

MASSACHUSETTS WATER RESOURCES AUTHORITY

# Board of Directors Report

on

## Key Indicators of MWRA Performance

for

Third Quarter FY2014

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director  
Michael J. Hornbrook, Chief Operating Officer  
May 14, 2014

# Board of Directors Report on Key Indicators of MWRA Performance

## Third Quarter FY2014

### Table of Contents

#### Operations and Maintenance

DITP Operations-Energy	1
DITP Operations	2
Residuals Processing	4
DITP Maintenance	5
Operations Division–Metering & Leak Detection	6
Water Distribution System–Valves	7
Wastewater Pipeline/Structures	8
FOD Metro Facility & Equipment Maintenance	9
Field Operations Energy Program	10
Toxic Reduction and Control	11
Field Operations – Narrative Topics	12
Laboratory Services	14

#### Construction Programs

Projects in Construction	15
CSO Control Update	17
CIP Expenditures	19

#### Drinking Water Quality and Supply

Source Water – Microbial Results	20
Source Water – Turbidity, pH and Alkalinity	21
Treated Water – Disinfection Effectiveness	22
Source Water – Algae, Complaints	23
Bacteria and Chlorine Residual Results	24
Disinfection By-Products, UV 254	25
Water Supply/Source Water Management	26

#### Wastewater Quality

NPDES Permit Compliance –	
Deer Island TP	27
Clinton TP	28

#### Community Flows and Programs

Total Water Use	29
Core Communities	30
Community Wastewater Flows	31
Infiltration/Inflow Local Financial Assist. Prog.	
Water-Local Pipeline & System Assist. Prog.	
Community Support Programs	32
Community Water - System Leak Detection	
- Conservation Outreach	

#### Business Services

Procurement	33
Materials Management	34
MIS Program	35
Legal Matters	36
Internal and Contract Audits	39

#### Other Management

Workforce Management	40
Workplace Safety Program	41
Job Group Representation	42
MBE/WBE Expenditures	43
CEB Expenses	44
Cost of Debt	45
Investment Income	46

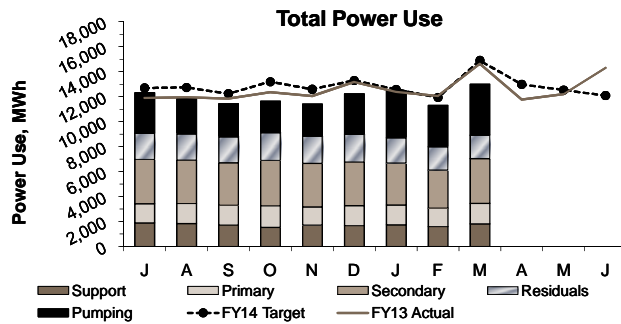
This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's Board of Directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for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

Frederick A. Laskey, Executive Director  
Michael J. Hornbrook, Chief Operating Officer  
**May 14, 2014**

# OPERATIONS AND MAINTENANCE

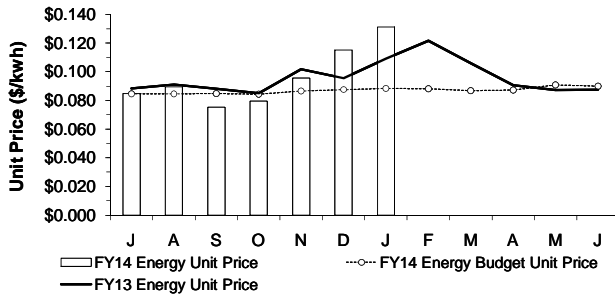
# Deer Island Operations

3rd Quarter - FY14



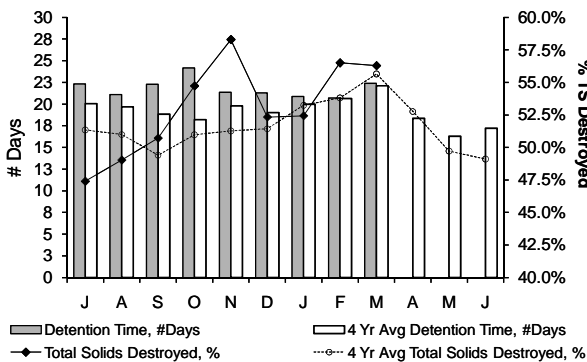
Total Power Use in the 3rd Quarter was 6.6% lower than the FY14 projections due mainly to lower-than-expected power used in wastewater pumping and for secondary wastewater treatment (as a result of energy optimization measures in the secondary reactor process area). Power used for pumping was 15.0% lower-than-expected for the quarter as the 4 year average plant flow (used in power use projections) was 12.1% lower-than-expected.

### Total Energy Pricing (Includes spot energy price, ancillary costs, and NSTAR's transmission & distribution costs)



Under the current 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. The actual Total Energy Unit Price in the 3rd Quarter (January only) was 49.6% higher than the FY14 budget estimate. Both February and March Total Energy Prices are not yet available as some of the invoices have not yet been received; the NSTAR and TransCanada invoices for both months are still pending as of reporting time. Year-to-date costs are \$255,502 (4.4%) higher than budgeted through January (actuals only) as the Total Energy Unit Price through January is 11.7% higher than budget even though Total Power Purchased is 6.3% lower than budget. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

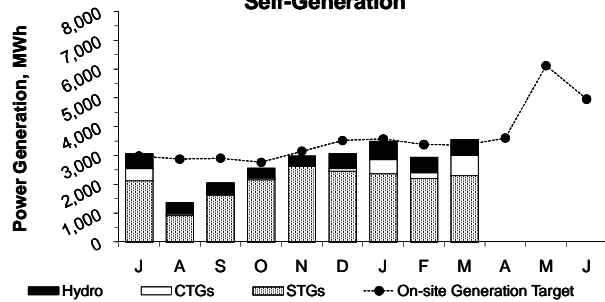
### Sludge Detention Time in Digesters and Total Solids Destruction



Total solids (TS) destruction following anaerobic sludge digestion averaged 55.1% during the 3rd Quarter, 1.6% higher than the 4 year average, with an average sludge detention time in the digesters of 21.3 days, 2.0% higher than the 4 year average. An average of 8 digesters were in operation during the 3rd Quarter compared to the 4 year average of 7.2 digesters.

Total solids (TS) destruction is dependent on sludge detention time which is determined by primary and secondary solids production, plant flow, and the number of active digesters in operation. Solids destruction is also significantly impacted by changes in the number of digesters and the resulting shifting around of sludge.

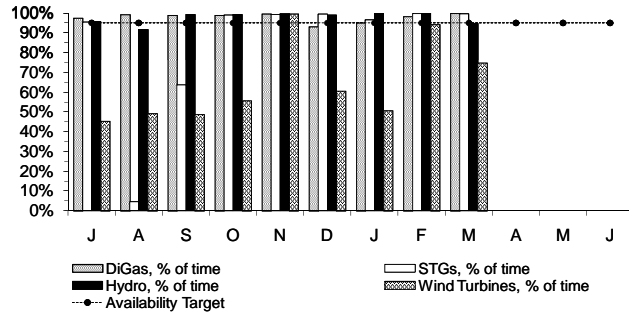
### Self-Generation



Power generated on-site during the 3rd Quarter was 3.4% higher than target as CTG generation was five (5) times higher-than-expected due to operation during three (3) storm events, in response to high spot market prices in January, and during Stack Emissions Testing in March. Generation by the Hydro Turbines was also 12% higher than the target for the quarter. Generation by the STGs was 11% lower than the target due partially to lower DiGas utilization caused by several equipment trips in January. Generation by the Wind Turbines was 15% lower than the target due mostly to mechanical issues with Wind Turbine #2, and generation by the Solar Panels was 11% lower-than-expected for the quarter due to significant snow cover on the panels in February.

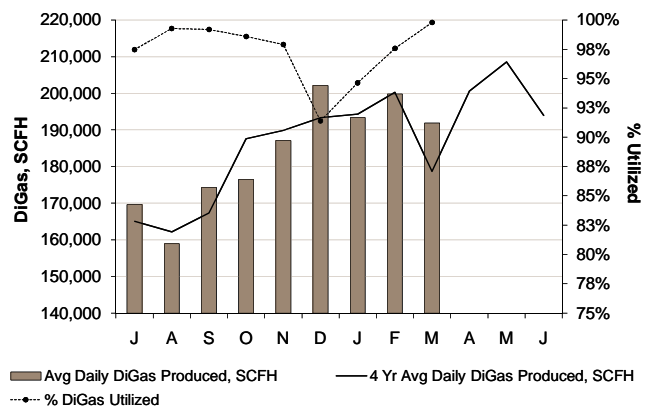
Note: Power generation by the Solar Panels and the Wind Turbines are not included in the graph (as the amounts generated cannot be seen within the current scale of this graph); a total of 145 MWh was generated by the Solar Panels and 545 MWh was generated by the Wind Turbines in the 3rd Quarter.

### Self-Generation Equipment On-Line (% of Time in Operation)



The DiGas, STGs, and Hydro Turbine systems all met or exceeded their 95% Availability Target for the 3rd Quarter. Wind Turbine availability averaged 73.2% for the quarter due to mechanical issues mostly with Wind Turbine #2.

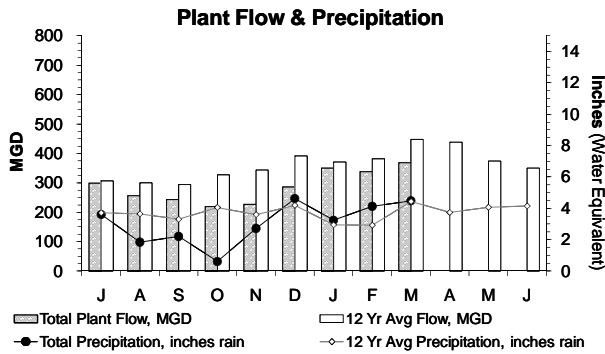
### Digester Gas Production and % Utilized



The Avg Daily DiGas Production in the 3rd Quarter was 2.0% higher than the 4 Year Avg Daily DiGas Production for the same period. 97.3% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant with a fiscal year high of 99.8% utilized in March.

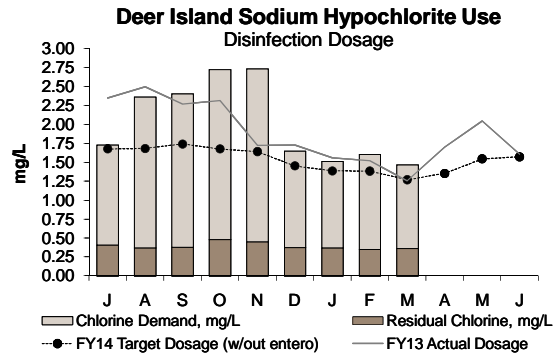
# Deer Island Operations

3rd Quarter - FY14



Precipitation was 15% higher than expected for the quarter (11.85 inches actual vs. 10.31 inches expected).

The total plant flow for the quarter was 12.0% lower than the target total plant flow (352.1 actual vs. 399.9 MGD target) as much of the precipitation in January and February fell in the form of snow which had little impact on plant flow. Also, ambient temperatures remained fairly cold for much of the quarter so a large portion of the snow did not melt until March and therefore did not contribute significantly to the Total Plant Flow for the quarter.



The disinfection dosing rate in the 3rd Quarter was 13% higher than the target. DITP maintained an average disinfection chlorine residual of 0.36 mg/L this quarter with an average dosing rate of 1.53 mg/L (as chlorine demand was 1.17 mg/L). Dosing was and has been much higher-than-expected due to a higher chlorine demand as a result of stronger wastewater caused by the lengthy period of much lower-than-normal plant flows. However, actual sodium hypochlorite usage in pounds of chlorine was on target for the quarter following the high plant flows and lengthy secondary blending event caused by the major storm event at the end of March.

The overall 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	2	2	0	99.7%	6.63
A	1	1	0	99.6%	6.25
S	1	1	0	99.97%	0.96
O	0	0	0	100.0%	0.00
N	1	1	0	99.8%	3.73
D	1	1	0	99.5%	6.07
J	1	1	0	99.9%	3.56
F	2	2	0	99.96%	2.97
M	1	1	0	96.5%	52.05
A					
M					
J					
<b>Total</b>	<b>10</b>	<b>10</b>	<b>0</b>	<b>99.3%</b>	<b>82.22</b>

98.7% of all flows were treated at full secondary for the 3rd Quarter of FY14. There were a total of four (4) separate secondary blending events; all due to high plant flows resulting from heavy rain. The blending event in March was triggered by high plant flows resulting from a rain storm that dropped 3.64 inches of rain from March 29 through March 31. The duration of this single blending event was 52.02 hours.

The four (4) blending events combined produced a total of 58.58 hours of blending and 417.96 Mgal of flow blended with secondary effluent.

**Secondary permit limits were met at all times during the 3rd Quarter of FY14.**

## Deer Island Operations & Maintenance Report

### Environmental/Pumping:

A record low in the 365-dry day flow of 261.2 MGD was set at the end of January as a result of the continuation of the low plant flow trend seen for much of the time since January 2012.

The plant achieved a maximum average hourly flow rate, during the quarter, of 1,175.4 MGD during mid-day on March 30, near the height of a three (3) day storm event that produced a total of 3.64 inches of rain in the Boston area. Pumping and treatment operations at DITP continued without incident through this storm, as well as throughout the entire quarter.

On January 17, the Winthrop Terminal Facility was shut down for under two hours to allow for welding repairs on the screen/bar rack in one of the channels. Field Operations held back wastewater flow at the Caruso Pump Station to temporarily suspend flows to the facility until the repair was completed. There were no negative impacts to operations as a result of this repair work.

## Deer Island Operations & Maintenance Report (continued)

### Odor Control Treatment:

Wet chemical scrubbers #1 in the East Odor Control (EOC), #2 in the Residuals Odor Control (ROC), and #3 in the West Odor Control (WOC) Facilities were acid washed in February to improve performance. Over time, buildup of chemical precipitate significantly reduces the effectiveness of a wet chemical scrubber unit. Improved odor treatment was achieved once the units were appropriately cleaned. These scrubber units treat the process airflows from the primary batteries and the residuals sludge treatment processes.

During Quarter 3, activated carbon media was changed out in carbon adsorber (CAD) units: #1 in the North Pumping Odor Control (NPOC); units #1, #2, and #3 in the EOC; and units #3 and #5 in the ROC Facilities as part of routine practice to replace spent carbon.

### Energy and Thermal Power Plant:

Solar power generation accounted for 1.35% (145 MWh) of the total power generated on-site in the 3rd Quarter while Wind Turbine generation accounted for 5.11% (545 MWh) of the total power generated on-site in the 3rd Quarter. Wind Turbine power generation typically includes generation by the two wind turbines located in the South Parking Lot and intermittent generation during optimization and testing by the Ogin, Inc. (formerly FloDesign) wind turbine installed near the Hydro Power Plant.

Overall, total power generated on-site accounted for 29.1% of Deer Island's total power use for the 3rd Quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 25.2% of Deer Island's total electrical power use for the quarter.

March 26 marks the fourth (4th) year anniversary of the startup of the solar installations on the roof of the Maintenance/Warehouse building.

Wind Turbine #2 tripped offline on March 2 due to a yaw motor and worm gear failure. The turbine was returned to operation on March 14 after investigation and repair. Wind Turbine #1 was returned to operation on January 3 after a contactor that failed on the evening of December 31, 2013 was repaired.

The Ogin (formerly FloDesign) wind turbine was returned to operation in February after having been out of service intermittently for several months due to maintenance work and communications issues.

Combustion Turbine Generator (CTG) generation was five (5) times higher-than-expected for the quarter due to operation during three (3) storm events, in response to high spot market prices in January, and during Stack Emissions Testing in March, in addition to operation for routine maintenance/checkout purposes.

Scheduled maintenance and replacement of the Generator Rotor Ground Detector for CTG-2B was performed on February 10 to February 12. Formal notifications were made to the regulatory agencies (EPA and DEP) in advance of the maintenance work as the unit was unavailable for operation during this period of time. The scheduled work could have been postponed to a later time if the availability of both CTGs was needed as might be the case during severe weather conditions. CTG-1A was available for operation during the entire period and capable of handling the entire plant power load in the event of a NSTAR power loss.

Stack Emissions Testing was conducted on both CTGs as required by Deer Island's Title V Air Permit during the week of March 10. Complete emissions testing is required once every five (5) years and was last conducted in January 2009. Emissions testing was conducted on the exhaust stacks of both CTGs (one unit at a time) and also reestablishes parametric emissions curves for CTG operation at various operating loads to full load to allow for NOx emission rate reporting under the Federal NOx Budget Trading Program. In addition to the development of new emissions curves, the test program also collected measurements to demonstrate compliance with the emission limits as listed in the Title V Air Permit including particulates testing and smoke reader evaluations. As a precautionary measure, the CTG unit being tested was run in parallel with NSTAR during the testing.

Hydro Turbine #1 was offline for three (3) days in mid-March for investigation and repair of a faulty gate relay. The operation of Hydro Turbine #2 was more than adequate to effectively utilize all the plant flow during the Hydro Turbine #1 downtime.

### Clinton AWWTP:

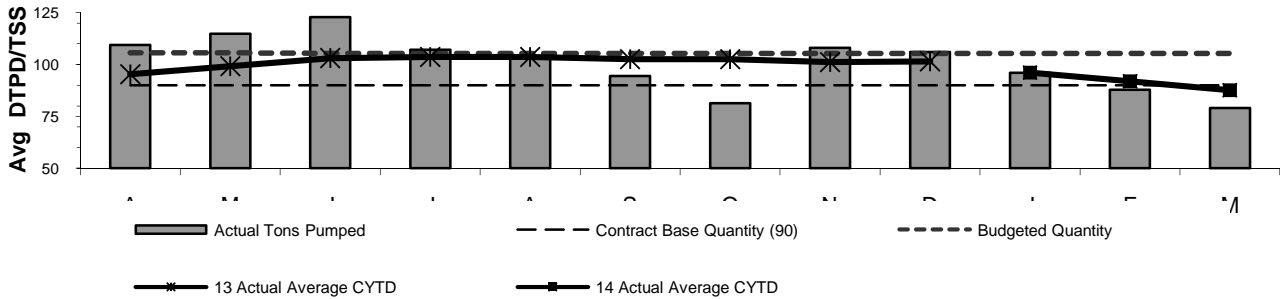
Bids were received for contract 7277a, rehabilitation of anaerobic digesters, primary clarifiers, and influent gates. The Contract was awarded to R.H. White Construction Co. in March. Fay, Spofford & Thorndike, has been selected to provide engineering services during construction. Clinton AWWTP, met all permit requirements for this quarter.

# Deer Island Residuals

3rd Quarter - FY14

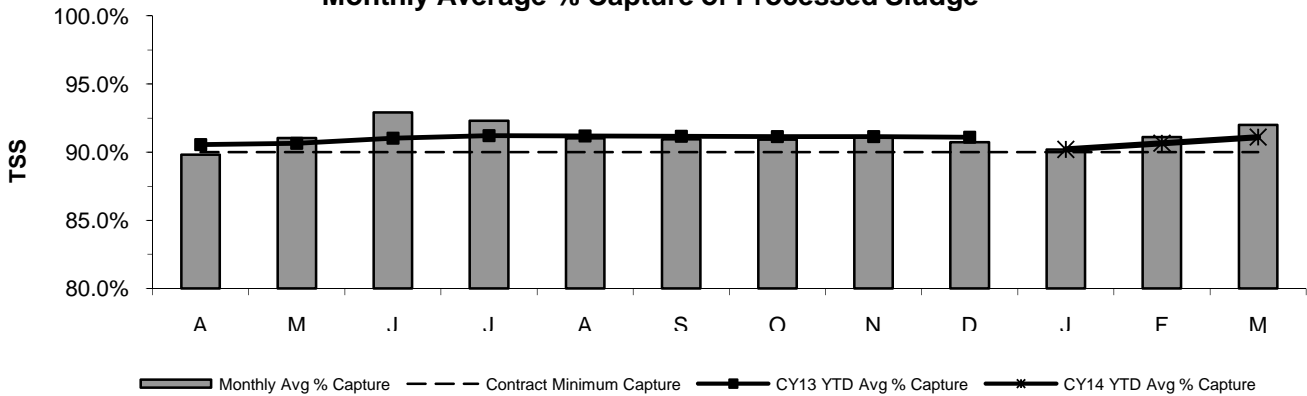
MWRA pays a fixed monthly amount for the calendar year to process up to 90 DTPD/TSS as an annual average. The monthly invoice is based on 90 DTPD/TSS (Dry Tons Per Day/Total Suspended Solids) times 365 days divided by 12 months. At the end of the year, the actual totals are calculated and additional 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 (FY14's budget is 105.4 DTPD/TSS).

