

MASSACHUSETTS WATER RESOURCES AUTHORITY

# Board of Directors Report

on

## Key Indicators of MWRA Performance

for

First Quarter FY2010

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director  
Michael J. Hornbrook, Chief Operating Officer  
November 18, 2009

# Board of Directors Report on Key Indicators of MWRA Performance for First Quarter FY2010

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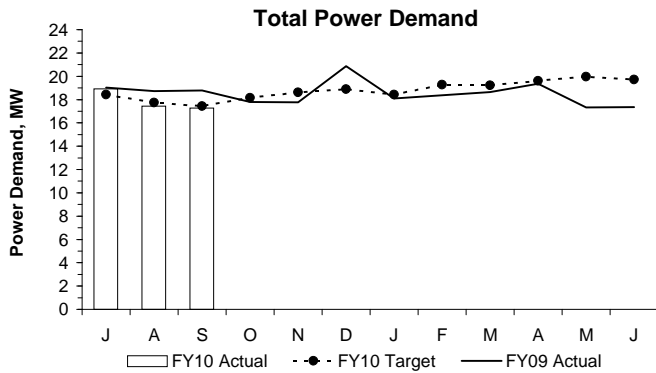
This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's board of directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for internal management use and is subject to correction and clarification.

Frederick A. Laskey, Executive Director  
Michael J. Hornbrook, Chief Operating Officer  
November 18, 2009

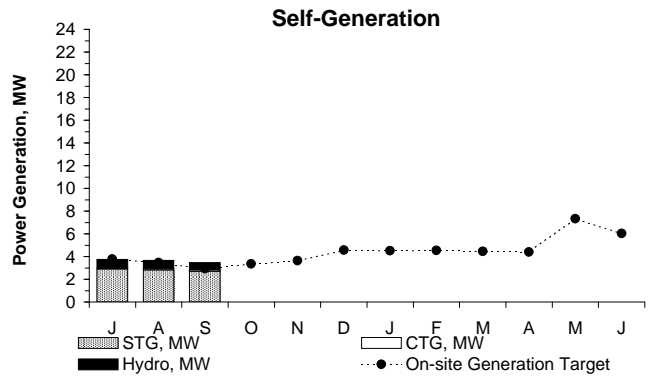
# OPERATIONS AND MAINTENANCE

# Deer Island Operations - Energy

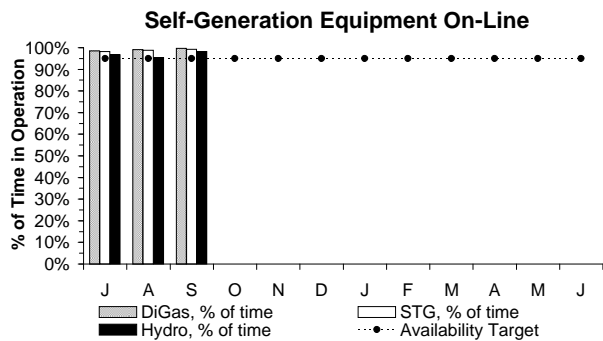
1st Quarter - FY10



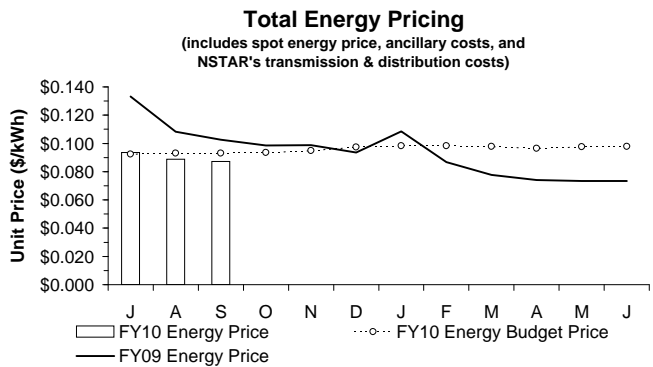
Total Power Demand in the 1st Quarter was pretty much in line with projections and slightly lower (-5%) than FY09's actual. Even though Total Plant Flow for the 1st Quarter was 11% higher than expected, due to higher-than-expected rainfall, the 10% higher power demand for pumping alone was directly offset by lower-than-expected energy demand from other DITP process areas.



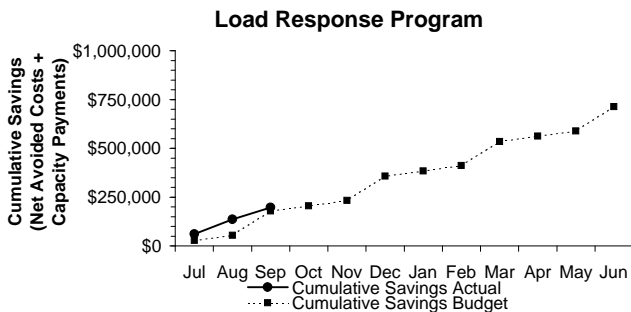
Power generated on-site was 7% higher than the target for the 1st Quarter. Power generation by the STG, Hydro Turbine System, and CTGs all exceeded their targets (+7%, +11%, +10%, respectively). In addition to operating for maintenance/checkout purposes, the CTGs were operated for a Demand Response event on August 24 for 2.87 hours and for 6.68 hours on September 16 due to emergency NSTAR maintenance, during which DITP had to be disconnected from the electrical grid.



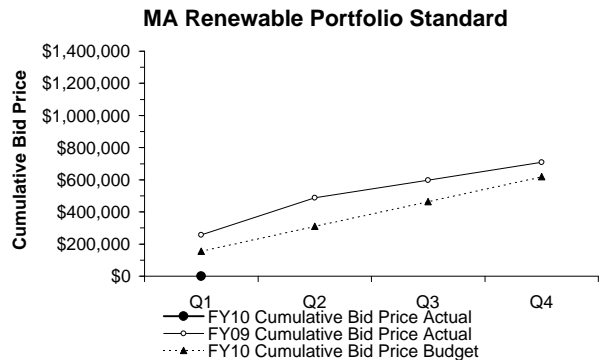
The DiGas, STG, and Hydro Turbine Systems all exceeded their 95% Availability Target for the 1st Quarter.



Under the new energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. Overall, the total energy price in Q1 was 3% lower than the target due to lower-than-budgeted spot energy prices. The total energy price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges. The August and September total energy prices are estimates as the invoices have not been received yet. Year-to-date costs as a result of the lower energy pricing are estimated at approximately \$76,865 less than budgeted.



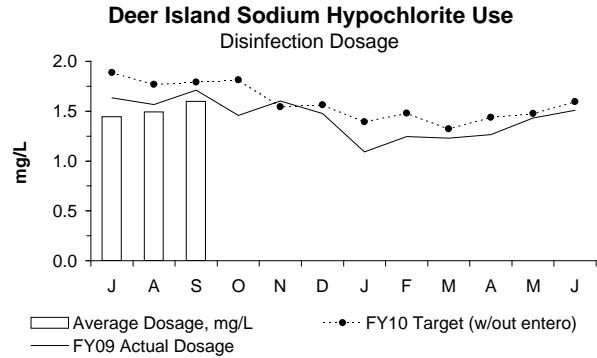
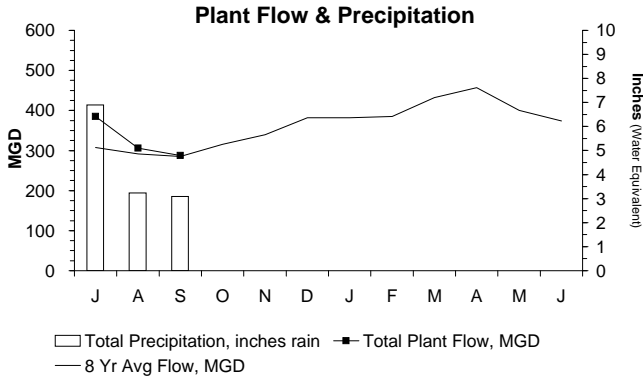
DI participated in one demand response event called on August 24. DI participates in ISO-New England's (ISO-NE) Load Response Programs. By agreeing to have its CTGs available to run, and thus, relieve the New England energy grid of Deer Island's load during times of high energy demand or high pricing, MWRA receives monthly Capacity Payments from ISO-NE. When it runs the CTGs at ISO-NE's request, MWRA receives energy payments from ISO-NE and also avoids NSTAR's transmission and distribution charges. "Net Avoided Cost" is the avoided NSTAR payments, offset by the cost of running the CTGs, and the energy payments from ISO-NE. Cumulative savings are the sum of Net Avoided Costs and monthly Capacity Payments - \$196,183 through the 1st Quarter of FY10.



There were no Renewable Energy Certificate (REC) bids in the 1st Quarter of FY10.

# Deer Island Operations

## 1st Quarter - FY10



The Total Plant Flow for the 1st Quarter was 11% higher than the 8-year average flow (326.3 mgd actual vs. 294.7 mgd expected) as precipitation was 44% greater than the 8-year average for the quarter (13.23 water equivalent inches actual vs. 9.17 water equivalent inches expected). Although Total Plant Flow in August and in September was in line with targets, July's Total Plant Flow was 25% higher than expected as precipitation was 105% higher than expected for the month.

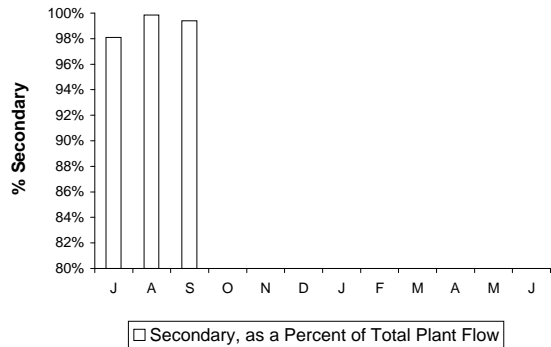
The disinfection dosing rate was 17% lower than the target for the 1st Quarter and 8% lower than the FY09 actual dosage for the same period. Chlorine demand was less than historical because the wastewater contains less overall solids and organic matter following the heavy rain events at the beginning of the quarter. The disinfection dosing rate (target and actual) is dependent on plant flow, target effluent total chlorine residual levels, effluent quality and NPDES permit levels for fecal coliform.

### Secondary Blending Events

Month	Count of Blending Events	Count of Blending Events Due to Rain	Count of Blending Events Due to Non-Rain-Related Events	Secondary, as a Percent of Total Plant Flow	Total Hours Blended During Month
J	8	8	0	98.1%	30.2
A	1	1	0	99.9%	3.99
S	1	1	0	99.4%	6.34
O	0	0	0		
N	0	0	0		
D	0	0	0		
J	0	0	0		
F	0	0	0		
M	0	0	0		
A	0	0	0		
M	0	0	0		
J	0	0	0		
<b>Total</b>	<b>10</b>	<b>10</b>	<b>0</b>	<b>99.1%</b>	<b>40.6</b>

There were a number of significant rain events during the 1st Quarter, which resulted in ten separate blending events with a combined total of 40.6 hours; 293.9 Mgal of flow was blended with secondary effluent. All secondary blending events during the quarter were due to rain resulting in high plant flows. **Secondary permit limits were met at all times.**

### Deer Island Secondary Treatment as a Percent of Total Plant Flow



Overall, 99.1% of total plant flow to DITP was treated through secondary treatment during the 1st Quarter. The Maximum Secondary Capacity for the entire quarter was 700 mgd.

## Deer Island Operations & Maintenance Report

### Environmental/Pumping:

Precipitation in the 1st Quarter was 44% higher than the 8-year historical average with a total of 13.23 inches falling on 27 out of the 92 days but was 22% lower than FY09's precipitation of 16.92 inches during the same period. The plant achieved a maximum average hourly flow rate for the quarter of 1,197 mgd on July 24 as a result of a "nor'easter" that produced a total of 2.36 inches of rainfall over two days. Pumping and treatment operations continued without incident throughout this storm event, as well as, throughout the entire quarter.

### Primary and Secondary Treatment:

In August, contractors started work on a major Primary and Secondary Clarifier Rehabilitation Project. The primary scope of this three-year, \$59.4 million contract is to replace all chains and sprockets in the Primary and Secondary Clarifiers. Site work on the started on August 3. To ensure sufficient clarifier availability, the contractor is limited to working in no more than four Primary Clarifiers (all of which will be in one battery) and three Secondary Clarifiers (one Secondary Clarifier in each of Secondary Batteries A, B, and C).

## Deer Island Operations

1st Quarter - FY10

### Deer Island Operations & Maintenance Report (continued)

**Odor Control Treatment:** Contractors started work in late August to clean and inspect several odor control Carbon Adsorber (CAD) units in the North Main Pumping Odor Control, West Odor Control (Primary Batteries C & D and Grit), and Residuals Odor Control Facilities. The spent activated carbon was replaced with new (regenerated) carbon in four separate carbon adsorber units.

**Energy:** DITP participated in one demand response event this quarter on August 24, an unannounced test called by ISO-NE to confirm facility and equipment availability in the event an actual demand response is called. CTG 1 was operated for 2.8 hours during this test. Participation in this event resulted in a Net Avoided Cost of approximately \$16,000.

The installation of two 190-foot, 600-kW wind turbine generators by Lumus Construction, Inc. was completed in August. The first turbine was erected on August 10 and the second turbine on August 14. The remaining portion of the installation process and connection to the plant's existing electrical system continues. Power generated by the turbines will be used onsite to offset Deer Island's electricity purchases. With the addition of these two turbines, Deer Island's self-generation will increase from 23% to 26%. Plans are also underway to install three more wind turbines at DITP, with the Federal Aviation Administration agreeing to allow the turbines to be installed, one at a time, after 30 days of operation with no negative impacts on aviation for each additional turbine.

On August 11, Governor Deval Patrick visited Deer Island to celebrate the installation of the two wind turbines as a symbol of Massachusetts' commitment to clean energy. He was joined by House Speaker Robert DeLeo, Senator Anthony Petrucci, Ian Bowles, other past and present Board members, and MWRA staff.

**Regulatory:** Emissions compliance testing on the West Odor Control (WOC) system was conducted by consultants during the week of September 7. The WOC system treats process air from Primary Batteries C and D, as well as, from the Grit Facility and the Lydia Goodhue (South System) Pump Station. DEP requires that DITP conduct emissions compliance testing for the various emission units once every 5 years. The final report summarizing the test results is currently being prepared. A comprehensive emissions audit by DEP was also conducted on September 9 and 10 in conjunction with the emissions compliance test; no issues requiring further notification or remediation surfaced during this audit.

Kevin Brander with DEP was onsite on September 10 for an unannounced site visit; he was given a comprehensive plant tour covering the entire wastewater and residuals treatment facilities and process areas. Initial communications indicate the inspection went well and a formal report by DEP will be forwarded to EPA.

### Clinton Wastewater Treatment Plant Operations & Maintenance Report

**Phosphorous Limits:** Task order work continues to review options for enhanced phosphorous treatment; a new NPDES permit requirement is expected to reduce effluent concentrations of phosphorous.

**Plant Survey:** A survey report is underway that will examine all areas of the Clinton Plant (structural, HVAC, electrical, process operations, equipment, etc.) The resulting report will be a "blueprint" for future CIP/CEB projects, as well as assist management in defining plant maintenance priorities.

**Aeration System:** A consultant review of Clinton's aeration system for activated sludge is complete. The draft recommendation is for a change from mechanical aeration to a fine-bubble, diffused-air system for three of the plant's six aeration basins. This new system will save on electrical costs and the payback period is approximately five years. The system may also help with phosphorous treatment (see above) as it may provide the flexibility for biological treatment (an anaerobic selector).

**Headworks Building:** Staff replaced the drive belts on the lift pumps; replaced the rake arm motor and clutch assembly and sent the old motor out to be rebuilt; and replaced the rubber edge on the scraper blade for the bar rack.

**Dewatering Building:** Staff adjusted the packing on Sludge Transfer Pumps 1 & 3; cleaned the polymer makeup system; and replaced the packing set on Thickened Sludge Transfer Pump.

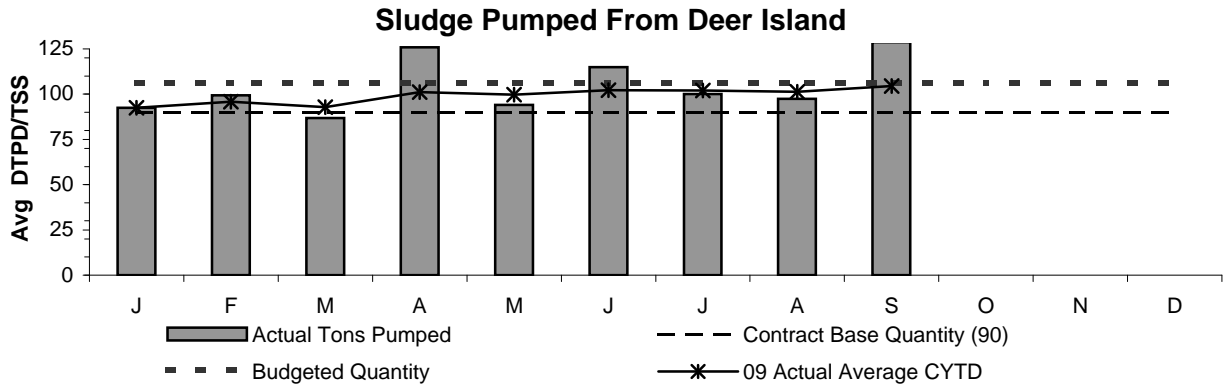
**Chemical Building:** Staff repaired a leak on the soda ash slurry pump; replaced filter bags on the soda ash fill station; flushed the soda ash discharge line and exercised the discharge valves; and repaired a tamper switch on the water line for fire protection.

**Digester Building:** Staff cleared a blockage from the primary digester overflow pipe; installed a new motor mount on Recirculation Pump 1 (the motor was sent out for repair and re-installed).

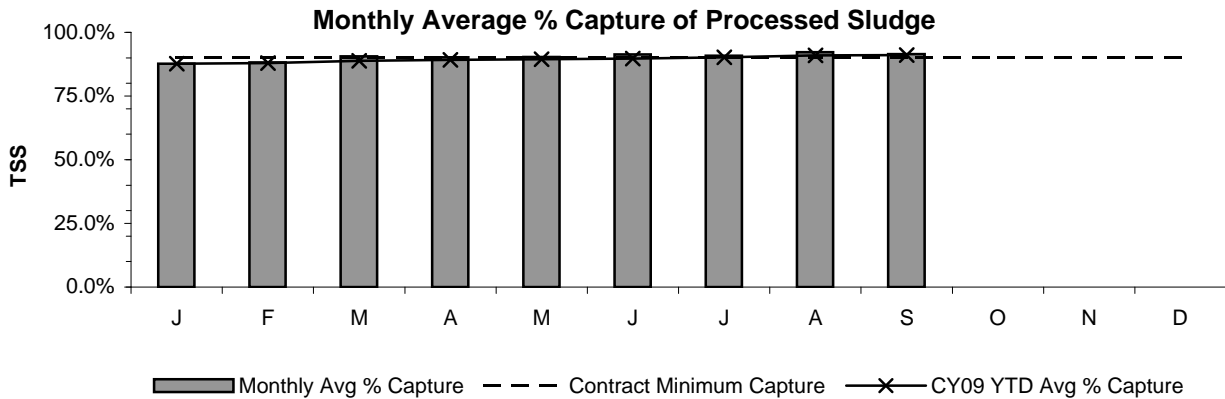
# Deer Island Residuals

1st Quarter - FY10

MWRA pays a fixed monthly amount for the calendar year to process up to 90 DTPD/TSS as an annual average. The monthly invoice is based on 90 DTPD/TSS (Dry Tons Per Day/Total Suspended Solids) times 365 days divided by 12 months. At the end of the year, the actual totals are calculated and additional payments are made on any quantity above the base amount. The base quantity of 90 DTPD/TSS was set for the 15-year term of the contract, even though, on average, MWRA processes more than 90 DTPD/TSS each year (FY10's budget is 106 DTPD/TSS - same as FY09).



The average total quantity of sludge pumped from Deer Island to the Pelletizing Plant in Quincy in the 1st Quarter was 108.7 DTPD, which is greater than the FY10 budgeted average amount of 106 DTPD. The higher volume reflects the summer months' impact on sludge yield; higher temperatures yield more sludge. Changes in sludge inventory (retained on Deer Island for process reasons), the performance of Primary and Secondary Treatment systems, and digester upset conditions can also affect sludge quantities.



The average solids capture rate for the 1st Quarter was 91.5%; the contract requirement is at least 90%.

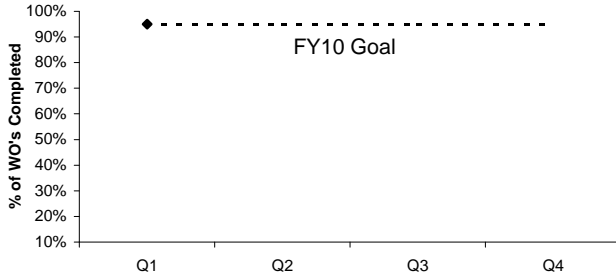
# Deer Island Maintenance

1st Quarter - FY10

## Productivity Initiatives

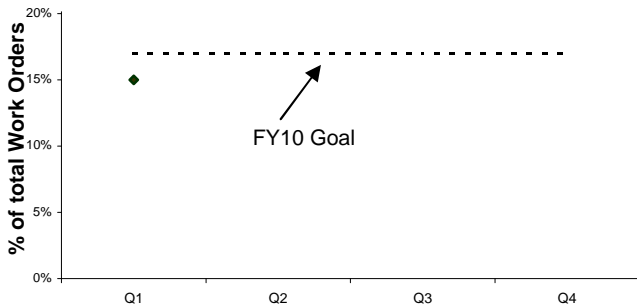
Productivity initiatives include increasing predictive maintenance tasks. Accomplishing this initiative should result in a decrease in the overall maintenance backlog.

### Predictive Maintenance Compliance



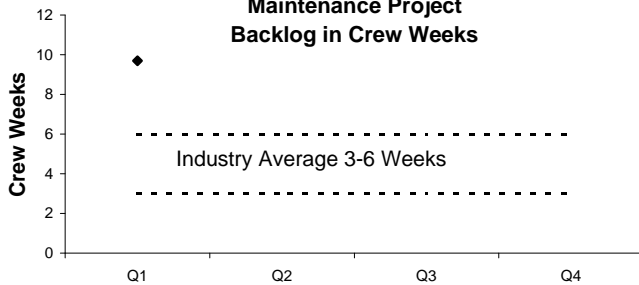
Deer Island's FY10 predictive maintenance goal is completion of 95% of all PdM work orders; DITP met that goal this quarter.

### Predictive Maintenance



Deer Island's FY10 goal is to increase PdM work orders to 17% of total work orders. The industry is moving toward increasing predictive maintenance work to reduce down time and to better predict when repairs are needed. DITP completed 15% for the 1st Quarter.

### Maintenance Project Backlog in Crew Weeks



The industry average for maintenance backlog is 3-6 weeks. Deer Islands FY10 goal is to stay within the industry average. Maintenance backlog is at 9.7 weeks for the 1st Quarter. Maintenance currently has a number of vacancies being filled and a number of staff on job-related injury leave; these vacancies are contributing to the increased backlog. Management monitors the backlog and equipment availability weekly to ensure that all critical equipment is on line.

## Proactive Initiatives

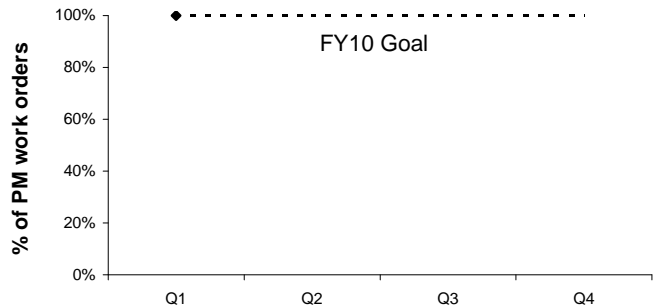
Proactive initiatives include completing 100% of all preventive maintenance tasks and increasing preventive maintenance kitting. These tasks should result in lower maintenance costs for maintenance.

### Preventive Maintenance Compliance



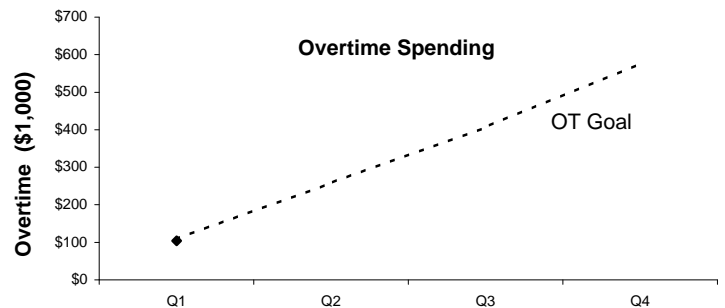
Deer Island's FY10 preventive maintenance goal is completion of 100% of all PM work orders from Operations and Maintenance. DITP met the goal this quarter.

### Preventive Maintenance Kitting



Deer Island's FY10 preventive maintenance kitting goal is 100% of all PM work orders. DITP met this goal late in FY09 but will audit all PM work orders to ensure that all PMs requiring kitting are complete. DI continued to meet the goal in the first quarter of FY10. Staff will develop a new proactive maintenance initiative in January 2010.

### Overtime Spending



Overtime spending was \$5K under budget for the 1st Quarter. Overtime was used for storm coverage, the dip tube project, the hot water loop, the pressure relief valves in Residuals, and Primary and Secondary clarifier work. Management is continuing to limit overtime spending to critical maintenance activities.

