of this inspection phase, MWRA has and will continue to add design and construction phases to the CIP.

Project History and Background

This project provided 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 utilized existing information and site visits to inventory the condition of each facility. The work yielded a facility report that identifies existing conditions and provides recommendations for needed improvements, rehabilitation, and repairs. The project resulted in the development of a conceptual design for each facility including alternatives, basic design criteria, cost estimates, required permits, and schedules. MWRA uses the final conceptual design reports 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, was targeted for immediate replacement. These valves were 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 was a high priority.

Scope

Sub-phase	Scope
Facilities Inspection	Assessment of existing conditions; update of infrastructure rehabilitation evaluation; identification of improvements/repairs/upgrades, 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 were needed in Phase I Valve Rehabilitation, required 6 to 10 months to fabricate and had to be pre-purchased so the valves were available for installation.
Oakdale Phase 1A Design & Construction	Upgrade the 60 year old Oakdale facility and electrical control systems & the switchyard which are antiquated and unsafe to personnel. Will lower the station service voltage from 2,200 to 480.

Ware River Intake Valve Replacement	Replace oil-actuated valves currently underwater and inaccessible for maintenance with electric actuated valves. Also, replace siphons with hard piped intakes and automate equipment with remote control capabilities.
CVA Intake Motorized Screen Replacement	Replace current motorized screens on the CVA Intake which are nearing the end of their useful life. The screens keep debris from entering CVA.
Wachusett Lower Gatehouse Rehabilitation	Replace the leaking roof, gutters, and repair/seal masonry and degraded windows and doors. Sealing of the building will allow more efficient heating of building space to prevent further deterioration.
Rehabilitation of Oakdale Turbine	Rehabilitate turbine. Turbine was last rehabilitated in 1986 and we will be approaching thirty years which is the expected life of an overhaul.
Geo-thermal Heat Wachusett Gatehouse	Convert from propane fueled boilers to geo-thermal heating utilizing the internal water in the piping located in the building. The existing heating isn't sufficient to keep building warm enough and therefore remaining moisture contributes to accelerated deterioration.
Rehabilitate Wachusett Gatehouse Chamber 4 Piping	Rehabilitate the piping in the Lower Gatehouse. Investigate the possibility of simplifying the layout and improving the reliability of the valves. Existing piping and valves are of poor quality. Other piping and valves of the same age in this facility have already been replaced.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$13,516	$4,913	$8,602	$2,211	$2,701	$276	$3,261	$3,130

Project Status 5/13	52.0%	Status as % is approximation based on project budget and expenditures. Valves were received in February 2006 and Phase I Design was substantially complete in June 2007. Phase 1A Construction commenced in April 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$13,526	$13,516	($10)	Jan-21	Jan-21	None	$3,718	$3,261	($457)

Explanation of Changes

- Project cost decreased due to credit change orders for Oakdale Phase 1A Electrical Construction.
- Spending changed primarily due to updated schedule for Wachusett Lower Gatehouse Rehabilitation.

CEB Impact

- None identified at this time.

S. 617 Sudbury/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 Aqueduct in preparation for future repairs. This aqueduct is 120 years old and is in need of renewal and upgrade. This is a critical back-up facility for the City Tunnel and the Sudbury Reservoir emergency supply. The inspection phase of the Sudbury Aqueduct was conducted in 2006. The Inspection Report identified several short-term repairs required to better prepare the aqueduct for short-term use. This project will also fund inspections of the Weston Aqueduct which is more than 100 years old. The results of the inspection will allow MWRA to evaluate and prioritize future construction and repair work for this aqueduct.

Scope

Sub-phase	Scope
Hazardous Materials	Remove contaminated sediment from aqueduct.
Sudbury Aqueduct Inspection	Inspection of the Sudbury Aqueduct to identify need for future repair work.
Ash Street Sluice Gates	Construct (rehabilitate) a means to isolate the Weston Reservoir from a break west of Ash Street. Investigate Ash Street and Happy Hollow Siphon. Existing gates in siphon are in need of repair.
Sudbury Short-Term Repairs Phase 1 and 2 Construction	Repairs needed in order to better prepare the Sudbury Aqueduct for short-term use (flow test and emergency activation).

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$4,327	$660	$3,667	$0	$25	$0	$3,667	$0

Project Status 5/13	15.3%	Status as % is approximation based on project budget and expenditures. Inspection of Sudbury Aqueduct was completed in October 2006. Short Term Repairs Phase 1 is expected to begin in July 2014.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$4,308	$4,327	$19	Jan-17	Jul-17	6 mos.	$3,648	$3,667	$19

Explanation of Changes

- Project cost and spending changed due to inflation adjustment for Sudbury Short-Term Repairs.
- Schedule shift for Sudbury Short-Term Repairs Phase 2 to follow completion of Phase 1 Repairs.

CEB Impact

- None identified at this time.

S. 621 Watershed Land

Project Purpose and Benefit

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

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

Project History and Background

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

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

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

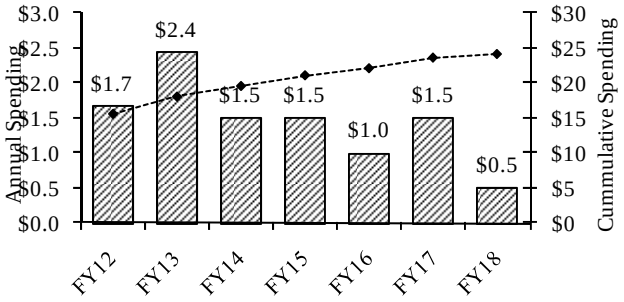
Scope

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

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$24,000	$15,564	$8,437	$2,437	$9,793	$1,500	$6,000	$0

Watershed Land



Project Status 5/13	70.4%	Status as % is approximation based on project budget and expenditures. MWRA began purchasing land in FY07.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$19,000	$24,000	$5,000	Jun-13	Jun-18	60 mos.	$0	$6,000	$6,000

Explanation of Changes

- The FY14 CIP added $5 million for the continuation of this initiative, covering the FY14-18 timeframe.

CEB Impact

- None identified at this time.

S. 623 Dam Projects

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*

Master Plan Project ☑ 2008 Priority Rating 2 (See Appendix 3)

To evaluate, design, and make necessary safety modifications and repairs to dams for proper operation as a result of the 2004 MOU between MWRA and DCR.

Project History and Background

Massachusetts Dam Safety Regulations, 302 CMR 10, require modifications to the Framingham Reservoir No. 3 (Foss) Dam and the Weston Reservoir Dam to provide a spillway system capable of passing the applicable Spillway Design Flood (SDF) or safely storing this same flood within the reservoir without a spillway or other emergency overflow structure. Based on existing Hydraulics and Hydrology studies for these two dams, Foss Dam may require spillway modifications and a parapet wave wall to pass the SDF while at the much smaller Weston Reservoir, the dam will only require the parapet wave wall to safely contain the SDF.

Additionally, all earthen dams and masonry dams under MWRA responsibility were built in the late 1800s to early 1900s and are in need of repairs. Based on ongoing inspections, immediate repairs such as riprap re-setting and replacement, mitigation of erosion features, and addressing mortar loss and consequent minor leakage at gatehouses are necessary at Foss, Weston, Chestnut Hill, Sudbury and Wachusett Open Channel Lower dams.

Scope

Sub-phase	Scope
Dam Safety Modifications and Repairs	Provide Design and ESDC for required Dam Safety Modifications and Repairs. Construct parapet wave walls on dam crests to safely contain the SDF at the Weston Reservoir Dam. Design required repair measures at the Foss, Weston, Sudbury, Chestnut Hill and Wachusett Open Channel Lower dams and associated gatehouses. At present, alternatives are being evaluated at Foss.
Oakdale Dam Design/ESDC/RI and Construction	Provide final design, ESDC/RI, and construction for the removal of the Oakdale Dam adjacent to the Oakdale Pump Station. The removal of the dam will help landlocked fish in the Wachusett Reservoir to reach spawning grounds in the Quinapoxet River.
Goodnough Dike Drainage Improvement	Restoring proper drainage to the downstream discharge location of the Goodnough Dike toe drain system. Continued flooding of the toe drain system due to downstream conditions could lead to internal problems within the dam and overall dam safety concerns. Recent inspection of the flooded drain system and downstream conditions indicate water is backing-up into the toe drain system. 302 CMR 10:00 Dam Safety Regulations require proper correction of deficiencies identified by licensed dam safety engineers. This is a High-Hazard-Class-Dam for the largest reservoir in MWRA system. Proper functioning of the overall drain system is critical to maintenance of this earthen dam.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$5,540	$2,888	$2,652	$281	$3,169	$336	$2,328	$43

Project Status 5/13	55.6%	Status as % is approximation based on project budget and expenditures. Design phase for Dam Safety Modifications and Repairs began in September 2009. Dam Safety Modifications and Repairs Construction commenced in August 2011 and reached substantial completion in September 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$5,651	$5,540	($111)	Dec-16	Dec-17	12 mos.	$2,224	$2,328	$104

Explanation of Changes

- Project cost changed due to change orders for Dam Safety Modifications & Repairs were less than anticipated.
- Schedule changed for Oakdale Dam Removal Construction due to project priorities.

CEB Impact

- None identified at this time.

S. 625 Long Term Redundancy

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*

Master Plan Project ☑ 2008 Priority Rating 1 (See Appendix 3)

To plan, design and construct the recommended redundancy improvements to the City Tunnel, the City Tunnel Extension, the Dorchester Tunnel and the Cosgrove Aqueduct.

Project History and Background

This project includes the study, permitting, design, and construction of redundancy improvements to critical elements of the water transmission system. The study phase evaluated alternatives and developed conceptual designs and cost estimates to provide redundancy for the metropolitan tunnel system and the Cosgrove Tunnel.

The metropolitan tunnel system was evaluated first with emphasis on providing redundancy for Shaft 7 of the City Tunnel. Historically, the plan for providing redundancy for the metropolitan tunnel system was based on one or more proposed parallel deep rock tunnel loops from the terminus of the Hultman Aqueduct and MetroWest Tunnel in Weston into the metropolitan area. The focus of this study was to develop and evaluate alternative surface pipe improvements, in addition to revisiting previously proposed tunnel loops, to achieve an acceptable level of redundancy at a lower cost.

The tunnels in the Metropolitan Boston area, i.e. the City Tunnel, City Tunnel Extension, and Dorchester Tunnel remain a weak link in the water transmission system. While the integrity of the underground tunnel sections is believed to be good based on very low, unaccounted for water levels in the MWRA transmission system, there is still risk of failure mainly due to pipe and valve failures at the surface connections to the distribution system or due to major subsurface failures as a result of earthquakes or geological faults. A rupture of piping or a valve failure at surface connections points on any of the metropolitan area tunnel shafts would cause an immediate loss of pressure throughout the entire High Service area and would require difficult emergency valve closures and lengthy system repairs. The assumption is that tunnels have a useful life of 100 years but these subsurface structures have not been inspected and their actual condition is unknown because they cannot be shut down for inspection. Facilities at the top of tunnel shafts have been examined and a number of hardening measures are needed for risk reduction at these sites. Completion of planned distribution system storage projects like the Blue Hills and the Spot Pond Storage Facilities also assist in mitigating the effects of local pipe ruptures.

In the event of a failure of the City Tunnel, a limited amount of water could be transferred through the WASM 3 line (scheduled for major rehabilitation) and WASM 4 and the Sudbury Aqueduct would need to be brought on-line. Extensive use of the Sudbury Aqueduct/Chestnut Hill Emergency Pump Station and open distribution storage at Spot Pond and Chestnut Hill would be required. Supply would be limited and a boil order would be put in place. Failure of the City Tunnel Extension would be similar with reliance on WASM 3 and open storage at Spot Pond.

The redundancy study was undertaken to recommend a phased program which could be implemented over a period of years. The study reviewed currently proposed MWRA pipeline improvement projects and recommendations as to changes in size and/or alignment to contribute to the objective of transmission redundancy within the metropolitan system. The recommendations of the study now form the basis for subsequent projects for MEPA environmental review, permitting, design and construction. In June 2010, staff presented to the Board of Directors the findings and redundancy recommendations for the metropolitan tunnel system.

For the western system, the Board of Directors approved the construction of a new pump station to provide redundancy for water supply to the John J. Carroll Water Treatment Plant and to support the shutdown and repair of the Cosgrove Tunnel.

For the Metropolitan system, the recommended plan includes both northern and southern components. The southern components are identified below in the Sudbury Aqueduct Design/CA/RI and Construction. The northern components are addressed in the Weston Aqueduct Supply Mains (WASM) 3 and Spot Pond Storage Facility projects.

Subsequent Design, Permitting and Construction phases will follow-up on the recommendations of the study. The Design and Construction costs have been updated based on the recommendations of the study.

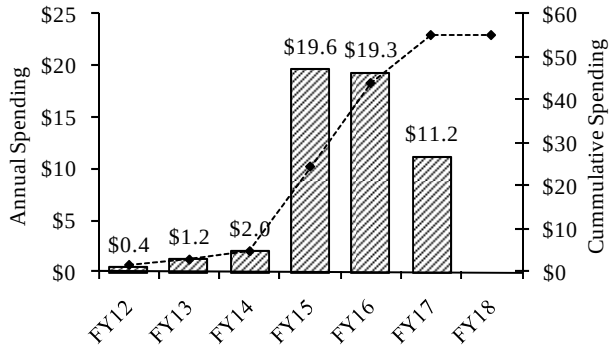
Scope

Sub-phase	Scope
Water Transmission Redundancy Plan	Evaluation and recommendations of alternatives for long term redundancy.
Wachusett Aqueduct Pump Station Design/ESDC/RI and Construction	Design and construction of an emergency pump station to pump water from the Wachusett Aqueduct to the Carroll Water Treatment Plant. Pump station will provide redundancy in the event of failure at the Cosgrove Tunnel or Intake and for the inspection/rehabilitation of the Cosgrove Tunnel. During a planned or emergency shutdown of the Cosgrove Tunnel, the existing gravity Wachusett Aqueduct with the proposed emergency pumping station could deliver approximately 240 million gallons per day (mgd) of raw water to the CWTP for full treatment. The 240-mgd capacity would allow for unrestricted supply for at least eight months during the lower-demand fall/winter/spring period. This project, along with the completion of the on-going Hultman Aqueduct rehabilitation and interconnections project, will provide fully treated water transmission redundancy from the Wachusett Reservoir to the beginning of the metropolitan distribution system in Weston.
Sudbury Aqueduct Preliminary Design/EIR, Design CA/RI; MWWST/Sudbury Aqueduct Connection Construction; Sudbury Aqueduct Slipline Construction; Chestnut Hill Final Connections Construction	Design and construction for providing redundancy for the Southern Metropolitan area. The southern component consists of pressurizing the Sudbury Aqueduct from Needham to Chestnut Hill and connecting it to the Chestnut Hill Emergency Pump Station, and constructing a tunnel or surface pipe from the Sudbury Aqueduct to either Shaft 5/5A or the Norumbega site of the Metro West Supply Tunnel/Hultman Aqueduct system. Design and construction of an emergency generator for the Chestnut Hill Emergency Pump Station is included in the Chestnut Hill Connecting Mains project.
Tops of Shafts Rehab Design CA/RI and Construction	Design and construction of rehabilitation/replacement of connecting pipes and valves at the top of tunnel shafts throughout the metropolitan tunnel system.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$375,435	$1,677	$373,758	$1,232	$2,909	$1,958	$52,047	$320,479

Long Term Redundancy



Project Status 5/13	0.7%	Status as % is approximation based on project budget and expenditures. An engineering services contract for the Water Transmission Redundancy Plan was completed in September 2011. Wachusett Aqueduct Redundancy Pump Station Design/ESDC/RI contract was awarded in January 2012. Sudbury Aqueduct MEPA Review was awarded in September 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$351,504	$375,435	$23,931	Dec-21	Dec-25	48 mos.	$102,120	$52,047	($50,072)

Explanation of Changes

- Project cost increased primarily due to updated cost estimates for Chestnut Hill Final Connection Construction, Sudbury Aqueduct Slipline Construction, and Sudbury Aqueduct Design CA/RI. Also, inflation adjustments on unawarded contracts and award of Sudbury Aqueduct MEPA Review were less than the budgeted estimate.

- Schedule and spending changed primarily due to revised schedules for MWWST/Sudbury Aqueduct Connection and Sudbury Aqueduct Design CA/RI contracts to reflect MEPA schedule and final report.

CEB Impact

- None identified at this time.

Distribution & Pumping

S. 618 Northern High Northwest Transmission Section 70-71

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*

Master Plan Project ☑ 2008 Priority Rating 2 (see Appendix 3)

To improve service reliability by completing a study to rehabilitate more than 10 miles of pipeline serving the northern high service area.

Project History and Background

The Northern High System Pipeline Sections 70, 71, and 79 are the primary distribution mains that supply water to seven north shore communities. These water mains are constructed of unlined steel and are over 55 years old. Rehabilitation of these pipelines will extend their useful life and postpone the need for more costly pipe replacement in the future. This project includes an initial planning study that will assess the existing pipe condition and develop a sequence of work that would ensure uninterrupted service to the north shore communities while pipeline segments are out of service for rehabilitation. Future phases for design and construction of the rehabilitation will be added to this project based on the results of the planning study.

Scope

Sub-phase	Scope
Planning	Planning phase for the rehabilitation of more than 10 miles of NHS Sections 70, 71, and 79.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$1,000	$0	$1,000	$0	$0	$0	$1,000	$0

Project Status 5/13	0.0%	Status as % is approximation based on project budget and expenditures. Planning is expected to begin in July 2015.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$1,000	$1,000	$0	Jun-15	Jun-16	12 mos.	$1,000	$1,000	$0

Explanation of Changes

- Project schedule changed due to project priorities.

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 response reduces 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 1,109 blow-off valves and 1,246 main line valves. Some blowoff valves are cross-connected into sewers or drainage piping. To ensure there is no chance of contamination, DEP requires retrofiting of the blow off valves to provide air gaps to ensure that non-potable water cannot reach the potable water lines. In addition, many of the main line valves in the system are significantly beyond their original design life. Many of these are either inoperable or inadequate and require replacement, repair or retrofitting.

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

Scope

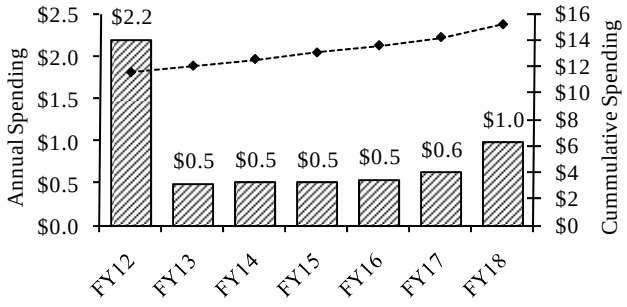
Sub-phase	Scope
Design/Phase 1	Design of valve replacements, setting priorities based on the level of urgency or risk associated with each valve and scheduling work on valves that would not otherwise be replaced during upcoming pipeline rehabilitation projects.
Construction - Phase 1	Purchase and installation of 27 blow-off valve retrofits.
Construction - Phase 2	Purchase and installation of 10 blow-off valve retrofits and 10 main line valve replacements.
Construction - Phase 3	Purchase and installation of 10 blow-off valve retrofits and 12 main line valve replacements as well as rehabilitation of two meters.
Construction - Phases 4, 5 & 6	For each phase, purchase and install blow-off valve retrofits and main line valve replacements and rehabilitation of miscellaneous meters. Phase 4 Contract included 12 main line valves, 10 blow-off retrofits, 2 check valves and the rehabilitation of 2 meters. Phase 5 Contract included 10 blow-off valve retrofits and 13 main line valve replacements. Phase 6 includes 4 blow-off valve retrofits, 8 main line valve replacements and 9 globe valves (tank isolation).
Construction Phases 7, 8 & 9	For each phase, purchase and install blow-off valve retrofits and main line valve replacements and rehabilitation of miscellaneous meters. Each phase includes approximately 10 blow-off valve retrofits and 10 main line valve replacements.

Sub-phase	Scope
Design CA/RI Phases 8 & 9	Design/Contract Administration/Resident Inspection for Construction 8 and 9.
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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$22,311	$11,523	$10,788	$494	$3,437	$500	$3,131	$7,163

Valve Replacement



Project Status 5/13	53.9%	Status as % is approximation based on project budget and expenditures. Phases 1-6 are complete. Phase 7 was completed in April 2013. Design CA/RI for Phases 8 is expected to commence in FY16.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY14	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$22,392	$22,311	($81)	Jun-21	Jun-21	None	$4,511	$3,131	($1,380)

Explanation of Changes

- Project cost decreased due to estimated change orders for Construction 7 partially offset by inflation adjustments for Construction 8 and 9.
- Project spending changed primarily due to revised schedule for Construction 8 and updated cash flow for equipment purchases.

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 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 Section 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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$1,043	$124	$919	$0	$0	$1	$178	$742

Project Status 5/13	11.9%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$3,475	$1,043	($2,432)	Nov-19	Nov-19	None	$778	$178	($600)

Explanation of Changes

- Project cost and spending decreased due to updated cost estimate for Section 27 construction as a result of revised scope and in-house work.

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 which can 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 49, 53, and 59A-D in Malden; rehabilitation of Sections 53 and 55 in Revere; and installation of control valves to improve water pressure. All the work for this project, with the exception of the design and construction of Section 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 has been sliplined with steel pipe. 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. Sections 49 and 49A, old 24-inch pipelines, are used to connect Section 53 to Shaft 9A of the City Tunnel. They are undersized for this purpose and are a severe restriction. A new 3,000-foot, 48 or 60-inch diameter pipeline (proposed Section 53A) is needed to reinforce Sections 49 and 49A. An 850-feet, 20-inch diameter, portion of Section 68, interconnects Section 53 with the new Saugus/Lynn pipeline. This section is undersized and needs to be reinforced with 850 feet of 48-inch pipeline to improve hydraulic capacity. 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. Sliplining of Section 53 Revere was completed in August 2009.

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 4,900 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.
Design and Construction Section 53 Connections	Design, Construction Administration, Resident Inspection, and 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. These proposed pipelines will eliminate hydraulic restrictions and better integrate the Section 53 distribution main into the system.
Shaft 9A-D Extension Design and Construction	Design CA/RI, and Construction of approximately 2,000 linear feet of new pipeline in Malden connecting Shaft 9A-D line to Section 99.
Section 56 Repl./Saugus River Crossing	Replace failed 30" steel water main crossing the Saugus River by trenchless methods. Main is 75 years old and is leaking. This main provides redundancy to Section 26 which is currently out of service for maintenance.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$48,622	$26,833	$21,789	$0	$2,938	$0	$12,604	$9,185

Project Status 5/13	55.2%	Status as % is approximation based on project budget and expenditures. Revere Beach, Malden Section 53 and Linden Square construction are complete. Revere Section 53 Construction was substantially complete in August 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$37,276	$48,622	$11,346	Nov-20	Nov-20	None	$4,494	$12,604	$8,110

Explanation of Changes

- Project cost and spending increased primarily due to a new sub-phase being added for Section 56 Replacement/Saugus River Crossing and updated cost estimates and schedules for Section 53 Design and Construction contracts.

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, and the City Tunnel. 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.

Project History and Background

WASM 3 is a 56-inch to 60-inch diameter lock-bar steel pipe installed in 1926 and 1927. It is connected to the MetroWest Tunnel and Hultman Branch at the west end and the City Tunnel Extension at its east end. It extends from Weston through Waltham, Belmont, Arlington and Somerville to Medford. Most of its flow comes from the MetroWest Tunnel Shaft W, with peak flow of 57 million gallons per day. A lesser amount enters the main from the City Tunnel Extension 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 Supply Mains and Reservoir. WASM 3 serves a population of more than 250,000.

A break almost anywhere on this pipeline would result in severe service disruptions in Waltham, Watertown, Belmont, Arlington, Lexington, Bedford, and Winchester. Virtually no water would reach Waltham if a break were to occur at the west end of the pipeline; water normally supplied through the Shaft W connection would be forced through the Shaft 9 connection, increasing flows and reducing hydraulic grade lines in WASM 3, the City Tunnel, and City Tunnel Extension. The lack of redundancy also makes routine cleaning and lining of the 80-year old pipeline impossible. The need for maintenance is indicated by a significant number of leaks, particularly on the most vulnerable west end, 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 Shaft 9 of the City Tunnel Extension to WASM 3. This will be accomplished by rehabilitating existing mains between the City Tunnel Extension and WASM 3.

Previously proposed portions of this project have been eliminated or placed on hold until the Long-Term Redundancy study is completed. Specifically, the proposed new 48-inch pipeline through Newton and Waltham has been eliminated in favor of a shorter 36-inch pipeline in Waltham from Meter 182 to the Waltham transmission system; and the rehabilitation of Sections 23, 24, and 47 has been delayed until the Long Term Redundancy study is finalized.

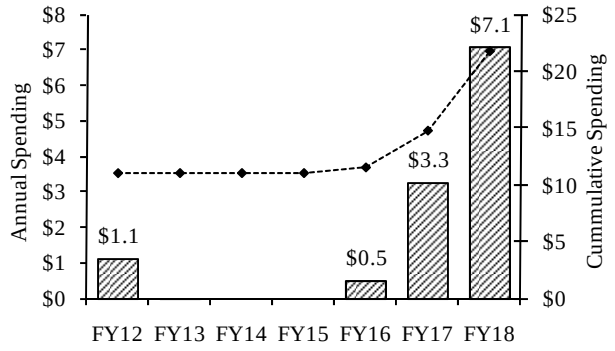
Scope

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 (5163)	Identification of alternatives to determine the optimum approach for providing additional strong connections to WASM 3.
Design/CA/RI-DP1 (6383)	Design, construction administration and residential inspection services for a new 48-inch pipeline to interconnect WASM 3 with WASM 4 (CP-1). This design work was terminated based on the recommendation of the Long Term Redundancy Study.
Design DP2/4 Meter 120 (6384)	Design services for CP-3, 5 and Meter 120. Construction Administration and Resident Inspection services to be performed by in-house staff.
Design and Construction CP2 C&L Sections 59 & 60 (7086/6548)	Cleaning and lining of 16,400 linear feet of 20-inch diameter pipe on Sections 59 and 60 (Intermediate High) from Section 25 in Watertown to Meter 121 in Arlington.
South Segment CP3 (6392)	Cleaning and lining of 6,900 linear feet of 20-inch pipe (Section 24) from Meter 120 to WASM 4, 5,350 linear feet of 36-inch (Section 23) and 10,170 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 (6394)	Rehabilitation of 15,000 linear feet of 20 and 48-inch diameter pipe for Sections 18, 50, and 51 for the Northeast Segment plus Meter 32 replacement.
Replacement of Section 25 Design (6955) and Construction (6956)	Replacement of existing Section 25 (approximately 4,800 linear feet of existing 16" pipe) with a new pipeline.
Section 75 Extension	Addition of approximately 6,000 feet of new 30-inch pipe to extend Section 75 from the Commonwealth Avenue pump station in Newton to Section 23, also in Newton, to provide a redundant feed to the Intermediate High Service area supplying Belmont and Watertown. Requires replacement of Section 25.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$33,351	$10,961	$22,391	$7	$5,649	$0	$10,824	$11,559

New Connecting Mains



Project Status 5/13	32.9%	Status as % is approximation based on project budget and expenditures. Northeast Segment CP-5 construction contract was completed in January 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$32,763	$33,351	$588	Nov-19	Nov-19	None	$10,664	$10,824	$160

Explanation of Changes

- Project cost primarily due to inflation adjustments on unawarded contracts.
- Spending increased primarily due to updated schedules for CP-3 South Segment Design Construction Administration/Resident Inspection and Construction contracts.

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 includes a future phase to rehabilitate Gillis, Newton Street, Lexington Street, and Commonwealth Ave pumping stations.

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 was completed several years ago.

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 Supervisory Control and Data Acquisition (SCADA) systems at each station. Under the second construction contract, MWRA will complete rehabilitation of the five pump stations. The second construction contract was awarded in October 2006 and was substantially complete in June 2010.

The next phase will be to rehabilitate the Gillis, Newton Street, Lexington Street, and Commonwealth Avenue pumping 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.

Sub-phase	Scope
Design 2 CS/RI	Final Design, construction services, and resident inspection for rehabilitation of five pump stations.
Pump Station Rehabilitation	Rehabilitation of the Commonwealth Avenue, Gillis, Lexington Street, and Newton Street pump stations. The pumps in these stations will be over 20 years old and maintenance of the existing units will be an issue mostly due to availability of replacement parts. More efficient units will be installed based upon age and life of the equipment. Commonwealth Avenue, Gillis, and Lexington Street are the only pump stations for their respective service areas.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$55,058	$30,058	$25,000	$0	$12,072	$0	$0	$25,000

Project Status 5/13	54.6%	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) was substantially complete in June 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$55,058	$55,058	$0	Jun-24	Jun-24	None	$0	$0	$0

Explanation of Changes

- N/A

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 and 45 provide service to the Northern Extra High (NEH) communities of Waltham, Lexington, Bedford, Belmont, Winchester, 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 community distribution systems. 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
Design/CA/RI and construction – Sections 45, 63, and 83.	Replacement of approximately 2,600 linear feet of Section 45 with 24-inch diameter pipe extending from the connection point at Meter 47 to Section 82 on Park Street at the Intersection of Paul Revere Road in Arlington; installation of about 2,100 linear feet of new 24-inch pipeline, parallel to a portion of Section 83, starting from Meter 182 and proceeding to the intersection of Waltham Street (in Lexington and part of Waltham) and Concord Ave (in Lexington). Also, Rehabilitation of Section 63, consisting of about 3,400 linear feet of 20-inch pipeline connecting Section 63 to Meter 136.
Design and Construction Sections 34 & 45	Replacement of 1,532 linear feet of 12-inch diameter cast-iron pipe (Section 34) with new 20-inch diameter pipe and rehabilitation of 3,374 linear feet of 16-inch diameter cast iron main (Section 45).

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$7,653	$3,632	$4,021	$9	$9	$13	$1,198	$2,815

Project Status 5/13	47.5%	Status as % is approximation based on project budget and expenditures. Construction of a portion of Section 45 was rehabilitated in September 2001. Design of Sections 34 and 45 scheduled to start in FY16.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$7,479	$7,653	$174	Dec-18	Dec-20	24 mos.	$2,908	$1,198	($1,710)

Explanation of Changes

- Project cost increase due to inflation adjustments.
- Schedule and spending shifted due to project prioritization.

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 68 miles or 24% 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 50 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.
Corrosion Control Program Task 1 -3	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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$1,591	$141	$1,450	$0	$0	$0	$725	$725

Project Status 5/13	8.9%	Status as % is approximation based on project budget and expenditures. Project Planning phase is complete. Corrosion Control Program-Task 1 is expected to commence in FY15.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$1,527	$1,591	$64	Jun-22	Jun-22	None	$0	$725	$725

Explanation of Changes

- Project cost increased due to inflation adjustments.
- Spending changed due to updated schedules for Corrosion Control Program Task 1 and 2 contracts.

CEB Impact

- None identified 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.

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. These mains will interconnect the new Spot Pond Storage Facility to the system when it is completed in FY15.

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.

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.

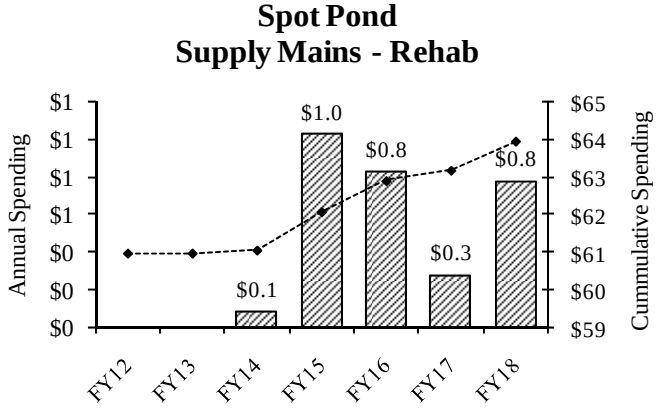
Completion of this project will facilitate consolidation of the Boston Low and Northern Low Service Areas into one service area and will improve pressures to the far reaches of the Northern High Service Area by reducing the demand burden on the City Tunnel Extension. The quality of water delivered to 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) CA/RI Construction – CP3	Cleaning and lining of 11,700 linear feet of the East Spot Pond Main in Charles River Crossing and Cambridge (48-inch, Sections 3 and 4) including valve replacement, and cleaning and lining of 16,800 linear feet of the West Spot Pond Main in Harvard St., Franklin St., No. Harvard Avenue, and Massachusetts Avenue (48-inch, Sections 9 and 11 11, Brighton and Cambridge).
Early Valve Replacement Contract	Installation of nine main line valves and associated blow-off valves, as well as permanent by-pass piping to meters and air valves. Also includes removal of pipe at three locations for materials strength testing.
Construction 4 – Trusses	Section 4 Bridge Trusses spanning the Fitchburg Main Line and the New Hampshire-Maine Line are in need of repair, painting and replacement, respectively.
Early Valve Equipment Purchase	Purchase Order for 12 valves that were installed from 1998-1999 as a precursor to the cleaning and lining contracts.
Section 4 Webster Ave Bridge Pipe Rehabilitation Design and Construction	Section 4 is a 48” cast iron main crossing the Webster Ave Bridge in Somerville that needs to be rehabilitated and is currently out of service due to pipe deflection and leakage. This project will return a currently isolated pipeline to service to provide redundancy.
Section 50 Pipe Rehabilitation Design and Construction	Section 50 is several hundred feet of 20” cast iron main on exposed pilings which is need of rehabilitation.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$66,243	$60,980	$5,263	$0	$502	$80	$2,975	$2,288



Project Status 5/13	92.1%	Status as % is approximation based on project budget and expenditures. Work in Contract 2, Middle, is complete. Contract 3 (South) was substantially complete in April 2008. Section 4 Webster Ave Bridge Pipe Replacement Design is expected to commence in FY14.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$66,187	$66,243	$56	Dec-18	Jun-19	6 mos.	$4,725	$2,975	($1,750)

Explanation of Changes

- Project cost increase primarily due to inflation adjustment for Construction 4 Trusses.
- Schedule and planned spending changed primarily due to revised schedule for Section 50 Pipe Rehabilitation Design/Engineering Services During Construction/Resident Inspection and construction contracts.

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 pipelines, sliplining, abandoning 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

The City Tunnel divides into two branches at Chestnut Hill: the City Tunnel Extension going north to supply the Northern High System, Northern Intermediate High System, Northern Extra 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 the Chestnut Hill 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.

Previously, the Southern High System could 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. A new potable water connection has been constructed from the low service pipes to the new emergency pump station.

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 are presently in normal use, and a 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 discolored 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. Future design efforts will relocate the reservoir level control functions and provide an emergency electric generator for the pump station. 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.
Chestnut Hill Emergency Pump Station Emergency Generator/Electrical Rehabilitation Final Design CA/RI and Construction	Final Design CA/RI services and construction for the Chestnut Hill Emergency Pump Station Emergency Generator and electrical rehabilitation. The Chestnut Hill Underground Pump Station groundwater is extremely high and has entered the electrical equipment and caused electrical equipment to fail. Part of this project is to relocate electrical conduits out of the concrete slab to prevent further failures.
Design and Construction Shaft 7 Building	Design and construction of a new access building above the Shaft 7 Top of Shaft structure including new electrical service, HVAC equipment, piping corrosion protection, PRV replacement, new flow meters, and structural and access improvements to the facility.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$31,301	$17,487	$13,815	$0	$25	$0	$837	$12,978

Project Status 5/13	55.9%	Status as % is approximation based on project budget and expenditures. Preliminary engineering for the final pipe connections reached substantial completion in April 2006. Chestnut Hill Emergency Pump Station Emergency Generator/Electrical Upgrade Final Design CA/RI is expected to commence in July 2016.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$30,041	$31,301	$1,260	Jan-26	Jan-26	None	$6,315	$837	($5,478)

Explanation of Changes

- Project increased due updated cost estimates for the Emergency Generator/Electrical Upgrades Final Design Construction Administration/Resident Inspection and Construction contracts.

- Spending shifted due to updated schedules for the Emergency Generator/Electrical Upgrades contracts due to delayed design start of MEPA process for the Sudbury Aqueduct 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 was completed by June 2005. The contract for Section 107 Phase 1 and Phase 2 were completed in January 2009 and January 2012, respectively.

Scope

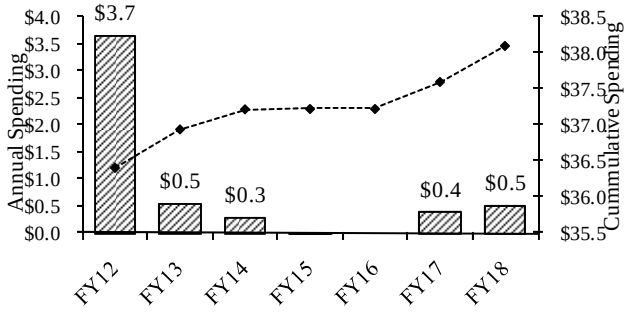
Sub-phase	Scope
Sections 21,43, 22 Design/CS/RI	Design, construction services, and resident inspection for five construction contracts in Phase 1, including rehab of 32,000 linear feet of 24- to 48-inch main, and installation of 17,000 linear feet of 36- to 48-inch main. Rehabilitation to consist of cleaning and cement mortar lining, 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 South, 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 Facility Plan/EIR	Facility Plan/EIR for Section 22 North.
Section 22 North Design/ESDC	Design/ESDC for Section 22 North.
Section 22 North Construction	Rehabilitation of 17,300 linear feet of existing 48-inch Section 22 North.

Sub-phase	Scope
Section 20 and 58 Rehabilitation Design and Construction	Rehabilitation of approximately 19,000 feet of 36-inch steel and cast iron water main in Morton Street from Shaft 7C of the Dorchester Tunnel to Washington Street.
Section 107 Phase 1 Construction	Construction of 4,400 linear feet of new 48-inch water main from East Milton Square to Furnace Brook Parkway in Milton and Quincy.
Section 107 Phase 2 Construction	Replacement of existing Sections 21 and 43 with 9,200 linear feet of new 48-inch water main from Dorchester Lower Mills in Boston to East Milton Square, and cleaning and lining of 4,000 feet of existing water mains.
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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$73,568	$36,406	$37,162	$535	$19,331	$279	$1,158	$35,470

Southern Spine
Distribution Mains



Project Status 5/13	49.7%	Status as % is approximation based on project budget and expenditures. Construction of Contracts 1 and 1A for Section 22 South is completed. Section 107 Phase 1 Construction was substantially complete in January 2009. Section 107 Phase 2 Construction was substantially complete in January 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$72,465	$73,568	$1,103	Jan-23	May-26	40 mos.	$1,013	$1,158	$145

Explanation of Changes

- Project cost increased primarily due to inflation adjustments for Section 22 North Construction and Section 20 & 58 Design & Construction. This increase was partially offset by change order estimates for Section 107 Phase 2 Construction.

- Schedule shifted for Section 20 & 58 Construction and Section 22 North Construction due to project priorities.

CEB Impact

- None identified at this time.

S. 722 Northern Intermediate High (NIH) Redundancy and Covered Storage

Project Purpose and Benefits

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

Master Plan Project ☑ 2008 Priority Rating 1 (see Appendix 3)

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

Project History and Background

This system serves Reading, Stoneham, Wakefield, Wilmington, Winchester, and Woburn with an average daily demand of 9.9 million gallons. The population served is approximately 150,000. The current six million gallon capacity of MWRA's Bear Hill Tank in Stoneham is both insufficient to meet MWRA's 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 Prestressed Concrete Cylinder Pipe (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 109 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.

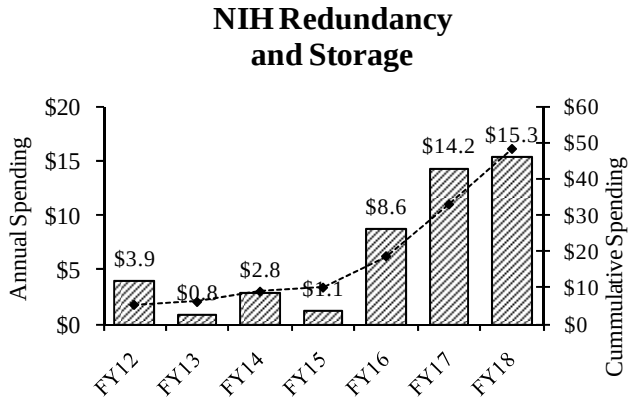
Scope

Sub-phase	Scope
Concept Plan, ENF, and Mobile Pump Unit	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, improved community interconnections, pipeline redundancy, targeted emergency response plans, additional storage or other improvements that can be implemented within the NIH system. Concept planning work included environmental review of the recommended plan and specification and purchase of the Mobile Pump Unit.
Design CA/RI NIH Impr/Gillis PS Impr./Reading-Stoneham Interconnection	This phase (Contract 7045) includes the design and construction of short-term measures identified in the conceptual plan including Gillis PS Improvements and the Reading/Stoneham Interconnection.
Design and Construction Section 89/29 Redundancy Ph 1 & 2	The Concept Plan has developed preliminary route alternatives in order to provide redundancy to Section 89. The route selected is under review with MWRA staff. Final route selection is scheduled for September 2013, reflecting consultations with local elected officials, consideration of permitting requirements, project impacts and the location of the recommended storage for the NIH system. Contract 6906 includes design and CA/RI for the redundant pipeline only (approximately 7 miles).
NIH Storage Design and Construction	The Concept Plan has identified several potential storage locations in the NIH system. This phase includes the design and construction of two 3-MG elevated tanks.

Sub-phase	Scope
Section 89/29 Rehab Design and Construction (Ph 1 and 2)	There must be a redundant pipeline prior to Section 89 being taken off line for repairs. At that point, the pipeline can be inspected and rehabilitated as necessary. This phase includes design and construction of Section 89/29 rehabilitation.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$84,956	$5,331	$79,625	$798	$5,495	$2,822	$42,079	$36,748



Project Status 5/13	7.0%	Status as % is approximation based on project budget and expenditures. Concept planning began in February 2006. Design for Short-term Improvements contract began in September 2009. Mobile Pump Unit purchase was made in FY10. Section 89/29 Redundancy Design/CA/RI contract was awarded in March 2011. Reading/Stoneham Interconnections was substantially complete in October 2012. 2011. Gillis Pump Station Improvements are expected to commence in July 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$83,660	$84,956	$1,296	Jan-21	Jun-22	17 mos.	$51,456	$42,079	($9,377)

Explanation of Changes

- Project cost increased primarily due to inflation adjustments on unawarded contracts partially offset by updated cost estimate for Gillis Pump Station Improvements.
- Project schedule shifted as a result of rescheduling rehabilitation phases to begin after short-term work and redundancy phases are completed.
- Project spending changed primarily due to updated schedules for Section 89 & 29 Rehabilitation Design and

Construction and 89 & 29 Redundancy Construction Phase 1 and 2 contracts.

CEB Impact

- The proposed storage facilities will require periodic inspection, maintenance, and water quality testing but impacts are not quantified yet.

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 provides 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 cement mortar lining. Section 97A, a new 16-inch pipeline provides redundancy to East Boston via Northern High System. The pipeline connects 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, Design CA/RI and Construction – Section 8	Cleaning and cement mortar lining of the pipeline interior, replacement of all defective and inoperable valves, and the addition of new valves for 7,500 linear feet of 48-inch pipe on Section 8 in Malden and Everett. Replacement work consists of replacing 9,722 feet of 42-inch pipeline with new 36-inch ductile iron main and replacement of blow-off connections from Second Street in Everett to the Mystic River Bridge in Chelsea.
Rehab Sections 37 and 46 Chelsea, East Boston Design and 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 3,000 linear feet of 16-inch and 12-inch water main and a new pressure-reducing valve. This recently completed work is part of the Northern High System and adds redundancy to East Boston, including Logan Airport.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$22,440	$2,321	$20,119	$0	$2,263	$0	$754	$19,365

Project Status 5/13	10.3%	Status as % is approximation based on project budget and expenditures. Section 97A Construction contract was substantially complete in October 2009.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$21,698	$22,440	$742	Jul-22	Jul-22	None	$4,149	$754	($3,395)

Explanation of Changes

- Project cost increase due to inflation adjustments for Section 8 Design and Construction.
- Spending changed due to rescheduling Rehabilitation of Sections 37 & 46 Chelsea/East Boston Design and Construction as a result of project priorities.

CEB Impact

- None identified at this time.

S. 727 Southern Extra High Redundancy & Storage

Project Purpose and Benefits

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

Master Plan Project ☑ 2008 Priority Rating 2 (see Appendix 3)

To provide redundancy to Section 77 and 88 to the single spine mains serving Canton, Norwood, Stoughton and Dedham-Westwood by construction a redundant pipeline. Also, to increase distribution storage within the service area to improve system operation and reliability.

Project History and Background

This project will provide redundancy to Sections 77 and 88, which are currently single spine mains serving Canton, Norwood, Stoughton, and Dedham-Westwood, through construction of a redundant pipeline. The project will also increase distribution storage within the service area to improve system operation and reliability.

MWRA's Southern Extra High pressure zone serves Canton, Dedham, Norwood, Stoughton, Westwood, portions of Brookline, Milton, Newton, and the Roslindale and West Roxbury sections of Boston. Water is pumped to this pressure zone from the Dorchester tunnel through three pump stations.

The Southern Extra High pressure zone is currently deficient in distribution storage and lacking in redundant distribution pipelines. MWRA maintains two distribution storage tanks (Bellevue Tank 1 and Bellevue Tank 2) totaling 6.2 million gallons of storage for the entire Southern Extra High service area, which is significantly below the goal of one day of storage. Further highlighting the deficiency is the fact that the overflow elevation for the 2.5-million-gallon Bellevue Tank 1 is 25 feet lower than the overflow elevation for the newer 3.7-million-gallon Bellevue Tank 2, limiting its useful capacity.

The five communities in the southern portion of the service area (Canton, Norwood, Dedham, Westwood, and Stoughton) are served by a single MWRA 36-inch diameter transmission main (Section 77), which is five miles long. Canton and Stoughton are served by a branch (Section 88) off of Section 77. Although several of these communities are partially supplied by MWRA, the loss of this single transmission main would result in a rapid loss of service in Norwood and Canton, and water restrictions for Stoughton and Dedham/Westwood.

In addition, the Southern Extra High service area has expanded during the past several years with the addition of the partially-supplied Town of Stoughton and the Dedham-Westwood Water District. This growth has been concentrated to the south while the Bellevue tanks are located at the northern end of the service area. Although several of these communities are partially supplied by MWRA, the Town of Norwood is fully supplied by this line and has no back-up source of supply. There have been several instances when the water supply to Norwood has been interrupted due to valve and/or pipe failures.

Scope

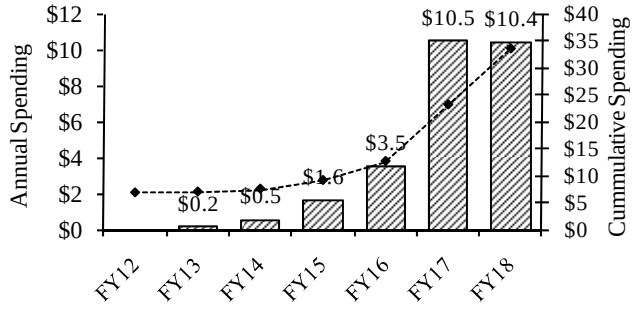
Sub-phase	Scope
Concept Plan	A study to assess storage, capacity and condition of existing distribution pipes, new pipeline routing options and tank sites will be identified.
University Ave Water Main	Initial phase to provide redundant pipeline on University Avenue in Norwood. Project broken out from the larger SEH redundancy and storage projects. This work has been completed.
Redundancy Pipeline Section 111 Design & Construction Ph 1	The first phase, Alternative 6, funds the design and construction of a pipeline from the Bellevue storage tank to East Street in Westwood, which will provide redundancy to Sections 77 & 88.

Sub-phase	Scope
Storage Design & Construction Phase 2	The second phase will provide redundancy to Sections 77 & 88 through design and construction of one (1) 2.5 million gallon distribution storage tank. This tank is needed to provide adequate one day storage to the service area.
Storage Design & Construction Phase 3 Second Tank	The third phase will provide additional redundancy to Sections 77 & 88 through design and construction of an additional one (1) 2.5 million gallon distribution storage tank. This tank is needed to provide additional one day storage to the service area.
Section 77/88 Design/Constr.	Rehab of Sections 77 & 88 after redundant pipeline is in place.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$93,460	$6,672	$86,787	$150	$5,155	$544	$26,521	$60,116

SEH
Redundancy & Storage



Project Status 5/13	7.2%	Status as % is approximation based on project budget and expenditures. Conceptual Design began in February 2007. University Ave Water Main was substantially complete in November 2008. Redundancy/Storage Phase 1 Final Design/CA/RI is expected to commence in January 2014.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$101,849	$93,460	($8,389)	Jun-29	Dec-35	78 mos.	$11,998	$26,521	$14,523

Explanation of Changes

- Project cost decreased due updated cost estimates reflecting preferred Alternative 6 pipeline route. This was partially offset by inflation adjustments on unawarded contracts.
- Schedule and project spending changed due to updated schedules based on preferred alternative pipeline route and project sequencing.