## Sludge Pumped From Deer Island



The average total quantity of sludge pumped in the 3rd Quarter was 87.6 DTPD - lower than FY14's budget of 105.4 DTPD. The lower amount is due to lower than expected sludge production at Deer Island, due in part to better solids destruction in the digesters.

## Monthly Average % Capture of Processed Sludge



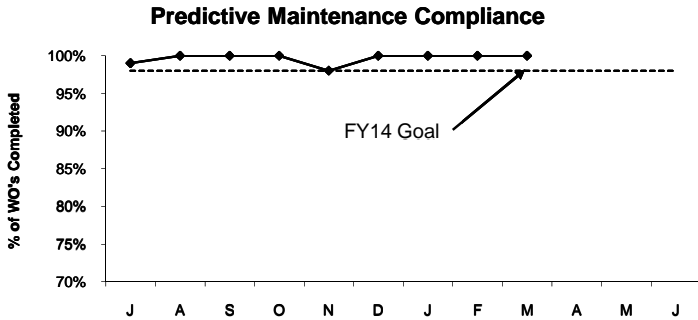
The contract requires NEFCo to capture at least 90% of the solids delivered to the Biosolids Processing Facility in Quincy. The CY14 average capture is 91.10%

# Deer Island Maintenance

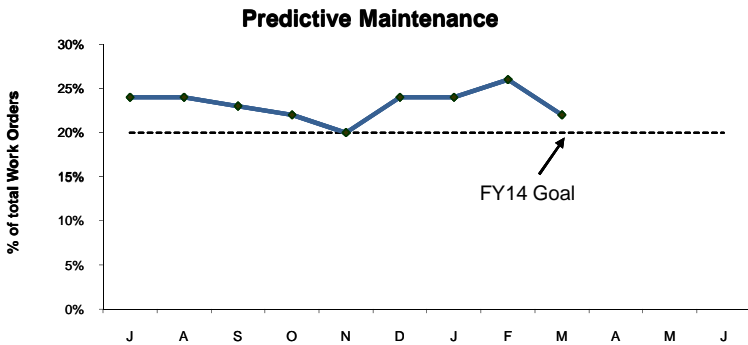
3rd Quarter FY 14

## Productivity Initiatives

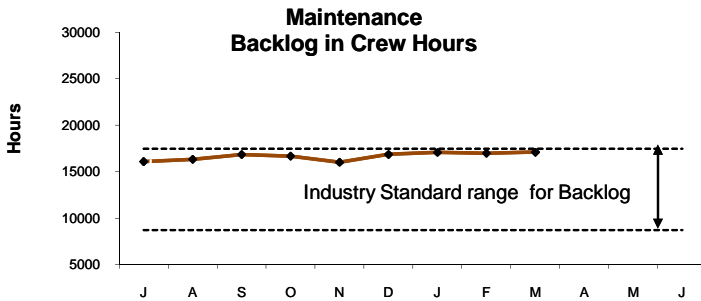
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.



Deer Island's FY14 predictive maintenance goal is 98%. DITP completed 100% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program.



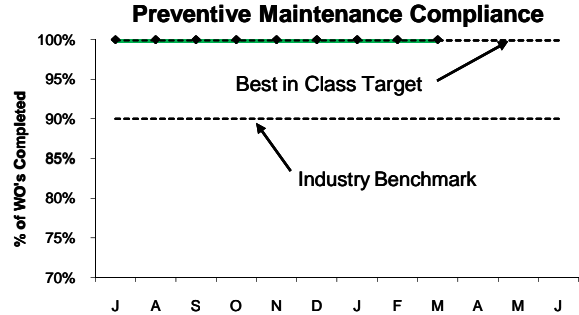
Deer Island's FY14 predictive maintenance goal is 20% of all work orders to be predictive. 24% of all work orders were predictive maintenance this quarter. The industry is moving toward increasing predictive maintenance work to reduce downtime and better predict when repairs are needed.



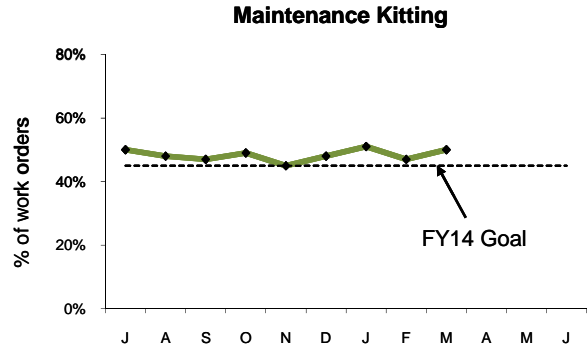
DITP's maintenance backlog at Deer Island is 17,063 hours this quarter. DITP is within, but at the upper end, of the industry average for backlog. The industry Standard for maintenance backlog with 98 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by two vacancies, a Plumber and a Mechanic, and one on medical leave, a B&G Worker. Management continues to monitor backlog and to ensure all critical systems and equipment are available.

## Proactive Initiatives

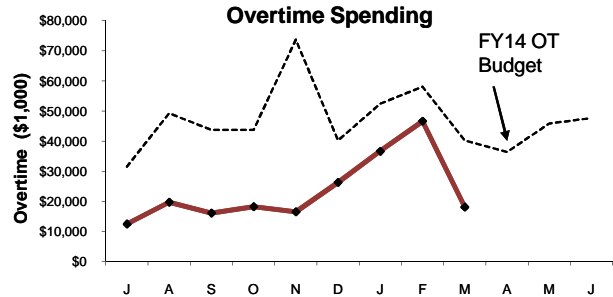
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.



Deer Island's FY14 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 100% of all PM work orders this quarter.



Deer Island's FY14 maintenance kitting goal is 45% of all work orders to be kitted. 49% of all work orders were kitted this quarter. Kitting is staging of parts or material necessary to complete maintenance work. This has resulted in more wrench time and increased productivity.



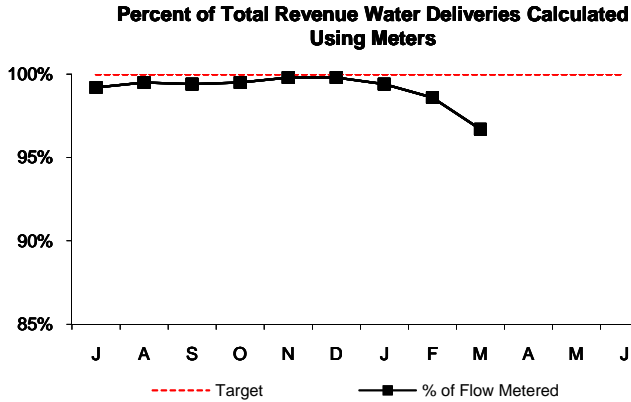
Maintenance overtime was under budget by \$50K this quarter. Management continues to monitor backlog and to ensure all critical equipment and systems are available. This quarters overtime was spent on multiple snow/wet weather events, repairing TPS #5, repacking bearings on RWW pump #8 in SMPS, preparing scum mixers for Tip Tube operation, Air Handling Units in West Odor Control, cleaning of Winthrop Terminal Facility Wet Well to investigate Pump suction issues, and preparing MOD 1 for start up in Spring 2014.



# Operations Division Metering

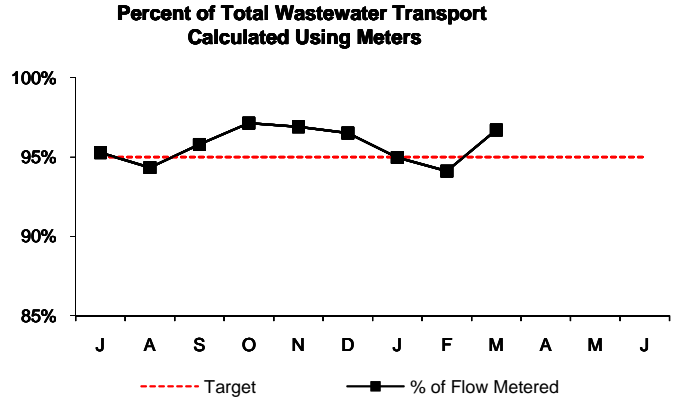
3rd Quarter - FY14

## 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 3rd Quarter of FY14, meter actuals accounted for 98.2% of flow; only 1.8% of total revenue water deliveries were estimated. The following is the breakdown of estimations:  
In-house and Capital Construction Projects - 0.0%

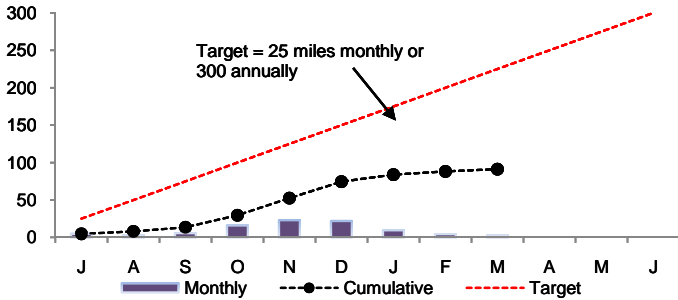
## WASTEWATER METERS



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 3rd Quarter of FY14, meter actuals accounted for 94.3% of flow; 5.7% of wastewater transport was estimated.

## WATER DISTRIBUTION SYSTEM PIPELINES

### Miles Surveyed for Leaks



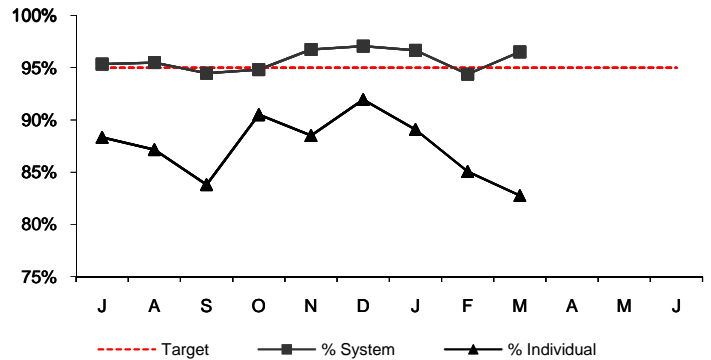
During the 3rd Quarter of FY14 16.79 miles of water mains were inspected. The total mileage inspected for the fiscal year to date is 91.21. Miles inspected is less than target due in part to weather conditions. Additionally, staff were working on hydrant surveys for Revere and Swampscott which helped to identify leaks causing higher than normal water usage.

### Water Distribution System

Month	J	A	S	O	N	D	J	F	M	A	M	J
Leaks Detected	2	1	0	8	5	6	3	1	3			
Leaks Repaired	0	1	2	5	4	5	4	4	2			
Backlog	2	2	0	3	4	5	4	1	2			
Avg. Lag Time	1.0	20.0	27.3	13.7	15.3	16.4	20.0	22.0	21.9			

During the 3rd Quarter of FY14, seven (7) leaks were detected. Three leaks were detected in January, one in February and three in March. Of the seven leaks detected during the 3rd Quarter, all but one leak has been repaired. Additionally, Walnut Street, Saugus, originally detected on October 23, 2013 remains unrepaired. The Walnut Street leak is a very small, non-surfacing leak. The repair is complicated by the street location and by difficulty of isolating the pipeline without service disruptions. Planning for a repair is on-going.

### % Wastewater Meter Uptime



During the 3rd Quarter of FY14, out of a possible 1,503,360 data points, only 61,523 points were missed resulting in a system-wide up time of 95.7%. Of the 174 revenue meters installed, on average 75 experienced down time greater than the 5% target resulting in a 85.7% individual meter uptime. Target not met due to a parts issue in February as well as the loss of three maintenance days in March for software system upgrade and staff training. For the 3d Quarter of FY14, down time for an individual meter is defined by any individual meter having less than 2,736 data points out of a potential 2,880 data points.

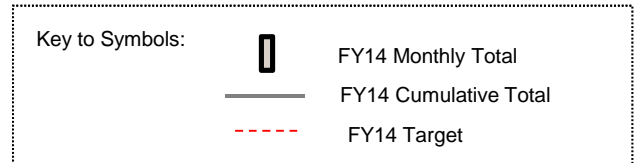
# Water Distribution System Valves

3rd Quarter - FY14

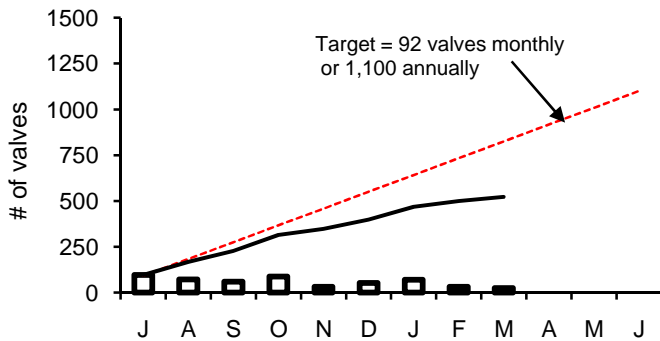
## Background

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.

Type of Valve	Inventory #	Operable Percentage	
		FY14 to Date	FY14 Targets
Main Line Valves	2,092	97.9%	95%
Blow-Off Valves	1,206	95.6%	95%
Air Release Valves	1,335	93.3%	95%
Control Valves	48	100.0%	95%

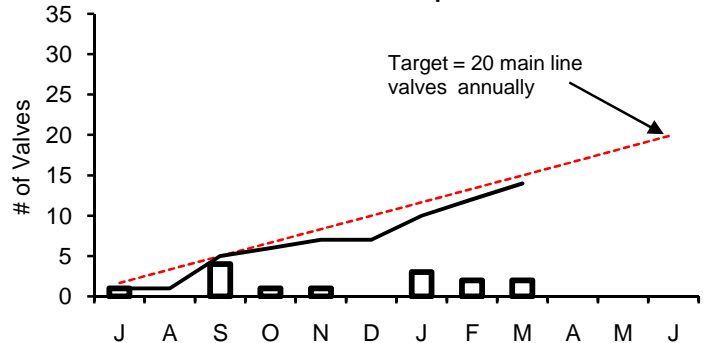


### Main Line Valves Exercised



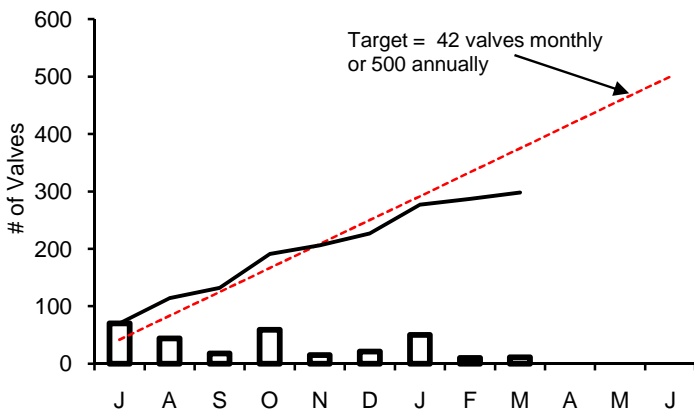
During the 3rd Q of FY14 staff exercised 124 main line valves. The total exercised for the fiscal year to date is 523.

### Main Line Valves Replaced



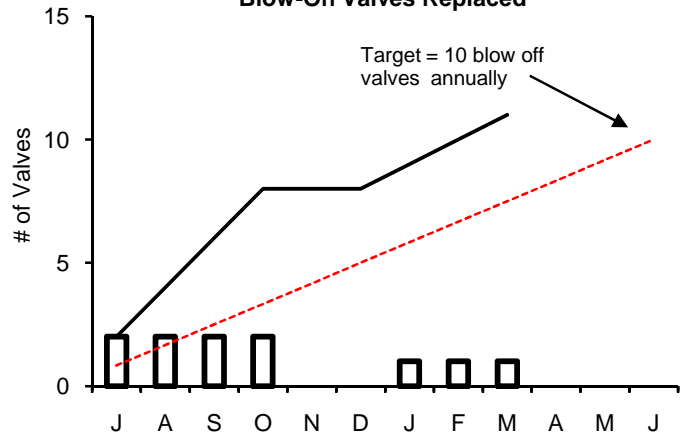
During the 3rd Q of FY14 staff replaced seven main line valves. The total replaced for the fiscal year to date is fourteen.

### Blow-Off Valves Exercised



During the 3rd Q of FY14 staff exercised 71 blow-off valves. The total exercised for the fiscal year to date is 298.

### Blow-Off Valves Replaced



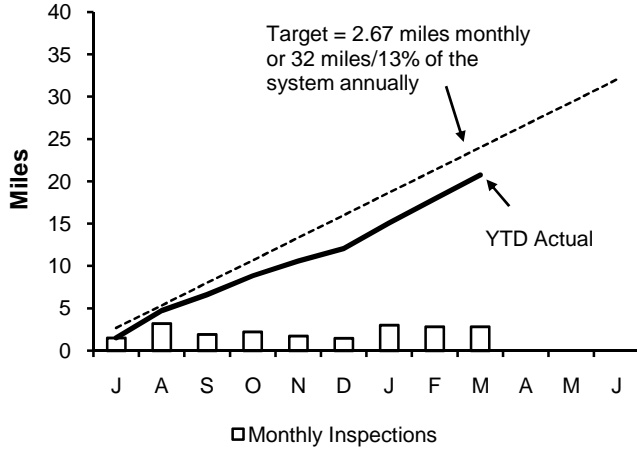
During the 3rd Q of FY14 staff replaced three blow-off valves. The total replaced for the fiscal year to date is eleven.

# Wastewater Pipeline and Structure Inspections and Maintenance

## 3rd Quarter - FY14

### Inspections

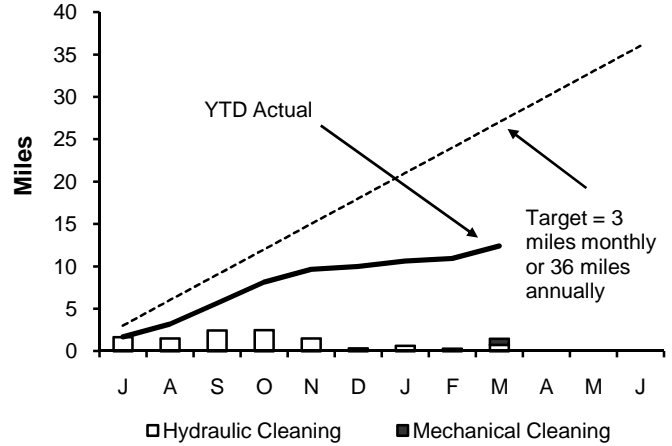
#### Pipeline Inspections



Staff internally inspected 8.69 miles of MWRA sewer pipeline during this quarter. The year to date total is 20.74 miles. No Community Assistance was provided this quarter.

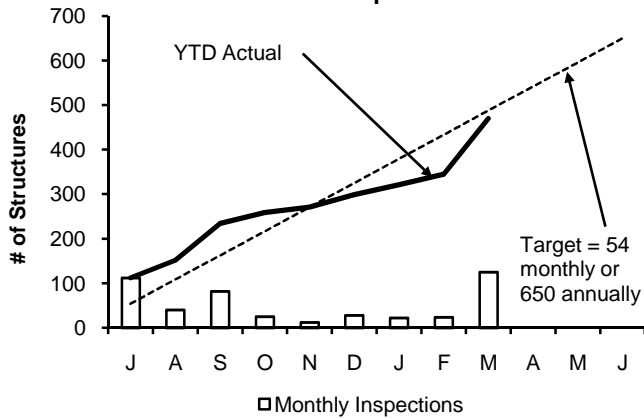
### Maintenance

#### Pipeline Cleaning



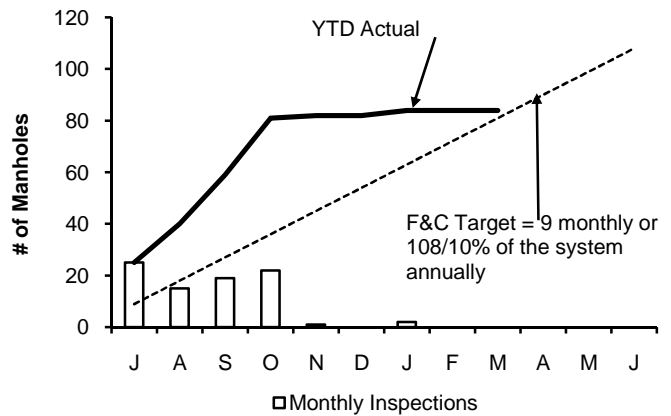
Staff cleaned 2.42 miles of MWRA's sewer system and removed 26 yards of grit and debris during this quarter. The year to date total is 12.40 miles. Community Assistance was provided to the city of Waltham. Staff utilized two 6" pumps to help alleviate flooding.