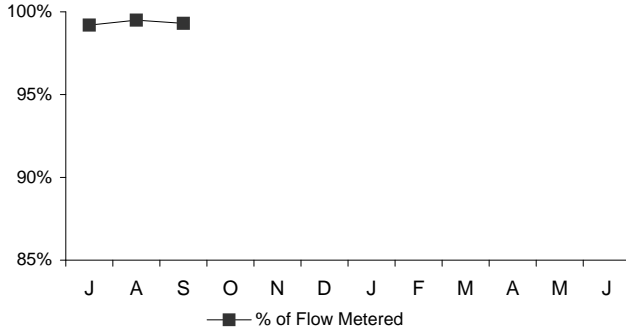


# Operations Division Metering

## 1st Quarter - FY10

### WATER METERS

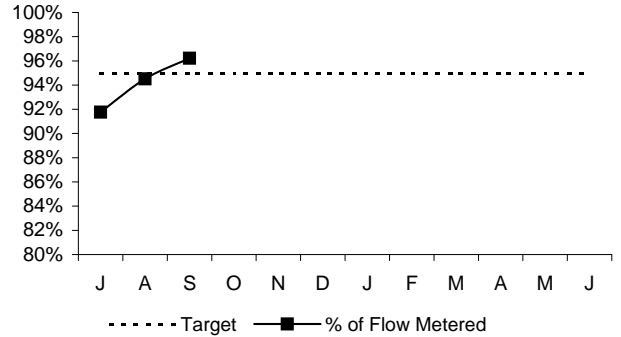
**Percent of Total Revenue Water Deliveries Calculated Using Meters**



The target for revenue water deliveries calculated using meters is 100%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house/capital construction projects. During the 1st Quarter, meter actuals accounted for 99.3% of flow; only 0.7% of total revenue water deliveries were estimated. The following is the breakdown of estimations:  
 In-house/Capital Construction Projects - 0.2%  
 Instrumentation Failure - 0.5%

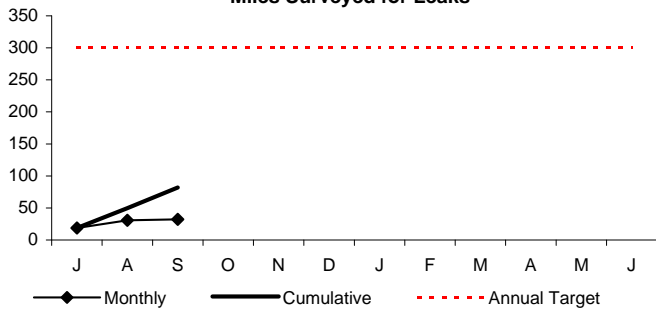
### WASTEWATER METERS

**Percent of Total Wastewater Transport Calculated Using Meters**



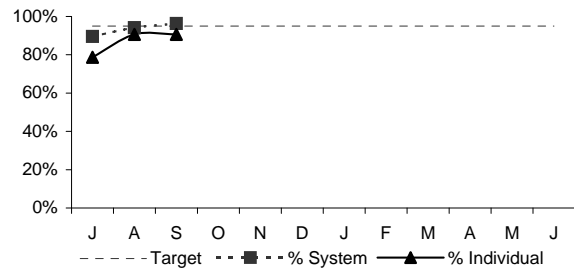
The target for revenue wastewater transport calculated using meters is 95%. Estimates are generated for meters missing data due to instrument failure and/or erratic meter behavior. Estimates are produced using data from previous time periods under similar flow conditions. During the 1st Quarter, meter actuals accounted for 94.2% of flow; 5.8% of wastewater transport was estimated.

**Miles Surveyed for Leaks**



In the 1st Quarter, staff inspected 81.89 miles of water mains were inspected; this brings the total for the fiscal year to 81.89 miles.

**% METER UPTIME**



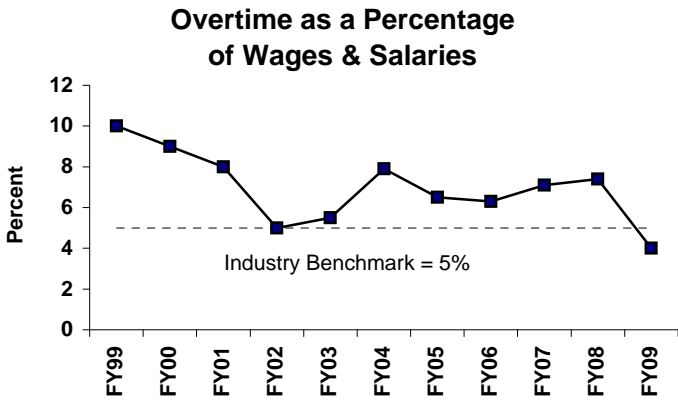
For the 1st Quarter, out of a possible 1,607,424 data points, only 55,596 points were missed resulting in a system-wide up time of 96.5%. Of the 182 revenue meters installed, on average, 24 experienced down time greater than the 5% target resulting in a 86.7% individual meter uptime. For the 1st Quarter, down time for an individual meter is defined by any individual meter, on average, having less than 2,797 data points.

#### Water Distribution System

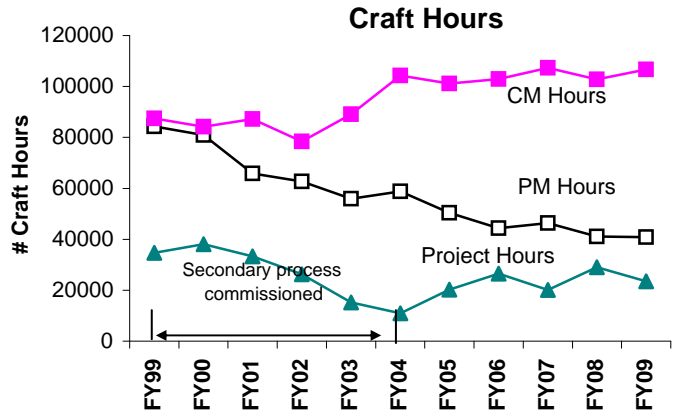
Month	J	A	S	O	N	D	J	F	M	A	M	J
Leaks Detected	0	1	1									
Leaks Repaired	0	1	1									
Backlog	0	0	0									
Avg. Lag Time (days)	0.0	3.0	1.5									

The leak backlog for FY10 is currently at zero. The Pipeline Program's goal is to repair all leaks found during the fiscal year. However, if the goal cannot be reached due to restrictions, isolations, communities, or degree of difficulty, then the goal is to have not more than two leaks outstanding at year's end.

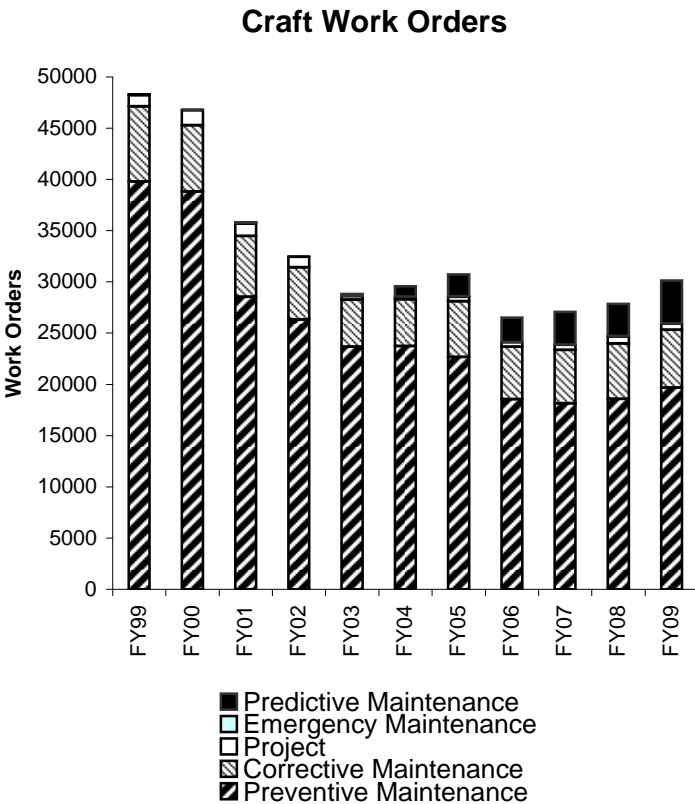
## Deer Island's Yearly Maintenance Metrics Overall Maintenance Program Measures



Overtime in FY03 to FY08 was higher than the industry benchmark due to the loss of staff from internal transfers and resignations. In trying to reach the Industry benchmark, management has taken steps to reduce overtime spending. This has resulted in a short-term increase in the maintenance backlog. DITP management closely monitors all related key performance indicators to manage and maintain optimal plant performance.



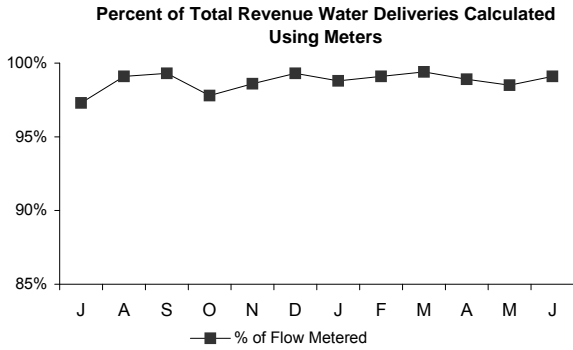
Optimization of the preventive maintenance program through the transfer of some light maintenance tasks to Operations staff (17% of PM hours at the end of FY09), elimination of duplicate work orders, decreasing PM frequency due to equipment history and performance, completion of a PM Optimization effort in FY05, and RCM recommendations, have resulted in a significant decrease (43,363 hours) of PM craft hours from FY99 to FY09.



During FY09, the number of total work orders increased by approximately 2,283 (8.2%), compared to FY08. A large portion of the additional work orders was the result of increasing the use of predictive maintenance techniques to monitor more plant equipment. This approach is part of the transition from reactive maintenance to proactive maintenance, using less-intrusive methods, which is part of DITP's strategy to improve overall maintenance. In FY09, the predictive maintenance work orders increased by 25% and the number of emergency maintenance work orders decreased from 32 to 6 compared to FY08.

## Operations Division Metering 4th Quarter - FY09

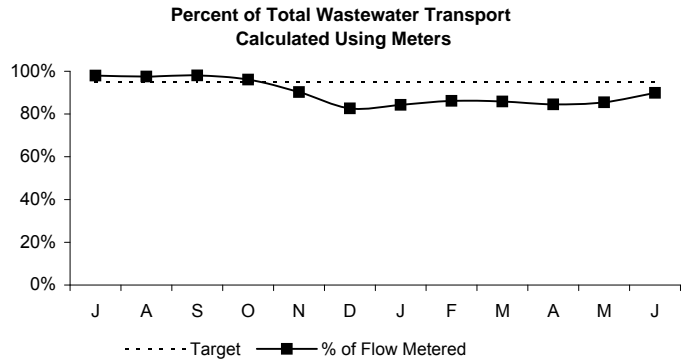
### WATER METERS



The target for revenue water deliveries calculated using meters is 100%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house and capital construction projects. During the 4th Quarter, meter actuals accounted for 98.8% of flow; only 1.2% of total revenue water deliveries were estimated.

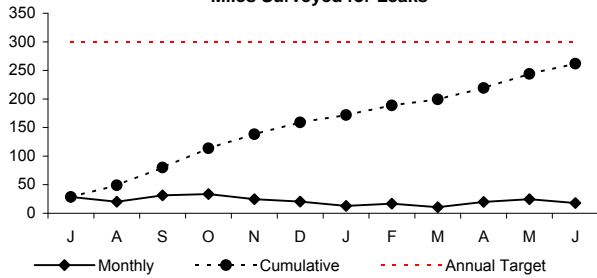
The following is the breakdown of estimations:  
 In-house and Capital Construction Projects - 0.4 %  
 Instrumentation Failure - 0.8%

### WASTEWATER METERS



The target for revenue wastewater transport calculated using meters is 95%. Estimates, which are generated for meters missing data due to instrument failure and/or erratic meter behavior, are produced using data from previous time periods under similar flow conditions. During the 4th Quarter, meter actuals accounted for 86.61% of flow. Access to many meter sites for maintenance is being impacted by ongoing construction work zone safety issues and the use of flaggers. It should be noted that although the average estimated data is about 14%, up to 10 communities required temporary year-to-date wastewater flow estimates in the range of 20 to 50%; staff were able to correct this in June/July using police details. Staff expect the average of data estimations for these communities will be reduced throughout the remainder of the calendar year.

### Miles Surveyed for Leaks



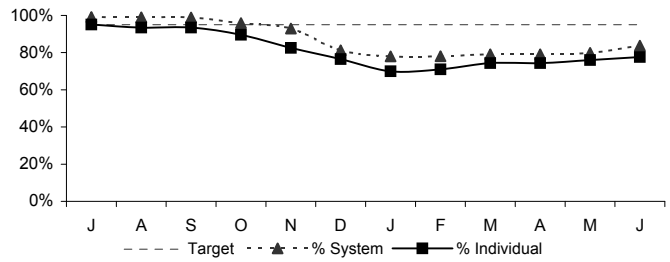
Staff inspected 62.46 miles of MWRA water mains in the 4th Quarter. The total for the fiscal year was 261.84 miles.

### Water Distribution System

Month	J	A	S	O	N	D	J	F	M	A	M	J
Leaks Detected	1	0	0	2	1	1	1	0	0	0	1	0
Leaks Repaired	1	0	0	2	1	1	1	0	0	0	1	0
Backlog	0	0	0	0	0	0	0	0	0	0	0	0
Avg. Lag Time (days)	4.0	4.0	4.0	3.0	2.5	2.0	1.8	1.8	1.8	1.8	1.8	1.8

The Pipeline Program met its goal of repairing all leaks found during the fiscal year; FY09 ended with the backlog at zero.

### % METER UPTIME



For the 4th Quarter, out of a possible 1,598,688 data points, 305,592 points were missed resulting in an average system-wide up time of 80.86%. Of the 183 revenue meters installed, an average of 44 experienced down time greater than the 5% target, resulting in an average 75.96% individual meter uptime. For the 4th Quarter, down time for an individual meter is defined by any individual meter having less than 2,618 data points. Access to many of the meter sites for maintenance is being impacted by ongoing construction work zone safety issues and the use of flaggers.

# Water Distribution System Valves

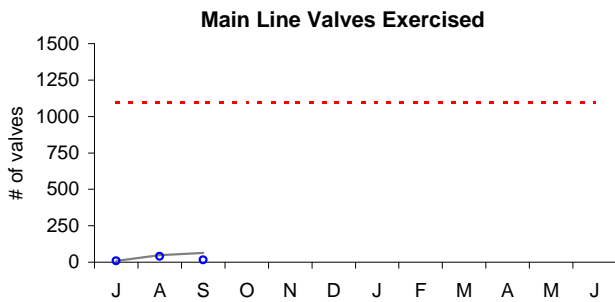
## 1st Quarter - FY10

### Background

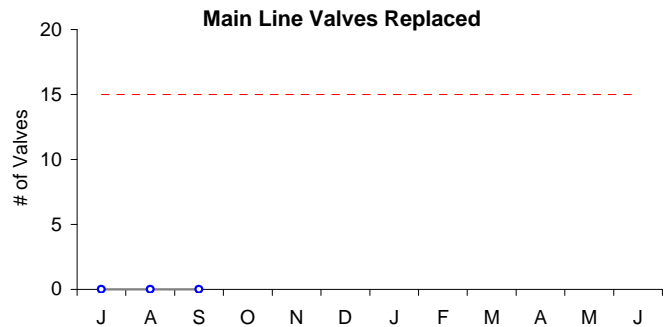
Valves are exercised, rehabilitated, or replaced in order to improve their operating condition. This work occurs year round. Valve replacements occur in roadway locations during the normal construction season, and in off-road locations during the winter season. Valve exercising can occur year round but is often displaced during the construction season. This is due to the fact that a large number of construction contracts involving rehabilitation, replacement, or new installation of water lines, requires valve staff to operate valves and assist with disinfection, dechlorination, pressure-testing, and final acceptance. Valve exercising can also be impacted due to limited redundancy in the water system; valve exercising cannot be performed in areas where there is only one source of water to the community meters or flow disruptions will occur. Since October 2008, Field Operations' valve work has been impacted by construction/work zone safety issues and the use of flaggers.

Type of Valve	Inventory #	Operable Percentage	
		FY10 to Date	FY10 Targets
Main Line Valves	2,083	84.9%	87%
Blow-Off Valves	1,175	92.8%	94%
Air Release Valves	1,338	91.7%	92%
Control Valves	48	94.0%	92%

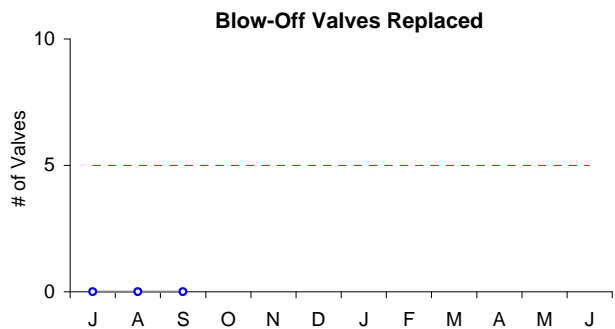
Key to Symbols: ○ FY2010 Monthly Total  
— FY2010 Cumulative Total



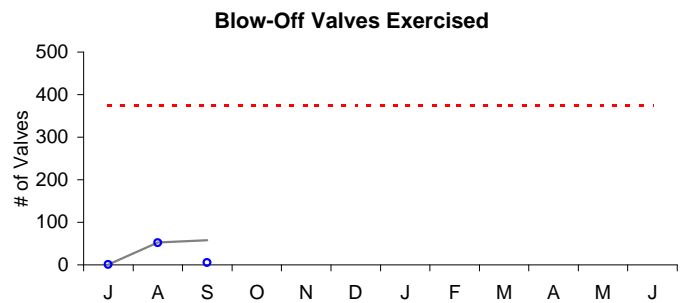
In the 1st Quarter, staff exercised 64 main line valves.



No main line valves were replaced in the 1st Quarter because staff performed unscheduled MWRA water/wastewater line projects, including the drain line at the IPS, the centrate/filtrate line at FRSA, and leak repairs at Deer Island and Nut Island.



No blow-off valves were replaced in the 1st Quarter. Blow-off valves replacements, in particular, have been impacted by other MWRA construction projects and construction/work zone safety issues and the use of flaggers. Current staffing levels also have impacted the blow-off valve replacement schedule thus far for FY10.



Staff exercised 58 blow-off valves in the 1st Quarter.

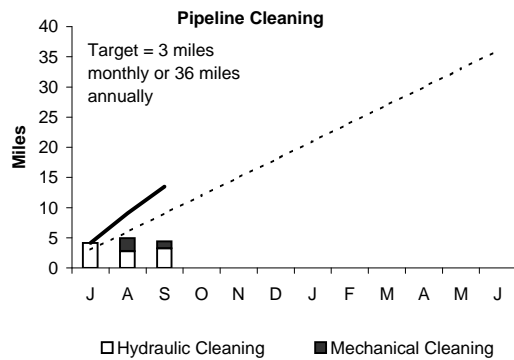
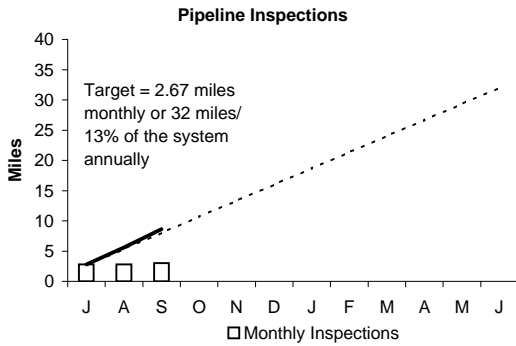
# Wastewater Pipeline and Structure Inspections and Maintenance

## 1st Quarter - FY10



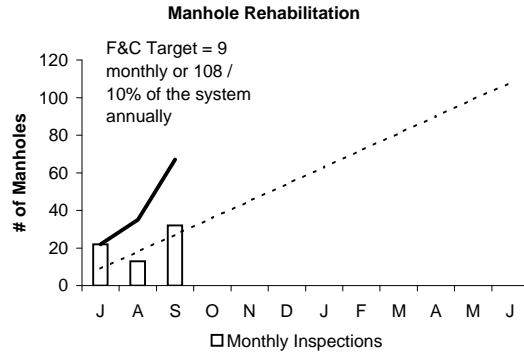
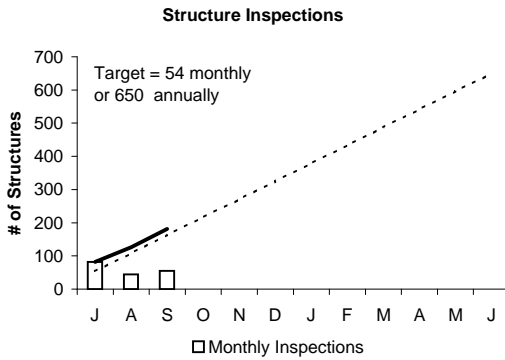
### Inspections

### Maintenance



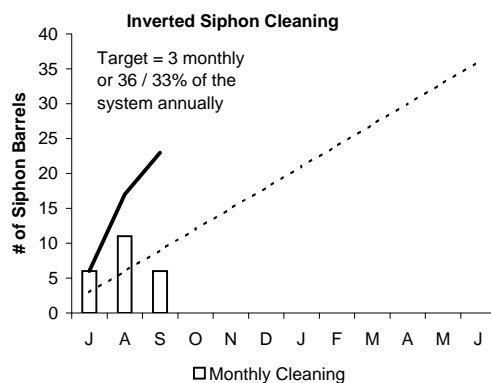
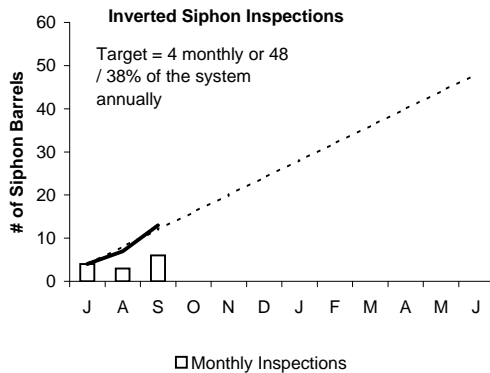
Staff internally inspected 8.63 miles of MWRA sewer pipeline in the 1st Quarter; no Community Assistance was provided this quarter.

In the 1st Quarter, staff cleaned 13.46 miles of MWRA's sewer system and removed 43 cubic yards of grit and debris. No Community Assistance was provided this quarter.



In the 1st Quarter, staff performed 145 manhole/structure inspections, including the 12 CSO structures each month during the quarter.

Staff replaced 67 frames and covers in the 1st Quarter.



Staff inspected 13 siphon barrels in the 1st Quarter.

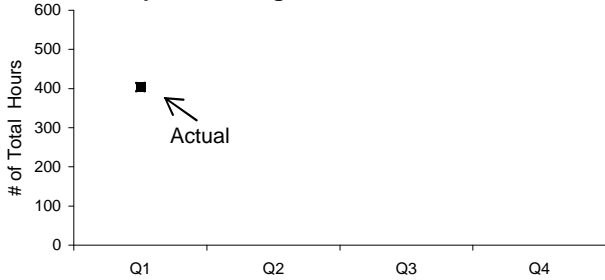
In the 1st Quarter, staff cleaned 23 siphon barrels.

# Field Operations' Metropolitan Equipment & Facility Maintenance

## 1st Quarter - FY10

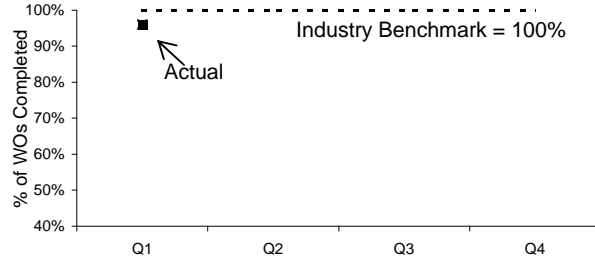
Several maintenance and productivity initiatives are in progress; Operators now performing light maintenance tasks is one of those productivity initiatives. This frees up maintenance staff to perform corrective maintenance and project work, thus reducing maintenance spending. Backlog and overtime metrics monitor the success of these maintenance initiatives.

**Operations Light Maintenance PM Hours**



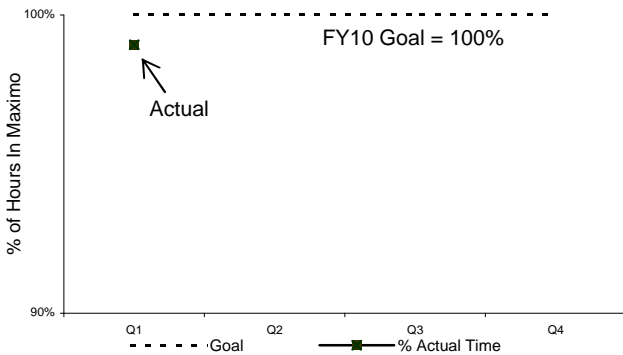
Operations staff averaged 404 hours of preventive maintenance during the 1st quarter, an average of 22% of the total PM hours for the 1st Quarter, which is above the industry benchmark of 10% to 15%.

**Overall Preventive Maintenance**



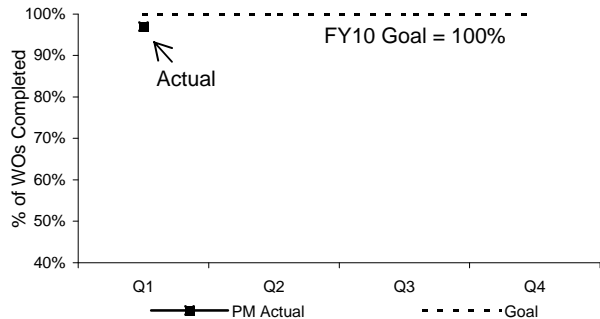
FOD's preventive maintenance goal for FY10 is 100% of all PM work orders. Staff completed an average of 96% of all PM work orders in the 1st Quarter.