CEB Impact

- None identified at this time.

S. 730 Weston Aqueduct Supply Mains (WASMs)

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. Increasing the capacity of the WASM 3 Supply Main is a key component of the Long term Redundancy Plan for the metropolitan tunnel system. 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 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 cement-lined cast iron pipeline about 38,700 feet long that was constructed in 1904. WASM 2, built in 1916, is a 60-inch diameter cement-lined 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 between 1926 and 1933. This major supply line carries high service water from the 7-ft 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 extends from the Hultman Aqueduct branch in Weston northeast to the Shaft 9 line in Medford and supplies more than 250,000 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. Supply to the Spot Pond Supply Mains from WASMs 3 and 4 was maintained at their east ends through pressure reducing valves.

WASMs 1, 2, and 4 were previously 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 was 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, 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 had 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.

The rehabilitation of WASMs 1 and 2 is now complete. WASM 1 and WASM 2 now connect to the new Loring Road tanks in Weston and 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, is now 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 a new Waltham Connection to the Northern Extra High system is complete. 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 Waltham Connection project will provide redundancy so that the main can be rehabilitated/replaced in phases. Based on the recommendations of the Transmission Redundancy Study, approximately 8 of the 11 miles of WASM 3 will be replaced with a larger 72-inch main. The remaining 3 miles will be rehabilitated.

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 included 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 WASM 4 is complete.

WASM 4, since 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 also has the capability to operate completely as a low service main. This flexibility in operating conditions allows WASM 4 to best support the system.

Scope

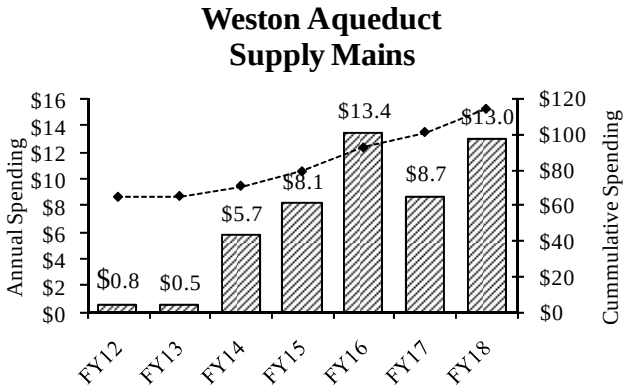
Sub-phase	Scope
Design/CA/RI – WASMs 1 & 2 (6142)	Design, construction administration, and resident inspection for the rehabilitation of WASM 1 and WASM 2 (construction contracts 6280 and 6281).
Design/CA/RI - WASM 4 (5147)	Design, construction administration, and resident inspection for the rehabilitation of WASM 4 (construction contracts 6203, 6175, 6312, 6176, and 6313).
Construction - Newton WASMs 1 & 2 (6280)	Construction work on WASM 1 and WASM 2 along Commonwealth Avenue and WASM 1 through Centre Street to the Newton Commonwealth Golf Course.

Sub-phase	Scope
Construction - Boston WASMs 1 & 2 (6281)	Construction on the remaining lengths of WASMs 1 and 2 consists of rehabilitation of 8,640 linear feet of Section 4 of WASM 1 through the Newton Commonwealth Golf Course to Gatehouse #1, rehabilitation of 11,450 linear feet of Sections 7 and 8 of WASM 2 between Grant Avenue and Cleveland Circle, and installation of 650 linear feet of 36-inch pipe from Shaft 7 to Section 47.
Design/CA/RI WASM 3 (6539)	Design, construction administration and resident inspection for construction phases CP2, CP3 and CP4.
Construction - Waltham WASM3 CP2 (6543)	Replacement of the westerly portion of WASM 3 with a new 72-inch pipe generally located between the Hultman Branch and the Watertown Branch.
Construction – Belmont WASM 3 CP3 (6544)	Replacement of the middle portion of WASM 3 with a 72-inch pipe generally located between the Watertown Branch and the Spring Street Pumping Station.
Construction - Arlington WASM 3 CP4 (6545)	Rehabilitation of the easterly portion of WASM 3 and a short segment of Section 51 generally located between the Spring Street Pumping Station and the Shaft 9 line (Section 5-9A).
Construction - Arlington Section 28 CP1 (6546)	Rehabilitation of Section 28, the suction main to the Brattle Court Pumping Station, from the WASM 3 connection to the pumping station.
Construction - Auburndale WASMs 1, 2 & 4 (6175)	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.
Construction - Newton WASMs 2 & 4 (6312)	Cleaning and cement lining of 21,200 linear feet of 60-inch pipe on WASM 4 (Sections 13 & 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 as well as rehabilitation of Meters 104 and 105.
Construction - Allston WASM 4 & W. Ave Sewer (6313)	Replacement of the Nonantum Road PRV and sliplining of 1,600 linear feet of pipe from Brooks Street to North Beacon Street, 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 South 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.
Construction – WASM 3 PCCP SPL12 (7000)	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 a mainline butterfly valve with chamber and separate air release manhole.
Design CA/RI WASM 3 PCCP SPL12 (7001)	Design, construction administration and resident inspection services for the replacement of the PCCP pipe portion of WASM 3 (construction contract 7000).

Sub-phase	Scope
Design CA/RI Section 36/ WS/Waltham Connection (6540)	Design, construction administration and resident inspection services for the replacement of Section 36, rehabilitation of the Watertown Section, a new 11B interconnection to WASM 3, and a new connection to Waltham from the Northern Extra High service area (construction contract 7222, 7448 and 7457).
Construction Watertown Section (7222)	Rehabilitation of approximately 5,795 linear feet of the Watertown Section.
Construction Section 36/C/S9-A11 Valve (7448)	Replacement of approximately 5,200 linear feet of 1911 vintage 16-inch diameter cast-iron pipe from the Brattle Court pumping station to the Arlington Heights Standpipe, construction of a new 11B interconnection to WASM 3 and replacement of 48 inch mainline butterfly id S9-A11-A in Medford.
Construction Section 101/Watertown Section (7457)	Construction of 8.800 linear feet of a new connection to Waltham from the Northern Extra High Service Area.
Design CA/RI Section 28 (7083)	Design, construction administration, and resident inspection services for the rehabilitation of Section 28, suction main to the Brattle Court Pumping Station, from the WASM 3 connection to the pumping station (construction phase CP1, contract 6546).

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$286,418	$64,830	$221,588	$506	$4,435	$5,685	$48,742	$172,340



Project Status 5/13	22.9%	Status as % is approximation based on project budget and expenditures. Newton WASMs 1 & 2, Boston WASMs 1 & 2, Auburndale WASMs 1, 2 & 4, Newton WASMs 2 & 4, Allston WASM 4 & W. Ave Sewer, and WASM 3 PCCP SPL12 are complete. Section 28 Arlington CP-1 was substantially complete in February 2011. Design CA/RI Section 36/Watertown Section/Waltham Connection commenced in January 2011. WASM 3 MEPA/Design/CA/RI is expected to commence in July 2013.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$276,166	$286,418	$10,252	Aug-22	Feb-24	18 mos.	$100,111	$48,742	($51,369)

Explanation of Changes

- Project cost increased primarily due to inflation adjustments. Also, updated cost estimates for Section 36 construction contracts which were repackaged into three contracts.

- Project schedule extended to account for schedule change in WASM 3 Design/Massachusetts Environmental Policy Act (MEPA)/Design Construction Administration/Resident Inspection and changes in project sequencing.

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 4,700 linear feet 24-inch water main, 1,800 feet of 36-inch water main and 6,000 feet of 12-inch 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 and construction of approximately 6,000 feet of distribution piping for the town of Saugus. The cost of this project will be shared by MWRA and the town of Saugus. An interim interconnection to the Saugus system was constructed in early FY08.

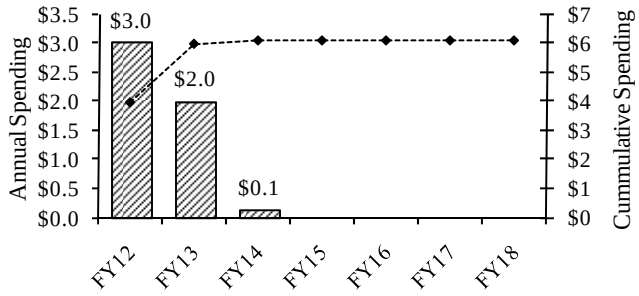
Scope

Sub-phase	Change/Explanation
Temporary Interconnect Construction Ph 1	Install approximately 150 feet of 24" main.
Design and Construction Ph 2	Construction of 4,700 linear feet of new 24-inch main, 1,800 feet of 36-inch water main and 6,000 feet of 12-inch water main.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$6,073	$3,974	$2,099	$1,986	$5,447	$113	$113	$0

Lynnfield Pipeline



Project Status 5/13	95.2%	Status as % is approximation based on project budget and expenditures. Temporary Interconnect Construction Phase I reached substantial completion in December 2007. Construction (Phase 2) reached substantial completion in December 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$5,563	$6,073	$510	Jan-13	Dec-12	(1) mos.	$0	$113	$113

Explanation of Changes

- Project cost increased based on change order estimates.

CEB Impact

- None identified at this time.

S. 735 Section 80 Rehabilitation

Project Purpose and Benefits

☑ *Contributes to improved public health*
☑ *Extends current asset life*

Master Plan Project☑ 2009 Priority Rating 3 (see Appendix 3)

Rehabilitation of approximately 16,197 feet of pipe along Route128/95. Section 80 supplies water to Wellesley and Needham. Rehabilitation will improve water quality to these two MWRA communities.

Project History and Background

Section 80 is a steel main that runs from Shaft 5 of the City Tunnel in Newton to supply Wellesley and Needham. The main runs along portions of 128/95 and has been exposed to highly corrosive conditions and cathodic protection has not been maintained. Complaints from residents in Needham and Wellesley of a tar-like smell in the water indicate deterioration of the pipe liner. Testing indicated phenols levels 10 times allowable limits. Failure of Section 80 would create huge traffic challenges on this major metro-Boston highway.

Scope

Sub-phase	Scope
Section 80 Design CA/RI and Construction	Design and rehab of approximately 16,197 feet of pipeline in Section 80 along route 128/95.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$9,340	$0	$9,340	$0	$0	$0	$636	$8,704

Project Status 5/13	0.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$8,928	$9,340	$412	Dec-20	Dec-20	None	$582	$636	$54

Explanation of Changes

- Project cost and spending increased due to inflation adjustments.

CEB Impact

- None identified at this time.

Other Waterworks

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 Supervisory Control and Data Acquisition (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 built several new and upgraded facilities. These included the Nash Hill Covered Storage facility and the Loring Road Covered Storage facility, Carroll Water Treatment Plant, MetroWest Water Supply Tunnel, and the Norumbega Covered Storage facility. The existing system-wide backbone microwave communications network has been improved to connect these 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, control and metering sites.
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.
Winsor Dam High Line Replacement	Replace high line cable from Winsor Power Station to Quabbin Tower to insure uninterrupted service of SCADA communication network.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$16,992	$15,804	$1,189	$60	$197	$629	$1,129	$0

Project Status 5/13	93.0%	Status as % is approximation based on project budget and expenditures. Winsor Dam High Line Replacement is expected to begin in FY14.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$16,992	$16,992	$0	Dec-13	Jun-14	6 mos.	$1,000	$1,129	$129

Explanation of Changes

- Schedule changed for the Winsor Dam High Line Replacement project due to project priorities.
- Planned spending changed to account for final SCADA work.

CEB Impact

- None 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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$1,799	$1,036	$763	$0	$0	$0	$763	$0

Project Status 5/13	57.6%	Status as % is approximation based on project budget and expenditures. Records Development NTP is expected in FY16.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$1,799	$1,799	$0	Dec-16	Dec-17	12 mos.	$763	$763	$0

Explanation of Changes

- Schedule for Records Development changed due to project priorities.

CEB Impact

- No additional impacts identified at this time.

S. 765 Local Water System 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 Water System Assistance Program is a critical piece of MWRA's Integrated Water Supply Improvement Program. In November 1999, the Board of Directors approved the Phase 1 Local Pipeline Assistance Program, supported 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 loan during a ten-year time period beginning one year after the project funding is approved. MWRA increased the initial total program budget to $256,796,500 to provide funds for additional water system communities: Stoughton ($4,480,000), Reading ($1,916,000), Lynnfield ($320,000), Dedham/Westwood ($7,500), and Wilmington ($73,000).

An additional $210 million was added to the FY11 budget for the Phase 2 program known as the Local Water System Assistance Program. Community distributions from this program will be made from FY11 through FY20 with repayments scheduled for FY12 through FY30. The $210 million is split with $200 million allocated among 42 Metro-Boston/Metro-West communities and $10 million allocated among three Chicopee Valley Aqueduct (CVA) communities.

Scope

Sub-phase	Scope
Community Loans	Loans for MWRA water communities to replace and rehabilitate local water pipelines based on each community's share of total unlined pipe miles. These loans will be complete by the end of FY13.
Community Repayments	Principal repayment over a ten-year period beginning one year after origination of the loans.
Local Water System Assistance Program Loans	This is a continuation of the program of providing interest-free loans to water system communities for pipeline replacement, cleaning and lining, water metering and other local water system improvements.
Local Water System Assistance Program Repayments	Principal repayment over a ten-year period beginning one year after origination of the loans.
CVA Loans	This is an extension of the Local Water System Assistance program to the CVA communities to provide interest-free loans to water system communities for pipeline replacement, cleaning and lining, water metering and other local water system improvements.
CVA 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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$0	$108,821	($108,821)	$8,969	$26,714	$450	$2,927	($120,718)

Project Status 5/13	62.4%	Through May 2013, $255.8 million in loans were distributed to member communities.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$0	$0	$0	Jun-30	Jun-30	None	$22,179	$2,927	($19,252)

Explanation of Changes

- Spending shift is due to revised cash flows.

CEB Impact

- The annual interest paid for the Commercial Paper program supporting the Local Water Pipeline initiative is over $1.2 million average per year based on the last 10 years of actual spending.

S. 766 Waterworks 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 2018 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. Rehabilitation 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 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.
Transformer at Cosgrove Intake Building	Replacement of a 45 year old main service transformer and load break switch. This transformer supplies power to the Cosgrove Intake Building. If it were to fail, the building would be running on generator power for a significant period of time.

Sub-phase	Scope
Covered Storage Tank Rehabilitation	Rehabilitation of Fells and Loring Road Covered storage facilities commencing in FY19. The valves, sluice gates, and piping should be considered for rehabilitation by this time, as each facility will be more than 20 years old.
Elevated Water Storage Tank Repainting	Repaint 5 steel water storage tanks (Bellevue 1, Bellevue 2, Park Circle, Turkey Hill, and Walnut Hill). All were painted in 2000. Bellevue 1 and 2 are in the same service area (SEH); Park Circle, Turkey Hill and Walnut Hill are in the same service area (NEH). As noted, the various tanks are redundant to each other. Redundancy is maintained by performing this project and keeping the tanks in good condition and in service.
Shaft 9 Rehabilitation	Ground water leakage is filling the access shaft. The piping and components in the access shaft need to be evaluated and repair work performed.
Electrical Distribution Upgrades at Southborough	Upgrade of existing 13.8kV distribution system that supplies the various buildings at Southborough Complex due to on-going service disruptions. Install electrical metering equipment to better manage electrical use in facility.
Water Meter Upgrade Replacement	Replace six older Venturi meters in Boston and upgrade to above ground cabinets. This will provide more accurate and reliable meter data since current meters are beyond their life expectancy.
Beacon Street Line Repair	Repair of 48" water main in Brookline serving Boston Meter 44. This main provides important water supply redundancy to Meter 60 which serves the Longwood Medical Center in Boston.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$20,101	$538	$19,563	$0	$301	$0	$11,522	$8,041

Project Status 5/13	2.7%	Status as % is approximation based on project budget and expenditures. Waltham Pipe/Bridge Replacement project was substantially complete in September 2004. Transformer Replacement at Cosgrove Intake Building contract was completed in July 2012.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$17,179	$20,101	$2,922	Jul-23	Jul-23	None	$11,396	$11,522	$126

Explanation of Changes

- Project cost changed due to new project added for Water Meter Upgrade and Beacon Street Line, updated cost estimate for Cosgrove Valve Replacement and inflation adjustment for Meter Vault Manhole Retrofits. This increase was partially offset by Cosgrove Turbine Isolation Design sub-phase being deleted since it is no longer needed.

- Planned spending shift primarily due to new projects added and updated cost for Cosgrove Valve Replacement. This increase was partially offset by deleted sub-phase above and revised schedules for Elevated Water Storage Repainting, Shaft 9 Rehabilitation, Walnut Hill Tank Construction , and Cosgrove Valve Replacement projects.

CEB Impact

- None identified at this time.

Business and Operations Support

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.
FY09-13 Major Laboratory Instrumentation	Purchase major laboratory instrumentation, such as high resolution GC-MS or LC-MS to provide for lab testing of newly regulated contaminants.
Vehicles:	
Closed Circuit TV Inspection Truck	Purchase of TV Inspection Truck to support Wastewater Pipeline Unit of Field Operations Department.
High Lift Fork Loader (Lull)	Purchase High Lift Fork Loader (Lull) to move equipment and materials at Deer Island.
Front-End Loader	Purchase front-end loaders to move equipment, sand, and gravel at Deer Island.
Prior Vehicle Purchases	Vehicle purchases including TV Inspection Truck, Two Back Hoes, Vactor Truck, Water Service Truck, Bucket Machine, Excavator, Grove Crane, Land Fill Loader, Power Sweeper/Catch Basin Cleaner, Front-End Loader, Two Dump Trucks, Crane, and International Tractor/Trailer.
Ramp Truck	Purchase of Ramp Truck to support Fleet Services.
Street Sweeper	Purchase of Street Sweeper to support MWRA facilities and community assistance.
FY11-13 Vehicle Purchases	Vehicle purchases planned for FY11-13.
FY14-18 Vehicle Purchases	Future vehicle purchases planned for FY14-18.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$18,483	$10,108	$8,374	$1,355	$6,207	$2,181	$7,019	$0

Project Status 5/13	62.2%	Status as % is approximation based on project budget and expenditures. Purchase and installation of security equipment is in process and will continue through FY15.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$16,744	$18,483	$1,739	Jun-18	Jun-18	None	$3,925	$7,019	$3,094

Explanation of Changes

- Project cost and spending increased primarily due to revised cost estimates for Security Equipment and Installation and FY14-18 Vehicle Purchases.

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: mechanical, materials testing, surveying, hazardous materials assessment, instrumentation control, and wetland/environmental.

Status: MWRA uses technical assistance contracts in support of various CIP and CEB projects.

Expenditure Forecast (in $000s)

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$ 1,200	$0	$1,200	$0	$0	$400	$1,200	$0

Changes in Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$1,200	$1,200	$0	Jun-15	Jun-16	12 mos.	$800	$1,200	$400

Explanation of Changes

- Schedule and spending shift to reflect continuation of 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 Current Expense Budget (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. For updated MIS Business Plan refer to the new projects (S.940, S.942, S.944, & S.946) that are based on the MIS 5-Year Strategic Plan.

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. 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.

The initial business systems plan focused primarily on FY95-97 (Phase 1) with the goal of getting greater use out of existing systems. Implementation of Phase I improvements was completed in June 1997.

Phase II (FY97-10) 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 (TRAC/IS), Phase II is complete. The TRAC I/S was competitively bid in FY07 and the project is expected to be completed in Q2 FY13.

Phase III (FY99-01) focused on implementing a newly, integrated financial, procurement and human resources/payroll system (Lawson) which replaces three separate and obsolete software products. This project was substantially completed in May 2000 and met schedule and budgetary targets. Implementation of a Treasury application (XRT) 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 disruptions. In addition, approximately 65% of Phase IV spending was for items that would have been purchased under normal circumstances and the items have a useful life well beyond 2000.

Phase V (FY01-10) 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 (completed), and improvements to the Laboratory Information Management System (LIMS) to ensure MWRA keeps pace with changing business needs and technology standards. The LIMS contract was awarded in FY08 and the project was completed in Q2 FY10. In addition, Phase V includes replacement of obsolete minicomputers and improvements to GIS and TV Inspection systems based on benchmarking results (completed).

Phase VI (FY04-12) supports the replacement of obsolete PBXs at major sites, the 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. Lawson hardware was procured in FY08; software procurement and implementation was completed in May 2009.

The major areas of focus are: replacing aging systems and the network architecture, improving disaster recovery, enhancing data integration, consolidating server/computing resources, and implementing applicable best practices. The goal is to continue to support efficient administrative, financial, operational, engineering and planning functions

with cost-effective technologies**.** Key projects remaining include: records management software and Laboratory Instrument Data Management.

Scope – The table describes the original CIP phases and associated projects.

Sub-phase	**Scope**
Phase I (FY95-03)	(Complete): Upgrade of BHP minicomputers; Unix-based minicomputer for GIS integration; implementation and enhancement of the Sewerage Analysis and Management System (SAMS) including high-end workstations to incorporate improved hydraulic modeling capabilities, condition information, mapping, and GIS data so that CSO Master Plan and Transport data requirements are met; PC replacements; storage and functionality improvements for TRAC (IS) and wastewater flow data; leasing of three replacement minicomputers for administration and finance systems to address capacity and performance issues; 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; and development of a network plan for Business Systems Plan updates to address industry changes, maintenance/replacement concerns and functionality needs.
Phase II (FY97-13)	(Complete): Server consolidation, network scalability program, database integration program, PBX replacement, records management inventory program, maintenance management and waterworks programming services are completed. (On-going): The new TRAC I/S replacement was in production by September 2009 and the CIP includes 3 years of maintenance through FY13 and efforts customizing based on MWRA business needs and regulatory requirements. The Authority accepted the system in October 2010.
Phase III (FY99-04)	(Complete): Procurement of new integrated financial, procurement and human resources/payroll system. Purchase and installation of a back-up generator for Building 36 in the Charlestown Navy Yard and network project support.
Phase IV	(Complete): Year 2000 assessment and improvements.

Sub-phase	Scope
Phase V (FY01-12)	(Complete): Waterworks Operations Management System (OMS) project: Establishment of a system to integrate SCADA, water quality, flow, and related data for management reporting and analysis. SCADA incorporation to Process Book is complete. In FY06, a Harbor Outfall Monitoring Database project was identified and the system was completed in FY08. Data warehouse was completed in Q2 FY10. (Complete): Geographical Information Management System (GIS): Conversion of GIS from UNIX to NT based on vendor software changes (complete). Also, completed recommendations from a TV Inspection Benchmarking Project by purchasing new software to improve data and operational efficiencies. New business requirements, including expansion of GeoXH handhelds to collect information on manhole inspections and its incorporation into GIS, were handled under the CEB. (Complete): GIS Projects and Enhancements Project: In FY01, the scope of this project was expanded to include Open-VMS minicomputers replacement project, which is the project to replace Deer Island VMS servers. In FY08, the Open VMS project was renamed GIS Projects and Enhancements Project and an RFB was published Q1 FY09. (Complete): Laboratory Information Management System: Implementation of software improvements to stay current with industry standards and meet ongoing business needs. A competitive bid was awarded in FY08. Development and testing continued during FY09 with final system acceptance in Q3 FY10. The LIMS will process both water and wastewater samples. Phase One, water testing, of the LabWare LIMS implementation went live in Q3 FY09 as planned. Phase Two, wastewater testing, was completed in Q3 FY10. LIMS replacement is complete.

Sub-phase	Scope
Phase VI (FY04–12)	(Complete): Telecommunications: Replacement of the Deer Island PBX (completed in FY04). (Complete) Lawson Minicomputer: The original plan was to purchase a backup UNIX minicomputer to be used for Lawson processing and storage improvements for all MWRA's minicomputer and server resources (scheduled for FY08). However, in order to maintain vendor support for the Lawson System, new OS and server replacements, application environment and upgrades needed to be implemented in FY08/FY09. New servers were procured for Chelsea (production) and Deer Island (disaster recovery/test/development) in FY08. Application Environment upgrade was procured and installed in FY08. (Complete): Disaster Recovery: In FY06, as part of the MWRA-wide Continuity of Operations Planning project, it was determined that a permanent disaster recovery computer center would be located at the Interim Corrosion Control Facility at the CWTP. A disaster recovery computer center was viewed as a higher priority than the originally budgeted server consolidation line item. This project has changed. The ICCF plan was not viable due to limited space and Weston was identified as a preferred alternative site. However, Weston requires time for design and cost analysis. Pending a review of the viability and cost of a redundant network connection via microwave technology, a third option, utilizing the existing DITP Data Center as the permanent Disaster Recovery was investigated. However, since the Commonwealth is opening a new Disaster Recovery site in Springfield, the MIS Department is working closely with state officials to explore utilizing the space at the new site scheduled to open in the Spring of 2012. The approach will allow the MWRA to save money by leveraging the existing infrastructure (i.e. environmental equipment, generator, security, UPS, etc). To be consolidated under MIS Strategic 5-Year Plan. (Complete): Microsoft Licensing: Microsoft's current strategy is 2 years of final maintenance on a version once a newer version has been released. The remaining CIP provides for approximately 350 future Office 2007 licenses (previous re-licensing programs yielded a credit); however, MIS used the funding for Microsoft Server licenses. The outstanding Microsoft office licenses were purchased under the CEB in FY09 and FY10. (Complete): Document Management: The replacement of InfoStar, the MWRA Document Management System, was originally part of this phase but it was eliminated in December 2004 and is requested for FY15. Project not funded during the FY09 Cycle but was resubmitted in FY10 and was budgeted under the FY11 CIP. Staff evaluated various software.

Sub-phase	Scope
DITP/OMS	(Complete): Establishment of a system to integrate SCADA, water quality, flow, and related data for management reporting and analysis. SCADA incorporation to Process Book is ongoing. Data warehouse completed in FY10. Budget deleted in FY13 Final CIP process.
GIS/TV Inspection	(Complete): Conversion of GIS from UNIX to NT based on vendor software changes was completed. Also, completed recommendations from a TV Inspection Benchmarking Project by purchasing new software to improve data and operational efficiencies. New business requirements, including expansion of GeoXH handhelds to collect information on manhole inspections and its incorporation into GIS, were handled under the CEB.
MIS Licensing	(Complete): Funding for Microsoft Licensing Suite of products – Office Professional 2003 was completed. Remaining funds were used for MS VISTA and Office Professional 2007 Test Licenses.
Lawson Conversion	(Complete): Original funding of $600,000. The remainder of funding came from Phase V projects where bids were awarded at a lower than anticipated cost. The project includes funding for new OS, server replacements and application environment (new servers were procured for Chelsea (production) and Deer Island (disaster recovery/test/development) in FY08). Application Environment upgrade was completed in FY08. The application software upgrade, including technical support and professional services was successfully completed in Q4 FY10.
Cyber Security	(Complete): Funding for Development Contract executed in December 2007 for Internet Data Protection 24X7 Monitoring costs. Cyber Security Monitoring continues to provide multiple layers of protection against internal and external threats to our networks and systems. Updates to software and hardware completed.
Original SAN	(Complete): The original amount of $680,004 funded from Phase II project. Funding will be used for Hardware, Software and Technical Support. This project provides increased data storage with high availability, centralized storage management and more energy-efficient operations

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$24,475	$24,289	$187	$175	$2,455	$12	$12	$0

Project Status 5/13	99.9%	Status as % is approximation based on project budget and expenditures. Phases V and VI are complete. The first phase of Cyber Security was completed in September 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$26,583	$24,475	($2,108)	Sep-15	Sep-11	(48) mos.	$2,190	$12	($2,178)

Explanation of Changes

- Project cost, schedule and spending changed due to Document Control System Software Application Replacement and Laboratory Instrument Data Management work to be done under Enterprise Content Management and LIMS Enhancements phases, respectively.

- Cost decreased due to project being redefined with subphases being moved to other projects.

CEB Impact

- None identified at this time.

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 as well as 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 completed in October 2010. Chelsea Creek Headworks and Cottage Farm UST replacement construction were completed in December 2002. The Commercial Point CSO and Hingham Pump Station UST Upgrades were 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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$1,479	$1,479	$0	$0	$11	$0	$0	$0

Project Status 5/13	100%	Status as % is approximation based on project budget and expenditures. The Prison Point oil recovery was completed in July 2010 and decommissioning of the oil recovery system was completed in October 2010.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$1,479	$1,479	$0	Oct-10	Oct-10	None	$0	$0	$0

Explanation of Changes

- Project completed.

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. Sub-phases consist of As-Needed Design phases 1-13.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$15,701	$8,270	$7,431	$1,785	$6,335	$1,884	$5,646	$0

Project Status 5/13	63.7%	Status as % is approximation based on project budget and expenditures. All tasks in *Inventory & Evaluation Phases 1 & 2* are complete. As-Needed Design 7 was substantially completed in July 2012. As-Needed Design 8 was substantially completed in February 2012. As-Needed Contracts 9 and 10 were awarded in July 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
10,617	$15,701	$5,084	Aug-13	Aug-16	36 mos.	$611	$5,646	$5,035

Explanation of Changes

- Project cost and planned spending increased primarily due to additional phases for As-Needed Design Phases 11-13 and updated cost estimates.

- Schedule changed due to additional phases added above.

CEB Impact

- None identified at this time.

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 consolidated existing MWRA projects (DI Maintenance Facilities and DI CSB Demolition) to provide a central point of review and decision making for space planning decisions across the organization.

The 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. The project also included funds for demolition of the CSB (Construction Support Building) which was built as a temporary structure and has also deteriorated. The CSB Demolition contract was completed in September 2009.

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 FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$2,151	$371	$1,780	$0	$371	$0	$1,780	$0

Project Status 5/13	17.2%	Status as % is approximation based on project budget and expenditures. CSB/Demolition contract was substantially complete in September 2009. Records Center Shelving and Moving to the interim warehouse/records center was completed in the spring of 2009. Remaining work is to rehabilitate or demolish old Administration Building on DI.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$2,151	$2,151	$0	Jul-14	Sep-17	38 mos.	$1,780	$1,780	$0

Explanation of Changes

- Project to rehabilitate or demolish the old Deer Island Administrative Building schedule changed due to project priorities.

CEB Impacts

- None identified at this time.

S. 935 Alternative Energy Initiatives

Project Purpose

A comprehensive "green energy" initiative that is expected to bring solar, wind and hydroelectric power either alone or in combination to a number of MWRA facilities

Project History and Background

This project was originally included under Deer Island in previous budget cycles. Building upon its track record in sustainable resource use – most notably dramatic system-wide reductions in water demand, 100% beneficial reuse of biosolids, self-generation of approximately 25% of Deer's Island power needs, and maximizing revenue through hydropower – MWRA continues to work aggressively to use its resources efficiently, respond appropriately to climate change, and reduce the environmental impacts of its daily operations. Key initiatives completed to-date include: A comprehensive "green energy" initiative that brought solar, wind and hydroelectric power to a number of MWRA facilities.

Scope

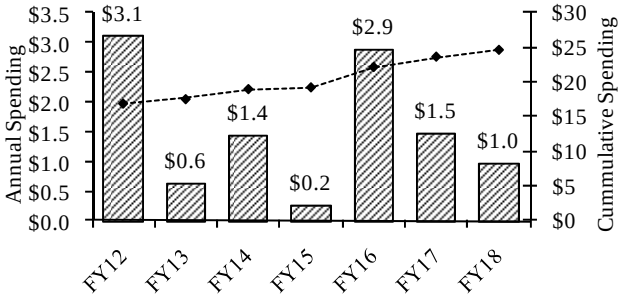
Sub-phase	Scope
DI Solar Residuals Odor Control (ROC)	Design and construction of 100kw photovoltaic array. Projected annual output estimated at 105,000 kwh.
DI Wind	Design and construction of 2 600kw solar wind turbine systems. Projected annual output estimated at 2,300,000 kwh. Project added to include repair/rehabilitation contract.
DI Solar Maintenance/Warehouse	Design and construction of 180kw photovoltaic array. Projected annual output estimated at over 200,000 kwh. Project funding includes $735K million from the American Recovery and Reinvestment Act ("ARRA").
Future DI Wind (Battery D Location)	Design and construction of up to two 600 kw wind turbines at Deer Island. Projected annual output estimated at 1,150,000 kwh per turbine.
DI Solar Power Purchase Agreement (PPA)	Design and construction of 456kw photovoltaic array through a third party 20 yr Power Purchase Agreement. Projected annual output estimated at 520,000 kwh. Project partially subsidized by $1.1M from ARRA program. No capital costs to MWRA; pay for electricity generated.
Loring Road Hydro	Construction of a 200 kW hydropower turbine/generator at Loring Road. Projected annual output estimated at 1,200,000 kwh. Project funding includes $1.5 million from the ARRA program.
Energy Adv Con Services	Consultant for comprehensive energy advisory services on throughout the Authority.
Wachusett Hydro Design & Construction	Design and construction of 155kw hydro generation plant at Wachusett Reservoir. Projected annual output estimated at 750,000 kwh.
Technical Assistance	Various technical assistance contracts to aid solar, wind, and hydro initiatives.
Carroll WTP Solar Construction	Installation of photovoltaic cells with generating capacity of 496kw at Carroll WTP plant. Projected annual output estimated at over 616,000 kwh. Project funding includes $2.2 million from the ARRA program.

Sub-phase	Scope
Charlestown Wind	Design and construction of 1.5 MW wind turbine system. Projected annual output estimated at 3,000,000 kwh. Project funding includes $4.8 million from the ARRA program.
DI Wind Phase 2 Construction	Installation of one 600 kw wind turbine at Deer Island. Projected annual output estimated at 1,150,000 kwh. On-going discussions continue with the City of Boston.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$28,230	$16,985	$11,245	$628	$17,021	$1,423	$6,965	$3,652

Alternative Energy Initiatives



Project Status 5/13	60.8%	Status as % is approximation based on project budget and expenditures. Carroll Water Treatment Solar and Loring Road Hydro Construction were completed in May 2011. Carroll Water Treatment Plant Solar Construction and Charlestown Wind Project were completed in 2011. DITP Solar PPA was completed in 2011.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$27,225	$28,230	$1,005	Dec-16	Sep-20	45 mos.	$6,953	$6,965	$11

Explanation of Changes

- Project cost increased primarily due to DI Wind Turbine Repair/Rehabilitate added and inflation adjustment for future DI Wind (Battery D) contract.

- Spending increased due to DI Wind Turbine Repair work noted above, updated schedule for DI Wind Phase II Construction, and updated cash flows for existing projects. This increase was partially offset by revised schedule for Future DI Wind Construction (Battery D).

CEB Impacts

- Deer Island Wind Phase 2 reflects impacts of ($106,000) in incremental avoided costs and +$15,000 in Renewable Portfolio Standards (RPS) revenue in FY18: Future DI Wind assume ($300,000) in incremental avoided costs and +$40,000 in RPS revenue in FY22: Wachusett Hydro assume ($120,000) in avoided costs and +$20,000 in RPS revenue as of FY18: Hatchery Pipeline assume ($60,000) in avoided costs in FY18.

Information Technology (IT) Strategic Plan

The Board recommended that staff develop a five-year strategic plan for the Management Information Systems Department (MIS) to ensure alignment of business goals, objectives, processes, and technology within the Authority. At the July 13, 2011 meeting, the Board approved the recommendation of a Selection Committee to award a contract to Westin Engineering, Inc. (Westin) for the development of a Five-Year Information Technology Strategic Plan (IT Plan). Westin's scope of work included evaluating MWRA's current applications, IT systems and infrastructure, as well as the MIS Department's organizational structure and staffing requirements. After Westin completed its review, it was charged with developing plans for future improvements to MWRA's IT systems and organizational approach and structure.

Based on the recommendation of the Five-Year IT Strategic Plan which was conducted during FY12, the structure of the MIS projects going forward were classified into four major programs, as follows:

Application Improvement Programs (Includes 4 subprograms) - These four subprograms will continue MWRA's efforts to update and enhance a wide range of applications to improve efficiencies of business processes and effectiveness of the staff while ensuring the availability, and integrity of the MWRA's data resources. This program relates to 123 applications with 227 modules that support various business functions across the Authority. Seventy-seven, or 63%, of these applications are commercially available off the shelf packages.

Information Security Programs (Includes 2 subprograms) - These two subprograms focus on the resiliency and sustainability of the MWRA's data security practices. They will establish policies, procedures, and information security awareness. The work under this subprogram will also review each IT system and make recommendations to improve its security profile in accordance with the Department of Homeland Security Guidelines.

Information Technology Management Programs (Includes 2 subprograms) -- These two programs are intended to improve the organization of MIS and the oversight processes for selecting and implementing IT solutions throughout the MWRA. To accomplish those goals, the study recommends that MWRA:

- Develops an Information Technology Service Management (ITSM) Program to improve service delivery.
- Adopts a Standardized Software Development Lifecycle (SDLC) to improve the quality of software delivered.
- Implements a more robust Project Management Program to improve the predictability of deliverables and cost associated with information technology projects.
- Updates the IT Governance Program to ensure that the business and technology priorities of the MWRA are aligned and are being met.

Information Technology Infrastructure Programs (Includes 4 subprograms) - These four subprograms will assess and implement consolidated and optimized versions of core IT infrastructure elements and improve and optimize data management practices, including: storage, backup, archive and purge processes, and technologies. These improvements will cover the 1,238 desktops, 160 laptops, 105 servers, 20 Wide Area Network Circuits and associated ancillary equipment, as well as the 18 Terabytes of data managed by MIS.

S. 940 Applications Improvements Program

Project Purpose

To develop, improve, and procure management information systems (MIS) applications to improve efficiencies of business processes associated with managing the operations and support divisions.

Project History and Background

Currently there are 123 applications that have 227 modules. Seventy seven of these applications are "commercially available off the shelf" (COTS) packages. These applications support business functionality for the Operations, Administration & Finance, Internal Audit, Public Affairs, Law Divisions along with the Office of Emergency Preparedness and the Office of the Executive Director. This program will continue the good work started in previous years to update and enhance a wide range of applications to improve efficiencies of business process and effectiveness of the staff performing the processes while enduring the availability, integrity and credibility of the MWRA's data resources. It will further enhance the integrations and availability of data to provide a more holistic view of the overall operational status for seamless access to the detailed data.

The applications implementation program includes upgrades to applications such as Lawson, Maximo and PIMS. The program also includes significant expansion to GIS, Mobile Integration, and Enterprise Content Management technologies.

This program is scheduled to be completed by Q4 FY18.

Scope – The table describes the CIP phases and associated projects.

Sub-phase	Scope
GIS Applications & Integration	Expand role of GIS technology for scientific, environmental and engineering applications. Projected expenses include Hardware, Installations, Support, Software, Customizations and Technical Support. This project will assess the current state of the GIS Program and make recommendations for improvements in the future state.
Lawson Enhancements	New releases and implementation of ERP System hardware, environment, and application replacement or upgrades. Implement contract management, strategic sourcing and process flow integrator modules.
Maximo Upgrade	Complete migration to Maximo 7.5, acquire new modules and add richer integrations (e.g. GIS). Hardware replacements and enhancements to the system based on current useful life.
Pre-Treatment Information Mgmt System (PIMS) Enhancements	The system is used by the MWRA to monitor the pretreatment program pursuant to MWRA's NPDES permit and EPA regulations. Hardware replacements and enhancements to the system based on current useful life. This project will assess the current state of the PIMS implementation to develop and execute a plan for addressing functional issues and complying with new regulations.
Enterprise Performance Management Enhancements	Implement automated tools to support the compilation of monthly and quarterly performance reports, including tools for extracting data from existing operational applications, managing data quality, generating reports and automating report assembly.
Enterprise Content Management	Implement an Authority-wide Content Management Program to address dependence upon paper records, support records management and improve access to information, streamline workflows and replace several department-level solutions.
Mobile Integrations	Define integrated business strategy for mobile computing. Expand the application of mobile computing to meet the Authority's business requirements in the Laboratory, DITP Operations and Maintenance and other Operations and management areas.

LIMS Enhancement	Laboratory Information Management System (LIMS) Enhancements: The e-Lab is a new project that will improve productivity of staff and reduce the amount of paper being generated. This initiative adds a new module into LIMS called Electric Laboratory Notebook (ELN). ELN will replace paper based laboratory notebooks with tablets that are connected to LIMS and integrated into the core product. This project includes the purchase of tablets, ELN licenses and services required to implement the new module.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$9,150	$0	$9,150	$5	$5	$569	$8,986	$159

Project Status 5/13	0.8%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$3,800	$9,150	$5,350	Jun-17	Jun-18	12 mos.	$3,013	$8,986	$5,973

Explanation of Changes

- Project cost, schedule and spending changed based on the MIS Five-Year Strategic Plan. Project now includes funds for work transferred from old Business Systems Plan for Document control System Software Application replacement and Laboratory Instrument Data Management.

CEB Impact

- Maximo Upgrade reflects impacts of $50,000 in FY16 and Lawson Enhancements of $100,000 in FY18.

S. 942 Information Security Program

Project Purpose

To develop, improve, and procure a new and improved oversight process for selecting and implementing Information technology solutions throughout the MWRA.

Project History and Background

This program focuses on the resiliency and sustainability of the MWRA's data security practices. The projects associated with this program will establish policies, procedures and an information security awareness program for all of the MWRA. This program includes designing both an information security program and electronic security plans in order to provide a more formal, comprehensive IT security framework that is better compliant with Federal Standards than the Authority's existing decentralized activities.

This program is scheduled to be completed by FY16.

Scope – The table describes the CIP phases and associated projects.

Sub-phase	Scope
IT Security Program	Information Security Program Development and Implementation Project – To develop and coordinate an IT Security program to provide a holistic approach to physical and cyber security efforts. Define and coordinate implementation of an Authority-wide information security plan, electronic security plans, and a cyber security plan including standards, policies, and practices. This project started in FY13. Electronic Security Plan Development and Implementation Project - Coordinate a system-by-system development of Electronic Security Plan (ESP) to apply security controls and standards to each system within MWRA's application portfolio. Information Security Awareness Program Development and Delivery Project – Formal and informal activities to inform staff (including contractors and business partners) of the information security risks associated with their activities and their responsibilities in complying with MWRA policies and procedures designed to reduce these risks. This project started in FY13.
Electronic Security Implementation	Information Security Monitoring Program – Next phase of Cyber Security to provide new appliances, software upgrades, and hardware replacement in addition to the current 24 hour day monitoring to outfit the 2nd MIS Data Center. This project started in FY12 and will continue through FY15.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$1,293	$358	$935	$144	$501	$392	$792	$0

Project Status 5/13	40.8%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$1,000	$1,293	$293	Jun-17	Jun-16	(12) mos.	$300	$792	$492

Explanation of Changes

- Project cost, schedule and spending changed based on the MIS Five-Year Strategic Plan.

CEB Impact

- CEB impact of $30,000 in FY18.

S. 944 Information Technology Management Program

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

This program and associated projects are intended to bring to the MWRA a new and improved Management Information Systems Department and an improved oversight process for selecting and implementing Information Technology solutions throughout the MWRA by establishing:

a. An Information Technology Service Management (ITSM) Program to improve service delivery

b. A Standardized Software Development Lifecycle (SDLC) to improve the quality of software delivered

c. A Project Management Program to improve the predictability of deliverables and cost associated with information technology projects

d. An updated IT Governance Program to ensure that the business and technology priorities of the MWRA are aligned and are being met

e. Organizational changes to reflect the changing technologies and processes

This program is scheduled to be completed by FY17 at an estimated cost of $1.5 million.

Scope – The table describes the CIP phases and associated projects.

Sub-phase	Scope
Implement IT Governance	Implement formal practices for allocating IT resources among competing demands and prioritizing requests for IT services. Define and implement roles and responsibilities for allocation of technology related policies and standards.
MIS Organization and Change Management	Reorganize MIS Department to better align responsibilities with current and emerging requirements. Implement a focus on problem resolution and customer service issues. Change Management – Enhance capabilities for planning and implementing organizational change, integrated with software development lifecycle, project management and information technology service management.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$1,493	$0	$1,493	$0	$0	$218	$1,493	$0

Project Status 5/13	0.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	FY14	Chge.	FY13	FY14	Chge.	FY13	FY14	Chge.
$2,562	$1,493	($1,069)	Jun-17	Jun-17	None	$1,550	$1,493	($57)

Explanation of Changes

- Project cost and spending changed based on the MIS Five-Year Strategic Plan.

CEB Impact

- Impact of $30,000 in FY16 and $70,000 in FY17.

S. 946 IT Infrastructure Program

Project Purpose

To assess and implement consolidated and optimized versions of equipment and data bases and improve and optimize data management practices.

Project History and Background

The MWRA currently owns and operates 1,238 desktops, 108 servers, 20 Wide Area Network Circuits and associated equipment. It also manages in excess of 7 Terabytes of data stored in 148 data bases; and an additional 12 Terabytes of unstructured data on file shares. This program will assess and implement consolidated and optimized versions of these core IT infrastructure elements as utility like services and commodities. Furthermore, it will look to improve and optimize data management practices, including: storage, backup, achieve and purge processes and technologies.

This program is scheduled to be completed by FY19.

Scope – The table describes the CIP phases and associated projects.

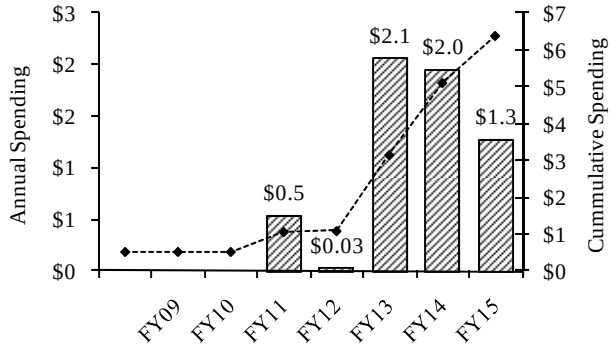
Sub-phase	Scope
IT Infrastructure Upgrades	IT System Architecture - This effort will focus on the development of a MWRA Technical Reference Model (TRM). The TRM will provide an architectural framework used to identify the standards, specifications and technologies that support the MWRA's computing environment. The TRM will identify both the current state and the target state of the MWRA's computing environment. Elements of the TRM will include the following domains: 1. Access - Addresses how information, transactions and services are delivered to and accessed by the MWRA's staff, constituents and business partners. 2. Information – Addresses standards and guidelines for Data Interoperability, Data Management, Data Formats and Records Management. 3. Application – Defines how applications are designed and developed, and identifies open standards to facilitate rapid service-oriented development, integration and implementation of new applications and business processes. 4. Integration – Addresses how information, transactions, security, systems management and Business Services are integrated across intra-enterprise entities, e.g. SCADA, PICS, Security & MIS, as well as extra-enterprise entities, e.g. business partners. 5. Management – Introduces service management concepts using Information Technology Infrastructure Library (ITIL) Guidelines for the management of traditional IT infrastructure and business services. 6. Security – Addresses the approach, methodology and technology components necessary to provide the appropriate level of protection for the information assets of the MWRA, its constituents and business partners. Data center Upgrades – The Chelsea facility hosts the computer Center, Operations Control Center (OCC) and the primary Emergency Operations Center. Specialty fire suppression systems, UPS equipment, environmental control and alarming systems, console apparatus, etc. was purchased in 2000/01 with the facility opening. All of this equipment has a useful life of approximately 15 years and will require replacement in FY15.

	Network Infrastructure Project - Plan and coordinate upgrades to IT infrastructure elements, including networks, servers, storage, etc. The Net 2020 DITP/Southborough includes Copper cable upgrade to CAT6 since the existing cabling and fiber are non-compliant with current standards. The new standards and fiber upgrade will support increased backbone capacity for 10GIG. Storage Upgrades - Implement recommended IT infrastructure changes that include enhancements to capacity and performance of networking and communications, storage, backups, server consolidation, disaster recovery, and integration approach and tools. Backup Upgrades – Evaluate need for tape backup versus alternative means for different record types. Plan and implement backup capabilities to expand backup coverage (user data). Server Management – Develop specifications for server hardware and software including ability to implement greater virtualization. Seek opportunities to standardize operating systems, and hardware, for greater ease of support. Enterprise Application Integration – Develop systems architecture as framework for infrastructure changes. Coordinate activities needed to support Enterprise Application Integration, Data Management and application improvements. Adopt Service-Oriented Architecture (SOA). Select SOA toolkits and approaches that maximize ability to integrate existing and current applications.
E-Mail Upgrades	E-Mail Upgrades - Complete migration to Exchange 2010. Increase default attachment size. Substantially increase total email capacity. Establish procedures for managing PST files, including managing on local hard disks, archiving, and automated backups. Explore automation tools for managing email, including automated archiving, automated backup, legal holds, indexing and search.
Enterprise Data Management	Enterprise Data Management - Develop an Authority-wide data architecture that maximizes benefit from data capture and ongoing maintenance. Implement Authority-wide data modeling and management, to standardize data access across multiple systems for a consistent view of the Authority across all business units.
User Data Management	User Data Management – Implement secure capability for large file transfers and upgrade Authority-wide storage capabilities to better support individual user and work team data sharing.

Expenditure Forecast (in $000s) and Project Status

Total Budget	Payments thru FY12	Remaining Balance	FY13	FY09-13	FY14	FY14-18	Beyond FY18
$8,980	$561	$8,419	$237	$799	$1,292	$8,002	$179

IT Infrastructure Program



Project Status 5/13	10.0%	Status as % is approximation based on project budget and expenditures.