#### Structure Inspections



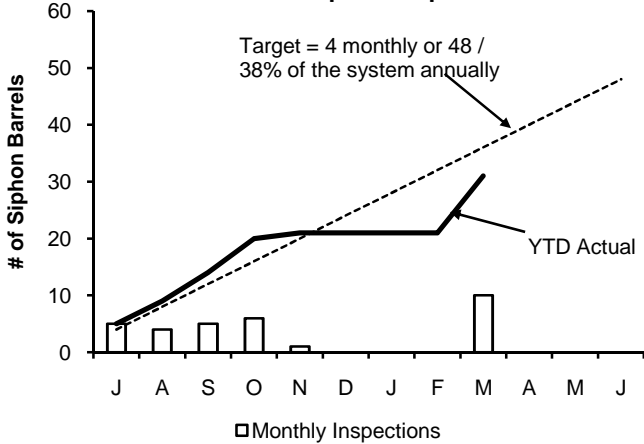
Staff inspected the 36 CSO structures and performed 135 additional manhole/structure inspections during this quarter. The year to date total is 470 inspections.

#### Manhole Rehabilitation



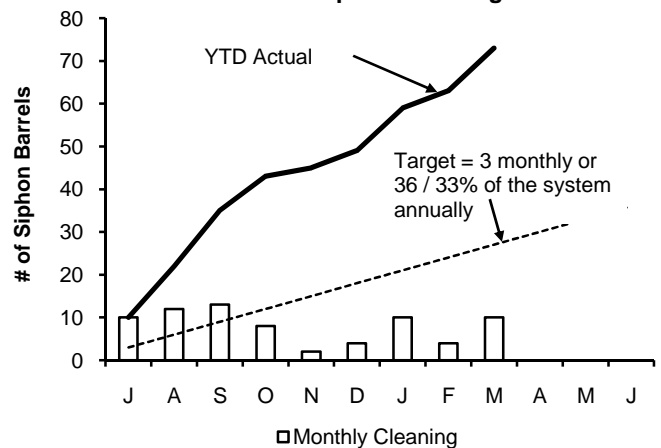
Staff replace 2 frames & covers during this quarter. The year to date total is 84.

#### Inverted Siphon Inspections



Staff inspected 10 siphon barrels during this quarter. Year to date total is 31 inspections.

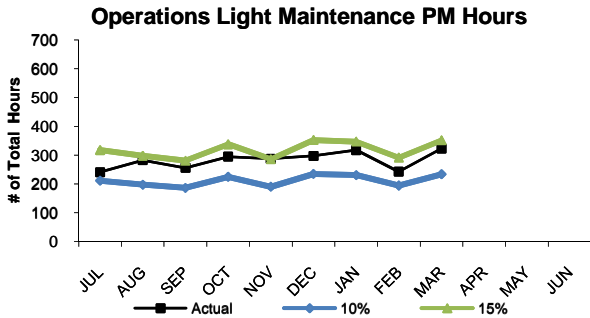
#### Inverted Siphon Cleaning



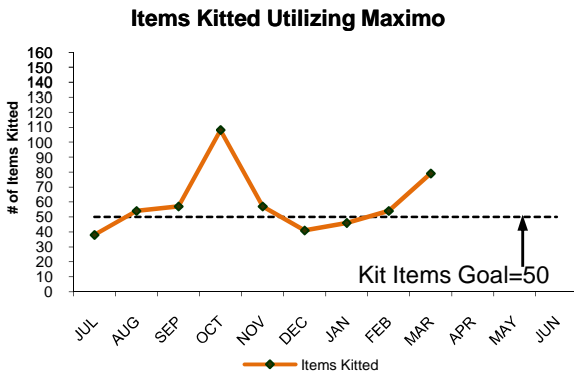
Staff cleaned 24 siphon barrels during this quarter. The year to date total is 73 barrels.

## Field Operations' Metropolitan Equipment & Facility Maintenance 3rd Quarter, FY14

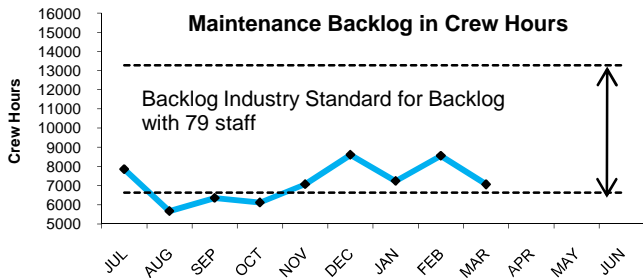
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus reducing maintenance spending. Backlog and overtime metrics monitor the success of these maintenance initiatives.



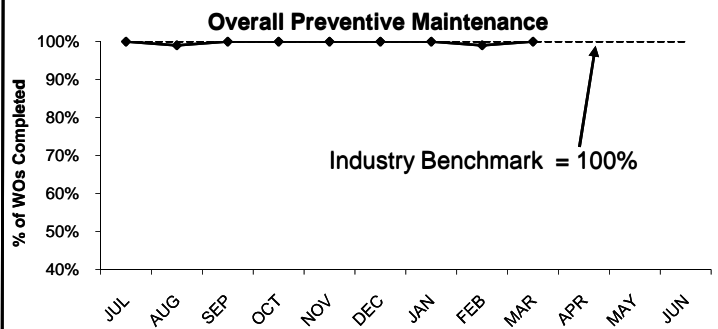
Operations staff averaged 295 hours of preventive maintenance during the 3rd Quarter, an average of 13% of the total PM hours for the 3rd Quarter, which is within the industry benchmark of 10% to 15%.



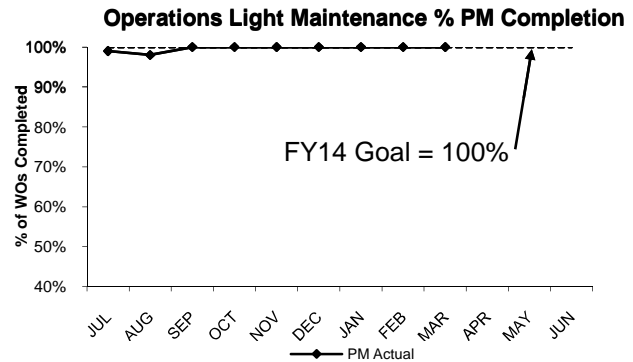
In an effort to more efficiently complete work, maintenance staff and work coordination staff have utilized the Lawson/Maximo interface to better kit stock and non stock material. The goal for FY14 is to "kit" 50 stock and non stock items total per month. An average of 60 items were kitted during the 3rd Quarter.



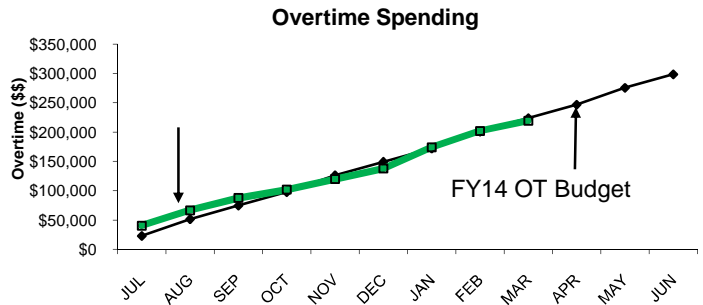
The 3rd Quarter backlog average is 7615 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6450 to 12,940 hours. There are currently three vacant positions Facility Specialist, Mechanic and Electrical Supervisor.



The Field Operations Department (FOD) preventive maintenance goal for FY14 is 100% of all PM work orders. Staff completed an average of 100% of all PM work orders in the 3rd Quarter.



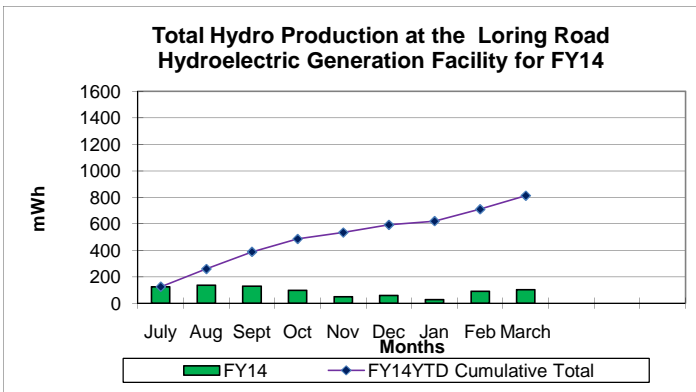
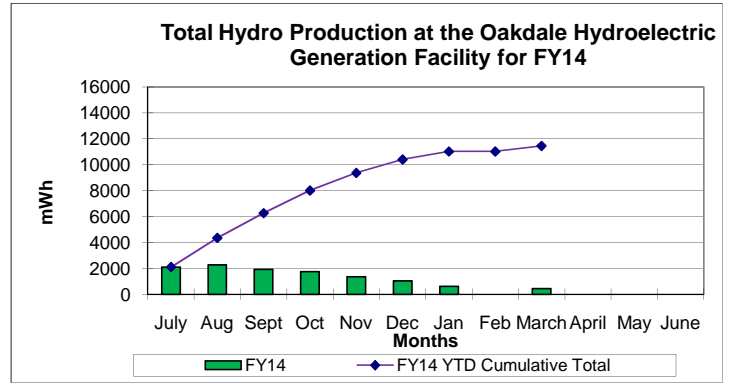
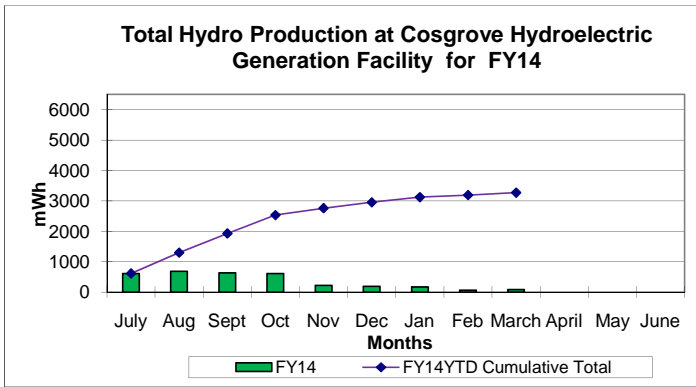
Wastewater Operators complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY14 PM goal is completion of 100% of all PM work orders assigned. Operations completed an average of 100% of PM work orders in the 3rd Quarter.



Maintenance overtime was \$4k under budget for the 3rd Quarter. Overtime was used for emergency repairs and storm coverage.

# Field Operations Hydroelectric Generation Quarterly Report

3rd Quarter - FY14



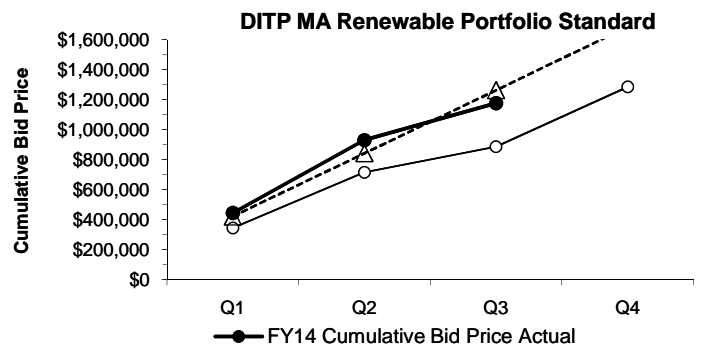
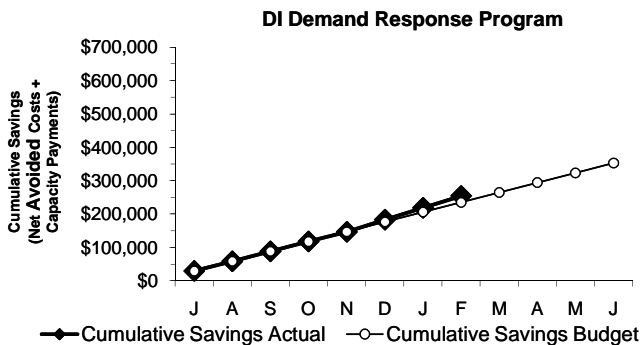
In the 3rd Quarter, the Cosgrove Hydroelectric Station generated a net of 320 MWh; approximately 17% less power than was generated during the same quarter in FY13. This is due to the longer CWTP half plant operation: during half plant, only part of the flow is passed through the turbines to reduce the chance of CWTP being shut down by turbine trips. The revenue generated at Cosgrove in the third quarter was \$40,402, exclusive of Renewable Energy Certificates.

In the 3rd Quarter, the Oakdale Hydroelectric Station generated a net of 1,056 MWh. The net revenue generated in the third quarter was \$146,776. (Power is generated when water is transferred from Quabbin to Wachusett.)

In the 3rd Quarter, the Loring Road hydroelectric 200 kW station generated 221 MWh; approximately 13% less power than was generated during the same quarter in FY13, due to swichgear and PLC repairs. The net revenue generated in the third quarter was \$8,281 (this only represents power sold to the grid, it does not reflect power used on site). Power is generated as water conveyed from Norumbega to the Loring Road storage tanks is reduced in pressure and the energy available in this pressure reduction is captured by the turbine.

**Energy Audits and Implementation of Audit Recommendations at FOD Facilities:** Technical energy audits of 24 facilities were performed in FY13. The focus of these energy audits were to identify specific lighting, HVAC, pumps, and motors, and insulation, among other measures that could be implemented at these facilities to save energy. Implementation of these audit recommendations began in the second quarter of FY14, and continue into the 3rd quarter. The installation of VFDs and an Energy Management System on the HVAC system at the Navy Yard and insulation of incoming water pipes at select water pump stations began in the 2nd quarter and continued through the second quarter. In addition, the internal paperwork for gas conversion at Brattle Court and Lexington St. pump stations was completed in the third quarter. Also a comprehensive energy audit of the Chelsea Maintenance Building was conducted during the 3rd quarter.

**Demand Response Payments:** The John Carroll Water Treatment Plant, Loring Road Hydro, and Chelsea Creek, Columbus Park, Nut Island, and Ward Street Headworks are all enrolled in the ISO's Demand Response Program. The total net capacity payments for the third quarter of FY14 was \$12,780.



Deer Island participates in the ISO-New England Demand Response Programs. By agreeing to have its Combustion Turbine Generators available to run and thus relieve the New England energy grid of Deer Island's load during times of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the CTGs during an ISO-NE called event, MWRA receives energy payments from ISO-NE and also avoids the cost of purchasing electricity from the grid. "Net Avoided Cost" is the avoided electricity costs, 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 - totaling \$254,581 through February.

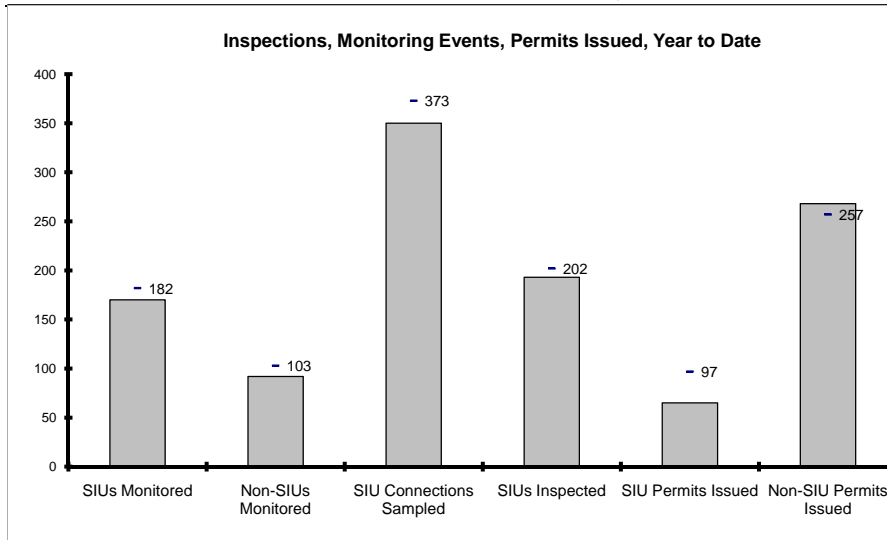
Note: Only the actual payments received are now being reported.

In Q3 FY14, a total of 3,688 Class I Renewable Energy Certificates (RECs) for a total value of \$220,257 and 107 Solar Renewable Energy Certificates (S-RECs) for a total value of \$25,620 were sold from Deer Island's renewable energy assets.

REC prices reflect the bid prices on the date that bids are accepted. Cumulative bid price reflects the total value of bids received to date. The FY14 budgeted cumulative bid estimate through the end of Q3 FY14 is \$1,264,208 while the current actual bid total is \$1,176,264.

# Toxic Reduction and Control

3rd Quarter - FY 2014



EPA Required SIU Monitoring Events for FY14: 182  
YTD: **170**

Required Non-SIU Monitoring Events for FY14: 103  
YTD: **92**

SIU Connections to be Sampled For FY14: 373  
YTD: **350**

EPA Required SIU Inspections for FY14: 202  
YTD: **193**

SIU Permits due to Expire In FY14: 97  
YTD: **65**

Non-SIU Permits due to Expire for FY14: 257  
YTD: **268**

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 in the month. 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.

TRAC's annual monitoring and inspection goals are set at the beginning of each fiscal year but they 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 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	7	13	0	0	0	0	7	14
Aug	1	94	1	1	0	1	2	96
Sep	12	13	1	3	0	0	13	16
Oct	5	9	0	4	0	2	5	15
Nov	12	10	0	0	1	0	13	10
Dec	7	26	5	3	0	1	12	30
Jan	3	45	1	1	0	1	4	47
Feb	2	9	1	2	0	1	3	12
Mar	4	21	1	5	1	2	6	28
Apr							0	0
May							0	0
Jun							0	0

% YTD	82%	90%	15%	7%	3%	3%	65	268
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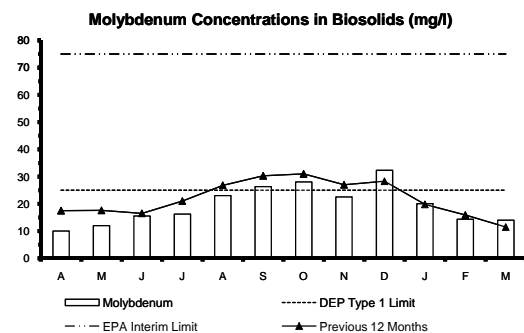
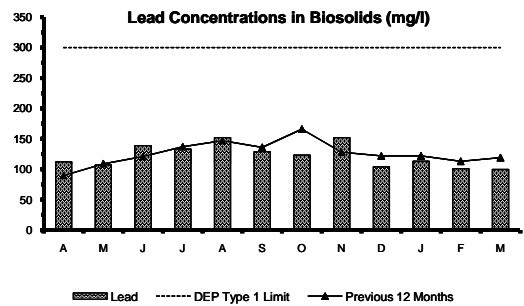
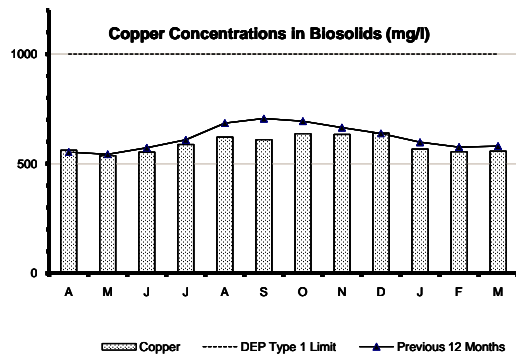
EPA requires MWRA to issue or renew 90% of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later. EPA also requires the remaining 10% of SIU permits to be issued within 180 days.

In the third quarter, one hundred permits were issued. Nine SIU permits and seventy-five non-SIU permits were issued within 120 days after receipt of their applications. Three SIU permits and eight non-SIU permits were issued more than 120 days but before 180 days after receipt of their applications, and one SIU and four non-SIU permits were issued after 180 days.