**Time in Maximo**



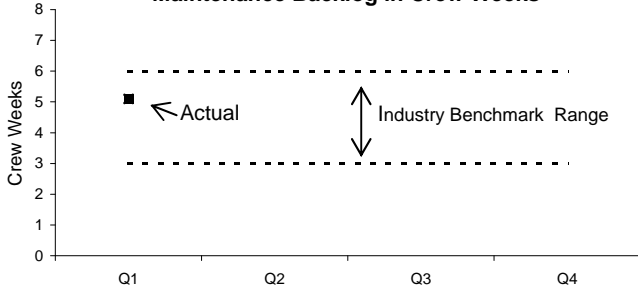
To ensure accurate data in the Maximo database, 8 hours of staff time each day must be entered into Maximo. Staff have developed a new method of time entry into Maximo that, with the issuance of a daily accountability report, has improved time entry. The FY10 goal is 100%; 99% of time was entered in the 1st Quarter.

**Operations Light Maintenance % PM Completion**



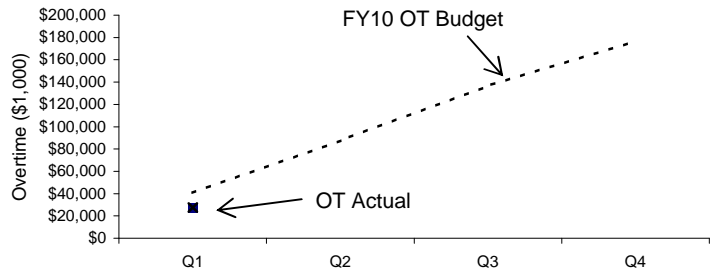
Operations' FY10 PM goal is completion of 100% of all PM work orders assigned. Operations completed an average of 96% of PM work orders in the 1st Quarter.

**Maintenance Backlog in Crew Weeks**



The 1st Quarter backlog average is at 5.1 weeks while overtime spending is \$14K under budget for the 1st Quarter. Electricians' backlog has increased due to the addition of critical project work. Management's goal is to control the overtime budget and stay within the industry benchmark of 3 to 6 weeks.

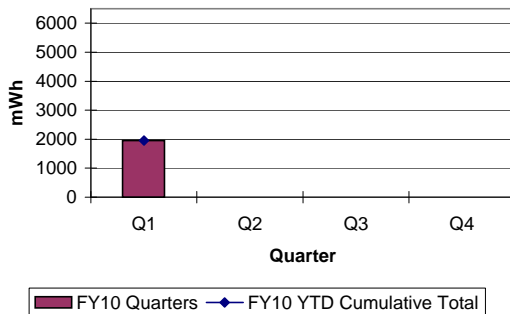
**Overtime Spending**



Maintenance overtime is \$14K under budget for the 1st Quarter. Overtime was used to complete emergency repairs due to a variety of critical operational needs.

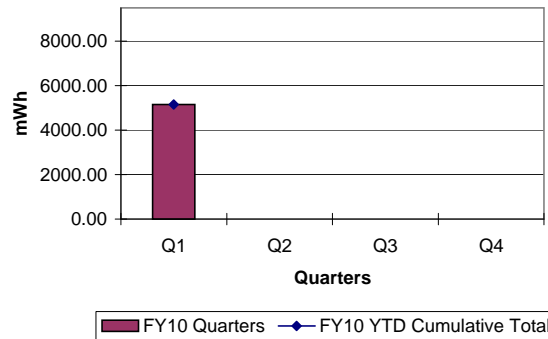
**Field Operations Hydroelectric Generation Quarterly Report  
1st Quarter - FY10**

**Quarterly Totals for Hydro Production at  
Cosgrove Hydroelectric Generation  
Facility**



In the 1st Quarter, the Cosgrove Hydroelectric Station generated a net of 1,954 mWh; 29% more power than was generated for the same period in FY09. The revenue generated at Cosgrove in the first quarter was \$60,824.

**Quarterly Totals for Hydro Production at  
the Oakdale Hydroelectric Generation  
Facility**



In the 1st Quarter, the Oakdale Station's hydroelectric plant generated a net of 5,155 mWh; 28% more power than was generated during the same period in FY09. The revenue generated at Oakdale in the first quarter was \$332,990. (Oakdale's operating protocol dictates that power is generated when water is transferred from Quabbin to Wachusett unless conditions result in flows that are in excess of generating capability.)

**ENERGY HIGHLIGHTS**

Loring Road Hydroelectric Project: Staff expect construction to begin in February 2010. MWRA was allocated \$1.5 million in SRF stimulus funding from SRF for this project.

Loneragan Intake: MWRA is conducting feasibility studies of hydroelectric power at the facility.

Carroll Water Treatment Plant (CWTP) Photovoltaic: A feasibility study has been completed for the placement of a solar power system up to 480 kW on the Dissolved Air Flotation platform. MWRA was allocated \$1.5 million in SRF stimulus funding for this project.

Southborough Photovoltaic: A feasibility study has been completed for the Trade Shop Roof. The feasibility of installing a system on the roof of the new Lab Building is being studied as part of the design and construction of the new building.

Nut Island Wind Project: The installation of wind turbines at Nut Island continued to be studied. Currently, staff are working with the City of Quincy to resolve some siting issues. MWRA had previously received a \$500,000 design and construction grant from the Massachusetts Technology Council for this project.

DeLauri Wind Project: MWRA was allocated \$4.75 million in SRF stimulus funding for this project and it is moving into the design/permitting phase.

Demand-Side Energy CWTP Energy Audit: Recommendations from the energy audit regarding process changes at CWTP are being further investigated, primarily installation of demand-controlled ventilation in the office space and variable frequency drives (VFDs).

Chelsea Facility Energy Audit: The second phase of NSTAR's energy audit, a study of the HVAC system, was completed in the 1st Quarter. Staff will work with NSTAR and its contractor on the audit recommendations to determine which ones are most cost effective to implement. NSTAR is the energy provider for the Chelsea Facility and will provide automatic rebates for up to 50% of any energy-saving measure implemented as a result of the audit.

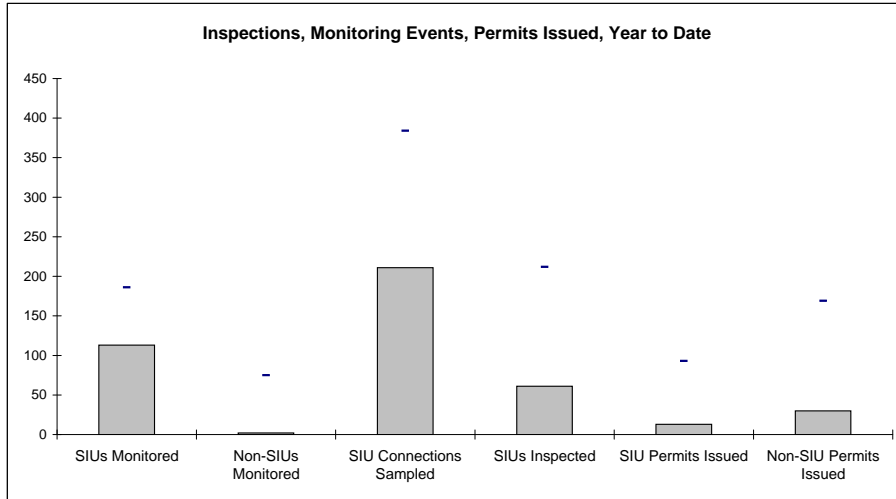
Energy Audit of Eight FOD Facilities: The focus of this energy audit was lighting, HVAC, pumps, and motors. The facilities audited were Chelsea Creek, Columbus Park, and Ward Street Headworks, and Gillis, Newton Street, Commonwealth Avenue, and Prison Point Pump Stations, and the Chelsea Screen House. The audits were completed in the 1st Quarter; individual reports for each facility are expected in October and November.

Energy Audit of Southborough Facility: A report outlining preliminary energy-saving recommendations from the NSTAR audit was received in September. Staff are reviewing these recommendations to determine which are cost effective to pursue and which require further study.

Six Water Pump Station VFD Installations: VFDs are being installed at six water pump stations, Brattle Court, Belmont, Hyde Park, Newton Street., Reservoir Road, and Spring Street for better process control and energy efficiency. Brattle Court has been completed and MWRA received a \$68,000 rebate check from NSTAR as a result of the installation. It appears from preliminary data that MWRA is using approximately 50% less energy at the station as a result of the new VFD. The other stations will be completed over the next 12 months.

# Toxic Reduction and Control

1st Quarter - FY10



EPA Required SIU Monitoring Events for FY10: 186  
YTD: 113

Required Non-SIU Monitoring Events for FY10: 75  
YTD: 2

SIU Connections to be Sampled For FY10: 384  
YTD: 211

EPA Required SIU Inspections for FY10: 212  
YTD: 61

SIU Permits due to Expire In FY10: 93  
YTD: 13

Non-SIU Permits due to Expire for FY10: 169  
YTD: 30

Significant Industrial Users (SIUs) are MWRA's highest priority industries due to their flow, type of industry, and/or their potential to violate limits. SIUs are defined by EPA and require a greater amount of oversight. EPA requires that all SIUs *with flow* be monitored at least once during the fiscal year. The "SIU Monitored" data above reflects the number of industries monitored. However, many of these industries have more than one sampling point and the "SIU Connections Sampled" data reflect samples taken from multiple sampling locations at these industries.

The annual goal is set at the beginning of the fiscal year but it can fluctuate due to the actual number of SIUs at any given time. During the course of the year, some SIUs do not discharge and cannot be monitored. TRAC's monitoring plan requires one additional sampling event for 40% of the SIUs and two additional sampling events for 10% of the SIUs. TRAC also monitors one-third of the non-SIUs each year.

SIU and Non-SIU permits are issued with durations of two to five years, depending on the category of industry, varying the number of permits that expire in a given year.

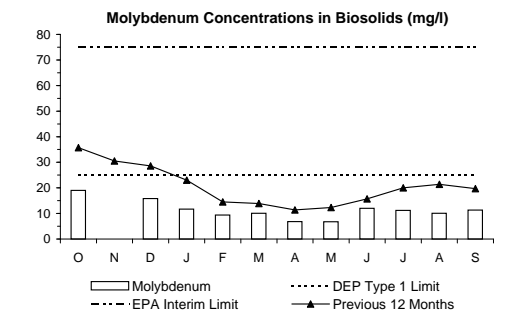
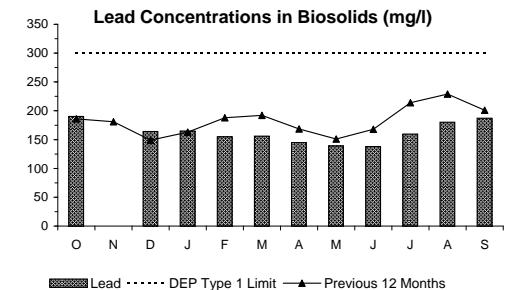
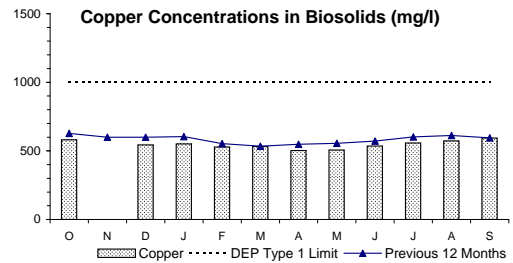
	Number of Days to Issue a Permit						Total Permits Issued	
	0 to 120		121 to 180		181 or more		SIU	Non-SIU
	SIU	Non-SIU	SIU	Non-SIU	SIU	Non-SIU		
Jul	5	15	0	0	0	0	5	16
Aug	1	4	0	2	0	0	1	8
Sep	6	5	1	0	0	0	7	6
Oct							0	0
Nov							0	0
Dec							0	0
Jan							0	0
Feb							0	0
Mar							0	0
Apr							0	0
May							0	0
Jun							0	0
<b>% YTD</b>	<b>92%</b>	<b>80%</b>	<b>8%</b>	<b>7%</b>	<b>0%</b>	<b>13%</b>	<b>13</b>	<b>30</b>

EPA requires MWRA to issue or renew 90% of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later. EPA also requires the remaining 10% of SIU permits to be issued within 180 days.

Copper, lead, and molybdenum are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer. Cooling tower usage typically causes a seasonal spike in molybdenum concentrations due to the blow-down on large AC systems that use corrosion inhibitors containing molybdenum. Levels drop again following the end of the cooling season. The hotter the season, the higher the spike. TRAC has an ongoing program to persuade cooling tower operators to switch to phosphate-based corrosion inhibitors. TRAC will continue its voluntary molybdenum reduction program, which has decreased influent loads significantly since 1995.

In prior years, molybdenum levels have exceeded the state standard for four to six months, depending upon the weather. It should be noted that in FY09, MWRA met DEP's Type 1 limit for the entire year, which is a significant event that can be attributed to the aforementioned on-going efforts to push voluntary reductions of molybdenum based corrosion inhibitors. Molybdenum levels also met the DEP limit during the first quarter of FY10.

**Note: No data is available for the month of November due to the duct work fire at the Pelletizing Plant**





# Field Operations Highlights – Orange Notebook

1st Quarter - FY10

## Western Water Operations & Maintenance

- Winsor Power Station: Staff supported the contractor during start-up and calibration of the new combination (fixed orifice and movable orifice valve). Staff also replaced a 2,400-volt step-down transformer.
- Chicopee Valley Aqueduct: Operations and Maintenance staff conducted a flow and pressure test to determine the existing head loss in the aqueduct to support the Ware Disinfection Facility Ultraviolet Project. Staff also provided support for the Original Equipment Manufacturer with the rebuilding of the Back Pressure Sustaining Valves in the Route 21 Valve Chamber.
- Carroll Water Treatment Plant: Staff completed a project to replace maintenance-intensive hydro-tube pumps with new diaphragm pumps on the fluoride system. Staff also replaced the mechanical seal on the dewatering pump for the storage tanks.
- Hydro Turbines: Staff supported the Federal Energy Regulatory Commission (FERC) during the annual inspection of the hydro turbines at Cosgrove and Oakdale Power Stations.
- Rutland-Holden Sewer: Staff completed clearing and chipping downed trees along the Rutland-Holden easement that resulted from last winter's severe ice storm in Worcester County.

## Metro Water Operations & Maintenance

- Blue Hills Covered Storage Facility Activation: On August 27, the new 20-million-gallon Blue Hills Covered Storage Facility was placed in service.
- WASM 10 Leak Repair on Linden Street in Waltham: On August 24, a Water Pipeline crew excavated and attempted to repair a leak on WASM 10 in Waltham with the main in service. Because pressure was too great, and a planned isolation occurred during the overnight hours; all affected customer communities were notified. The isolation and leak repair occurred without incident or complaint.
- WASM 2 Leak: A leak was reported near River Road in Weston, where all three WASM Mains cross under Route 128. Water Pipeline Staff excavated on Monday, September 14 to locate the leak. The leak was found on a lead joint near the top of the WASM 2 60" Main. Two of the three WASM mains at this location serve the Northern Low Service (NLS) Area and are redundant to each other. WASM 2 was isolated to allow staff to re-caulk the joint. The main was returned to service that evening. There were no service impacts resulting from the isolation and repair.
- Phase 2 Pump Station Rehabilitation Contract: The Hyde Park Pump Station successfully completed its 21-day acceptance test on July 14 for Pumps 1 and 2. The 21-day test for two of the new pumps at Spring Street was successfully completed August. Work was also successfully completed at Brattle Court Pump Station on Pump #2 in August; testing will begin in October.

## Wastewater Operations & Maintenance

- Preventive Maintenance: The combined efforts of Operations and Maintenance has increased the minimum average PM completion rates to 96%, ensuring that all Field Operations' wastewater equipment achieves maximum efficiency and availability when needed most.
- Process Control: A manhole rehabilitation contract was awarded; submittals are being reviewed and the contractor expects to start field work in October. Staff have worked to coordinate and schedule a trial shutdown of the Caruso Pump Station to permit work in the screen channels and wet well. Staff continued to support testing of SCADA rehabilitation improvements at Nut Island (isolation testing and grit collection and conveyance), headworks automatic gate control testing and are supporting the control strategy development and implementation of the Cottage Farm Brookline Connection.
- Northern Intermediate High Short-Term Improvements: Water Pipeline staff excavated a test pit on the Winchester/Lexington line for the design of a connection between the two communities as part of the Northern Intermediate High Short-Term Improvement Program.

## TRAC

- Penalty Assessment Notice: On September 3, TRAC issued a \$40,500 Penalty Assessment Notice (PAN) to Brandeis University in Waltham for discharging excessive levels of cyanide into MWRA's sanitary sewer system after the December 15, 2008 compliance deadline. Brandeis has appealed the PAN to an Adjudicatory Hearing.
- Compliance/Enforcement: On August 24, TRAC issued nine Notices of Proposed Permit Suspensions to facilities that had failed to pay their FY2009 permit charges. One facility resolved its case through a separate enforcement action and some facilities made partial payments. The remainder made no payments; pursuant to the Notices, the permits for these facilities have been suspended and further enforcement action is under development.
- Settlement Agreement: MWRA and Westin Copley Place Hotel entered into a Settlement Agreement, effective July 21, 2009, to resolve all issues related to the November 3, 2008 PAN issued to the Westin Copley Place for failure to submit required reports and for pH violations. The total amount of the penalty assessed was \$37,100; Westin Copley had appealed the PAN. The Settlement Agreement requires Westin Copley to pay a \$25,000 administrative penalty. Westin Copley has ceased discharging to MWRA's sewer and shall not resume discharging from its laundry operations without first receiving an MWRA Sewer Use Discharge Permit.

## Metro Equipment and Facility Maintenance

- Gillis Pump Station: Water Pipeline staff installed a new surge valve at Gillis; Electrical staff wired the valve actuator and director for the new valve.
- Nut Island Waste Drains: The drains located on the vortex level were prone to clogging and numerous leaks. MWRA Plumbers removed the old drains and replaced the piping, cleanouts and flushing valves.
- Dams: Staff cut and cleared the growth on the "bowls" around the Chestnut Hill Reservoir and Waban Reservoir; this provided a clear view of the condition of the structures, especially at Waban.
- Painting: Painters removed graffiti from Alford Street and Deer Island. In addition, the crosswalks, handicapped parking spaces, stack, exterior eyewash stations, gate actuators, bollards, front gate and railings at Nut Island, the gas tanks in the Chelsea Facility, the Braintree Weymouth Pump Station pipe gates and several offices in the Chelsea Facility were painted in the 1st Quarter.
- Columbus Park Headworks: Staff tested the thickness of the steel walls of Grit Pods 1 and 2 and determined that repetitive pneumatic "firing" of grit against the walls of the grit pods has worn down the steel, requiring replacement. New pods were purchased with thicker steel and staff reconfigured the air lines so that the grit is more diffused into the pods, which will significantly increase their serviceable life.

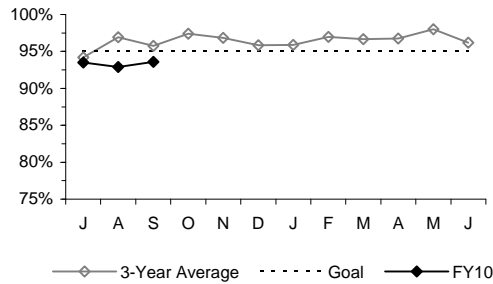
## Operations Support

- Updating Emergency Plans: Staff are updating MWRA's Emergency Response Plans and scenario-specific Emergency Action Plans to reflect new DEP requirements. Staff also continued preparing a community ERP Template, supporting material and a related training program to help communities comply with the 12/31/09 deadline for compliance with DEP requirements. An updated Pandemic EAP was completed in September.
- Tank Maintenance: Staff continued to coordinate the permitting process for the installation of a back-up generator and fuel tank to support the Bellevue Tank SCADA Hub.
- Online Water Quality Monitoring: Staff continue to update MWRA's distribution water quality monitoring analyzer strategy. Staff continued to research vendor capabilities; technical issues are being addressed and bid documents are being finalized.
- Headworks SCADA Project: The second construction contract (SCADA improvements at Headworks) was essentially complete by the end of the 1st Quarter with only punch list work at Nut Island remaining.
- Start-up Testing: Hyde Park Pump Station Phase 1 and Spring Street Pump Station Phase 1 work underwent successful acceptance testing in August; start-up testing of Brattle Court Pump Station Phase 2 work is expected in October.

# Laboratory Services

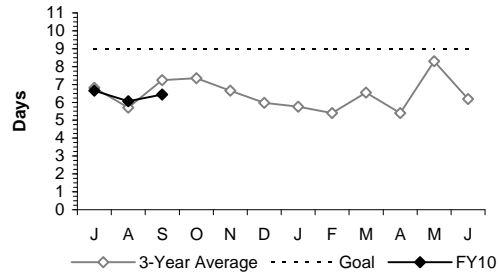
1st Quarter - FY10

**Percent On-Time Results**



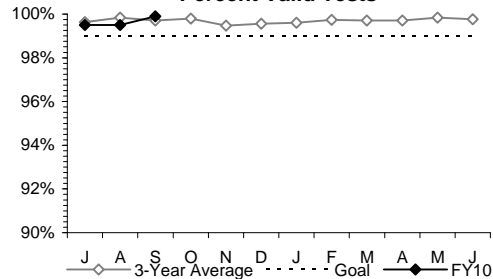
The Percent On-Time measurement was below the 95% goal each month this quarter due to implementing new LIMS.

**Turnaround Time**



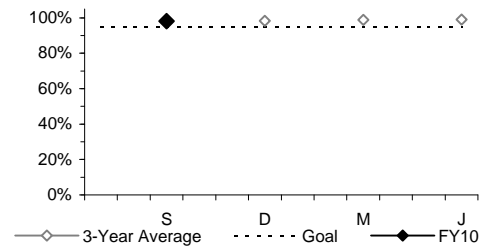
Turnaround Time was faster than the 9-day goal each month during the 1st Quarter.

**Percent Valid Tests**



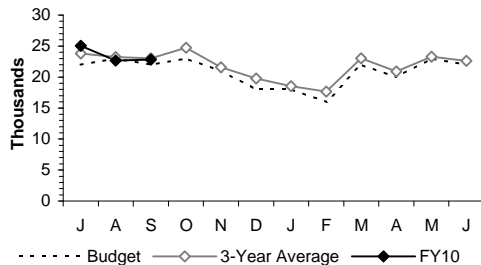
The Percent Valid Tests measurement was above the 99% goal each month of this quarter.

**Quarterly Compliance Rating**



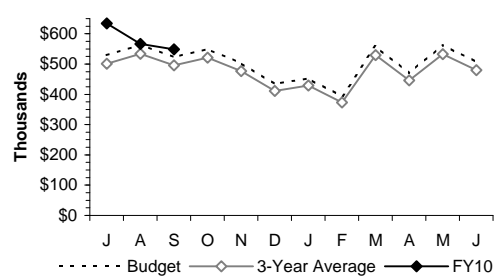
A quarterly compliance audit of methods and procedures at all five laboratory locations found good compliance with requirements. Compliance audits are performed in September, December, March and June.

**Tests Completed**



The Tests Completed measurement was above the seasonally adjusted budget goal for two out of three months in the 1st Quarter.

**Value of Services Rendered**



Value of Services Rendered was above the seasonally adjusted budget projection each month this quarter.

## Highlights:

**LIMS:** The final LIMS "Go-Live" for all chemistry and wastewater microbiology (scheduled for October 1) will be delayed to December 1 because the interface between LIMS and TRAC's Pretreatment Information Management System (PIMS) is not complete. PIMS will be able to send to LIMS information on samples that TRAC plans to collect, which will be a major change in workflow. MWRA's clients have verified that their new LIMS results are correctly showing up in their databases.

**Quality Assurance:** Proficiency Testing for DEP-certified parameters is complete for 2009. The Lab received "Acceptable" evaluations on 160 out of 162 potable water parameters, 252 out of 253 non-potable water parameters, and 40 out of 40 microbiology parameters. Overall this is a passing score of 99.3%. DLS continued to work on new drinking water microbiology certifications at the three water quality labs in support of the upcoming Groundwater Monitoring Rule and a new required Total Coliform Rule confirmation procedure.

**DITP:** Tested stormwater samples from storm drain outfalls during wet weather, ferric and ferrous chloride process chemicals for metals, additional sludge samples in support of a polymer procurement, and rush samples to support investigations of several leaks and process issues.

**ENQUAD:** Tested benthic sediment and flounder samples; fish and shellfish samples are only tested every three years and this is the first time they are being tested in-house.

**FOD/Water Quality Assurance:** Tested start-up samples from the Blue Hills Covered Storage Tanks and customer complaint samples from Brookline, Chelsea, Everett, Revere, Somerville, Swampscott and Waltham.

**Outside Customers:** Tested annual secondary contaminant samples for Woburn and rush samples from Northborough at the town's expense. Tested soil samples and a tank sample for DCR.