Changes to Project Scope, Budget, and Schedule

Project Cost			Scheduled Completion Date			FY14-18 Spending		
FY13	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**	**FY13**	**FY14**	**Chge.**
$7,120	$8,980	$1,860	Jun-17	Dec-18	18 mos.	$4,504	$8,002	$3,498

Explanation of Changes

- Project cost, schedule and spending changed based on the MIS Five-Year Strategic Plan.

CEB Impact

- Storage Upgrades will have impacts of $100K in FY18 and $100K in FY19; Net 2020 Deer Island and Southborough of $75k in FY16; Telecommunications of $25K in FY19; $85,000 in FY16 for Enterprise & User Data Management and E-Mail Upgrades.

APPENDIX 2

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 FY14 Final CIP document. Expenditure forecasts are accrual based, i.e., projected expenditures are estimated based on when services are expected to be rendered. Projects appear in this report in the same order they appear on-line, organized by capital program area. Grant and loan receipts for various projects and programs appear in the section following the expenditure forecasts.

The following presents a description of each column in the expenditure forecast tables:

Project and Subphase Names

The first column of the expenditure forecast identifies the organizational hierarchy of the CIP: capital program area (e.g., Wastewater System Improvements), program category (e.g., Interception and Pumping), project (e.g., Quincy Pump Facilities), and sub-phases (e.g., Facilities Plan/EIR). Sub-phases represent awarded and unawarded contracts.

Contract Number

To the left of each project name is a string of nine numbers. 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.

The first string 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.

Notice to Proceed (NTP) and Substantial Completion (SC)

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.

Contract Value

The Contract Value represents the budget amount for the capital 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.

Payments through FY12

Payments through FY12 includes actual and accrued expenditures since the inception of the contract through the end of FY12.

Remaining Balance

Remaining Balance is calculated by subtracting Payments through FY12 from the Contract Amount. This amount is then spread in the columns to the right, for FY13, FY09-13, FY14-18, and Beyond FY18.

APPENDIX 2
FY14 FINAL FIVE-YEAR CIP BY MAJOR PROGRAM CATEGORY
FY14 by Quarters

CAPITAL IMPROVEMENT PROGRAM													
EXPENDITURE FORECAST FY2014-2018													
($000)													
	Total Contract Amount	Project Payments Thr. FY12	Balance as of 6/30/12	QI FY14	QII FY14	QIII FY14	QIV FY14	FY14	FY15	FY16	FY17	FY18	5-Year Total FY14-18
Wastewater System Improvements	2,685,135	1,661,796	1,023,339	20,112	17,749	29,662	16,727	84,251	77,776	79,805	64,848	62,248	368,930
Waterworks System Improvements	2,820,956	1,799,565	1,021,391	13,021	13,302	14,216	9,299	49,839	61,005	58,597	67,987	69,706	307,134
Business & Operations Support	122,448	72,234	50,214	1,548	1,819	2,004	3,001	8,372	8,781	10,938	8,947	4,857	41,895
Contingency	119,815		119,815	1,885	1,788	1,887	1,997	7,557	9,475	10,072	9,754	9,253	46,111
Total MWRA w/ Contingency	5,748,354	3,533,595	2,214,759	36,567	34,658	47,769	31,025	150,018	157,037	159,412	151,537	146,064	764,070

Massachusetts Water Resources Authority
FY14 Final Capital Expenditure Forecast

Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY12	Remaining Balance	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
Total MWRA				**5,628,539,326**	**3,533,594,910**	**2,094,944,416**	**155,786,106**	**826,387,409**	**717,957,835**	**1,221,200,445**
Wastewater				**2,685,135,203**	**1,661,795,832**	**1,023,339,371**	**79,888,316**	**524,013,165**	**368,929,500**	**574,521,539**
Interception & Pumping				**846,540,618**	**518,609,282**	**327,931,336**	**2,304,701**	**32,747,204**	**118,370,992**	**207,255,635**
102 Quincy Pump Facilities	**completed project**			25,907,202	25,908,077	(875)	(875)	(875)		
104 Braintree-Weymouth Relief Facilities				233,869,249	228,063,541	5,805,708	601	13,032,618	1,364,106	4,441,000
Geotechnical - Marine	10001_5333	Nov-91	Apr-92	442,860	442,860	-	-	-	-	-
Geotechnical - Land	10044_5332	Nov-91	Mar-92	7,980	7,980	-	-	-	-	-
Facilities Planning - Phase 1	10045_5311	Oct-81	Dec-90	331,140	331,140	-	-	-	-	-
EIR - Phase 1	10046_5312	Nov-84	Oct-90	513,530	513,530	-	-	-	-	-
Design 1/CS/RI	10047_5313	Nov-94	Jun-06	18,882,312	18,882,312	-	-	-	-	-
Land Acquisition	10048_5314	Mar-97	Jun-10	13,221,359	12,841,307	380,052	601	9,182,112	379,450	-
Tunnel Construction/Rescue	10049_5315	Jun-99	Jul-03	83,550,809	83,550,809	-	-	-	-	-
Intermediate Pump Station-Construction	10050_5316	Dec-00	Apr-05	47,444,929	47,444,929	-	-	-	-	-
North Weymouth Relief Interceptor	10051_5303	Mar-01	Jun-02	4,704,618	4,704,618	-	-	-	-	-
HDD Siphon - Construction	10052_5373	Jul-03	May-07	16,357,407	16,357,407	-	-	-	-	-
B-W Replacement Pump Station	10054_5375	Jan-05	Apr-08	17,728,028	17,728,028	-	-	76,562	-	-
Design - Rehab	10055_5308	Sep-88	Dec-89	23,710	23,710	-	-	-	-	-
Construction - Rehab	10056_5309	Jan-92	Dec-96	255,490	255,490	-	-	-	-	-
Final EIR/Facility Plan	10057_5324	Apr-91	Aug-93	1,111,007	1,111,007	-	-	-	-	-
Design 2/CS/RI	10058_5331	Apr-95	Dec-11	14,999,714	14,999,714	-	-	1,090,709	-	-
Rehabilitation of Section 624 - Const.	10060_5310	Jul-10	Dec-10	2,505,767	2,505,767	-	-	2,505,767	-	-
Technical Assistance	10061_5951	Nov-84	Apr-07	144,264	144,264	-	-	-	-	-
Sedimentation Testing	10251_6016	Sep-94	Apr-96	95,880	95,880	-	-	-	-	-
Legal	10263_6072	Jul-95	Apr-08	849,220	849,220	-	-	104,666	-	-
Hazardous Waste	10265_6074	Jul-95	Apr-07	7,937	7,937	-	-	6,037	-	-
Marine Pipeline - Design	10278_6119	Feb-97	Aug-97	1,100,000	1,100,000	-	-	-	-	-
Mill Cove Siphon - Construction	10302_6368	Aug-97	Jun-98	2,748,908	2,748,908	-	-	-	-	-
Community Technical Assistance	10354_6631	Jul-99	Apr-07	1,111,451	1,111,451	-	-	-	-	-
Geotechnical Consultant	10375_6766	Sep-00	Mar-03	56,045	56,045	-	-	-	-	-
IPS/RPS Communication System	10378_6792	Dec-02	Apr-08	224,884	224,884	-	-	42,421	-	-
Wetlands Replication	10470_7290	Sep-14	Jun-15	700,000	24,344	675,656	-	24,344	675,656	-
Mill Cove Siphon Sluice Gates-Design	10479_7326	Jul-17	Dec-18	150,000	-	150,000	-	-	75,000	75,000
Mill Cove Sluice Gates - Construction	10480_7327	Jul-18	Dec-18	600,000	-	600,000	-	-	-	600,000
B/W Improvements - Construct	10493_7366	Sep-18	Aug-20	3,200,000	-	3,200,000	-	-	-	3,200,000
B/W Improvements - Des/CS/RI	19567_9586	Apr-17	Aug-20	800,000	-	800,000	-	-	234,000	566,000

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Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY12	Remaining Balance	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
105 New Neponset Valley Relief Sewer	**completed project**			30,300,303	30,300,303	-	-	-	-	-
106 Wellesley Extension Replacement Sewer	**completed project**			64,358,543	64,358,543	-	-	-	-	-
107 Framingham Extension Relief Sewer	**completed project**			47,855,986	47,855,986	-	-	-	-	-
127 Cummingsville Replacement Sewer	**completed project**			8,998,768	8,998,767	-	-	43,382	-	-
130 Siphon Structure Rehabilitation				5,603,338	939,770	4,663,568	-	-	4,581,224	82,344
Planning	10253_6017	Jan-96	Nov-98	937,670	937,670	-	-	-	-	-
Land Acquisition	10280_6165	Jun-07	Jun-16	50,000	2,100	47,900	-	-	47,900	-
Design/CS/RI	10293_6224	Jul-14	Jun-18	1,314,573	-	1,314,573	-	-	1,232,229	82,344
Construction	10294_6225	Jul-16	Jun-17	3,301,095	-	3,301,095	-	-	3,301,095	-
131 Upper Neponset Valley Sewer System				54,174,078	53,860,692	313,386	313,386	1,024,421	-	-
Design/CS/RI	10256_6031	May-00	Apr-09	4,584,683	4,584,683	-	-	91,606	-	-
Legal	10266_6075	Jun-00	Apr-08	150,226	150,226	-	-	148,967	-	-
Sewer Sections 685-686 - Replacement	10290_6191	Mar-05	Mar-08	37,004,923	37,004,923	-	-	509,867	-	-
Land Acquisition	10311_6450	Jun-00	Apr-08	1,815,711	1,502,325	313,386	313,386	313,431	-	-
Sewer Section 687 Replacement - Const	10352_6629	Oct-06	Nov-07	7,663,585	7,663,585	-	-	(181,000)	-	-
Boston Paving	10393_6830	Apr-05	Apr-08	609,723	609,723	-	-	43,280	-	-
Resident Engineering/Inspection	10439_7072	Apr-05	Feb-09	2,345,226	2,345,226	-	-	98,270	-	-
132 Corrosion & Odor Control				16,259,955	3,001,406	13,258,549	-	(1,404)	1,000,000	12,258,549
Planning/Study	10279_6137	Jan-97	Dec-98	587,422	587,422	-	-	-	-	-
Land Acquisition	10323_6549	Aug-02	Jun-05	3,341	3,341	-	-	-	-	-
Legal	10325_6551	Dec-00	Jul-08	1,925	1,925	-	-	-	-	-
Design/CS/RI	10327_6553	Aug-02	Jun-05	1,787,912	1,787,912	-	-	-	-	-
Interim Corrosion Control	10373_6743	Jul-00	Dec-01	620,805	620,805	-	-	(1,404)	-	-
FES Tunnel Rehab - Construction	10405_6918	Jul-19	Jun-20	6,800,000	-	6,800,000	-	-	-	6,800,000
FES/FERS Biofilters - Design	10406_6919	Jul-18	Apr-21	1,079,293	-	1,079,293	-	-	-	1,079,293
FES Tunnel Rehab - Design/CS/RI	10453_7196	Jul-18	Jun-21	1,700,000	-	1,700,000	-	-	-	1,700,000
FES/FERS Biofilters - Construction	10456_7215	Apr-19	Apr-20	1,679,256	-	1,679,256	-	-	-	1,679,256
System-wide Odor Control - Study	10491_7364	Jul-18	Jul-20	1,000,000	-	1,000,000	-	-	-	1,000,000
NI System-wide Odor Cntrl-Eval & Des	10492_7365	Jul-14	Jul-16	1,000,000	-	1,000,000	-	-	1,000,000	

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136 West Roxbury Tunnel				11,313,573	10,309,178	1,004,395	4,395	1,433,771	-	1,000,000
Inspection	10299_6230	Jul-98	Sep-99	344,202	344,202	-	-	-	-	-
Tunnel Easements & Permits	10329_6566	Mar-10	Dec-15	53,789	53,789	-	-	53,789	-	-
Legal	10330_6567	Apr-00	Mar-10	2,133	2,133	-	-	295	-	-
Land Acquisition	10331_6568	Apr-00	Mar-10	440,154	440,154	-	-	-	-	-
Construction	10332_6569	Jun-01	Jun-02	6,673,671	6,673,671	-	-	-	-	-
Design/CS/RI	10333_6570	Apr-00	Jun-03	1,416,580	1,412,185	4,395	4,395	4,395	-	-
Technical Assistance	10366_6709	Nov-99	Mar-10	7,752	7,752	-	-	-	-	-
Tunnel - Design	10400_6897	Feb-09	Jun-11	1,375,292	1,375,292	-	-	1,375,292	-	-
Tunnel Inspection	10401_6898	Sep-19	Jun-20	1,000,000	-	1,000,000	-	-	-	1,000,000
137 Wastewater Central Monitoring				20,482,201	19,782,201	700,000	-	5,834,465	700,000	-
Planning	10301_6232	Jan-98	Jul-99	563,425	563,425	-	-	-	-	-
Design and Integration Services	10319_6532	Jun-02	Jul-10	6,344,266	6,344,266	-	-	1,351,248	-	-
Construction 1 (CP1)	10320_6533	Mar-06	Jan-08	7,662,173	7,662,173	-	-	7,780	-	-
Construction 2 (CP2)	10321_6534	Feb-08	Jul-09	5,139,444	5,139,444	-	-	4,460,402	-	-
Technical Assistance	10322_6535	Sep-02	Jul-10	7,425	7,425	-	-	4,235	-	-
Equipment Prepurchase	10398_6861	Apr-05	Dec-09	65,468	65,468	-	-	10,800	-	-
Wastewater Redundant Communications	10490_7363	Jul-14	Mar-18	700,000	-	700,000	-	-	700,000	-
139 South System Relief Project				4,939,244	3,439,244	1,500,000	-	(645)	-	1,500,000
Archdale - CS/RI	10309_6419	Nov-98	Aug-99	5,379	5,379	-	-	(645)	-	-
Archdale - Construction	10310_6420	May-99	Aug-99	210,748	210,748	-	-	-	-	-
Sections 70 & 71 HLS - Evaluation	10318_6519	Sep-98	Oct-99	215,140	215,140	-	-	-	-	-
Outfall 023 - Design	10345_6595	Jun-99	Sep-99	509	509	-	-	-	-	-
Outfall 023 - Cleaning	10346_6596	Apr-00	Nov-00	1,097,526	1,097,526	-	-	-	-	-
Land Acquisition/Easements	10347_6605	Apr-99	Apr-05	5,053	5,053	-	-	-	-	-
Sections 70 & 71 HLS - Construction	10349_6611	Jun-99	Oct-99	417,021	417,021	-	-	-	-	-
Milton Financial Assistance	10350_6616	Oct-99	Jun-00	1,487,868	1,487,868	-	-	-	-	-
Outfall 023 - Structural Impovements	10386_6801	Jan-19	Dec-20	1,500,000	-	1,500,000	-	-	-	1,500,000
141 Wastewater Process Optimization				10,327,761	1,137,662	9,190,099	105,517	312,871	2,541,675	6,542,906
Planning	10367_6733	Aug-01	Aug-04	930,308	930,308	-	-	-	-	-
North System Hydraulic Study	10412_6930	Nov-11	Jun-13	571,477	207,354	364,123	105,517	312,871	258,606	-
Somerville Sewer - Design	10413_6931	Oct-17	Mar-20	200,000	-	200,000	-	-	40,000	160,000
Somerville Sewer - Construction	10414_6932	Mar-19	Mar-20	1,033,952	-	1,033,952	-	-	-	1,033,952
Siphon - Planning	10415_6933	Nov-16	Jun-17	150,000	-	150,000	-	-	150,000	-
Hydr Flood Engr Des & Cons N. Sys	19401_7412	Jan-16	Jun-24	7,442,023	-	7,442,023	-	-	2,093,069	5,348,954

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142 Wastewater Meter Sys. - Equip. Replacement				26,437,912	5,137,912	21,300,000	-	49,147	5,530,769	15,769,231
Planning / Study	10371_6739	Sep-13	Mar-14	100,000	-	100,000	-	-	100,000	-
Equipment Purchase & Installation	10379_6793	Nov-03	Jun-08	5,137,912	5,137,912	-	-	49,147	-	-
Design	10410_6928	Jul-14	Jan-17	200,000	-	200,000	-	-	200,000	-
Construction	10411_6929	Apr-16	Apr-17	1,000,000	-	1,000,000	-	-	1,000,000	-
WW Metering Asset Protect/Equip Purch	10451_7191	Jul-15	Jul-28	20,000,000	-	20,000,000	-	-	4,230,769	15,769,231
143 Regional I/I Management Planning	**completed project**			168,987	168,987	-	-	-	-	-
145 Facility Asset Protection				279,793,519	15,347,013	264,446,506	1,881,676	11,019,452	102,653,218	159,911,605
Prison Point HVAC Upgrades-Construct.	10380_6795	Dec-10	Dec-13	2,905,818	2,439,264	466,554	6,547	2,445,811	460,007	-
Remote Headworks Heating Syst Upgrade	10381_6796	May-05	May-06	1,175,181	1,175,181	-	-	-	-	-
Alewife Brook Pump Stn Rehab - Const.	10382_6797	Jul-14	Aug-16	8,938,512	-	8,938,512	-	-	8,938,512	-
Rehab of Section 93A Lexington	10383_6798	Jul-03	Apr-04	1,565,742	1,565,742	-	-	-	-	-
Chelsea Creek Upgr ESDC/REI	10387_6802	Feb-15	Jul-18	2,142,240	-	2,142,240	-	-	1,938,215	204,025
Technical Assistance	10392_6829	Jul-02	Mar-22	82,640	49,436	33,204	6,528	30,746	15,245	11,431
Sections 80 & 83	10394_6842	Apr-07	Sep-07	364,590	364,590	-	-	-	-	-
Section 160	10395_6843	Jun-07	Dec-08	1,581,369	1,581,369	-	-	(271,680)	-	-
Survey	10396_6857	Nov-04	May-05	10,708	10,708	-	-	-	-	-
Permits	10397_6858	May-03	Nov-08	8,576	8,576	-	-	1,529	-	-
Remote Headworks Concept Plan	10399_6886	May-08	Sep-09	670,436	687,888	(17,452)	(17,452)	618,436	-	-
Interceptor Renewal No. 2	10418_6936	Sep-18	Dec-19	9,616,490	-	9,616,490	-	-	-	9,616,490
Alewife Brook Pump Stn Rehab - Des/CA	10419_6937	Apr-10	Oct-11	223,194	223,194	-	-	223,194	-	-
Prison Point HVAC Upgrades - Design	10420_6938	Jan-08	Mar-13	452,205	448,653	3,552	3,552	404,091	-	-
93 A Force Main Replacement	10423_6987	May-06	Jan-07	461,962	461,962	-	-	-	-	-
Mill Brook Valley Sewer Section 79&92	10424_7004	Jun-04	Mar-05	542,292	542,292	-	-	-	-	-
Hingham Pump Stn Isolation Gate-Const	10427_7033	Sep-11	May-12	124,500	124,500	-	-	124,500	-	-
Alewife Brook PS Final Des/CA/REI	10428_7034	Mar-12	Aug-17	1,640,446	126,599	1,513,847	525,969	652,568	987,878	-
Alewife Brook Pump Stn Screens-Const	10429_7035			-	-	-	-	-	-	-
Caruso PS Improve Des/CA/REI	10431_7037	Aug-12	Mar-16	773,396	-	773,396	213,550	213,550	559,846	-
Land/Easements	10440_7073	Jul-03	Jun-10	103,386	103,386	-	-	50	-	-
Nut Island Headworks Fire Alarm/Wire	10444_7144	Jun-09	Dec-09	285,391	285,391	-	-	285,391	-	-
Chelsea Creek Upgr Construction	10445_7161	Feb-15	Jul-18	52,050,468	-	52,050,468	-	-	39,275,000	12,775,468
Pump Stns & CSOs Condition Assessment	10446_7162	Jul-14	Jul-16	3,000,000	-	3,000,000	-	-	3,000,000	-
Interceptor Renewal No.1 - Design	10447_7163	Aug-14	Mar-19	1,000,000	-	1,000,000	-	-	800,000	200,000
Interceptor Renewal No.1 - Construct.	10448_7164	Sep-16	Mar-18	3,800,000	-	3,800,000	-	-	3,800,000	-
Chelsea Creek Upgr Design/CA	10455_7206	Jul-10	Jul-18	7,282,531	1,240,043	6,042,488	1,112,285	2,352,328	4,849,380	80,823
Malden&Melrose Hydr&Struc-Study/Design	10457_7216	Jan-19	Dec-19	300,000	-	300,000	-	-	-	300,000
Malden&Melrose Hydraulics&Struc-Const	10458_7217	Jul-20	Jul-22	1,000,000	-	1,000,000	-	-	-	1,000,000

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Nut Island Fire Pump Building - Study	10459_7218	Mar-14	May-15	600,000	-	600,000	-	-	600,000	-
NI Mechanical&Electrical Replacements	10460_7219	Jul-16	Jun-19	3,000,000	-	3,000,000	-	-	1,750,000	1,250,000
Headworks Effluent Shaft - Study	10463_7237	Jul-15	Jul-16	500,000	-	500,000	-	-	500,000	-
Melrose Sewer	10464_7248	Feb-10	Feb-11	-	653,639	(653,639)	(653,639)	-	-	-
Inter Ren. No. 3 Camb/Some Sect 26&27	10467_7279	Sep-21	Dec-22	5,000,000	-	5,000,000	-	-	-	5,000,000
Inter Ren. No. 4 Evrtt Sect 23/24/156	10468_7280	Sep-24	Dec-25	3,000,000	-	3,000,000	-	-	-	3,000,000
Cottage Farm Fuel System Upgrade	10469_7281	Jun-12	Apr-13	482,105	-	482,105	456,319	456,319	25,786	-
NI Elec & Grit/Sreens Conveyance-Des	10477_7312	Mar-11	Nov-15	1,024,877	324,981	699,896	228,017	552,998	471,879	-
NI Elec & Grit/Sreens Conveyance-Con	10478_7313	Jun-13	Nov-14	8,046,289	-	8,046,289	-	-	8,046,289	-
Interceptor Renewal No. 5 - Milton	10481_7328	Sep-27	Dec-28	4,000,000	-	4,000,000	-	-	-	4,000,000
Interceptor Renewal No. 6 - Chelsea	10482_7329	Sep-30	Dec-31	11,000,000	-	11,000,000	-	-	-	11,000,000
Somer/Marginal Influent Gates Replace	10484_7344	Jul-11	Nov-11	366,848	366,848	-	-	366,848	-	-
PP Dry Weather Flow&Strip Pump Improv	10485_7358	Jul-14	Jun-16	750,000	-	750,000	-	-	750,000	-
PP/CF CSO Rehab Prelimin Design/Study	10486_7359	Jul-14	Jan-16	1,000,000	-	1,000,000	-	-	1,000,000	-
System Relief & Contingency Planning	10487_7360	Jul-20	Jun-23	500,000	-	500,000	-	-	-	500,000
DeLauri PS Upgrades	10488_7361	Jun-13	Jun-14	406,892	-	406,892	-	-	406,892	-
Caruso PS Impovements - Const	10489_7362	Sep-14	Dec-15	2,355,784	-	2,355,784	-	-	2,355,784	-
Pump Stn. Rehab-Prelim. Design/Study	10500_7375	Jul-15	Jul-20	750,000	-	750,000	-	-	405,737	344,263
Sect 156 Rehab - Design/Build	10503_7393	Jul-11	Jul-12	2,562,778	2,562,773	5	-	2,562,773	-	-
Interceptor Ren #2 Des/CA/REI	10504_7410	Mar-17	Dec-20	2,000,000	-	2,000,000	-	-	565,217	1,434,783
Sect 4,5,6 North Met Design CS/RI	10505_7421	Jul-14	Jul-19	1,000,000	-	1,000,000	-	-	737,703	262,297
Sect 4,5,6 North Met Construction	10506_7422	Jul-17	Jul-19	12,000,000	-	12,000,000	-	-	4,320,000	7,680,000
Rehab of Sects 186 and 4 Construction	10507_7423	Dec-13	Nov-14	3,539,235	-	3,539,235	-	-	3,539,235	-
Ward St & Colu Park HWKS Des/CA/REI	10510_7429	Sep-15	Mar-22	9,747,192	-	9,747,192	-	-	3,824,847	5,922,345
Ward St & Columbus Park HWKS Const	10511_7430	Sep-18	Mar-22	95,329,680	-	95,329,680	-	-	-	95,329,680
Chelsea Screenhouse Upgrades	10512_7431	Jul-14	Jul-15	3,300,000	-	3,300,000	-	-	3,300,000	-
Prison PT Cottage Farm Facil	10515_7452	Jul-13	May-14	5,099,100	-	5,099,100	-	-	5,099,100	-
Prison Point Piping Rehab	10518_7459	Oct-13	May-14	330,666	-	330,666	-	-	330,666	-
146 Deer Island Cross Harbor Tunnel				5,000,000	-	5,000,000	-	-	-	5,000,000
Tunnel Shaft Repairs - Plan/Des/Const	10454_7199	Jul-18	Jun-20	5,000,000	-	5,000,000	-	-	-	5,000,000
147 Randolph Trunk Sewer Relief	Interception & Pumping			750,000	-	750,000	-	-	-	750,000
Study	10461_7220	Jul-18	Jun-20	750,000	-	750,000	-	-	-	750,000

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Treatment				**659,597,220**	**168,695,431**	**490,901,788**	**19,735,852**	**136,637,223**	**199,137,875**	**272,029,060**
200 DI Plant Optimization	**completed project**			33,455,815	33,455,815	-	-	296,298	-	-
206 DI Treatment Pl antAsset Protection				606,847,768	132,409,844	474,437,924	17,618,923	132,668,071	188,385,153	268,433,847
DITP Roof Replacements	18045_6196	Jun-10	Jun-11	2,299,881	2,299,881	-	-	2,299,881	-	-
DISC Application	19162_6241			125,077	125,077	-	-	-	-	-
Pump Packing Replacement	19176_6422	Sep-03	Jun-08	732,447	732,447	-	-	-	-	-
Demineralizer Construction	19177_6423	Jul-00	Dec-00	50,527	50,527	-	-	-	-	-
Equipment Replacement Projection	19182_6478	Jul-18	Jun-23	25,000,000	-	25,000,000	-	-	-	25,000,000
Ancillary Mods - Construction 4	19188_6538	Jul-17	Jul-20	11,051,700	-	11,051,700	-	-	2,455,933	8,595,767
Equipment Condition Monitoring	19193_6594	May-04	Jan-05	1,776,946	1,776,946	-	-	-	-	-
Expansion Joint Repair - Design	19204_6668	Apr-99	Oct-04	149,421	149,421	-	-	-	-	-
Expansion Joint Repair - Construct. 1	19205_6669	Aug-02	Nov-03	304,726	304,726	-	-	-	-	-
Expansion Joint Repair - Construct. 2	19217_6704	Aug-12	Feb-14	1,927,500	-	1,927,500	1,061,090	1,061,090	866,410	-
Expansion Joint Repair - Construct. 3	19218_6705	May-16	May-18	1,832,364	-	1,832,364	-	-	1,832,364	-
As-needed Design Phase 6-1	19220_6721	May-09	Oct-12	1,950,000	1,796,610	153,390	153,390	1,950,000	-	-
As-needed Design Phase 6-2	19221_6722	May-09	Aug-12	1,797,726	1,641,747	155,979	155,979	1,797,726	-	-
Eastern Seawall Design - 1	19222_6723	Jan-15	Jan-19	610,788	-	610,788	-	-	381,742	229,046
Eastern Seawall Construction - 1	19223_6724	Jan-18	Jan-19	3,562,930	-	3,562,930	-	-	890,732	2,672,198
Digester Gas Flare #4 - Design	19227_6728	Jan-19	Jan-21	466,204	-	466,204	-	-	-	466,204
Digester Gas Flare #4 - Construction	19228_6729	Jan-20	Jan-21	1,048,959	-	1,048,959	-	-	-	1,048,959
Roof Replacement - Phase I	19230_S464	Mar-09	Mar-10	2,749,941	2,749,941	-	-	2,749,941	-	-
Drive Chain Replacement	19231_6742	Oct-01	Jul-03	264,000	264,000	-	-	-	-	-
Busduct Replacement (2+22)	19236_6763	Jan-01	Oct-01	195,500	195,500	-	-	-	-	-
Reline Hypochlorite Tanks 1 & 3	19237_6764	May-07	Nov-07	1,691,095	1,691,095	-	-	220	-	-
CTG Modifications	19238_6765	Mar-01	May-02	482,339	482,339	-	-	-	-	-
Electrical Equipment Upgrade-Const 2	19239_6767	Apr-05	Feb-07	1,913,183	1,913,183	-	-	-	-	-
Document Format Conversion	19241_6791	May-07	Jun-14	145,275	55,698	89,577	14,929	36,229	74,648	-
Outfall Modification - Inspection	19243_6811	Dec-01	Jul-02	173,500	173,500	-	-	-	-	-
Secondary Clarifier Access	19244_6812	Sep-01	Jul-02	274,874	274,874	-	-	-	-	-
Transformer Replacement	19245_6813			1,703,072	1,703,072	-	-	1,665,079	-	-
DSL Pump Repi Ph 2	19246_6821	Oct-13	Oct-15	4,659,000	-	4,659,000	-	-	4,659,000	-
Reline Hypochlorite Tanks 2 & 4	19250_6849	Apr-08	Oct-08	2,241,692	2,241,692	-	-	1,787,192	-	-
Chemical Pipe Replacement - Design	19252_6851	Jun-15	Jun-18	543,740	-	543,740	-	-	509,756	33,984
Chemical Pipe Replacement - Construct	19253_6852	Jun-16	Jun-18	2,212,900	-	2,212,900	-	-	1,936,287	276,613
Sodium Hypo Pipe Replacement - Design	19254_6853	Nov-13	Nov-16	2,212,900	-	2,212,900	-	-	2,212,900	-
Sodium Hypo Pipe Replacement - Const.	19255_6854	Nov-14	Nov-16	7,745,150	-	7,745,150	-	-	7,745,150	-
Electrical Equipment Upgrade-Const. 3	19256_6855	Feb-08	Aug-11	15,173,750	15,173,750	-	-	14,530,750	-	-

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WTF VFD Replacement - Construction	19258_6875	Jun-14	Jun-16	3,949,935	-	3,949,935	-	-	3,949,935	-
Heat Loop Pipe Replacement - Constr 1	19259_6876	Mar-05	Dec-05	615,000	615,000	-	-	-	-	-
Miscellaneous VFD Replacements	19260_6877	May-05	Jun-14	2,625,000	932,451	1,692,549	846,274	876,114	846,275	-
LOCAT Scrubber Replacement - Design	19263_6880	Nov-17	Nov-20	900,000	-	900,000	-	-	337,500	562,500
Grit Air Handler Replacements	19264_6881	Jul-08	Jun-10	1,751,687	1,751,687	-	-	1,751,687	-	-
CEMS Equipment Replacement	19265_6882	Nov-05	Mar-06	100,392	100,392	-	-	(1,480)	-	-
Heat Loop Pipe Replacement - Const. 2	19266_6883	Dec-06	Feb-08	1,488,356	1,488,356	-	-	-	-	-
PICS Replacement - Construction	19267_6884	Jul-11	Jun-15	1,302,198	324,406	977,792	887,792	1,212,198	90,000	-
Primary&Second Clarifier Rehab-Const	19268_6899	Feb-09	Feb-12	56,703,292	56,788,279	(84,987)	(84,987)	56,703,292	-	-
Electrical Equipment Upgrade-Const 4	19270_6901	May-13	May-16	10,861,700	-	10,861,700	-	-	10,861,700	-
NMPS VFD Replacement - Design/ESDC	19271_6902	Dec-07	Apr-12	1,306,063	1,232,357	73,706	73,706	1,087,306	-	-
NMPS VFD Replacement - Construction	19272_6903	Dec-11	May-15	24,190,385	1,282,751	22,907,634	5,851,982	7,134,733	17,055,652	-
Fire Alarm System Replacement-Design	19273_6904	Sep-13	Sep-18	2,100,000	-	2,100,000	-	-	1,925,000	175,000
Primary&Second Clarifier Rehab-Design	19276_6965	Mar-09	Sep-13	1,680,462	1,645,378	35,084	35,084	1,680,462	-	-
Gravity Thickener Improvements-Constr	19277_6966	Apr-10	Jun-12	733,118	733,118	-	-	733,118	-	-
STG System Modifications - Design	19278_6967	Jun-09	Apr-11	405,732	405,732	-	-	405,732	-	-
Electrical Equipment Upgrade 3 - REI	19279_6968	Feb-08	Nov-11	1,111,984	1,111,984	-	-	1,042,825	-	-
NMPS Motor Control Center - Constr	19283_6972	Jan-12	Apr-13	913,710	150,255	763,455	763,455	913,710	-	-
STG System Modifications - Construct.	19284_6973	May-10	Apr-11	2,569,673	2,568,557	1,116	1,116	2,569,673	-	-
Digester Chiller Replacement	19287_7005	Sep-05	May-06	635,244	635,244	-	-	-	-	-
Dystor Tank Membrane Replacement	19288_7006	Sep-04	Oct-05	640,195	640,195	-	-	-	-	-
Fire Alarm System Replacement - Const	19289_7051	Sep-15	Sep-18	16,000,000	-	16,000,000	-	-	13,333,333	2,666,667
Digester & Storage Tank Rehab Des/ESDC	19290_7052	Oct-13	Jun-20	3,000,000	-	3,000,000	-	-	1,875,000	1,125,000
Thick Primary Sludge Pump Repl-Constr	19292_7054	Oct-13	Jul-15	27,297	27,297	-	-	-	-	-
Digester Modules 1 & 2 Pipe Replacemt	19293_7055	Aug-11	Aug-14	7,095,947	1,755,016	5,340,931	4,798,591	6,553,607	542,340	-
LOCAT Scrubber Replacement - Constr.	19294_7056	Nov-18	Nov-20	4,270,200	-	4,270,200	-	-	-	4,270,200
Centrifuge Backdrive Replacement	19295_7057	Feb-13	Feb-15	3,957,952	25,952	3,932,000	63,833	67,546	3,868,167	-
Switchgear Replacement - Design	19296_7058	Jun-15	Jun-19	1,526,970	-	1,526,970	-	-	1,049,792	477,178
Switchgear Replacement - Construction	19297_7059	Jun-17	Jun-19	4,270,200	-	4,270,200	-	-	1,601,325	2,668,875
Power Consultant Recommned - Design	19298_7060	Jan-06	Jul-09	2,097,404	2,097,404	-	-	271,600	-	-
Power System Improvements - Construct	19299_7061	Jan-09	Sep-15	8,422,664	5,249,308	3,173,356	173,350	5,422,658	3,000,006	-
NMPS VFD Replacement - REI	19300_7062	Dec-12	Jul-15	1,321,624	-	1,321,624	165,203	165,203	1,156,421	-
Heat Loop Pipe Replacement - Const. 3	19301_7063	Jun-09	Jun-11	11,338,800	11,338,800	-	-	11,338,800	-	-
Ancillary Modifications - Final Des 4	19303_7088	Jan-15	Jul-20	4,071,920	-	4,071,920	-	-	2,488,396	1,583,525
Sodium Hypo Tank Liner Removal	19304_7089	May-06	Sep-06	196,400	196,400	-	-	-	-	-
As-needed Design Phase 5-1	19305_7090	Aug-07	Aug-09	955,174	955,174	-	-	267,876	-	-
As-needed Design Phase 5-2	19306_7091	Jul-07	Jul-09	1,055,822	1,055,822	-	-	428,663	-	-
TPP Fuel System Mod REI	19307_7094	Sep-13	Sep-15	800,000	-	800,000	-	-	800,000	-
HVAC Equipment Replacement - Des/ESDC	19309_7111	Aug-13	Apr-19	3,500,000	-	3,500,000	-	-	2,868,055	631,945

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HVAC Equipment Replacement - Const.	19310_7110	Apr-16	Apr-19	17,100,600	-	17,100,600	-	-	10,925,383	6,175,217
DI As-needed Technical Design	19311_7121	Dec-15	Dec-25	21,050,000	-	21,050,000	-	-	5,000,000	16,050,000
Digester Sludge Pump Repl - Construct	19313_7123	Oct-09	Jun-14	2,321,504	1,506,504	815,000	-	1,506,504	815,000	-
Electrical Equipment Upgrade Phase 5	19314_7124	Dec-17	Jun-25	23,161,875	-	23,161,875	-	-	798,685	22,363,190
Future SSPS VFD Replacements - Design	19316_7126	Jul-17	Nov-20	4,800,000	-	4,800,000	-	-	1,800,000	3,000,000
Future SSPS VFD Replacements - Const.	19317_7127	Nov-18	Nov-20	19,200,000	-	19,200,000	-	-	-	19,200,000
Future NMPS VFD Replacements - Design	19318_7128	Jun-21	Sep-24	4,420,000	-	4,420,000	-	-	-	4,420,000
Future NMPS VFD Replacements - Const.	19319_7129	Sep-22	Sep-24	17,680,000	-	17,680,000	-	-	-	17,680,000
Future Misc. VFD Replacements-Design	19320_7130	Dec-14	May-20	1,333,000	-	1,333,000	-	-	851,639	481,361
Future Misc. VFD Replacements-Const.	19321_7131	May-17	May-20	5,334,000	-	5,334,000	-	-	1,481,667	3,852,333
DI Switchgear Replacement - Design	19322_7132	Jul-16	Jul-20	4,500,000	-	4,500,000	-	-	2,250,000	2,250,000
DI Switchgear Replacement - Construct	19323_7133	Jul-18	Jul-20	16,000,000	-	16,000,000	-	-	-	16,000,000
DI PICS Replacement - Construction	19324_7134	Feb-21	Feb-23	5,400,000	-	5,400,000	-	-	-	5,400,000
DI Dystor Membrane Replacements	19325_7135	Jul-16	Oct-16	3,000,000	-	3,000,000	-	-	1,200,000	1,800,000
DI CTG Rebuilds	19326_7136	Jul-16	Jul-19	6,000,000	-	6,000,000	-	-	3,333,332	2,666,668
DI Centrifuge Replacements - Design	19327_7137	Dec-15	Jul-20	4,160,000	-	4,160,000	-	-	520,000	3,640,000
DI Centrifuge Replacements-Construct	19328_7138	Jul-18	Jul-20	16,640,000	-	16,640,000	-	-	-	16,640,000
Cryogenics Plant-Equip Replace-Design	19329_7139	Dec-13	Oct-16	1,600,000	-	1,600,000	-	-	1,600,000	-
Cryogenics Plant-Equip Replace-Const.	19330_7140	Apr-15	Oct-16	5,300,000	-	5,300,000	-	-	5,300,000	-
Future Sodium Hypo Tank Rehab	19332_7142	Jul-17	Jul-21	10,000,000	-	10,000,000	-	-	1,666,667	8,333,333
Barge Berth and Facility Replacement	19334_7168	Sep-13	Apr-19	2,264,750	-	2,264,750	-	-	750,000	1,514,750
South Systm PS Lube System Replace.	19335_7169	Jul-18	Jul-20	2,900,000	-	2,900,000	-	-	-	2,900,000
E/W Odor Control Air Handler Replace.	19336_7170	Jun-25	Jun-30	2,000,000	-	2,000,000	-	-	-	2,000,000
PICS Distributed Process Units Replac	19338_7172	Feb-21	Feb-23	8,000,000	-	8,000,000	-	-	-	8,000,000
NMPS & WTF Butterfly Valve Replace.	19339_7275	Jun-13	Jun-15	10,000,000	-	10,000,000	-	-	10,000,000	-
Digester & Storage Tank Rehab - Const.	19345_7373	Jun-18	Jun-21	21,700,000	-	21,700,000	-	-	-	21,700,000
Clarif W3H Flush Syst	19346_7374	Jul-12	Jul-13	1,228,141	-	1,228,141	1,156,897	1,156,897	71,244	-
Clarifier Ph 2 Des	19347_7394	Nov-13	Dec-20	3,000,000	-	3,000,000	-	-	1,166,666	1,833,334
Clarif Rehab2 Const	19348_7395	Dec-17	Dec-20	27,000,000	-	27,000,000	-	-	2,250,000	24,750,000
Scum Skimr Replac	19349_7396	Jun-13	Jun-16	20,000,000	-	20,000,000	-	-	20,000,000	-
Cryo Chillers Replac	19352_7398	Sep-13	Sep-14	1,100,000	-	1,100,000	-	-	1,100,000	-
As-Needed Des 7-1	19353_7399	Oct-12	Oct-15	1,600,000	-	1,600,000	349,473	349,473	1,250,527	-
As-Needed Des 7-2	19354_7400	Oct-12	Oct-15	1,600,000	-	1,600,000	321,727	321,727	1,278,273	-
TPP Boiler Ctrl Replac	19355_7401	Aug-13	Aug-14	1,000,000	-	1,000,000	-	-	1,000,000	-
Sod Hypo Repl REI	19356_7413	Nov-14	Nov-16	600,000	-	600,000	-	-	600,000	-
NMPS Harmonic Filter Repl	19557_7414	May-18	May-20	3,000,000	-	3,000,000	-	-	-	3,000,000
Fuel Pipe Abandonment	19558_7415	Aug-12	Jan-13	230,000	-	230,000	230,000	230,000	-	-
Electr Equip Upgr 4 REI	19559_7416	Feb-14	May-16	1,200,000	-	1,200,000	-	-	1,200,000	-
NMPS MCC Ph 2 Const	19561_7420	Jul-14	Jul-16	6,085,725	-	6,085,725	-	-	6,085,725	-

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Roof Replacement Phase 3	19562_7424	Jun-13	Jun-14	1,300,000	-	1,300,000	144,444	144,444	1,155,556	-
Fire Systm Repl REI	19563_7426	Sep-15	Sep-18	1,800,000	-	1,800,000	-	-	1,500,000	300,000
Grav Thick Ctr Col Repl	19564_7427	Jan-13	Jan-14	747,430	-	747,430	249,143	249,143	498,287	-
Grav Thicknr Rehab	19565_7428	Feb-14	Feb-16	5,786,060	-	5,786,060	-	-	5,786,060	-
As-Needed Des 7-3	19566_7434	Oct-12	Oct-15	1,600,000	-	1,600,000	206,452	206,452	1,393,548	-
Sodium Bisulfite Tanks Rehab	40256_7449	Jan-15	Jun-16	2,543,075	-	2,543,075	-	-	2,543,075	-
210 Clinton Wastewater Treatment Plant				17,058,617	755,538	16,303,079	1,956,144	2,366,899	10,752,722	3,594,213
Clinton Soda Ash Replacement	19302_7075	Nov-07	Aug-08	267,221	267,221	-	-	152,878	-	-
Clinton Permanent Standby Generator	19308_7095	Feb-07	Nov-07	230,440	230,440	-	-	-	-	-
Clinton Plant-Wide Concrete Repair	19340_7276			62,615	62,615	-	-	62,615	-	-
Clinton Digester Cleaning & Rehab	19341_7277	May-10	Jun-15	3,200,000	88,600	3,111,400	-	88,600	3,111,400	-
Clinton Aeration Effciency Improvement	19342_7278	Apr-12	Feb-13	2,062,806	106,662	1,956,144	1,956,144	2,062,806	-	-
Phos Remov Des/ESDC	19350_7377	Jun-13	Feb-18	900,000	-	900,000	-	-	900,000	-
PhosRemov Constr	19400_7411	Aug-15	Feb-17	5,758,000	-	5,758,000	-	-	5,758,000	-
Clinton Roofing Rehab	19405_7450	Sep-14	Sep-15	508,615	-	508,615	-	-	508,615	-
Clinton Facilities Rehab	19406_7451	Sep-17	Sep-22	4,068,920	-	4,068,920	-	-	474,707	3,594,213
211 Laboratory Services				2,235,019	2,074,234	160,785	160,785	1,305,955	-	-
Metals Lab Fume Hood Replacem - Const	19152_6197	Mar-11	Feb-12	995,476	847,448	148,028	148,028	995,476	-	-
Metals Lab Fume Hood Replacem - Desig	19249_6848	Jan-09	Feb-12	270,706	257,949	12,757	12,757	270,706	-	-
Metals Lab Modification - Construction	19251_6850	May-07	Sep-08	968,837	968,837	-	-	39,773	-	-
Residuals				**168,020,224**	**64,156,045**	**103,864,180**	**406,309**	**751,506**	**1,548,749**	**101,909,122**
261 Residuals	**completed project**			63,810,848	63,810,848	-	-	-	-	-
271 Residuals Asset Protection				104,209,377	345,197	103,864,180	406,309	751,506	1,548,749	101,909,122
Residual Facility Plan / EIR	26069_7143	Jan-14	Jul-19	1,000,000	-	1,000,000	-	-	787,878	212,122
Residuals Facility Upgrade - Design	26070_7145	Jan-18	Jul-19	2,000,000	-	2,000,000	-	-	303,000	1,697,000
Residuals Facility Upgrade-Construct.	26071_7146	Jul-18	Dec-19	10,000,000	-	10,000,000	-	-	-	10,000,000
Condition Assess/Tech & Reg Review	26072_7147	May-09	Jan-14	959,377	345,197	614,180	406,309	751,506	207,871	-
Co-Digest Pilot	26073_7148	Sep-13	Jul-15	250,000	-	250,000	-	-	250,000	-
Resid Ph 2 Designs	26074_7149	Jul-18	Jul-23	15,000,000	-	15,000,000	-	-	-	15,000,000
Resid Ph 2 Constr	26075_7150	Jul-18	Jul-23	75,000,000	-	75,000,000	-	-	-	75,000,000

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CSO				**888,112,279**	**802,275,285**	**85,836,994**	**36,435,304**	**316,492,456**	**48,066,290**	**1,334,395**
CSO MWRA Managed				**434,901,991**	**429,187,262**	**5,714,729**	**1,316,576**	**161,053,669**	**4,085,152**	**313,000**
339 North Dorchester Bay				223,059,718	221,540,523	1,519,195	398,972	82,897,402	807,221	313,000
North Dorchester Outfall-Design/CA/RI	10426_7032	Mar-11	May-13	1,005,976	406,655	599,321	60,986	467,641	538,335	-
Tunnel - Design/ESDC	32660_6220	Aug-97	Aug-12	23,065,378	22,964,438	100,940	70,940	1,410,413	30,000	-
Tunnel - Construction (Ch30)	32661_6244	Aug-06	Nov-09	147,531,347	147,531,347	-	-	38,673,105	-	-
Dewatering Pump Station & Sewers-Con	32662_6245	Apr-09	Apr-11	27,144,169	27,144,169	-	-	27,144,169	-	-
Tunnel & Facilities - CM Services	32726_6993	Oct-05	Oct-12	9,258,223	9,022,309	235,914	235,914	6,095,107	-	-
Pleasure Bay - Construction	32732_7012	Sep-05	May-06	3,194,885	3,194,885	-	-	-	-	-
Design/ESDC/Facilities	32733_7013	Nov-06	Jul-12	4,886,582	4,803,564	83,018	31,132	2,836,397	51,886	-
Tunnel Rescue/Emergency Response	32744_7103	Mar-07	Dec-09	793,354	793,354	-	-	590,767	-	-
Ventilation Building - Construction	32745_7259	Dec-09	May-11	5,462,321	5,462,321	-	-	5,462,321	-	-
Communication Systems	32746_7345	Jul-10	May-11	217,482	217,482	-	-	217,482	-	-
No. Dorchester Outfall Inspection	32747_4094	Jul-14	Jul-24	500,000	-	500,000	-	-	187,000	313,000
347 East Boston Branch Sewer Relief				85,873,733	85,534,665	339,068	339,067	75,168,354	-	-
Design	32673_6256	Mar-00	Sep-06	3,465,434	3,463,306	2,128	2,128	2,710	-	-
East Boston Branch Relief Sewer	32674_6257	Jul-08	Jul-10	62,095,343	62,095,343	-	-	62,095,343	-	-
East Boston Branch Sewer Rehab	32719_6840	Apr-03	May-04	5,222,005	5,222,005	-	-	-	-	-
Sections 38 & 207 Replacement	32720_6841	Apr-09	Jul-10	8,875,990	8,875,990	-	-	8,875,990	-	-
Design 2 CS	32742_7087	Jun-06	Jul-11	3,020,722	2,809,566	211,156	211,157	1,000,073	-	-
Resident Inspection Services	32743_7097	Jul-08	Mar-11	3,194,238	3,068,456	125,782	125,782	3,194,238	-	-
348 BOS019 Storage Conduit	**completed project**			14,287,581	14,287,581	-	-	(44,067)	-	-
349 Chelsea Trunk Sewer	**completed project**			29,779,319	29,779,319	-			-	-
350 Union Park Detention Treatment Facility	**completed project**			49,583,406	49,583,406	-	-	(227,192)	-	-
353 Upgrade Existing CSO Facilities	**completed project**			22,385,200	22,385,200	-			-	-
354 Hydraulic Relief Projects	**completed project**			2,294,549	2,294,549	-			-	-
355 MWR003 Gate & Siphon				4,005,409	148,942	3,856,467	578,537	727,479	3,277,931	-
Design	32722_6952	Mar-12	Sep-16	1,550,044	148,942	1,401,102	578,537	727,479	822,565	-
Construction 1	32723_6953	Sep-13	Jun-14	278,083	-	278,083	-	-	278,083	-
Construction 2	32755_7409	Aug-14	Oct-15	2,177,283	-	2,177,283	-	-	2,177,283	-