The delays in permit issuance continued, mainly due to consideration of unique permitting conditions, late payment of permit fees, and delays inherent in training the new staff.

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 blowdown on large AC systems that use corrosion inhibitors containing molybdenum. Levels drop again following the end of the cooling season, although this is delayed due to biosolids processing time. 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, but increases this year indicate that additional regulatory options must be considered.

Throughout the third quarter, the level of molybdenum was below the DEP type 1 Limit. MWRA and its contractor (NEFCO) do not distribute product in Massachusetts between July and January under its approval of suitability.



# Field Operations Highlights

## 3<sup>rd</sup> Quarter – FY14

### Western Water Operations and Maintenance

CWTP: At the beginning of the quarter, Treatment Train “A” was returned to service and a few days later Treatment Train “B” was taken out of service for its winter maintenance, including cleaning of the primary contactors, cleaning of the storage tank, replacing the rupture disks, adjusting the flow control sluice gates and replacing or rebuilding check valves on the chemical systems. The treatment plant stayed in half-plant operation for the remainder of the quarter to allow the UV Contractor to repair leaks on the transition pipe between the influent channel and the UV inlet header. The Contractor was also repairing leaks on the 120- inch line that supplies the influent channel.

Chicopee Valley Aqueduct: Staff responded to a report of water surfacing in Ludlow, from a failed air valve. A portion of the CVA was shut down to allow isolation and replacement of the broken air valve. Wilbraham continued to be supplied from the Ware Disinfection Facility while Chicopee and South Hadley were fed from the Nash Hill Tanks. Staff from Chelsea deployed emergency pumps as a contingency. Staff also conducted trial shutdowns of the CVA at the Ware Disinfection Facility and supported the contractor at the Shea Avenue leak site.

### Metro Water Operations & Maintenance

Water Pipeline Program: Snow removal dominated the early part of the quarter. Three blow off retrofits were completed during the quarter: one each on Section 13 in the Fells Reservation, Crafts Road in Brookline on Section 19 and on Section 80 in Newton. Leak repairs were completed on Section 57 in Chelsea on Everett Avenue on Section 22 on Adams Street in Dorchester, and on WASM 10 on Linden Street in Waltham. Leak Detection Staff successfully located a leak off of Second Street in Chelsea behind the Market Basket complex. The leak was repaired by the complex’s contractor. Valves were replaced at the Lexington Street and Gillis Pump Stations.

Valve Program: A leaking blow off valve was repaired on Section 72 in Saugus on Route 1. Section 16 was isolated and dewatered in early January at the request of Revere as the first step in their repair of the broken sewer on Winthrop Avenue. The city’s contractor did not mobilize in the field to begin excavation until early February. The contractor installed the bypass piping for our Section 16 water line. Once the bypass was in service (in early March), Section 69 was isolated and dewatered to enable the contractor to excavate down the 20 feet required to access the sewer. The overall work will continue into April. The drain valve to the Chestnut Hill Reservoir was closed during January, as the desired water surface elevation of the reservoir for the freezing of the invasive milfoil plant had been reached. Cambridge completed a new water main connection within their distribution system that will allow them to produce and consume more water from their water treatment plant during the ongoing CSO Project. Initially, the new connection has allowed the city’s water production to increase to approximately 40 percent of their total daily water demand. During the course of the quarter, the flow balance has shifted such that Cambridge now supplies about 55% of their total demand. Work continues by the Cambridge CSO Contractor, and is projected to be completed in May.

Gillis Pump Station Alternate Supply Testing: On January 27, a test using the Northern Low Service (NLS) as the suction source supply for the Gillis Pump Station occurred. The risk of a potential pipe failure during the installation of the drain line for the Spot Pond Tank currently under construction was the primary reason for the test. The new drain line was being jacked under the existing 72” Section 99 Northern High Service water main that is the normal suction supply source to Gillis Pump Station. Prior coordination had taken place with the potentially affected communities. Several pump cycles occurred over the course of the test, but the Pressure Reducing Valve (PRV) at Shaft 9A did not maintain pressure as closely as required, and on the third cycle, the pump at Gillis tripped on low suction pressure. This caused an excessive pressure wave that caused several breaks in local water systems. The emergency action plan developed for the test identified several alternative sources of suction supply, one of which is the use of the Fells service area and covered storage facility and mobile pump Units. The potentially affected communities were briefed on the 24-hour test of that plan which occurred on February 20. The MPU was deployed behind Gillis Pump Station, connected to the piping, and filled, flushed, and disinfected. The test was successful, and the jacking operation was able to proceed on March 11 to 13. During the critical period when the jacking was under Section 99, the system was reconfigured such that the MPUs were pumping from the Fells service area to the NIH service area to replicate supply from the Gillis Pump Station. Section 99 was isolated as a precaution. The potentially affected communities had been contacted, and communications occurred throughout the operation. Service remained normal.

### Operations Engineering

ERP Training Programs: Continued implementation with OEP staff of the Community Emergency Response Training Program as required by DEP. This training is provided by MWRA expert staff to local staff from the MWRA water communities and MWRA Staff.

Springfield Supply Test: On April 8th, MWRA and Springfield Water and Sewer Commission conducted a test using MWRA’s mobile pumps on an emergency water connection to determine Springfield’s capabilities to supply water to the MWRA CVA communities. The test went well and Springfield will be able to supply at least 6 MGD during off peak demand season.

## **Wastewater Operations & Maintenance**

Wastewater OCC Operation Practice Drills: Wastewater Operations Staff worked with SCADA Staff to practice OCC operations from the Chelsea Radio Building and John Carroll Water Treatment Plant remote locations. This required staff to relocate to the specific back-up OCC site and assume SCADA control. Staff will continue this annual practice drill to ensure staff maintains familiarity with each remote site in case of a possible emergency.

Backup Control and Manual Pump Testing: Operations Staff worked with Process Control & Process Support (PC&PS) and SCADA Staff while performing local pump backup control operations and manual pump testing at wastewater pumping stations. This activity ensures consistent equipment operation in the field in the event OCC control capabilities are impeded and verifies the accuracy of present operating parameters programmed into the equipment. These tests will be performed on an annual basis and have been included in scheduled Maximo maintenance items.

Intermediate Pump Station (IPS)-Boiler Burner Replacement: Staff assisted the contractor during installation, startup and testing of a new dual fuel oil/gas burner installed on the existing boiler. . This modification is expected to save \$135,000.00 in boiler fuel costs.

Weekly SCADA Alarm Meeting: Operations Staff met with Maintenance, Electrical, Process Control & Planning Support and SCADA Staff to review the top 20 weekly SCADA alarms. This allows all departments to verify specific top 20 alarm conditions and correct actual equipment alarm problems or address failed equipment items as indicated in the SCADA alarm system and monitored through the OCC. Reviewing these alarms also provides the opportunity to address possible variations in the alarms trended over the course of the time period and historically tracked.

Braintree/Weymouth and Houghs Neck Carbon Replacement: Staff has determined that the carbon in the carbon absorbers at these facilities is beginning to fail and should be replaced by early summer. A contract for the replacement of the carbon at these two facilities was drafted and submitted to Purchasing in March 2014..

## **TRAC**

Permitting–Municipal Permits: TRAC renewed Annual Municipal Permits to 35 of 45 Sewer User Communities in January, and to 44 of 45 by the end of the quarter.

Monitoring–Carroll Water Plant: TRAC Staff successfully conducted outdoor sampling at the Carroll Water Treatment Plant NPDES discharge in minus 10 degree F weather, using a variety of means to prevent samples and sampling equipment from freezing.

## **Metro Equipment and Facility Maintenance**

A worn grinder at Squantum Pump Station was replaced. The worn grinder was set out for rebuild and will be the spare grinder once repaired. Staff rehabilitated Channel #3 at the Chelsea Headworks, including installation of new chain, shafts, sprockets and wear rails. Staff changed out thermostats at Gillis Pump Station. These thermostats allow for better temperature control when facility is unoccupied resulting in energy savings. The original dewatering pump for Channels 3 and 4 at Chelsea Headworks was replaced with new pump, motor, valves, intermediate shafting and piping. The original piping for the wet well wash down system at Cottage Farm had developed numerous leaks, and was difficult to maintain because of lack of access. The existing piping and nozzles were replaced and a permanent scaffolding system installed to allow easy access.

## **Environmental Quality**

Online Water Quality Monitoring: All remaining monitoring sites are currently under development. Staff continue to review collected data for system characterization and to gain a better understanding of water quality conditions and hydraulic events. Consequence management procedures and protocols are under development.

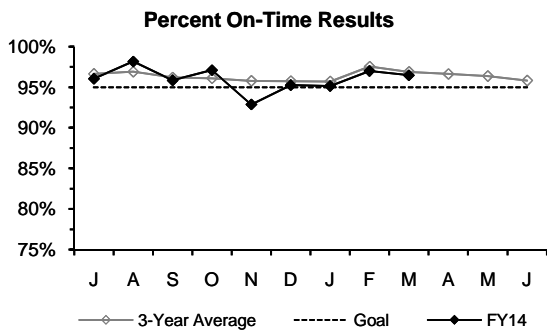
Water Quality Reporting System: ENQUAL Water Staff, with MIS and Western Operations, have continued development of disinfection reporting calculators for the Ware Disinfection Facility and Carroll Water Treatment Plant using chlorine, ozone and UV.

Molybdenum (Mo): Staff compiled molybdenum data in a team effort with TRAC and others to understand Mo trends in pellets.

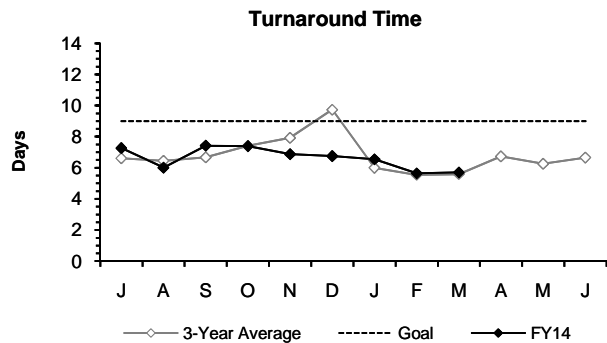


# Laboratory Services

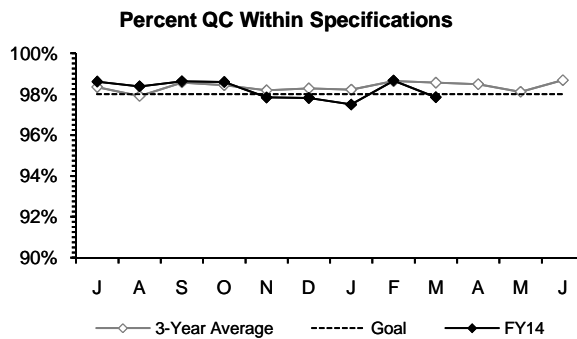
3rd Quarter - FY14



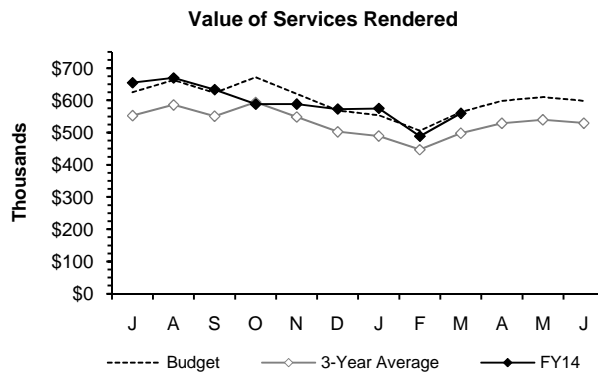
The Percent On-Time measurement was above the 95% goal each month of the quarter.



Turnaround Time was faster than the 9-day goal each month of the quarter.



Percent of QC tests meeting specifications was slightly below the 98% in-house goal two months of the quarter.



Value of Services Rendered was above the seasonally adjusted budget projection two months of the quarter.

**Highlights:** A manuscript was submitted for publication in Water Environmental Research: "Total Cyanide Field Spikes for Industrial Wastewater Samples Verify Successful Sample Integrity". The Lab Director was asked to chair a committee to revise the cyanide methods in the reference text "Standard Methods for the Examination of Water and Wastewater".

**Quality Assurance:** The DEP lab certification audit report for the Quabbin Lab had no significant adverse findings. Worked with Internal Audit on a management advisory on Lab QA/QC.

**LIMS:** Go Live for the new version of LIMS occurred over the weekend of March 15th and went very smoothly. Issues since Go Live have been minor and most have been addressed quickly by MIS.

**ENQUAL Clean Water:** Obtained EPA approval to change the regulatory method for Total PCBs on the DITP NPDES permit based on acceptable demonstration of performance. Participated in an EPA workshop on cyanobacteria and harmful algae blooms.

**ENQUAL Drinking Water:** The source of a low lab contamination of Haloacetic Acid affecting field and QC samples was identified and rectified. A bad batch of concentrated sulfuric acid was the cause. Samples were contracted out for a month to avoid compromising them. There was no regulatory impact. Tested lead complaint samples from residences in Winthrop and Somerville, and lead service line replacement samples from Newton.

**TRAC:** Continuing to work with an MWRA group examining wastewater sources of molybdenum. Tested special grit samples from the Intermediate Pump Station. Participated in a work group to examine wastewater sources of molybdenum.

**Wastewater Operations:** Tested CSO wet-weather samples from a treatment evaluation special study.

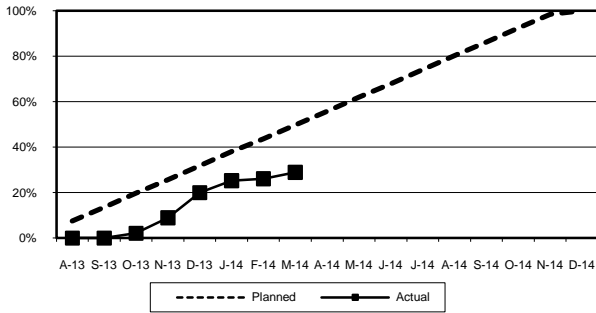
# CONSTRUCTION PROGRAMS

# Projects In Construction

Q3 FY14

(Progress Percentages based on Construction Expenditures)

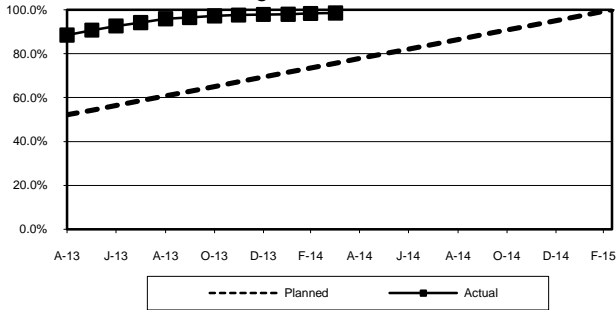
## Nut Island Headworks Electrical and Conveyor Improvements Progress – March 2014



**Project Summary:** This project will replace the floor-slab-embedded electrical conduits in the bottom level of the headworks, as well as improvements to the grit and screenings conveyors.

**Status and Issues:** As of March the Contractor, J.F. White, completed the installation of the conduit for the A-2 Ductbank. They placed 70 cyd of concrete for the A-2 Ductbank from the electrical handhold to the roof penetrations R3/R4, after which they began backfilling the A-2 Ductbank.

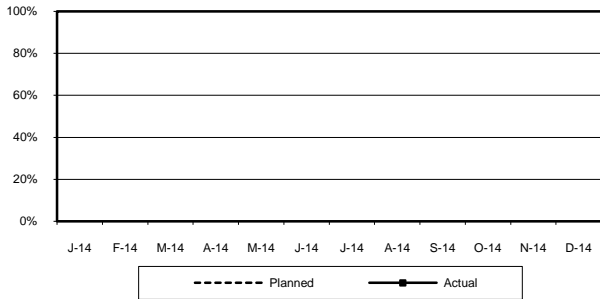
## UV Disinfection Facilities CWTP Progress – March 2014



**Project Summary:** In accordance with the EPA's requirement to have two primary methods of disinfection, the Authority will add an Ultraviolet (UV) light disinfection process at the Carroll Water Treatment Plant, which will render Cryptosporidium inactive.

**Status and Issues:** As of March the Contractor made repairs on the 120" influent concrete pipe by chipping out and removing loose grout from the joints, then repacking them with oakum over which hydraulic grout was applied to the surface of all 3 joints. They also made repairs to the 120" concrete transition piece and the sluice gate thimble inside the B-side UV room.

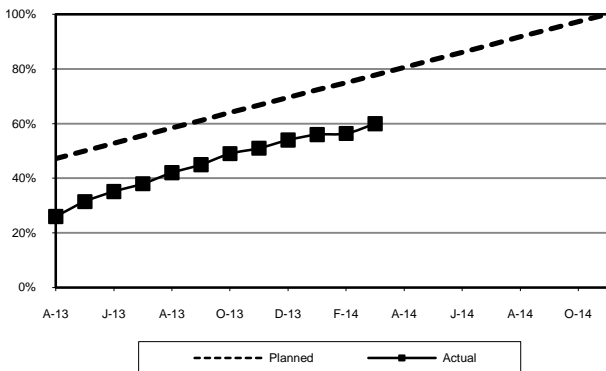
## Clinton Digester and Primary Clarifier Rehab Progress - March 2014



**Project Summary:** This project involves the rehabilitation of the Plant's two digesters, as well as the replacement of the gas compressors, sludge collection equipment, isolation gates and repairs to the concrete.

**Status and Issues:** This contract was awarded at the March BOD meeting to R.H. White Construction and anticipate a May 2014 NTP.

## Spot Pond Water Storage Facility Progress – March 2014



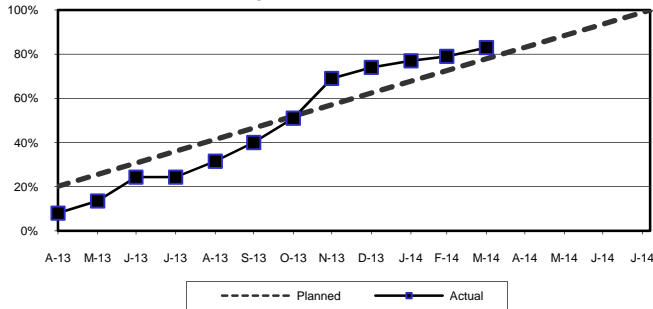
**Project Summary:** This is a design/build project for the construction of two, 10 million-gallon covered concrete storage tanks and a buried pump station, which will provide back-up redundancy for the Northern High and Northern Intermediate High distribution service areas.

**Status and Issues:** As of March, the Contractor completed pipe jacking below Woodland Road and constructed the receiving pit on DCR property. They completed tree clearing and access road installation for the overflow pipe outlet to Spot Pond. In addition, they worked on concrete repairs to the Tank 1 walls common to the pump station.

## Projects In Construction Q3 - FY14

(Progress Percentages based on Construction Expenditures)

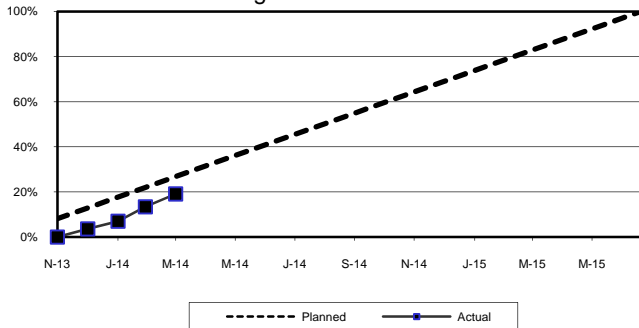
**Quabbin UV Disinfection  
Progress – March 2014**



*Project Summary:* This project will improve the quality of the drinking water delivered to the CVA communities serviced by the MWRA. It involves the addition of UV disinfection at the Quabbin Disinfection Facility to meet the EPA's regulation for a second means of disinfection for unfiltered water systems.

*Status and Issues:* Through March, the Contractor installed conduit throughout the UV building and continued pulling wires to outlets and switches located throughout the building. They conducted pressure and leakage tests on the remaining ductile iron piping and switched building power from the existing supply to the new supply. In addition, A 48" MWRA valve needed for a shutdown to allow the UV facility to be connected to the CVA system was found to be inoperable. A change order for a line stop and bypass piping was approved in April.