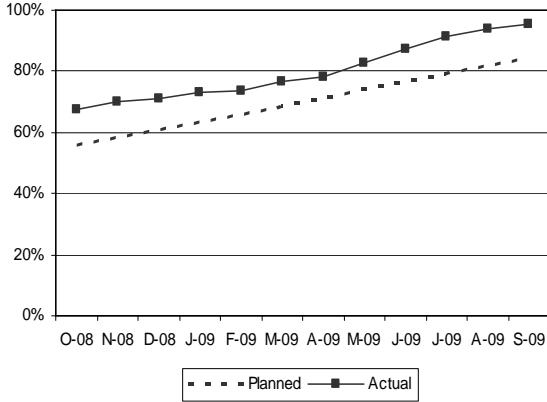
# CONSTRUCTION PROGRAMS

# Projects In Construction - 1

## September 2009

(Progress Percentages based on Construction Expenditures)

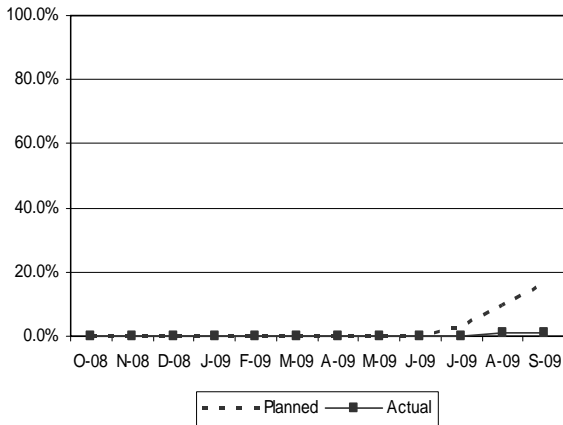
**Blue Hills Covered Storage Design Build Project**  
Progress - September 2009



**Project Summary:** This project includes a 20 million gallon covered storage facility at the Blue Hills Reservation, providing sufficient distribution storage to the communities of MWRA's Southern High Storage Area.

**Status and Issues:** During September, the contractor completed the communication structure and the dam core wall. The rip rap is nearing completion. The valve vault is complete except for minor punch list issues. The precast outlet control structure, reservoir gate vault, and detention basin are complete. Backfilling is complete with work continuing to place dense grade material on the roads. The majority of the landscaping work is complete with aquatic plantings continuing.

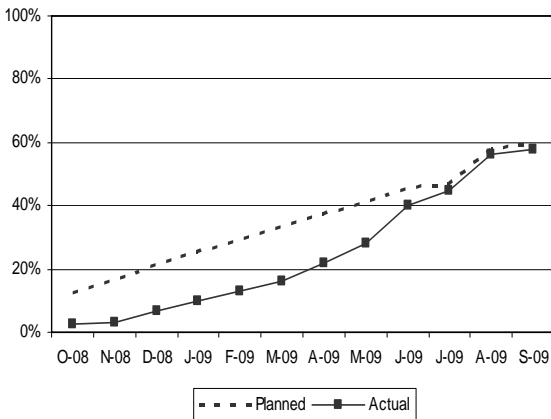
**North Dorchester Bay Pump Station and Sewers**  
Progress -September 2009



**Project Summary:** Construction of 15-MGC CSO pump station, approximately 3,200 linear feet of 2-inch force main and 640 linear feet of 30-inch gravity sewers and appurtenant work.

**Status and Issues:** On August 28<sup>th</sup>, DEP issued a stop work order stating the contractor failed to obtain a building permit for the temporary earth support system. Slurry wall construction was delayed 4 days before an interim permit for the construction of the slurry wall only was issued. An independent 3<sup>rd</sup> party Structure Peer Review is required before a building permit will be issued. On 10/9 the contractor received a permit for the mini-pile installation, which is now three weeks behind schedule. At the force main, the contractor continued installation of the 30-inch force main on Broadway to the P St. intersection.

**East Boston Branch Relief Sewer**  
Progress - September 2009

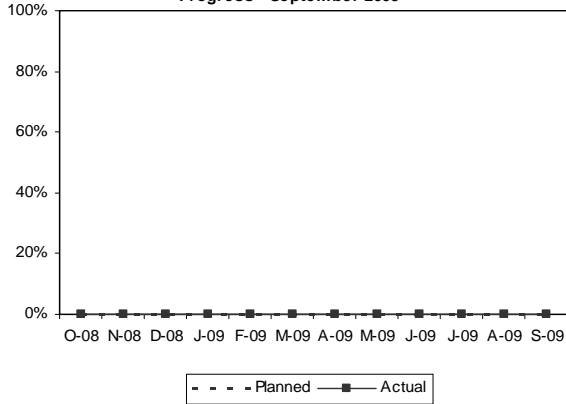


**Project Summary:** Construction of 14,500 feet of replacement sewers primarily by microtunneling.

**Status and Issues:** The contractor continued support of excavation at Receiving Shaft (RS) -8A & -14A and Jacking Shaft (JS) -13A. Preparations to receive the MTBM have begun at RS-8A. Microtunneling was completed from JS-5A to RS-6A on September 19<sup>th</sup>. Sewer manholes were installed at RS-3 and JS-3 and the contractor began restoration of the street, curb and sidewalks in these areas. Work continued on cleaning the silty material from the tidal flats adjacent to JS-5A and restoration began on the top of the bank.

## Projects In Construction – 2 September 2009 (Progress Percentages based on Construction Expenditures)

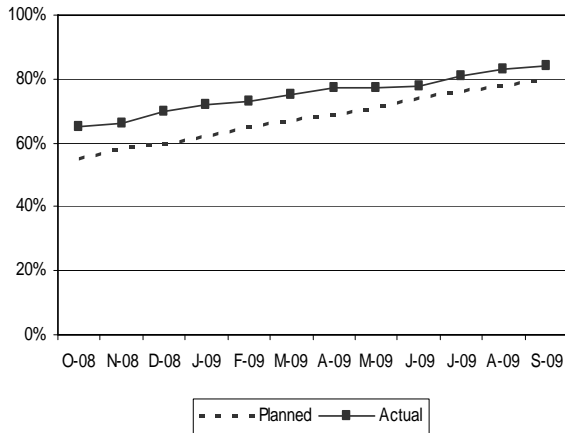
**Section 18, 50 & 51 Rehabilitation in Medford/Somerville  
Progress - September 2009**



**Project Summary:** This project is one of the Shaft 7 to WASM 3 phases (CP-5) and provides for the rehabilitation of valves and 15,000 linear feet of 48, 20 and 16-inch pipe in Medford and Somerville including replacement of revenue Meter 32 in Somerville.

**Status and Issues:** The contractor began mobilization, submitted shop drawings and worked on obtaining permits. No physical progress was reported in September.

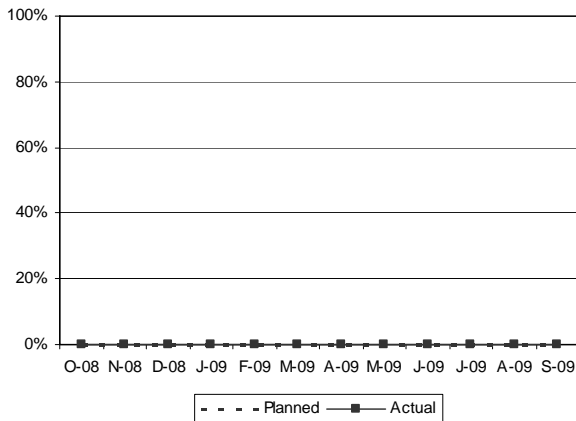
**Rehabilitation of Water Pumping Stations  
Progress - September 2009**



**Project Summary:** This work provides rehabilitation of a series of water pump stations. At the present time, Brattle Court and Hyde Park are the focus of work.

**Status and Issues:** At Brattle Court, the contractor completed the pipe strain check on pump P-2, along with the pump coupling alignment. The actuator controller was replaced on DV-5 with the valve being successfully tested and placed in service. At Hyde Park, the contractor worked on the installation of phase 2 interior suction and discharge piping and completed the installation of pump 3, SCV-3 and DV-5. At Belmont the contractor continued work on miscellaneous punch list items. At Reservoir Road the contractor commenced work on suction yard piping and meter vault installation. At Spring Street the contractor completed demolition of all phase 2 equipment.

**Hultman Aqueduct Interconnections Project  
Progress - September 2009**



**Project Summary:** This project includes rehabilitation construction to the Hultman Aqueduct to provide redundancy to the MetroWest Tunnel from Southborough to Weston by adding five new MetroWest/Hultman interconnections, two surge relief structures, 13.5 miles of internal rehabilitation and 15 miles of external access work.

**Status and Issues:** The contractor was issued their notice to proceed on the September 2<sup>nd</sup> and began pre-construction survey, photos, ambient background noise level measurements. The contractor also started mobilization of field offices and the Norumbega staging area.

**CSO CONTROL PROGRAM (1 of 2)**  
1<sup>st</sup> Quarter FY10

Twenty-four (24) of the 35 projects in MWRA's Long-Term CSO Control Plan are complete, as reported last quarter. Six projects are in construction or have early, phased contracts completed as design of later contracts continues. Four additional projects are in design. MWRA plans to commence design of the one project not yet started, MWR003 Gate and Floatables Control and Rindge Ave. Siphon Relief, by April 2012.

Project	Court Milestones in Schedule Seven (Shaded milestones are complete.)			Status
	Commence Design	Commence Construction	Complete Construction	
North Dorchester Bay Storage Tunnel and Related Facilities	Aug 97	Aug 06	May 11	Tunnel construction: Remaining work involves punch list items; contract ends December 2009. <u>Dewatering Pump Station and Sewer construction</u> : Since commencement of work in May 2009, the contractor has mobilized on the Conley Terminal site, prepared technical submissions required by the contract, and completed preconstruction surveys. The contractor has also completed relining BWSC sewers that will accept flows from the pumping station and force main, commenced construction of the slurry wall for the pumping station foundation and wet well on Conley Terminal, and installed the 24-inch force main on East Broadway. <u>Ventilation Facility design and construction</u> : Final design completed and contract advertised on August 1, 2009. Board awarded the contract on October 14, 2009. This is the last of the construction contracts that comprise the CSO control plan for North Dorchester Bay (South Boston beaches).
East Boston Branch Sewer Relief	Mar 00	Mar 03	Jun 10	MWRA completed the first construction contract in 2004 and is making substantial progress with the second and third contracts: Contract 6257 (Micro-tunneling) and Contract 6841 (Pipe-bursting). Both contracts are on schedule for substantial completion by July 2010. <u>Contract 6257</u> : Work 60% complete and pipe installation 50% complete as of September 2009. The contractor completed 6,410 linear feet of Phase I mining and pipe installation; took delivery of a second 48-inch diameter micro-tunnel boring machine (MTBM) and a 66-inch diameter MTBM; and completed several mining shafts associated with Phase II and Phase III mining, which will commence in the spring of 2010. <u>Contract 6841</u> : Work 20% complete and pipe installation 30% complete as of September 2009. The contractor has completed the installation of test pits and the construction of three insertion and receiving shafts on Marginal Street. Commenced initial pipe bursting drives to install new 12- to 16-inch diameter pipe, with 760 feet (30%) installed.
	Jun 06	Jun 08		
Cottage Farm Brookline Connection and Inflow Controls	Sep 06	Jun 08	Jun 09	Construction substantially completed 6/30/09, in compliance with Schedule Seven, and MWRA is using the new facilities in wet weather operations as intended. The contractor continues to complete punch list items, final pavement restoration, and wetland restoration.
Charles River Interceptor Gate Controls and Additional Interconnections	Jan 08	Jan 10	Jan 11	From 18-month hydraulic study, MWRA concludes that system optimization measures cannot improve wet weather performance or further reduce CSOs at Cottage Farm Facility without also causing flooding risks. Recommended plan of "no action" was included in supplemental report submitted to EPA and DEP on September 14, 2009. MWRA is seeking deletion of related construction milestones in Schedule Seven.

**CSO CONTROL PROGRAM (2 of 2)**  
1<sup>st</sup> Quarter FY10

Twenty-four (24) of the 35 projects in MWRA's Long-Term CSO Control Plan are complete, as reported last quarter. Six projects are in construction or have early phased contracts completed as design of later contracts continues. Four additional projects are in design. MWRA plans to commence design of the one project not yet started, MWR003 Gate and Floatables Control and Rindge Ave. Siphon Relief, by April 2012.

Project		Court Milestones in Schedule Seven (Shaded milestones are complete.)			Status
		Commence Design	Commence Construction	Complete Construction	
South Dorchester Bay Sewer Separation		Jun 96	Apr 99	Nov 08	BWSC continues to perform stormwater inflow removal to meet sewer system hydraulic performance criteria.
Morrissey Boulevard Storm Drain		Jun 05	Dec 06	Jun 09	BWSC substantially completed construction on 7/15/09. Project is serving only local drainage purposes until MWRA CSO tunnel becomes operational in May 2011.
Reserved Channel Sewer Separation		Jul 06	May 09	Dec 15	BWSC final design and phased construction are underway. In May 2009, BWSC issued Notice to Proceed with first of nine planned construction contracts; pipe installation progressing on Farragut and East First streets. BWSC plans to award second contract by February 2010.
Bulfinch Triangle Sewer Separation		Nov 06	Nov 08	Jul 13	BWSC commenced sole construction contract in September 2008. Progress is on schedule for substantial completion by July 2010, ahead of court milestone.
Brookline Sewer Separation		Nov 06	Nov 08	Jul 13	First of two Brookline construction contracts to be substantially complete by November 2009. Brookline to advertise second, larger contract in November 2009. MWRA is developing scope of contract to inspect, clean and repair outfall MWR010 in time for Brookline's July 2013 project completion.
Cambridge/ Alewife Brook Sewer Separation	CAM004 Outfall and Detention Basin		Jul 08*	Jul 09*	Cambridge resumed design in October 2008 after 27-month delay due to wetlands permit appeals. Cambridge is obtaining construction permits and easements and is coordinating work in Alewife Reservation and related Article 97 legislation with DCR. New Cambridge schedule proposes construction award by July 2010.
	CAM004 Sewer Separation	Jan 97	Jul 98 Jul 09*	Jan 13*	Cambridge plans to resume design in February 2010 and resume construction by July 2012.
	CAM400 Manhole Separation	Jul 06*	Jul 07*	Jul 08*	Final design is progressing. Cambridge proposes to award construction in January 2010.
	Interceptor Connection Relief/ Floatables	Jul 06*	Jan 08*	Dec 08*	Final design is progressing. Cambridge proposes to award construction in January 2010.
	MWR003 Gate and Rindge Ave. Siphon	Apr 09*	Nov 10*	Jan 12*	MWRA plans to commence design by April 2012.

\* Project schedules are delayed at least 27-months due to past wetlands permit appeals. Additional time required for certain Alewife projects due to permits, land, easements and Article 97 legislation requirements for Outfall and Detention Basin. MWRA is presently seeking revisions to the milestones in Schedule Seven based on new project schedules proposed by the City of Cambridge.



## CIP Expenditures September 2009

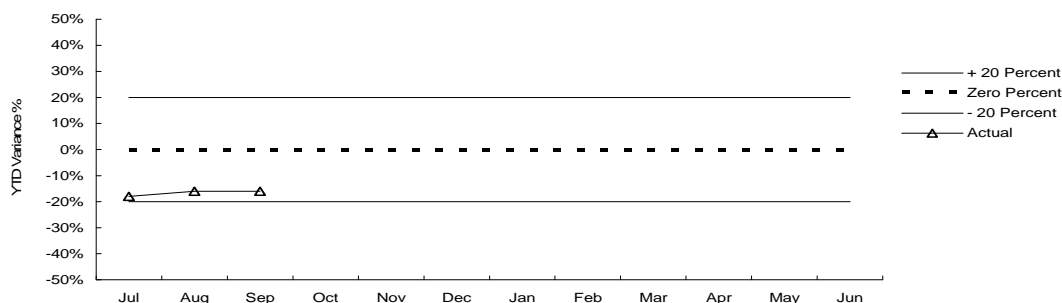
Accurate projections of CIP spending are one measure of effective project management and are important to ensuring that funds are available to support MWRA's capital program.

FY10 Capital Improvement Program Expenditure Variances through September by Program (\$000)				
Program	FY10 Budget Through September	FY10 Actual Through September	Variance Amount	Variance Percent
Wastewater	46,882	43,997	(2,885)	-6%
Waterworks	16,428	9,866	(6,562)	-40%
Business and Operations Support	4,140	3,070	(1,070)	-26%
<b>Total</b>	<b>\$67,450</b>	<b>\$56,933</b>	<b>(\$10,517)</b>	<b>-16%</b>

Underspending within Wastewater is primarily attributable to start-up delays for the Heat Loop Pipe Replacement Construction 3 and ESDC/REI Services, Primary & Secondary Clarifier Rehabilitation, timing of miscellaneous Variable Frequency Drive Replacements and Fort Point Channel Sewer Separation payment, delay in award of Low Voltage Lighting Replacement contract, and projected spending for Grit Air Handler Replacement and North Dorchester Dewater/Pump Station & Sewers contracts being less than anticipated. This was partially offset by contractor progress and additional change order work on the East Boston Branch Relief Sewer project, community requests for loans being greater than anticipated, and DI Roof Replacement work scheduled for FY09 but performed in FY10. Underspending in Waterworks is primarily due to delay in land acquisition associated with the Low Storage Near Spot Pond project, Watershed Land, and community requests for loans and repayments being less than anticipated. This underspending was partially offset by contractor progress on the Blue Hills Covered Storage project.

### CIP Expenditure Variance

*Total FY10 CIP Budget of \$238,251,000.*



### Construction Fund Management

All payments to support the capital program are made from the Construction Fund. Sources of fund revenues include bond proceeds, commercial paper, SRF reimbursements, loan repayments by municipalities, and current revenue. Accurate estimates of cash withdrawals and grant payments (both of which are derived from CIP spending projections) facilitate planning for future borrowings and maintaining an appropriate construction fund balance.

Cash Balance 9/28/09	\$168 million
Unused capacity under the debt cap:	\$648 million
Estimated date for exhausting construction fund without new borrowing:	May-10
Estimated date for debt cap increase to support new borrowing:	FY2011
Commercial paper outstanding:	\$194 million
Commercial paper capacity:	\$350 million
Budgeted FY10 capital spending*:	\$207 million

\* Cash based spending is discounted for construction retainage.

# DRINKING WATER QUALITY AND SUPPLY

# Source Water – Microbial Results

1st Quarter - FY10

## Background

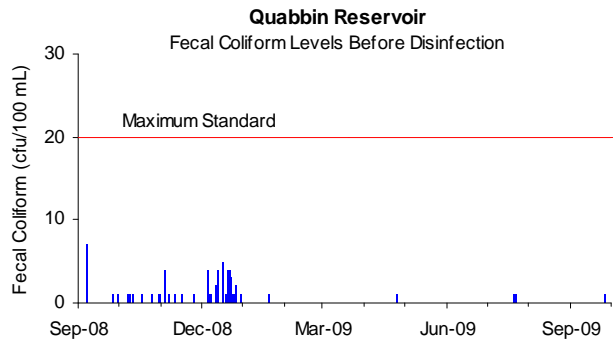
Total coliform bacteria are monitored in both source and treated water to provide an indication of overall bacteriological activity. Most coliforms are harmless. However, fecal coliform, a subclass of the coliform group, are identified by their growth at temperatures comparable to those in the intestinal tract of mammals. They act as indicators of possible fecal contamination. The Surface Water Treatment Rule for unfiltered water supplies allows for no more than 10% of source water samples prior to disinfection over any six-month period to have more than 20 fecal coliforms per 100ml.

### Sample Site: Quabbin Reservoir

Quabbin Reservoir water is sampled at the Ware Disinfection Facility (WDF) raw water tap before entering the CVA system.

All samples collected during the 1st Quarter were below 20 cfu/100ml.

For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100ml.



### Sample Site: Wachusett Reservoir

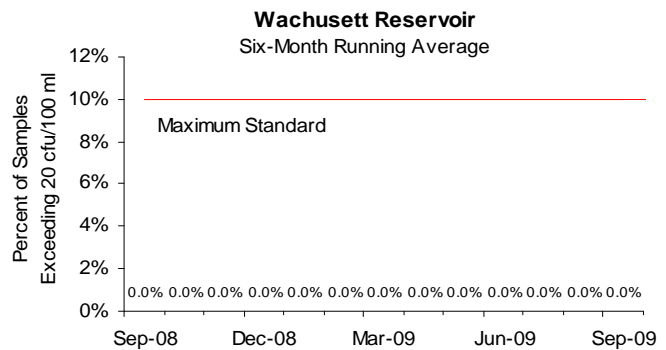
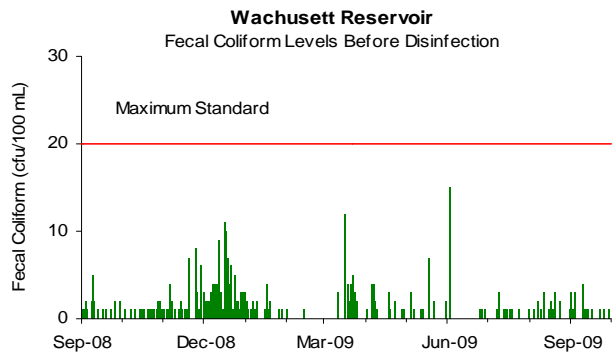
Wachusett Reservoir water is sampled at the CWTP raw water tap in Marlborough before it enters the MetroWest/Metropolitan Boston systems.

Fecal coliform levels tend to increase during the winter because when water bodies near Wachusett ice over, waterfowl seek open water. Many roost at Wachusett, which tends to freeze later in the year than smaller ponds nearby.

DCR has an active bird harassment program to move birds away from the intake area. The bird harassment program was fully implemented with bird monitoring (Monday through Friday) in September.

All samples collected during the 1st Quarter were below 20 cfu/100ml.

For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100ml.



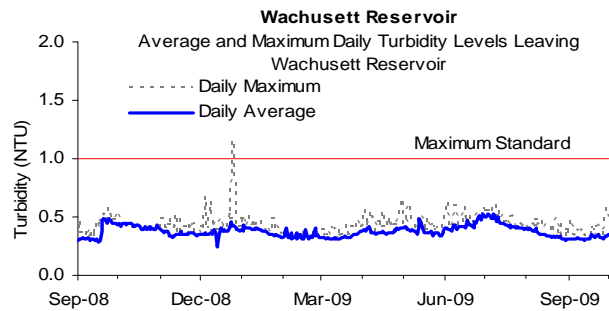
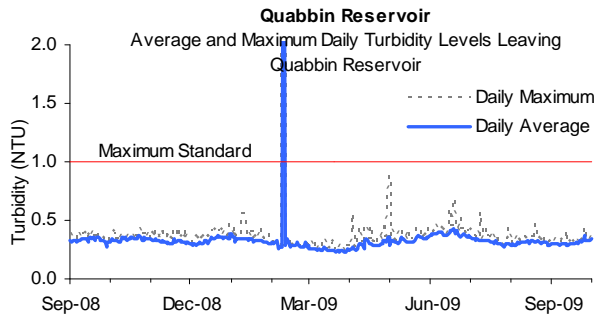
# Source Water – Turbidity

1st Quarter - FY10

## Background

Turbidity is a measure of suspended and colloidal particles including clay, silt, organic and inorganic matter, algae and microorganisms. The effects of turbidity depend on the nature of the matter that causes the turbidity. High levels of particulate matter may have a higher chlorine demand or may protect bacteria from the disinfectant effects of chlorine, thereby interfering with the disinfectant residual throughout the distribution system.

Samples for turbidity from Quabbin Reservoir are collected at the Ware Disinfection Facility before chlorination. Samples from Wachusett Reservoir are taken at the CWTP's inlet (raw water line) before ozonation. The Massachusetts Department of Environmental Protection standard for source water turbidity for unfiltered water supply systems is a maximum of 1.0 NTU; the EPA standard is a maximum of 5.0 NTU. Maximum turbidity results at Quabbin and Wachusett were within DEP standards for the quarter.



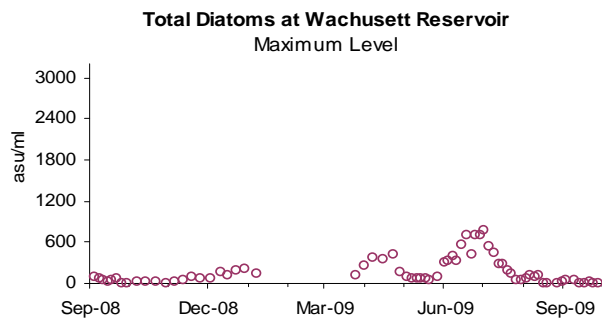
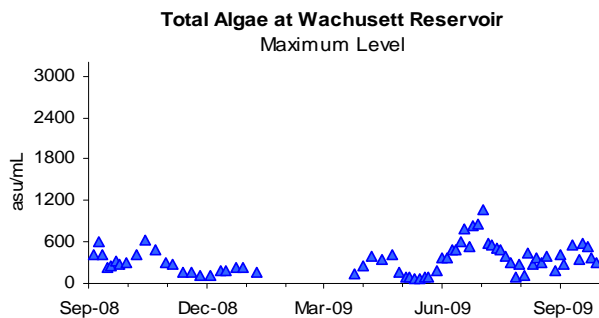
In February 2009, there was a spike in turbidity at Quabbin when a planned valve operation disturbed sediment, but it did not disrupt disinfection effectiveness and was not a violation.

## Source Water – Algae

Algal levels in Wachusett Reservoir are monitored by DCR and MWRA. These results, along with taste and odor complaints, are used to make decisions on source water treatment for algae control.

Taste and odor complaints at the tap may be due to algae, which originate in source reservoirs, typically in trace amounts. Occasionally, a particular species grows rapidly, increasing its concentration in water. When *Synura*, *Anabaena*, or other nuisance algae bloom, MWRA may treat the reservoir with copper sulfate, an algicide. During the winter and spring, diatom numbers may increase. While not a taste and odor concern, consumers using filters may notice more frequent changing of the filters is needed. Diatom levels were low this quarter.

Of the 384 complaints received for the quarter from local water departments, none concerned taste and odor that may be due to algae.