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357 Charles River CSO Controls	**completed project**			3,633,077	3,633,077	-	-	2,531,693	-	-
CSO Community Managed				**402,894,739**	**323,528,806**	**79,365,933**	**35,069,940**	**150,919,200**	**44,295,990**	-
340 Dorchester Bay Sewer Separation (Fox Pt)	**completed project**			54,168,552	54,152,295	16,257	-	389,676	16,256	-
341 Dorch Bay Sew Separation (Commercial Point)				64,775,652	60,451,470	4,324,182	696,445	6,257,325	3,627,737	-
Design	32650_6154	Jun-96	Jun-16	17,664,846	16,236,695	1,428,151	401,445	2,954,650	1,026,705	-
Construction	32665_6248	Apr-99	Jun-16	47,110,806	44,214,774	2,896,032	295,000	3,302,675	2,601,032	-
342 Neponset River Sewer Separation	**completed project**			2,444,394	2,444,394	-			-	-
343 Constitution Beach Sewer Separation	**completed project**			3,768,888	3,768,888	-			-	-
344 Stony Brook Sewer Separation				44,332,539	44,198,384	134,155	134,155	(721,285)	-	-
Design/CS/RI	32667_6395	Jul-98	Sep-08	10,137,127	10,137,127	-	-	343,167	-	-
Construction	32668_6251	Jul-00	Sep-06	34,195,412	34,061,257	134,155	134,155	(1,064,452)	-	-
346 Cambridge Sewer Separation				85,833,982	35,489,357	50,344,625	14,995,524	32,033,751	35,349,100	-
Design/CS/RI	32654_6161	Jan-97	Jun-16	28,208,145	15,408,473	12,799,672	5,827,093	12,552,396	6,972,579	-
Construction	32672_6255	Jul-98	Dec-15	57,625,837	20,080,885	37,544,952	9,168,431	19,481,355	28,376,521	-
351 BWSC Floatables Controls	**completed project**			932,979	932,979	-			-	-
352 Cambridge Floatables Control	**completed project**			1,086,925	1,086,925	-	-	164,727	-	-
356 Fort Point Channel Sewer Separation	**completed project**			12,006,708	12,006,708	-	-	3,715,550	-	-
358 Morrissey Boulevard Drain				32,814,545	32,346,787	467,758	-	17,670,616	467,758	-
Construction	32713_6696	Dec-06	Jun-09	28,320,446	28,320,646	(200)	-	16,626,959	(199)	-
Design	32735_7015	Jun-05	Jun-13	4,494,099	4,026,142	467,957	-	1,043,657	467,957	-
359 Reserved Channel Sewer Separation				64,808,529	41,529,984	23,278,545	18,509,630	57,322,620	4,768,914	-
Construction	32727_6994	May-09	Dec-15	50,430,935	30,708,141	19,722,794	16,700,287	47,408,428	3,022,507	-
Design	32734_7014	Jul-06	Jun-16	14,377,594	10,821,843	3,555,751	1,809,343	9,914,192	1,746,407	-
360 Brookline Sewer Separation				25,977,385	25,263,178	714,207	734,186	24,725,764	(19,979)	-
Design/CS/RI	32736_7076	Nov-06	Jul-14	5,342,000	5,342,000	-	-	4,070,400	-	-
Construction	32737_7077	Nov-08	Jul-13	20,635,385	19,921,178	714,207	734,186	20,655,364	(19,979)	-

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361 Bulfinch Triangle Sewer Separation				9,943,660	9,857,456	86,204	-	9,360,456	86,204	-
Design/CS/RI	32738_7078	Aug-06	Jun-11	1,323,150	1,236,946	86,204	-	739,946	86,204	-
Construction	32739_7079	Sep-08	Jul-10	8,620,510	8,620,510	-	-	8,620,510	-	-
CSO Planning & Support				50,314,549	49,559,217	755,332	48,788	4,519,587	(314,852)	1,021,395
Technical Assistance	32400_5790	Feb-94	Dec-95	228,320	228,320	-	-	-	-	-
Planning/EIR	32401_5791	Mar-88	Sep-90	10,768,610	10,768,610	-	-	-	-	-
Master Planning	32403_5716	Mar-92	Sep-04	21,762,805	21,762,805	-	-	(114,342)	-	-
Technical Assistance - Geotech	32407_5970	Jun-90	Jun-92	61,110	61,110	-	-	-	-	-
Modeling	32409_5795	May-92	Mar-95	299,840	299,840	-	-	-	-	-
SOP Program	32411_5767	Jan-94	May-01	772,835	1,956,550	(1,183,715)	-	-	(1,183,715)	-
Watershed Planning	32645_6036	Dec-94	Apr-01	877,134	877,134	-	-	-	-	-
Technical Review	32648_6150	Jul-96	Dec-20	2,038,314	528,932	1,509,382	-	-	500,000	1,009,382
Land Acquisition/Easement	32658_6169	Jul-96	Jun-20	13,182,081	13,049,068	133,013	7,000	4,592,141	114,000	12,013
System Assessment	32691_6372	May-97	Dec-20	323,500	26,849	296,651	41,788	41,788	254,863	-
Other Wastewater				**122,865,861**	**108,059,788**	**14,806,073**	**21,006,150**	**37,384,776**	**1,805,595**	**(8,005,673)**
128 I/I Local Financial Assistance				122,584,985	107,778,912	14,806,073	21,006,150	37,384,776	1,805,594	(8,005,673)
Phase II - Grants	10273_6084	May-93	May-06	15,928,524	15,928,524	-			-	-
Phase II - Loans	10274_6085	May-93	May-06	47,664,000	47,664,000	-			-	-
Phase II - Repayments	10282_6170	May-94	May-11	(47,664,000)	(47,663,995)	(5)	(5)	(1,121,836)	-	-
Public Participation	10348_6609	Feb-99	Jun-02	6,461	6,461	-	-	-	-	-
Phase IV - Grants	10368_6736	Nov-99	May-10	34,650,000	34,650,000	-		1,294,358	-	-
Phase IV - Loans	10369_6737	Nov-99	May-10	42,350,000	42,350,000	-		1,581,995	-	-
Phase IV - Repayments	10370_6738	Nov-00	May-15	(42,350,000)	(41,205,403)	(1,144,597)	(556,635)	(13,715,912)	(587,962)	-
Phase V - Grants	10407_6925	Aug-04	May-12	18,000,000	18,183,610	(183,610)	(183,610)	6,216,126	-	-
Phase V - Loans	10408_6926	Aug-04	May-12	22,000,000	22,224,407	(224,407)	(224,407)	7,597,488	-	-
Phase V - Repayments	10409_6927	Aug-05	May-17	(22,000,000)	(16,571,538)	(5,428,462)	(2,284,894)	(15,533,226)	(3,143,569)	-
Phase VI - Grants	10441_7107	Nov-06	Jun-15	18,000,000	11,582,644	6,417,356	3,070,319	12,054,503	3,347,037	-
Phase VI - Loans	10442_7108	Nov-06	Jun-15	22,000,000	14,156,564	7,843,436	3,752,612	14,733,281	4,090,824	-
Phase VI - Repayments	10443_7109	Nov-07	Jun-20	(22,000,000)	(6,405,971)	(15,594,029)	(1,685,452)	(7,719,832)	(12,052,052)	(1,856,525)
Phase VII - Grants	10471_7293	Aug-09	Jun-18	18,000,000	6,395,512	11,604,488	5,099,400	11,494,912	6,505,088	-
Phase VII - Loans	10472_7294	Aug-09	Jun-18	22,000,000	7,816,738	14,183,262	6,611,203	14,427,941	7,572,059	-
Phase VII - Repayments	10473_7295	Aug-10	Jun-23	(22,000,000)	(1,332,640)	(20,667,360)	(1,511,047)	(2,843,687)	(13,877,811)	(5,278,503)
Phase VIII - Grants	10474_7296	Aug-13	Jun-21	18,000,000	-	18,000,000	4,013,399	4,013,399	8,100,000	5,886,601
Phase VIII - Loans	10475_7297	Aug-13	Jun-21	22,000,000	-	22,000,000	4,905,266	4,905,266	9,900,000	7,194,734
Phase VIII - Repayments	10476_7298	Aug-14	Jun-26	(22,000,000)	-	(22,000,000)	-	-	(8,048,020)	(13,951,980)

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138 Sewerage System Mapping Upgrade				280,876	280,876	-			-	-
Waterworks				**2,820,956,187**	**1,799,565,147**	**1,021,391,040**	**71,568,125**	**268,742,364**	**307,133,761**	**642,688,141**
Drinking Water Quality Improvements				**657,172,228**	**559,732,487**	**97,439,742**	**40,049,471**	**91,232,007**	**57,311,272**	**79,000**
542 Carroll Water Treatment Plant				433,252,898	391,220,222	42,032,676	20,927,488	39,435,441	21,026,188	79,000
Study 1	53293_5023	Jan-88	Feb-89	444,190	444,190	-	-	-	-	-
Study 2	53294_5024	Jul-90	Mar-94	2,368,323	2,368,323	-	-	-	-	-
EIR / Conceptual Design	53296_5042	Nov-93	Jul-95	5,807,703	5,807,703	-	-	-	-	-
Technical Assistance	53300_5997	Jan-88	Jun-00	72,108	72,108	-	-	-	-	-
Wachusett WTP - Design/CS/RI	53301_5017	Oct-96	Sep-06	46,605,542	46,605,542	-	-	-	-	-
Permit Fees	53304_5157	Jul-93	Mar-14	80,251	80,101	150	150	31,931	-	-
Cryptosporidium Inactivation Study	53367_6118	Feb-97	May-00	150,000	150,000	-	-	-	-	-
Management Support - Design	53371_6134	Apr-97	Apr-00	1,729,937	1,729,937	-	-	-	-	-
AWWARF Study	53375_6182	Dec-96	Sep-03	650,342	650,342	-	-	-	-	-
Emerg Discharge Reserv Water Mgmt Study	53376_6206	Nov-98	Sep-02	1,453,825	1,453,825	-	-	-	-	-
Wachusett and Cosgrove Intakes - CP1	53377_6207	Jun-00	Jun-03	15,489,314	15,489,314	-	-	98,218	-	-
Construction Management / RI	53378_6208	Aug-98	Sep-06	31,437,824	31,437,824	-	-	-	-	-
Cosgrove Disinfection - Phase II	53390_6365	Apr-98	May-99	2,169,292	2,169,292	-	-	-	-	-
Cosgrove Disinfection - Phase I	53391_6397	Jul-97	Oct-97	150,380	150,380	-	-	-	-	-
Distribution Water Consultant	53392_6401	Jul-97	Jun-98	3,200	3,200	-	-	-	-	-
Immediate Disinfection - MECO	53393_6406	Jul-97	Jul-97	10,300	10,300	-	-	-	-	-
Cosgrove Disinfection Fac. - Underwater	53406_6479	Jan-98	Jun-98	217,400	217,400	-	-	-	-	-
Community Chlorine Analyzers	53410_6485	Apr-98	Jun-98	48,863	48,863	-	-	-	-	-
Wachusett Aqueduct Interim Rehab. - CP2	53412_5522	Dec-00	Oct-02	23,400,005	23,400,005	-	-	-	-	-
Sitework & Storage Tanks - CP3	53413_6488	Mar-99	Nov-02	67,367,673	67,367,673	-	-	-	-	-
Treatment Facilities - CP4	53414_6489	Dec-00	Jul-05	145,871,496	145,871,496	-	-	-	-	-
Late Sitework - CP6	53416_6491	Jul-04	Jan-06	4,087,831	4,087,831	-	-	-	-	-
OCIP	53418_6494	Mar-99	Dec-07	5,107,089	5,107,089	-	-	-	-	-
Professional Services	53419_6495	Sep-98	Oct-05	2,752,328	2,752,328	-	-	-	-	-
Marlboro MOA	53420_6497	Sep-98	Jun-05	5,859,141	5,859,141	-	-	-	-	-
CWTP- MECO	53421_6520	Sep-98	Mar-05	128,328	128,328	-	-	-	-	-
Site Security Services	53425_6613	May-99	Mar-05	1,263,635	1,263,635	-	-	-	-	-
Existing Facilities Modifications - CP7	53426_6650	Sep-13	Mar-15	6,077,341	-	6,077,341	-	-	6,077,341	-
CSX Crossing	53427_6670	Aug-01	Dec-01	64,700	64,700	-	-	-	-	-
Wachusett Algae - Design CS/RI	53428_6671	Jul-15	Dec-18	450,000	-	450,000	-	-	371,000	79,000
Public Health Research	53432_6691	Jul-00	Jun-07	1,702,560	1,702,560	-	-	-	-	-
Security Equipment	53435_6756	Jun-00	Jun-00	570,721	570,721	-	-	-	-	-

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Cosgrove Screens, CP8 - Design	53436_6772	Feb-02	Mar-04	-	-	-	-	-	-	-
Cosgrove Screens, CP8 - Construction	53437_6773	Aug-03	Aug-04	3,238,306	3,238,306	-	-	-	-	-
AWWARF - Evaluation Ozone & UV	53443_6815	Jul-01	Jan-04	301,750	301,750	-	-	-	-	-
Fitout / Construction	53445_6827	Oct-03	Aug-15	1,500,000	545,570	954,430	-	(197,039)	954,430	-
Wachusett Algae - Construction	53448_6889	Feb-16	Dec-17	1,800,000	-	1,800,000	-	-	1,800,000	-
CWTP Ultraviolet Disinfection-Des/ESDC/R	53450_6923	Jul-08	Apr-15	4,393,797	1,815,524	2,578,273	900,000	2,715,524	1,678,273	-
CWTP Ultraviolet Disinfection-Constr.	53451_6924	May-11	Mar-14	31,644,185	11,465,180	20,179,005	17,950,005	29,415,185	2,229,000	-
As-needed Technical Assistance #1	53452_6939	Jan-06	Jun-08	491,274	491,274	-	-	330	-	-
Existing Fac Modif., CP7 - Design	53453_6951	Jul-05	Mar-16	1,622,611	805,858	816,753	233,349	925,429	583,404	-
As-needed Technical Assistance	53455_6989	Jan-06	Jun-08	702,024	702,024	-	-	21,023	-	-
Ancillary Modifications - Construct. 1	53456_7084	Jul-06	Jun-08	160,475	160,475	-	-	-	-	-
Ancillary Modifications - Construct. 2	53457_7085	Jan-09	Jun-16	6,189,640	3,596,663	2,592,977	952,197	4,548,860	1,640,780	-
Ancillary Modifications - Design 3	53458_7192	Mar-08	Sep-10	299,101	299,101	-	-	296,601	-	-
Ancillary Modifications - Design 4	53459_7208	Mar-08	Sep-10	527,412	527,412	-	-	480,657	-	-
Technical Assistance 5	53464_7315	Sep-10	Mar-13	485,924	117,377	368,547	368,547	485,924	-	-
Technical Assistance 6	53465_7316	Sep-10	Mar-13	612,798	89,558	523,240	523,240	612,798	-	-
CWTP Storage Tank Roof Drainage Sys.	53470_7376	May-14	Nov-14	4,065,960	-	4,065,960	-	-	4,065,960	-
Technical Assistance 7	75530_7406	Jun-13	Jun-15	563,000	-	563,000	-	-	563,000	-
Technical Assistance 8	75531_7407	Jun-13	Jun-15	563,000	-	563,000	-	-	563,000	-
CWTP-Asset Protection	75546_7455	Jul-15	Jun-17	500,000	-	500,000	-	-	500,000	-
543 Quabbin Water Treatment Plant				17,392,925	10,832,937	6,559,988	1,524,965	2,214,380	5,035,023	-
Quabbin WTP - Design/CA/RI	53363_6043	May-95	Aug-01	3,793,701	3,793,701	-	-	(29,021)	-	-
Permit Fees	53380_6210	Jan-98	Dec-13	32,300	11,850	20,450	14,168	18,908	6,282	-
Utilities	53381_6211	Aug-98	Jan-12	13,400	13,400	-	-	-	-	-
Construction	53382_6212	Nov-98	Sep-00	5,070,892	5,070,892	-	-	-	-	-
Ware Fire Department - MOA	53433_6706	Oct-99	Jul-00	25,000	25,000	-	-	-	-	-
Water Quality Analysis Equipment	53434_6711	Jan-01	Jun-06	48,620	48,620	-	-	-	-	-
Quabbin UVWTP - Design/CA/RI	53439_6775	Dec-08	Jul-15	1,790,740	727,202	1,063,538	324,505	1,051,707	739,033	-
Quabbin UVWTP - Construction	53440_6776	Jan-13	Aug-14	5,476,000	-	5,476,000	1,186,292	1,186,292	4,289,708	-
Quabbin UVWTP -Study/Pilot	53442_6804	May-02	Dec-05	1,142,272	1,142,272	-	-	(13,506)	-	-
544 Norumbega Covered Storage	**completed project**			106,674,146	106,674,146	-	-	101,670	-	-

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545 Blue Hills Covered Storage				40,703,606	39,969,816	733,790	133,824	21,214,786	599,966	-
Technical Support & Permit Compliance	53385_6215	Apr-02	Dec-15	104,000	25,949	78,051	10,451	13,138	67,600	-
Design / Build	53386_6216	Jan-07	Apr-10	37,667,883	37,544,510	123,373	123,373	20,971,530	-	-
Roadway Resurfacing - Design	53460_7213	Jul-14	Jan-16	61,405	-	61,405	-	-	61,405	-
Roadway Resurfacing - Construction	53461_7214	Apr-15	Jan-16	313,165	-	313,165	-	-	313,165	-
EIR/Preliminary Design/OR	68025_6139	May-97	Jun-10	2,557,153	2,399,357	157,796	-	230,118	157,796	-
550 Spot Pond Storage Facility				59,148,654	11,035,366	48,113,288	17,463,194	28,265,730	30,650,095	-
Environmental Review	53400_6455	Apr-02	Feb-03	232,830	232,830	-	-	-	-	-
Design / Build	53402_6457	Nov-11	Nov-14	49,801,713	4,389,914	45,411,799	16,977,704	21,367,618	28,434,095	-
Easement/Land Acquis/Permits	53447_6868	Oct-08	Dec-14	6,000,000	5,134,775	865,225	273,466	5,408,241	591,759	-
Owners' Representative	53462_7233	Mar-10	Jul-15	2,892,096	915,753	1,976,343	352,102	1,267,855	1,624,241	-
Early Construction Water Connection	53463_7314	Jul-11	Feb-12	222,016	362,094	(140,078)	(140,078)	222,016	-	-
Transmission				**1,185,971,524**	**737,867,886**	**448,103,638**	**18,006,199**	**82,989,625**	**80,006,992**	**350,090,446**
597 Winsor Station Pipeline				27,256,312	1,389,157	25,867,155	81,998	1,432,873	5,006,817	20,778,339
Preliminary Permit, Study & Licensing	60032_6276	Nov-97	Jun-99	38,282	38,282	-	-	-	-	-
Quabbin Aqueduct TV Inspection	60033_6277	Jul-18	Oct-21	2,805,948	-	2,805,948	-	-	-	2,805,948
Hatchery Pipeline - Design/ESDC/RI	60077_7017	Nov-13	Nov-17	749,577	144	749,433	-	144	702,594	46,839
Quabbin Aqueduct & WPS Upg. Design/CA/RI	60087_7114	Feb-10	Jan-18	2,320,000	566,036	1,753,964	81,998	648,034	1,671,966	-
Winsor Station Rehab & Improvement	60088_7115	Jul-18	Jan-21	9,343,395	-	9,343,395	-	-	-	9,343,395
Shaft 12 Construction	60095_7197	Jul-18	Jan-21	8,251,430	-	8,251,430	-	-	-	8,251,430
Shaft 2 Construction	60096_7198	Jul-18	Jan-21	330,727	-	330,727	-	-	-	330,727
Winsor Station Chapman Valve Repai	60101_7212	Feb-09	Nov-09	416,425	416,425	-	-	416,425	-	-
Purchase of Sleeve Valves	60105_7234	Jul-08	May-09	368,270	368,270	-	-	368,270	-	-
Hatchery Pipeline - Construction	60106_7235	Feb-15	Aug-16	2,098,482	-	2,098,482	-	-	2,098,482	-
Shaft 12 Power / Comm Constr	60140_7460	Jul-14	Mar-15	533,775	-	533,775	-	-	533,775	-
601 Sluice Gate Rehabilitation				9,158,411	9,158,411	-			-	-
Design/CS/RI	59757_5255	Aug-88	Jun-93	177,160	177,160	-			-	-
Construction 1	59758_5256	Apr-91	Jul-93	1,529,140	1,529,140	-			-	-
Construction 2	59760_5258	Sep-03	Jun-05	4,771,186	4,771,186	-			-	-
Constr-Stop Planks	59761_5259	Dec-88	Jun-89	444,460	444,460	-			-	-
Const-Sudbury Toe Drain Repair	60027_6158	Sep-96	Jun-97	1,145,067	1,145,067	-			-	-
Design CS/RI 2	60034_6272	Apr-98	Sep-06	1,091,252	1,091,252	-			-	-
Legal	60047_6564	Jul-99	Sep-05	146	146	-			-	-

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604 MetroWest Tunnel				708,785,875	683,664,737	25,121,138	11,763,971	61,627,882	7,697,198	5,659,969
Study	59794_5043	Jun-84	Oct-89	414,770	414,770	-	-	-	-	-
Design/EIR - Tunnel/ESDC	59795_5044	Apr-92	Mar-07	37,939,302	37,938,693	609	609	52,594	-	-
Sudbury Pipe Bridge - Construction	59796_5048	Nov-91	Jun-92	295,910	295,910	-	-	-	-	-
West Tunnel Segment - CP1	59798_6054	Apr-97	Apr-03	147,787,135	147,787,135	-	-	-	-	-
Construction Managementt/Resident Inspec	59799_5284	May-95	Apr-04	39,427,799	39,427,799	-	-	-	-	-
Technical Assistance	59804_5976	Jun-84	Jun-98	131,400	131,400	-	-	-	-	-
Land Acquisition	59805_5139	Oct-95	Jul-13	6,258,741	6,258,741	-	-	-	-	-
Hultman Study	59806_5141	Apr-95	Mar-05	1,863,998	1,863,998	-	-	-	-	-
DEP Permit Fees	60012_6037	Oct-94	Sep-14	58,000	56,178	1,822	822	6,438	1,000	-
Middle Tunnel Segment - CP2	60013_6055	Jun-96	Apr-03	245,809,358	245,809,358	-	-	-	-	-
MHD Salt Sheds - CP5	60014_6056	Sep-96	Jun-97	1,313,900	1,313,900	-	-	-	-	-
Shaft 5A - CP3	60015_6059	Aug-97	Aug-98	5,871,954	5,871,954	-	-	-	-	-
Local Supply Contingency - Design/CA/RI	60017_6063	May-96	Oct-99	858,703	858,703	-	-	-	-	-
Community Technical Assistance	60018_6067	Jun-95	Apr-99	297,408	297,408	-	-	-	-	-
Professional Services	60020_6117	Nov-95	Dec-03	730,860	730,860	-	-	-	-	-
OCIP	60021_6122	Jun-96	May-06	26,021,794	26,021,794	-	-	(1,034)	-	-
Hultman Leak Repair	60022_6128	Aug-96	May-97	307,280	307,280	-	-	-	-	-
Framingham MOU	60023_6129	May-96	Dec-03	2,444,171	2,444,171	-	-	-	-	-
Local Supply Contingency - Construction	60024_6130	Jun-97	Dec-03	4,298,444	4,298,444	-	-	10,023	-	-
Local Supply Contingency - Legal/Easemen	60025_6131	Apr-97	Jun-02	9,110	9,110	-	-	-	-	-
Hultman Repair Bands	60026_6140	Aug-96	Dec-96	28,400	28,400	-	-	-	-	-
Loring Road Storage Tanks - CP-8	60029_6203	Sep-97	Nov-00	41,367,921	41,367,921	-	-	-	-	-
Testing & Disinfection - CP7	60030_6204	Jan-03	Oct-03	3,612,435	3,612,435	-	-	-	-	-
Upper Hultman Rehab - CP6B	60031_6205	Apr-12	Jun-13	6,018,247	833,749	5,184,498	4,717,953	5,551,702	466,545	-
Southboro MOA	60038_6366	May-97	Jun-03	254,883	254,883	-	-	-	-	-
Weston MOA	60039_6367	Apr-96	Oct-04	1,005,524	1,005,524	-	-	-	-	-
East Tunnel Segment - CP3A	60040_6374	Nov-98	Sep-02	56,145,497	56,099,733	45,764	45,764	169,881	-	-
Hultman Investigation and Repair	60042_6430	Jun-99	Nov-00	1,604,381	1,604,381	-	-	-	-	-
Hultman Repair Bands 98-99	60043_6492	Apr-99	Jun-99	116,457	116,457	-	-	-	-	-
Wayland MOA	60053_6762	Jun-00	Dec-02	35,040	35,040	-	-	-	-	-
Equipment Prepurchase	60054_6777	Jun-05	Mar-06	198,000	198,000	-	-	-	-	-
Hultman Rehab - CP9	60058_6856	Nov-05	Dec-06	3,256,702	3,256,702	-	-	-	-	-
Interim Disinfection	60059_6872	Jan-03	Oct-05	1,244,540	1,244,540	-	-	-	-	-
Hultman Interconnect - Final Design/CA/I	60066_6911	Sep-05	Sep-14	5,883,901	4,865,576	1,018,325	397,434	2,233,449	620,891	-
Valve Chamber Modifications - Design CA/	60072_6950	Jul-16	Dec-20	1,162,994	-	1,162,994	-	-	673,000	489,994
Lower Hultman Rehab -CP6A	60073_6975	Sep-09	May-13	52,277,479	45,638,646	6,638,833	6,088,833	51,727,479	550,000	-
Hultman Interconnect - RI Services	60083_7082	Jan-10	Jan-15	2,049,240	1,276,684	772,556	452,556	1,729,240	320,000	-
CP6 Easements	60085_7105	Jan-08	Apr-14	175,000	31,238	143,762	60,000	90,888	83,762	-

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CP6A Demolition	60086_7106	Sep-08	Jan-09	57,222	57,222	-	-	57,222	-	-
Valve Chamber & Storage Tank Access Impr	60109_7283	Jul-14	Jul-18	3,000,000	-	3,000,000	-	-	2,900,000	100,000
Shaft 5 Electrical Upgrade	60128_7367	Jan-19	Jan-20	1,000,000	-	1,000,000	-	-	-	1,000,000
Shaft 5A/5 Surface Piping Inspect./Resto	60129_7368	Jul-14	Jul-15	1,500,000	-	1,500,000	-	-	1,500,000	-
Valve Chamber Modifications - Constructi	75525_7755	Jan-18	Dec-19	4,651,975	-	4,651,975	-	-	582,000	4,069,975
615 Chicopee Valley Aqueduct Redundancy				8,666,292	8,666,747	(455)	(455)	94,688	-	-
Pipeline Redundancy - Design/CA/RI	60045_6527	Apr-00	Dec-08	1,913,114	1,913,569	(455)	(455)	98,624	-	-
Pipeline Redundancy - Construction	60046_6528	Oct-05	Apr-08	6,651,675	6,651,674	1	-	(3,936)	-	-
Construction Easements	60065_6908	Apr-03	Oct-07	39,533	39,533	-			-	-
Permits	60074_7002	May-04	Oct-06	11,970	11,970	-			-	-
MWRA/South Hadley Fire District No.1 Tak	60084_7100	Oct-06	Dec-06	50,000	50,000	-			-	-
616 Quabbin Transmission System				13,515,635	4,913,428	8,602,207	2,210,753	2,700,754	3,261,453	3,130,000
Facilities Inspection	60055_6828	Oct-05	Oct-07	1,005,413	1,005,413	-	-	(2,049)	-	-
Equipment Pre-purchase	60075_7007	Feb-05	Jun-08	534,366	534,366	-	-	-	-	-
Oakdale Phase 1A Electrical - Design	60103_7229	Oct-09	Jul-14	799,880	412,050	387,830	272,507	684,557	115,322	-
Oakdale Phase 1A Electrical - Constructi	60104_7230	Apr-12	Jul-13	2,194,377	80,000	2,114,377	1,938,246	2,018,246	176,131	-
Ware River Intake Valve Replacement	60108_7282	Jul-15	Jul-18	1,200,000	-	1,200,000	-	-	1,150,000	50,000
CVA Intake Motorized Screens Replacement	60112_7332	Jul-17	Jun-18	500,000	-	500,000	-	-	500,000	-
Wachusett Lower Gatehouse Rehab	60113_7333	Jul-15	Dec-19	2,200,000	-	2,200,000	-	-	1,320,000	880,000
Rehabilitate Oakdale Turbine	60135_7378	May-20	Jan-21	1,000,000	-	1,000,000	-	-	-	1,000,000
Geo-Thermal Heat Wachusett Gatehouse	60136_7379	May-19	Nov-19	200,000	-	200,000	-	-	-	200,000
Rehab Wach. Gatehouse Chamber 4 Piping	60137_7380	Jan-19	Jan-20	1,000,000	-	1,000,000	-	-	-	1,000,000
Oakdale Valves - Phase 1 Construction	75491_6690	Oct-05	Jun-06	1,811,309	1,811,309	-	-	-	-	-
Oakdale Valves - Phase 1 Study & Design	75496_6831	Apr-04	Jun-07	1,070,290	1,070,290	-	-	-	-	-
617 Sudbury/Weston Aqueduct Repairs				4,326,512	659,948	3,666,564	-	25,000	3,666,564	-
Sudbury Aqueduct Inspection	60056_6838	Aug-05	Oct-06	369,520	369,520	-	-	-	-	-
Technical Assistance	60057_6839	Sep-09	Dec-11	25,000	25,000	-	-	25,000	-	-
Weston Aqueduct Inspection	60070_6947	Jul-15	Mar-16	150,000	-	150,000	-	-	150,000	-
Sudbury Short-Term Repairs	60076_7016	Jul-14	Jun-15	418,564	-	418,564	-	-	418,564	-
Sudbury Short-Term Repairs - Phase 2	60110_7317	Jul-16	Jul-17	2,098,000	-	2,098,000	-	-	2,098,000	-
Ash Street Sluice Gates	60130_7369	Jan-16	Jan-17	1,000,000	-	1,000,000	-	-	1,000,000	-
Hazardous Material Sudbury Aqueduct	75486_6617	Apr-99	May-05	265,428	265,428	-	-	-	-	-
620 Wachusett Reservoir Spillway Improvements	**completed project**			9,287,460	9,287,461	(1)	-	1,237,499	-	-
621 Watershed Land				24,000,000	15,563,500	8,436,500	2,436,500	9,793,000	6,000,000	-
Land Acquisition	60081_7069	Apr-06	Jun-18	24,000,000	15,563,500	8,436,500	2,436,500	9,793,000	6,000,000	-

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623 Dam Projects				5,540,300	2,887,967	2,652,333	281,084	3,169,051	2,328,393	42,856
Dam Safety Modificat. & Repairs - Constr	60094_7194	Aug-11	Sep-12	2,054,559	1,895,806	158,753	158,753	2,054,559	-	-
Dam Safety Modificat. & Repairs Design/C	60100_7211	Sep-09	Jun-14	1,534,741	991,802	542,939	122,331	1,114,133	420,608	-
Oakdale Dam Permits	60118_7346	Jan-14	Dec-15	1,000	359	641	-	359	641	-
Oakdale Dam - Design/ESDC/RI	60119_7347	Jul-15	Dec-18	200,000	-	200,000	-	-	157,144	42,856
Oakdale Dam Removal - Construction	60120_7348	Jul-16	Dec-17	750,000	-	750,000	-	-	750,000	-
Goodnough Dike Drainage Improvements	60131_7370	Jul-14	Jul-15	1,000,000	-	1,000,000	-	-	1,000,000	-
625 Long Term Redundancy				375,434,727	1,676,530	373,758,197	1,232,348	2,908,878	52,046,567	320,479,282
Water Transmission Redundancy Plan	60035_6273	Oct-08	Sep-11	1,400,455	1,400,455	-	-	1,400,455	-	-
Wachusett Aqueduct PS Des/ESDC/RI	60090_7156	Feb-12	Apr-17	4,542,283	276,075	4,266,208	854,048	1,130,123	3,412,160	-
Wachusett Aqueduct PS Const	60091_7157	Apr-14	Oct-16	45,607,600	-	45,607,600	-	-	45,607,600	-
Sudbury Aqueduct - Design/CA/RI	60092_7159	Jul-18	Jun-26	52,496,628	-	52,496,628	-	-	-	52,496,628
Sudbury Aqueduct Slipline - Construction	60093_7160	Jul-21	Jun-24	95,966,372	-	95,966,372	-	-	-	95,966,372
MWWST/Sudbury Aqueduct Connection Const.	60107_7291	Jul-20	Jun-24	155,436,402	-	155,436,402	-	-	-	155,436,402
Sudbury Aqueduct - MEPA Review	60122_7352	Oct-12	Sep-15	3,405,107	-	3,405,107	378,300	378,300	3,026,807	-
Chestnut Hill Final Connection - Constru	60123_7353	Jul-20	Dec-22	11,079,226	-	11,079,226	-	-	-	11,079,226
Tops of Shafts Rehab - Design/CA/RI	60126_7356	Jan-22	Dec-26	1,100,376	-	1,100,376	-	-	-	1,100,376
Tops of Shafts Rehab - Construction	60127_7357	Jan-24	Dec-25	4,400,278	-	4,400,278	-	-	-	4,400,278

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Distribution And Pumping				**931,432,580**	**368,277,508**	**563,155,072**	**4,483,028**	**67,308,796**	**153,474,911**	**405,196,121**
618 Northern High NW Transmission Section 70				1,000,000	-	1,000,000	-	-	1,000,000	-
Planning	60063_6895	Jul-15	Jun-16	1,000,000	-	1,000,000	-	-	1,000,000	-
677 Valve Replacement				22,310,841	11,522,846	10,787,995	493,537	3,437,055	3,131,000	7,163,460
Construction 1	67559_5126	Nov-95	Nov-96	717,800	717,800	-	-	-	-	-
Technical Assistance	67560_5124	Oct-95	May-10	124,607	124,607	-	-	12,864	-	-
Equipment Purchase	68005_6088	Oct-95	Jun-18	4,037,670	1,111,804	2,925,866	-	324,790	2,500,000	425,866
Construction 2	68012_6105	Nov-97	Jul-99	1,356,516	1,356,516	-	-	-	-	-
Construction 3	68039_6278	Feb-00	Aug-01	1,337,571	1,337,571	-	-	-	-	-
Construction 4	68079_6345	May-02	Oct-03	1,539,911	1,539,911	-	-	-	-	-
Construction 5	68080_6346	Mar-04	Jul-05	1,389,006	1,389,006	-	-	-	-	-
Construction 6	68126_6435	May-07	Dec-08	1,571,992	1,571,992	-	-	238,765	-	-
Construction 7	68127_6436	Apr-11	Apr-13	2,858,864	2,365,327	493,537	493,537	2,858,864	-	-
Permits	68239_6859	Jan-02	May-10	2,542	2,542	-	-	1,772	-	-
Easements	68240_6860	Jan-02	May-10	5,770	5,770	-	-	-	-	-
Construction 8	68300_7195	Jan-18	Jun-20	3,070,247	-	3,070,247	-	-	307,000	2,763,247
Construction 9	68307_7236	Dec-19	Jun-21	3,070,247	-	3,070,247	-	-	-	3,070,247
Phase 8 Design/CA/RI	68330_7417	Jan-16	Jan-21	614,050	-	614,050	-	-	279,000	335,050
Phase 9 Design/CA/RI	68331_7418	Dec-17	Jun-22	614,050	-	614,050	-	-	45,000	569,050
678 Boston Low Service - Pipe & Valve Rehab	**completed project**			23,690,864	23,690,863	1			-	-
683 Heath Hill Road Pipe Replacement	**completed project**			19,358,036	19,358,036	-	-	(9,817)	-	
689 James L. Gillis Pump Station	**completed project**			33,419,006	33,419,007	(1)			-	-
692 Northern High Service - Section 27 Improve.				1,042,789	123,646	919,143	-	-	177,506	741,637
Section 27 - Construction	67769_6333	Mar-18	Nov-19	918,218	26,581	891,637	-	-	150,000	741,637
Easements	68192_6589	Apr-16	Mar-18	22,800	-	22,800	-	-	22,800	-
Technical Assistance	68211_6712	Oct-99	Mar-18	64,500	59,794	4,706	-	-	4,706	-
Surveying	68229_6809	Jun-01	Mar-17	37,271	37,271	-	-	-	-	-

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693 NHS - Revere & Malden Pipeline Improve.				48,621,925	26,832,740	21,789,185	-	2,938,022	12,603,902	9,185,284
Revere & Malden - Design/CS/RI	67780_5185	May-88	Sep-94	1,785,747	1,785,747	-	-	-	-	-
Revere Beach - Construction	67781_5186	Aug-92	Oct-94	6,314,186	6,314,186	-	-	-	-	-
Malden Section 53 - Construction	67782_5176	Apr-92	Sep-94	10,026,430	10,026,430	-	-	-	-	-
Revere Section 53 - Construction	67784_5177	Sep-08	Aug-09	2,938,022	2,938,022	-	-	2,938,022	-	-
Control Valves - Construction	67785_5191	Jun-88	Aug-89	948,780	948,780	-	-	-	-	-
DI Pipeline Cleaning & Lining - Construc	67786_5179	Jun-90	Sep-90	157,930	157,930	-	-	-	-	-
Winthrop Cleaning & Lining - Constructio	67787_5178	Jun-90	Aug-90	575,040	575,040	-	-	-	-	-
Sect 53 Connections Constr	67790_6335	Jul-16	Dec-17	6,731,902	-	6,731,902	-	-	6,731,902	-
Technical Assistance	67791_5986	Jul-06	Mar-18	246,445	246,445	-	-	-	-	-
Linden Square - Construction	67792_5238	Apr-91	Nov-91	1,849,430	1,849,430	-	-	-	-	-
Linden Square - Construction Admin.	67793_5239	Apr-91	Nov-91	125,380	125,380	-	-	-	-	-
Road Restoration - Design/CA/RI	67996_6033	Nov-94	Dec-95	77,250	77,250	-	-	-	-	-
Road Restoration - Construction	67997_6034	Jul-95	Jun-96	1,713,790	1,713,790	-	-	-	-	-
Malden Section 53 - Landscaping	68020_6113	Apr-96	Jun-96	20,000	20,000	-	-	-	-	-
Sidewalk Restoration	68033_6183	Sep-96	Oct-96	54,100	54,100	-	-	-	-	-
Revere Section 53 - Easements	68078_6334	Sep-02	Jul-09	210	210	-	-	-	-	-
Shaft 9A-D Extension - Construction	68258_6958	Mar-19	Nov-20	2,853,150	-	2,853,150	-	-	-	2,853,150
Easements	68265_6978	Jul-06	Mar-19	30,000	-	30,000	-	-	15,000	15,000
Permits	68280_7049	Apr-05	Mar-18	5,000	-	5,000	-	-	3,000	2,000
Sect 53 Connections Des CA/RI	75526_7402	Jul-14	Dec-18	1,550,384	-	1,550,384	-	-	1,400,000	150,384
Shaft 9A-D Design/CA/RI	75527_7403	Mar-17	Nov-21	618,750	-	618,750	-	-	214,000	404,750
Sections 56 Replacement/Saugus	75545_7454	Jul-15	Jul-19	10,000,000	-	10,000,000	-	-	4,240,000	5,760,000
702 New Connecting Mains - Shaft 7 to WASM 3				33,351,346	10,960,807	22,390,539	7,349	5,649,430	10,824,000	11,559,190
Routing Study	67846_5163	Aug-94	Nov-96	397,087	397,087	-	-	-	-	-
Watertown MOU	68035_6199	Jun-94	Sep-97	167,000	167,000	-	-	-	-	-
CP1- Design/CA/RI	68110_6383	Sep-98	Jul-11	3,532,814	3,532,814	-	-	42,395	-	-
Des/CA/RI DP2/4 Meter 120	68111_6384	Aug-02	Oct-08	1,277,722	1,277,722	-	-	30,720	-	-
CP3 - Final Design/CA/RI	68112_6385	Jul-16	Jun-22	1,425,172	-	1,425,172	-	-	900,000	525,172
CP1 A&B - Easements	68114_6387			16,919	16,919	-	-	-	-	-
CP3 - Easements	68115_6388	Jan-18	Dec-18	40,000	-	40,000	-	-	20,000	20,000
CP5 - Easements	68117_6390	Dec-06	Jan-11	29,000	21,659	7,341	7,341	28,701	-	-
CP3 - South Segment	68119_6392	Jul-18	Jun-21	7,355,313	-	7,355,313	-	-	4,719,000	2,636,313
CP5 - Northeast Segment	68121_6394	Aug-09	Nov-11	5,547,606	5,547,606	-	-	5,547,606	-	-
CP2- Clean&Line Sections 59&60 - Constr	68174_6548	Jan-18	Nov-19	4,942,448	-	4,942,448	8	8	1,150,000	3,792,440
CP2 -Easements	68175_6547	May-17	Nov-17	33,000	-	33,000	-	-	33,000	-
Replacement of Section 25 - Design/CA/RI	68255_6955	Apr-16	Aug-20	533,130	-	533,130	-	-	259,000	274,130
Replacement of Section 25 - Construction	68256_6956	Apr-18	Aug-19	2,665,646	-	2,665,646	-	-	500,000	2,165,646

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Section 59 & 60 - Design/CA/RI	68286_7086	Jan-16	Nov-20	988,489	-	988,489	-	-	603,000	385,489
Section 75 Extension	68315_7284	Oct-15	Oct-19	4,400,000	-	4,400,000	-	-	2,640,000	1,760,000
704 Rehab of Other Pump Stations				55,057,852	30,057,852	25,000,000	-	12,072,270	-	25,000,000
Preliminary Design	67885_5153	Aug-94	Mar-96	351,000	351,000	-	-	-	-	-
Design/CS/RI	68017_6110	May-97	Nov-04	2,545,826	2,545,826	-	-	-	-	-
Construction II & C	68072_6304	Jan-00	Feb-01	639,272	639,272	-	-	-	-	-
Rehab of 5 Pump Stations	68102_6375	Oct-06	Jun-10	21,847,856	21,847,856	-	-	10,137,081	-	-
Legal	68179_6557	Jul-99	Jan-10	6,097	6,097	-	-	3,292	-	-
Proprietary Equipment Purchases	68204_6676	Jun-99	Jan-10	157,638	157,638	-	-	-	-	-
Design 2 CS/RI	68266_6980	Dec-04	Jun-11	4,510,163	4,510,163	-	-	1,931,897	-	-
Pump Station Rehabilitation	75522_7383	Jul-19	Jun-24	25,000,000	-	25,000,000	-	-	-	25,000,000
706 NHS-Connecting Mains from Section 91	**completed project**			2,360,194	2,360,194	-			-	-
708 Northern Extra High Service - New Pipelines				7,653,106	3,632,119	4,020,987	8,500	8,500	1,197,614	2,814,874
Design/CA/RI	67970_5242	Sep-94	Jun-01	587,802	587,802	-	-	-	-	-
Appraisal &Easements	67971_6339	Sep-94	Jun-01	389	389	-	-	-	-	-
Construction	67972_6340	Aug-99	Sep-01	3,031,572	3,031,572	-	-	-	-	-
Regulatory Compliance	68010_6099	Nov-95	Oct-00	250	250	-	-	-	-	-
Sections 34 & 45 - Construction	68162_6522	Jul-17	Dec-20	3,299,895	-	3,299,895	-	-	800,000	2,499,895
Public Participation	68176_6554	Jul-99	Jan-17	5,000	-	5,000	2,500	2,500	2,500	-
Legal	68177_6555	Jul-99	Jan-17	5,000	-	5,000	500	500	4,500	-
Technical Assistance	68210_6707	Nov-10	Jan-17	54,000	7,886	46,114	5,000	5,000	41,114	-
PLC Equipment Purchases	68215_6749	Dec-99	Dec-00	4,219	4,220	(1)	-	-	-	-
Permits	68281_7050	Nov-10	Jan-17	5,000	-	5,000	500	500	4,500	-
Section 34 & 45 Design/CA/RI	75528_7404	Jul-15	Dec-20	659,979	-	659,979	-	-	345,000	314,979
712 Cathodic Protection Of Distribution Mains				1,590,815	140,913	1,449,902	-	-	724,950	724,950
Planning Phase I	68002_6058	Apr-95	Dec-97	107,680	107,680	-	-	-	-	-
Corrosion Control Program - Task 1	68129_6438	Jul-14	Jul-16	483,301	-	483,301	-	-	483,300	-
Corrosion Control Program - Task 2	68130_6439	Jul-17	Jun-19	483,301	-	483,301	-	-	241,650	241,650
Corrosion Control Program - Task 3	68131_6440	Jul-21	Jun-22	483,301	-	483,301	-	-	-	483,300
Technical Assistance	68216_6751	Jan-00	May-09	33,233	33,233	-	-	-	-	-

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713 Spot Pond Supply Mains Rehab				66,243,122	60,980,157	5,262,965	-	501,659	2,975,000	2,287,965
Sec 4 Webster Ave Bridge Pipe Rehab Des	60114_7334	Sep-13	Mar-17	500,000	-	500,000	-	-	500,000	-
Sec 4 Webster Ave Bridge Pipe Rehab Con	60115_7335	Sep-14	Mar-16	1,500,000	-	1,500,000	-	-	1,500,000	-
Section 50 Pipe Rehab - Design/ESDC/RI	60116_7336	Jul-16	Jun-20	500,000	-	500,000	-	-	250,000	250,000
Section 50 Pipe Rehab - Construction	60117_7337	Jul-18	Jun-19	1,500,000	-	1,500,000	-	-	-	1,500,000
Preliminary Design & Design/CA/RI	68038_6223	Sep-98	Oct-08	10,868,582	10,868,582	-	-	76,155	-	-
Easements & Paving - CP1	68059_6316	May-00	Mar-02	143,347	143,347	-	-	-	-	-
North (Medford/Melrose)	68060_6317	May-00	Jan-02	6,597,330	6,597,330	-	-	-	-	-
Easements - CP2	68106_6379	May-02	Jun-06	49,601	49,601	-	-	-	-	-
Easements - CP3	68107_6380	Apr-04	Nov-07	79,782	79,782	-	-	-	-	-
Middle (Medford/Somerville)	68108_6381	Jun-02	Jul-06	22,176,813	22,176,813	-	-	-	-	-
South (Cambridge/Boston)	68109_6382	Oct-04	Apr-08	17,590,133	17,590,133	-	-	326,397	-	-
Early Valve Replacement Contract	68150_6475	Sep-98	Jan-00	2,387,073	2,387,073	-	-	-	-	-
Easements - CP4	68151_6476	Sep-06	May-09	1,451	1,451	-	-	-	-	-
Early Valve Equipment Purchase	68153_6483	May-98	Nov-01	161,390	161,390	-	-	-	-	-
Construction 4 - Bridge Trusses	68209_6697	Apr-17	Dec-18	1,262,965	-	1,262,965	-	-	725,000	537,965
CA/RI - CP3	68274_7003	Sep-04	Apr-09	924,656	924,656	-	-	99,107	-	-
714 Southern Extra High - Sections 41 & 42				3,657,243	3,657,243	-			-	-
Design/CA/RI	68014_6107	Apr-97	Jan-05	770,057	770,057	-			-	-
Easements	68049_6299	Apr-97	Jun-03	46,126	46,126	-			-	-
Construction	68050_6300	Dec-00	Sep-03	2,344,612	2,344,612	-			-	-
Boston Paving	68183_6561	Sep-98	Oct-02	496,051	496,051	-			-	-
Legal	68185_6563	Jul-99	Oct-02	398	398	-			-	-
719 Chestnut Hill Connecting Mains				31,301,217	17,486,675	13,814,542	-	25,061	837,000	12,977,542
Pump Stn. Potable Connect.-Design/CA/RI	68026_6141	Mar-00	Dec-04	1,359,533	1,359,533	-	-	-	-	-
Preliminary Engineering	68051_6301	Jan-05	Apr-06	457,200	457,200	-	-	25,061	-	-
Shaft 7 Building - Design & Construct.	68052_6302	Jan-22	Jan-26	5,627,978	-	5,627,978	-	-	-	5,627,978
Easements	68053_6303	Apr-03	Dec-07	80,575	80,575	-	-	-	-	-
Emergency Pump Relocation - Const.	68155_6501	Feb-99	Mar-01	6,502,187	6,502,187	-	-	-	-	-
Emergency Pump Relocation - Design/CA/RI	68157_6503	May-98	May-01	1,120,816	1,120,816	-	-	-	-	-
Boston Paving	68180_6558	Jul-99	Dec-07	132,896	132,896	-	-	-	-	-
Legal	68182_6560	Jul-99	Jun-08	1,137	1,137	-	-	-	-	-
BECo Emergency Pump Construction	68199_6623	Sep-99	Jun-00	430,641	430,641	-	-	-	-	-
Pump Station Potable Connection - Const	68203_6651	Apr-02	Dec-03	7,132,109	7,132,109	-	-	-	-	-
Equipment Pre-purchase	68230_6814	Apr-01	Oct-01	154,337	154,337	-	-	-	-	-
Demolition of Garages	68231_6820	Feb-02	May-02	71,600	71,600	-	-	-	-	-
Utilities	68244_6869	Jun-02	Aug-02	43,644	43,644	-	-	-	-	-