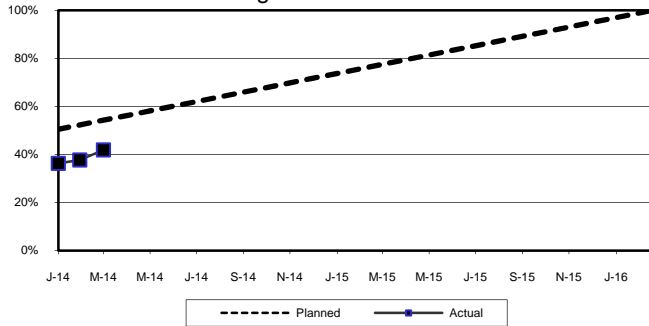
**Pump, Gear Box and Diesel Engine Upgrade  
Prison Point and Cottage Farm CSO Facilities  
Progress - March 2014**



*Project Summary:* This project involves the rebuilding of pumps right angle gear drives and engines as well as the installation of diesel oxidation catalysts at the Prison Point and Cottage Farm CSO facilities.

*Status and Issues:* As of March, the electrical sub-contractor completed pulling electric and SCADA wires to connect DOCs at both Prison Point and Cottage Farm. The insulation contractor completed the installation of 4-inches of insulation and stainless steel covering on exhaust piping at both facilities.

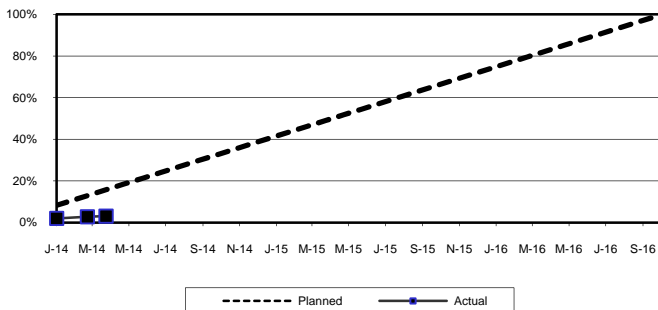
**North Main Pump Station VFDs & Motors  
Progress - March 2014**



*Project Summary:* This project involves the replacement of the existing 3500 HP variable frequency drives and synchronous motors for the RWW pumps at the North Main Pump Station.

*Status and Issues:* The Contractor, J.F. White, has completed the installation of VFD/motor No. 7. The Contractor is presently in the process of installing VFD/Motor No. 6.

**Primary and Secondary Clarifier Scum Tip Tubes  
Progress - March 2014**



*Project Summary:* This project involves the replacement of the existing carbon steel tip tubes with 316 stainless steel in 48 primary and 54 secondary clarifiers to improve reliability and increase longevity.

*Status and Issues:* The Contractor, Walsh Construction, has provided submittals on major equipment ( tip tube and control panels) for review by the Authority. Staff anticipate that the Contractor will commence work activity in mid May 2014.

# CSO CONTROL PROGRAM

3rd Quarter - FY14

MWRA and the CSO communities have completed 32 of the 35 projects in the Long-Term CSO Control Plan, including the Interceptor Connection Relief and Floatables Control at Outfall SOM01A project, which MWRA completed in December 2013 ahead of the June 2014 milestone in Schedule Seven. Two CSO projects are in construction: Reserved Channel Sewer Separation by BWSC and CAM004 Sewer Separation by the City of Cambridge. MWRA recently completed 100% design of the last project, Automated Gate and Floatables Control at Outfall MWR003 and Rindge Avenue Siphon Relief, and plans to issue notice to proceed with construction in August 2014. The following table reports on the progress of the three CSO projects not yet complete, as well as BWSC's continuing inflow removal work associated with the completed South Dorchester Bay Sewer Separation project.

Project	Court Milestones in Schedule Seven (Shaded milestones are complete.)			Status as of March 31, 2014																												
	Commence Design	Commence Construction	Complete Construction																													
Reserved Channel Sewer Separation	Jul 06	May 09	Dec 15	<p>BWSC continues to make progress with the nine planned contracts for the Reserved Channel Sewer Separation project.</p> <table border="1"> <tr> <td>Contract 1</td> <td>CSO outfall rehab</td> <td>\$ 4.2 M</td> <td>Complete</td> </tr> <tr> <td>Contract 2</td> <td>Sewer separation</td> <td>\$ 5.9 M</td> <td>Complete</td> </tr> <tr> <td>Contract 3A</td> <td>Sewer separation</td> <td>\$11.2 M</td> <td>Complete</td> </tr> <tr> <td>Contract 3B</td> <td>Sewer separation</td> <td>\$ 9.6 M</td> <td>90% complete</td> </tr> <tr> <td>Contract 4</td> <td>Sewer separation</td> <td>\$ 7.4 M</td> <td>75% complete</td> </tr> <tr> <td>Contract 7</td> <td>Pavement restoration</td> <td>\$ 1.1 M</td> <td>Complete</td> </tr> <tr> <td>Contract 8</td> <td>Pavement restoration</td> <td>\$ 5.4 M</td> <td>35% complete</td> </tr> </table> <p>BWSC awarded Contract 5 (sewer cleaning and lining – not MWRA-eligible) on February 24, 2014 and Contract 6 (downspout disconnections) on January 29, 2014. BWSC plans to complete all work for the Reserved Channel sewer separation project by December 2015, in compliance with Schedule Seven. BWSC recently submitted updated cost-to-complete estimates for the Reserved Channel contracts with a request to increase the CSO MOU/FAA total award amount by approximately \$3.1 million, from \$289.5 million to \$292.6 million.</p>	Contract 1	CSO outfall rehab	\$ 4.2 M	Complete	Contract 2	Sewer separation	\$ 5.9 M	Complete	Contract 3A	Sewer separation	\$11.2 M	Complete	Contract 3B	Sewer separation	\$ 9.6 M	90% complete	Contract 4	Sewer separation	\$ 7.4 M	75% complete	Contract 7	Pavement restoration	\$ 1.1 M	Complete	Contract 8	Pavement restoration	\$ 5.4 M	35% complete
Contract 1	CSO outfall rehab	\$ 4.2 M	Complete																													
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Contract 7	Pavement restoration	\$ 1.1 M	Complete																													
Contract 8	Pavement restoration	\$ 5.4 M	35% complete																													
Cambridge/ Alewife Brook Sewer Separation	CAM004 Sewer Separation	Jan 97	Jul 98	<p>Cambridge completed four initial construction contracts for this project more than a decade ago and is presently managing construction under three additional sewer separation contracts (contracts 8A, 8B and 9) to complete the project.</p> <table border="1"> <tr> <td>Contract 8A</td> <td>Sewer separation</td> <td>\$10.1M</td> <td>70% complete</td> </tr> <tr> <td>Contract 8B</td> <td>Sewer separation</td> <td>\$16.3M</td> <td>10% complete</td> </tr> <tr> <td>Contract 9</td> <td>Sewer separation</td> <td>\$ 5.7M</td> <td>NTP Issued</td> </tr> </table> <p>Cambridge issued the notice to proceed for Contract 9 on February 11, 2014. Cambridge signed the right of entry permit for work in Concord Lane (private way) for the initial survey and building inspections which began in March. Cambridge continues to work with the property owner for right of entry to conduct geotechnical borings, groundwater wells and environmental testing. Cambridge plans to complete all work for the CAM004 sewer separation project by December 2015, in compliance with Schedule Seven.</p>	Contract 8A	Sewer separation	\$10.1M	70% complete	Contract 8B	Sewer separation	\$16.3M	10% complete	Contract 9	Sewer separation	\$ 5.7M	NTP Issued																
		Contract 8A	Sewer separation		\$10.1M	70% complete																										
Contract 8B	Sewer separation	\$16.3M	10% complete																													
Contract 9	Sewer separation	\$ 5.7M	NTP Issued																													
	Sep 12																															
	MWR003 Gate and Rindge Ave. Siphon Relief	Apr 12	Aug 14	Oct 15	<p>The design consultant is responding to MWRA comments on the 100% design. A hearing before the Cambridge Conservation Commission for a Wetlands Order of Conditions is scheduled for April 28. MWRA filed an application for a DCR construction permit and license and is drafting a license agreement for access across a small private parcel. MWRA plans to advertise the contract later this spring and issue the notice to proceed with construction by August 2014, in compliance with Schedule Seven.</p>																											

## CSO CONTROL PROGRAM (cont.)

Other CSO Related Work				
Project	Court Milestones in Schedule Seven (Shaded milestones are complete.)			Status as of March 31, 2014
	Commence Design	Commence Construction	Complete Construction	
South Dorchester Bay Sewer Separation Post-Construction Inflow Removal	N/A	N/A	N/A	<p>BWSC continues to investigate alternatives for removing additional stormwater inflow from its Dorchester Interceptor or otherwise relieving hydraulic conditions in the interceptor during extreme storms following the closing of its CSO regulators with completion of the South Dorchester Bay sewer separation project in 2007. Final draft report with recommendations will be available in the Summer of 2014. BWSC continues with a construction contract to remove some of the remaining inflow sources from its sewer system. The contract amount is \$562,261, of which \$204,000 is eligible for MWRA funding under the BWSC CSO MOU and FAA. MWRA's FY14 CIP includes a total of \$5.6 million for the inflow removal effort, of which approximately \$2.6 million is allocated to awarded design and construction contracts.</p>

## CIP Expenditures

Q3 – FY14

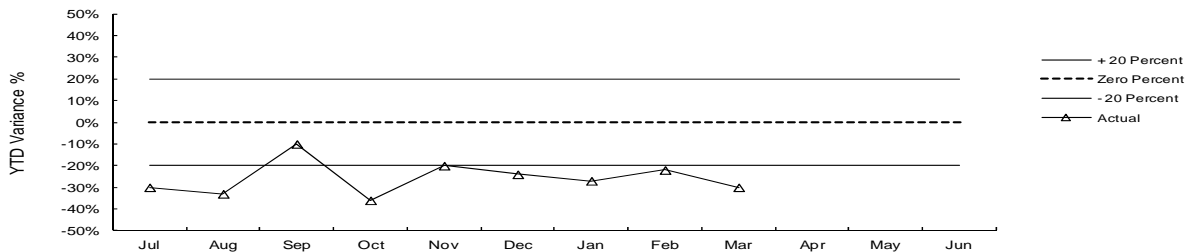
The Year-To-Date variances are highlighted below:

FY14 Capital Improvement Program Expenditure Variances through March by Program (\$000)				
Program	FY14 Budget Through March	FY14 Actual Through March	Variance Amount	Variance Percent
Wastewater	53,607	33,071	(20,536)	-38%
Waterworks	41,299	32,670	(8,629)	-21%
Business and Operations Support	4,994	3,726	(1,268)	-25%
<b>Total</b>	<b>\$99,900</b>	<b>\$69,467</b>	<b>(\$30,433)</b>	<b>-30%</b>

Underspending within Wastewater is primarily due to timing of anticipated expenditures for contracts 8B and 9 for the Cambridge Sewer Separation project, delays for the North Main Pump Station Variable Frequency Drives Construction and Scum Skimmer Replacement, timing of expenditures for the Reserved Channel Construction 8 and South Dorchester Sewer Separation contracts, award was less than budget for the Nut Island Electrical Grit & Screening Conveyance Construction, schedule change for North Main Pump Station Butterfly Valve Replacement, and timing of equipment delivery for the Centrifuge Back-drive Replacement construction. This was partially offset by greater than anticipated community requests for grants and loans for the Infiltration/Inflow (I/I) Program and work anticipated in FY13 but completed in FY14 for the Digester Modules 1 & 2 Pipe Replacement contract. Underspending in Waterworks is primarily due to site issues and delay in equipment delivery for the Spot Pond Storage Facility Design/Build contract, lower than budgeted award for WASM 3 Design Construction Administration/Resident Inspection, schedule change for Carroll Treatment Plant Existing Facility Modifications CP-7, timing of Watershed Land purchases, timing of delivery of electrical equipment and lower award for Gillis Pump Station Improvements, timing of work for the Watertown Section Rehabilitation, and delay in tie-in of new facility to the existing Chicopee Valley Aqueduct for the Quabbin Ultraviolet Disinfection construction. This was partially offset by community requests for loans being greater than anticipated, under the Local Water System Assistance Program.

### CIP Expenditure Variance

Total FY14 CIP Budget of \$142,461,000.



### Construction Fund Management

All payments to support the capital program are made from the Construction Fund. Sources of fund in-flows 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 3/29/2014	\$58 million
Unused capacity under the debt cap:	\$732 million
Estimated date for exhausting construction fund without new borrowing:	May-14
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper outstanding:	\$144 million
Commercial paper capacity:	\$350 million
Budgeted FY14 capital spending*:	\$125 million

\* Cash based spending is discounted for construction retainage.

# DRINKING WATER QUALITY AND SUPPLY



## Source Water – Microbial Results and UV Absorbance

3rd Quarter – FY14

### Source Water – Microbial Results

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 being treated and entering the CVA system.

All samples collected during the 3rd Quarter were below 20 cfu/100ml. **For the current six-month period, 0.0% of the samples have 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 being treated and entering the MetroWest/Metropolitan Boston systems.

In the wintertime when smaller water bodies near Wachusett Reservoir freeze up, many waterfowl will roost in the main body of the reservoir - which freezes later. This increased bird activity tends to increase fecal coliform counts. DCR has an active bird harassment program to move the birds away from the intake area.

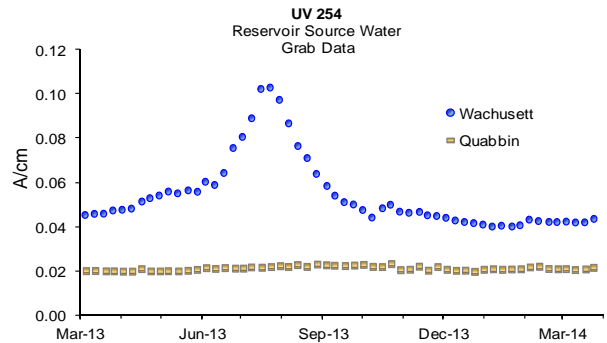
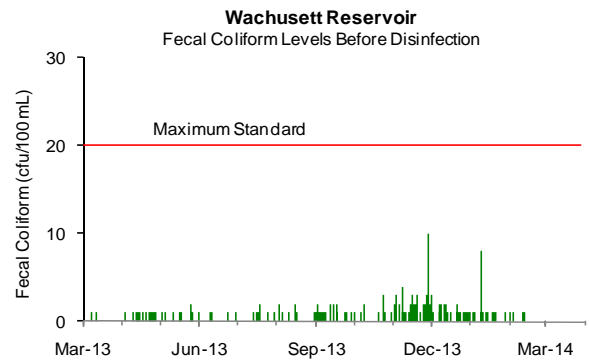
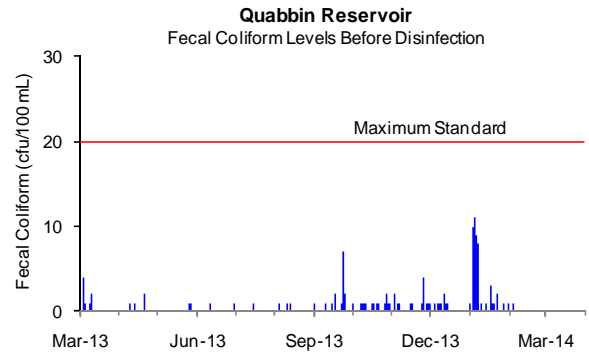
All samples collected during the 3rd Quarter were below 20 cfu/100mL. **For the current six-month period, 0% of the samples exceeded a count of 20 cfu/100mL.**

### Source Water – UV Absorbance

UV Absorbance at 254nm wavelength (UV-254), is a measure of the amount and reactivity of natural organic material in source water. Higher UV-254 levels cause increased ozone and chlorine demand resulting in the need for higher ozone and chlorine doses, and can increase the level of disinfection by-products. UV-254 is impacted by tributary flows, water age, sunlight and other factors. Hurricanes can have a significant and long lasting impact.

Quabbin Reservoir UV-254 levels are currently around 0.021 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.042 A/cm.



## Source Water – Turbidity

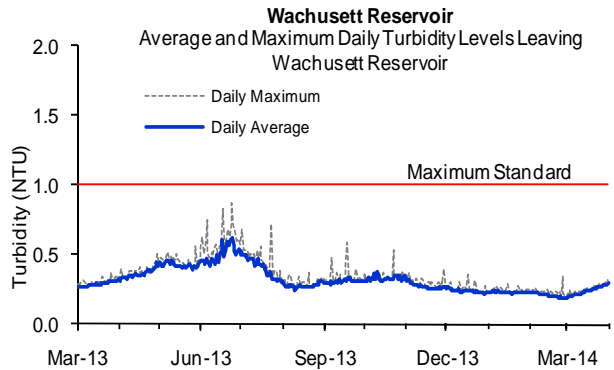
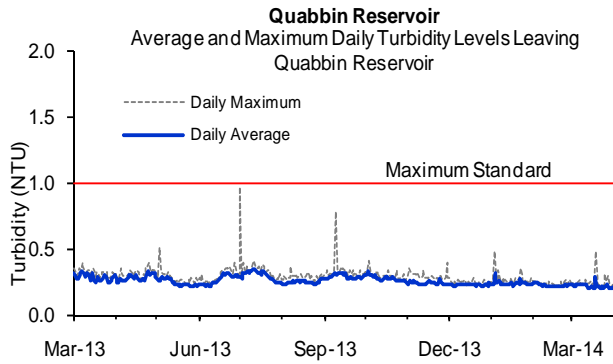
### 3rd Quarter – FY14

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 disinfectant demand or may protect bacteria from disinfection effects, thereby interfering with the disinfectant residual throughout the distribution system.

There are two standards for turbidity: all water must be below 5 NTU (Nephelometric Turbidity Units), and water only can be above 1 NTU if it does not interfere with effective disinfection.

Turbidity of Quabbin Reservoir water is monitored continuously at the Ware Disinfection Facility (WDF) before chlorination. Turbidity of Wachusett Reservoir is monitored continuously at the Carroll Water Treatment Plant before ozonation.

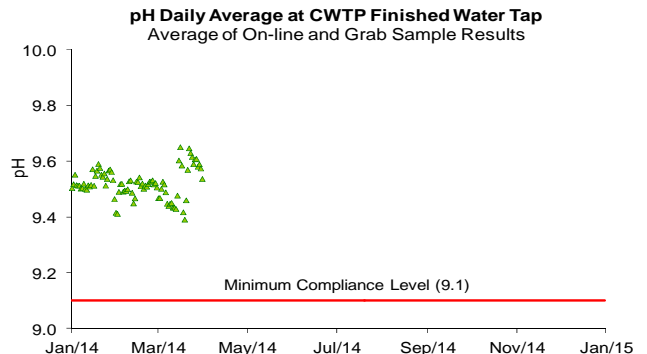
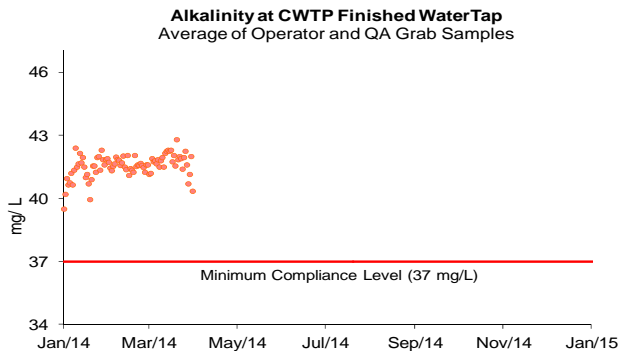
Maximum turbidity results at Quabbin and Wachusett were within DEP standards for the quarter



## Treated Water – pH and Alkalinity Compliance

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 tests finished water pH and alkalinity daily at the CWTP's Fin B sampling tap. MWRA's target for distribution system pH is 9.3; the target for alkalinity is 40 mg/l. Per DEP requirements, CWTP 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 these levels 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 March 12 and 13, 2014. Distribution system sample pH ranged from 9.4 to 9.7 and alkalinity ranged from 42 to 43 mg/L. No sample results were below DEP limits for this quarter.