# Treated Water – Disinfection Effectiveness

1st Quarter – FY10

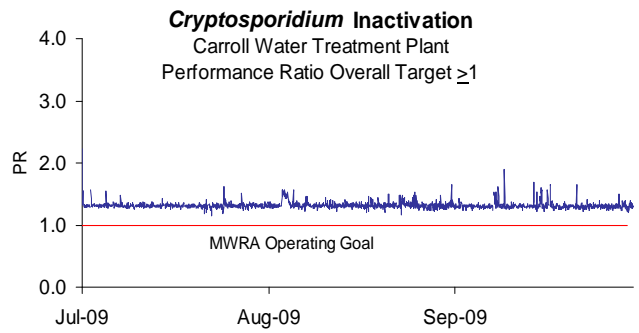
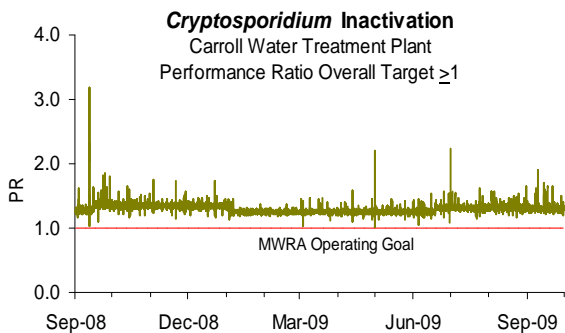
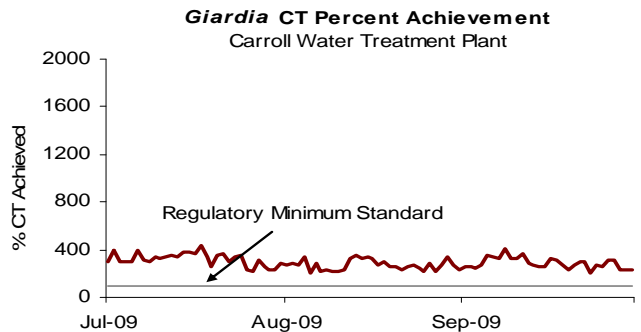
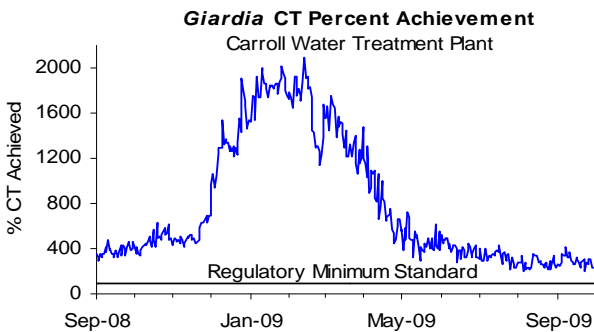
## Background

With the activation of the Carroll Water Treatment Plant (CWTP), MWRA now reports on both regulatory required 99.9% inactivation for *Giardia* (reported as “CT”), and its voluntary operating goal of 99% inactivation for *Cryptosporidium* (reported as “PR”). MWRA calculates hourly CT inactivation rates and reports daily CT inactivation rates at maximum flow, as specified by EPA regulations. The concentration (C) of the disinfectant over time (T) yields a measure of the effectiveness of disinfection. CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement. The required CT for ozonated water varies with water temperature.

Compliance with the *Giardia* standard is expressed as percent of required CT achieved; 100% is the minimum allowed. To avoid confusion with the regulatory requirements, inactivation of *Cryptosporidium* is reported as Performance Ratio (PR). A PR of 1 demonstrates inactivation of 99% of *Cryptosporidium* based on site-specific data.

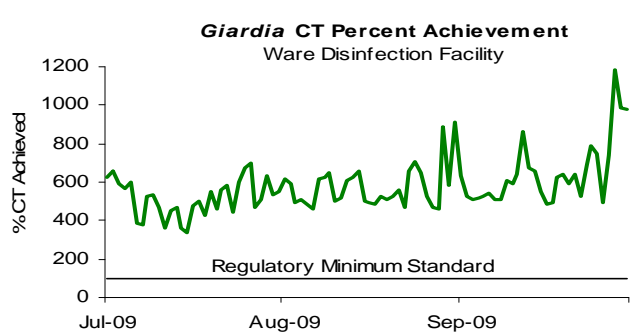
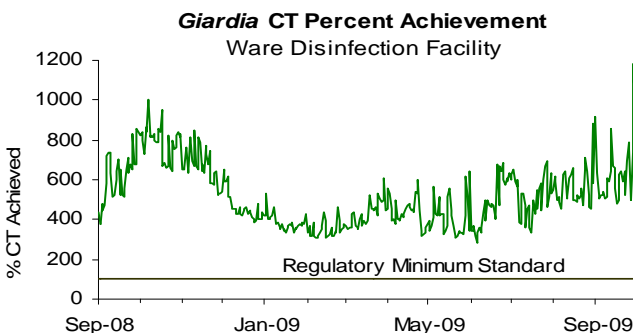
### Wachusett Reservoir – MetroWest/Metro Boston Supply:

- CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter; PR was maintained above 1.
- Ozone dose at the CWTP varied between 2.2 to 3.7 mg/L for the quarter.



### Quabbin Reservoir at Ware Disinfection Facility (CVA Supply):

CT was maintained above 100% at all times the plant was providing water into the distribution system for the quarter, as well as every day for the last fiscal year. Chlorine dose was increased from 1.3 mg/L to 1.4 mg/L on August 5.

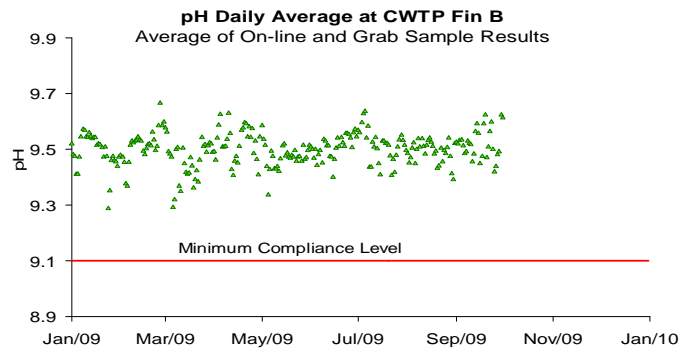
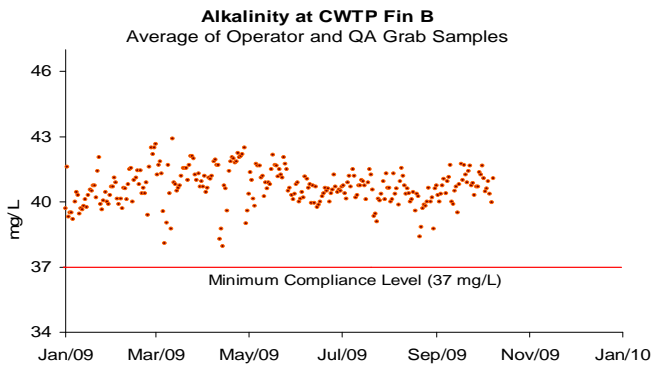


## Treated Water – pH and Alkalinity Compliance

1st Quarter - FY10

MWRA adjusts the alkalinity and pH of Wachusett water to reduce its corrosivity, which minimizes the leaching of lead and copper from service lines and home plumbing systems into the water. MWRA's target for distribution system pH is 9.3; the target for alkalinity is 40 mg/l. MWRA tests finished water pH and alkalinity daily at the CWTP Fin B sampling tap; per DEP requirements, these samples have a minimum compliance level of 9.1 for pH and 37 mg/L for alkalinity. Samples from 27 distribution system taps have a minimum compliance level of 9.0 for pH and 37 mg/L for alkalinity. Results must not be below this level for more than nine days in a six-month period. Distribution system samples are collected in March, June, September, and December.

Distribution system samples were collected on September 21, 2009; sample pH ranged from 9.1 to 9.7 and alkalinity ranged from 39 to 45 mg/L. No sample results were below DEP limits for this quarter.



## Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

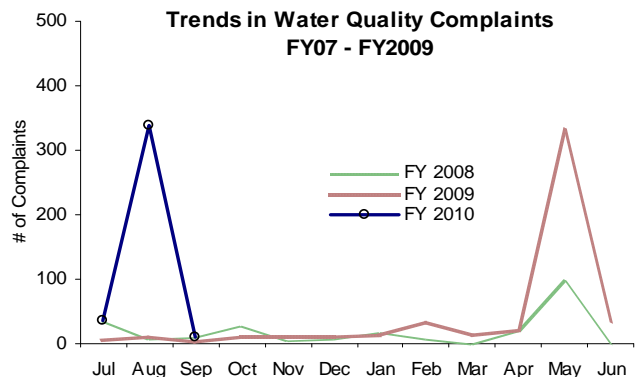
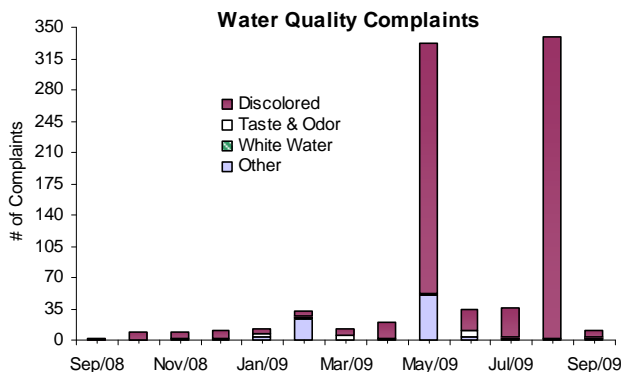
### Background

MWRA collects information on water quality complaints that typically fall into four categories: 1.) discoloration due to MWRA or local pipeline work; 2.) taste and odor due to algae blooms in reservoirs or chlorine in the water; 3.) white water caused by changes in pressure or temperature that traps air bubbles in the water; or 4.) "other" complaints including no water, clogged filters or other issues.

MWRA routinely contacts communities to classify and tabulate water complaints from customers. This count, reflecting only telephone calls to towns, probably captures only a fraction of the total number of customer complaints. Field Operations staff have improved data collection and reporting by keeping track of more kinds of complaints, tracking complaints to street addresses and circulating results internally on a daily basis.

### Outcome

Communities reported 384 complaints during the quarter. Of these complaints, 374 were for "discolored water", including 300 reported in Revere on August 10, 2009 when an MWRA water main was reactivated following a cleaning and lining project.



## Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

1st Quarter - FY10

While all communities collect bacteria samples for the Total Coliform Rule (TCR), 40 systems (including Deer Island and Westborough State Hospital) use MWRA's Laboratory for TCR compliance testing. These systems collect samples for bacteriological analysis and measure water temperature and chlorine residual at the time of collection. The other 10 MWRA customer communities (including Lynn's GE plant) have their samples tested elsewhere and these towns should be contacted directly for their monthly results.

There are 140 sampling locations for which MWRA is required to report TCR results. These locations include a subset of the community TCR locations, as well as sites along MWRA's transmission system, water storage tanks and pumping stations.

The TCR requires that no more than 5% of all samples may be total coliform positive in a month (or that no more than one sample be positive when less than 40 samples are collected each month). Public notification is required if this standard is exceeded.

*Escherichia coli* (*E.coli*) is a specific coliform species that is almost always present in fecal material and whose presence indicates potential contamination of fecal origin. If *E.coli* are detected in a drinking water sample, this is considered evidence of a critical public health concern. Additional testing is conducted immediately and joint corrective action by DEP, MWRA, and the community is undertaken. Public notification is required if follow-up tests confirm the presence of *E.coli* or total coliform. A disinfectant residual is intended to maintain the sanitary integrity of the water; MWRA considers a residual of 0.2 mg/L a minimum target level at all points in the distribution system.

### Highlights

In the 1st Quarter, two of the 5,629 community samples (0.04% system-wide) submitted to MWRA labs for analysis tested positive for coliform (Southborough and Waltham - September); seven of MWRA's 2,029 (0.34%) samples tested positive. No sample tested positive for *E.coli*. All 40 systems that submitted chlorine residual data maintained an average disinfectant residual of at least 0.2 mg/L. Only 5.3% of samples had any results with a disinfectant residual lower than 0.2 mg/L for the quarter.

TCR results by Community						
Town	Samples Tested for Coliform (a)	Total Coliform # (%) Positive	E.coli % Positive	Public Notification Required?	Minimum Chlorine Residual (mg/L)	Average Chlorine Residual (mg/L)
ARLINGTON	179	0 (0%)	0.0%		0.01	1.37
BELMONT	104	0 (0%)	0.0%		0.47	1.48
BOSTON	744	0 (0%)	0.0%		0.29	1.78
BROOKLINE	221	0 (0%)	0.0%		0.08	1.76
CHELSEA	131	0 (0%)	0.0%		1.10	1.81
DEER ISLAND	52	0 (0%)	0.0%		1.20	1.70
EVERETT	130	0 (0%)	0.0%		0.99	1.06
FRAMINGHAM	217	0 (0%)	0.0%		0.22	1.54
HANSCOM AFB (Bedford) (b)	27	0 (0%)	0.0%		0.03	0.99
LEXINGTON	126	0 (0%)	0.0%		0.01	1.60
LYNNFIELD	17	0 (0%)	0.0%		0.22	1.09
MALDEN	195	0 (0%)	0.0%		1.23	1.30
MARBLEHEAD	72	0 (0%)	0.0%		0.28	1.63
MARLBOROUGH (b)	161	0 (0%)	0.0%		0.03	1.46
MEDFORD	221	0 (0%)	0.0%		0.06	1.52
MELROSE	118	0 (0%)	0.0%		0.02	0.38
MILTON	96	0 (0%)	0.0%		0.73	1.52
NAHANT	30	0 (0%)	0.0%		0.02	1.22
NEEDHAM (b)	126	0 (0%)	0.0%		0.03	0.53
NEWTON	277	0 (0%)	0.0%		0.30	1.81
NORTHBOROUGH	48	0 (0%)	0.0%		0.04	1.01
NORWOOD	108	0 (0%)	0.0%		0.01	1.16
QUINCY	310	0 (0%)	0.0%		0.06	1.39
READING	130	0 (0%)	0.0%		0.02	1.31
REVERE	182	0 (0%)	0.0%		0.29	1.52
SAUGUS	103	0 (0%)	0.0%		1.55	1.86
SOMERVILLE	284	0 (0%)	0.0%		0.17	1.62
SOUTH HADLEY FD1 (c)	48	0 (0%)	0.0%		0.02	0.25
SOUTHBOROUGH	35	1 (2.86%)	0.0%	No	0.07	1.31
STONEHAM	91	0 (0%)	0.0%		0.66	1.76
SWAMPSCOTT	56	0 (0%)	0.0%		0.02	1.13
WAKEFIELD (b)	143	0 (0%)	0.0%		0.07	1.20
WALTHAM	209	1 (0.48%)	0.0%	No	0.02	1.53
WATERTOWN	130	0 (0%)	0.0%		0.05	1.46
WELLESLEY (b)	98	0 (0%)	0.0%		0.10	0.62
WESTBORO HOSPITAL	15	0 (0%)	0.0%		0.06	1.25
WESTON	48	0 (0%)	0.0%		0.73	1.83
WINCHESTER (b)	65	0 (0%)	0.0%		0.10	1.08
WINTHROP	72	0 (0%)	0.0%		0.06	1.08
WOBURN (b)	210	0 (0%)	0.0%		0.03	0.75
Total:	5629	2(0.04%)				
MASS. WATER RESOURCES AUTHORITY (d)	2029	7 (0.34%)	0.0%		0.01	1.67

(a) The number of samples collected depends on the population served and the number of repeat samples required.

(b) These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.

(c) Part of the Chicopee Valley Aqueduct System. Free chlorine system.

(d) MWRA sampling program includes a subset of community TCR sites as well as sites along the transmission system, tanks and pumping stations. Some MWRA TCR sites which are entry points to the community had low chlorine residuals due to various reasons.

# Treated Water Quality: Disinfection By-Product (DBP) Levels in Communities

## 1st Quarter - FY10

### Background

Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAA5s) are by-products of disinfection treatment with chlorine. TTHMs and HAA5s are of concern due to their potential adverse health effects at high levels. EPA's running annual average (RAA) standard is 80 ug/L for TTHMs and 60 ug/L for HAA5s. The switch from chlorine to ozone for primary disinfection and the consolidation of treatment has lowered DBP formation and results are now more uniform. DEP requires that compliance samples be collected quarterly. Partially served communities are responsible for their own compliance monitoring and reporting and must be contacted directly for their results.

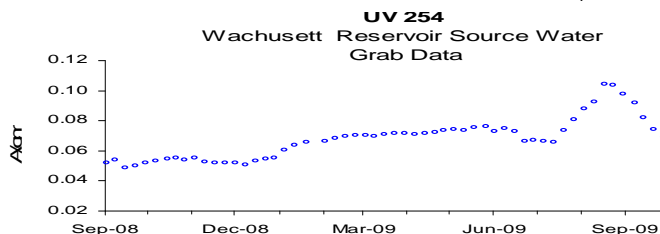
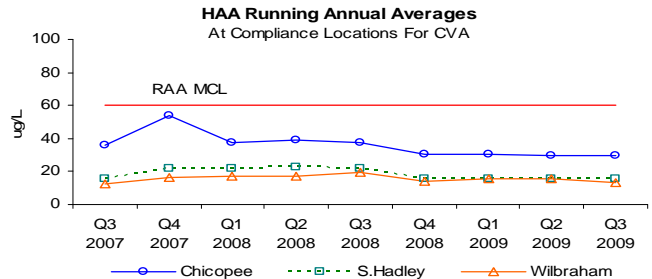
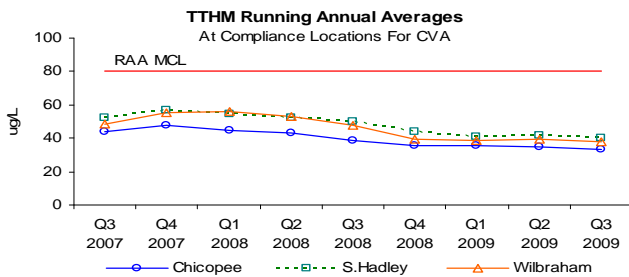
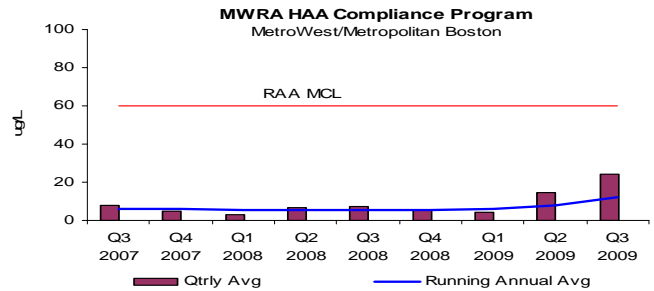
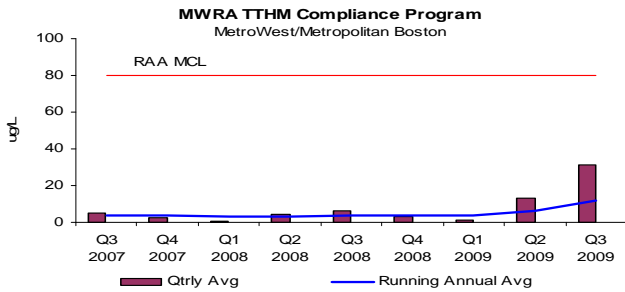
Absorbance, measured as UV-254, is a surrogate measure of reactive organic matter. Regulated DBPs have dropped to very low levels with the CWTP coming on-line. However, UV-254 levels remain useful for estimating ozone dosage and serving as a trigger for Quabbin transfer consideration.

Bromate is tested monthly per DEP requirements for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA MCL standard for bromate is 10 ug/L.

### Outcome

The RAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remained below current standards. TTHM levels at all sampling locations for the MetroWest/Metropolitan Boston communities declined dramatically following activation of the CWTP in August 2005. The RAA for TTHMs = 12.2 ug/L; HAA5s = 12.2 ug/L. CVA's DBP levels continue to be below current standards. UV-254 levels are currently around 0.07 A/cm. The current RAA for Bromate = 0.0 ug/L.

Metropolitan area DBPs rose during the second and third (calendar year) quarters due to increased reactive organic loading (see the UV254 graph). The increased loadings, which are among the highest seen since regular measurements have been taken, are the result of the very high early summer rainfalls and high tributary flows into the Wachusett Reservoir. Staff maximized use of the Quabbin transfer by releasing excess water to both the Nashua River and the Sudbury Reservoir reducing the potential impact.





# Water Supply and Source Water Management

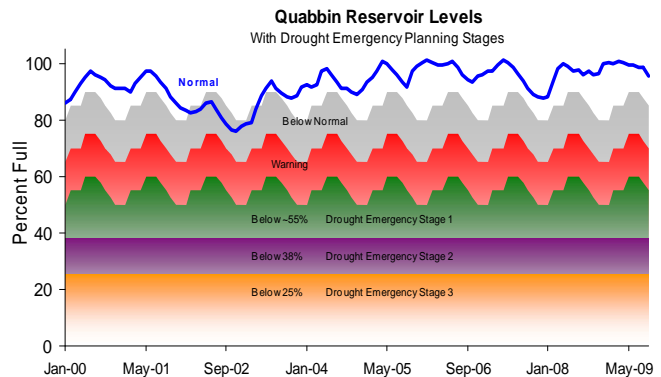
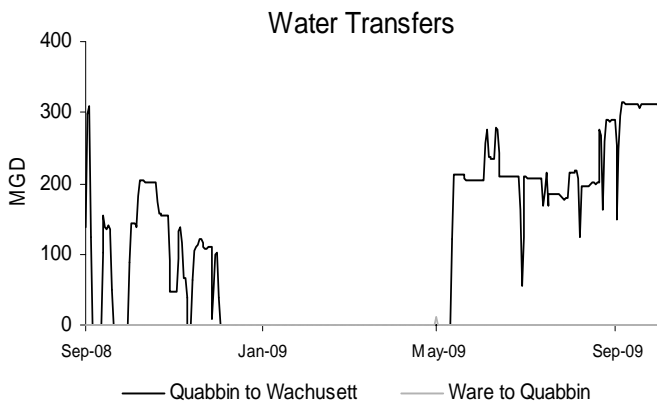
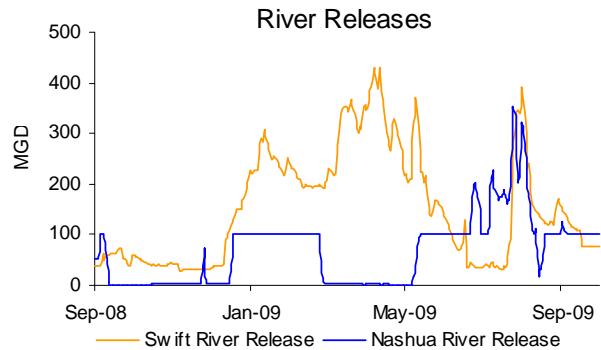
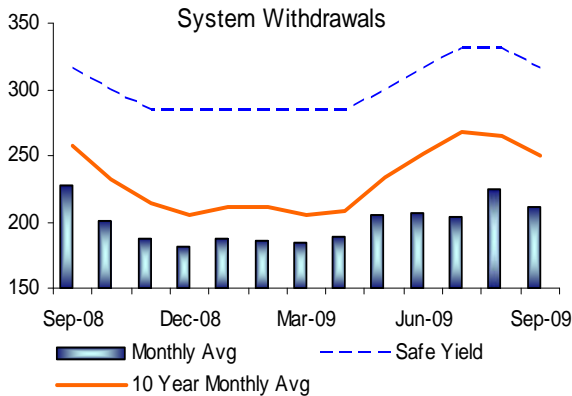
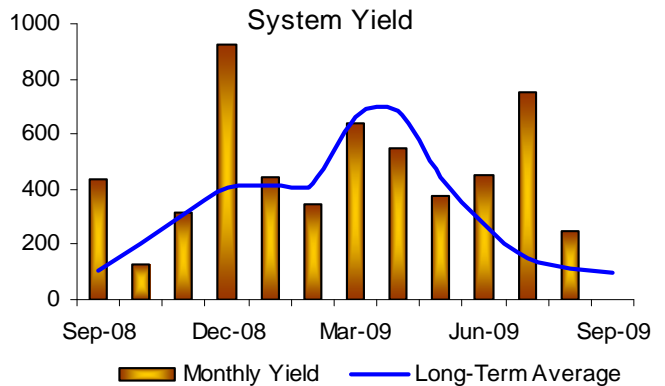
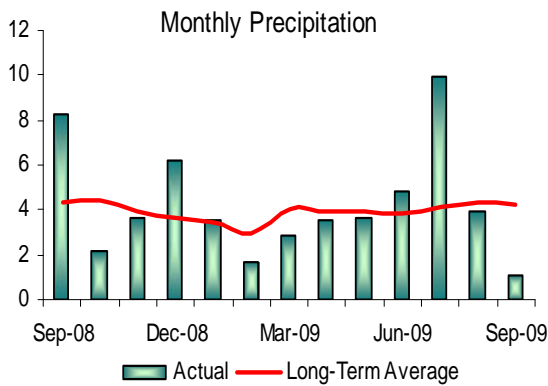
1st Quarter - FY10

## Background

A reliable supply of water in MWRA's reservoirs depends on adequate precipitation during the year and seasonal hydrologic inputs from watersheds that surround the reservoirs. Demand for water typically increases with higher summer temperatures and then decreases as temperatures decline. Quabbin Reservoir was designed to effectively supply water to the service areas under a range of climatic conditions and has the ability to endure a range of fluctuations. Wachusett Reservoir serves as a terminal reservoir to meet the daily demands of the Greater Boston area. A key component to this reservoir's operation is the seasonal transfer of Quabbin Reservoir water to enhance water quality during high-demand periods. On an annual basis, Quabbin Reservoir accounts for nearly 50% of the water supplied to Greater Boston. The water quality of both reservoirs (as well as the Ware River, which is also part of the System Safe Yield) depend upon implementation of DCR's DEP-approved Watershed Protection Plans.

## Outcome

Quabbin Reservoir level remains above the normal operating range for this period of the year. Quabbin Reservoir was at 95.6% capacity as of September 30, 2009; 1.7% lower than the same time last year. This is a decrease of more than 6.8 billion gallons of storage. High precipitation totals, combined with lower air temperatures - especially in July, reflect a higher system yield and lower system demand for the quarter.