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CHEPS Emerg Gen/Elec Upgr Constr	68267_6982	Jul-18	Jul-20	6,549,251	-	6,549,251	-	-	-	6,549,251
CHEPS Emerg Gen/Elec Upgr Final Des/CA	68268_6995	Jul-16	Jun-21	1,637,313	-	1,637,313	-	-	837,000	800,313
720 Warren Cottage Line Rehab				1,204,822	1,204,821	1			-	-
721 South Spine Distribution Mains				73,568,223	36,406,074	37,162,149	534,598	19,330,738	1,157,742	35,469,801
Sections 21, 43 & 22 - Design	68083_6290	Sep-00	May-13	7,776,068	6,962,546	813,522	534,598	2,394,088	278,924	-
Sections 21, 43 & 22 - Easements	68084_6291	Mar-02	May-12	106,986	106,986	-	-	32,370	-	-
Section 22 South - Construction	68085_6292	Jul-03	Jun-05	4,993,131	4,993,131	-	-	-	-	-
Section 20 & 58 - Design	68089_6296	Jun-22	Nov-27	2,865,608	-	2,865,608	-	-	-	2,865,608
Section 20 & 58 - Easements	68090_6297	Sep-20	Sep-24	35,070	-	35,070	-	-	-	35,070
Section 20 & 58 - Construction	68091_6298	Sep-24	May-26	13,485,684	-	13,485,684	-	-	-	13,485,684
Adams Street Bridge	68122_6396	Jul-98	Dec-99	153,783	153,783	-	-	-	-	-
Southern High Public Participation	68193_6601	Oct-98	May-99	15,000	15,000	-	-	-	-	-
Southern High Extension Study	68194_6602	Sep-98	May-99	242,372	242,372	-	-	-	-	-
Boston Paving	68228_6787			3,194	3,194	-	-	-	-	-
Section 22 North - Construction	68235_6844	Jan-22	Jan-24	16,458,439	-	16,458,439	-	-	-	16,458,439
Section 107 Phase 1 - Construction	68236_6845	Jul-07	Jan-09	6,184,370	6,184,362	8	-	2,182,350	-	-
Legal	68237_6846	May-04	Jun-10	5,000	1,192	3,808	-	126	3,808	-
Technical Assistance	68238_6847	Feb-04	Oct-05	28,102	28,102	-	-	-	-	-
Contract 1A - Construction	68247_6885	Nov-03	Jun-05	2,858,603	2,858,603	-	-	-	-	-
Section 107 Phase 2 - Construction	68290_7099	Jan-10	Jan-12	14,721,814	14,721,804	10	-	14,721,804	10	-
Milton Pressure Regulator Valve	68291_7104	Jun-06	Nov-06	135,000	135,000	-	-	-	-	-
Section 22 North - Design/ESDC	68298_7120	Jul-19	Jan-25	2,500,000	-	2,500,000	-	-	-	2,500,000
Section 22 North - Facility Plan/EIR	68299_7155	Jul-16	Jun-18	1,000,000	-	1,000,000	-	-	875,000	125,000
722 NIH Redundancy & Storage				84,956,047	5,331,010	79,625,037	797,739	5,494,776	42,079,126	36,748,172
Concept Plan	53454_6954	Feb-06	Aug-10	796,748	796,748	-	-	162,775	-	-
Easements	68093_6306	Jul-12	Jun-14	300,000	-	300,000	-	-	300,000	-
Section 89/29 Redundancy - Design	68252_6906	Mar-11	Jun-18	4,644,381	247,657	4,396,724	700,000	947,657	3,596,000	100,724
Purchase Mobile Pump Unit	68276_7026	Jul-09	Jan-10	290,848	290,848	-	-	290,848	-	-
Short Term Improvements - Design/CA/RI	68277_7045	Sep-09	May-15	825,171	548,720	276,451	76,225	624,945	200,226	-
Permits	68278_7047	Jan-10	Dec-18	5,000	-	5,000	-	-	5,000	-
Technical Assistance	68279_7048	Jan-10	Dec-18	18,000	-	18,000	2,000	2,000	16,000	-
Sec 89 & 29 Redundancy Const. Phase 1	68282_7066	Aug-15	Aug-18	21,316,438	-	21,316,438	-	-	17,625,000	3,691,438
Sec 89 & 29 Redundancy Const. Phase 2	68283_7067	Oct-15	Oct-18	21,692,611	-	21,692,611	-	-	16,778,000	4,914,611
NIH Storage - Construction	68284_7068	Jan-19	Jan-21	17,303,932	-	17,303,932	-	-	-	17,303,932
Section 89 & 29 Rehab - Design	68294_7116	Jul-17	Jun-23	1,461,301	-	1,461,301	-	-	285,000	1,176,301
Section 89 & 29 Rehab - Construction	68295_7117	Jul-19	Jun-22	7,304,223	-	7,304,223	-	-	-	7,304,223

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Gillis Pump Station Improvements	68309_7260	Jun-13	May-14	2,019,900	-	2,019,900	-	-	2,019,900	-
Reading/Stoneham Interconnections	68310_7261	Aug-11	Oct-12	3,466,551	3,447,037	19,514	19,514	3,466,551	-	-
NIH Storage - Design	68316_7311	Jan-17	Dec-22	3,510,943	-	3,510,943	-	-	1,254,000	2,256,943
723 Northern Low Service Rehab - Section 8				22,439,870	2,320,986	20,118,884	-	2,263,003	754,088	19,364,790
Easements	68094_6321	Jul-15	Jun-22	80,000	-	80,000	-	-	40,000	40,000
Section 8 - Construction	68095_6322	Jul-20	Jul-22	13,412,733	-	13,412,733	-	-	-	13,412,733
Rehab Sects. 37 & 46 Chelsea/EB Constr.	68262_6962	Jul-18	Jun-19	3,200,000	-	3,200,000	-	-	-	3,200,000
Permits	68263_6977	Jul-05	Jul-18	299,000	284,912	14,088	-	271,174	14,088	-
Technical Assistance	68264_6979	Jul-05	Jul-17	44,245	44,245	-	-	-	-	-
Section 97A - Construction	68275_7021	Oct-08	Oct-09	1,991,836	1,991,829	7	-	1,991,829	-	-
Section 8 - Design/CA/RI	68287_7092	Jul-17	Jul-22	2,682,547	-	2,682,547	-	-	300,000	2,382,547
Rehab Sec 37&46 Chel/BosDes/CA/RI	75529_7405	Jul-16	Jun-20	729,510	-	729,510	-	-	400,000	329,510
724 Northern High Service - Pipeline Improve.				-	-	-	-	(1,600)	-	
Design/CA/RI	68098_6336	May-11	Nov-15	-	-	-	-	(1,600)	-	
725 Hydraulic Model Update	**completed project**			598,358	598,358	-			-	-
727 SEH Redundancy & Storage				93,459,769	6,672,412	86,787,357	149,819	5,154,962	26,521,286	60,116,254
Concept Plan/Prelim. Design/Env. Review	53397_6452	Feb-07	Feb-14	840,072	534,800	305,272	149,819	272,644	155,453	-
Redundancy/Storage Ph 1 Final Des/CA/RI	53398_6453	Jan-14	Dec-19	5,663,023	-	5,663,023	-	-	4,926,000	737,023
Redundant Pipeline Sect 111 Ph 1 Constr	53399_6454	Jan-16	Dec-18	28,315,114	-	28,315,114	-	-	21,235,000	7,080,114
Redundancy/Storage Ph 2 Final Des/CA/RI	68135_6444	Jan-26	Dec-31	5,634,519	-	5,634,519	-	-	-	5,634,519
University Avenue Water Main	68136_6445	Mar-08	Nov-08	6,137,445	6,137,445	-	-	4,882,318	-	-
Sections 77 & 88 Rehab - Design	68292_7112	Mar-21	Mar-26	1,297,161	-	1,297,161	-	-	-	1,297,161
Sections 77 & 88 Rehab - Construction	68293_7113	Apr-23	Apr-25	5,188,643	-	5,188,643	-	-	-	5,188,643
Easements/Agreements	68305_7226	Aug-08	Jul-27	300,000	-	300,000	-	-	200,000	100,000
Permits/Utilities	68306_7227	Aug-08	Jul-27	5,000	167	4,833	-	-	4,833	-
Redundancy/Storage Phase 2 Construct.	68308_7245	Jan-28	Dec-30	28,172,597	-	28,172,597	-	-	-	28,172,597
Phase 3, 2nd Tank - Construction	68311_7262	Jan-33	Dec-35	9,921,831	-	9,921,831	-	-	-	9,921,831
Phase 3, 2nd Tank - Design	68312_7263	Jan-31	Dec-36	1,984,366	-	1,984,366	-	-	-	1,984,366

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730 Weston Aqueduct Supply Mains				286,417,600	64,829,663	221,587,937	505,973	4,434,777	48,742,317	172,339,646
Newton Water Mains - Construction	59774_5034	Apr-95	Oct-96	668,790	668,790	-	-	-	-	-
Technical Assistance	59776_5975	Mar-95	Oct-18	186,424	186,424	-	-	-	-	-
WASM 4 - Design/CA/RI	67865_5147	Mar-95	Sep-07	5,978,368	6,013,476	(35,108)	(35,108)	98,891	-	-
WASMs 1 & 2 - Design/CA/RI	68027_6142	Jun-97	Jul-06	5,059,988	5,066,028	(6,040)	(6,040)	(14,664)	-	-
Appraisal / Easement	68030_6174	Mar-95	Oct-18	753,000	293,352	459,648	5,000	5,954	390,000	64,648
WASM 1, 2 & 4 - Auburndale	68031_6175	Jun-97	Nov-98	4,001,461	4,001,461	-	-	-	-	-
Meter 103 - Construction	68032_6176	Oct-96	Jul-98	61,027	61,027	-	-	-	-	-
WASMs 1 & 2 - Newton	68041_6280	Mar-00	Jun-02	9,218,520	9,218,520	-	-	-	-	-
WASMs 1 & 2 - Boston	68042_6281	Feb-03	Jun-05	7,038,896	7,038,896	-	-	-	-	-
WASMs 2 & 4 - Newton	68069_6312	Apr-98	Mar-01	8,281,877	8,281,877	-	-	-	-	-
WASM 4 - Allston & Western Ave. Sewer	68070_6313	Feb-02	Dec-04	17,330,800	17,330,800	-	-	-	-	-
WASM 3 - MEPA/Design/CA/RI	68166_6539	May-13	Feb-25	32,978,856	-	32,978,856	-	-	13,702,000	19,276,856
Sect 36/WS/Waltham Conn. - Design/CA/RI	68167_6540	Jan-11	Dec-17	2,988,492	629,283	2,359,209	543,466	1,172,749	1,815,743	-
WASM 3 Waltham - CP2	68170_6543	Jul-17	Sep-19	65,469,710	-	65,469,710	-	-	10,000,000	55,469,710
WASM 3 Belmont - CP3	68171_6544	Oct-19	Dec-22	80,906,742	-	80,906,742	-	-	-	80,906,742
WASM 3 Arlington - CP4	68172_6545	Jan-23	Feb-24	16,621,690	-	16,621,690	-	-	-	16,621,690
Section 28, Arlington - CP1	68173_6546	Aug-09	Feb-11	2,303,626	2,303,626	-	-	2,303,626	-	-
Survey	68245_6870	Dec-01	Oct-18	210,000	88,681	121,319	-	-	121,319	-
Arlington Pipe Work	68269_6996	Dec-09	May-10	401,035	401,035	-	-	401,035	-	-
WASM3 Section 12 Replacement - Constr.	68272_7000	Oct-04	Sep-05	2,113,693	2,113,693	-	-	-	-	-
WASM3 Section 12 Replacement - Design	68273_7001	May-04	Aug-06	264,663	266,008	(1,345)	(1,345)	(1,345)	-	-
Section 28 - Design/CA/RI	68285_7083	Oct-06	Apr-11	866,688	866,688	-	-	468,531	-	-
Watertown Sect Rehab	68301_7222	May-13	Dec-13	2,580,900	-	2,580,900	-	-	2,580,900	-
Sect 36/W11/S 9-All Valve	68332_7448	Jul-14	Jun-16	8,537,082	-	8,537,082	-	-	8,537,082	-
Section 101 Const	68333_7457	Jan-15	Dec-16	11,595,273	-	11,595,273	-	-	11,595,273	-
731 Lynnfield Pipeline				6,072,838	3,973,945	2,098,893	1,985,513	5,446,737	113,380	-
Construction Phase 2	68187_6584	Jan-11	Dec-12	4,841,744	3,241,063	1,600,681	1,600,681	4,841,744	-	-
Easement, Legal, License & Permits	68196_6619	Jul-07	Jul-11	200,000	7,678	192,322	192,322	200,000	-	-
Design/CA/RI	68251_6905	Nov-07	Oct-13	759,093	453,203	305,890	192,510	405,830	113,380	-
Temporary Interconnect - Phase 1 Constr	68289_7096	Jun-07	Dec-07	272,001	272,001	-	-	(837)	-	-
732 Walnut St. & Fisher Hill Pipeline Rehab	**completed project**			2,717,140	2,717,141	-	-	563,223	-	-
735 Section 80 Rehabilitation				9,339,557	-	9,339,557	-	-	636,000	8,703,557
Section 80 - Construction	68249_6891	Jan-19	Dec-20	7,471,646	-	7,471,646	-	-	-	7,471,646
Section 80 - Design/CS/RI	68250_6892	Jan-17	Dec-21	1,867,911	-	1,867,911	-	-	636,000	1,231,911

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Other Waterworks				**46,379,855**	**133,687,266**	**(87,307,411)**	**9,029,427**	**27,211,936**	**16,340,586**	**(112,678,426)**
753 Central Monitoring System				16,992,423	15,803,729	1,188,694	60,000	196,784	1,128,694	-
Study	75300_5025	Mar-84	Sep-86	189,590	189,590	-	-	-	-	-
Design	75301_5026	Oct-87	Jan-92	2,651,250	2,651,250	-	-	-	-	-
Equipment Prepurchase	75302_5027	Oct-87	Dec-93	2,161,920	2,161,920	-	-	-	-	-
SCADA Implementation	75303_5028	Aug-96	Mar-12	2,101,110	1,912,416	188,694	60,000	196,784	128,694	-
Communications Structures	75304_5160	Nov-92	May-93	161,290	161,290	-	-	-	-	-
Construction & Start-up Services	75305_5173	Jul-92	Aug-98	352,040	352,040	-	-	-	-	-
Construction 1	75306_5171	Nov-97	Nov-98	208,950	208,950	-	-	-	-	-
Operations Center - Construction	75308_5849	Sep-92	Jun-94	1,498,980	1,498,980	-	-	-	-	-
Technical Assistance	75309_5987	Jul-92	Dec-97	385,601	385,601	-	-	-	-	-
Microwave Equipment	75474_6125	Mar-96	Dec-01	781,987	781,987	-	-	-	-	-
Microwave Comm System-Wide Backbone	75488_6653	Sep-01	Jun-02	1,694,018	1,694,018	-	-	-	-	-
Monitoring & Control - Study & Design	75489_6654	Dec-99	Sep-04	1,807,784	1,807,784	-	-	-	-	-
Microwave Communic for Waterworks Fac.	75494_6816	Sep-02	Jul-04	1,957,399	1,957,399	-	-	-	-	-
Ludlow Communications	75495_6825	Sep-01	Oct-01	40,504	40,504	-	-	-	-	-
Winsor Dam High Line Replacement	75512_7338	Jan-14	Jun-14	1,000,000	-	1,000,000	-	-	1,000,000	-
763 Distribution Systems Facilities Mapping				1,798,919	1,036,368	762,551	-	-	762,551	-
Planning and Design	75458_5162	Feb-95	Dec-98	936,368	936,368	-	-	-	-	-
Data Purchase	75476_6152	Nov-95	Aug-96	100,000	100,000	-	-	-	-	-
Records Development	75484_6525	Jul-15	Dec-17	762,551	-	762,551	-	-	762,551	-
764 Local Water Infrastructure Rehab	**completed project**			7,487,762	7,487,762	-			-	-
765 Local Water Pipeline Assistance Program				-	108,821,204	(108,821,204)	8,969,427	26,714,499	2,927,341	(120,717,974)
Community Loans	75485_6608	Aug-00	Jun-13	220,000,000	204,074,290	15,925,710	15,925,710	79,920,748	-	-
Community Repayment	75493_6759	Aug-01	Jun-23	(220,000,000)	(116,238,913)	(103,761,087)	(17,098,858)	(84,334,652)	(62,689,515)	(23,972,715)
Local Water System Assistance Loans	75513_7339	Aug-10	Jun-20	200,000,000	20,665,458	179,334,542	11,267,619	31,933,077	97,000,000	71,066,923
Local Water System Assistance Repayment	75514_7340	Aug-11	Jun-30	(200,000,000)	(614,630)	(199,385,370)	(2,066,544)	(2,681,174)	(34,863,500)	(162,455,326)
CVA Loans	75515_7350	Nov-10	Jun-20	10,000,000	935,000	9,065,000	1,150,000	2,085,000	5,653,570	2,261,430
CVA Repayments	75516_7351	Nov-11	Jun-30	(10,000,000)	-	(10,000,000)	(208,500)	(208,500)	(2,173,214)	(7,618,286)

Massachusetts Water Resources Authority
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Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY12	Remaining Balance	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
766 Waterworks Facility Asset Protection				20,100,751	538,203	19,562,548	-	300,653	11,522,000	8,040,548
Meter Vault Manhole Retrofits	75490_6689	Sep-15	Jun-18	1,928,643	-	1,928,643	-	-	1,757,000	171,643
Walnut Hill Tank - Design	75497_6832	Jul-15	Jul-19	300,000	-	300,000	-	-	206,000	94,000
Walnut Hill Tank - Construction	75498_6833	Jan-17	Jul-18	1,000,000	-	1,000,000	-	-	790,000	210,000
Waltham Bridge Pipe Replacement	75501_6910	Mar-04	Sep-04	237,550	237,550	-	-	-	-	-
Permits and Legal Fees	75502_6920	Mar-04	Jun-18	16,340	1,340	15,000	-	1,340	15,000	-
Cosgrove Valve Replacement - Constr	75509_7064	Jul-19	Dec-19	1,716,915	-	1,716,915	-	-	-	1,716,915
Cosgrove Valve Replacement - Design	75510_7065	Jul-18	Dec-20	201,990	-	201,990	-	-	-	201,990
Transformer at Cosgrove Intake Building	75511_7228	Jun-11	Jul-12	299,313	299,313	-	-	299,313	-	-
Shaft 9 Rehab	75520_7381	Jul-15	Jul-18	2,000,000	-	2,000,000	-	-	1,770,000	230,000
Elevated Water Storage Tank Repainting	75523_7384	Jul-15	Jul-18	5,000,000	-	5,000,000	-	-	4,584,000	416,000
Covered Storage Tank Rehab	75524_7385	Jul-19	Jul-23	5,000,000	-	5,000,000	-	-	-	5,000,000
Electrical Distr Upgr Southboro	75535_7425	Jul-15	Jun-16	400,000	-	400,000	-	-	400,000	-
Water Meter Upgrade Repl	75536_7453	Jun-15	Jun-17	1,000,000	-	1,000,000	-	-	1,000,000	-
Beacon ST Line Repair	75537_7458	Jul-14	Jun-15	1,000,000	-	1,000,000	-	-	1,000,000	-
Business & Operations Support				**122,447,936**	**72,233,931**	**50,214,005**	**4,329,665**	**33,631,880**	**41,894,574**	**3,989,765**
881 Equipment Purchase				18,482,592	10,108,351	8,374,241	1,355,320	6,206,564	7,018,921	-
TV Inspection Truck	92367_6732	Jul-00	Mar-01	-	-	-	-	(174,977)	-	-
Security Equipment & Installation	92374_6760	Jan-01	Jun-15	7,775,375	6,001,444	1,773,931	479,011	3,433,535	1,294,921	-
ICP-MS Lab Testing Equipment	92379_6808	Oct-08	Dec-08	117,432	117,432	-	-	-	-	-
Back Hoe	92381_6866	Apr-03	Jun-04	-	-	-	-	(129,921)	-	-
Vactor Truck	92382_6867	Apr-03	Jun-03	-	-	-	-	(219,890)	-	-
Water Service Truck	92383_6907	Apr-04	Jun-04	-	-	-	-	(114,357)	-	-
Bucket Machine	92384_6944	Oct-04	Dec-04	-	-	-	-	(136,936)	-	-
Excavator	92385_6945	Apr-07	Jun-07	-	-	-	-	(232,699)	-	-
Grove Crane	92386_6946	May-05	Aug-05	-	-	-	-	(310,800)	-	-
Land Fill Loader	92388_6981	May-05	Aug-05	-	-	-	-	(112,682)	-	-
PowerSweeper/Catch Basin	92392_6986	Apr-04	Jun-04	-	-	-	-	(154,958)	-	-
Back Hoe	92394_6990	Jan-08	Mar-08	-	-	-	-	(96,900)	-	-
Closed-Circuit TV Inspection Truck	92395_7027			-	-	-	-	-	-	-
Front-End Loader	92396_7028	Jul-05	Mar-06	-	-	-	-	(110,258)	-	-
Dump Truck	92397_7029	Apr-09	Jun-09	-	-	-	-	-	-	-
Dump Truck	92398_7030	Jan-09	Mar-09	-	-	-	-	-	-	-
Crane	92400_7074	Apr-06	Jun-06	-	-	-	-	(298,378)	-	-
Future Vehicle Purchases	92409_7232			-	-	-	-	-	-	-
High Lift Fork Loader (Lull)	92411_7239	Oct-10	Dec-10	121,449	121,449	-	-	121,449	-	-
Ford Ramp Truck	92416_7246	Apr-10	Jun-10	121,572	121,572	-	-	121,572	-	-

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Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY12	Remaining Balance	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
Street Sweeper	92417_7247	Jul-09	Sep-09	181,673	181,673	-	-	181,673	-	-
International Tractor Trailer	98449_7301	Jan-09	Mar-09	-	-	-	-	-	-	-
Prior Vehicle Purchases	98454_7306	Jul-00	Jun-10	2,415,190	2,415,190	-	-	2,415,190	-	-
FY11-13 Vehicle Purchases	98455_7307	Jul-09	Jun-13	1,904,680	1,028,371	876,309	876,309	1,904,680	-	-
FY14-18 Vehicle Purchases	98456_7308	Jul-13	Jun-18	4,724,000	-	4,724,000	-	-	4,724,000	-
FY09-13 Major Lab Instrumentation	98457_7309	Mar-15	Mar-18	1,000,000	-	1,000,000	-	-	1,000,000	-
FY14-18 Major lab Instrumentation	98458_7310			-	-	-	-	-	-	-
Front-End Loader	98467_7325	Oct-10	Dec-10	121,221	121,221	-	-	121,221	-	-
925 Technical Assistance				1,200,000	-	1,200,000	-	-	1,200,000	-
Land Appraisal	77000_LAND			150,000	-	150,000	-	-	150,000	-
Surveying	80000_SURV			150,000	-	150,000	-	-	150,000	-
Hazardous Material	90000_HAZM			900,000	-	900,000	-	-	900,000	-
930 MWRA Facility - Chelsea	**completed project**			9,813,633	9,813,633	-	-	(73,272)	-	
931 Business Systems Plan				24,475,309	24,288,747	186,562	174,521	2,455,188	12,038	-
Network - Phase I	92322_6015	Jul-94	Dec-96	141,610	141,610	-	-	-	-	-
Phase I (FY95-97)	92338_6014	Jul-94	Mar-03	1,146,321	1,146,321	-	-	-	-	-
Hardware - Phase I	92339_6013	Jul-94	Dec-96	440,770	440,770	-	-	-	-	-
Phase II (FY97-10)	92343_6177	Jul-96	Oct-13	4,174,368	4,109,701	64,667	52,629	911,469	12,038	-
Phase III (FY99-01)	92347_6362	Dec-97	Jun-04	10,746,841	10,746,841	-	-	(1,624)	-	-
Phase IV / Year 2000 Improvements	92352_6508	Jul-98	Jan-00	3,018,373	3,018,373	-	-	(19,600)	-	-
Phase V (FY01-10)	92353_6509	Jul-01	Oct-14	2,126,835	2,018,854	107,981	107,981	1,163,041	-	-
Phase VI (FY04-09)	92380_6865	Jan-03	Jun-11	2,036,689	2,036,689	-	-	(241,597)	-	-
GIS/TV Inspection	92419_7250	Apr-09	Jun-10	80,644	68,893	11,751	11,751	80,644	-	-
MIS Licensing	92423_7254	Jul-08	Mar-10	14,060	14,060	-	-	14,060	-	-
Lawson Conversion	92424_7255	Jun-08	Jun-11	188,887	186,727	2,160	2,160	188,887	-	-
Cyber Security	92425_7256	Apr-09	Sep-11	104,862	104,862	-	-	104,862	-	-
Original SAN	92426_7257	Jul-09	Jun-11	255,049	255,046	3	-	255,046	-	-

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Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY12	Remaining Balance	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
932 Environmental Remediation				1,478,802	1,478,802	-	-	10,602	-	
Technical Assistance/Envir. Remediation	92369_6745	Feb-99	Jun-07	543,255	543,255	-			-	-
Prison Point Tank Removal - Construct.	92370_6746	Feb-99	Oct-10	452,523	452,523	-			-	-
Cottage Farm Tank Replacement - Const.	92371_6747	Jun-02	Dec-02	427,749	427,749	-			-	-
Oakdale Power Station	92376_6805	Sep-03	Dec-04	47,066	47,066	-			-	-
Cosgrove Power Station	92377_6806	Jun-02	Aug-02	8,209	8,209	-			-	-
933 Capital Maintenance Planning & Development				15,700,745	8,269,656	7,431,089	1,785,183	6,335,459	5,645,907	-
Inventory & Evaluation - 1 & 2	19175_6421	Apr-00	Jul-05	2,579,434	2,579,434	-	-	-	-	-
As-Needed Design Contract 1	92387_6976	Mar-05	Sep-07	313,302	313,302	-	-	(1,122)	-	-
As Needed Design Contract 2	92393_6988	Mar-05	Sep-07	317,539	317,539	-	-	-	-	-
As-Needed Design Contract 5	92399_7070	Sep-08	Mar-11	558,111	558,111	-	-	558,111	-	-
As-Needed Design Contract 3	92402_7101	Aug-07	Feb-10	578,622	578,623	(1)	-	259,017	-	-
As-Needed Design Contract 4	92403_7102	Aug-07	Aug-09	247,384	343,744	(96,360)	(96,360)	59,007	-	-
As-Needed Design Contract 6	92413_7242	Aug-08	Aug-10	704,220	704,220	-	-	704,220	-	-
As-Needed Design Contract 7	92414_7243	Jan-10	Jul-12	1,016,481	953,056	63,425	63,425	1,016,481	-	-
As-Needed Design Contract 8	92415_7244	Feb-10	Jun-13	1,043,596	950,686	92,910	69,672	1,020,358	23,238	-
As-Needed Design Contract 9	98470_7390	Jul-11	Jan-14	1,729,668	562,455	1,167,213	807,998	1,370,453	359,215	-
As-Needed Design Contract 10	98471_7391	Aug-11	Feb-14	1,812,388	408,486	1,403,902	940,448	1,348,934	463,454	-
As-Needed Design Contract 11	98473_7436	Aug-13	Aug-16	1,600,000	-	1,600,000	-	-	1,600,000	-
As-Needed Design Contract 12	98474_7437	Aug-13	Aug-16	1,600,000	-	1,600,000	-	-	1,600,000	-
As-Needed Design Contract 13	98485_7456	Aug-13	Aug-16	1,600,000	-	1,600,000	-	-	1,600,000	-
934 MWRA Facilities Management & Planning				2,150,535	370,533	1,780,002	-	370,533	1,780,002	-
Design/Engineering Services	92389_6983	Jul-15	Sep-16	150,000	(2)	150,002	-	(2)	150,002	-
Facilities Construction	92390_6984	Sep-16	Sep-17	2,000,535	370,535	1,630,000	-	370,535	1,630,000	-
935 Alternative Energy Initiatives				28,230,370	16,985,111	11,245,259	628,381	17,021,449	6,965,278	3,651,600
Deer Island Solar	19285_6974	Sep-07	May-08	903,714	903,714	-	-	311,671	-	-
DI Wind	92428_6974C	Nov-08	Apr-10	4,863,294	4,063,294	800,000	400,000	4,463,294	400,000	-
Future DI Wind Constr (Battery D Locat)	92430_7270	Jul-15	Sep-20	4,614,600	-	4,614,600	-	-	963,000	3,651,600
Loring Road Hydro - Design	92432_6974E	Mar-08	Sep-09	2,344	2,344	-	-	2,344	-	-
Technical Assistance - Solar	92439_7274	May-09	May-13	385,000	138,950	246,050	1,200	140,150	244,850	-
Energy Advisory Consultant Services	92440_6974B	Jun-08	Jun-09	58,780	45,632	13,148	-	45,632	13,148	-
Wind Power Feasibility Study	92441_OP67	Mar-07	Jun-10	346,426	346,426	-	-	346,426	-	-
DI Photovoltaic System Phase 1 - Const.	92442_7292	Sep-09	Mar-10	1,119,000	1,119,000	-	-	1,119,000	-	-
Technical Assistance-Energy Efficiency	92443_7274A	May-09	May-13	500,000	146,142	353,858	119,885	266,027	233,973	-
Technical Assistance - Solar II	92444_7274B	May-09	May-13	380,000	331,251	48,749	26,154	357,405	22,595	-
Tech Assistance - Emerging Technology	92445_7274C	May-09	May-13	200,000	35,379	164,621	8,245	43,624	156,376	-

Massachusetts Water Resources Authority
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Program / Project	Contract No.	Notice to Proceed	Substantial Completion	Total Contract Amount	Payments through FY12	Remaining Balance	FY13	FY09 - FY13	FY14 - FY18	Beyond FY18
Technical Assistance - Wind	92446_7274D	May-09	May-13	750,000	427,457	322,543	115,688	543,145	206,855	-
Wachusett Hydro - Design & Construction	98448_7300	Jul-15	Dec-16	1,446,288	-	1,446,288	-	-	1,446,288	-
Charlestown Wind - Construction	98450_7302	Feb-10	Oct-11	5,180,669	5,080,507	100,162	(45,111)	5,035,396	145,273	-
John J. Carroll WTP Solar-Construction	98452_7304	Jan-10	Aug-11	2,428,037	2,428,037	-	-	2,428,037	-	-
Loring Road Hydro - Construction	98459_6974F	Jan-10	May-11	1,882,218	1,882,218	-	-	1,882,218	-	-
DI Wind Phase II Construction	98463_7321	Jul-15	Sep-16	2,500,000	34,760	2,465,240	2,320	37,080	2,462,920	-
Fish Hatch Pipeline Hydro	98465_7323	Feb-15	Aug-16	670,000	-	670,000	-	-	670,000	-
940 Application Improvement Program				9,150,000	-	9,150,000	5,000	5,000	8,985,910	159,090
GIS Applications & Integration	92420_7251	Dec-13	Jun-17	350,000	-	350,000	-	-	350,000	-
Lawson Enhancements	92435_7286	Oct-15	Jun-18	1,750,000	-	1,750,000	-	-	1,590,910	159,090
Maximo Upgrade	92436_7287	Jul-13	Nov-17	1,750,000	-	1,750,000	-	-	1,750,000	-
PIMS Enhancements	92437_7288	Dec-13	Jun-17	400,000	-	400,000	-	-	400,000	-
Enterprise Performance mgmt Enhancements	92469_7386	Jan-16	Jun-17	200,000	-	200,000	-	-	200,000	-
Enterprise Content Mgmt	98475_7438	Apr-14	Jun-17	4,000,000	-	4,000,000	-	-	4,000,000	-
Mobile Integrations	98476_7439	Sep-13	Jun-16	150,000	-	150,000	-	-	150,000	-
LIMS Enhancement	98484_7447	Mar-13	Jun-17	550,000	-	550,000	5,000	5,000	545,000	-
942 Information Security Program				1,292,950	357,641	935,309	143,773	501,414	791,536	-
IT Security Infrastructure/Equipment	92434_7285	Sep-11	Jun-14	647,000	357,641	289,359	143,773	501,414	145,586	-
Electronic Sec Impl	98477_7440	Jun-14	Jun-16	400,000	-	400,000	-	-	400,000	-
IT Security Program (ISP) Development	98483_7446	May-13	Jun-14	245,950	-	245,950	-	-	245,950	-
944 Information Technology Management Program				1,493,000	-	1,493,000	-	-	1,493,000	-
Implement IT Governance	92412_7240	Jan-14	Jun-15	100,000	-	100,000	-	-	100,000	-
Service Delivery & Best Practices	92421_7252	Jul-13	Dec-16	370,000	-	370,000	-	-	370,000	-
Reorganize MIS Department	92422_7253	Jul-13	Jun-17	150,000	-	150,000	-	-	150,000	-
Manage Implementation Program	98472_7408	Jan-14	Jun-17	511,000	-	511,000	-	-	511,000	-
Implementation Approach	98478_7441	Jan-14	Jun-17	362,000	-	362,000	-	-	362,000	-
Change Mgmt	98479_7442	Jan-14	Jun-17	-	-	-	-	-	-	-
946 IT Infrastructure Program				8,980,000	561,456	8,418,544	237,487	798,943	8,001,982	179,075
IT System Architecture	92404_7200	Sep-12	Jun-17	750,000	-	750,000	-	-	750,000	-
Net 2020/Net 2020 DITP/Southborough	92405_7201	Mar-11	Jun-17	2,500,000	561,456	1,938,544	49,034	610,490	1,889,510	-
Storage Upgrades	92406_7203	Jul-13	Jun-18	870,000	-	870,000	79,925	79,925	746,500	43,575
Backup Upgrades	92407_7204	Jul-13	Sep-18	619,000	-	619,000	-	-	588,050	30,950
Server Management	92408_7205	Jul-13	Jun-18	500,000	-	500,000	100,522	100,522	399,478	-
Enterprise Applic Integr	98480_7443	Jul-13	Dec-18	2,091,000	-	2,091,000	-	-	1,986,450	104,550
E-Mail Upgrades	98481_7444	Jul-15	Jun-17	150,000	-	150,000	8,006	8,006	141,994	-
Enterprise Data Mgmt	98482_7445	Jan-14	Jun-17	1,500,000	-	1,500,000	-	-	1,500,000	-

APPENDIX 3

New Capital Projects Added During the FY14 CIP

APPENDIX 3
New Capital Projects Added to the FY14 CIP

Program	Project	Subphase	Total Contract Amount	FY09-13	FY14-18	Beyond FY18	Total Expenditures
Treatment	DITP Asset Protection	Sodium Bisulfite Tanks Rehabilitation	$2,543,075	$0	$2,543,075		$2,543,075
	Clinton Wastewater Treatment Plant	Clinton Roofing Rehabilitation	$508,615	$0	$508,615		$508,615
	Clinton Wastewater Treatment Plant	Clinton Facilities Rehabilitation	$4,068,920	$0	$474,707	$3,594,213	$4,068,920
Distribution and Pumping	NHS Revere & Malden Pipeline	Section 56 Replacement/Saugus	$10,000,000	$0	$4,240,000	$5,760,000	$10,000,000
Drinking Water Quality Improvements	Carroll Water Treatment Plant	CWTP - Asset Protection	$500,000	$0	$500,000		$500,000
Other Waterworks	Waterworks Asset Protection	Water Meter Upgrade Replacement	$1,000,000	$0	$1,000,000		$1,000,000
	Waterworks Asset Protection	Beacon Street Line Repair	$1,000,000	$0	$1,000,000		$1,000,000
SUMMARY:							
Total Wastewater Projects			**$7,120,610**	**$0**	**$3,526,397**	**$3,594,213**	**$7,120,610**
Total Waterworks Projects			**$12,500,000**	**$0**	**$6,740,000**	**$5,760,000**	**$12,500,000**
Total Projects			**$19,620,610**	**$0**	**$10,266,397**	**$9,354,213**	**$19,620,610**

APPENDIX 4

Overview of the FY14 Final CIP and Changes from the FY13 Final CIP

APPENDIX 4
Overview of the FY14 Final CIP and Changes from the FY13 Final CIP

	FY13 Final				FY14 Final				Change from FY13 Final			
Program and Project	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**
Total MWRA	**5,524,898**	**838,131**	**997,267**	**826,508**	**5,628,539**	**826,390**	**717,958**	**1,221,201**	**103,643**	**(11,740)**	**(279,309)**	**394,693**
Wastewater	**2,645,510**	**517,300**	**533,950**	**376,591**	**2,685,135**	**524,016**	**368,930**	**574,520**	**39,626**	**6,715**	**(165,020)**	**197,931**
Interception & Pumping	**822,656**	**37,484**	**156,752**	**140,253**	**846,541**	**32,750**	**118,371**	**207,255**	**23,886**	**(4,734)**	**(38,381)**	**67,002**
102 Quincy Pump Facilities	25,908	-	-	-	25,907	-	-	-	-	-	-	-
104 Braintree-Weymouth Relief Facilities	233,735	14,203	4,499	-	233,869	13,033	1,364	4,441	134	(1,170)	(3,135)	4,441
105 New Neponset Valley Relief Sewer	30,300	-	-	-	30,300	-	-	-	-	-	-	-
106 Wellesley Extention Replacement Sewer	64,359	-	-	-	64,359	-	-	-	-	-	-	-
107 Framingham Extension Relief Sewer	47,856	-	-	-	47,856	-	-	-	-	-	-	-
127 Cummingsville Replacement Sewer	8,999	43	-	-	8,999	43	-	-	-	-	-	-
130 Siphon Structure Rehabilitation	2,671	30	1,702	-	5,603	-	4,581	82	2,932	(30)	2,879	82
131 Upper Neponset Valley Sewer	54,942	1,792	-	-	54,174	1,024	-	-	(768)	(768)	-	-
132 Corrosion & Odor Control	16,140	-	5,706	7,431	16,260	-	1,000	12,259	120	-	(4,706)	4,828
134 Ashland Extension Sewer	-	-	-	-	-	-	-	-	-	-	-	-
135 System Master Plan Interceptors	-	-	-	-	-	-	-	-	-	-	-	-
136 West Roxbury Tunnel	11,309	1,429	-	1,000	11,314	1,434	-	1,000	5	5	-	-
137 Wastewater Central Monitoring	20,839	6,241	650	-	20,482	5,834	700	-	(357)	(407)	50	-
139 South System Relief Project	4,939	-	188	1,313	4,939	-	-	1,501	-	-	(188)	188
140 Neponset Valley Relief Sewer	-	-	-	-	-	-	-	-	-	-	-	-
141 Wastewater Process Optimization	10,300	558	5,686	3,125	10,328	313	2,542	6,543	28	(245)	(3,144)	3,418
142 Wastewater Meter System-Equipment	26,578	210	8,586	12,691	26,438	49	5,531	15,767	(140)	(161)	(3,055)	3,076
143 Regional I/I Management Planning	169	-	-	-	169	-	-	-	-	-	-	-
145 Facility Asset Protection	257,863	12,977	124,609	114,068	279,794	11,019	102,653	159,912	21,931	(1,958)	(21,956)	45,844
146 D.I. Cross Harbor Tunnel Inspection	5,000	-	4,375	625	5,000	-	-	5,000	-	-	(4,375)	4,375
147 Randolph Trunk Sewer Relief	750	-	750	-	750	-	-	750	-	-	(750)	750
Treatment	**626,107**	**156,257**	**270,123**	**147,933**	**659,597**	**136,637**	**199,138**	**272,029**	**33,490**	**(19,620)**	**(70,985)**	**124,096**
200 DI Plant Optimization	33,456	296	-	-	33,456	296	-	-	-	-	-	-
206 DI Treatment Plant Asset Protection	580,900	151,601	264,005	147,933	606,848	132,668	188,385	268,434	25,948	(18,933)	(75,620)	120,501
210 Clinton Wastewater Treat Plant	9,538	3,075	6,118	-	17,059	2,367	10,753	3,595	7,521	(708)	4,635	3,595
211 Laboratory Services	2,214	1,285	-	-	2,235	1,306	-	-	21	21	-	-
Residuals	**211,741**	**941**	**54,337**	**92,652**	**168,020**	**752**	**1,549**	**101,909**	**(43,720)**	**(189)**	**(52,788)**	**9,257**
261 Residuals	63,811	-	-	-	63,811	-	-	-	-	-	-	-
271 Residuals Asset Protection	147,930	941	54,337	92,652	104,209	752	1,549	101,909	(43,721)	(189)	(52,788)	9,257

APPENDIX 4
Overview of the FY14 Final CIP and Changes from the FY13 Final CIP

	FY13 Final				FY14 Final				Change from FY13 Final			
Program and Project	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**
CSO	**862,140**	**308,740**	**31,173**	**9**	**888,111**	**316,492**	**48,066**	**1,334**	**25,971**	**7,751**	**16,893**	**1,325**
340 Dorchester Bay Sewer Separation (Fox Point)	54,187	390	35	-	54,169	390	16	-	(18)	-	(19)	-
341 Dorchester Bay Sewer Separation (Commercial Point)	64,725	6,472	3,363	-	64,776	6,257	3,628	-	51	(215)	265	-
342 Neponset River Sewer Separation	2,444	-	-	-	2,444	-	-	-	-	-	-	-
343 Constitution Beach Sewer Separation	3,769	-	-	-	3,769	-	-	-	-	-	-	-
344 Stony Brook Sewer Separation	44,333	(856)	134	-	44,333	(721)	-	-	-	135	(134)	-
346 Cambridge Sewer Separation	56,791	29,208	9,131	-	85,834	32,034	35,349	-	29,043	2,826	26,218	-
351 BWSC Floatables Controls	933	-	-	-	933	-	-	-	-	-	-	-
352 Cambridge Floatables Control	1,087	164	-	-	1,087	165	-	-	-	-	-	-
356 Fort Point Channel Sewer Separation	12,007	3,715	-	-	12,007	3,716	-	-	-	-	-	-
358 Morrissey Boulevard Drain	32,905	18,009	220	-	32,815	17,671	468	-	(90)	(338)	248	-
359 Reserved Channel Sewer Separation	64,330	50,776	10,837	-	64,809	57,323	4,769	-	479	6,547	(6,068)	-
360 Brookline Sewer Separation	25,998	24,726	-	-	25,977	24,726	(20)	-	(21)	-	(20)	-
361 Bulfinch Triangle Sewer Separation	9,986	9,489	-	-	9,944	9,360	86	-	(42)	(129)	86	-
339 North Dorchester Bay	226,562	83,997	3,523	-	223,060	82,897	807	313	(3,502)	(1,100)	(2,716)	313
347 East Boston Branch Sewer Relief	85,706	75,000	-	-	85,874	75,168	-	-	168	168	-	-
348 BOS019 Storage Conduit	14,288	(44)	-	-	14,288	(44)	-	-	-	-	-	-
349 Chelsea Trunk Sewer	29,779	-	-	-	29,779	-	-	-	-	-	-	-
350 Union Park Detention Treatment Facility	49,583	(227)	-	-	49,583	(227)	-	-	-	-	-	-
353 Upgrade Existing CSO Facilities	22,385	-	-	-	22,385	-	-	-	-	-	-	-
354 Hydraulic Relief Projects	2,295	-	-	-	2,295	-	-	-	-	-	-	-
355 MWR003 Gate & Siphon	4,098	838	3,260	-	4,005	727	3,278	-	(93)	(111)	18	-
357 Charles River CSO Controls	3,633	2,532	-	-	3,633	2,532	-	-	-	-	-	-
324 CSO Support	50,316	4,549	670	9	50,315	4,520	(315)	1,021	(1)	(29)	(985)	1,012
Other Wastewater	**122,866**	**13,878**	**21,564**	**(4,256)**	**122,866**	**37,385**	**1,806**	**(8,005)**	**-**	**23,507**	**(19,759)**	**(3,749)**
128 I/I Local Financial Assistance	122,585	13,878	21,564	(4,256)	122,585	37,385	1,806	(8,005)	-	23,507	(19,758)	(3,749)
138 Sewerage System Mapping Upgrade	281	-	-	-	281	-	-	-	-	-	-	-
Total Waterworks	**2,769,093**	**279,095**	**437,691**	**449,916**	**2,820,956**	**268,742**	**307,134**	**642,692**	**51,863**	**(10,352)**	**(130,557)**	**192,773**
Drinking Water Quality	**654,097**	**99,436**	**46,111**	**-**	**657,172**	**91,232**	**57,311**	**79**	**3,076**	**(8,204)**	**11,201**	**79**
542 Carroll Water Treatment Plant	430,036	41,292	16,031	-	433,253	39,435	21,026	79	3,217	(1,857)	4,995	79
543 Quabbin Water Treatment Plant	17,667	3,353	4,170	-	17,393	2,214	5,035	-	(274)	(1,139)	865	-
544 Norumbega Covered Storage	106,674	102	-	-	106,674	102	-	-	-	-	-	-
545 Blue Hills Covered Storage	40,687	21,361	436	-	40,704	21,215	600	-	17	(146)	164	-
550 Spot Pond Storage Facility	59,032	33,325	25,474	-	59,149	28,266	30,650	-	117	(5,059)	5,176	-

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	FY13 Final				FY14 Final				Change from FY13 Final			
Program and Project	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**
Transmission	**1,157,005**	**84,688**	**151,538**	**247,894**	**1,185,972**	**82,990**	**80,007**	**350,090**	**28,966**	**(1,697)**	**(71,532)**	**102,196**
597 Winsor Station Pipeline	26,427	2,075	24,314	-	27,256	1,433	5,007	20,778	829	(642)	(19,307)	20,778
601 Sluice Gate Rehabilitation	9,158	-	-	-	9,158	-	-	-	-	-	-	-
604 MetroWest Tunnel	709,477	59,063	15,513	1,100	708,786	61,628	7,697	5,660	(691)	2,565	(7,816)	4,560
615 Chicopee Valley Aqueduct Redundancy	8,667	95	-	-	8,666	95	-	-	(1)	-	-	-
616 Quabbin Transmission System	13,526	2,903	3,718	2,480	13,516	2,701	3,261	3,130	(10)	(202)	(457)	650
617 Sudbury/Weston Aqueduct Repairs	4,308	25	3,648	-	4,327	25	3,667	-	19	-	19	-
620 Wachusett Reservior Spillway Improvement	9,287	1,238	-	-	9,287	1,237	-	-	-	-	-	-
621 Watershed Land	19,000	10,794	-	-	24,000	9,793	6,000	-	5,000	(1,001)	6,000	-
622 Cosgrove/Wachusett Redundancy	-	-	-	-	-	-	-	-	-	-	-	-
623 Dam Projects	5,651	3,427	2,224	-	5,540	3,169	2,328	43	(111)	(258)	104	43
625 Long Term Redundancy	351,504	5,069	102,119	244,314	375,435	2,909	52,047	320,479	23,931	(2,160)	(50,072)	76,165
Distribution & Pumping	**914,533**	**73,606**	**204,704**	**330,770**	**931,433**	**67,309**	**153,475**	**405,200**	**16,900**	**(6,297)**	**(51,229)**	**74,430**
618 Northern High NW Tran Sections 70 & 71	1,000	-	1,000	-	1,000	-	1,000	-	-	-	-	-
677 Valve Replacement	22,392	4,092	4,511	5,209	22,311	3,437	3,131	7,163	(81)	(655)	(1,380)	1,954
678 Boston Low Service-Pipe & Valve Rehabilitation	23,691	-	-	-	23,691	-	-	-	-	-	-	-
683 Heath Hill Road Pipe Replacement	19,358	(10)	-	-	19,358	(10)	-	-	-	-	-	-
689 James L. Gillis Pump Station Rehabilitation	33,419	-	-	-	33,419	-	-	-	-	-	-	-
692 NHS - Section 27 Improvements	3,475	-	778	2,574	1,043	-	178	742	(2,432)	-	(600)	(1,832)
693 NHS - Revere & Malden Pipeline Improvement	37,276	2,938	4,494	5,950	48,622	2,938	12,604	9,185	11,346	-	8,110	3,235
702 New Connect Mains-Shaft 7 to WASM 3	32,763	5,680	10,664	11,101	33,351	5,649	10,824	11,559	588	(31)	160	458
704 Rehabilitation of Other Pump Stations	55,058	12,072	-	25,000	55,058	12,072	-	25,000	-	-	-	-
706 NHS-Connecting Mains from Section 91	2,360	-	-	-	2,360	-	-	-	-	-	-	-
708 Northern Extra High Service New Pipelines	7,479	13	2,908	925	7,653	9	1,198	2,815	174	(4)	(1,710)	1,890
712 Cathodic Protection Of Distrubution Mains	1,527	-	-	1,386	1,591	-	725	725	64	-	725	(661)
713 Spot Pond Supply Mains Rehabilitation	66,187	502	4,725	482	66,243	502	2,975	2,288	56	-	(1,750)	1,806
714 Southern Extra High Sections 41 & 42	3,657	-	-	-	3,657	-	-	-	-	-	-	-
719 Chestnut Hill Connecting Mains	30,041	25	6,315	6,239	31,301	25	837	12,977	1,260	-	(5,478)	6,738
720 Warren Cottage Line Rehabilitation	1,205	-	-	-	1,205	-	-	-	-	-	-	-
721 South Spine Distribution Mains	72,465	19,958	1,013	33,885	73,568	19,331	1,158	35,470	1,103	(627)	145	1,585
722 NIH Redundancy & Storage	83,660	9,063	51,456	22,506	84,956	5,495	42,079	36,749	1,296	(3,568)	(9,377)	14,243
723 Northern Low Service Rehabilitation Section 8	21,698	2,268	4,149	15,222	22,440	2,263	754	19,366	742	(5)	(3,395)	4,144
724 Northern High Service - Pipeline Rehabilitation	-	(2)	-	-	-	(2)	-	-	-	-	-	-
725 Hydraulic Model Update	598	-	-	-	598	-	-	-	-	-	-	-
727 Southern Extra High Redundancy & Storage	101,849	5,311	11,998	82,873	93,460	5,155	26,521	60,116	(8,389)	(156)	14,523	(22,757)
730 Weston Aqueduct Supply Mains	276,166	6,081	100,111	109,072	286,418	4,435	48,742	172,341	10,252	(1,646)	(51,369)	63,269
731 Lynnfield Pipeline	5,563	5,050	-	-	6,073	5,447	113	-	510	397	113	-

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	FY13 Final				FY14 Final				Change from FY13 Final			
Program and Project	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**	**Total Budget Amount**	**FY09-13**	**FY14-18**	**Beyond 18**
732 Walnut St. & Fisher Hill Pipeline Rehabilitation	2,717	563	-	-	2,717	563	-	-	-	-	-	-
733 NHS Pipeline Rehabilitation 13-18 & 48	-	-	-	-	-	-	-	-	-	-	-	-
734 Southern Extra High Pipelines-Sections 30, 39,40, & 44	-	-	-	-	-	-	-	-	-	-	-	-
735 Section 80 Rehabilitation	8,928	-	582	8,346	9,340	-	636	8,704	412	-	54	358
Other	**43,458**	**21,366**	**35,338**	**(128,750)**	**46,380**	**27,212**	**16,341**	**(112,677)**	**2,922**	**5,846**	**(18,997)**	**16,073**
753 Central Monitoring System	16,992	326	1,000	-	16,992	197	1,129	-	-	(129)	129	-
763 Distribution Systems Facilities Mapping	1,799	-	763	-	1,799	-	763	-	-	-	-	-
764 Local Water Infrastructure Rehabilitation Assistance Program	7,488	-	-	-	7,488	-	-	-	-	-	-	-
765 Local Water Pipeline Improvement Loan Program	-	20,737	22,179	(133,993)	-	26,714	2,927	(120,718)	-	5,977	(19,252)	13,275
766 Waterworks Facility Asset Protection	17,179	303	11,396	5,243	20,101	301	11,522	8,041	2,922	(2)	126	2,798
Business & Operations Support	**110,294**	**41,736**	**25,627**	**-**	**122,448**	**33,632**	**41,895**	**3,990**	**12,154**	**(8,103)**	**16,268**	**3,990**
881 Equipment Purchase	16,744	7,561	3,925	-	18,483	6,207	7,019	-	1,739	(1,354)	3,094	-
925 Technical Assistance	1,200	400	800	-	1,200	-	1,200	-	-	(400)	400	-
930 MWRA Facility - Chelsea	9,814	(74)	-	-	9,814	(73)	-	-	-	2	-	-
931 Business Systems Plan	26,583	2,385	2,190	-	24,475	2,455	12	-	(2,108)	70	(2,178)	-
932 Environmental Remediation	1,479	11	-	-	1,479	11	-	-	-	-	-	-
933 Capital Maintenance Planning	10,617	6,286	611	-	15,701	6,335	5,646	-	5,084	49	5,035	-
934 MWRA Facilities Management	2,151	371	1,780	-	2,151	371	1,780	-	-	-	-	-
935 Alternative Energy Initiatives	27,225	19,680	6,954	-	28,230	17,021	6,965	3,652	1,005	(2,659)	11	3,652
940 Applicat Improv Program	3,800	787	3,013	-	9,150	5	8,986	159	5,350	(782)	5,973	159
942 Info Security Program ISP	1,000	700	300	-	1,293	501	792	-	293	(199)	492	-
944 Info Tech Mgmt Program	2,562	1,012	1,550	-	1,493	-	1,493	-	(1,069)	(1,012)	(57)	-
946 IT Infrastructure Program	7,120	2,616	4,504	-	8,980	799	8,002	179	1,860	(1,817)	3,498	179

APPENDIX 5

Master Plan/CIP Status

Master Plan Priority Ratings - Wastewater

Priority One **Critical/Emergency** Risk moderate to high/Consequence very high

Projects which:

Resolve emergencies or critical threats to public health or worker health and safety

Prevent imminent failure of the system and significant loss of service

---

Priority Two **Essential Projects** Risk variable/Consequences high

Projects which are essential to:

Critical facility assessment

Fix existing reliability or capacity problems during dry weather flow conditions

Reduce sanitary sewer overflows from the MWRA system

Address facilities in poor condition where the ability to provide uninterrupted service or adequate flow is compromised.