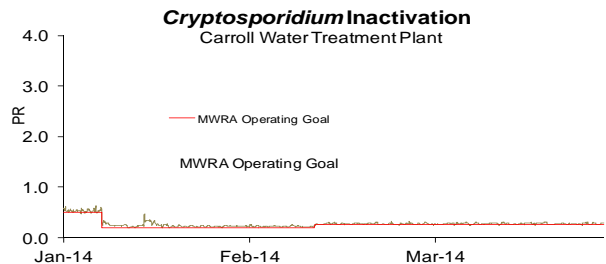
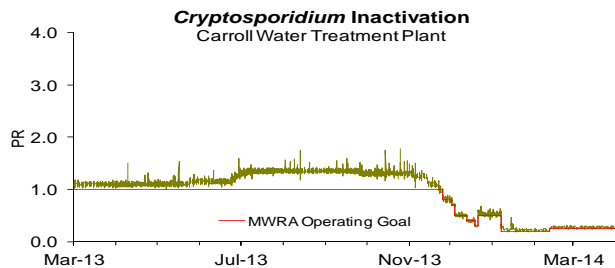
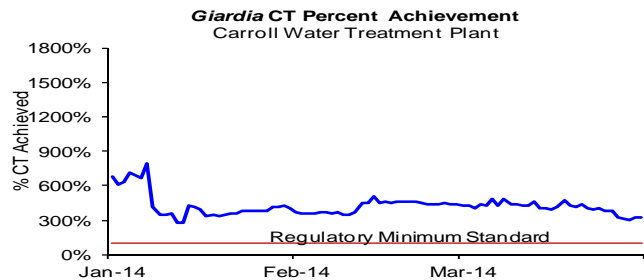
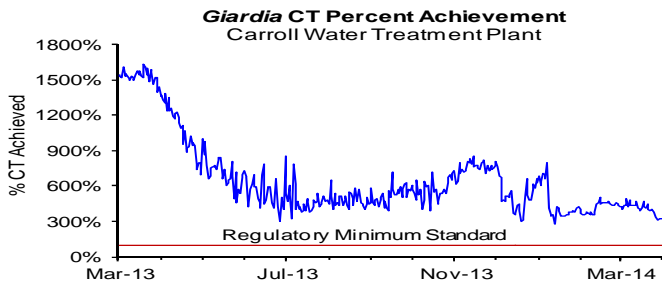
## Treated Water – Disinfection Effectiveness

3rd Quarter – FY14

At the Carroll Water Treatment Plant (CWTP), MWRA reports on both regulatory required 99.9% inactivation for *Giardia* (reported as "CT"), and its voluntary operating goal of 99% inactivation for *Cryptosporidium*. 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 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.

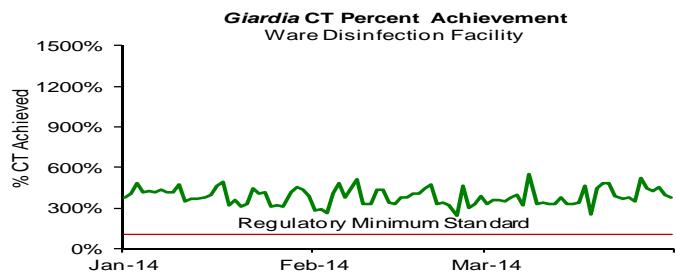
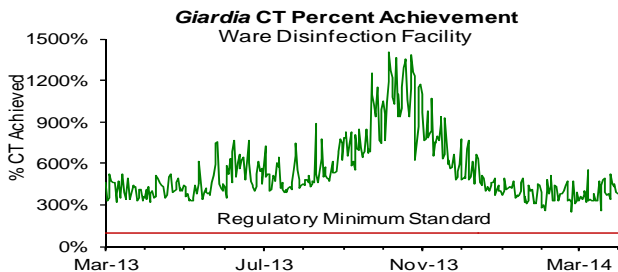
### Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 1.5 to 2.4 mg/L for the quarter.
- Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter, as well as every day for the last fiscal year.
- MWRA is not able to fully meet the voluntary *Cryptosporidium* inactivation target during the winter months due to the UV construction eliminating the extended ozone contactors. MWRA, with DEP approval, has lowered the voluntary *Cryptosporidium* target. The minimum *Cryptosporidium* inactivation achieved by ozone for the quarter was 60%.
- The UV system was operating in extended testing mode through the end of March and is achieving over 99% inactivation of *Cryptosporidium* for over 95% of the water. The UV facility officially went on-line for regulatory compliance on April 1, 2014.



### 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. The chlorine dose at Ware Disinfection Facility (WDF) is adjusted in order to achieve MWRA's seasonal target of  $\geq 0.75$  mg/L (November 01 – May 31) and  $\geq 1.0$  mg/L (June 1– October 31) at Ludlow Monitoring Station. The chlorine dose at WDF varied between 1.3 to 1.5 mg/L for the quarter.



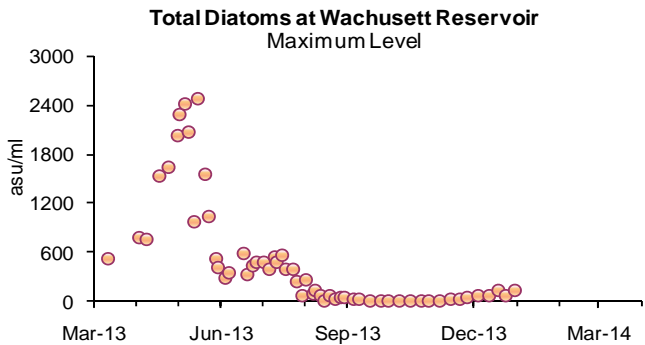
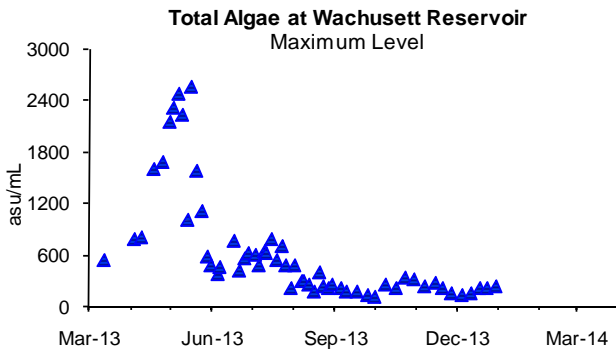
## Source Water - Algae

### 3rd Quarter – FY14

Algae 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 algaecide. During the winter and spring, diatom numbers may increase. While not a taste and odor concern, consumers that use filters may notice a more frequent need to change their filters.

In the 3rd Quarter, there were no complaints which may be related to algae reported from local water departments. There have been no samples collected since December 30, 2013 as significant ice cover on the reservoir prevents safe algae sampling.



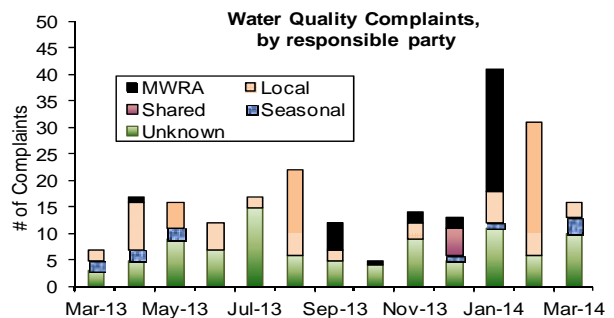
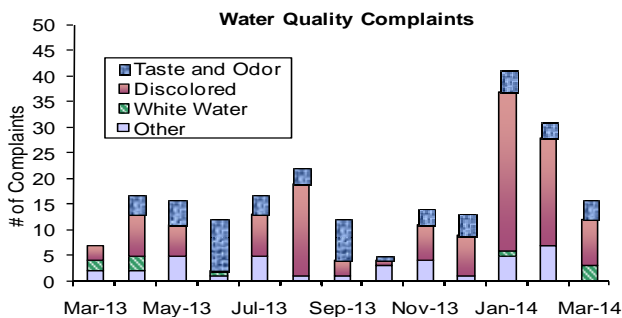
## Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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.

Communities reported 88 complaints during the quarter compared to 29 complaints for 3rd Quarter of FY13. Of these complaints, 61 were for "discolored water", 11 were for "taste and odor", 4 were for "white water", and 12 were for "other". Of these complaints, 34 were local community issues, 23 were an MWRA issue, 4 were seasonal in nature, and 27 were unknown.

- On January 27, twenty-three discolored water complaints were from a planned MWRA water operation being performed in Medford. Medford was notified prior to the operation being initiated.
- On February 1, fifteen discolored water complaints and five low water pressure complaints were reported in Milton due to a local main break.



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

3rd Quarter – FY14

While all communities collect bacteria samples for the Total Coliform Rule (TCR), 43 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.

There are 139 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. 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 3rd Quarter, one of the 5,842 community samples (0.02% system-wide) submitted to MWRA labs for analysis tested positive for coliform (Bedford in February). None of the 1,833 MWRA samples (0.00%) tested positive for total coliform. No sample tested positive for *E.coli*. Only 1.8% of the samples had any chlorine residuals lower than 0.2 mg/L for the quarter.

	# Coliform Samples (a)	Total Coliform # (%) Positive	E.coli # Positive	Public Notification Required?	Minimum Chlorine Residual (mg/L)	Average Chlorine Residual (mg/L)	
<b>MWRA Sampling Locations (d)</b>	1833	0 (0%)	0		0.07	1.94	
ARLINGTON	155	0 (0%)	0		0.01	1.54	
BELMONT	104	0 (0%)	0		1.18	2.07	
BOSTON	757	0 (0%)	0		1.09	1.93	
BROOKLINE	204	0 (0%)	0		0.51	2.04	
CHELSEA	169	0 (0%)	0		1.20	1.85	
DEER ISLAND	52	0 (0%)	0		1.80	2.00	
EVERETT	169	0 (0%)	0		0.90	1.17	
FRAMINGHAM	216	0 (0%)	0		0.49	2.17	
LEXINGTON	117	0 (0%)	0		0.93	2.25	
LYNNFIELD	18	0 (0%)	0		0.56	1.45	
MALDEN	252	0 (0%)	0		0.62	1.72	
MARBLEHEAD	72	0 (0%)	0		0.19	1.67	
MEDFORD	221	0 (0%)	0		0.68	1.85	
MELROSE	117	0 (0%)	0		0.02	1.08	
MILTON	96	0 (0%)	0		1.31	1.78	
NAHANT	30	0 (0%)	0		0.24	1.50	
NEWTON	276	0 (0%)	0		0.39	2.00	
NORWOOD	99	0 (0%)	0		0.06	1.83	
QUINCY	276	0 (0%)	0		0.14	1.79	
READING	120	0 (0%)	0		0.03	1.65	
REVERE	182	0 (0%)	0		0.98	2.08	
SAUGUS	96	0 (0%)	0		1.37	1.87	
SOMERVILLE	272	0 (0%)	0		1.07	1.83	
SOUTHBOROUGH	30	0 (0%)	0		0.43	1.91	
STONEHAM	91	0 (0%)	0		1.17	1.94	
SWAMPSCOTT	54	0 (0%)	0		0.80	1.80	
WALTHAM	216	0 (0%)	0		1.63	2.14	
WATERTOWN	130	0 (0%)	0		0.35	1.94	
WESTBORO HOSPITAL	15	0 (0%)	0		0.08	0.34	
WESTON	48	0 (0%)	0		0.28	2.18	
WINTHROP	72	0 (0%)	0		0.20	1.82	
<b>Total: Fully Served</b>	<b>4726</b>	<b>0 (0%)</b>					
CVA & Partially Served	BEDFORD	63	1 (1.59%)	0	No	0.19	1.02
	CANTON	90	0 (0%)	0		0.03	0.72
	HANSCOM AFB	27	0 (0%)	0		0.24	1.65
	MARLBORO	126	0 (0%)	0		1.12	2.33
	NEEDHAM	123	0 (0%)	0		0.07	0.55
	NORTHBORO	48	0 (0%)	0		0.48	1.66
	WAKEFIELD	132	0 (0%)	0		0.35	1.45
	WELLESLEY	114	0 (0%)	0		0.02	0.62
	WILMINGTON	87	0 (0%)	0		1.18	1.95
	WINCHESTER	78	0 (0%)	0		0.23	1.07
	WOBURN	180	0 (0%)	0		0.12	0.89
	SOUTH HADLEY FD1	48	0 (0%)	0		0.16	0.50
	<b>Total: CVA &amp; Partially Served</b>	<b>1116</b>	<b>1 (0.09%)</b>				
<b>Total: Community Samples</b>	<b>5842</b>	<b>1 (0.02%)</b>					

(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 total coliform and chlorine residual results include data from 125 community pipe locations as described above. In most cases these community results are accurately indicative of MWRA water as it enters the community system; however, some are clearly strongly influenced by local pipe conditions. Residuals in the MWRA system are typically between 1.0 and 2.8 mg/L.

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

### 3rd Quarter – FY14

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 µg/L for TTHMs and 60 µg/L for HAA5s. For the MetroBoston system, effective Q2 2013, under the Stage 2 DBP Rule, compliance is based on locational running annual averages (LRAA). Sampling locations have increased from 16 to 32 each quarter. Data prior to Q1 2013 reports the running annual average, and since Q1 2013, the maximum LRAA is reported (in addition to min and max values).

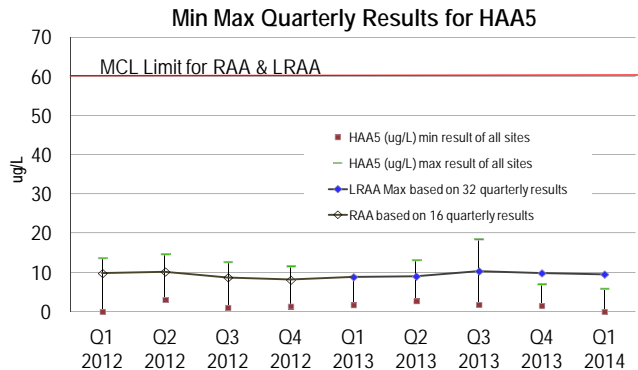
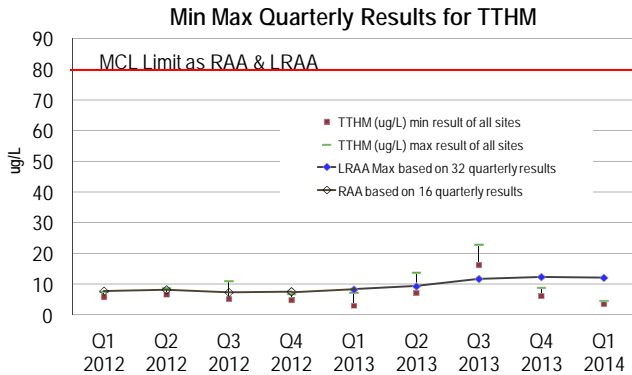
For the CVA communities, effective Q3 2013, under the Stage 2 DBP Rule, compliance is based on a LRAA for each community. Sampling locations have increased from 12 to 14 each quarter. Prior to Q3 2013, the running annual average is reported, and since Q3 2013, the maximum LRAA is reported (in addition to min and max values). The chart below combines all three CVA communities data.

Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results.

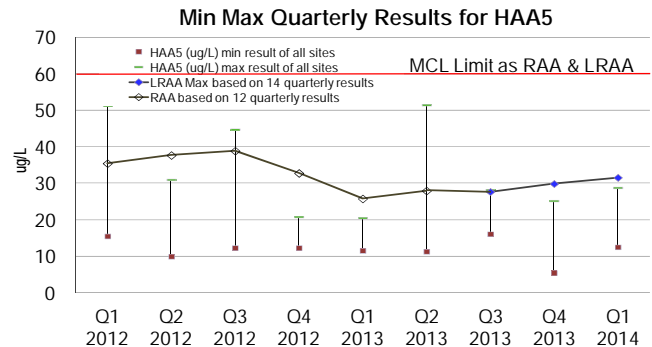
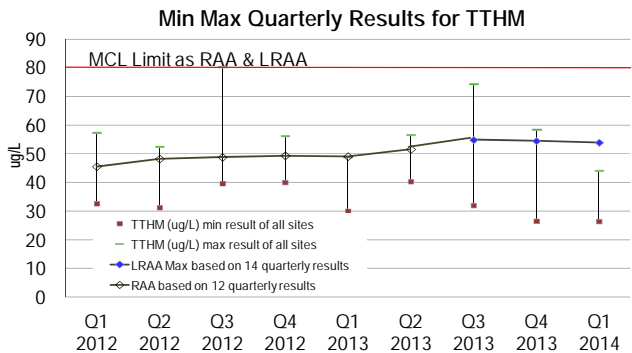
Bromate is tested monthly per DEP requirements for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA MCL standard for bromate is 10 µg/L.

The RAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The LRAA for TTHMs = 12.2 µg/L; HAA5s = 9.5 µg/L. The current RAA for Bromate = 0.0 µg/L. CVA's DBP levels continue to be below current standards.

### MetroBoston Disinfection By-Products



### CVA Disinfection By-Products



# Water Supply and Source Water Management

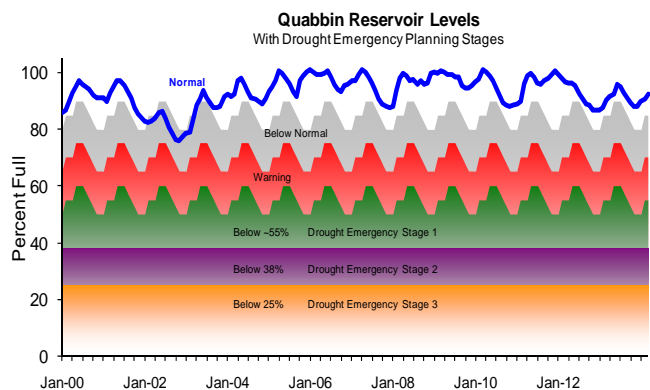
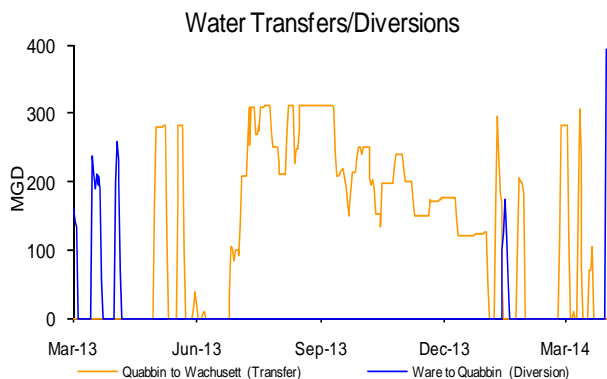
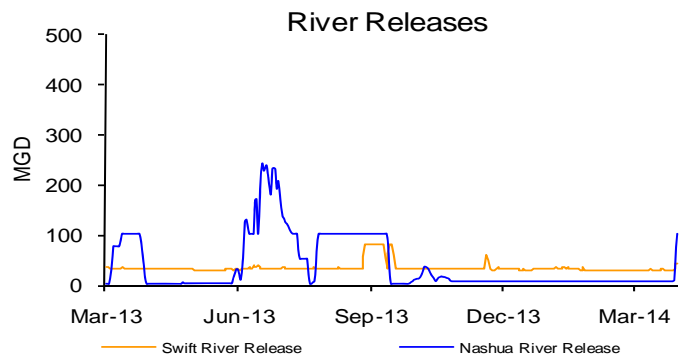
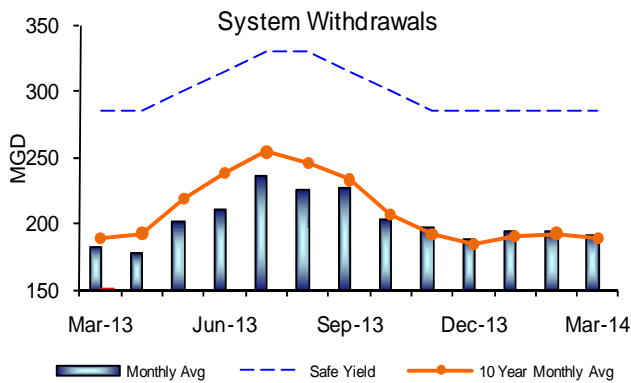
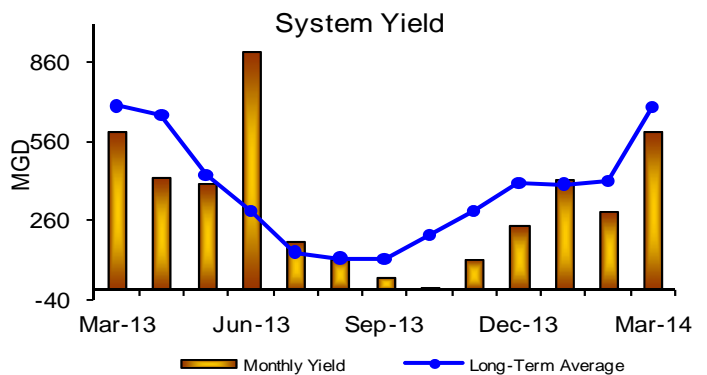
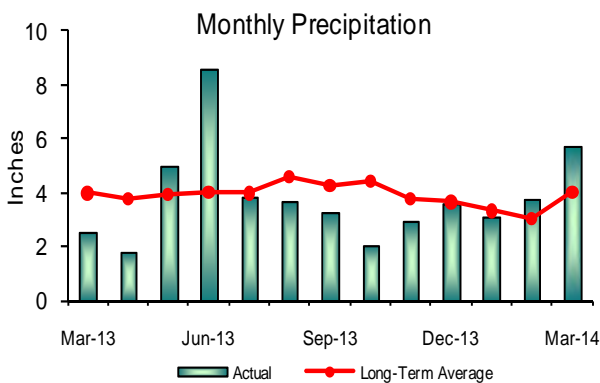
3rd Quarter – FY14

## 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. System Yield is defined as the water produced by its sources, and is reported as the net change in water available for water supply and operating requirements.