# WASTEWATER QUALITY

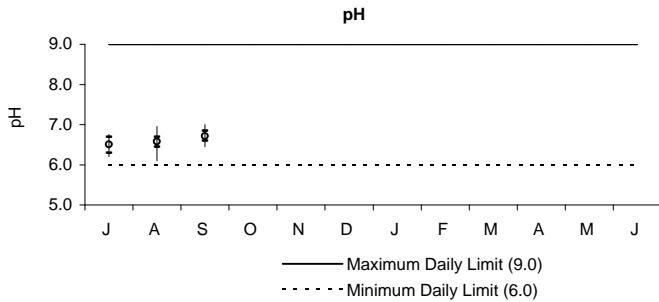
## NPDES Permit Compliance: Deer Island Treatment Plant

### 1st Quarter - FY10

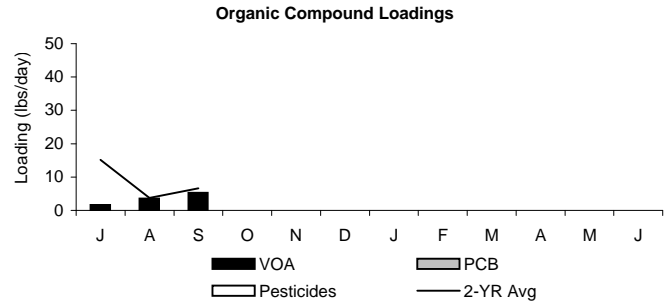
#### NPDES Permit Limits

Effluent Characteristics	Units	Limits	July	August	September	1st Quarter Violations	FY10 YTD Violations	
Dry Day Flow:	mgd	436	314.8	315.3	311.9	0	0	
cBOD:	Monthly Average	mg/L	3.9	3.2	3.7	0	0	
	Weekly Average	mg/L	40	5.7	4.1	0	0	
TSS:	Monthly Average	mg/L	30	7.6	5.2	0	0	
	Weekly Average	mg/L	45	12.9	6.0	0	0	
TCR:	Monthly Average	ug/L	456	40	40	0	0	
	Daily Maximum	ug/L	631	40	40	0	0	
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	44.3	205.8	0	0	
	Weekly Geometric Mean	col/100mL	14000	10.2	46.6	0	0	
	% of Samples >14000	%	10	0	0	0	0	
	Consecutive Samples >14000	#	3	0	0	0	0	
pH:	SU	6.0-9.0	6.2-6.8	6.1-7.0	6.5-7.0	0	0	
PCB, Aroclors:	Monthly Average	ug/L	0.00045	UNDETECTED		0	0	
Acute Toxicity:	Mysid Shrimp	%	50	>100	>100	>100	0	0
	Inland Silverside	%	50	>100	>100	>100	0	0
Chronic Toxicity:	Sea Urchin	%	1.5	13	100	100	0	0
	Inland Silverside	%	1.5	50	50	25	0	0

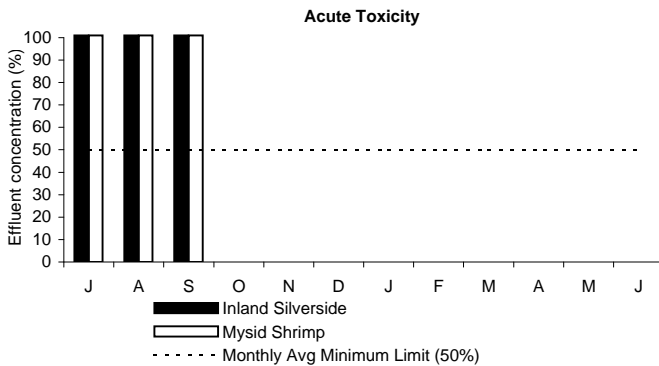
To date, there have been no permit violations at the Deer Island Treatment Plant in FY10.



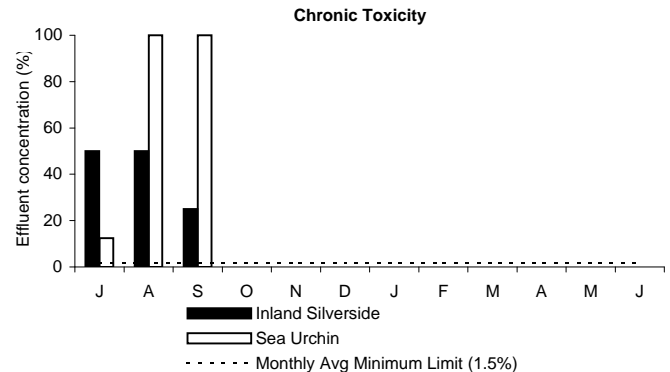
pH is a measure of the alkalinity or acidity of the effluent. Fluctuations in pH do not have an adverse effect on marine environments. Because of the pure oxygen used in the activated sludge reactor, the effluent pH tends to be at the lower pH range. pH measurements for the 1st Quarter were within the daily permit limits.



An important wastewater component to be monitored in the effluent is organic compounds, including volatile organic acids, pesticides, and polychlorinated biphenyls. The secondary treatment process has significantly reduced organic compound loadings in the effluent stream.



The acute toxicity test simulates the short-term toxic effects of chemicals in wastewater effluent on marine animals. The test measures the concentration (percent) of effluent that kills half the test organisms within four days. The higher the concentration of effluent required, the less toxic the effluent. For permit compliance, the effluent concentration that causes mortality to mysid shrimp and inland silverside must be at least 50%. Acute toxicity permit limits were met for the 1st Quarter for both the inland silverside and mysid shrimp.



Typically, effects of chronic exposures differ from those of acute exposures. Because of this, chronic toxicity responses are not necessarily related to acute toxicity. The chronic toxicity test simulates the long-term toxic effects of chemicals in wastewater effluent on marine animals. To meet permit limits, 1.5% effluent concentration must show no observed effect on the growth and reproduction of the test species. Chronic toxicity permit limits were met for the 1st Quarter for both the inland silverside and sea urchin.

**NPDES Permit Compliance: Clinton Wastewater Treatment Plant**

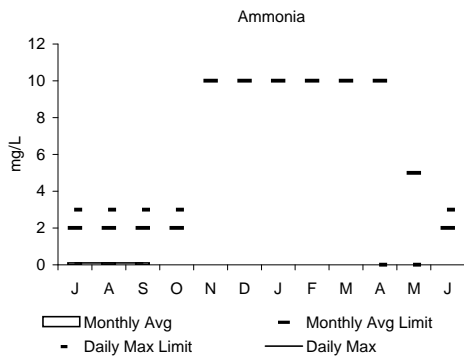
**1st Quarter - FY10**

**NPDES Permit Limits**

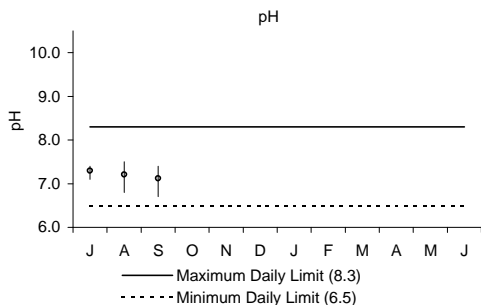
<b>Effluent Characteristics</b>	<b>Units</b>	<b>Limits</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>1st Quarter Violations</b>	<b>FY10 YTD Violations</b>
Flow:	mgd	3.01	3.36	3.40	3.39	3	3
BOD: Monthly Average:	mg/L	20	3.5	2.7	2.9	0	0
Weekly Average:	mg/L	20	4.1	3.8	3.9	0	0
TSS: Monthly Average:	mg/L	20	4.2	3.2	3.9	0	0
Weekly Average:	mg/L	20	4.8	4.3	5.0	0	0
pH:	SU	6.5-8.3	7.1-7.4	6.8-7.5	6.7-7.4	0	0
Dissolved Oxygen: Daily Minimum:	mg/L	6	8.3	7.5	7.4	0	0
Fecal Coliform: Daily Geometric Mean:	col/100mL	400	12	6	12	0	0
Monthly Geometric Mean:	col/100mL	200	2	3	3	0	0
TCR: Monthly Average:	ug/L	50	0	0	0	0	0
Daily Maximum:	ug/L	50	0	0	0	0	0
Total Ammonia Nitrogen: 6/1-10/31							
Monthly Average:	mg/L	10.0	0.1	0.1	0.1	0	0
Daily Maximum:	mg/L	35.2	0.1	0.1	0.1	0	0
Copper: Monthly Average:	ug/L	20	7.8	6.3	6.9	0	0
Phosphorus: May 1 - Oct 31							
Monthly Average:	mg/L	1.0	0.19	0.22	0.21	0	0
Acute Toxicity: Daily Minimum:	%	100	N/A	N/A	>100	0	0
Chronic Toxicity: Daily Minimum:	%	62.5	N/A	N/A	100	0	0

The Clinton Wastewater Treatment Plant's NPDES permit limit for monthly average flow is 3.01 mgd; average monthly flows for July, August and September were 3.36 mgd, 3.40 mgd, and 3.39 mgd, respectively. The monthly average flow is calculated using a 12-month running average. Staff attribute the high flows to the 11.57 inches of rain recorded in July. Higher flows are also presumably related to growth in the district and infiltration/inflow.

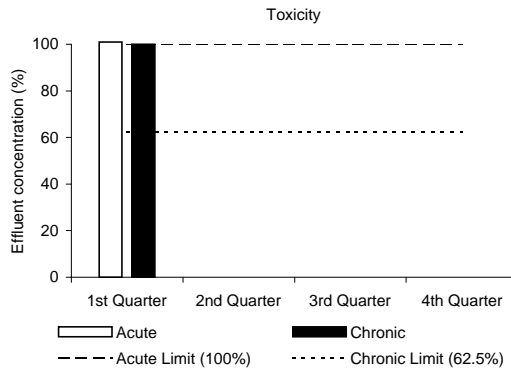
Toxicity testing is conducted on a quarterly basis.



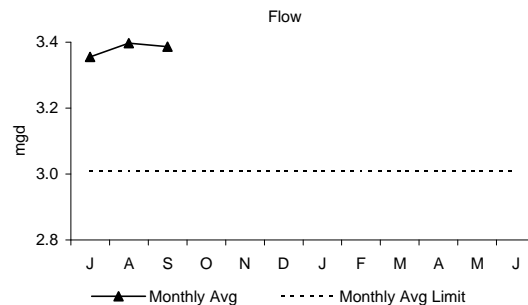
The 1st Quarter's monthly average and daily maximum concentrations were below permit limits. The monthly average and daily maximum limits for the period of November 1 - March 31 are 10 mg/L and 35.2 mg/L, respectively. The permit limits are most stringent from June-October when warm weather conditions are most conducive to potential eutrophication.



pH is a measure of the alkalinity or acidity of the effluent. All daily pH results for the 1st Quarter were within the range set by the permit.



Acute and chronic toxicity testing simulates the short- and long-term toxic effects of chemicals in wastewater effluent on aquatic animals. For permit compliance, the effluent concentration that causes mortality to the daphnid in acute and chronic testing must be at least >100% and 62.5%, respectively. Toxicity limits were met during the 1st Quarter.



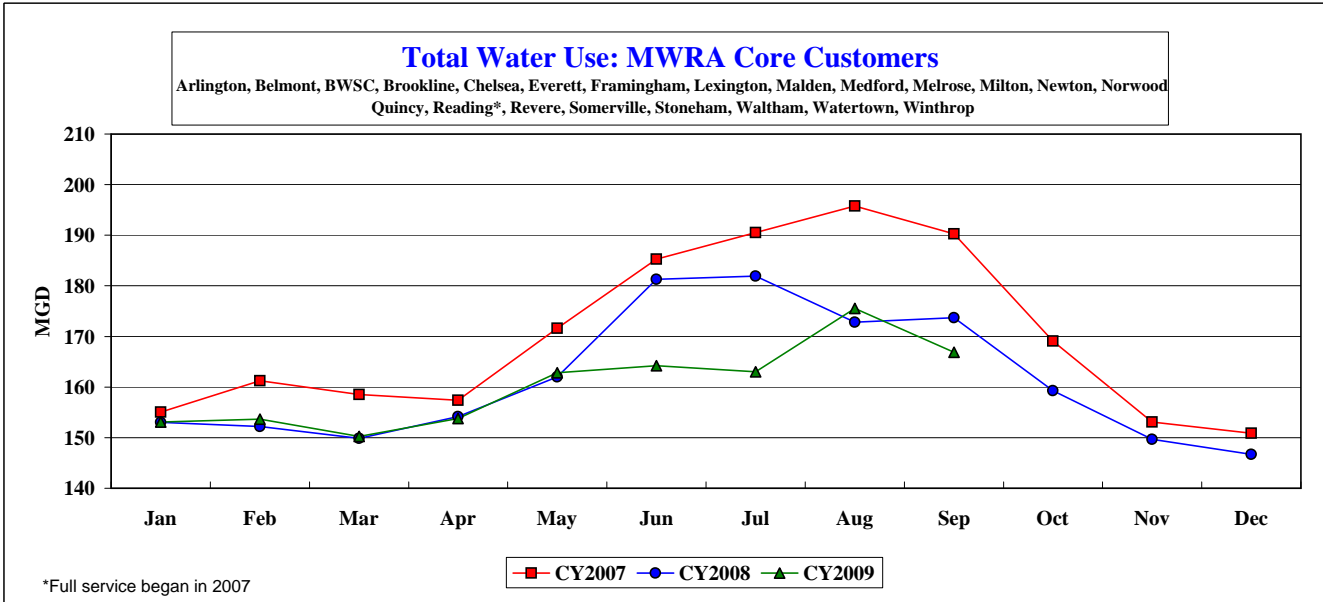
This graph depicts the average monthly flow, measured in million gallons per day, entering the plant. Average monthly flows in July, August and September were 3.36 mgd, 3.40 mgd, and 3.39 mgd, respectively; the permit limit is 3.01 mgd.

# COMMUNITY FLOWS AND PROGRAMS

# Total Water Use: MWRA Core Communities

MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
CY2007	155.061	161.227	158.519	157.376	171.642	185.297	190.539	195.762	190.260	169.111	153.066	150.887	169.949
CY2008	153.035	152.189	149.874	154.139	161.989	181.307	181.934	172.806	173.706	159.314	149.690	146.678	161.402
CY2009	153.093	153.685	150.256	153.799	162.838	164.236	163.000	175.540	166.886	0.000	0.000	0.000	160.430

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CY2007	4,806.893	4,514.365	4,914.084	4,721.268	5,320.891	5,558.920	5,906.704	6,068.612	5,707.813	5,242.433	4,591.980	4,677.497	62,031.459
CY2008	4,744.091	4,413.477	4,646.087	4,624.185	5,021.664	5,439.220	5,639.940	5,356.984	5,211.188	4,938.739	4,490.700	4,547.005	59,073.281
CY2009	4,745.887	4,303.168	4,657.927	4,613.970	5,047.977	4,927.074	5,053.009	5,441.729	5,006.589	0.000	0.000	0.000	43,797.330

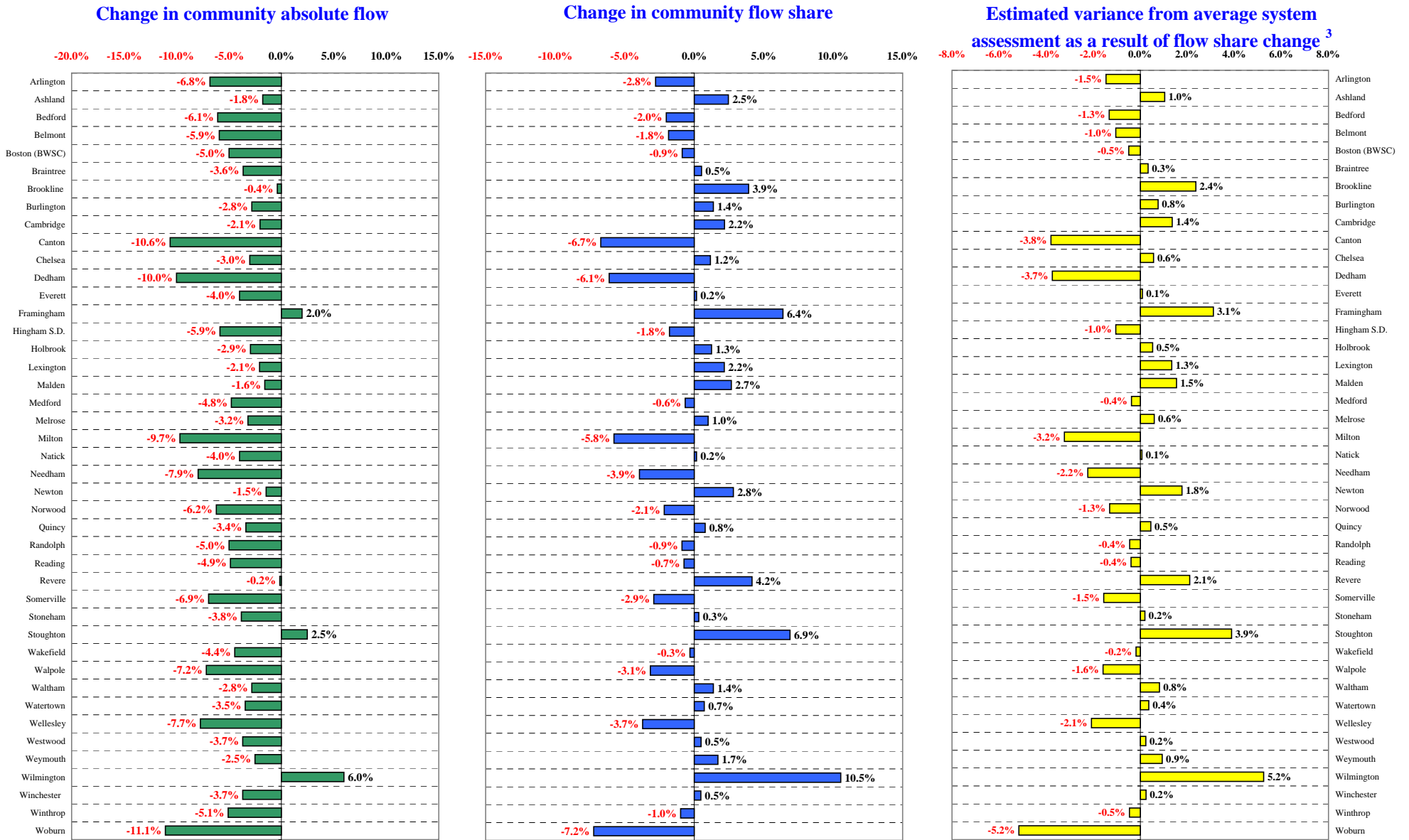


# How CY2009 Community Wastewater Flows Through Eight Months Could Effect FY2011 Sewer Assessments <sup>1,2</sup>

The flow components of FY2011 sewer assessments will be allocated using a 3-year average of CY2007 to CY2009 wastewater flows compared to FY2010 assessments that used a 3-year average of CY2006 to CY2008 wastewater flows.

But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the **RELATIVE** change in CY2007 to CY2009 flow share compared to CY2006 to CY2008 flow share, compared to all other communities in the system.

Change in flow shares are only a part of the assessment calculation as illustrated by the estimated impact of flow share changes on FY2011 sewer assessments.



<sup>1</sup> MWRA uses a 3-year moving flow average to calculate sewer assessments. Three-year averaging smoothes the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.

<sup>2</sup> Based on CY2006 to CY2009 average wastewater flows as of 10/06/09. Flow data is preliminary and subject to change pending additional MWRA and community review.

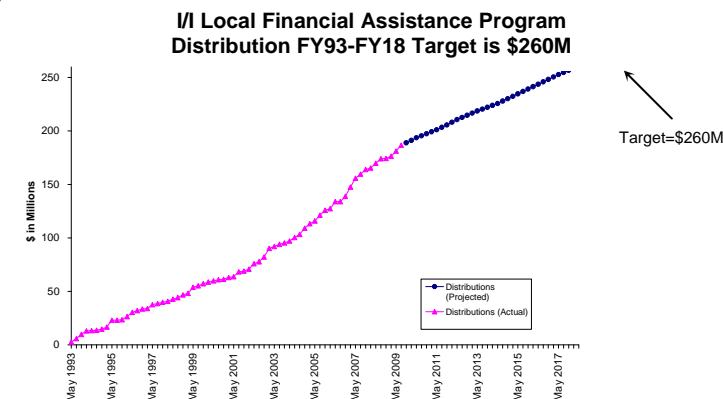
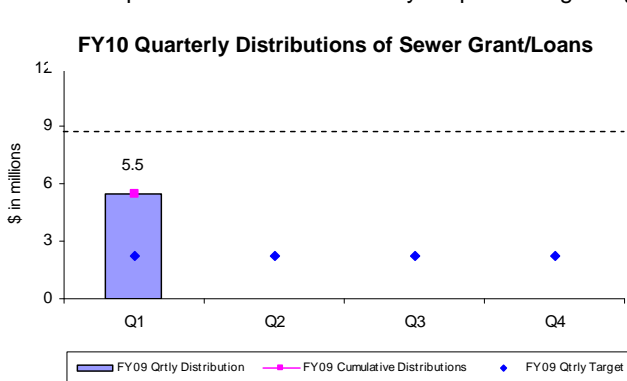
<sup>3</sup> Represents the assessment impact of the changes in wastewater flow share.

# Community Support Programs

## 1<sup>st</sup> Quarter – FY10

### Infiltration/Inflow Local Financial Assistance Program

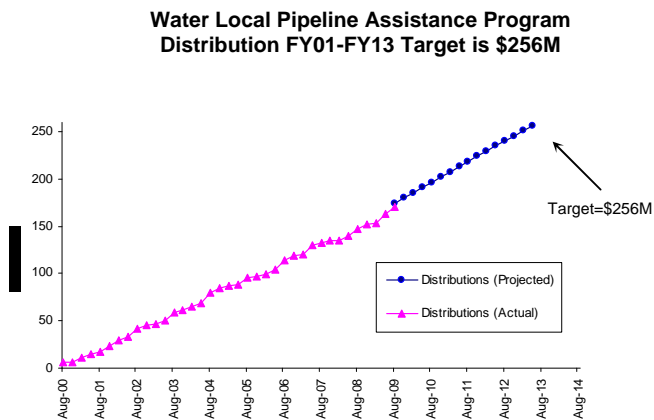
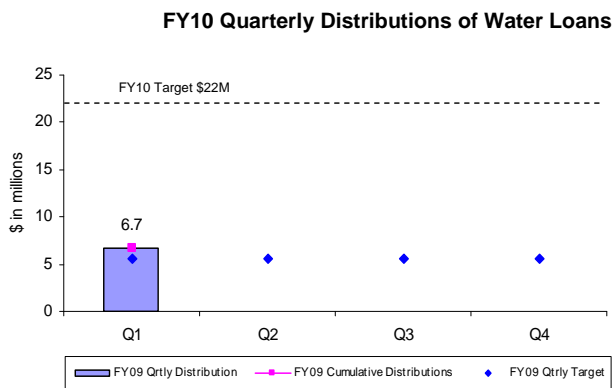
The MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$260.75 million in grants and interest-free loans (average of about \$10 million per year from FY93 through FY18) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned collection systems. Eligible project costs include: sewer rehabilitation construction, pipeline replacement, removal of public and private inflow sources, I/I reduction planning, engineering design, engineering services during construction, etc. I/I Local Financial Assistance Program funds are allocated to member sewer communities based on their percent share of MWRA's wholesale sewer charge. Interest-free loans are repaid to MWRA over a five-year period beginning one year after distribution of the funds.



During the first quarter of FY10, \$5.5 million in financial assistance (45% grants and 55% interest-free loans) was distributed to fund local sewer rehabilitation projects in Boston, Norwood, Reading, Wilmington, and Woburn. Total grant/loan distribution for FY10 is \$5.5 million. From FY93 through the first quarter of FY10, all 43 member sewer communities have participated in the program and more than \$186 million has been distributed to fund 373 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY18 and community loan repayments will be made through FY23. All scheduled community loan repayments have been made.

### Water Local Pipeline Assistance Program

The MWRA's Local Pipeline Assistance Program (LPAP) provides \$256,796,500 in interest-free loans (an average of about \$20 million per year from FY01 through FY13) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution system. Eligible project costs include: water main cleaning/lining, replacement of unlined water mains, lead service replacements, valve work along the pipe alignment, engineering design, engineering services during construction, etc. LPAP funds are allocated to member water communities based on their percent share of unlined water pipe. MWRA partially supplied communities receive pro-rated funding allocations based on their percentage use of MWRA water. Interest-free loans are repaid to MWRA over a ten-year period beginning one year after distribution of the funds.



During the first quarter of FY10, \$6.7 million in interest-free loans was distributed to fund local water projects in Boston, Melrose, Norwood, Saugus and Swampscott. Total loan distribution for FY10 is \$6.7 million. From FY01 through the first quarter of FY10, \$170 million has been distributed to fund 200 local water pipeline rehabilitation projects in 30 MWRA member water communities. Distribution of the remaining funds has been approved through FY13 and community loan repayments will be made through FY23. All scheduled community loan repayments have been made.