Upgrade or maintain emergency backup facilities in poor condition

Meet minimum hydraulic performance requirements and service needs

Implement MWRA's approved CSO control plan

Maintain wastewater effluent and residuals quality

To comply with mandated legal, regulatory or statutory requirements

---

Priority Three **Necessary Projects** Risk moderate to high/Consequence moderate to low

Projects which are necessary to:

Improve public health and worker safety

Restore the system's infrastructure where it is seriously deteriorated

Improve hydraulic performance

Significantly improve the effectiveness, efficiency, or reliability of system operations and service delivery including where appropriate, the ability to monitor the system

Maintain consumer confidence

To comply with other legal, regulatory or statutory requirements

---

Priority Four **Important Projects** Risk moderate/Consequences low

Projects which are important to:

Maintain the integrity of the system's infrastructure

Produce significant cost savings or revenue gains for MWRA

Monitor system needs and plan appropriate longer-term responses

Provide acceptable working conditions at field sites and at maintenance support facilities

Implement the regional I/I plan

Priority Five **Desirable Projects** Risk/Consequence both low

Projects which are desirable because they would:

Yield worthwhile cost savings, revenue gains, or efficiency improvements for MWRA

Protect the long term value and usefulness of system assets

Solve future problems and conditions which are expected to arise in the latter half of the planning period

Be beneficial towards the improved operation of a local system

Master Plan Priority Ratings - Water

Priority One **Critical/Emergency** Risk moderate to high/Consequence very high
Projects which:

Resolve emergencies or critical threats to public health or worker health and safety

Prevent imminent failure of the system and significant loss of service

---

Priority Two **Essential Projects** Risk variable/Consequences high
Projects which are essential to:

Critical facility assessment

Fix existing reliability problems related to "single points of failure"

Upgrade or maintain emergency back-up facilities in operational condition

Address facilities in poor condition where the ability to provide uninterrupted service, sanitary protections or adequate flow is compromised.

Meet minimum hydraulic performance requirements and service needs including adequate distribution storage in areas with a critical shortfall of storage

To comply with mandated legal, regulatory or statutory requirements

---

Priority Three **Necessary Projects** Risk moderate to high/Consequences moderate to low
Projects which are necessary to:

Improve public health and worker safety

Restore the system's infrastructure where it is seriously deteriorated

Significantly improve the effectiveness, efficiency, or reliability of system operations and service delivery including where appropriate, the ability to monitor the system

Preserve water quality during distribution

Maintain consumer confidence

To comply with other legal, regulatory or statutory requirements

---

Priority Four **Important Projects** Risk moderate/Consequence low
Projects which are important to:

Maintain the integrity of the system's infrastructure

Improve hydraulic performance or add distribution storage

Produce significant cost savings or revenue gains for MWRA

Monitor system needs and plan appropriate longer-term responses

Provide acceptable working conditions at field sites and at maintenance support facilities

Maintain efforts to manage system demands

Provide broader environmental benefits

Priority Five **Desirable Projects** Risk/Consequence both low

Projects which are desirable because they would:

Yield worthwhile cost savings, revenue gains, or efficiency improvements for MWRA

Protect the long term value and usefulness of system assets

Solve future problems and conditions which are expected to arise in the latter half of the planning period

Be beneficial towards the improved operation of a local system

Appendix 5
Master Plan/CIP Status
(in 000's)

Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY14-18	Beyond FY 18	Comment
FY14 Budget Cycle									
S.206 DI Treatment Plant Asset Protection									
S.40256.7449 Sodium Bisulfate Tanks Rehabilitation	**4**	FY14	**2**	Jan-15	Jun-16	2,543	2,543	0	
S.210 Clinton Wastewater Treatment Plant									
S.19405.7450 Clinton Roofing Rehabilitation	**3**	FY14	**2**	Sep-14	Sep-15	509	509	0	
S.19406.7451 Clinton Facilities Rehabilitation	**3**	FY14	**2**	Sep-17	Sep-22	4,069	467	3,602	
S.766 Waterworks Asset Protection									
S.75536.7453 Water Meter Upgrade & Replacement	**3**	FY14	**3**	Jun-15	Jun-17	1,000	1,000	0	
S.693 NHS Revere & Malden Pipeline									
S.75545.7454 Section 56 Replacement/Saugus	**2**	FY14	**2**	Jul-15	Jul-19	10,000	8,560	1,440	
S. 542 Carroll Water Treatment Plant									
S.75546.7455 CWTP Asset Protection	**3**	FY14	**3**	Jul-15	Jun-17	500	500	0	
FY14 Master Plan Totals - 6 projects						**$18,621**	**$13,579**	**$5,042**	
FY13 Budget Cycle							**FY09-13**	**Beyond FY13**	
S. 542 Carroll Water Treatment Plant									
S.75530.7406 Technical Assistance 7	2	FY13	2	Jan-13	Jan-15	563	70	493	
S.75530.7407 Technical Assistance 8	2	FY13	2	Jan-13	Jan-15	563	70	493	
FY13 Master Plan Totals - 2 projects						**$1,126**	**$140**	**$986**	
FY12 Budget Cycle									
S. 132 Corrosion and Odor Control									
S. 10491.7364 System Wide Odor Control Study	2	FY12	3	Jul-18	Jul-20	1,000	0	1,000	
S.145 I&P Facility Asset Protection									
S.10490.7362 Caruso PS HVAC & Fire Upgrade	3	FY12	2	Apr-12	Mar-14	1,000	500	500	
S.10488.7361 Delauri Pump Station Electrical Room Cooling	3	FY12	2	Jul-12	Jul-13	250	188	62	
S.10486.7359 Prison Point and Cottage Farm CSO Rehabilitation	3	FY12	2	Jul-13	Jun-18	1,000	45	955	
S.10485.7358 Prison Point Dry Weather Flow and Stripping Improvements	3	FY12	3	Jan-13	Dec-15	750	63	687	
S.10501.7389 Prison Point Gearbox Rebuilds	3	FY12	2	Jun-11	Dec-11	440	440	0	
S.10500.7375 Pump Station Rehabilitation - Preliminary Design and Study	3	FY12	2	Jul-14	Jun-19	750	0	750	
S.10503.7393 Section 156 Rehabilitation Design/Build	2	FY12	2	Jun-11	Jun-12	2,000	2000	0	
S.10502.7392 Section 156 Rehabilitation Owners Representative	2	FY12	2	Jun-11	Jun-12	200	200	0	
S.210 Clinton Wastewater Treatment Plant									
S.19950.7377 Phosphorous Removal	3	FY12	2	Jan-13	Jan-16	3,500	292	3,208	
S. 623 Dam Projects									
S.60131.7370 Goodnough Dike Drainage Improvements	3	FY12	2	Jul-13	Jul-14	1,000	0	1,000	
S. 704 Rehabilitation of Other Pump Stations									
S.75522.7383 Pump Station Rehabilitation	4	FY12	3	Jul-19	Jun-24	25,000	0	25,000	
S. Waterworks Facility Asset Protection									
S. 75520.7381 Shaft 9 Rehabilitation	2	FY12	3	Jul-13	Jul-16	2,000	0	2,000	
FY12 Master Plan Totals - 13 projects						**$ 38,890**	**$ 3,728**	**$ 35,162**	

Appendix 5
Master Plan/CIP Status
(in 000's)

Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY14-18	Beyond FY 18	Comment
FY11 Budget Cycle									
S.145 I&P Facility Asset Protection									
S.10481.7328 Interceptor # 5 Milton	2	FY11	2	Jul-13	Jul-16	4,000	0	4,000	
S.10482.7329 Interceptor Renewal # 6 Chelsea	2	FY11	2	Jul-13	Jul-16	11,000	0	11,000	
S.10469.7281 Cottage Farm Fuel System Upgr	3	FY11	3	Mar-11	Sep-11	300	300	0	
S.10484.7344 Som/Marginal Gate Replacement	3	FY11	3	Jul-10	Nov-10	300	300	0	
S.542 Carroll Water Treatment Plant									
S.53464.7315 Technical Assistance 5	2	FY11	2	Aug-10	Aug-12	563	563	0	
S.53465.7316 Technical Assistance 6	2	FY11	2	Aug-10	Aug-12	563	563	0	
S.713 Spot Pond Supply Mains - Rehab									
S.60116.7336 Section 50 Pipe Rehab Design /ESDC/RI	3	FY11	3	Jul-12	Jun-15	500	250	250	
S.60117.7337 Section 50 Pipe Rehab Const	3	FY11	3	Jul-13	Jun-14	1,500	0	1,500	
S.765 Local Water Pipeline Imp. Loan Program									
S.75513.7339 Local Water System Loans	3	FY11	3	Aug-10	Jan-00	200,000	35,000	165,000	
S.75514.7340 Local Water System Repayment	3	FY11	3	Aug-11	Jan-00	(200,000)	-3,000	-197,000	
S.753 Central Monitoring System									
S.75512.7338 Winsor Dam High Line Replacement	3	FY11	3	Jan-11	Dec-11	1,000	1,000	0	
FY11 Master Plan Totals - 9 projects						**$ 19,726**	**$ 34,976**	**$ (15,250)**	

Appendix 5
Master Plan/CIP Status
(in 000's)

Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY14-18	Beyond FY 18	Comment
FY10 Budget Cycle									
S.128 I/I Local Financial Assistance									
S.10471.7293 Grants-Phase VII	**3**	FY10	3	Aug-09	Jun-18	18,000	4,950	13,050	**One Initiative - 3 subphases**
S.10472.7294 Loans - Phase VII	**3**	FY10	3	Aug-09	Jun-18	22,000	6,050	15,950	
S.10473.7295 Repayments-Phase VII	**3**	FY10	3	Aug-10	Jun-23	(22,000)	(1,320)	(20,680)	
S.10474.7296 Grants-Phase VIII	**3**	FY10	3	Aug-13	Jun-21	18,000	0	18,000	**One Initiative - 3 subphases**
S.10475.7297 Loans - Phase VIII	**3**	FY10	3	Aug-13	Jun-21	22,000	0	22,000	
S.10476.7298 Repayments-Phase VIII	**3**	FY10	3	Aug-14	Jun-26	(22,000)	0	(22,000)	
S.210 Clinton Wastewater Treatment Plant									
S.32749.7277 Clinton Digester Cleaning & Rehabs	**3**	FY10	2	Nov-09	May-11	1,500	1,500	0	
S.32750.7278 Clinton Aeration Effciency Improvement	**3**	FY10	3	May-10	May-11	372	372	0	
S.145 I&P Facility Asset Protection									
S.32752.7280 Inter Ren # 4 Everett Sect 23/24/156	**2**	FY10	2	Jul-15	Jul-16	3,000	0	3,000	
S.32751.7279 Inter Ren # 3 Camb/Some Sect 26/27	**2**	FY10	2	Jul-13	Jul-14	5,000	0	5,000	
S.616 Quabbin Transmission System									
S.92366.7282 Ware River Intake Valve Replancement	**3**	FY10	3	Jul-14	Jul-17	1,200	0	1,200	
S.604 MetroWest Tunnel									
S.92367.7283 Valve Chamber Storage Tank Access Imp	**3**	FY10	2	Jul-11	Jul-13	3,000	2,500	500	
S.702 New Connecting Mains - Shaft 7 to WASM 3									
S.92368.7284 Section 75 Extension	**3**	FY10	3	Oct-15	Oct-19	4,400	0	4,400	
S.931 Business Systems Plan									
S.92434.7285 Cyber Security	**2**	FY10	2	Sep-11	Sep-12	1,200	1,200	0	
S.92435.7286 Lawson System Upgrade	**2**	FY10	2	Sep-13	Sep-15	1,550	0	1,550	
S.92436.7287 Laboratory Infor Mgmt Sys (LIMS)	**2**	FY10	2	Sep-14	Sep-16	600	0	600	
S.92437.7288 PRE-Treatment Infor Mgmt Sys (PIMS)	**2**	FY10	2	Sep-14	Sep-16	600	0	600	
S.92436.7289 Document Control System Software Application Replacement	**None**	FY10	1	Mar-10	Mar-11	250	250	0	**While specific mention of the need to replace the InfoStar record drawings indexing tool is made in the Wastewater and Waterworks Master Plan books (pgs. 13-11 & 13-12 and 9-7 & 9-8 respectively, there is no line item estimate provided in Attachment 2A which details dollar estimates for each new project in the Master Plan.**
FY10 Master Plan Totals - 14 projects						**$ 58,672**	**$ 15,502**	**$ 43,170**	

Appendix 5
Master Plan/CIP Status
(in 000's)

Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY14-18	Beyond FY 18	Comment
FY09 Budget Cycle									
S.145 I&P Facility Asset Protection									
S.10418.6936 Interceptor Renewal No. 2	2	FY09	2	Jul-12	Jul-14	5,429	1,953	3,476	
S.10457.7216 Interceptor Renewal #7 Study	2	FY09	2	Jul-08	Jun-09	300	300	0	
S.10458.7217 Interceptor Renewal #7 Constr	2	FY09	2	Jul-09	Jun-12	1,000	1,000	0	
S.10460.7219 NI Mech & Elec Replacements	3	FY09	3	Jun-09	Jun-12	3,800	3,800	0	
S.130 Siphon Structure Rehabilitation									
S.10293.6224 Design/CS/RI	2	FY09	3	Jun-12	Sep-16	476	114	362	**Lower consequence after review**
S.10294.6225 Construction	2	FY09	3	Sep-14	Sep-15	1,189	0	1,189	**Lower consequence after review**
S.147 Randolph Trunk Sewer Relief									
S.10461.7220 Study	3	FY09	3	Jul-11	Jun-13	750	656	94	
S.132 Corrosion & Odor Control									
S.10406.6919 FES/FERS Biofilters Design	3	FY09	3	Jul-09	Apr-13	995	995	0	
S.10456.7215 FES/FERS Biofilters Const.	3	FY09	3	Apr-11	Apr-12	2,140	2,140	0	
S.206 DI Treatment Plant Asset Protection									
S.19278.6967 STG System Modifications-Des	3	FY09	3	Oct-08	May-12	750	751	0	
S.19284.6973 STG System Mods-Constr	3	FY09	3	May-10	May-12	2,500	2,500	0	
S.616 Quabbin Transmission System									
S.60103.7229 Oakdale Phase 1A Elec Des	3	FY09	1	Jul-09	Oct-13	921	915	6	**Rising safety and other concerns**
S.60104.7230 Oakdale Phase 1A Elec Constr	3	FY09	1	Jan-11	Oct-12	2,150	2,150	0	**Rising safety and other concerns**
S.722 NIH Redundancy & Covered Storage									
S.68250.6892 Section 80 Design CS/RI	3	FY09	3	Jan-11	May-15	1,524	962	562	
S.68249.6891 Section 80 Construction	3	FY09	3	May-13	May-15	6,096	0	6,096	
S.931 Business Systems Plan									
S.92410.7238 Laboratory Instrument Data Mgmt	3	FY09	3	Mar-09	Mar-10	250	250	0	
S.92411.7239 Major Laboratory Instrumentation	4	FY09	3	Mar-09	Mar-10	1,000	1,000	0	
FY09 Master Plan Totals - 11 projects						**$ 31,270**	**$ 19,486**	**$ 11,785**	
FY08 Budget Cycle									
S.104 Braintree-Weymouth Relief Facilities									
S.10060.5310 Rehab Sections 624 & 652	1	FY08	2	May-10	Jun-13	4,000	4,000	0	
S.10452.7193 Rehab of Section 624 Des	1	FY08	2	Jul-09	Jun-13	1,000	1,000	0	
S.132 Corrosion & Odor Control									
S.10405.6918 FES Tunnel Rehab	2	FY08	2	Dec-15	Jun-17	6,800	0	6,800	
S.10453.7196 FES Tunnel Rehab Des	2	FY08	2	Jul-15	Jun-17	1,700	0	1,700	
S.136 West Roxbury Tunnel									
S.10400.6897 Tunnel Design	1	FY08	1	Mar-08	Sep-10	16,000	8,500	7,500	
S.10401.6898 Tunnel Construction	1	FY08	1	Mar-11	Mar-17	64,000	24,900	39,100	
S.142 Wastewater Meter Sys-Equip Replace									
S.10451.7191 Wastewater Metering Asset Protection	2	FY08	2	Jul-15	Jan-00	20,000	0	20,000	
S.145 I&P Facility Asset Protection									
S.10444.7144 Nut Island Headworks Fire Alarm/Wire	1	FY08	1	Jul-09	Jun-10	200	200	0	
S.10445.7161 HW Fac. Plan Upgrades 3 Older HWKS	1	FY08	2	Jun-10	Dec-28	28,000	3,690	24,310	
S.10446.7162 PS/CSO Condition Assessment	2	FY08	2	Jul-11	Jun-14	3,000	1,900	1,100	
S.10447.7163 Interceptor AP-Interc Renewal Des #1	2	FY08	2	Feb-08	Dec-10	200	184	16	
S.10448.7164 Interceptor AP-Interc Renew #1 Const	2	FY08	2	Dec-10	Jun-11	1,600	1,600	0	

Appendix 5
Master Plan/CIP Status
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Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY14-18	Beyond FY 18	Comment
S.10455.7206 HW Facility Plan Upgrades Des	1	FY08	1	Jan-10	Dec-28	7,000	1,480	5,520	
S.146 D.I. Cross Harbor Tunnel									
S.10454.7199 Tunnel Shaft Repairs Plan/Des/Const	2	FY08	2	Jul-14	Jun-17	5,000	0	5,000	
S.200 DI Plant Optimization									
S.19311.7121 DI As needed Tech Design	1	FY08	1	Sep-13	Jun-27	26,450	0	26,450	
S.206 DI Treatment Plant Asset Protection									
S.19285.6974 Alternative Energy Initiatives	5	FY08	2	Jan-08	Dec-08	7,000	5,000	2,000	**Priority changed to reflect acceleration of green energy initiatives.**
S.19293.7055 Digester Mod 1&2 Pipe Replc.		FY08	1	Apr-08	Oct-09	8,000	6,000	2,000	
S.19312.7122 DI Digester Sludge Pump Repl Des	1	FY08	1	Jul-09	Nov-11	906	507	399	
S.19313.7123 DI Digester Sludge Pump Repl Const	1	FY08	1	Nov-10	Nov-11	3,624	2,023	1,601	
S.19314.7124 DI Elec Equip Upgrade Ph.5	1	FY08	1	Jan-12	Jan-14	20,662	2,635	18,027	
S.19315.7125 DI Equipment Replacement Projection	2	FY08	2	Jul-08	Jun-27	41,538	700	40,838	
S.19316.7126 Future SSPS VFD Replacements Des	1	FY08	1	Jul-15	Nov-18	4,800	0	4,800	
S.19317.7127 Future SSPS VFD Replacements Constr	1	FY08	1	Nov-16	Nov-18	19,200	0	19,200	
S.19318.7128 Future NMPS VFD Replacements Des	1	FY08	1	Jul-17	Nov-20	4,420	0	4,420	
S.19319.7129 Future NMPS VFD Replacements Constr	1	FY08	1	Nov-18	Nov-20	17,680	0	17,680	
S.19320.7130 Future Misc. VFD Replacements Des	1	FY08	1	Jul-17	Nov-20	1,333	0	1,333	
S.19321.7131 Future Misc. VFD Replacements Constr	1	FY08	1	Nov-18	Nov-20	5,334	0	5,334	
S.19322.7132 DI Switchgear Replacement Design	1	FY08	1	Jul-17	Apr-22	3,250	0	3,250	
S.19323.7133 DI Switchgear Replacement Constr	1	FY08	1	Apr-19	Apr-22	13,000	0	13,000	
S.19324.7134 DI PICS Replacement Construction	1	FY08	1	Jul-21	Jul-22	5,400	0	5,400	
S.19325.7135 DI Dystor Membrane Replacements	1	FY08	1	Jul-14	Oct-14	3,000	0	3,000	
S.19326.7136 DI CTG Rebuilds	1	FY08	1	Jul-14	Jul-16	6,000	0	6,000	
S.19327.7137 DI Centrifuge Replacements Des	1	FY08	1	Jul-13	Oct-15	4,160	0	4,160	
S.19328.7138 DI Centrifuge Replacements Constr	1	FY08	1	Oct-14	Oct-15	16,640	0	16,640	
S.19329.7139 DI Cryogenics Plant-Equip Repl Des	1	FY08	1	Jul-13	May-16	1,600	0	1,600	
S.19330.7140 DI Cryogenics Plant-Equip Repl Constr	1	FY08	1	Nov-14	May-16	6,400	0	6,400	
S.19331.7141 Laboratory As needed Tech Des		FY08	1	Jul-08	Jun-27	4,000	500	3,500	
S.19332.7142 Future Sodium Hypo Tank Rehab	1	FY08	1	Jul-16	Jul-18	10,000	0	10,000	
S.19333.7167 Leak Protection System Upgrade	2	FY08	2	Jul-08	Jul-09	1,138	1,139	-1	
S.19334.7168 Barge Berth and Fac. Replacement	2	FY08	2	Jul-10	Jun-27	2,265	1,265	1,000	
S.19335.7169 South Systm PS Lube System Repl	2	FY08	2	Dec-08	Dec-10	2,019	2,018	1	
S.19336.7170 DI Grit and Odor Control Air Handlers	3	FY08	2	Jan-09	Jan-10	3,265	1,265	2,000	**Condition determined to be worse than when Master Plan Priority Ratings assigned.**
S.19337.7171 Central Lab Fume Hood Replacement		FY08	2	Jul-08	Jul-12	1,632	1,631	1	
S.19338.7172 DI PICS Dist. Proc. Units Replac	2	FY08	2	Jul-14	Jul-16	8,000	0	8,000	
Deer Island Equipment & Replacement Drop-downs	2	FY08	2			20,572	25,904	-5,332	
S.271 Residuals Asset Protection									
S.26069.7143 Residual Plant System Reliability	1	FY08	1	Sep-07	Sep-09	870	580	290	
S.26070.7145 Residuals Pellet Plant Upgrade Design	1	FY08	1	Jul-10	Jun-18	4,000	4,000	0	
S.26071.7146 Residuals Pellet Plant Upgrade Constr	1	FY08	1	Jul-13	Jul-18	4,000	0	4,000	
S.26093.7187 Utility Upgrades Des.	1	FY08	1	Jan-00	Jan-00	0	0	0	
S.26094.7188 Utility Upgrades Const.	1	FY08	1	Jul-16	Jul-18	6,000	0	6,000	
S.26072.7147 Condition Assessment/Fac Plan	1	FY08	1	Jul-08	Jun-10	1,000	1,000	0	
S.26074.7149 Six Rotary Dryer Replacements Constr	1	FY08	1	Jul-13	Jul-16	60,000	0	60,000	

Appendix 5
Master Plan/CIP Status
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Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY14-18	Beyond FY 18	Comment
S.26076.7151 Six Air Scrubber Replacements Constr	1	FY08	1	Jul-15	Jul-17	9,000	0	9,000	
S.26078.7153 Plant MCC Replacements Const	1	FY08	1	Jul-16	Jul-18	4,500	0	4,500	
S.26079.7173 FRSA Pier Rehab Des	1	FY08	1	Dec-07	Jun-10	140	112	28	
S.26080.7174 FRSA Pier Rehab Const.	1	FY08	1	Dec-08	Jun-10	560	560	0	
S.26082.7176 Rehab Rail System Const.	1	FY08	1	Jul-16	Jul-18	3,000	0	3,000	
S.26084.7178 Replace 9 Pellet Storage Silos Const.	1	FY08	1	Jul-15	Jul-17	6,000	0	6,000	
S.26086.7180 Sludge Conveyor Replacement Const.	1	FY08	1	Jul-14	Jul-15	3,000	0	3,000	
S.26088.7182 Sludge Storage Tank Rehab	1	FY08	1	Jul-15	Jul-16	3,000	0	3,000	
S.26090.7184 Upgrade Pumping System Const.	1	FY08	1	Jul-14	Jul-16	6,000	0	6,000	
S.26092.7186 Replace 12 Centrifuges Const.	1	FY08	1	Jul-14	Jul-16	36,000	0	36,000	
S.26096.7190 Odor Control System Upgrade Const.	1	FY08	1	Jul-17	Jul-18	1,500	0	1,500	
S.542 John J. Carroll Water Treatment Plant									
S.53457.7085 Ancillary Mods Const 2	2	FY08	2	Jan-08	Jun-13	6,080	5,616	464	
S.53458.7192 Ancil Mods Design 3	2	FY08	2	Jan-08	Jan-10	750	613	137	
S.53459.7208 Ancillary Mods Design 4	2	FY08	2	Jan-08	Jan-10	750	613	137	
S.550 Low Service Storage Near Spot Pond									
S.53401.6456 Env Rev Con Des Owners Rep	2	FY08	2	Apr-09	Sep-14	2,500	2,152	348	
S.53402.6457 Design/Build	3	FY08	2	Apr-12	Apr-14	36,093	13,977	22,116	**Priority revised as project added to CIP**
S.53447.6868 Easement/Land Acquisition		FY08	2	Apr-09	Apr-14	630	563	67	
S.597 Winsor Dam Hydroelectric									
S.60033.6277 Detail Design	4	FY08	2	Jul-09	Feb-11	359	359	0	**Priority revised as project added to CIP**
S.60044.6526 Construction	4	FY08	2	Aug-10	Feb-11	1,406	1,406	0	**Priority revised as project added to CIP**
S.60077.7017 Design and Construction		FY08	2	Oct-07	Jun-09	2,000	1,750	250	
S.60087.7114 Winsor Power Station Pipe Des	1	FY08	2	Sep-08	Jun-12	1,012	1,012	0	
S.60088.7115 Winsor Power Station Pipe Constr Ph1	1	FY08	2	Apr-10	Jun-12	4,047	4,047	0	
S.60095.7197 Shft 12 Quabbin Aqdct Sluice Gate Des	2	FY08	2	Jul-08	Jun-12	400	400	0	
S.60096.7198 Shft 12 Quabbin Aqdct Sluice Gate Con	2	FY08	2	Jul-09	Jun-12	1,600	1,600	0	
S.60101.7212 Winsor Power St. Chapman Valve Repair		FY08	2	Mar-09	Dec-09	509	509	0	
S.614 Metropolitan Tunnel Loop									
S.60035.6273 Redundancy StudyTunnel Insp Fea Study	1	FY08	1	Mar-08	Feb-10	3,500	3,208	292	
S.618 Northern High NW Trans Sect 70-71									
S.60063.6895 Planning	2	FY08	2	Jul-10	Jun-12	1,000	1,000	0	
S.623 Dam Projects									
S.60089.7154 Engineering Studies for Dam Risk	1	FY08	1	Jul-07	Jun-09	460	230	230	
S.60094.7194 Immediate Repair Dams	2	FY08	2	Mar-10	Jun-11	3,255	3,255	0	
S.60100.7211 Immediate Repair Dams-Design	2	FY08	2	Jul-08	Jun-11	814	814	0	
S.624 Wachusett Aqueduct Pressurization									
S.60090.7156 Wachusett Aqueduct Pressurization Des	1	FY08	1	Jul-11	Jun-16	20,000	7,000	13,000	
S.60091.7157 Wachusett Aqueduct Pressurization Con	1	FY08	1	Jul-13	Jun-16	80,000	0	80,000	

Appendix 5
Master Plan/CIP Status
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Listing of Master Plan Projects	Original MP Rating	CIP Year	Rating when added to CIP	NTP	SC	Total Contract Amount	FY14-18	Beyond FY 18	Comment
S.625 Long Term Redundancy									
S.60092.7159 Long Term Redundancy Des	1	FY08	1	Jul-13	Jun-23	20,000	0	20,000	
S.60093.7160 Long Term Redundancy Construction	1	FY08	1	Jul-14	Dec-23	80,000	0	80,000	
S.677 Valve Replacement									
S.68300.7195 Valve Replacement 8&9 Construction	2	FY08	2	Jul-10	Jun-16	5,000	2,500	2,500	
S.719 Chestnut Hill Connecting Mains									
S.68052.6302 Construction- Chp 149	2	FY08	2	Jul-10	Jul-12	3,431	3,431	0	
S.68267.6982 Construction-Chp 30	2	FY08	2	Jul-10	Jul-12	2,220	2,220	0	
S.721 Southern Spine Distribution Mains									
S.68299.7155 Southern Spine Sect 22 N Fac Plan/EIR	1	FY08	1	Jul-08	Jun-10	1,000	1,000	0	
S.722 NIH Redundancy & Covered Storage									
S.68252.6906 Section 89/29 Redundancy Design	1	FY08	1	Jul-08	Jun-13	5,059	5,000	59	
S.68282.7066 Sec 89&29 Redundancy Constr	1	FY08	1	Jul-10	Jun-13	19,224	14,949	4,275	
S.68283.7067 NIH Storage Fin Des/CS/RI	1	FY08	1	Jul-08	Sep-12	2,024	2,024	0	
S.68284.7068 NIH Storage Construction	1	FY08	1	Sep-10	Sep-12	8,094	8,094	0	
S.68294.7116 Section 89/29 Rehab Design	1	FY08	1	Jul-13	Jun-17	1,012	0	1,012	
S.68295.7117 Section 89/29 Rehab Construction	1	FY08	1	Jul-15	Jun-17	4,047	0	4,047	
S.68296.7118 NIH Gillis Redundancy Design	1	FY08	1	Jul-13	Jun-18	2,024	0	2,024	
S.68297.7119 NIH Gillis Redundancy Construction	1	FY08	1	Jul-15	Jun-18	8,094	0	8,094	
S.727 SEH Redundancy & Storage									
S.53397.6452 Concept Plan/Prelim Des/Env Rev	1	FY08	2	Feb-07	Aug-08	840	125	715	
S.53398.6453 SEH Storage Final Des/CS/RI	2	FY08	2	Jul-09	Jun-14	2,024	1,539	485	
S.53399.6454 SEH Storage Construction	2	FY08	2	Jul-12	Jun-14	8,094	4,550	3,544	
S.68135.6444 SEH Red Loop Final Des/CA/RI	2	FY08	2	Jul-09	Jun-14	4,047	3,217	830	
S.68136.6445 SEH Redund Loop Construction	2	FY08	2	Jul-11	Jun-14	21,248	12,634	8,614	
S.68292.7112 Design Sect 77/88 Rehab	2	FY08	2	Jul-18	Jun-23	1,012	0	1,012	
S.68293.7113 Section 77/88 Rehab	2	FY08	2	Sep-20	Jun-23	4,047	0	4,047	
S.931 Business Systems Plan									
S.92404.7200 Computer Center - OCC Infrastructure		FY08	2	Jul-14	Jun-16	1,500	0	1,500	
S.92405.7201 Net 2020		FY08	2	Jul-09	Jun-12	1,500	1,500	0	
S.92406.7203 SAN II		FY08	2	Jul-11	Jun-12	600	600	0	
S.92407.7204 SAN III		FY08	2	Jul-14	Jun-15	600	0	600	
S.92408.7205 Telecommunications		FY08	2	Jul-13	Jun-15	750	0	750	
FY08 Master Plan Totals - 67 projects						**$ 955,014**	**$ 217,800**	**$ 737,214**	

Total Projects from the Master Plan: **122**
Total $$ of Projects from the Master Plan **$1,123,319**

APPENDIX 6

Project Status Overview

Appendix 6
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. FY12	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
104 Braintree-Weymouth Relief Facilities		**$233,869**	**$228,064**	**97.5%**	**97.5%**		
10001_5333	Geotechnical - Marine	443	443	Complete	100.0%		
10044_5332	Geotechnical - Land	8	8	Complete	100.0%		
10045_5311	Facilities Planning - Phase 1	331	331	Complete	100.0%		
10046_5312	EIR - Phase 1	514	514	Complete	100.0%		
10047_5313	Design 1/CS/RI	18,882	18,882	Complete	100.0%		
10048_5314	Land Acquisition	13,221	12,841	97.1%	97.1%		
10049_5315	Tunnel Construction/Rescue	83,551	83,551	Complete	100.0%		
10050_5316	Intermediate Pump Station-Construction	47,445	47,445	Complete	100.0%		
10051_5303	North Weymouth Relief Interceptor	4,705	4,705	Complete	100.0%		
10052_5373	HDD Siphon - Construction	16,357	16,357	Complete	100.0%		
10054_5375	B-W Replacement Pump Station	17,728	17,728	Complete	100.0%		
10055_5308	Design - Rehab	24	24	Complete	100.0%		
10056_5309	Construction - Rehab	255	255	Complete	100.0%		
10057_5324	Final EIR/Facility Plan	1,111	1,111	Complete	100.0%		
10058_5331	Design 2/CS/RI	15,000	15,000	Complete	100.0%		
10060_5310	Rehabilitation of Section 624 - Const.	2,506	2,506	Complete	100.0%		
10061_5951	Technical Assistance	144	144	Complete	100.0%		
10251_6016	Sedimentation Testing	96	96	Complete	100.0%		
10263_6072	Legal	849	849	Complete	100.0%		
10265_6074	Hazardous Waste	8	8	Complete	100.0%		
10278_6119	Marine Pipeline - Design	1,100	1,100	Complete	100.0%		
10302_6368	Mill Cove Siphon - Construction	2,749	2,749	Complete	100.0%		
10354_6631	Community Technical Assistance	1,111	1,111	Complete	100.0%		
10375_6766	Geotechnical Consultant	56	56	Complete	100.0%		
10378_6792	IPS/RPS Communication System	225	225	Complete	100.0%		
10470_7290	Wetlands Replication	700	24	3.4%	3.4%		Jun-15
10480_7327	Mill Cove Sluice Gates - Construction	600	0	Future	0.0%	Jul-18	
10493_7366	Braintree-Weymouth Improvements	3,200	0	Future	0.0%	Sep-18	
128 I/I Local Financial Assistance		**$122,585**	**$107,779**	**87.9%**	**87.9%**		
10232_5300	Community I/I Grants	0	5,800	NA	NA		
10233_5393	Community I/I Loans	0	17,278	NA	NA		
10234_5394	Community I/I Loan Repayments	0	-17,278	NA	NA		
10273_6084	Phase II - Grants	15,929	10,129	63.6%	63.6%		
10274_6085	Phase II - Loans	47,664	30,386	63.8%	63.8%		
10282_6170	Phase II - Repayments	-47,664	-30,386	63.8%	63.8%		
10315_6505	Phase III - Grants	0	16,650	NA	NA		
10316_6506	Phase III - Loans	0	20,350	NA	NA		
10317_6507	Phase III - Repayments	0	-20,245	NA	NA		
10348_6609	Public Participation	6	6	Complete	100.0%		
10368_6736	Phase IV - Grants	34,650	18,000	51.9%	51.9%		
10369_6737	Phase IV - Loans	42,350	22,000	51.9%	51.9%		
10370_6738	Phase IV - Repayments	-42,350	-20,961	49.5%	49.5%		May-15
10407_6925	Phase V - Grants	18,000	18,184	Complete	101.0%		
10408_6926	Phase V - Loans	22,000	22,224	Complete	101.0%		
10409_6927	Phase V - Repayments	-22,000	-16,572	75.3%	75.3%		May-17
10441_7107	Phase Vl - Grants	18,000	11,583	64.4%	64.4%		Jun-15
10442_7108	Phase Vl - Loans	22,000	14,157	64.4%	64.4%		Jun-15

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10443_7109	Phase Vl - Repayments	-22,000	-6,406	29.1%	29.1%		Jun-20
10471_7293	Phase VII - Grants	18,000	6,396	35.5%	35.5%		Jun-18
10472_7294	Phase VII - Loans	22,000	7,817	35.5%	35.5%		Jun-18
10473_7295	Phase VII - Repayments	-22,000	-1,333	6.1%	6.1%		Jun-23
10474_7296	Phase VIII - Grants	18,000	0	Future	0.0%	Aug-13	
10475_7297	Phase VIII - Loans	22,000	0	Future	0.0%	Aug-13	
10476_7298	Phase VIII - Repayments	-22,000	0	Future	0.0%	Aug-14	
130 Siphon Structure Rehabilitation		**$5,603**	**$940**	**16.8%**	**16.8%**		
10253_6017	Planning	938	938	Complete	100.0%		
10280_6165	Land Acquisition	50	2	4.0%	4.0%		Jun-16
10293_6224	Design/CS/RI	1,315	0	Future	0.0%	Jul-14	
10294_6225	Construction	3,301	0	Future	0.0%	Jul-16	
131 Upper Neponset Valley Sewer		**$54,174**	**$53,861**	**Complete**	**99.4%**		
10256_6031	Design/CS/RI	4,585	4,585	Complete	100.0%		
10266_6075	Legal	150	150	Complete	100.0%		
10290_6191	Sewer Sections 685-686 - Replacement	37,005	37,005	Complete	100.0%		
10311_6450	Land Acquisition	1,816	1,502	82.7%	82.7%		
10352_6629	Sewer Section 687 Replacement - Const	7,664	7,664	Complete	100.0%		
10393_6830	Boston Paving	610	610	Complete	100.0%		
10439_7072	Resident Engineering/Inspection	2,345	2,345	Complete	100.0%		
132 Corrosion & Odor Control		**$16,260**	**$3,001**	**18.5%**	**18.5%**		
10279_6137	Planning/Study	587	587	Complete	100.0%		
10323_6549	Land Acquisition	3	3	Complete	100.0%		
10325_6551	Legal	2	2	Complete	100.0%		
10327_6553	Design/CS/RI	1,788	1,788	Complete	100.0%		
10373_6743	Interim Corrosion Control	621	621	Complete	100.0%		
10405_6918	FES Tunnel Rehab - Construction	6,800	0	Future	0.0%	Jul-19	
10406_6919	FES/FERS Biofilters - Design	1,079	0	Future	0.0%	Jul-18	
10453_7196	FES Tunnel Rehab - Design	1,700	0	Future	0.0%	Jul-18	
10456_7215	FES/FERS Biofilters - Construction	1,679	0	Future	0.0%	Apr-19	
10491_7364	System-wide Odor Control - Study	1,000	0	Future	0.0%	Jul-18	
10492_7365	NI System-wide Odor Cntrl-Eval & Des	1,000	0	Future	0.0%	Jul-14	
136 West Roxbury Tunnel		**$11,314**	**$10,309**	**91.1%**	**91.1%**		
10299_6230	Inspection	344	344	Complete	100.0%		
10329_6566	Tunnel Easements & Permits	54	54	Complete	100.0%		
10330_6567	Legal	2	2	Complete	100.0%		
10331_6568	Land Acquisition	440	440	Complete	100.0%		
10332_6569	Construction	6,674	6,674	Complete	100.0%		
10333_6570	Design/CS/RI	1,417	1,412	Complete	99.6%		
10366_6709	Technical Assistance	8	8	Complete	100.0%		
10400_6897	Tunnel - Design	1,375	1,375	Complete	100.0%		
10401_6898	Tunnel Inspection	1,000	0	Future	0.0%	Sep-19	
137 Wastewater Central Monitoring		**$20,482**	**$19,782**	**96.6%**	**96.6%**		
10301_6232	Planning	563	563	Complete	100.0%		
10319_6532	Design and Integration Services	6,344	6,344	Complete	100.0%		
10320_6533	Construction 1 (CP1)	7,662	7,662	Complete	100.0%		
10321_6534	Construction 2 (CP2)	5,139	5,139	Complete	100.0%		
10322_6535	Technical Assistance	7	7	Complete	100.0%		

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10398_6861	Equipment Prepurchase	65	65	Complete	100.0%		
10490_7363	Wastewater Redundant Communications	700	0	Future	0.0%	Jul-14	
139 South System Relief Project		**$4,939**	**$3,439**	**69.6%**	**69.6%**		
10309_6419	Archdale - CS/RI	5	5	Complete	100.0%		
10310_6420	Archdale - Construction	211	211	Complete	100.0%		
10318_6519	Sections 70 & 71 HLS - Evaluation	215	215	Complete	100.0%		
10345_6595	Outfall 023 - Design	1	1	Complete	100.0%		
10346_6596	Outfall 023 - Cleaning	1,098	1,098	Complete	100.0%		
10347_6605	Land Acquisition/Easements	5	5	Complete	100.0%		
10349_6611	Sections 70 & 71 HLS - Construction	417	417	Complete	100.0%		
10350_6616	Milton Financial Assistance	1,488	1,488	Complete	100.0%		
10386_6801	Outfall 023 - Structural Impovements	1,500	0	Future	0.0%	Jan-19	
141 Wastewater Process Optimization		**$10,328**	**$1,138**	**11.0%**	**11.0%**		
10367_6733	Planning	930	930	Complete	100.0%		
10412_6930	North System Hydraulic Study	571	207	36.3%	36.3%		
10413_6931	Somerville Sewer - Design	200	0	Future	0.0%	Oct-17	
10414_6932	Somerville Sewer - Construction	1,034	0	Future	0.0%	Mar-19	
10415_6933	Siphon - Planning	150	0	Future	0.0%	Nov-16	
19401_7412	Hydr Flood Engr Analysis N. Sy	7,442	0	Future	0.0%	Jan-16	
142 Wastewater Meter System-Equipment		**$26,438**	**$5,138**	**19.4%**	**19.4%**		
10371_6739	Planning / Study	100	0	Future	0.0%	Sep-13	
10379_6793	Equipment Purchase & Installation	5,138	5,138	Complete	100.0%		
10410_6928	Design	200	0	Future	0.0%	Jul-14	
10411_6929	Construction	1,000	0	Future	0.0%	Apr-16	
10451_7191	WW Metering Asset Protect/Equip Purch	20,000	0	Future	0.0%	Jul-15	
145 Facility Asset Protection		**$279,794**	**$15,347**	**5.5%**	**5.5%**		
10380_6795	Prison Point HVAC Upgrades-Construct.	2,906	2,439	83.9%	83.9%		Dec-13
10381_6796	Remote Headworks Heating Syst Upgrade	1,175	1,175	Complete	100.0%		
10382_6797	Alewife Brook Pump Stn Rehab - Const.	8,939	0	Future	0.0%	Jul-14	
10383_6798	Rehab of Section 93A Lexington	1,566	1,566	Complete	100.0%		
10387_6802	Chelsea Creek Upgr ESDC/REI	2,142	0	Future	0.0%	Feb-15	
10392_6829	Technical Assistance	83	49	59.0%	59.0%		Mar-22
10394_6842	Sections 80 & 83	365	365	Complete	100.0%		
10395_6843	Section 160	1,581	1,581	Complete	100.0%		
10396_6857	Survey	11	11	Complete	100.0%		
10397_6858	Permits	9	9	Complete	100.0%		
10399_6886	Remote Headworks Concept Plan	670	688	Complete	102.7%		
10418_6936	Interceptor Renewal No. 2	9,616	0	Future	0.0%	Sep-18	
10419_6937	Alewife Brook Pump Stn Rehab - Des/CA	223	223	Complete	100.0%		
10420_6938	Prison Point HVAC Upgrades - Design	452	449	Complete	99.3%		
10423_6987	93 A Force Main Replacement	462	462	Complete	100.0%		
10424_7004	Mill Brook Valley Sewer Section 79&92	542	542	Complete	100.0%		
10427_7033	Hingham Pump Stn Isolation Gate-Const	125	125	Complete	100.0%		
10428_7034	Alewife Brook PS Final Des/CA/REI	1,640	127	7.7%	7.7%		Aug-17
10431_7037	Caruso PS Improve Des/CA/REI	773	0	Future	0.0%	Aug-12	
10440_7073	Land/Easements	103	103	Complete	100.0%		
10444_7144	Nut Island Headworks Fire Alarm/Wire	285	285	Complete	100.0%		
10445_7161	Chelsea Creek Upgr Construction	52,050	0	Future	0.0%	Feb-15	