## Outcome

Quabbin Reservoir level remains within the normal operating range for this period of the year. The volume of the Quabbin Reservoir was at 92.5% as of March 31, 2014; a 4.2% increase for the quarter, which represents an increase of 17.25 billion gallons of storage. Yield and precipitation for the quarter were above their respective long term quarterly averages. Monthly withdrawals continue to be below its long-term average.



# WASTEWATER QUALITY

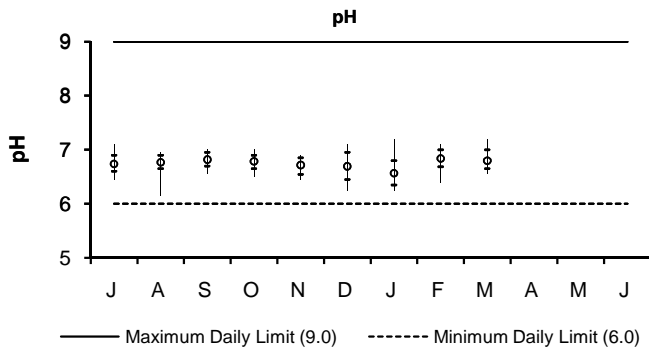


## NPDES Permit Compliance: Deer Island Treatment Plant 3rd Quarter - FY14

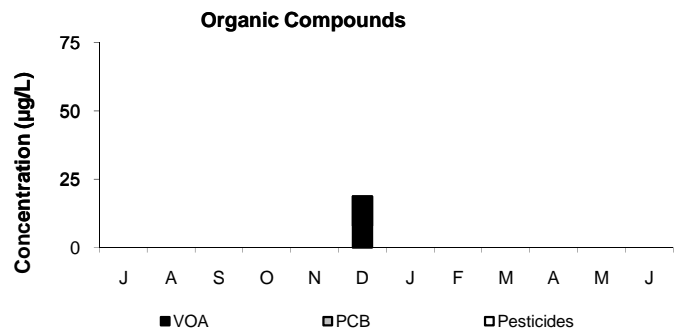
### NPDES Permit Limits

Effluent Characteristics		Units	Limits	January	February	March	3rd Quarter Violations	FY14 YTD Violations
Dry Day Flow:		mgd	436	261.2	263.3	264.7	0	0
cBOD:	Monthly Average	mg/L	25	6.4	9.6	8.9	0	0
	Weekly Average	mg/L	40	7.7	11.9	13.1	0	0
TSS:	Monthly Average	mg/L	30	10.4	17.4	18.1	0	0
	Weekly Average	mg/L	45	12.4	16.3	25.5	0	0
TCR:	Monthly Average	ug/L	456	<40	<40	<40	0	0
	Daily Maximum	ug/L	631	<40	<40	<40	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	305	126	107	0	0
	Weekly Geometric Mean	col/100mL	14000	16	26	15	0	0
	% of Samples >14000	%	10	0	0	0	0	0
	Consecutive Samples >14000	#	3	0	0	0	0	0
pH:		SU	6.0-9.0	6.3-7.2	6.4-7.1	6.6-7.2	0	0
PCB, Aroclors:		ug/L	0.000045	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	100	100	50	0	0
	Inland Silverside	%	≥1.5	100	100	100	0	0

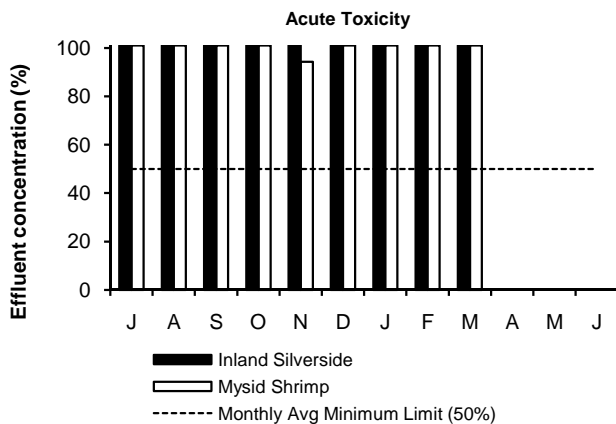
There have been no permit violations in FY14 at the Deer Island Treatment Plant.



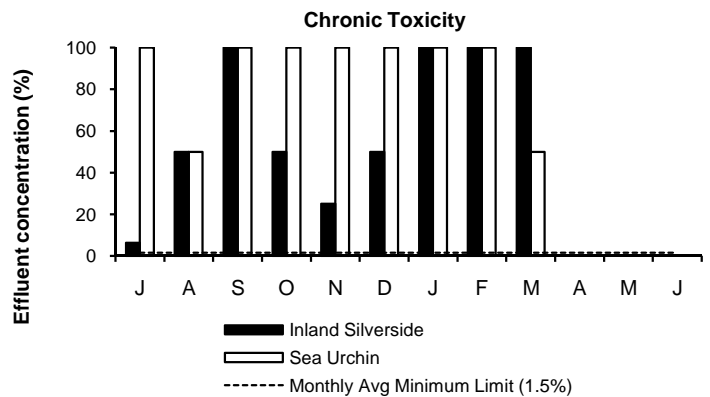
pH is a measure of the alkalinity or acidity of the effluent. Fluctuations in pH do not have an adverse effect on marine environments. Because of the pure oxygen used in the activated sludge reactor, the effluent pH tends to be at the lower pH range. pH measurements for the 3rd Quarter were within the daily permit limits.



An important wastewater component monitored in the effluent is organic compounds, such as volatile organic acids, pesticides, and polychlorinated biphenyls, which are all sampled monthly. The secondary treatment process has significantly reduced organic compounds in the effluent stream. In the 3rd Quarter, all organic compounds were below the detection limit.



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 3rd 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, a solution of 1.5% effluent and 98.5% dilution water must show no observed effect on the growth and reproduction of the test species. Chronic toxicity permit limits were met for the 3rd Quarter for both the inland silverside and sea urchin.

## NPDES Permit Compliance: Clinton Wastewater Treatment Plant 3rd Quarter - FY14

### NPDES Permit Limits

Effluent Characteristics		Units	Limits	January	February	March	3rd Quarter Violations	FY14 YTD Violations
Flow:	Running Average:	mgd	3.01	2.46	2.45	2.38	0	0
BOD:	Monthly Average:	mg/L	20	3.0	3.7	4.4	0	0
	Weekly Average:	mg/L	20	3.9	4.0	8.4	0	0
TSS:	Monthly Average:	mg/L	20	3.4	4.9	4.5	0	0
	Weekly Average:	mg/L	20	5.7	6.0	7.1	0	0
pH:		SU	6.5-8.3	7.0-7.4	6.7-8.0	7.0-7.3	0	0
Dissolved Oxygen:	Daily Minimum:	mg/L	6	8.2	7.9	8.2	0	0
Fecal Coliform:	Daily Geometric Mean:	col/100mL	400	3	4	6	0	0
	Monthly Geometric Mean:	col/100mL	200	3	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: November 1 - March 31								
	Monthly Average:	mg/L	10.0	0.20	1.49	2.25	0	0
	Daily Maximum:	mg/L	35.2	0.78	4.41	5.92	0	0
Copper:	Monthly Average:	ug/L	20	4.6	6.2	4.6	0	0
Phosphorus:								
	Monthly Average:	mg/L	N/A	--	--	--	0	0
Acute Toxicity:	Daily Minimum:	%	100	*N/A	*N/A	No Data	0	0
Chronic Toxicity:	Daily Minimum:	%	> 62.5	*N/A	*N/A	No Data	0	1

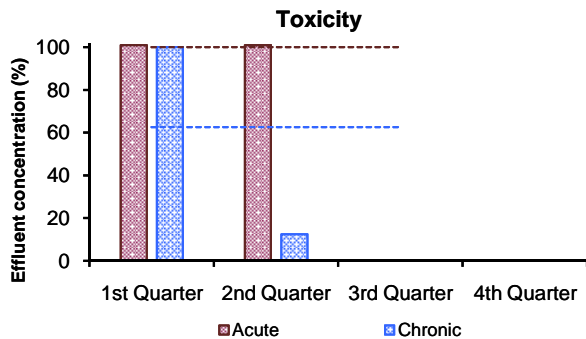
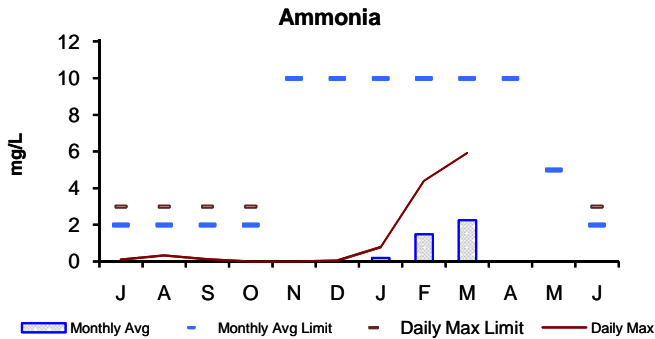
There has been one permit violation in FY14 at the Clinton Treatment Plant.

**1st Quarter:** There were no permit violations in the 1st Quarter of FY14.

**2nd Quarter:** There was one permit violation in the 2nd Quarter of FY14. In December 2013, the chronic toxicity was 12.5%, which is below the permit minimum of 62.5%.

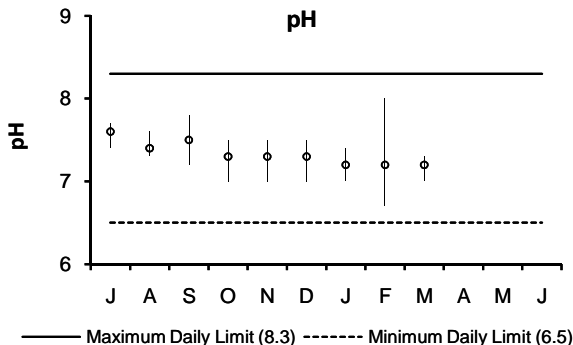
**3rd Quarter:** There were no permit violations in the 3rd Quarter of FY14.

\*Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.

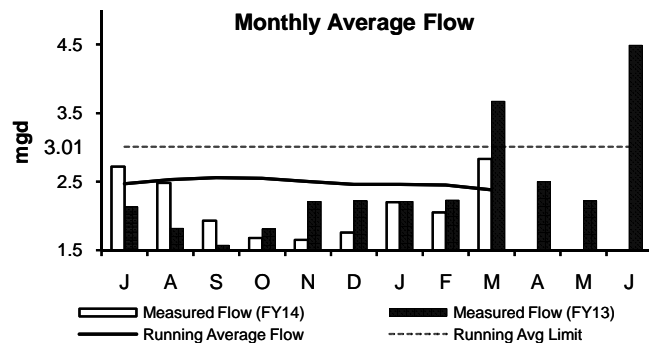


The 3rd Quarter's monthly average and daily maximum concentrations were below the permit limits. The monthly average and daily maximum limits for the 3rd Quarter are 10.0 mg/L and 35.2 mg/L. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.

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. The test results in the 3rd Quarter of FY14 were invalid; the testing is being redone. The results will be reported to EPA when they are received. This did not result in a permit violation.



pH is a measure of the alkalinity or acidity of the effluent. All daily pH results for the 3rd Quarter were within the range allowed by the permit.



The graph depicts the running annual average monthly flow, measured in million gallons per day, exiting the plant. The average monthly flows during the 3rd Quarter met the NPDES permit limit.

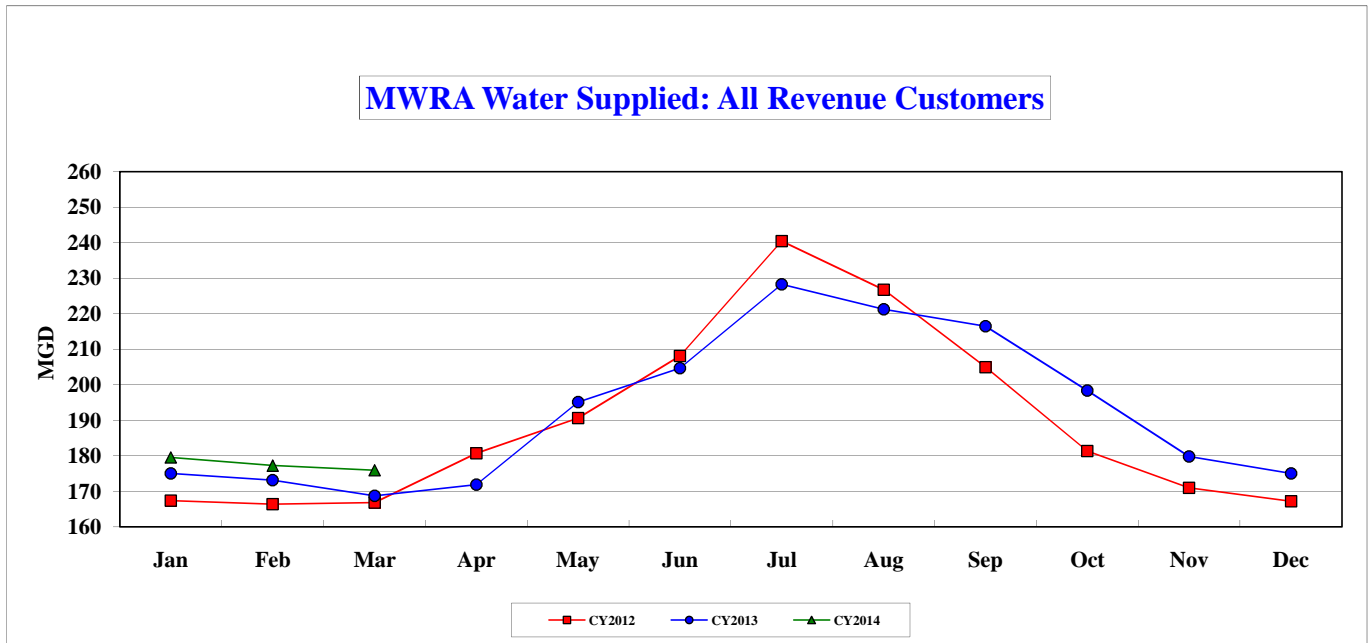
# COMMUNITY FLOWS AND PROGRAMS

## Total Water Use MWRA Core Customers Q3 - FY14

Massachusetts Water Resources Authority  
Water Supplied: All Revenue Customers

MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
CY2012	167.372	166.339	166.837	180.719	190.613	208.064	240.451	226.777	204.916	181.292	171.007	167.163	189.401
CY2013	174.996	173.168	168.729	171.838	195.119	204.640	228.278	221.268	216.427	198.406	179.809	175.062	192.460
CY2014	179.513	177.240	175.967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	177.584

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CY2012	5,188.526	4,823.828	5,171.960	5,421.579	5,908.998	6,241.906	7,453.978	7,030.086	6,147.483	5,620.049	5,130.219	5,182.049	69,320.661
CY2013	5,424.874	4,848.707	5,230.598	5,155.146	6,048.690	6,139.195	7,076.614	6,859.306	6,492.801	6,150.597	5,394.269	5,426.928	70,247.724
CY2014	5,564.915	4,962.715	5,454.973	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15,982.603



Attached for your information is the March 2014 Community Water Use Report recently distributed to communities served by the MWRA waterworks systems. Each community's annual water use relative to the system as a whole is the primary factor in allocating the annual water rate revenue requirement to MWRA water communities. Calendar year 2014 water use will be used to allocate the FY16 water utility rate revenue requirement.

March 2014 water supplied of 176.0 mgd (for revenue generating users) is up 7.2 mgd or 4.3% compared to March 2013. This includes 5.3 mgd supplied to the City of Cambridge and 0.352 mgd supplied to the Town of Hudson.

Including the water supplied to Cambridge and Hudson, annual system-wide consumption for CY14 is higher than CY13 with 177.6 mgd being supplied to MWRA customers **through March**. This is 5.3 mgd higher than CY13, and is an increase of 3.1%.

During Calendar year 2013, if Cambridge and Hudson were netted out, consumption would have been 0.2 mgd lower than 2012.

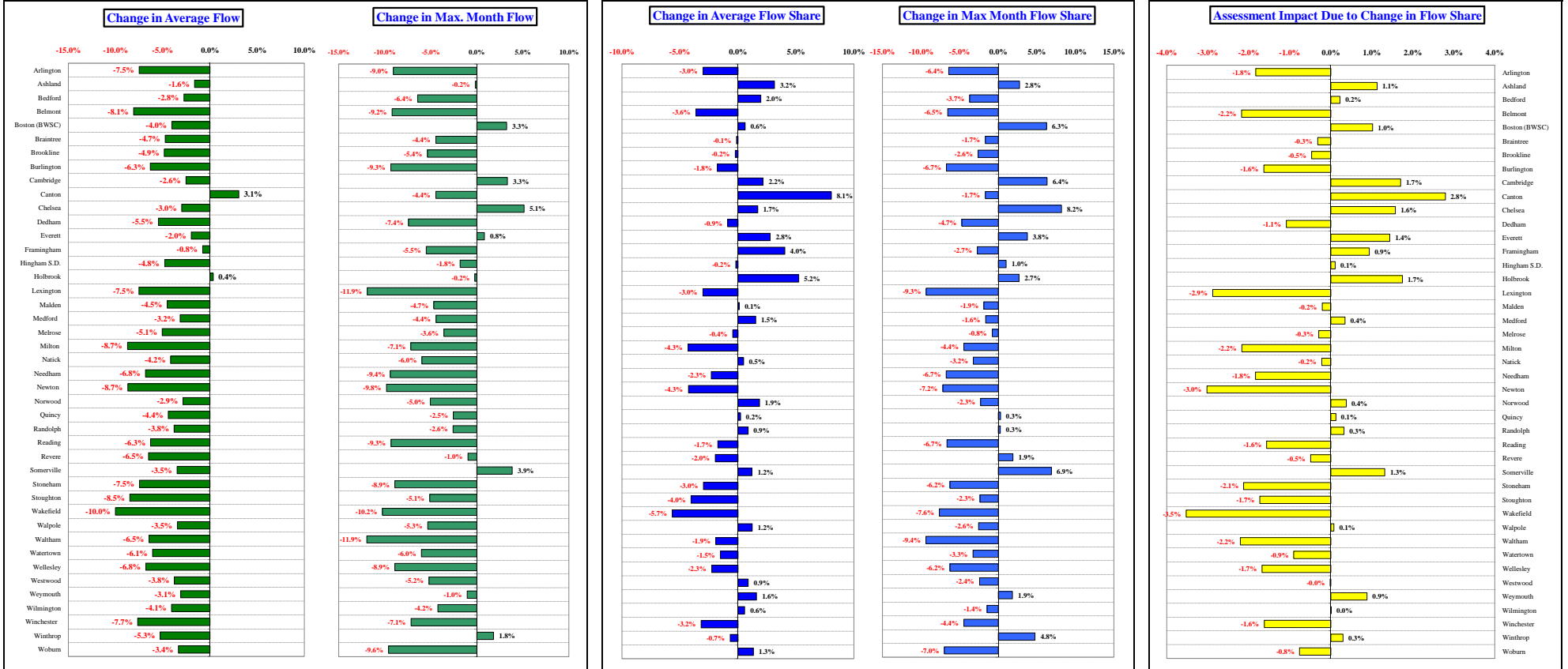
# Community Wastewater Flows 3rd Quarter - FY14

## How Projected CY2014 Community Wastewater Flows Could Effect FY2016 Sewer Assessments <sup>1,2,3</sup>

The flow components of FY2016 sewer assessments will be calculated using a 3-year average of CY2012 to CY2014 wastewater flows compared to FY2015 assessments that used a 3-year average of CY2011 to CY2013 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 CY2012 to CY2014 flow share compared to CY2011 to CY2013 flow share, compared to all other communities in the system.