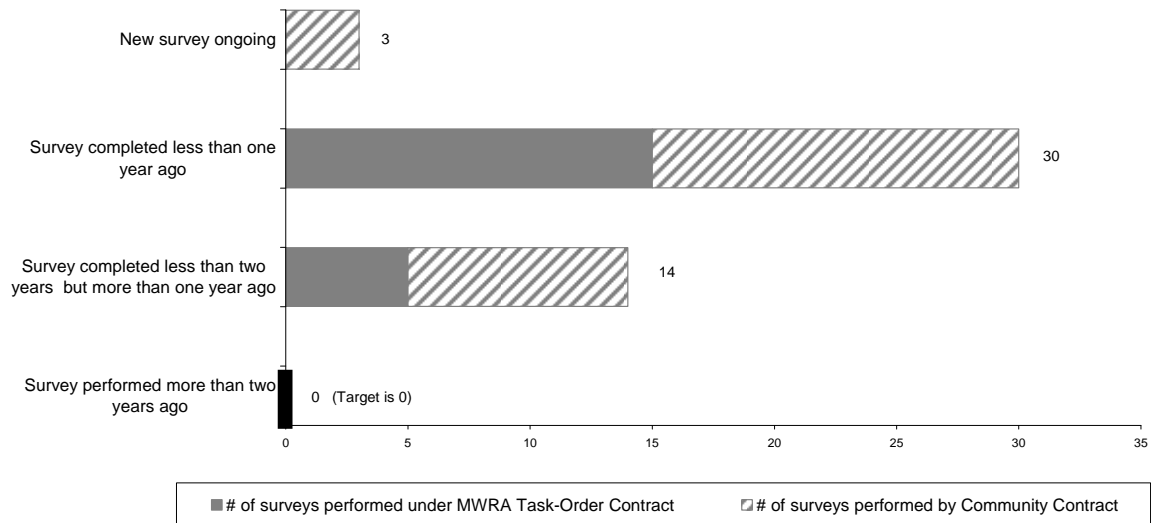


## Community Support Programs

### 1<sup>st</sup> Quarter – FY10

#### Community Water System Leak Detection

To ensure member water communities identify and repair leaks in local-owned distribution systems, MWRA developed leak detection regulations that went into effect in July 1991. Communities purchasing water from MWRA are required to complete a leak detection survey of their entire distribution system at least once every two years. Communities can accomplish the survey using their own contractor or municipal crews; or alternatively, using MWRA's task-order leak detection contract. MWRA's task-order contract provides leak detection services at a reasonable cost that has been procured (3-year low bid contract) taking advantage of the large volume of work anticipated throughout the regional system. Leak detection services performed under the task-order contract are paid by MWRA, and the costs are billed to the community the following year.



#### Community Water Conservation Outreach

The MWRA's Community Water Conservation Program helps to maintain average water demand below the regional water system's safe yield of 300 mgd. Current average annual water demand is less than 215 mgd. The local water conservation program includes distribution of water conservation education brochures (indoor and outdoor bill-stuffers) and low-flow water fixtures and related materials (shower heads, faucet aerators, toilet leak detection dye tabs, and instructions), all at no cost to member communities or regional customers. The annual budget is \$25,000 for printing and purchase of materials. Annual distribution targets and totals are provided in the table below.

	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	200,000	1,760				1,760
Low-Flow Fixtures (showerheads and faucet aerators)	6,000	4,185				4,185
Toilet Leak Detection Dye Tablets	-----	4,330				4,330

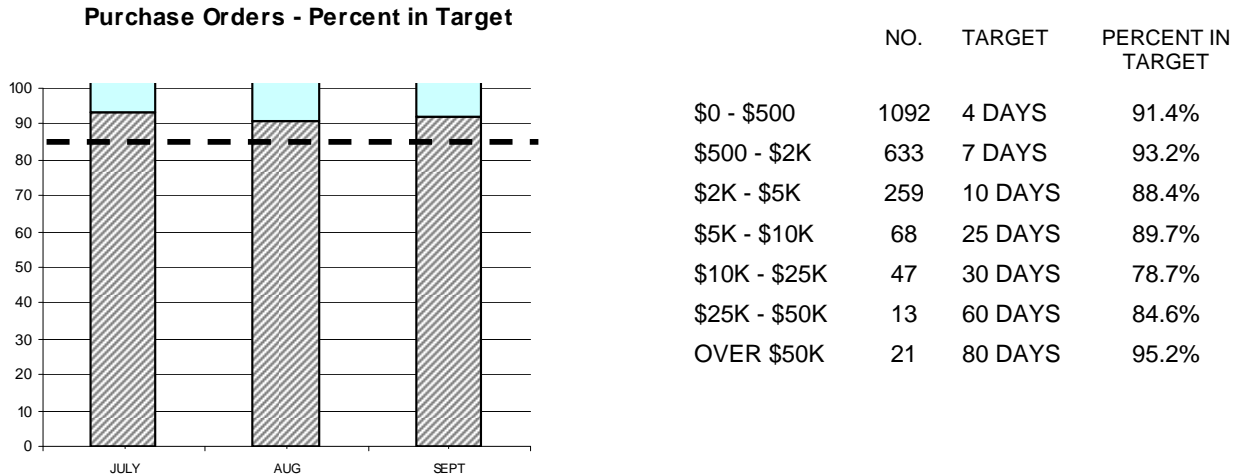
## BUSINESS SERVICES

## Procurement: Purchasing and Contracts First Quarter FY10

**Background:** Goal is to process 85% of Purchase Orders and 80% of Contracts within Target timeframes.

**Outcome:** Processed 91% of purchase orders within target; Avg. Processing Time was 4.62 days vs. 4.50 days in Qtr 1 of FY09. Processed 65% (13 of 20) contracts within target timeframes; Avg. Processing Time was 233 days vs. 145 days in Qtr 1 of FY09.

### Purchasing



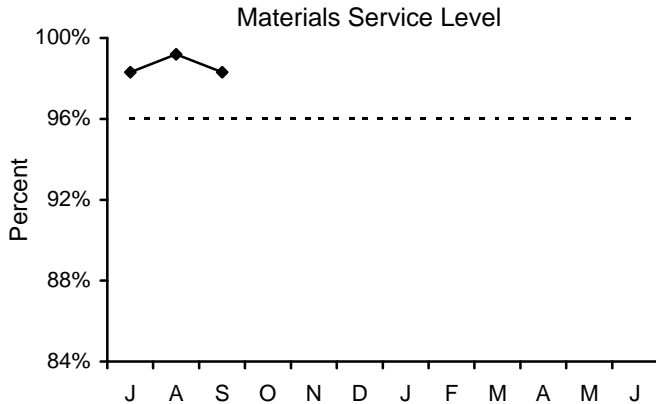
- Purchasing Unit processed 2133 purchase orders, 207 fewer than the 2340 processed in Qtr 1 of FY09, for a total value of \$7,361,918 vs. a dollar value of \$12,530,880 in Qtr 1 of FY09.
- The purchase order-processing target was not achieved for the \$10k - \$25k category due to an extended review of bids and changes in specifications.

### Contracts, Change Orders and Amendments

- Seven contracts were not processed within target timeframes for the following reasons: scope revisions, extended negotiations, agency priorities, bidder eligibility and regulatory changes.
- Procurement processed twenty contracts with a value of \$60,509,666 and thirteen amendments with a value of \$575,408.
- Nineteen change orders were executed during the period, but several were large balancing change orders at the end of jobs, and are recorded as credits or negative numbers. The dollar value of all non-credit change orders during the 1st quarter FY10 was \$552,859 and the value of credit change orders was (\$843,769). The net dollar value of all change orders was (\$290,910).
- In addition, staff reviewed 109 proposed change orders and 29 draft change orders.

# Materials Management

1st Quarter, FY10



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 8,841 (98.6%) of the 8,962 items requested in Q1 from the inventory locations for a total dollar value of \$1,111,689.

## Inventory Value - All Sites

Inventory goals focus on:

- Maintaining optimum levels of consumables and spare parts inventory
- Adding new items to inventory to meet changing business needs
- Reviewing consumables and spare parts for obsolescence
- Managing and controlling valuable equipment and tools via the Property Pass Program

The FY10 goal is to reduce consumable inventory from the July '09 base level (\$6.88 million) by 3.0% (approximately \$206,504), to \$6.67 million by June 30, 2010 (see chart below).

Items added to inventory this quarter include:

- Deer Island – actuator oxygen vent valve for the Maintenance group.
- Chelsea – sewer brick and PVC conduit for the Maintenance group.
- Southboro – ceramic valve, condensing pump, HVAC filters, lamps and relief valve for the Maintenance group. Electronic module and analog card for the Carroll Water Treatment Plant.

Property Pass Program:

- Numerous obsolete computers, printers, monitors, keyboards, mice and box cables have been received into property pass as surplus. Disposition is being handled as part of our ongoing recycling efforts.
- Scrap revenue for the first quarter amounted to \$9,083.
- Tool/equipment reviews were conducted by staff at Chelsea grounds, Chelsea Metering and Alford Street during the first quarter.
- Vehicle Auction netted approximately \$94,000.

Items	Base Value July-09	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	6,883,472	6,776,428	-107,044
Spare Parts Inventory Value	7,243,971	7,107,941	-136,030
Total Inventory Value	14,127,443	13,884,369	-243,074

**Note:** New adds are items added at an inventory location for the first time for the purpose of servicing a group/department to meet their business needs/objectives.

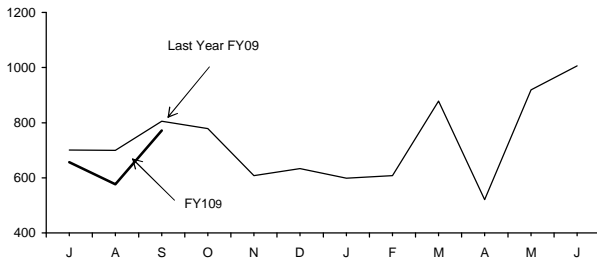
# MIS Program

## 1st Quarter FY10

Operations

Highlights:

**Helpline Monthly Call Volume**



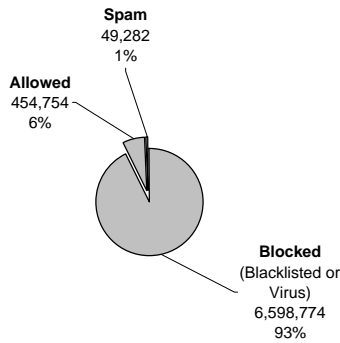
Performance

Call volume peaked in September and has decreased by 9.12% from Q1 last year. The backlog peaked in August and is above the targeted benchmark range. The mix of calls for the quarter do not indicate any major problems.

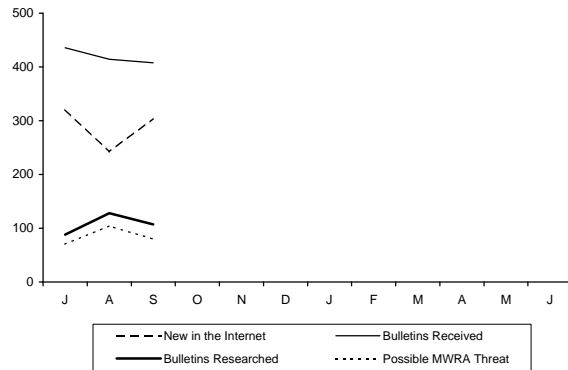
Business System Plan

- **Cyber Security:** During Q1, staff pushed security fixes and updates to desktops and servers throughout the quarter in order to protect against the 867 newly revealed vulnerabilities.
- Six files were identified with viruses on MWRA computers this quarter and infected files were cleaned or deleted before any damage ensued.

**Emails Received**



**Internet Vulnerabilities**



- Implemented Blade and Virtualization technologies in the Chelsea Data Center on Network and Systems servers in support of MWRA Green Computing efforts. The combination of Blade and Virtualization technologies allowed us to retire 6 servers and replace them with two blades (the second for redundancy) to reduce energy consumption, server costs, and ongoing maintenance costs. As existing servers reach their end-of-life, blade and virtualization technology will be utilized to continue to support green initiatives.
- Telecommunications: Nextel/Sprint completed an installation of Bi-directional amplifiers (BDA's) at the Deer Island Treatment Plant. The existing infrastructure that propagates external and in-building signal strength was expanded by an additional 340,000 square feet of coverage to include the underground galleries throughout Deer Island. This enhancement will provide more reliable cellular, direct connect and e-mail communications that were previously not dependable.

**Applications/Training/Records Center**

Area	Significant Accomplishments
PIMS	TRAC completed their Annual Report to EPA for the Industrial Pretreatment Program using the PIMS application.
GIS	The GIS integration vendor, Applied Geographics, has delivered a beta version of the PIMS viewer for testing. The addition of a "Map It" button in PIMS will be added next month to further enhance the user interface.
Lawson	A kickoff meeting was held to begin planning the expanded use of the Commonwealth's electronic bid system, COMM-PASS. Initial plan is to post procurement bid documents in addition to bid notices that are already being posted on COMM-PASS and develop appropriate procedures. Performed/supported start of FY10 Lawson data transfers including: loading the FY10 budget files into Lawson, producing and delivering our FY10 insurance enrollment data to Colonial Life Insurance, updating the step and grade details on the Retroactive database for FY10, loading the sick leave buy back data into the payroll systems, and configuring the LTD deduction for FY10.
Employee Availability Tracking	Conducted a demo at the MWRA senior staff meeting and two demos for users illustrating the new features and reports and utilized the application for a drill on 9/4/09. In addition the Lawson download was revised to capture shift information to reduce data entry requirements.
Training	For the quarter, 96 staff attended 11 classes and 7 workshops. 4% of the workforce have attended at least 1 class year-to-date.

# Legal Matters

## 1st Quarter FY10

### PROJECT ASSISTANCE

#### COURT AND ADMINISTRATIVE ORDERS

- **Boston Harbor Litigation and CSO:** Finalized and filed Compliance and Progress Report and CSO Quarterly Progress Report with Federal District Court.
- **NPDES:** Reviewed water quality variance CSO discharge notification letter for Cottage Farm CSO facility. Reviewed requirements of general NPDES multi-sector stormwater permit as it relates to sample that exceeded water quality criteria. Reviewed EPA's draft peak flow guidance document for POTWs.

#### REAL ESTATE AND CONTRACT

- **Hultman Aqueduct Interconnections Project:** Continued review of revisions to the proposed agreement with the Massachusetts Turnpike Authority and Liberty Mutual. Met with the Assistant City Solicitor for the City of Waltham regarding an agreement to do work in and for the City of Waltham. Drafted agreement with the City of Waltham. Reviewed title information on property to be subject to easements to be acquired in Weston.
- **Low Service Storage Facility – Spot Pond:** Reviewed and revised various drafts of the Purchase and Sales Agreement. Drafted a license for environmental testing on the property.
- **Braintree-Weymouth Sewer Relief Facilities Project – Intermediate Pump Station:** Revised License Agreement; Drafted Permanent Drainage Easement.
- **Delauri Pump Station – Wind Turbine:** Reviewed and provided guidance on Article 88 of the Boston Zoning Code – Wind Energy Facilities. Reviewed deed from MBTA to MWRA for a possible easement for an NSTAR cable on the property.
- **Water Mains- Arlington:** Finalized and executed an MOA with the Town of Arlington for Arlington to install a section of 24- inch ductile iron pipe in connection with Arlington's Brattle Street Culvert Reconstruction Project.
- **Deer Island:** Reviewed and provided guidance on Winthrop Town Ordinance regarding weight restrictions on delivery vehicles.
- **Quality-Based Selection:** Reviewed legislation amending G.L. c. 30B which may require MWRA to adhere to a quality-based selection process in its selection of engineering consultants; drafted “clarifying” amendments to the current legislation.
- **Section 8(m) permits:** Reviewed and approved 20 Section 8(m) permits; provided recommendations on three construction claims

#### ENVIRONMENTAL

- **Water Supply/Watershed Management:** Conducted research and drafted memoranda relating to questions concerning responsibility for controlling invasive species at water supply reservoirs as between MWRA and DCR and concerning origins of legal authority for shore fishing and on-reservoir fishing at Quabbin.
- **MWRA/DCR Watershed and Reservoir Responsibilities:** Researched and prepared memo concerning the interplay of shared statutory duties as between MWRA and DCR for protection of the quality of reservoir source waters in the watersheds.
- **TRAC Regulations:** Conducted/coordinated public hearing on TRAC regulations amendments; supervised the final changes to the official draft of the TRAC regulations and submitted them and required forms to the Secretary of State's Regulation Division for publication in the August 8, 2009 Mass Register.
- **Safe Drinking Water Act:** Provided assistance in drafting the formal request to DEP for an additional two years to complete capital improvements necessary to comply with the new Long Term 2 Enhanced Surface Water Treatment Rule.

## LABOR, EMPLOYMENT AND ADMINISTRATIVE

### New Matters

Three demands for arbitration were filed.

One charge was filed at the Massachusetts Commission Against Discrimination.

### Matters Concluded

Received an arbitration decision in favor of a union.

Settled one MCAD charge.

## LITIGATION/TRAC

### New Lawsuits

One new case was reported in the First Quarter of FY 2010.

#### MWRA v. Chutehall Construction Co., Ltd., et al.

This is an action to enforce payment of an administrative penalty and to reach and apply. MWRA is seeking \$10,000 for a TRAC penalty in addition to \$1,347.17 in awarded costs. MWRA's suit also includes a "Reach and Apply" count, in which various parties whom Chutehall has filed suit against are named as defendants and any judgments Chutehall might obtain are sought to be applied to Chutehall's debt to MWRA.

### Significant Developments

Seaver Electric v. JF White, et al.: On August 20, the Superior Court granted Motions for Summary Judgment by MWRA and its co-defendants in Seaver Electric v. JF White, et al. This was a construction contract claim. Plaintiff was the filed electrical sub-bidder on the Braintree/Weymouth Intermediate Pumping Station Project. Plaintiff alleged some \$565,000 in contract damages, the loss of which Seaver alleged caused it to lose bonding capacity, and ultimately go out of business and to sustain "lost business" damages of \$5,000,000. All defendants filed motions for summary judgment asserting that the work which Seaver performed was fully within the scope of its subcontract. The Superior Court agreed, concluding that Seaver had not shown that it performed any "extra" work. The Court therefore granted summary judgment in favor of MWRA on all counts. Seaver filed an appeal in September 2009.

### Closed Cases

There is one case reported closed in the First Quarter FY 2010.

- UniFirst Corporation v. MWRA: In September 2007, UniFirst Corporation brought suit against MWRA, claiming breach of contract and monetary losses of \$233,647.11 for uniforms lost or damaged, and uniforms that MWRA had otherwise not returned, in connection with the Employee Uniform Contract awarded to UniFirst in 1996. The Contract continued in effect until September 2006, when MWRA notified UniFirst that MWRA would no longer have a formal uniform program. MWRA undertook comprehensive efforts to collect and return the employee uniforms to UniFirst. The dispute between UniFirst and MWRA centered on the valuation of those uniforms that had been lost or damaged during the course of the Contract. UniFirst sought full replacement value for lost or damaged uniforms; MWRA relied on the depreciation schedule included in the Contract, by which the value of the clothing decreased based on the number of years in service. After negotiations, the lawsuit settled for \$35,000.

### Subpoenas

During the First Quarter of FY 2010, no subpoenas were received and one subpoena was pending at the end of First Quarter FY 2010.

### Public Records

During the First Quarter of FY 2010, thirteen new public records requests were received and eight requests were pending at the end of First Quarter FY 2010.

## TRAC

### New Appeals:

Three new appeals were received in the 1<sup>st</sup> Quarter FY 2010.

- New England Wildlife Center: MWRA Docket NO. 09-02
- Empire Photo: MWRA Docket No. 09-03
- Boston Biomedical, Inc.: MWRA Docket No. 09-04

**Settlement by  
Agreement of  
Parties**

One case was settled by Agreement of Parties in 1<sup>st</sup> Quarter FY 2010.

- LHO Backstreet Lessee, LLC d/b/a The Westin Copley Place; MWRA Docket No. 08-04

**Tentative  
Decisions**

One Tentative Decision was issued in 1<sup>st</sup> Quarter FY 2010.

- Massachusetts General Hospital; MWRA Docket No. 08-01

**Final  
Decisions**

No Final Decisions were issued during the 1<sup>st</sup> Quarter FY 2010.



## Internal & Contract Audit Program

### 1st Quarter FY10

#### Highlights

##### REVIEW OF FIXED ASSETS (Issued: Sep 21, 2009)

The purpose of this review was to assess the status and future value of capital assets listed in the Fixed Asset Register. A recommendation was made to write-off the cost of \$215,558,310 of fixed assets having an estimated book value of \$32,769,978 as of June 30, 2009. As a result, assets with a cost of \$167,839,787 and a book value of \$10,854,623 were written off during FY09. Finance staff is reviewing the remaining asset write-offs which are expected to be completed in FY10. Additional recommendations were made to ensure that assets, including their component parts, are placed in an appropriate asset class to match their expected useful life, and to enhance control of the fixed asset register.

##### BWSC CSO ELIGIBLE COSTS (Issued: Sep 18, 2009)

The purpose of this review was to determine if costs claimed for consultant and contractor work performed since the inception of the BWSC's CSO Financial Assistance Agreement through calendar year 2008 were supported by BWSC's records and were eligible for reimbursement under the FAA. The recommendations made centered on ensuring that only costs approved by the BWSC's Director of Construction are withdrawn from the BWSC CSO account, and that a true-up of eligible costs be performed, as soon as possible, for all completed contracts.

#### Status of Open Audit Recommendations

The Internal Audit Department follows up on open recommendations on a continuous basis. All pending recommendations have target implementation dates and Internal Audit has implemented a tracking system that automatically notifies the responsible managers 30 days prior to the target implementation date. When a recommendation has not been acted on in 48 months the appropriateness of the recommendation is re-evaluated during a subsequent audit. On closed assignments 90% of recommendations have been implemented.

Report Title (date)	Pending Implementation	Closed Recommendations
Financial & Management Controls of the Fore River Railroad (3/1/07)	1	6
Audit of Buying Practices (9/15/08)	1	10
Boston Water & Sewer Commission CSO Financial Assistance Agreement (9/18/09)	3	0
Review of Fixed Assets (9/21/09)	<u>6</u>	<u>4</u>
<b>Total Recommendations</b>	<b>11</b>	<b>20</b>

#### Audit Savings

The Internal Audit Department's target is to achieve at least \$1 million in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of work in prior years. Commencing in FY07 cost savings include the dollar impact, if measurable, of internal assignments.

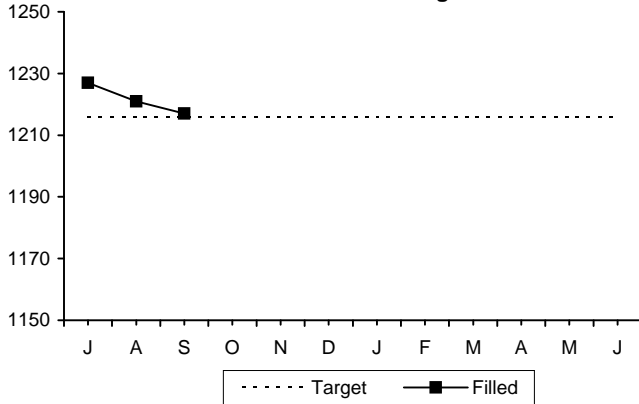
Savings	FY06	FY07	FY08	FY09	FY10	TOTAL
Consultants	\$768,394	\$358,341	\$55,901	\$316,633	\$95,046	\$1,594,315
Contractors & Vendors	\$456,968	\$637,378	\$2,147,311	\$1,262,088	\$154,559	\$4,658,304
Internal Audits	0	\$183,840	0	\$438,027	0	\$621,867
<b>Total</b>	<b>\$1,225,362</b>	<b>\$1,179,559</b>	<b>\$2,203,212</b>	<b>\$2,016,748</b>	<b>\$249,605</b>	<b>\$6,874,486</b>

## OTHER MANAGEMENT

# Workforce Management

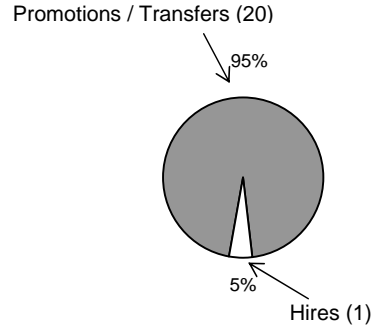
## 1st Quarter FY10

**Filled Position Tracking**



FY10 Target for Filled Positions = 1216  
 Filled Positions as of September 2009 = 1217

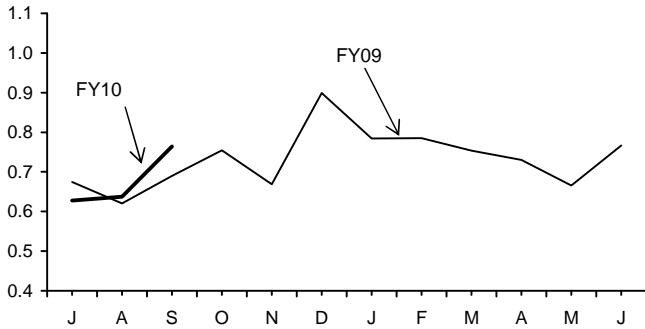
**Positions Filled by Hires/Promotions**  
FY10



	Pr/Tms	Hires	Total
FY07	52 (56%)	41(44%)	93
FY08	63 (62%)	39(38%)	99
FY09	63 (73%)	23(27%)	86

In FY10, the average monthly sick leave usage has increased 2.21% from the same time last year.