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10446_7162	Pump Stns & CSOs Condition Assessment	3,000	0	Future	0.0%	Jul-14	
10448_7164	Interceptor Renewal No.1 - Construct.	3,800	0	Future	0.0%	Sep-16	
10455_7206	Chelsea Creek Upgr Design/CA	7,283	1,240	17.0%	17.0%		Jul-18
10457_7216	Malden&Melrose Hydraulics&Struc-Study	300	0	Future	0.0%	Jan-19	
10458_7217	Malden&Melrose Hydraulics&Struc-Const	1,000	0	Future	0.0%	Jul-20	
10459_7218	Nut Island Fire Pump Building - Study	600	0	Future	0.0%	Mar-14	
10460_7219	NI Mechanical&Electrical Replacements	3,000	0	Future	0.0%	Jul-16	
10463_7237	Headworks Effluent Shaft - Study	500	0	Future	0.0%	Jul-15	
10464_7248	Melrose Sewer	0	654	Complete	100.0%		
10467_7279	Inter Ren. No. 3 Camb/Some Sect 26&27	5,000	0	Future	0.0%	Sep-21	
10468_7280	Inter Ren. No. 4 Evrtt Sect 23/24/156	3,000	0	Future	0.0%	Sep-24	
10469_7281	Cottage Farm Fuel System Upgrade	482	0	Future	0.0%	Jun-12	
10477_7312	NI Elec & Grit/Sreens Conveyance-Des	1,025	325	31.7%	31.7%		Nov-15
10478_7313	NI Elec & Grit/Sreens Conveyance-Con	8,046	0	Future	0.0%	Jun-13	
10481_7328	Interceptor Renewal No. 5 - Milton	4,000	0	Future	0.0%	Sep-27	
10482_7329	Interceptor Renewal No. 6 - Chelsea	11,000	0	Future	0.0%	Sep-30	
10484_7344	Somer/Marginal Influent Gates Replace	367	367	Complete	100.0%		
10485_7358	PP Dry Weather Flow&Strip Pump Improv	750	0	Future	0.0%	Jul-14	
10486_7359	PP/CF CSO Rehab Prelimin Design/Study	1,000	0	Future	0.0%	Jul-14	
10487_7360	System Relief & Contingency Planning	500	0	Future	0.0%	Jul-20	
10488_7361	DeLauri PS Improvements	407	0	Future	0.0%	Jun-13	
10489_7362	Caruso PS Impovements - Const	2,356	0	Future	0.0%	Sep-14	
10500_7375	Pump Stn. Rehab-Prelim. Design/Study	750	0	Future	0.0%	Jul-15	
10503_7393	Sect 156 Rehab - Design/Build	2,563	2,563	Complete	100.0%		
10504_7410	Interceptor Ren #2 Des/CA/REI	2,000	0	Future	0.0%	Mar-17	
10505_7421	Sect 4,5,6 North Met Design CS/RI	1,000	0	Future	0.0%	Jul-14	
10506_7422	Sect 4,5,6 North Met Construction	12,000	0	Future	0.0%	Jul-17	
10507_7423	Rehab of Sects 186 and 4 Construction	3,539	0	Future	0.0%	Dec-13	
10510_7429	Ward St. HWKS Upgr Des ESDC/REI	9,747	0	Future	0.0%	Sep-15	
10511_7430	Ward St. Headworks Construction	95,330	0	Future	0.0%	Sep-18	
10512_7431	Columbus Park HWKS Upgr Des ESDC/REI	3,300	0	Future	0.0%	Jul-14	
10515_7452	Diesel Engine Upgrade	5,099	0	Future	0.0%	Jul-13	
146 D.I. Cross Harbor Tunnel Inspection		**$5,000**	**$0**	**Future**	**0.0%**		
10454_7199	Tunnel Shaft Repairs - Plan/Des/Const	5,000	0	Future	0.0%	Jul-18	
147 Randolph Trunk Sewer Relief		**$750**	**$0**	**Future**	**0.0%**		
10461_7220	Study	750	0	Future	0.0%	Jul-18	
206 DI Treatment Plant Asset Protection		**$606,848**	**$132,410**	**21.8%**	**21.8%**		
18045_6196	DITP Roof Replacements	2,300	2,300	Complete	100.0%		
19162_6241	DISC Application	125	125	Complete	100.0%		
19176_6422	Pump Packing Replacement	732	732	Complete	100.0%		
19177_6423	Demineralizer Construction	51	51	Complete	100.0%		
19182_6478	Equipment Replacement Projection	25,000	0	Future	0.0%	Jul-18	
19188_6538	Ancillary Mods - Construction 4	11,052	0	Future	0.0%	Jul-17	
19193_6594	Equipment Condition Monitoring	1,777	1,777	Complete	100.0%		
19204_6668	Expansion Joint Repair - Design	149	149	Complete	100.0%		
19205_6669	Expansion Joint Repair - Construct. 1	305	305	Complete	100.0%		
19217_6704	Expansion Joint Repair - Construct. 2	1,928	0	Future	0.0%	Aug-12	
19218_6705	Expansion Joint Repair - Construct. 3	1,832	0	Future	0.0%	May-16	

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19220_6721	As-needed Design Phase 6-1	1,950	1,797	92.2%	92.2%		
19221_6722	As-needed Design Phase 6-2	1,798	1,642	91.3%	91.3%		
19222_6723	Eastern Seawall Design - 1	611	0	Future	0.0%	Jan-15	
19223_6724	Eastern Seawall Construction - 1	3,563	0	Future	0.0%	Jan-18	
19227_6728	Digester Gas Flare #4 - Design	466	0	Future	0.0%	Jan-19	
19228_6729	Digester Gas Flare #4 - Construction	1,049	0	Future	0.0%	Jan-20	
19230_S464	Roof Replacement - Phase I	2,750	2,750	Complete	100.0%		
19231_6742	Drive Chain Replacement	264	264	Complete	100.0%		
19236_6763	Busduct Replacement (2+22)	196	196	Complete	100.0%		
19237_6764	Reline Hypochlorite Tanks 1 & 3	1,691	1,691	Complete	100.0%		
19238_6765	CTG Modifications	482	482	8.0%	8.0%		
19239_6767	Electrical Equipment Upgrade-Const 2	1,913	1,913	Complete	100.0%		
19241_6791	Document Format Conversion	145	56	38.6%	38.6%		Jun-14
19243_6811	Outfall Modification - Inspection	174	174	Complete	100.0%		
19244_6812	Secondary Clarifier Access	275	275	Complete	100.0%		
19245_6813	Transformer Replacement	1,703	1,703	Complete	100.0%		
19250_6849	Reline Hypochlorite Tanks 2 & 4	2,242	2,242	Complete	100.0%		
19252_6851	Chemical Pipe Replacement - Design	544	0	Future	0.0%	Jun-15	
19253_6852	Chemical Pipe Replacement - Construct	2,213	0	Future	0.0%	Jun-16	
19254_6853	Sodium Hypo Pipe Replacement - Design	2,213	0	Future	0.0%	Nov-13	
19255_6854	Sodium Hypo Pipe Replacement - Const.	7,745	0	Future	0.0%	Nov-14	
19256_6855	Electrical Equipment Upgrade-Const. 3	15,174	15,174	Complete	100.0%		
19258_6875	WTF VFD Replacement - Construction	3,950	0	Future	0.0%	Jun-14	
19259_6876	Heat Loop Pipe Replacement - Constr 1	615	615	Complete	100.0%		
19260_6877	Miscellaneous VFD Replacements	2,625	932	35.5%	35.5%		Jun-14
19263_6880	LOCAT Scrubber Replacement - Design	900	0	Future	0.0%	Nov-17	
19264_6881	Grit Air Handler Replacements	1,752	1,752	Complete	100.0%		
19265_6882	CEMS Equipment Replacement	100	100	Complete	100.0%		
19266_6883	Heat Loop Pipe Replacement - Const. 2	1,488	1,488	Complete	100.0%		
19267_6884	PICS Replacement - Construction	1,302	324	24.9%	24.9%		Jun-15
19268_6899	Primary&Second Clarifier Rehab-Const	56,703	56,788	Complete	100.1%		
19270_6901	Electrical Equipment Upgrade-Const 4	10,862	0	Future	0.0%	May-13	
19271_6902	NMPS VFD Replacement - Design/ESDC	1,306	1,232	94.3%	94.3%		
19272_6903	NMPS VFD Replacement - Construction	24,190	1,283	5.3%	5.3%		May-15
19273_6904	Fire Alarm System Replacement-Design	2,100	0	Future	0.0%	Sep-13	
19276_6965	Primary&Second Clarifier Rehab-Design	1,680	1,645	97.9%	97.9%		Sep-13
19277_6966	Gravity Thickener Improvements-Constr	733	733	Complete	100.0%		
19278_6967	STG System Modifications - Design	406	406	Complete	100.0%		
19279_6968	Electrical Equipment Upgrade 3 - REI	1,112	1,112	Complete	100.0%		
19283_6972	NMPS Motor Control Center - Constr	914	150	16.4%	16.4%		
19284_6973	STG System Modifications - Construct.	2,570	2,569	Complete	100.0%		
19287_7005	Digester Chiller Replacement	635	635	Complete	100.0%		
19288_7006	Dystor Tank Membrane Replacement	640	640	Complete	100.0%		
19289_7051	Fire Alarm System Replacement - Const	16,000	0	Future	0.0%	Sep-15	
19290_7052	Digester & Storage Tank Rehab Des/ESDC	3,000	0	Future	0.0%	Oct-13	
19292_7054	Thick Primary Sludge Pump Repl-Constr	27	27	Complete	100.0%		
19293_7055	Digester Modules 1 & 2 Pipe Replacemt	7,096	1,755	24.7%	24.7%		Aug-14
19294_7056	LOCAT Scrubber Replacement - Constr.	4,270	0	Future	0.0%	Nov-18	

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19295_7057	Centrifuge Backdrive Replacement	3,958	26	0.7%	0.7%		Feb-15
19296_7058	Switchgear Replacement - Design	1,527	0	Future	0.0%	Jun-15	
19297_7059	Switchgear Replacement - Construction	4,270	0	Future	0.0%	Jun-17	
19298_7060	Power Consultant Recommned - Design	2,097	2,097	Complete	100.0%		
19299_7061	Power System Improvements - Construct	8,423	5,249	62.3%	62.3%		Sep-15
19300_7062	NMPS VFD Replacement - REI	1,322	0	Future	0.0%	Dec-12	
19301_7063	Heat Loop Pipe Replacement - Const. 3	11,339	11,339	Complete	100.0%		
19303_7088	Ancillary Modifications - Final Des 4	4,072	0	Future	0.0%	Jan-15	
19304_7089	Sodium Hypo Tank Liner Removal	196	196	Complete	100.0%		
19305_7090	As-needed Design Phase 5-1	955	955	Complete	100.0%		
19306_7091	As-needed Design Phase 5-2	1,056	1,056	Complete	100.0%		
19307_7094	TPP Fuel System Mod REI	800	0	Future	0.0%	Sep-13	
19309_7111	HVAC Equipment Replacement - Des/ESDC	3,500	0	Future	0.0%	Aug-13	
19310_7110	HVAC Equipment Replacement - Const.	17,101	0	Future	0.0%	Apr-16	
19311_7121	DI As-needed Technical Design	21,050	0	Future	0.0%	Dec-15	
19313_7123	Digester Sludge Pump Repl - Construct	2,322	1,507	64.9%	64.9%		Jun-14
19314_7124	Electrical Equipment Upgrade Phase 5	23,162	0	Future	0.0%	Dec-17	
19316_7126	Future SSPS VFD Replacements - Design	4,800	0	Future	0.0%	Jul-17	
19317_7127	Future SSPS VFD Replacements - Const.	19,200	0	Future	0.0%	Nov-18	
19318_7128	Future NMPS VFD Replacements - Design	4,420	0	Future	0.0%	Jun-21	
19319_7129	Future NMPS VFD Replacements - Const.	17,680	0	Future	0.0%	Sep-22	
19320_7130	Future Misc. VFD Replacements-Design	1,333	0	Future	0.0%	Dec-14	
19321_7131	Future Misc. VFD Replacements-Const.	5,334	0	Future	0.0%	May-17	
19322_7132	DI Switchgear Replacement - Design	4,500	0	Future	0.0%	Jul-16	
19323_7133	DI Switchgear Replacement - Construct	16,000	0	Future	0.0%	Jul-18	
19324_7134	DI PICS Replacement - Construction	5,400	0	Future	0.0%	Feb-21	
19325_7135	DI Dystor Membrane Replacements	3,000	0	Future	0.0%	Jul-16	
19326_7136	DI CTG Rebuilds	6,000	0	Future	0.0%	Jul-16	
19327_7137	DI Centrifuge Replacements - Design	4,160	0	Future	0.0%	Dec-15	
19328_7138	DI Centrifuge Replacements-Construct	16,640	0	Future	0.0%	Jul-18	
19329_7139	Cryogenics Plant-Equip Replace-Design	1,600	0	Future	0.0%	Dec-13	
19330_7140	Cryogenics Plant-Equip Replace-Const.	5,300	0	Future	0.0%	Apr-15	
19332_7142	Future Sodium Hypo Tank Rehab	10,000	0	Future	0.0%	Jul-17	
19334_7168	Barge Berth and Facility Replacement	2,265	0	Future	0.0%	Sep-13	
19335_7169	South Systm PS Lube System Replace.	2,900	0	Future	0.0%	Jul-18	
19336_7170	E/W Odor Control Air Handler Replace.	2,000	0	Future	0.0%	Jun-25	
19338_7172	PICS Distributed Process Units Replac	8,000	0	Future	0.0%	Feb-21	
19339_7275	NMPS & WTF Butterfly Valve Replace.	10,000	0	Future	0.0%	Jun-13	
19345_7373	Digester & Storage Tank Rehab - Const.	21,700	0	Future	0.0%	Jun-18	
19346_7374	Clarif W3H Flush Syst	1,228	0	Future	0.0%	Jul-12	
19347_7394	Clarifier Ph 2 Des	3,000	0	Future	0.0%	Nov-13	
19348_7395	Clarif Rehab2 Const	27,000	0	Future	0.0%	Dec-17	
19349_7396	Clarif Tip Tube Repl	20,000	0	Future	0.0%	Jun-13	
19352_7398	Cryo Chillers Replac	1,100	0	Future	0.0%	Sep-13	
19353_7399	As-Needed Des 7-1	1,600	0	Future	0.0%	Oct-12	
19354_7400	As-Needed Des 7-2	1,600	0	Future	0.0%	Oct-12	
19355_7401	TPP Boiler Ctrl Replac	1,000	0	Future	0.0%	Aug-13	
19356_7413	Sod Hypo Repl REI	600	0	Future	0.0%	Nov-14	

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19557_7414	NMPS Harmonic Filter Repl	3,000	0	Future	0.0%	May-18	
19558_7415	Fuel Pipe Cementing	230	0	Future	0.0%	Aug-12	
19559_7416	Electr Equip Upgr 4 REI	1,200	0	Future	0.0%	Feb-14	
19561_7420	NMPS MCC Ph 2 Const	6,086	0	Future	0.0%	Jul-14	
19562_7424	Roof Replacement Phase 3	1,300	0	Future	0.0%	Jun-13	
19563_7426	Fire Systm Repl REI	1,800	0	Future	0.0%	Sep-15	
19564_7427	Grav Thick Ctr Col Repl	747	0	Future	0.0%	Jan-13	
19565_7428	Grav Thicknr Rehab	5,786	0	Future	0.0%	Feb-14	
40256_7449	Sodium Bisulfite Tanks Rehab	2,543	0	Future	0.0%	Jan-15	
210 Clinton Wastewater Treat Plant		**$17,059**	**$756**	**4.4%**	**4.4%**		
19302_7075	Clinton Soda Ash Replacement	267	267	Complete	100.0%		
19308_7095	Clinton Permanent Standby Generator	230	230	Complete	100.0%		
19340_7276	Clinton Plant-Wide Concrete Repair	63	63	Complete	100.0%		
19341_7277	Clinton Digester Cleaning & Rehab	3,200	89	2.8%	2.8%		Jun-15
19342_7278	Clinton Aeration Effciency Improvement	2,063	107	5.2%	5.2%		
19400_7411	PhosRemov Constr	5,758	0	Future	0.0%	Aug-15	
19350_7377	Phos Remov Des/ESDC	900	0	Future	0.0%	Jun-13	
19400_7411	PhosRemov Constr	5,758	0	Future	0.0%	Aug-15	
19405_7450	Clinton Roofing Rehab	509	0	Future	0.0%		
19406_7451	Clinton Facilities Rehab	4,069	0	Future	0.0%		
211 Laboratory Services		**$2,235**	**$2,074**	**92.8%**	**92.8%**		
19152_6197	Metals Lab Fume Hood Replacem - Const	995	847	85.1%	85.1%		
19249_6848	Metals Lab Fume Hood Replacem - Desig	271	258	95.2%	95.2%		
19251_6850	Metals Lab Modification - Construction	969	969	Complete	100.0%		
271 Residuals Asset Protection		**$104,209**	**$345**	**0.3%**	**0.3%**		
26069_7143	Residual Facility Plan / EIR	1,000	0	Future	0.0%	Jan-14	
26070_7145	Residuals Facility Upgrade - Design	2,000	0	Future	0.0%	Jan-18	
26071_7146	Residuals Facility Upgrade-Construct.	10,000	0	Future	0.0%	Jul-18	
26072_7147	Condition Assess/Tech & Reg Review	959	345	36.0%	36.0%		Jan-14
26074_7149	Six Rotary Dryer Replacements-Const.	15,000	0	Future	0.0%	Jul-18	
324 CSO Support		**$50,315**	**$49,559**	**98.5%**	**98.5%**		
32400_5790	Technical Assistance	228	228	Complete	100.0%		
32401_5791	Planning/EIR	10,769	10,769	Complete	100.0%		
32403_5716	Master Planning	21,763	21,763	Complete	100.0%		
32407_5970	Technical Assistance - Geotech	61	61	Complete	100.0%		
32409_5795	Modeling	300	300	Complete	100.0%		
32411_5767	SOP Program	773	1,957	Complete	253.2%		
32645_6036	Watershed Planning	877	877	Complete	100.0%		
32648_6150	Technical Review	2,038	529	26.0%	26.0%		Dec-20
32658_6169	Land Acquisition/Easement	13,182	13,049	Complete	99.0%		
32691_6372	System Assessment	324	27	8.3%	8.3%		Dec-20
339 North Dorchester Bay		**$223,060**	**$221,541**	**Complete**	**99.3%**		
10426_7032	North Dorchester Outfall-Design/CA/RI	1,006	407	40.5%	40.5%		
32660_6220	Tunnel - Design/ESDC	23,065	22,964	Complete	99.6%		
32661_6244	Tunnel - Construction (Ch30)	147,531	147,531	Complete	100.0%		
32662_6245	Dewatering Pump Station & Sewers-Con	27,144	27,144	Complete	100.0%		
32726_6993	Tunnel & Facilities - CM Services	9,258	9,022	97.5%	97.5%		
32732_7012	Pleasure Bay - Construction	3,195	3,195	Complete	100.0%		

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32733_7013	Design/ESDC/Facilities	4,887	4,804	98.3%	98.3%		
32744_7103	Tunnel Rescue/Emergency Response	793	793	Complete	100.0%		
32745_7259	Ventilation Building - Construction	5,462	5,462	Complete	100.0%		
32746_7345	Communication Systems	217	217	Complete	100.0%		
32747_4094	No. Dorchester Outfall Dredging-Const	500	0	Future	0.0%	Jul-14	
341 Dorchester Bay Sewer Separation (Commercial Point)		**$64,776**	**$60,451**	**93.3%**	**93.3%**		
32650_6154	Design	17,665	16,237	91.9%	91.9%		Jun-16
32665_6248	Construction	47,111	44,215	93.9%	93.9%		Jun-16
346 Cambridge Sewer Separation		**$85,834**	**$35,489**	**41.3%**	**41.3%**		
32654_6161	Design/CS/RI	28,208	15,408	54.6%	54.6%		Jun-16
32672_6255	Construction	57,626	20,081	34.8%	34.8%		Dec-15
355 MWR003 Gate & Siphon		**$4,005**	**$149**	**3.7%**	**3.7%**		
32722_6952	Design	1,550	149	9.6%	9.6%		Sep-16
32723_6953	Construction 1	278	0	Future	0.0%	Sep-13	
32755_7409	Construction 2	2,177	0	Future	0.0%	Aug-14	
359 Reserved Channel Sewer Separation		**$64,809**	**$41,530**	**64.1%**	**64.1%**		
32727_6994	Construction	50,431	30,708	60.9%	60.9%		Dec-15
32734_7014	Design	14,378	10,822	75.3%	75.3%		Jun-16
360 Brookline Sewer Separation		**$25,977**	**$25,263**	**97.3%**	**97.3%**		
32736_7076	Design/CS/RI	5,342	5,342	Complete	100.0%		
32737_7077	Construction	20,635	19,921	96.5%	96.5%		
542 Carroll Water Treatment Plant		**$433,253**	**$391,220**	**90.3%**	**90.3%**		
53293_5023	Study 1	444	444	Complete	100.0%		
53294_5024	Study 2	2,368	2,368	Complete	100.0%		
53296_5042	EIR / Conceptual Design	5,808	5,808	Complete	100.0%		
53300_5997	Technical Assistance	72	72	Complete	100.0%		
53301_5017	Wachusett WTP - Design/CS/RI	46,606	46,606	Complete	100.0%		
53304_5157	Permit Fees	80	80	Complete	100.0%		
53367_6118	Cryptosporidium Inactivation Study	150	150	Complete	100.0%		
53371_6134	Management Support - Design	1,730	1,730	Complete	100.0%		
53375_6182	AWWARF Study	650	650	Complete	100.0%		
53376_6206	Emerg Discharge Reserv Water Mgmt Study	1,454	1,454	Complete	100.0%		
53377_6207	Wachusett and Cosgrove Intakes - CP1	15,489	15,489	Complete	100.0%		
53378_6208	Construction Management / RI	31,438	31,438	Complete	100.0%		
53390_6365	Cosgrove Disinfection - Phase II	2,169	2,169	Complete	100.0%		
53391_6397	Cosgrove Disinfection - Phase I	150	150	Complete	100.0%		
53392_6401	Distribution Water Consultant	3	3	Complete	100.0%		
53393_6406	Immediate Disinfection - MECO	10	10	Complete	100.0%		
53406_6479	Cosgrove Disinfection Fac. - Underwater	217	217	Complete	100.0%		
53410_6485	Community Chlorine Analyzers	49	49	Complete	100.0%		
53412_5522	Wachusett Aqueduct Interim Rehab. - CP2	23,400	23,400	Complete	100.0%		
53413_6488	Sitework & Storage Tanks - CP3	67,368	67,368	Complete	100.0%		
53414_6489	Treatment Facilities - CP4	145,871	145,871	Complete	100.0%		
53416_6491	Late Sitework - CP6	4,088	4,088	Complete	100.0%		
53418_6494	OCIP	5,107	5,107	Complete	100.0%		
53419_6495	Professional Services	2,752	2,752	Complete	100.0%		
53420_6497	Marlboro MOA	5,859	5,859	Complete	100.0%		
53421_6520	CWTP- MECO	128	128	Complete	100.0%		

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53425_6613	Site Security Services	1,264	1,264	Complete	100.0%		
53426_6650	Existing Facilities Modifications - CP7	6,077	0	Future	0.0%	Sep-13	
53427_6670	CSX Crossing	65	65	Complete	100.0%		
53428_6671	Wachusett Algae - Design CS/RI	450	0	Future	0.0%	Jul-15	
53432_6691	Public Health Research	1,703	1,703	Complete	100.0%		
53435_6756	Security Equipment	571	571	Complete	100.0%		
53437_6773	Cosgrove Screens, CP8 - Construction	3,238	3,238	Complete	100.0%		
53443_6815	AWWARF - Evaluation Ozone & UV	302	302	Complete	100.0%		
53445_6827	Fitout / Construction	1,500	546	36.4%	36.4%		Aug-15
53448_6889	Wachusett Algae - Construction	1,800	0	Future	0.0%	Feb-16	
53450_6923	CWTP Ultraviolet Disinfection-Des/ESDC/R	4,394	1,816	41.3%	41.3%		Apr-15
53451_6924	CWTP Ultraviolet Disinfection-Constr.	31,644	11,465	36.2%	36.2%		Mar-14
53452_6939	As-needed Technical Assistance #1	491	491	Complete	100.0%		
53453_6951	Existing Fac Modif., CP7 - Design	1,623	806	49.7%	49.7%		Mar-16
53455_6989	As-needed Technical Assistance	702	702	Complete	100.0%		
53456_7084	Ancillary Modifications - Construct. 1	160	160	Complete	100.0%		
53457_7085	Ancillary Modifications - Construct. 2	6,190	3,597	58.1%	58.1%		Jun-16
53458_7192	Ancillary Modifications - Design 3	299	299	Complete	100.0%		
53459_7208	Ancillary Modifications - Design 4	527	527	Complete	100.0%		
53464_7315	Technical Assistance 5	486	117	24.1%	24.1%		
53465_7316	Technical Assistance 6	613	90	14.7%	14.7%		
53470_7376	CWTP Storage Tank Roof Drainage Sys.	4,066	0	Future	0.0%	May-14	
75530_7406	Technical Assistance 7	563	0	Future	0.0%	Jun-13	
75531_7407	Technical Assistance 8	563	0	Future	0.0%	Jun-13	
75546_7455	CWTP-Asset Protection	500	0	Future	0.0%		
543 Quabbin Water Treatment Plant		**$17,393**	**$10,833**	**62.3%**	**62.3%**		
53363_6043	Quabbin WTP - Design/CA/RI	3,794	3,794	Complete	100.0%		
53380_6210	Permit Fees	32	12	37.5%	37.5%		Dec-13
53381_6211	Utilities	13	13	Complete	100.0%		
53382_6212	Construction	5,071	5,071	Complete	100.0%		
53433_6706	Ware Fire Department - MOA	25	25	Complete	100.0%		
53434_6711	Water Quality Analysis Equipment	49	49	Complete	100.0%		
53439_6775	Quabbin UVWTP - Design/CA/RI	1,791	727	40.6%	40.6%		Jul-15
53440_6776	Quabbin UVWTP - Construction	5,476	0	Future	0.0%	Jan-13	
53442_6804	Quabbin UVWTP -Study/Pilot	1,142	1,142	Complete	100.0%		
545 Blue Hills Covered Storage		**$40,704**	**$39,970**	**98.2%**	**98.2%**		
53385_6215	Technical Support & Permit Compliance	104	26	25.0%	25.0%		Dec-15
53386_6216	Design / Build	37,668	37,545	Complete	99.7%		
53460_7213	Roadway Resurfacing - Design	61	0	Future	0.0%	Jul-14	
53461_7214	Roadway Resurfacing - Construction	313	0	Future	0.0%	Apr-15	
68025_6139	EIR/Preliminary Design/OR	2,557	2,399	93.8%	93.8%		
550 Spot Pond Storage Facility		**$59,149**	**$11,035**	**18.7%**	**18.7%**		
53400_6455	Environmental Review	233	233	Complete	100.0%		
53402_6457	Design / Build	49,802	4,390	8.8%	8.8%		Nov-14
53447_6868	Easement/Land Acquis/Permits	6,000	5,135	85.6%	85.6%		Dec-14
53462_7233	Owners' Representative	2,892	916	31.7%	31.7%		Jul-15
53463_7314	Early Construction Water Connection	222	362	Complete	163.1%		
597 Winsor Station Pipeline		**$27,256**	**$1,389**	**5.1%**	**5.1%**		

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60032_6276	Preliminary Permit, Study & Licensing	38	38	Complete	100.0%		
60033_6277	Quabbin Aqueduct TV Inspection	2,806	0	Future	0.0%	Jul-18	
60077_7017	Hatchery Pipeline - Design/ESDC/RI	750	0	Future	0.0%	Nov-13	
60087_7114	Quabbin Aqueduct & WPS Upg. Design/CA/RI	2,320	566	24.4%	24.4%		Jan-18
60088_7115	Winsor Station Rehab & Improvement	9,343	0	Future	0.0%	Jul-18	
60095_7197	Shaft 12 Construction	8,251	0	Future	0.0%	Jul-18	
60096_7198	Shaft 2 Construction	331	0	Future	0.0%	Jul-18	
60101_7212	Winsor Station Chapman Valve Repai	416	416	Complete	100.0%		
60105_7234	Purchase of Sleeve Valves	368	368	Complete	100.0%		
60106_7235	Hatchery Pipeline - Construction	2,098	0	Future	0.0%	Feb-15	
60140_7460	Shaft 12 Power / Comm Constr	534	0	Future	0.0%	Jul-14	
604 MetroWest Tunnel		**$708,786**	**$683,665**	**96.5%**	**96.5%**		
59794_5043	Study	415	415	Complete	100.0%		
59795_5044	Design/EIR - Tunnel/ESDC	37,939	37,939	Complete	100.0%		
59796_5048	Sudbury Pipe Bridge - Construction	296	296	Complete	100.0%		
59798_6054	West Tunnel Segment - CP1	147,787	147,787	Complete	100.0%		
59799_5284	Construction Managementt/Resident Inspec	39,428	39,428	Complete	100.0%		
59804_5976	Technical Assistance	131	131	Complete	100.0%		
59805_5139	Land Acquisition	6,259	6,259	Complete	100.0%		
59806_5141	Hultman Study	1,864	1,864	Complete	100.0%		
60012_6037	DEP Permit Fees	58	56	96.6%	96.6%		Sep-14
60013_6055	Middle Tunnel Segment - CP2	245,809	245,809	Complete	100.0%		
60014_6056	MHD Salt Sheds - CP5	1,314	1,314	Complete	100.0%		
60015_6059	Shaft 5A - CP3	5,872	5,872	Complete	100.0%		
60017_6063	Local Supply Contingency - Design/CA/RI	859	859	Complete	100.0%		
60018_6067	Community Technical Assistance	297	297	Complete	100.0%		
60020_6117	Professional Services	731	731	Complete	100.0%		
60021_6122	OCIP	26,022	26,022	Complete	100.0%		
60022_6128	Hultman Leak Repair	307	307	Complete	100.0%		
60023_6129	Framingham MOU	2,444	2,444	Complete	100.0%		
60024_6130	Local Supply Contingency - Construction	4,298	4,298	Complete	100.0%		
60025_6131	Local Supply Contingency - Legal/Easemen	9	9	Complete	100.0%		
60026_6140	Hultman Repair Bands	28	28	Complete	100.0%		
60029_6203	Loring Road Storage Tanks - CP-8	41,368	41,368	Complete	100.0%		
60030_6204	Testing & Disinfection - CP7	3,612	3,612	Complete	100.0%		
60031_6205	Upper Hultman Rehab - CP6B	6,018	834	13.9%	13.9%		
60038_6366	Southboro MOA	255	255	Complete	100.0%		
60039_6367	Weston MOA	1,006	1,006	Complete	100.0%		
60040_6374	East Tunnel Segment - CP3A	56,145	56,100	Complete	99.9%		
60042_6430	Hultman Investigation and Repair	1,604	1,604	Complete	100.0%		
60043_6492	Hultman Repair Bands 98-99	116	116	Complete	100.0%		
60053_6762	Wayland MOA	35	35	Complete	100.0%		
60054_6777	Equipment Prepurchase	198	198	Complete	100.0%		
60058_6856	Hultman Rehab - CP9	3,257	3,257	Complete	100.0%		
60059_6872	Interim Disinfection	1,245	1,245	Complete	100.0%		
60066_6911	Hultman Interconnect - Final Design/CA/I	5,884	4,866	82.7%	82.7%		Sep-14
60072_6950	Valve Chamber Modifications - Design CA/	1,163	0	Future	0.0%	Jul-16	
60073_6975	Lower Hultman Rehab -CP6A	52,277	45,639	87.3%	87.3%		

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60083_7082	Hultman Interconnect - RI Services	2,049	1,277	62.3%	62.3%		Jan-15
60085_7105	CP6 Easements	175	31	17.7%	17.7%		Apr-14
60086_7106	CP6A Demolition	57	57	Complete	100.0%		
60109_7283	Valve Chamber & Storage Tank Access Impr	3,000	0	Future	0.0%	Jul-14	
60128_7367	Shaft 5 Electrical Upgrade	1,000	0	Future	0.0%	Jan-19	
60129_7368	Shaft 5A/5 Surface Piping Inspect./Resto	1,500	0	Future	0.0%	Jul-14	
75525_7755	Valve Chamber Modifications - Constructi	4,652	0	Future	0.0%	Jan-18	
616 Quabbin Transmission System		**$13,516**	**$4,913**	**36.3%**	**36.3%**		
60055_6828	Facilities Inspection	1,005	1,005	Complete	100.0%		
60075_7007	Equipment Pre-purchase	534	534	Complete	100.0%		
60103_7229	Oakdale Phase 1A Electrical - Design	800	412	51.5%	51.5%		Jul-14
60104_7230	Oakdale Phase 1A Electrical - Constructi	2,194	80	3.6%	3.6%		
60108_7282	Ware River Intake Valve Replacement	1,200	0	Future	0.0%	Jul-15	
60112_7332	CVA Intake Motorized Screens Replacement	500	0	Future	0.0%	Jul-17	
60113_7333	Wachusett Lower Gatehouse Rehab	2,200	0	Future	0.0%	Jul-15	
60135_7378	Rehabilitate Oakdale Turbine	1,000	0	Future	0.0%	May-20	
60136_7379	Geo-Thermal Heat Wachusett Gatehouse	200	0	Future	0.0%	May-19	
60137_7380	Rehab Wach. Gatehouse Chamber 4 Piping	1,000	0	Future	0.0%	Jan-19	
75491_6690	Oakdale Valves - Phase 1 Construction	1,811	1,811	Complete	100.0%		
75496_6831	Oakdale Valves - Phase 1 Study & Design	1,070	1,070	Complete	100.0%		
617 Sudbury/Weston Aqueduct Repairs		**$4,327**	**$660**	**15.3%**	**15.3%**		
60056_6838	Sudbury Aqueduct Inspection	370	370	Complete	100.0%		
60057_6839	Technical Assistance	25	25	Complete	100.0%		
60070_6947	Weston Aqueduct Inspection	150	0	Future	0.0%	Jul-15	
60076_7016	Sudbury Short-Term Repairs	419	0	Future	0.0%	Jul-14	
60110_7317	Sudbury Short-Term Repairs - Phase 2	2,098	0	Future	0.0%	Jul-16	
60130_7369	Ash Street Sluice Gates	1,000	0	Future	0.0%	Jan-16	
75486_6617	Hazardous Material Sudbury Aqueduct	265	265	Complete	100.0%		
618 Northern High NW Tran Sections 70 & 71		**$1,000**	**$0**	**Future**	**0.0%**		
60063_6895	Planning	1,000	0				
621 Watershed Land		**$24,000**	**$15,564**	**64.9%**	**64.9%**		
60081_7069	Land Acquisition	24,000	15,564	64.9%	64.9%		Jun-18
623 Dam Projects		**$5,540**	**$2,888**	**52.1%**	**52.1%**		
60094_7194	Dam Safety Modificat. & Repairs - Constr	2,055	1,896	92.3%	92.3%		
60100_7211	Dam Safety Modificat. & Repairs Design/C	1,535	992	64.6%	64.6%		Jun-14
60118_7346	Oakdale Dam Permits	1	0	Future	0.0%	Jan-14	
60119_7347	Oakdale Dam - Design/ESDC/RI	200	0	Future	0.0%	Jul-15	
60120_7348	Oakdale Dam Removal - Construction	750	0	Future	0.0%	Jul-16	
60131_7370	Goodnough Dike Drainage Improvements	1,000	0	Future	0.0%	Jul-14	
625 Long Term Redundancy		**$375,435**	**$1,677**	**0.4%**	**0.4%**		
60035_6273	Water Transmission Redundancy Plan	1,400	1,400	Complete	100.0%		
60090_7156	Cosgrove Redund PS Des/ESDC/RI	4,542	276	6.1%	6.1%		Apr-17
60091_7157	Cosgrove Redundancy PS Construction	45,608	0	Future	0.0%	Apr-14	
60092_7159	Sudbury Aqueduct - Design/CA/RI	52,497	0	Future	0.0%	Jul-18	
60093_7160	Sudbury Aqueduct Slipline - Construction	95,966	0	Future	0.0%	Jul-21	
60107_7291	MWWST/Sudbury Aqueduct Connection Const	155,436	0	Future	0.0%	Jul-20	
60122_7352	Sudbury Aqueduct - MEPA Review	3,405	0	Future	0.0%	Oct-12	
60123_7353	Chestnut Hill Final Connection - Constru	11,079	0	Future	0.0%	Jul-20	

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60126_7356	Tops of Shafts Rehab - Design/CA/RI	1,100	0	Future	0.0%	Jan-22	
60127_7357	Tops of Shafts Rehab - Construction	4,400	0	Future	0.0%	Jan-24	
677 Valve Replacement		**$22,311**	**$11,523**	**51.6%**	**51.6%**		
67559_5126	Construction 1	718	718	Complete	100.0%		
67560_5124	Technical Assistance	125	125	Complete	100.0%		
68005_6088	Equipment Purchase	4,038	1,112	27.5%	27.5%		Jun-18
68012_6105	Construction 2	1,357	1,357	Complete	100.0%		
68039_6278	Construction 3	1,338	1,338	Complete	100.0%		
68079_6345	Construction 4	1,540	1,540	Complete	100.0%		
68080_6346	Construction 5	1,389	1,389	Complete	100.0%		
68126_6435	Construction 6	1,572	1,572	Complete	100.0%		
68127_6436	Construction 7	2,859	2,365	82.7%	82.7%		
68239_6859	Permits	3	3	Complete	100.0%		
68240_6860	Easements	6	6	Complete	100.0%		
68300_7195	Construction 8	3,070	0	Future	0.0%	Jan-18	
68307_7236	Construction 9	3,070	0	Future	0.0%	Dec-19	
68330_7417	Phase 8 Design/CA/RI	614	0	Future	0.0%	Jan-16	
68331_7418	Phase 9 Design/CA/RI	614	0	Future	0.0%	Dec-17	
692 NHS - Section 27 Improvements		**$1,043**	**$124**	**11.9%**	**11.9%**		
67769_6333	Section 27 - Construction	918	27	2.9%	2.9%		Nov-19
68192_6589	Easements	23	0	Future	0.0%	Apr-16	
68211_6712	Technical Assistance	64	60	93.8%	93.8%		Mar-18
68229_6809	Surveying	37	37	Complete	100.0%		
693 NHS - Revere & Malden Pipeline Improvement		**$48,622**	**$26,833**	**55.2%**	**55.2%**		
67780_5185	Revere & Malden - Design/CS/RI	1,786	1,786	Complete	100.0%		
67781_5186	Revere Beach - Construction	6,314	6,314	Complete	100.0%		
67782_5176	Malden Section 53 - Construction	10,026	10,026	Complete	100.0%		
67784_5177	Revere Section 53 - Construction	2,938	2,938	Complete	100.0%		
67785_5191	Control Valves - Construction	949	949	Complete	100.0%		
67786_5179	DI Pipeline Cleaning & Lining - Construc	158	158	Complete	100.0%		
67787_5178	Winthrop Cleaning & Lining - Constructio	575	575	Complete	100.0%		
67790_6335	Sections 68 & 53A - Construction	6,732	0	Future	0.0%	Jul-16	
67791_5986	Technical Assistance	246	246	Complete	100.0%		
67792_5238	Linden Square - Construction	1,849	1,849	Complete	100.0%		
67793_5239	Linden Square - Construction Admin.	125	125	Complete	100.0%		
67996_6033	Road Restoration - Design/CA/RI	77	77	Complete	100.0%		
67997_6034	Road Restoration - Construction	1,714	1,714	Complete	100.0%		
68020_6113	Malden Section 53 - Landscaping	20	20	Complete	100.0%		
68033_6183	Sidewalk Restoration	54	54	Complete	100.0%		
68258_6958	Shaft 9A-D Extension - Construction	2,853	0	Future	0.0%	Mar-19	
68265_6978	Easements	30	0	Future	0.0%	Jul-06	
68280_7049	Permits	5	0	Future	0.0%	Apr-05	
75526_7402	Sections 68&53A Design/CA/RI	1,550	0	Future	0.0%	Jul-14	
75527_7403	Shaft 9A-D Design/CA/RI	619	0	Future	0.0%	Mar-17	
75545_7454	Sections 56 Replacement/Saugus	10,000	0	Future	0.0%		
702 New Connect Mains-Shaft 7 to WASM 3		**$33,351**	**$10,961**	**32.9%**	**32.9%**		
67846_5163	Routing Study	397	397	Complete	100.0%		
68035_6199	Watertown MOU	167	167	Complete	100.0%		

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68110_6383	CP1- Design/CA/RI	3,533	3,533	Complete	100.0%		
68111_6384	Des/CA/RI DP2/4 Meter 120	1,278	1,278	Complete	100.0%		
68112_6385	CP3 - Final Design/CA/RI	1,425	0	Future	0.0%	Jul-16	
68114_6387	CP1 A&B - Easements	17	17	Complete	100.0%		
68115_6388	CP3 - Easements	40	0	Future	0.0%	Jan-18	
68117_6390	CP5 - Easements	29	22	75.9%	75.9%		
68119_6392	CP3 - South Segment	7,355	0	Future	0.0%	Jul-18	
68121_6394	CP5 - Northeast Segment	5,548	5,548	Complete	100.0%		
68174_6548	CP2- Clean&Line Sections 59&60 - Constr	4,942	0	Future	0.0%	Jan-18	
68175_6547	CP2 -Easements	33	0	Future	0.0%	May-17	
68255_6955	Replacement of Section 25 - Design/CA/RI	533	0	Future	0.0%	Apr-16	
68256_6956	Replacement of Section 25 - Construction	2,666	0	Future	0.0%	Apr-18	
68286_7086	Section 59 & 60 - Design/CA/RI	988	0	Future	0.0%	Jan-16	
68315_7284	Section 75 Extension	4,400	0	Future	0.0%	Oct-15	
704 Rehabilitation of Other Pump Stations		**$55,058**	**$30,058**	**54.6%**	**54.6%**		
67885_5153	Preliminary Design	351	351	Complete	100.0%		
68017_6110	Design/CS/RI	2,546	2,546	Complete	100.0%		
68072_6304	Construction II & C	639	639	Complete	100.0%		
68102_6375	Rehab of 5 Pump Stations	21,848	21,848	Complete	100.0%		
68179_6557	Legal	6	6	Complete	100.0%		
68204_6676	Proprietary Equipment Purchases	158	158	Complete	100.0%		
68266_6980	Design 2 CS/RI	4,510	4,510	Complete	100.0%		
75522_7383	Pump Station Rehabilitation	25,000	0	Future	0.0%	Jul-19	
708 Northern Extra High Service New Pipelines		**$7,653**	**$3,632**	**47.5%**	**47.5%**		
67970_5242	Design/CA/RI	588	588	Complete	100.0%		
67972_6340	Construction	3,032	3,032	Complete	100.0%		
68162_6522	Sections 34 & 45 - Construction	3,300	0	Future	0.0%	Jul-17	
68176_6554	Public Participation	5	0	Future	0.0%	Jul-99	
68177_6555	Legal	5	0	Future	0.0%	Jul-99	
68210_6707	Technical Assistance	54	8	14.8%	14.8%		Jan-17
68215_6749	PLC Equipment Purchases	4	4	Complete	100.0%		
68281_7050	Permits	5	0	Future	0.0%	Nov-10	
75528_7404	Section 34 & 45 Design/CA/RI	660	0	Future	0.0%	Jul-15	
712 Cathodic Protection Of Distrubution Mains		**$1,591**	**$141**	**8.9%**	**8.9%**		
68002_6058	Planning Phase I	108	108	Complete	100.0%		
68129_6438	Test Station Installation 2	483	0	Future	0.0%	Jul-14	
68130_6439	Test Station Installation 3	483	0	Future	0.0%	Jul-17	
68131_6440	Test Station Installation 4	483	0	Future	0.0%	Jul-21	
68216_6751	Technical Assistance	33	33	Complete	100.0%		
713 Spot Pond Supply Mains Rehabilitation		**$66,243**	**$60,980**	**92.1%**	**92.1%**		
60114_7334	Sec 4 Webster Ave Bridge Pipe Rehab Des	500	0	Future	0.0%	Sep-13	
60115_7335	Sec 4 Webster Ave Bridge Pipe Rehab Con	1,500	0	Future	0.0%	Sep-14	
60116_7336	Section 50 Pipe Rehab - Design/ESDC/RI	500	0	Future	0.0%	Jul-16	
60117_7337	Section 50 Pipe Rehab - Construction	1,500	0	Future	0.0%	Jul-18	
68038_6223	Preliminary Design & Design/CA/RI	10,869	10,869	Complete	100.0%		
68059_6316	Easements & Paving - CP1	143	143	Complete	100.0%		
68060_6317	North (Medford/Melrose)	6,597	6,597	Complete	100.0%		
68106_6379	Easements - CP2	50	50	Complete	100.0%		

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68107_6380	Easements - CP3	80	80	Complete	100.0%		
68108_6381	Middle (Medford/Somerville)	22,177	22,177	Complete	100.0%		
68109_6382	South (Cambridge/Boston)	17,590	17,590	Complete	100.0%		
68150_6475	Early Valve Replacement Contract	2,387	2,387	Complete	100.0%		
68151_6476	Easements - CP4	1	1	Complete	100.0%		
68153_6483	Early Valve Equipment Purchase	161	161	Complete	100.0%		
68209_6697	Construction 4 - Bridge Trusses	1,263	0	Future	0.0%	Apr-17	
68274_7003	CA/RI - CP3	925	925	Complete	100.0%		
719 Chestnut Hill Connecting Mains		**$31,301**	**$17,487**	**55.9%**	**55.9%**		
68026_6141	Pump Stn. Potable Connect.-Design/CA/RI	1,360	1,360	Complete	100.0%		
68051_6301	Preliminary Engineering	457	457	Complete	100.0%		
68052_6302	Shaft 7 Building - Design & Construct.	5,628	0	Future	0.0%	Jan-22	
68053_6303	Easements	81	81	Complete	100.0%		
68155_6501	Emergency Pump Relocation - Const.	6,502	6,502	Complete	100.0%		
68157_6503	Emergency Pump Relocation - Design/CA/RI	1,121	1,121	Complete	100.0%		
68180_6558	Boston Paving	133	133	Complete	100.0%		
68182_6560	Legal	1	1	Complete	100.0%		
68199_6623	BECo Emergency Pump Construction	431	431	Complete	100.0%		
68203_6651	Pump Station Potable Connection - Const	7,132	7,132	Complete	100.0%		
68230_6814	Equipment Pre-purchase	154	154	Complete	100.0%		
68231_6820	Demolition of Garages	72	72	Complete	100.0%		
68244_6869	Utilities	44	44	Complete	100.0%		
68267_6982	CHEPS Emergency Generation - Const.	6,549	0	Future	0.0%	Jul-18	
68268_6995	CHEPS Emerg Gener. - Final Design/CA/RI	1,637	0	Future	0.0%	Jul-16	
721 South Spine Distribution Mains		**$73,568**	**$36,406**	**49.5%**	**49.5%**		
68083_6290	Sections 21, 43 & 22 - Design	7,776	6,963	89.5%	89.5%		
68084_6291	Sections 21, 43 & 22 - Easements	107	107	Complete	100.0%		
68085_6292	Section 22 South - Construction	4,993	4,993	Complete	100.0%		
68089_6296	Section 20 & 58 - Design	2,866	0	Future	0.0%	Jun-22	
68090_6297	Section 20 & 58 - Easements	35	0	Future	0.0%	Sep-20	
68091_6298	Section 20 & 58 - Construction	13,486	0	Future	0.0%	Sep-24	
68122_6396	Adams Street Bridge	154	154	Complete	100.0%		
68193_6601	Southern High Public Participation	15	15	Complete	100.0%		
68194_6602	Southern High Extension Study	242	242	Complete	100.0%		
68228_6787	Boston Paving	3	3	Complete	100.0%		
68235_6844	Section 22 North - Construction	16,458	0	Future	0.0%	Jan-22	
68236_6845	Section 107 Phase 1 - Construction	6,184	6,184	Complete	100.0%		
68237_6846	Legal	5	1	20.0%	20.0%		
68238_6847	Technical Assistance	28	28	Complete	100.0%		
68247_6885	Contract 1A - Construction	2,859	2,859	Complete	100.0%		
68290_7099	Section 107 Phase 2 - Construction	14,722	14,722	Complete	100.0%		
68291_7104	Milton Pressure Regulator Valve	135	135	Complete	100.0%		
68298_7120	Section 22 North - Design/ESDC	2,500	0	Future	0.0%	Jul-19	
68299_7155	Section 22 North - Facility Plan/EIR	1,000	0	Future	0.0%	Jul-16	
722 NIH Redundancy & Storage		**$84,956**	**$5,331**	**6.3%**	**6.3%**		
53454_6954	Concept Plan	797	797	Complete	100.0%		
68093_6306	Easements	300	0	Future	0.0%	Jul-12	
68252_6906	Section 89/29 Redundancy - Design	4,644	248	5.3%	5.3%		Jun-18

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68276_7026	Purchase Mobile Pump Unit	291	291	Complete	100.0%		
68277_7045	Short Term Improvements - Design/CA/RI	825	549	66.5%	66.5%		May-15
68278_7047	Permits	5	0	Future	0.0%	Jan-10	
68279_7048	Technical Assistance	18	0	Future	0.0%	Jan-10	
68282_7066	Sec 89 & 29 Redundancy Const. Phase 1	21,316	0	Future	0.0%	Aug-15	
68283_7067	Sec 89 & 29 Redundancy Const. Phase 2	21,693	0	Future	0.0%	Oct-15	
68284_7068	NIH Storage - Construction	17,304	0	Future	0.0%	Jan-19	
68294_7116	Section 89 & 29 Rehab - Design	1,461	0	Future	0.0%	Jul-17	
68295_7117	Section 89 & 29 Rehab - Construction	7,304	0	Future	0.0%	Jul-19	
68309_7260	Gillis Pump Station Improvements	2,020	0	Future	0.0%	Jun-13	
68310_7261	Reading/Stoneham Interconnections	3,467	3,447	Complete	99.4%		
68316_7311	NIH Storage - Design	3,511	0	Future	0.0%	Jan-17	
723 Northern Low Service Rehabilitation Section 8		**$22,440**	**$2,321**	**10.3%**	**10.3%**		
68094_6321	Easements	80	0	Future	0.0%	Jul-15	
68095_6322	Section 8 - Construction	13,413	0	Future	0.0%	Jul-20	
68262_6962	Rehab Sects. 37 & 46 Chelsea/EB Constr.	3,200	0	Future	0.0%	Jul-18	
68263_6977	Permits	299	285	95.3%	95.3%		Jul-18
68264_6979	Technical Assistance	44	44	Complete	100.0%		
68275_7021	Section 97A - Construction	1,992	1,992	Complete	100.0%		
68287_7092	Section 8 - Design/CA/RI	2,683	0	Future	0.0%	Jul-17	
75529_7405	Rehab Sec 37&46 Chel/BosDes/CA/RI	730	0	Future	0.0%	Jul-16	
727 Southern Extra High Redundancy & Storage		**$93,460**	**$6,672**	**7.1%**	**7.1%**		
53397_6452	Concept Plan/Prelim. Design/Env. Review	840	535	63.7%	63.7%		Feb-14
53398_6453	Redundancy/Storage Ph 1 Final Des/CA/Rl	5,663	0	Future	0.0%	Jan-14	
53399_6454	Redundancy/Storage Phase 1 - Construct.	28,315	0	Future	0.0%	Jan-16	
68135_6444	Redundancy/Storage Ph 2 Final Des/CA/Rl	5,635	0	Future	0.0%	Jan-26	
68136_6445	University Avenue Water Main	6,137	6,137	Complete	100.0%		
68292_7112	Sections 77 & 88 Rehab - Design	1,297	0	Future	0.0%	Mar-21	
68293_7113	Sections 77 & 88 Rehab - Construction	5,189	0	Future	0.0%	Apr-23	
68305_7226	Easements	300	0	Future	0.0%	Aug-08	
68306_7227	Permits	5	0	Future	0.0%	Aug-08	
68308_7245	Redundancy/Storage Phase 2 Construct.	28,173	0	Future	0.0%	Jan-28	
68311_7262	Phase 4, 2nd Tank - Construction	9,922	0	Future	0.0%	Jan-33	
68312_7263	Phase 4, 2nd Tank - Design	1,984	0	Future	0.0%	Jan-31	
730 Weston Aqueduct Supply Mains		**$286,418**	**$64,830**	**22.6%**	**22.6%**		
59774_5034	Newton Water Mains - Construction	669	669	Complete	100.0%		
59776_5975	Technical Assistance	186	186	Complete	100.0%		
67865_5147	WASM 4 - Design/CA/RI	5,978	6,013	Complete	100.6%		
68027_6142	WASMs 1 & 2 - Design/CA/RI	5,060	5,066	Complete	100.1%		
68030_6174	Appraisal / Easement	753	293	38.9%	38.9%		Oct-18
68031_6175	WASM 1, 2 & 4 - Auburndale	4,001	4,001	Complete	100.0%		
68032_6176	Meter 103 - Construction	61	61	Complete	100.0%		
68041_6280	WASMs 1 & 2 - Newton	9,219	9,219	Complete	100.0%		
68042_6281	WASMs 1 & 2 - Boston	7,039	7,039	Complete	100.0%		
68069_6312	WASMs 2 & 4 - Newton	8,282	8,282	Complete	100.0%		
68070_6313	WASM 4 - Allston & Western Ave. Sewer	17,331	17,331	Complete	100.0%		
68166_6539	WASM 3 - MEPA/Design/CA/RI	32,979	0	Future	0.0%	May-13	
68167_6540	Sect 36/WS/Waltham Conn. - Design/CA/RI	2,988	629	21.1%	21.1%		Dec-17

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Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY12	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
68170_6543	WASM 3 Waltham - CP2	65,470	0	Future	0.0%	Jul-17	
68171_6544	WASM 3 Belmont - CP3	80,907	0	Future	0.0%	Oct-19	
68172_6545	WASM 3 Arlington - CP4	16,622	0	Future	0.0%	Jan-23	
68173_6546	Section 28, Arlington - CP1	2,304	2,304	Complete	100.0%		
68245_6870	Survey	210	89	42.4%	42.4%		Oct-18
68269_6996	Arlington Pipe Work	401	401	Complete	100.0%		
68272_7000	WASM3 Section 12 Replacement - Constr.	2,114	2,114	Complete	100.0%		
68273_7001	WASM3 Section 12 Replacement - Design	265	266	Complete	100.4%		
68285_7083	Section 28 - Design/CA/RI	867	867	Complete	100.0%		
68301_7222	Sect 36/Watertown/Waltham Conn. Constr.	2,581	0	Future	0.0%	May-13	
731 Lynnfield Pipeline		**$6,073**	**$3,974**	**65.4%**	**65.4%**		
68187_6584	Construction Phase 2	4,842	3,241	66.9%	66.9%		
68196_6619	Easement, Legal, License & Permits	200	8	4.0%	4.0%		
68251_6905	Design/CA/RI	759	453	59.7%	59.7%		Oct-13
68289_7096	Temporary Interconnect - Phase 1 Constr	272	272	Complete	100.0%		
735 Section 80 Rehabilitation		**$9,340**	**$0**	**Future**	**0.0%**		
68249_6891	Section 80 - Construction	7,472	0	Future	0.0%	Jan-19	
68250_6892	Section 80 - Design/CS/RI	1,868	0	Future	0.0%	Jan-17	
753 Central Monitoring System		**$16,992**	**$15,804**	**93.0%**	**93.0%**		
75300_5025	Study	190	190	Complete	100.0%		
75301_5026	Design	2,651	2,651	Complete	100.0%		
75302_5027	Equipment Prepurchase	2,162	2,162	Complete	100.0%		
75303_5028	SCADA Implementation	2,101	1,912	91.0%	91.0%		
75304_5160	Communications Structures	161	161	Complete	100.0%		
75305_5173	Construction & Start-up Services	352	352	Complete	100.0%		
75306_5171	Construction 1	209	209	Complete	100.0%		
75308_5849	Operations Center - Construction	1,499	1,499	Complete	100.0%		
75309_5987	Technical Assistance	386	386	Complete	100.0%		
75474_6125	Microwave Equipment	782	782	Complete	100.0%		
75488_6653	Microwave Comm System-Wide Backbone	1,694	1,694	Complete	100.0%		
75489_6654	Monitoring & Control - Study & Design	1,808	1,808	Complete	100.0%		
75494_6816	Microwave Communic for Waterworks Fac.	1,957	1,957	Complete	100.0%		
75495_6825	Ludlow Communications	41	41	Complete	100.0%		
75512_7338	Winsor Dam High Line Replacement	1,000	0	Future	0.0%	Jan-14	
763 Distribution Systems Facilities Mapping		**$1,799**	**$1,036**	**57.6%**	**57.6%**		
75458_5162	Planning and Design	936	936	Complete	100.0%		
75476_6152	Data Purchase	100	100	Complete	100.0%		
75484_6525	Records Development	763	0	Future	0.0%	Jul-15	
765 Local Water Pipeline Improvement Loan Program		**$0**	**$108,821**				
75485_6608	Community Loans	220,000	204,074	92.8%	92.8%		Jun-13
75493_6759	Community Repayment	-220,000	-116,239	52.8%	52.8%		Jun-23
75513_7339	Local Water System Assistance Loans	200,000	20,665	10.3%	10.3%		Jun-20
75514_7340	Local Water System Assistance Repayment	-200,000	-615	0.3%	0.3%		Jun-30
75515_7350	CVA Loans	10,000	935	9.4%	9.4%		Jun-20
75516_7351	CVA Repayments	-10,000	0	Future	0.0%	Nov-11	
766 Waterworks Facility Asset Protection		**$20,101**	**$538**	**2.7%**	**2.7%**		
75490_6689	Meter Vault Manhole Retrofits	1,929	0	Future	0.0%	Sep-15	
75497_6832	Walnut Hill Tank - Design	300	0	Future	0.0%	Jul-15	

Appendix 6
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. FY12	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
75498_6833	Walnut Hill Tank - Construction	1,000	0	Future	0.0%	Jan-17	
75501_6910	Waltham Bridge Pipe Replacement	238	238	Complete	100.0%		
75502_6920	Permits and Legal Fees	16	1	6.3%	6.3%		Jun-18
75506_7023	Cosgrove Turbine Isolation - Design	0	0	Future	0.0%		
75509_7064	Cosgrove Valve Seat Replacement - Constr	1,717	0	Future	0.0%	Jul-19	
75510_7065	Cosgrove Valve Seat Replacement - Design	202	0	Future	0.0%	Jul-18	
75511_7228	Transformer at Cosgrove Intake Building	299	299	Complete	100.0%		
75520_7381	Shaft 9 Rehab	2,000	0	Future	0.0%	Jul-15	
75523_7384	Elevated Water Storage Tank Repainting	5,000	0	Future	0.0%	Jul-15	
75524_7385	Covered Storage Tank Rehab	5,000	0	Future	0.0%	Jul-19	
75535_7425	Electrical Distr Upgr Southboro	400	0	Future	0.0%	Jul-15	
75536_7453	Water Meter Upgrade Repl	1,000	0	Future	0.0%		
881 Equipment Purchase		**$18,483**	**$10,108**	**54.7%**	**54.7%**		
92374_6760	Security Equipment & Installation	7,775	6,001	77.2%	77.2%		Jun-15
92379_6808	ICP-MS Lab Testing Equipment	117	117	Complete	100.0%		
92411_7239	High Lift Fork Loader (Lull)	121	121	Complete	100.0%		
92416_7246	Ford Ramp Truck	122	122	Complete	100.0%		
92417_7247	Street Sweeper	182	182	Complete	100.0%		
98454_7306	Prior Vehicle Purchases	2,415	2,415	Complete	100.0%		
98455_7307	FY09-13 Vehicle Purchases	1,905	1,028	54.0%	54.0%		
98456_7308	FY14-18 Vehicle Purchases	4,724	0	Future	0.0%	Jul-13	
98457_7309	FY09-13 Major Lab Instrumentation	1,000	0	Future	0.0%	Mar-15	
98467_7325	Front-End Loader	121	121	Complete	100.0%		
925 Technical Assistance		**$1,200**	**$0**	**Future**	**0.0%**		
77000_LAND	Land Appraisal	150	0	Future	0.0%		
80000_SURV	Surveying	150	0	Future	0.0%		
90000_HAZM	Hazardous Material	900	0	Future	0.0%		
931 Business Systems Plan		**$24,475**	**$24,289**	**Complete**	**99.2%**		
92322_6015	Network - Phase I	142	142	Complete	100.0%		
92338_6014	Phase I (FY95-97)	1,146	1,146	Complete	100.0%		
92339_6013	Hardware - Phase I	441	441	Complete	100.0%		
92343_6177	Phase II (FY97-10)	4,174	4,110	98.5%	98.5%		Oct-13
92347_6362	Phase III (FY99-01)	10,747	10,747	Complete	100.0%		
92352_6508	Phase IV / Year 2000 Improvements	3,018	3,018	Complete	100.0%		
92353_6509	Phase V (FY01-10)	2,127	2,019	94.9%	94.9%		Oct-14
92380_6865	Phase VI (FY04-09)	2,037	2,037	Complete	100.0%		
92418_7249	DITP/OMS	0	0	Future	0.0%	Jul-12	
92419_7250	GIS/TV Inspection	81	69	85.2%	85.2%		
92423_7254	MIS Licensing	14	14	Complete	100.0%		
92424_7255	Lawson Conversion	189	187	Complete	98.9%		
92425_7256	Cyber Security	105	105	Complete	100.0%		
92426_7257	Original SAN	255	255	Complete	100.0%		
933 Capital Maintenance Planning		**$15,701**	**$8,270**	**52.7%**	**52.7%**		
19175_6421	Inventory & Evaluation - 1 & 2	2,579	2,579	Complete	100.0%		
92387_6976	As-Needed Design Contract 1	313	313	Complete	100.0%		
92393_6988	As Needed Design Contract 2	318	318	Complete	100.0%		
92399_7070	As-Needed Design Contract 5	558	558	Complete	100.0%		
92402_7101	As-Needed Design Contract 3	579	579	Complete	100.0%		

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Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY12	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
92403_7102	As-Needed Design Contract 4	247	344	Complete	139.3%		
92413_7242	As-Needed Design Contract 6	704	704	Complete	100.0%		
92414_7243	As-Needed Design Contract 7	1,016	953	93.8%	93.8%		
92415_7244	As-Needed Design Contract 8	1,044	951	91.1%	91.1%		
98470_7390	As-Needed Design Contract 9	1,730	562	32.5%	32.5%		Jan-14
98471_7391	As-Needed Design Contract 10	1,812	408	22.5%	22.5%		Feb-14
934 MWRA Facilities Management		**$2,151**	**$371**	**17.2%**	**17.2%**		
92389_6983	Design/Engineering Services	150	0	Future	0.0%	Jul-15	
92390_6984	Facilities Construction	2,001	371	18.5%	18.5%		Sep-17

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Subphase/Project		Total Contract Amount	Projected Pmts. Thr. FY12	**Status** Based on % of Budget Expended	**% Complete**	Planned Start	Planned End
935 Alternative Energy Initiatives		**$28,230**	**$16,985**	**60.2%**	**60.2%**		
19285_6974	Deer Island Solar	904	904	Complete	100.0%		
92428_6974C	DI Wind	4,863	4,063	83.5%	83.5%		
92430_7270	Future DI Wind Construction	4,615	0	Future	0.0%	Jul-15	
92432_6974E	Loring Road Hydro - Design	2	2	Complete	100.0%		
92439_7274	Technical Assistance - Solar	385	139	36.1%	36.1%		
92440_6974B	Energy Advisory Consultant Services	59	46	78.0%	78.0%		
92441_OP67	Wind Power Feasibility Study	346	346	Complete	100.0%		
92442_7292	DI Photovoltaic System Phase 1 - Const.	1,119	1,119	Complete	100.0%		
92443_7274A	Technical Assistance-Energy Efficiency	500	146	29.2%	29.2%		
92444_7274B	Technical Assistance - Solar II	380	331	87.1%	87.1%		
92445_7274C	Tech Assistance - Emerging Technology	200	35	17.5%	17.5%		
92446_7274D	Technical Assistance - Wind	750	427	56.9%	56.9%		
98448_7300	Wachusett Hydro - Design & Construction	1,446	0	Future	0.0%	Jul-15	
98450_7302	Charlestown Wind - Construction	5,181	5,081	98.1%	98.1%		
98452_7304	John J. Carroll WTP Solar-Construction	2,428	2,428	Complete	100.0%		
98459_6974F	Loring Road Hydro - Construction	1,882	1,882	Complete	100.0%		
98463_7321	DI Wind Phase II - Construction	2,500	35	1.4%	1.4%		Sep-16
98465_7323	Fish Hatch Pipeline Hydro	670	0	Future	0.0%	Feb-15	
940 Application Improvement Program		**$9,150**	**$0**	**Future**	**0.0%**		
92420_7251	GIS Applications & Integration	350	0	Future	0.0%	Dec-13	
92435_7286	Lawson Enhancements	1,750	0	Future	0.0%	Oct-15	
92436_7287	Maximo Upgrade	1,750	0	Future	0.0%	Jul-13	
92437_7288	PIMS Enhancements	400	0	Future	0.0%	Dec-13	
92469_7386	Enterprise Performance mgmt Enhancements	200	0	Future	0.0%	Jan-16	
98475_7438	Enterprise Content Mgmt	4,000	0	Future	0.0%	Apr-14	
98476_7439	Mobile Integrations	150	0	Future	0.0%	Sep-13	
98484_7447	LIMS Enhancement	550	0	Future	0.0%	Mar-13	
942 Information Security Program ISP		**$1,293**	**$358**	**27.7%**	**27.7%**		
92434_7285	IT Security Infrastructure/Equipment	647	358	55.3%	55.3%		Jun-14
98477_7440	Electronic Sec Impl	400	0	Future	0.0%	Jun-14	
98483_7446	IT Security Program (ISP) Development	246	0	Future	0.0%	May-13	
944 Information Technology Management Program		**$1,493**	**$0**	**Future**	**0.0%**		
92412_7240	Implement IT Governance	100	0	Future	0.0%	Jan-14	
92421_7252	Service Delivery & Best Practices	370	0	Future	0.0%	Jul-13	
92422_7253	Reorganize MIS Department	150	0	Future	0.0%	Jul-13	
98472_7408	Manage Implementation Program	511	0	Future	0.0%	Jan-14	
98478_7441	Implementation Approach	362	0	Future	0.0%	Jan-14	
946 IT Infrastructure Program		**$8,980**	**$561**	**6.2%**	**6.2%**		
92404_7200	IT System Architecture	750	0	Future	0.0%	Sep-12	
92405_7201	Net 2020/Net 2020 DITP/Southborough	2,500	561	22.4%	22.4%		Jun-17
92406_7203	Storage Upgrades	870	0	Future	0.0%	Jul-13	
92407_7204	Backup Upgrades	619	0	Future	0.0%	Jul-13	
92408_7205	Server Management	500	0	Future	0.0%	Jul-13	
98480_7443	Enterprise Applic Integr	2,091	0	Future	0.0%	Jul-13	
98481_7444	E-Mail Upgrades	150	0	Future	0.0%	Jul-15	
98482_7445	Enterprise Data Mgmt	1,500	0	Future	0.0%	Jan-14	

APPENDIX 7

Municipality and Project Reference by Municipality

APPENDIX 7

PROJECT/MUNICIPALITY(s)

Project	Number/ Project	Community(s) Served
104	Braintree-Weymouth Relief Facilities	Braintree, Hingham, Holbrook, Randolph, Weymouth, Quincy
128	Infiltration/Inflow Local Financial Assistance Program	All Wastewater Communities
130	Siphon Structure Rehabiliation	All Wastewater Communities
131	Upper Neponset Valley Sewer System	Dedham, Boston, Brookline, Newton
132	Corrosion and Odor Control Study	All Wastewater Communities
136	West Roxbury Tunnel	Ashland, Framingham, Natick, Wellesley, Dedham, Boston, Brookline, Newton, Nedham,
137	Wastewater Central Monitoring	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
145	Interception & Pumping Facility Asset Protection	All Wastewater Communities
146	D.I. Cross Harbor Tunnel	All Wastewater Communities
147	Randolph Trunk Sewer Relief	Braintree & Randolph
206	Deer Island Treatment Plant Asset Protection	All Wastewater Communities
210	Clinton Wastewater Treatment Plant	Clinton
211	Laboratory Services	All MWRA Communities
271	Residuals Asset Protection	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
346	Cambridge CAM002-004 Sewer Separation	Cambridge
347	East Boston Branch Sewer Relief	Boston, Chelsea, Everett
355	MWR003 Gate and Siphon	Boston, Cambridge
356	Fort Point Channel Sewer Separation	Boston
357	Charles River CSO Controls	Boston, Brookline, Cambridge
358	Morrisey Boulevard Drain	Boston
359	Reserved Channel Sewer Separation	Boston
360	Brookline Sewer Separation	Brookline
361	Bulfinch Triangle Sewer Separation	Boston
542	Walnut Hill Treatment Plant	All Water Customers (except Chicopee, Wilbraham, South Hadley Fire District #1, Worcester, Clinton, and Leominster)
543	Quabbin Water Treatment Plant	South Hadley, Chicopee, Wilbraham
545	Blue Hills Covered Storage	Boston, Canton, Milton, Norwood, Quincy, Brookline, Dedham, Westwood, Stoughton
550	Low Service Storage Near Spot Pond	Cambridge, Charlestown, Chelsea, East Boston, Everett, Malden, Somerville
597	Winsor Dam Hydroelectric	All Water Communities
604	MetroWest Tunnel	All Water Communities (except South Hadley Fire District #1, Chicopee, Wilbraham, Worcester, Clinton, and Leominster)
616	Quabbin Transmission System	Chicopee, South Hadley, Wilbraham
617	Sudbury/Weston Aqueduct Repairs	All Water Communities (except South Hadley Fire District #1, Chicopee, Wilbraham, Worcester, Clinton, and Leominster)
618	Northern High NW Trans Section 70-71	Stoneham, Wakefield, Melrose, Lynnfield, Saugus, Lynn, Peabody, Marblehead, Swampscott, Nahant
621	Watershed Land	All Water Communities
623	Dam Projects	All Water Communities
625	Long Term Redundancy	All Water Customers (except Chicopee, Wilbraham, South Hadley Fire District #1, Worcester, Clinton, and Leominster)
677	Valve Replacement	All Water Communities
692	Northern High Service Section 27 Improvements	Lynn, Marblehead, Nahant, Swampscott
693	Northern High Service Pipe Improvements - Revere/Malden	Boston, Lynn, Malden, Marblehead, Nahant, Peabody, Reading, 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
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
719	Chestnut Hill Connecting Mains	Boston, Brookline, Newton
721	Southern Spine Distribution Mains	Boston, Brookline, Canton, Milton, Norwood, Quincy, Dedham, Westwood, Stoughton

APPENDIX 7

PROJECT/MUNICIPALITY(s)

Project	Number/ Project	Community(s) Served
722	NIH Redundancy & Covered Storage	Reading, Stoneham, Wakefield, Winchester, Woburn
723	Northern Low Service Rehab. - Sections 8	Chelsea, Boston, Everett
727	SEH Redundancy & Storage	Boston, Brookline, Canton, Milton, Norwood, Dedham, Westwood, Stoughton
730	Weston Aqueduct Supply Mains	Weston, Newton, Boston, Watertown, Cambridge, Waltham, Belmont, Arlington, Somerville
731	Lynnfield Pipeline	Lynnfield, Saugus
735	Section 80 Rehabilitation	Wellesley and Needham
753	Central Monitoring System	All Water Communities
763	Distribution Systems Facilities Mapping	All Water Communities
765	Local Water Pipeline Imp. Loan 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
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
935	Alternative Energy Initiatives	All MWRA Customers
940	Application Improvement Program	All MWRA Customers
942	Information Security Program ISP	All MWRA Customers
944	Information Technology Management Program	All MWRA Customers
946	IT Infrastructure Program	All MWRA Customers

APPENDIX 8

Municipality and Project Reference by Project

APPENDIX 8

MUNICIPALITY/PROJECT(s)

Municipality
Project Number/Project

All MWRA COMMUNITIES

211	Laboratory Services
881	Equipment Purchase
925	Technical Assistance
931	Business Systems Plan
932	Environmental Remediation
933	Capital Maintenance Planning/Development
934	MWRA Facilities Management
935	Alternatve Energy Initiatives
940	Application Improvement Program
942	Information Security Program ISP
944	Information Technology Management Program
946	IT Infrastructure Program

ALL WASTEWATER COMMUNITIES

128	Infiltration/Inflow Local Financial Assistance Program
130	Siphon Structure Rehabiliation
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
146	D.I. Cross Harbor Tunnel
147	Randolph Trunk Sewer Relief
206	Deer Island Treatment Plant Asset Protection
271	Residuals Asset Protection

ALL WATER COMMUNITIES

597	Winsor Dam Hydroelectric
621	Watershed Land
623	Dam Projects
625	Long-Term Redundancy
677	Valve Replacement
712	Cathodic Protection of Distribution Mains
753	Central Monitoring System
763	Distribution Systems Facilities Mapping
765	Local Water Pipeline Improvement Loan Program
766	Watertown Facility Asset Protection

ALL WATER COMMUNITIES (except South Hadley, Chicopee, Wibraham, Worcester, Clinton, and Leominster)

542	Walnut Hill Treatment Plant
544	Norumbega Covered Storage
604	MetroWest Tunnel

Arlington

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

136	West Roxbury Tunnel

Bedford

702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
708	Northern Extra High Service - New Pipelines

Belmont

702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
730	Weston Aqueduct Supply Mains

Boston

131	Upper Neponset Valley Sewer System
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.)
347	East Boston Branch Sewer Relief
355	MWR003 Gate and Siphon
356	Fort Point Channel Sewer Separation
357	Charles River CSO Controlls
358	Morrisey Boulevard Drain
359	Reserved Channel Sewer Separation
361	Bulfinch Triangle Sewer Separation
545	Blue Hills Covered Storage
693	Northern High Service Pipe Improvements - Revere/Malden
702	New Connecting Mains - Shaft 7 to WASM 3
704	Rehabilitation of Other Pump Stations
713	Spot Pond Supply Mains Rehabilitation
719	Chestnut Hill Connecting Mains
721	Southern Spine Distribution Mains
723	Northern Low Service Rehab. - Sections 8 & 57
727	SEH Redundancy & Storage
730	Weston Aqueduct Supply Mains

Braintree

104	Braintree-Weymouth Relief Facilities
147	Randolph Trunk Sewer Relief

APPENDIX 8

MUNICIPALITY/PROJECT(s)

Municipality	Project Number/Project
Brookline	
	131 Upper Neponset Valley Sewer System
	136 West Roxbury Tunnel
	357 Charles River CSO Controls
	360 Brookline Sewer Separation
	704 Rehabilitation of Other Pump Stations
	719 Chestnut Hill Connecting Mains
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Burlington	
	127 Cummingsville Replacement Sewer
Cambridge	
	324 CSO Support
	346 Cambridge CAM002-004 Sewer Separation
	355 MWR003 Gate and Siphon
	357 Charles River CSO Controls
	713 Spot Pond Supply Mains Rehabilitation
	730 Weston Aqueduct Supply Mains
Canton	
	545 Blue Hills Covered Storage
	704 Rehabilitation of Other Pump Stations
	714 Southern Extra High - Sections 41, 42, and 74
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Chelsea	
	324 CSO Support
	347 East Boston Branch Sewer Relief
	713 Spot Pond Supply Mains Rehabilitation
	723 Northern Low Service Rehab. - Sections 8 & 57
Lynn	
	618 Northern High NW Trans Section 70-71
	692 Northern High Service Section 27 Improvements
	693 Northern High Service Pipe Improvements - Revere/Malden
Lynnfield	
	618 Northern High NW Trans Section 70-71
	731 Lynnfield Pipeline
Malden	
	693 Northern High Service Pipe Improvements - Revere/Malden
	713 Spot Pond Supply Mains Rehabilitation

Municipality	Project Number/Project
Chicopee	
	543 Quabbin Water Treatment Plant
	615 Chicopee Valley Aqueduct Redundancy
	616 Quabbin Transmission System
Clinton	
	210 Clinton Wastewater Treatment Plant
Dedham	
	131 Upper Neponset Valley Sewer System
	136 West Roxbury Tunnel
	727 SEH Redundancy & Storage
Dover	
	136 West Roxbury Tunnel
Everett	
	347 East Boston Branch Sewer Relief
	713 Spot Pond Supply Mains Rehabilitation
	723 Northern Low Service Rehab. - Sections 8 & 57
Framingham	
	136 West Roxbury Tunnel
	617 Sudbury/Weston Aqueduct
Hingham	
	104 Braintree-Weymouth Relief Facilities
Holbrook	
	104 Braintree-Weymouth Relief Facilities
	617 Sudbury/Weston Aqueduct
Lexington	
	702 New Connecting Mains - Shaft 7 to WASM 3
	704 Rehabilitation of Other Pump Stations
	708 Northern Extra High Service - New Pipelines
Nahant	
	618 Northern High NW Trans Section 70-71
	692 Northern High Service Section 27
	693 Northern High Service Pipe Improvements - Revere/Malden
Natick	
	136 West Roxbury Tunnel
	617 Sudbury/Weston Aqueduct Repairs
Needham	
	136 West Roxbury Tunnel
	735 Section 80 Rehabilitation

APPENDIX 8

MUNICIPALITY/PROJECT(s)

Municipality	Project Number/Project
Marblehead	
	618 Northern High NW Trans Section 70-71
	692 Northern High Service Section 27
	693 Northern High Service Pipe Improvements - Revere/Malden
Medford	
	547 Fells Covered Storage
	702 New Connecting Mains - Shaft 7 to WASM 3
	713 Spot Pond Supply Mains Rehabilitation
Melrose	
	618 Northern High NW Trans Section 70-71
Milton	
	545 Blue Hills Covered Storage
	704 Rehabilitation of Other Pump Stations
	714 Southern Extra High - Sections 41, 42, and 74
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Quincy	
	104 Braintree-Weymouth Relief Facilities
	545 Blue Hills Covered Storage
	721 Southern Spine Distribution Mains
Randolph	
	104 Braintree-Weymouth Relief Facilities
	147 Randolph Trunk Sewer Relief
Reading	
	722 NIH Redundancy & Covered Storage
Revere	
	349 Chelsea Trunk Sewer
	693 Northern High Service Pipe Improvements - Revere/Malden
Saugus	
	618 Northern High NW Trans Section 70-71
	693 Northern High Service Pipe Improvements - Revere/Malden
	731 Lynnfield Pipeline

Municipality	Project Number/Project
Newton	
	131 Upper Neponset Valley Relief Sewer
	136 West Roxbury Tunnel
	702 New Connecting Mains - Shaft 7 to WASM 3
	719 Chestnut Hill Connecting Mains
	730 Weston Aqueduct Supply Mains
Norwood	
	545 Blue Hills Covered Storage
	704 Rehabilitation of Other Pump Stations
	714 Southern Extra High - Sections 41 and 42
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Peabody	
	618 Northern High NW Trans Section 70-71
	693 Northern High Service Pipe Improvements - Revere/Malden
	721 Southern Spine Distribution Mains
	722 NIH Redundancy & Storage
Wilbraham	
	543 Quabbin Water Treatment Plant
	616 Quabbin Transmission System
Wakefield	
	618 Northern High NW Trans Section 70-71
	722 NIH Redundancy & Covered Storage
Waltham	
	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	
	702 New Connecting Mains - Shaft 7 to WASM 3
	704 Rehabilitation of Other Pump Stations
	730 Weston Aqueduct Supply Mains
Wellesley	
	136 West Roxbury Tunnel
	617 Sudbury/Weston Aqueduct Repairs
	735 Section 80 Rehabilitation

APPENDIX 8
MUNICIPALITY/PROJECT(s)

Municipality	Project Number/Project
Somerville	
	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
	616 Quabbin Transmission System
Stoneham	
	618 Northern High NW Trans Section 70-71
	722 NIH Redundancy & Covered Storage
Stoughton	
	714 Southern Extra High - Sections 41, 42, and 74
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Sudbury	
	617 Sudbury/Weston Aqueduct Repairs
Swampscott	
	618 Northern High NW Trans Section 70-71
	692 Northern High Service Section 27
West Roxbury	
	131 Upper Neponset Valley Relief Sewer
Weston	
	617 Sudbury/Weston Aqueduct Repairs
	730 Weston Aqueduct Supply Mains
Westwood	
	721 Southern Spine Distribution Mains
	727 SEH Redundancy & Storage
Weymouth	
	104 Braintree-Weymouth Relief Facilities
Winchester	
	702 New Connecting Mains - Shaft 7 to WASM 3
	704 Rehabilitation of Other Pump Stations
	722 NIH Redundancy & Covered Storage
Winthrop	
	693 Northern High Service Pipe Improvements - Revere/Malden
Woburn	
	722 NIH Redundancy & Covered Storage

APPENDIX 9

MWRA Completed Projects

Appendix 9

MWRA Completed Projects
(as of June 30, 2013)

Project	Total Cost ($000)	Completion Date	Summary
Wastewater	$5,025,823		
Waterworks	$1,542,844		
Business and Operations Support	$67,065		
MWRA Total	$6,635,731		

Bolded items represent projects added since the last document.

Italicized items represent a change in value to a closed project due to a determination that past retainage values no longer represent a liability to the Authority.

Wastewater System Improvements			
Boston Harbor Project	*$3,512,332*	*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*
S.101 Wastewater Metering System Upgrade	$7,516	Dec-93	Construction of system to provide accurate flow data.
S.102 Quincy Pump Facilities	$25,907	Sep-03	Constructed 3 new pumpstation and rehabbed force mains to ensure continuous pumping to treatment facilitities.
S.103 Hingham Pump Station	$3,027	Apr-92	Elimination of untreated sewage discharges.
S.104 Braintree-Weymouth Relief Facilities	*$227,704*	*Jun-10*	*Project reduces overflows into Weymouth Fore River during wet weather events.*
S.105 New Neponset Valley Relief Sewer	$30,300	Jul-96	Relief facilities to correct structural and hydraulic deficiencies in the New Neposet Valley Interceptor Sewer System.
S.106 Wellesley Extention 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.107 Framingham Extension Relief Sewer	$47,856	Sep-04	Installation of a new force main and gravity sewer and construction of a new pumpstation.
S.108 Alewife Brk Pkwy Pump St Rehab	$1,465	May-95	Replacement of equipment, construction of building addition and wetwell modifications.
S.110 East Boston Pump Facilities	$48,234	Jan-93	Constructed to eliminate sewage back-ups.
S.112 Charlestown Pump Station Replacement	$32,533	Apr-93	New 93 mgd pump station to increase pumping efficiency and eliminate overflows to the Mystic River.
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.118 Bell Isle Siphon Rehabilitation	$79	Apr-89	Reduction of salt water infiltration and increase in system capacity.
S.127 Cummingsville Replacement Sewer	$8,999	Jul-08	Replacement and rehabilitation of existing sewers to provide additional capacity for upstream communities.
S.129 North Metropolitan Trunk Sewer	$11,997	Mar-99	Rehabilitation of a 19,700 linear-foot 100-year old sewer line.
S.131 Upper Neponset Valley Sewer System	*$54,175*	*Mar-08*	*Project anticipated to eliminate interceptor backups during wet weather events.*
S.138 Sewerage System Mapping	$281	Apr-04	Updated and new GIS maps of sewer system.
S.143 Regional I/I Management Planning	$169	Jun-03	Reduction in infiltration and inflow water entering the MWRA system.
S.178 Deer Island Pump and Power Station Upgrade	$32,952	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	$26,081	Jul-99	Facility rehabilitation restored headworks capacity.
S.180 D.I. Sedimentation Tank System Improvements	$1,684	Jul-89	Restoration of operating efficiency by replacing 80 inlet sluice gates and baffles, rehabilitation of control building and other improvements.
S.181 D.I. Intermediate Upgrade	$9,474	Jun-92	Upgrade of the old Deer Island treatment plant.
S.184 Nut Island Immediate Upgrade	$1,206	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.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.187 Deer Island Sludge Thickeners Rebuilding	$114	Sep-88	Ensuring efficient operation of Deer Island treatment plant digesters.
S.189 DI Dual Fuel Engine	$281	Jan-06	Overhaul of five diesel engines.
S.190 Deer Island Electrical Equipment Upgrade	$28	Mar-88	Restoration of system operating efficiency.
S.191 DI Chlorination Facility Rehab	$4	Mar-89	Provision of effective disinfection operation and safe working environment.

S.194 Nut Island Intermediate Upgrade	$1,507	Dec-92	Improvements to ensure effective operation of the Nut Island treatment plant.
S.196 Other Wastewater	$92	Apr-90	Removal of hazardous materials from wastewater facilities and creation of on-going safety management programs.
S.197 Deer Island Treatment Plant Outfall Repair	$1,300	Sep-97	Repair of effluent discharge Outfall 002.
S.198 Boston Harbor Performance Certification	$1,275	Dec-02	Certification required for continuous federal grant and loan programs during construction.
S.200 DI Plant Optimization	*$33,427*	*Sep-08*	*Capital investment to optimize the operation of the Deer Island Treatment Plant. Remaining initiatives rolled into DI Plant Asset Protection.*
S.211 Laboratory Services	**$2,228**	**Feb-12**	**Upgrade and restore the Central Laboratory**
S.261 Residuals	$172,056	Dec-01	Phase 1 Feb - 92 - construction of the Residuals Treatment Facility at ore River Staging Area (FRSA). Termination of the sludge discharge to Boston Harbor. Phase 2 Dec-01 - To expand the residuals processing plate at the FRSA in Quincy to provide the capacity to process the sludge quantities produced by Deer Island.
S.325 Fox Point CSO Facility	$152	Apr-89	Elimination of untreated sewage discharges.
S.326 Commercial Point CSO Facility	$7,117	Feb-91	Improvements to water quality by reducing wet weather overflows via construction of a screening and disinfection facility.
S.327 Souothwest Corridor CSO	-$6	Fall 86	Elimination of combined sewer overflows.
S.330 St. Mary's Street CSO Modifications	$17	Feb-87	Identification of solution for storm water detention.
S.332 Somerville Marginal CSO Rehabilitation	$98	Feb-89	Elimination of inadequately treated sewage discharges.
S.335 Moon Island	$1		
S.338 Cottage Farm CSO Ventilation System Repairs	$133	Sep-94	Rehabilitation of HVAC duct work.
S.339 North Dorchester Bay	**$221,621**	**May-11**	**Eliminate CSO discharges and provide a high level of stormwater control.**
S.340 S. Dorch Bay Sew Separ (Fox Pt.)	**$54,152**	**Nov-06**	**Eliminate CSO discharges to South Dorchester Bay**
S.342 Neponset River Sewer Separation	$2,444	Aug-02	Elimination of CSO discharges to the Neponset River.
S.343 Constitution Beach Sewer Separation	$3,769	Apr-02	Elimination of CSO discharges at the Constitution Beach CSO Facility.

S.344 Stony Brook Sewer Separation	*$44,198*	*Sep-06*	*Minimize CSO discharges to the Stony Brook conduit and the Backbay Fens.*
S.347 East Boston Branch Sewer Relief	**$85,646**	**Jul-10**	**To increase hydraulic capacity and provide long-term structural integrity to MWRA's East Boston Branch Sewer.**
S.348 BOS019 Storage Conduit	$14,288	Mar-07	To reduce CSO activations and annual volume to the Little Mystic Channel.
S.349 Chelsea Trunk Sewer	$29,779	Jun-02	To control CSO discharges at outfalls CHE002, CHE003, CHE004, and CHE008.
S.350 Union Park Detention Treatment Facility	$49,583	Jun-07	To reduce the frequency and impacts of CSO discharges from outfall BOS070.
S.351 BWSC Floatables Controls	$933	Mar-02	Limit the discharge of floatable materials from 5 BWSC combined sewer outfalls.
S.352 Cambridge Floatables Controls	$1,087	Dec-08	Limit the discharge of floatable materials from Cambridge CSO outfalls.
S.353 Upgrade Existing CSO Facilities	$22,385	Aug-01	Minimize CSO impacts to the Lower Charles River, Upper Inner Harbor, Mystic/Chelsea Confluence, and South Dorchester Bay by upgrading 5 CSO treatment facilities.
S.354 Hydraulic Relief Projects	$2,295	Aug-00	Elimination of hydraulic restrictions between local and MWRA Systems.
S.356 Fort Point Channel Sewer Separation	**$12,007**	**Dec-10**	**To minimize CSO discharges to Fort Point Channel by separating combined sewer systems tributary and implementing system optimization measures.**
S.357 Charles River CSO Controls	**$3,633**	**Oct-11**	**Implement wastewater system optimization measures, including structural and operational improvements.**
S.358 Morrissey Boulevard Drain	**$32,347**	**Jun-09**	**Reroute stormwater from BOS087 area**
S.360 Brookline Sewer Separation	**$25,997**	**Jul-13**	**Minimize discharges to Charles River by separating combined sewer systems in several areas.**
S.361 Bulfinch Triangle Sewer Separation	**$9,857**	**Jul-10**	**Minimize discharges to Charles River by separating combined sewer systems in several areas.**
S.402 Comprehensive Safety Action Project	$891	Nov-90	Correction of safety hazards at MWRA facilities and establishment ongoing safety management program.
S.403 Sewerage Division Management Services	$1,930	Dec-86	Provision of engineering design and construction advice.
S.924 Harbor Environmental Studies	$1,666	Jun-92	Collection and study of harbor water quality data.
Sub-Total Wastewater System	**$5,025,823**		

Waterworks System Improvements			
S.533 Local Sources of Supply	$2,112	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.535 Reservoir Risk Assessment	$647	Jun-92	Development of maps and data to determine at risk areas.
S.537 Drinking Water Quality Improvement Wachusett	$8,330	Oct-95	To comply with Safe Drinking Water Act to strengthen quality standards for water supply from Wachusett.
S.538 Sudbury Reservoir Treatment Plant Study and EIR	$447	Sep-92	Evaluation of alternative uses of the Sudbury Reservoir.
S.539 Drinking Water Quality Improvement Quabbin	$307	Nov-98	To comply with Safe Drinking Water Act to strengthen quality standards for water supply from Quabbin.
S.541 Watershed Protection	$8,500	Dec-03	To develop watershed protection measures for the MWRA/MDC reservoir system.
S.542 Carroll Water Treatment Plant	*$410,765*	*Jun-05*	*To provide high quality drinking water to MWRA communities and to ensure wter meets the standards established by the federal Safe Drinking Water Act.*
S.544 Norumbega Covered Storage	$106,674	Jun-08	Construction of a covered 115 million gallon reinforced concrete storage tank to meet the drinking water quality standards mandated by the federal Safe Drinking Water Act.
S.545 Blue Hills Covered Storage	*$39,963*	*Apr-10*	*To ensure sufficient distribution storage for MWRA's Southern High Service Area.*
S.547 Fells Covered Storage	$18,004	Jun-00	Covered storage for Northern High Service System.
S.548 Nash Hill Covered Storage	$14,296	Jul-99	To improve the quality of drinking water to the three Chicopee Valley Aqueduct communities.
S.598 Wachusett Reservoir By-pass Tunnel	$15	Jan-89	Evaluation of the option of constructing a tunnel by-pass.
S.599 Dam Control Valve Replacement	$1,763	Jul-98	Valve replacement at Sudbury Reservoir in Southborough and Wachusett Dam.
S.600 Oakdale Power Station Generator Repair	$893	Sep-91	Repair of substation metering and transformer systems.
S.601 Sluice Gate Rehab	$9,158	Jun-05	Installation of motorized gates and 12 facilities rehabilitated.
S.602 Hultman – Weston Aqueduct Transfer for Hydropower	$593	May-89	Production of approximately 3,700,000 kW hours per year of electricity.
S.603 Transmission Maintenance Facility	$5,025	May-93	Construction of new waterworks maintenance facility in Southborough.

S.604 MetroWest Tunnel	*$695,470*	*Jun-03*	*To provide transmission redundancy for the Hultman Aqueduct ensuring reliable water delivery and providing sufficient hydraulic capacity to support the new Carroll Water Treatment Plant and covered storage distribution facilities.*
S.605 Echo Bridge Rehabilitation	$356	Sep-92	Repair and cleaning of bridge façade and construction of new surface topping.
S.606 Norumbega Chlorination Facility	$10	Mar-89	Provision of a new water disinfection facility.
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.615 Chicopee Valley Aqued. Redundancy	$8,666	Apr-08	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.
S.620 Wachusett Res Spillway Improvement	*$9,287*	*Jul-10*	*Provide the necessary improvements to the Wachusett Reservoir Dam.*
S.675 Water Distribution Master Plan	$1,178	Mar-93	Development of data base and recommendations for master plan.
S.676 Water Meter Modernization	$12,482	Jun-90	Rehab of 139 revenue meters
S.678 Boston Low Service Pipe & Valve Rehab	$23,691	Sep-03	Improve the condition and operability of the pipelines serving the Boston Low Service System.
S.679 Nonantum Road Pipe Rehabilitation	$2,153	Mar-97	Rehabilitation and/or replacement of deteriorated pipeline.
S.680 Orient Heights Booster Pump Station	$3	Sep-90	Construction of a booster pump station to increase pressure throughout the Orient Hieght distribution system.

S.681 Southern Service Improvements	$14,450	Oct-99	Reliability and capability improvements to pipelines and pump stations serving the Southern service area.
S.683 Heath Hill Road Pipe Replacement	*$19,358*	*Oct-07*	*Repair and improve pipelines and valves in Southern High and Southern Extra High Service areas.*
S.684 Commonwealth Ave Pump Station	$8,503	Dec-99	Modernize and improve station serving a major portion of Newton.
S.685 Ward Street Pump Station	$24	Aug-89	Evaluation of the feasibility of pump station rehabilitation.
S.686 Dudley Road Pump Station	$55	Jun-91	Evaluation of the feasibility of pump station rehabilitation.
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.688 Northern Intermediate High Pipelines	$973	Nov-88	Increase in pipe capacity and pressure.
S.689 James L. Gillis Pump Station Rehab	*$33,138*	*May-02*	*To improve and modernize pumping facilities.*
S.690 Northern Low Service Pipeline Replacement	$714	Aug-99	Repair of Section 16W with replacement and pipe slip lining methods.
S.691 Northern High Service Improvements - Lynn Pipeline	$17,271	Jun-99	Installation of a new primary supply line for the northeast section of the Northern High Service System.
S.701 Northern Extra High Service – Bedford Pipeline	$71	Jan-92	Development of a plan to supply water to Bedford.
S.706 NHS - Con. Mains from Section 91	$2,360	Jun-02	To integrate the new Section 91 pipeline with the existing grid network, improving service pressures and reliability to community meters.

S.714 Southern Extra High Sections 41 & 42	$3,657	Dec-00	To increase hydraulic capacity of the mains that carry water to the Bellevue Tanks.
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.716 Water Main Relocation in Chelsea River	$10,648	Nov-00	Relocation of the Section 8 water main over the Chelsea River.
S.720 Warren Cottage Line Rehab	$1,205	Dec-02	To improve the carrying capacity and internal condition of the Warren Cottage Line.
S.725 Hydraulic Model Update	$598	Jun-07	To modernize MWRA hydraulic and water quality modeing capabilities.
S.732 Walnut St. & Fisher Hill Pipeline Rehab.	$2,716	Mar-09	Improve water quality and hydraulic capacity of the pipeline serving City of Boston.
S.754 Domestic Device Retrofit	$9,928	Dec-93	Installation of water saving devices to reduce demand.
S.755 Leak Detection Survey	$751	Aug-90	Provision of data on the magnitude and location of water leaks.
S.756 Asbestos Abatement	$562	Aug-90	Elimination of asbestos in MWRA facilities.
S.757 PCB Abatement	$432	Aug-91	Replacement of equipment with unacceptable levels of PCB concentrations.
S.758 Rehab of Existing Facilities	*$14,179*	*Nov-02*	*Upgrade various facilities in need of significant capital improvement.*
S.759 Municipal Toilet Replacement	$127	Dec-90	Reduction in water consumption.
S.760 Chestnut Hill Pump Station REH	$559	Oct-94	Rehab of pump station.
S.764 Local Water Infrastr Rehab Ast Progr	$7,488	Jun-04	To provide financial support to MWRA waterworks communities to replace, rehabilitate, and maintain their waterworks system infrastructures.
Sub-Total Water System Improvements	**$1,542,844**		

Business & Operations Support			
S.901 Charlestown Headquarters	$4,548	Jun-91	Provision of office equipment at MWRA headquarters.
S.921 Management Information Service	$21,423	Dec-92	Enhancement to information systems to support more effective management of MWRA business activities.
S.922 Fore River Preservation	$4,946	Nov-97	Modify FRSA for on-going construction and operational support.
S.929 Affirmative Action	$403	Mar-91	Evaluation of minority participation in the MWRA procurement process.
S.930 MWRA Facility - Chelsea	*$9,815*	*Mar-08*	*To improve MWRA operations by consolidating facilities.*
S.931 Business System Planning	**$24,451**	**Jun-11**	**Develop, improve, and procure management information systems.**
S.932 Environmental Remediation	**$1,479**	**Oct-10**	**Implement remedial programs necessary to protect the environment and to ensure compliance with the Clean State Initiative.**
Sub-Total Business & Operations Support	**$67,065**		

APPENDIX 10

Expected Useful Life of Capital Projects

APPENDIX 10

EXPECTED USEFUL LIFE OF CAPITAL PROJECTS

The estimated useful life of the MWRA's capital projects are summarized below:

Type of Capital Improvement	Estimated Useful Life (in years)
Buildings (includes all substantial above ground structures or enclosures)	40
Mechanical Equipment (includes pumps, chains, fans, HVAC, valves, etc.)	20
Electrical Equipment (motors, generators, motor control centers, lighting, conduit, etc)	20
Control Systems (computers, SCADA, PLCs, programming, etc)	10
Water Pipes	50 – 75
Water Pipe appurtenances (blow offs, air valves)	40
Sewer Pipes – gravity	50
Sewer Pipes – pressure	50
Sewer Pipe appurtenances (manholes, chambers)	50
Tunnels – Water	100
Tunnels – Wastewater	100
Tunnel appurtenances (shafts, control valves)	40
Distribution Reservoirs – above ground	40
Distribution Reservoirs – below ground	75 -100
Dams and Dam improvements	100
Motor Vehicles	10 – 15
Furniture and Fixtures	5 – 15
Leasehold Improvements	Period of lease
Study	5
Design – if constructed	20
Design – if not used	5
Inflow/Infiltration - Repair	20
Inflow/Infiltration - Replacement	50
Covered Storage	50