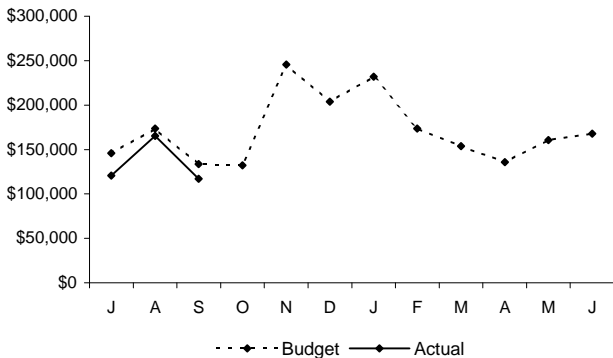
**Average Monthly Sick Leave Usage**  
Per Employee



	Number of Employees	YTD	Annualized Total	Annual FMLA %	FY09
Law	19	1.98	7.93	12.8%	7.91
Planning	24	1.40	5.58	37.1%	8.07
Operations	939	2.13	8.53	24.4%	9.11
Support	186	1.35	5.40	19.4%	7.53
Finance	43	3.33	13.31	62.1%	8.45
Executive	8	0.97	3.87	0.0%	6.83
<b>MWRA Avg</b>	<b>1219</b>	<b>2.03</b>	<b>8.12</b>	<b>25.8%</b>	<b>8.79</b>

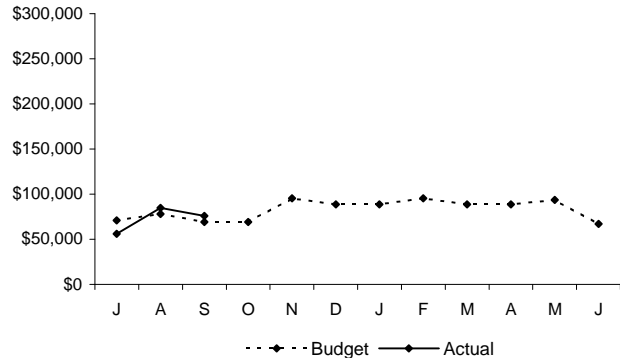
Percent of sick leave usage attributable to Family and Medical Leave Act (FMLA) leave is 25.8% ending September 30, 2009.

**Field Operations**  
Overtime Expenditure Variance



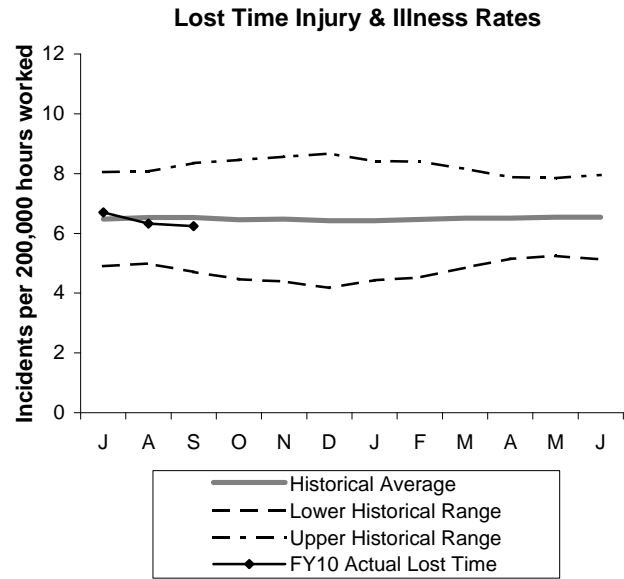
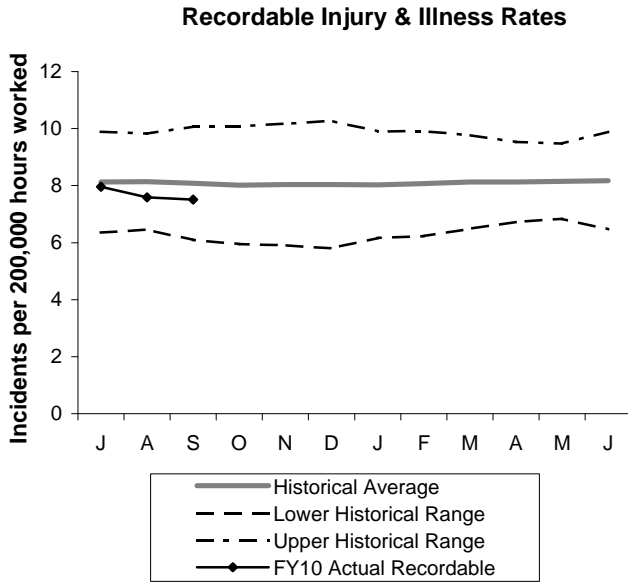
Overtime spending in the first quarter was \$50,144 less than budgeted (11.1%).

**Deer Island Treatment Plant**  
Overtime Expenditure Variance



Overtime spending in the first quarter was \$1,538 less than budgeted (0.7%).

## Workplace Safety 1st Quarter FY10



- 1 "Recordable" incidents are all work-related injuries and illnesses which result in death, loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid.
- 2 "Lost-time" incidents, a subset of the recordable incidents, are only those incidents resulting in any days away from work, days of restricted work activity or both - beyond the first day of injury or onset of illness.
- 3 The "Historical Average" is computed using the actual MWRA monthly incident rates for FY99 through FY09. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively. FY10 actual incident rates can be expected to fall within this historical range.

### Workers Compensation Claims Highlights

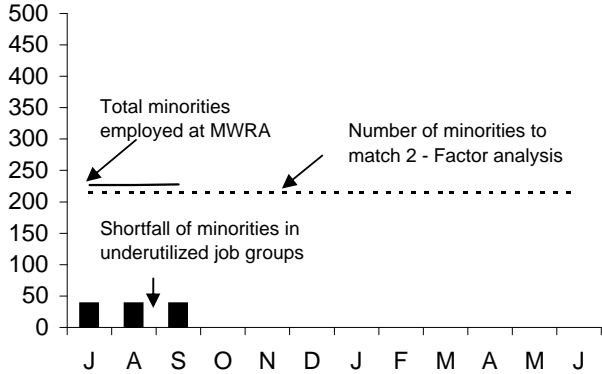
	New	Closed	Open Claims
Lost Time	5	18	49
Medical Only	63	50	54
	<b>New</b>		<b>YTD Returns</b>
Light Duty Returns	0		0

### Highlights / Comments

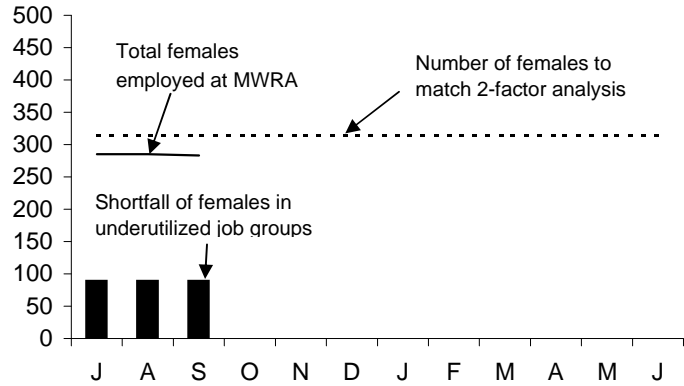
One employee returned to work on Light Duty for two weeks and then went back on IA.  
Five employees returned to work on Full Duty after being out on Workers' Comp.

## MWRA Job Group Representation Quarter 1, FY 2010

**Minority - Affirmative Action Plan Goals**



**Female - Affirmative Action Plan Goals**



**Highlights:**

At the end of Q1 FY10, 7 job groups or a total of 38 positions are underutilized by minorities as compared to 9 job groups or a total of 41 at the end of Q1 FY09; for females 13 job groups or a total of 89 positions are underutilized by females as compared to 11 job groups or a total of 85 at the end of Q1 FY09. During Q1, 1 minority and 0 females were hired. During this same period, 0 minorities and 2 females terminated.

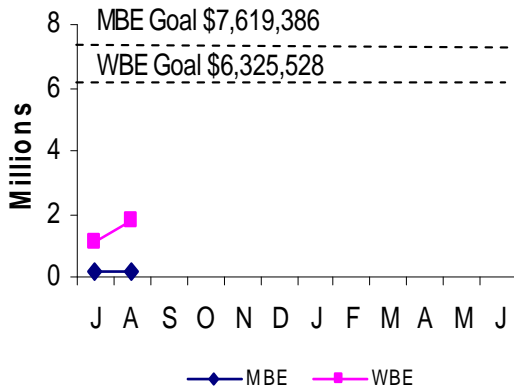
**Underutilized Job Groups - Workforce Representation**

Job Group	Employees as of 9/30/2009	Minorities as of 9/30/2009	Achievement Level	Minority Over or Under Under utilized	Females As of 9/30/2009	Achievement Level	Female Over or Under Under utilized
Administrator A	19	3	2	1	3	4	-1
Administrator B	25	0	4	-4	6	7	-1
Clerical A	50	22	11	11	44	10	34
Clerical B	37	8	9	-1	17	2	15
Engineer A	85	16	13	3	12	14	-2
Engineer B	50	9	4	5	6	25	-19
Craft A	120	16	21	-5	0	4	-4
Craft B	149	26	18	8	3	7	-4
Laborer	61	14	10	4	5	8	-3
Management A	106	17	17	0	30	36	-6
Management B	58	10	9	1	13	26	-13
Operator A	67	5	7	-2	2	4	-2
Operator B	66	8	10	-2	4	3	1
Para Professional	61	11	28	-17	28	53	-25
Professional A	38	2	9	-7	24	15	9
Professional B	171	43	28	15	79	77	2
Technical A	46	14	10	4	3	11	-8
Technical B	12	4	2	2	4	5	-1
<b>Total</b>	<b>1221</b>	<b>228</b>	<b>212</b>	<b>54/-38</b>	<b>283</b>	<b>311</b>	<b>61/-89</b>

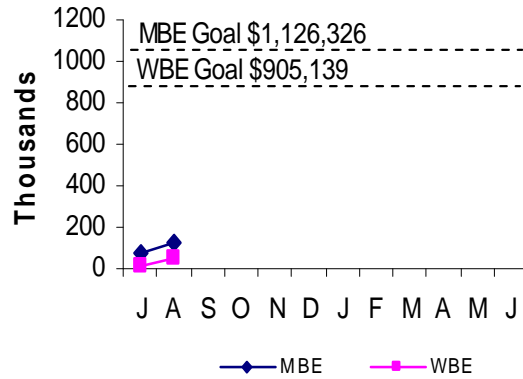
## MBE/WBE Expenditures First Quarter 2010

**Background:** MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. MBE/WBE percentage goals, resulting from a 2002 Availability Analysis, are applied to the MWRA CIP and CEB expenditure forecasts. As a result of the Availability Analysis, the category of Non-Professional Services is included in Goods/Services. Consistent with contractor reporting requirements, MBE/WBE expenditure data is available through August.

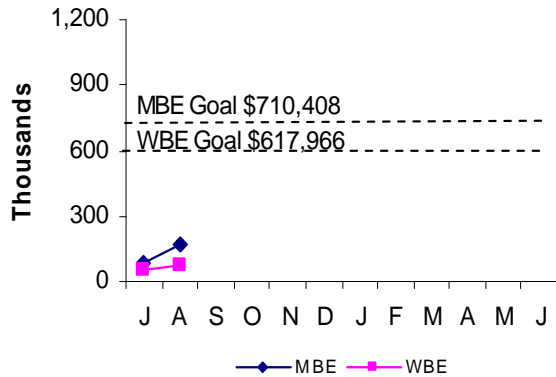
### Construction



### Professional



### Goods/Services



FY09 spending and percentage of goals achieved, as well as FY08 performance are as follows:

	MBE				WBE			
	FY10 Year-to-Date		FY09		FY10 Year-to-Date		FY09	
	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>
Construction	144,228	1.9%	6,609,216	122.4%	1,759,165	27.8%	8,770,461	210.0%
Professional Svc.	119,821	10.6%	1,266,243	83.5%	49,916	5.5%	706,320	57.9%
Goods & Svcs.	<u>170,624</u>	<u>24.0%</u>	<u>1,288,538</u>	<u>187.7%</u>	<u>78,643</u>	<u>12.7%</u>	<u>835,066</u>	<u>139.8%</u>
<b>Total</b>	<b>\$434,673</b>	<b>4.6%</b>	<b>\$9,163,997</b>	<b>120.5%</b>	<b>\$1,887,724</b>	<b>24.1%</b>	<b>\$10,311,847</b>	<b>172.1%</b>

## MWRA FY09 CEB Expenses through June 2009

	June 2009 Year-to-Date					
	Period 12 YTD Budget	Period 12 YTD Actual	Period 12 YTD Variance	%	FY09 Approved	% Expended
<b>EXPENSES</b>						
WAGES AND SALARIES	\$ 89,006,105	\$ 88,624,447	\$ (381,658)	-0.4%	\$ 89,006,105	99.6%
OVERTIME	3,536,671	2,990,600	(546,071)	-15.4%	3,536,671	84.6%
FRINGE BENEFITS	16,452,542	16,579,652	127,111	0.8%	16,452,542	100.8%
WORKERS' COMPENSATION	1,325,000	1,841,638	516,638	39.0%	1,325,000	139.0%
CHEMICALS	10,350,380	9,867,555	(482,825)	-4.7%	10,350,380	95.3%
ENERGY AND UTILITIES	26,961,532	24,428,446	(2,533,086)	-9.4%	26,961,532	90.6%
MAINTENANCE	28,089,127	27,443,721	(645,406)	-2.3%	28,089,127	97.7%
TRAINING AND MEETINGS	171,913	157,515	(14,399)	-8.4%	171,913	91.6%
PROFESSIONAL SERVICES	6,493,264	6,357,126	(136,138)	-2.1%	6,493,264	97.9%
OTHER MATERIALS	4,725,041	4,630,791	(94,251)	-2.0%	4,725,041	98.0%
OTHER SERVICES	22,524,528	22,819,397	294,868	1.3%	22,524,528	101.3%
<b>TOTAL DIRECT EXPENSES</b>	<b>\$ 209,636,103</b>	<b>\$ 205,740,888</b>	<b>\$ (3,895,217)</b>	<b>-1.9%</b>	<b>\$ 209,636,103</b>	<b>98.1%</b>
INSURANCE	\$ 2,450,000	\$ 1,994,022	\$ (455,978)	-18.6%	\$ 2,450,000	81.4%
WATERSHED/PILOT	22,659,385	22,439,393	(219,992)	-1.0%	22,659,385	99.0%
SPECIAL PAYMENT OBLIGATION	53,743,500	53,743,500	-	0.0%	53,743,500	100.0%
BECCO PAYMENT	4,161,027	4,142,047	(18,980)	-0.5%	4,161,027	99.5%
MITIGATION	1,445,236	1,416,686	(28,550)	-2.0%	1,445,236	98.0%
ADDITIONS TO RESERVES	1,743,337	1,743,337	-	0.0%	1,743,337	100.0%
RETIREMENT FUND	11,906,836	8,630,339	(3,276,497)	-27.5%	11,906,836	72.5%
<b>TOTAL INDIRECT EXPENSES</b>	<b>\$ 98,109,321</b>	<b>\$ 94,109,324</b>	<b>\$ (3,999,997)</b>	<b>-4.1%</b>	<b>\$ 98,109,321</b>	<b>95.9%</b>
DEBT SERVICE	\$ 325,283,841	\$ 330,821,056	\$ 5,537,215	1.7%	\$ 325,283,841	101.7%
DEBT SERVICE ASSISTANCE	-	-	-	---	-	---
<b>TOTAL DEBT SERVICE</b>	<b>\$ 325,283,841</b>	<b>\$ 330,821,056</b>	<b>\$ 5,537,215</b>	<b>1.7%</b>	<b>\$ 325,283,841</b>	<b>101.7%</b>
<b>TOTAL EXPENSES</b>	<b>\$ 633,029,265</b>	<b>\$ 630,671,268</b>	<b>\$ (2,358,000)</b>	<b>-0.4%</b>	<b>\$ 633,029,265</b>	<b>99.6%</b>
<b>REVENUE &amp; INCOME</b>						
RATE REVENUE	\$ 540,819,000	\$ 540,819,000	\$ -	0.0%	\$ 540,819,000	100.0%
OTHER USER CHARGES	7,228,280	7,163,518	(64,762)	-0.9%	7,228,280	99.1%
OTHER INCOME SPECIAL PAY	53,743,500	53,743,500	-	0.0%	53,743,500	100.0%
OTHER REVENUE	5,738,095	7,210,575	1,472,480	25.7%	5,738,095	125.7%
RATE STABILIZATION	5,073,365	5,073,365	-	0.0%	5,073,365	100.0%
INVESTMENT INCOME	20,427,025	19,769,035	(657,990)	-3.2%	20,427,025	96.8%
<b>TOTAL REVENUE &amp; INCOME</b>	<b>\$ 633,029,265</b>	<b>\$ 633,778,993</b>	<b>\$ 749,728</b>	<b>0.1%</b>	<b>\$ 633,029,265</b>	<b>100.1%</b>

Through June 2009, total revenue was \$633.8 million, \$750,000 or 0.1% more than the amended budget. Total expenses were \$630.7 million, \$2.4 million or 0.4% less than the amended budget.

Expenses – (All expenses are compared to the FY09 amended budget)

- **Direct Expenses** were \$205.7 million, \$3.9 million or 1.9% less than the amended budget.
- **Energy and Utilities** were \$2.5 million or 9.4% less than budget. Electricity of \$1.8 million due to lower pricing at DITP and usage in FOD, Diesel Fuel of \$691,000 due to lower pricing and usage in FOD, and Natural Gas of \$169,000 due to lower than projected pricing, offset by higher water usage of \$156,000.
- **Maintenance** was \$645,000 or 2.3% under budget due to staff reevaluation of the accounting treatment of the roof replacement program at DITP and the decision to fund the program through the capital budget starting in FY09 and going forward.
- **Overtime** was \$546,000 or 15.4% less than budget due to less storm activity than expected and changed staffing configuration which reduces coverage related overtime.
- **Workers' Compensation** was \$517,000 or 39.09% more than budget due to higher Compensation and Medical Payments as a result of recent serious injuries.
- **Chemicals** were \$483,000 or 4.7% less than budget due to lower Sodium Hypochlorite \$369,000, Sodium Hydroxide \$122,000, Sodium Bisulfite \$112,000, and Soda Ash \$93,000 offset by higher Ferric Chloride usage of \$338,000 to prevent struvite formation.
- **Wages and Salaries** were \$382,000 or 0.4% less than budget as a result of lower regular pay due to fewer than budgeted filled positions.
- **Other Services** were \$295,000 or 1.3% more than budget due to higher Sludge Pelletization of \$251,000, Space Lease/Rentals of \$176,000 and Grit & Screenings Removal of \$81,000 offset by lower Police Details of \$98,000.
- **Professional Services** were \$136,000 or 2.1% lower due to Other of \$124,000 due to energy consultant services in Operations and technical training in Human Resources, Lab and Testing Analysis of \$100,000 in ENQUAD for delays in harbor/outfall reports. Offset by higher Engineering services of \$149,000.
- **Fringe Benefits** were \$127,000 or 0.8% more than budget due to higher Health Insurance of \$197,000, offset by lower Medicare expense.
- **Indirect Expenses** were \$40.4 million, excluding Lehman Brothers Swap of \$53.7 million, \$4.0 million or 9.0% less than budget mainly due to decision not to make the Pension Reserve deposit of \$3.3 million in FY09 and lower Insurance Claims of \$429,000.
- **Debt Service** totaled \$330.8 million, \$5.5 million or 1.7% more than the amended budget which results from \$4.1 million in higher State Revolving Fund (SRF) expenses, \$6.8 million in higher Revenue Bonds, \$8 million for Subordinate Debt. The higher than projected spending for Revenue Bonds and Subordinate Debt was mainly due to the \$20 million defeasance in FY09. This was offset by lower variable rate debt of \$11.3 million due to favorable rates.

Revenue and Income –

- **Total Revenue / Income** through June was \$633.8 million, \$750,000 or 0.1% greater than the amended budget. Higher non-rate revenue of \$1.5 million due to Miscellaneous Revenue of which \$298,000 for receipt of NSTAR reimbursement, \$117,000 for Fore River Corporation Management Fees and Leases, disposal of surplus equipment \$399,000, Wilmington Emergency Water use of \$334,000, and unbudgeted Homeland Security grant of \$237,000 for mobile laboratory equipment to be used for water protection.

# Cost of Debt

## September 2009

MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

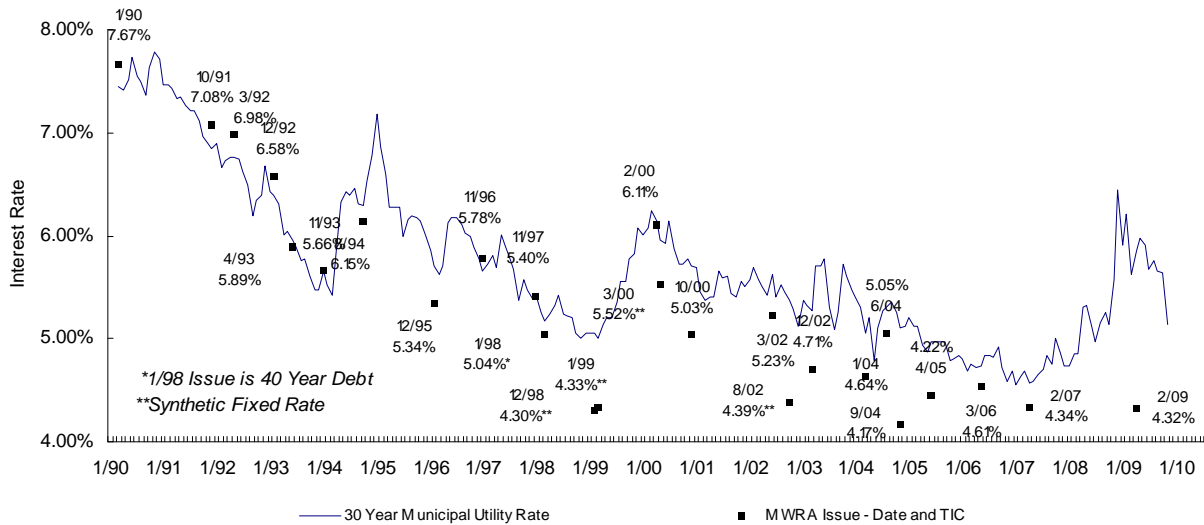
### Average Cost of MWRA Debt

Fixed Debt (\$3,931)	4.60%
Variable Debt (\$604)	0.79%
SRF Debt (\$1,045)	0.98%
 Weighted Average Debt Cost (\$5,579)	 3.51%

### Most Recent Senior Fixed Debt Issue February 2009

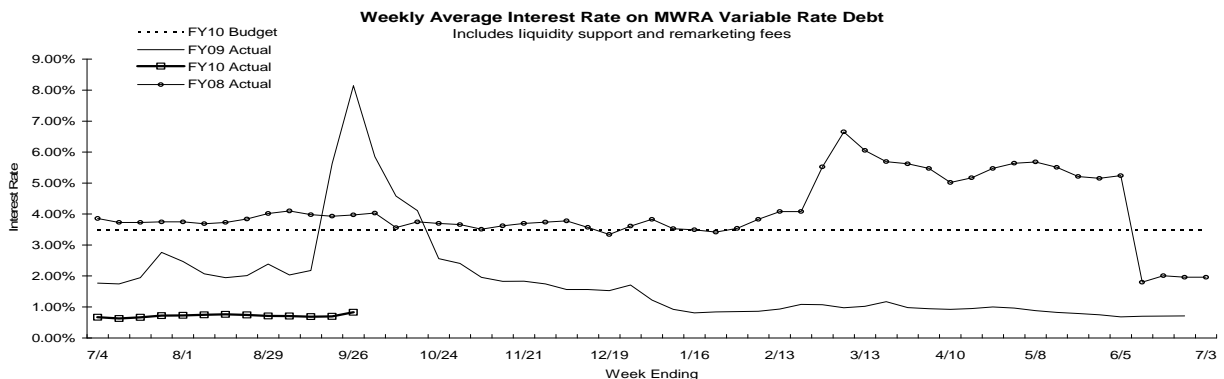
2009 Series A & B (\$383)	4.32%
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### MWRA Fixed Rate Debt vs. 30 Year Municipal Utility Interest Rate



### Weekly Average Interest Rates vs. Budget

MWRA currently has nine variable rate debt issues with \$1.3 billion outstanding, excluding commercial paper. Of the nine outstanding series, five have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. Over the last year, the short-term market experienced disruption caused by a market-wide credit crisis which pushed Securities Industry and Financial Markets Association (SIFMA) rates to a high of 7.96%. In September, SIFMA rates fluctuated with a high of 0.40% and a low of 0.28%. MWRA's issuance of variable rate debt, although consistently less expensive in recent years, results in exposure to additional interest rate risk as compared to fixed rate debt.





## Investment Income September 2010

Actual interest income varies from budgeted amounts because either fund balances or interest rates are greater or lower than budgeted.

### YTD Investment Income vs. Budget (\$000)

Fund	Impact on Investment Income due to Variance in Fund Balances				Impact on Investment Income due to Variance in Interest Rates			Combined Impact on Investment Income	
	Average Budgeted Balance	Average Actual Balance	Variance	Impact	Budget	Actual	Impact	Impact	%
Combined Reserves	\$92,836	\$92,193	(\$642)	(\$9)	4.54%	4.65%	\$27	\$18	1.8%
Construction	\$181,411	\$175,614	(\$5,797)	(\$10)	0.75%	0.71%	(\$16)	(\$26)	-8.1%
Debt Service	\$98,376	\$97,601	(\$775)	(\$1)	0.75%	0.74%	(\$3)	(\$4)	-2.5%
Debt Service Reserves	\$252,481	\$251,647	(\$833)	(\$9)	2.90%	2.86%	(\$18)	(\$27)	-1.5%
Operating	\$55,121	\$53,030	(\$2,091)	(\$3)	1.46%	1.49%	(\$1)	(\$3)	-1.7%
Revenue	\$52,948	\$58,681	\$5,732	\$10.4	0.99%	0.92%	(\$8)	\$3	2.1%
Redemption	\$32,853	\$32,851	(\$2)	(\$0)	1.68%	1.64%	(\$3)	(\$3)	-2.2%
<b>Total</b>	<b>\$766,026</b>	<b>\$761,617</b>	<b>(\$4,408)</b>	<b>(\$22)</b>	<b>2.02%</b>	<b>2.01%</b>	<b>(\$21)</b>	<b>(\$43)</b>	<b>-1.2%</b>

### YTD Investment Income Variance