The chart below illustrates the change in the TOTAL BASE assessment due to FLOW SHARE CHANGES. <sup>4</sup>



**Notes:**

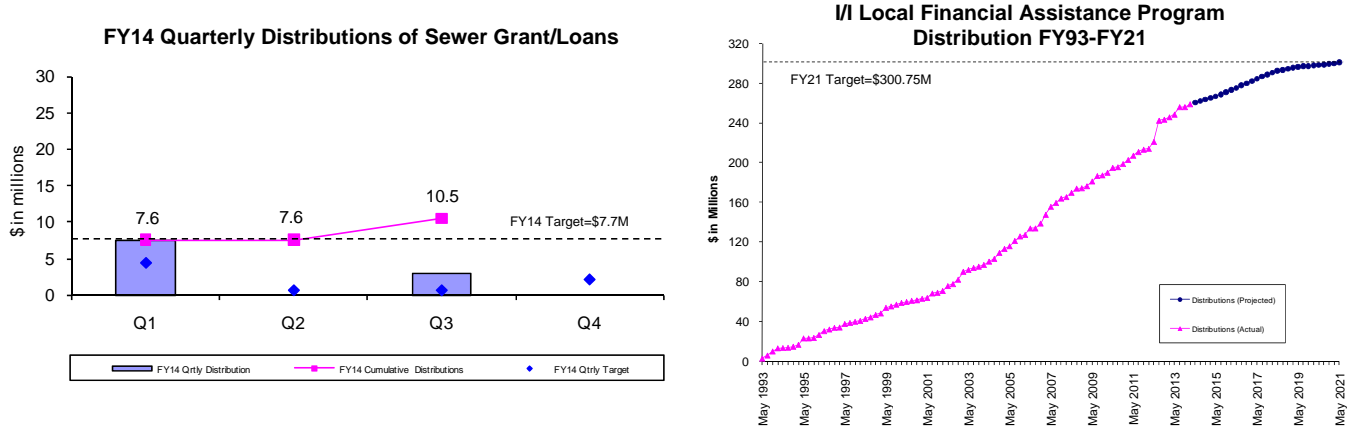
- <sup>1</sup> MWRA uses a 3-year flow average to calculate sewer assessments. Three-year averaging smoothes the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.
- <sup>2</sup> Based on CY2011 to CY2014 average wastewater flows as of 04/09/14. Flow data is preliminary and subject to change pending additional MWRA and community review.
- <sup>3</sup> CY2011 to CY2013 wastewater flows based on actual meter data. CY2014 flows based on actual meter data for January to February and projected flows for March to December.
- <sup>4</sup> Represents **ONLY** the impact on the total BASE assessment resulting from the changes in average and maximum wastewater **FLOW SHARES**.

# Community Support Programs

## 3rd Quarter – FY14

### Infiltration/Inflow Local Financial Assistance Program

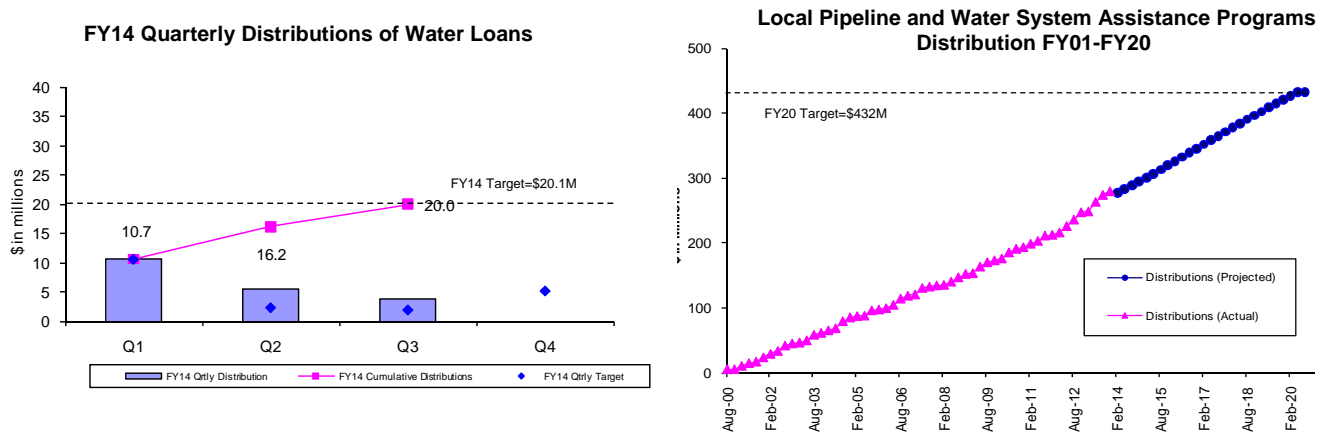
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$300.75 million in grants and interest-free loans (average of about \$10 million per year from FY93 through FY21) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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 3<sup>rd</sup> Quarter of FY14, \$2.93 million in financial assistance (45% grants and 55% interest-free loans) was distributed to fund local sewer rehabilitation projects in Chelsea, Natick, and Winchester. Total grant/loan distribution for FY14 is \$10.48 million. From FY93 through the 3<sup>rd</sup> Quarter of FY14, all 43 member sewer communities have participated in the program and more than \$259 million has been distributed to fund 454 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY21 and community loan repayments will be made through FY26. All scheduled community loan repayments have been made.

### Water Local Pipeline and Water System Assistance Programs

MWRA's Local Pipeline and Water System Assistance Programs (LPAP and LWSAP) provide \$432 million in interest-free loans (an average of about \$22 million per year from FY01 through FY20) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. Eligible project costs include: water main cleaning/lining, replacement of unlined water mains, lead service replacements, valve, hydrant, water meter, tank work, engineering design, engineering services during construction, etc. 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. The Phase 1 - LPAP concluded in FY13 with \$222 million in loan distributions. The Phase 2 - LWSAP continues through FY20.

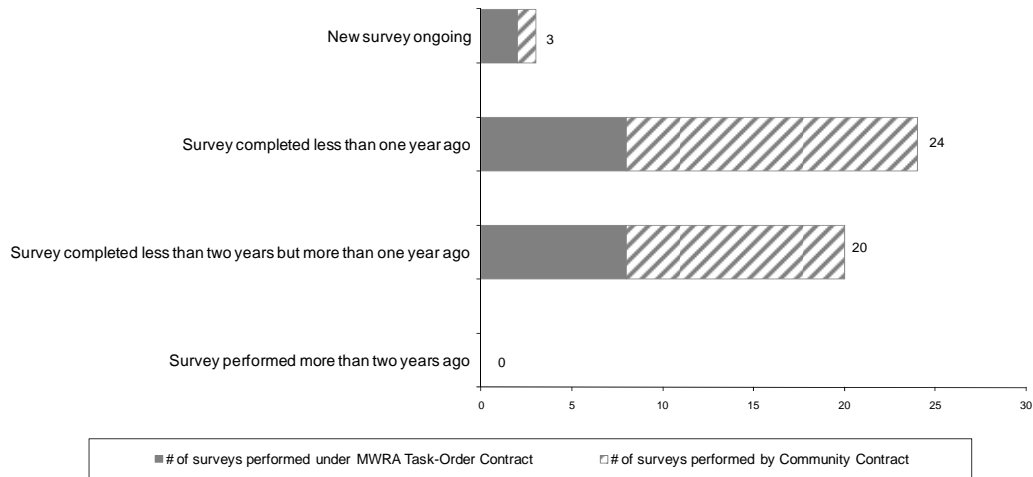


During the 3<sup>rd</sup> Quarter of FY14, \$3.81 million in interest-free loans was distributed to fund local water projects in Belmont, Boston, Chelsea, and Lexington. Total loan distribution for FY14 is \$20.03 million. From FY01 through the 3<sup>rd</sup> Quarter of FY14, more than \$282 million has been distributed to fund 328 local water system rehabilitation projects in 38 MWRA member water communities. Distribution of the remaining funds has been approved through FY20 and community loan repayments will be made through FY30. All scheduled community loan repayments have been made.

## Community Support Programs 3rd Quarter – FY14

### Community Water System Leak Detection

To ensure member water communities identify and repair leaks in locally-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 contractors 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 competitively 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 for by MWRA and the costs are billed to the community the following year. During the 3rd Quarter of FY14, all member water communities were in compliance with MWRA's Leak Detection Regulation.



### Community Water Conservation Outreach

MWRA's Community Water Conservation Program helps to maintain average water demand below the regional water system's safe yield of 300 mgd. Current 5-year average water demand is less than 210 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 individual customers. The Program's annual budget is \$25,000 for printing and purchase of materials. Annual distribution targets and totals are provided in the table below. Distributions of water conservation materials are made based on requests from member communities and individual customers.

FY14 DISTRIBUTION	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	100,000	55,816	24,172	89,623		169,611
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	2,323	3,624	6,041		11,988
Toilet Leak Detection Dye Tablets	-----	827	954	1,983		3,764

## BUSINESS SERVICES



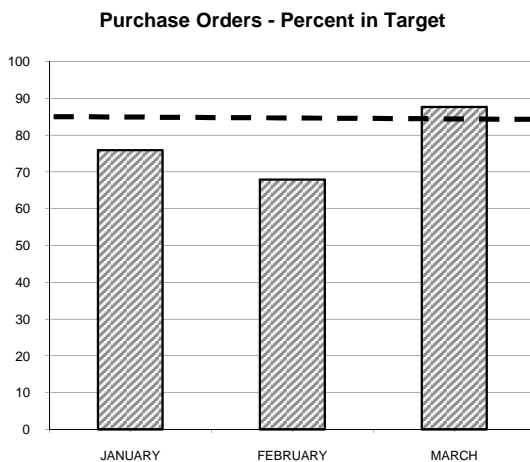
# Procurement: Purchasing and Contracts

Third Quarter FY14

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

**Outcome:** Processed 78% of purchase orders within target; Average Processing Time was 7.17 days vs. 8.81 days in Q3 FY13. Processed 65% (13 of 20) contracts within target timeframes; Average Processing Time was 122 days vs. 161 days in Q3 FY13.

## Purchasing



	No.	TARGET	PERCENT IN TARGET
\$0 - \$500	1243	3 DAYS	71.4%
\$500 - \$2K	1042	7 DAYS	86.5%
\$2K - \$5K	168	10 DAYS	60.1%
\$5K - \$10K	93	25 DAYS	82.7%
\$10K - \$25K	110	30 DAYS	86.3%
\$25K - \$50K	32	60 DAYS	75.0%
Over \$50K	20	90 DAYS	80.0%

The Purchasing Unit processed 2708 purchase orders, 307 more than the 2401 processed in Q3 FY13 for a total value of \$9,119,892 versus a dollar value of \$12,177,665 in Q3 FY13.

The purchase order processing target was not met for the \$0 - \$500 category due to vendor price confirmations, the \$2k - \$5k due to end user evaluations, the \$5k - \$10k due to end user evaluations, the \$25k - 50k due to staff summary process and end user evaluations and the over \$50k due to end user specification requirements and staff summary process.

## Contracts, Change Orders and Amendments

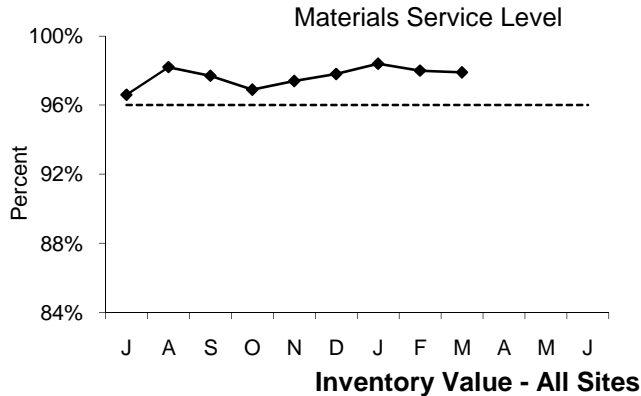
Seven contracts were not processed within target timeframe, two due to delays in obtaining insurance certificates, another two were held so that a program review could be conducted and three were processed within two weeks of the processing goal.

Procurement processed twenty contracts with a value of \$20,236,165 and eleven amendments with a value of \$13,858,164.

Twenty nine change orders were executed during the period. The dollar value of all non-credit change orders during Q3 FY14 was \$712,920.28 and the value of credit change orders was (\$503,135.16).

Staff reviewed 52 proposed change orders and 25 draft change orders.

## Materials Management 3rd Quarter, FY14



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 8,414 (98.1%) of the 8,579 items requested in Q3 from the inventory locations for a total dollar value of \$1,126,452.

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 FY14 goal is to reduce consumable inventory from the July '13 base level (\$6.9 million) by 4.0% (approximately \$276,182), to \$6.6 million by June 30, 2014 (see chart below).

Items added to inventory this quarter include:

- Deer Island – air filter, metal breather and grease head shafts for Maintenance; relays, output module, power supply and igniter for Core; cable, flowmeter and adapter for Residuals; plug valve for Liquid Train.
- Chelsea – motor cover, intersector light, bracket mount, snow plow motor, air hose, headlight assembly, filters and wheel bearing for VMM; rotork actuator, probe, chain screen, gaskets, coupling, cotter pins, eurodrive gearbox, 10 HP motor and conveyor rollers for Work Order Coordination Group.
- Southboro – AC battery, power steering fluid for VMM; check valve for Maintenance; ultrasonic transmitter for Carroll Water Treatment Plant.

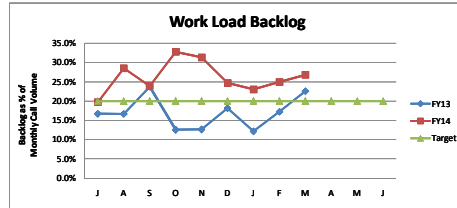
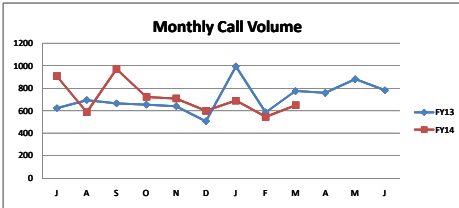
Property Pass Program:

- Audits were conducted for Mechanics tool bags and at Fleet Services, Chelsea during Q3.
- Numerous obsolete monitors, computers, printers, keyboards, mice, power supplies, laptops, and a television have been received into property pass as surplus. Disposition is being handled as part of our ongoing recycling efforts.
- Scrap revenue received to date for the quarter amounted to \$68,794.
- Revenue received from online vehicle auction held during Q3 amounted to \$6,458. Year to date revenue received amounts to \$86,394.

Items	Base Value July-13	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	6,954,017	7,075,357	121,340
Spare Parts Inventory Value	7,358,692	7,352,668	-6,024
Total Inventory Value	14,312,709	14,428,025	115,316

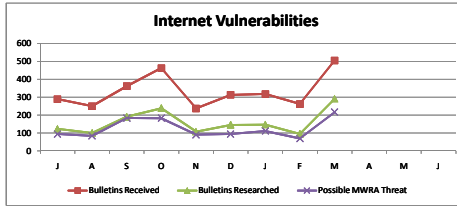
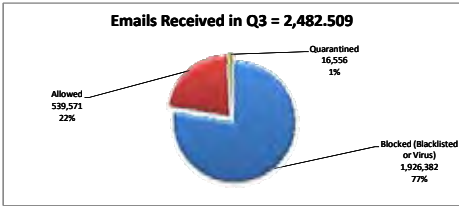
**Note:** New adds are items added at an inventory location for the first time for the purpose of servicing a group/department to meet their business needs/objectives.

**MIS Program**  
3rd Quarter FY14



**Performance:**

Call Volume: Peaked in January and increased by 12.4% from Q3 last year. Call Backlog: Peaked in March and was 6.8% above the targeted benchmark of 20%. As of the end of



**Information Security:**

During Q3, staff pushed security fixes and updates to desktops and servers throughout the quarter in order to protect against 61 vulnerabilities.

LANDesk Antivirus quarantined 26 distinct viruses from 25 MWRA computers. MWRA's systems are current with anti-virus providers' signatures for all known malware.

**Infrastructure:**

Data Network Wireless Access Points: Wireless access points were installed to provide internet access in Chelsea Vehicle Maintenance, TV Inspection bays, and Charlestown Board of Director's room. The access points enable the download of software upgrades from the manufacturer for vehicle maintenance onsite at Chelsea and the transfer of videos from the TV inspection vehicle to a MIS server on a regular basis for backup and storage to ensure data integrity.

Enterprise Backup and Recovery Project: The new Backup software (Networker) for Data Domain was installed at Chelsea, Southboro, Charlestown and JJCWTP. Also at these sites, additional storage was installed which provide increased performance and efficiencies when accessing local data.

Oracle 11i Upgrades: The GIS Oracle database was upgraded to version 11i R2 on the Oracle Database Appliance (ODA). Some configuration work still remains to be done. The ODA is a dual node server that provides manual failover capability in case one of the nodes fails.

**Applications/Training/Records Center:**

Strategic Sourcing and Contract Management: Staff continued data migration mapping and testing and a full pass of all open contracts have been successfully tested. The MBE/WBE reports were completed and demonstrated to users. Staff continued working on Contract language, templates, and output. Two web conferences were held with Infor/Lawson consultant to go over invoice matching for AP and reconciliation process for Contract managers and a corresponding Job Aid was written. A web interface for the customized Bid Tabulation reports were successfully deployed in development. Staff has mapped out the requirements to upgrade the following Landmark (LMRK) items: (1) Landmark Procurement and Strategic Sourcing Application from v9.1.0.10 to v9.1.1.x, (2) LMRK Environmenting from v10.0.4.5 to v10.1.x, and the upgrades have been scheduled. Drafted and routed staff summaries for application upgrades and, and updated project plans to include upgrades. In addition to a Staff have also developed scripts for synching the security configuration between the production and development systems.

AVL Implementation Support: MIS staff have completed compiling the reports for vehicle data transmission and conducted a live demo on 03/21/14 at the AVL go-live kickoff meeting. Operations management and staff along with Labor Relations addressed business issues and plans including a 90-day system trial period and the union agreement with management regarding the use of AVL. The AVL system was conditionally accepted contingent on a few system fixes, configuration adjustments and report changes. A second demo was held in CNY for management and union presidents during their meeting in the boardroom.

Laboratory Information Management System (LIMS): The production system was successfully upgraded from version 5 to 6 on March 16. There were 41 minor issues logged that were resolved quickly with no end user impact. The new version provides enhanced functionality and an improved user interface that improves productivity. The new version also provides the ability to implement the Electronic Laboratory Notebook (ELN) module of the LIMS application. The functionality in ELN is designed toward eliminating paper in the laboratories.

PI: The new ISO New England system was successfully implemented in production this month. MIS has developed a new ISO New England spot electrical rate application using data collection through PI. The new method involves data collection in PI that improves upon the old system's 12x7 coverage period to a 24x7 coverage period in the new system.

Telog: The Telog system for wastewater metering was upgraded to the latest version on March 19. The upgrade consisted of new hardware and software. The new Telog servers are a three tier configuration with servers being located in the Chelsea MIS Data Center.

Water Quality Reporting System: The new Water Quality Reporting system had the first round of reporting approved by the Southborough Water Quality Group. The new report provides information for the chlorine contact time at the Ware Disinfection Facility. This report will be included in the upcoming April DEP submittal.

Library & Records Center: MWRA received the last of the images from DigiComm for Phase 1, Batch 4 (Metropolitan Water Works collection 1895 to 1926). Staff attended DigiComm seminar on 3/17 and were asked to deliver a short presentation of the collection with DCR archivist at the DigiComm conference in April. Public Affairs continues to scan and add metadata into MWRA catalogs. Staff sent 10 disposal lists to the Departments requesting review for permission to dispose of 515 Records Center boxes. Issued quarterly Records Management email reminder to all MWRA staff. The Library completed 40 research requests (105 YTD), cataloged 26 books and reports (584 YTD), and provided 98 articles and standards as needed (274 YTD). Automatically generated article emails (3,793 YTD) were discontinued, and new services are being evaluated

IT Training: For the quarter, 111 staff attended 17 classes and 10 workshops. 24% of the workforce has attended at least one class year-to-date. iPad IT Support training classes were offered. Telog Enterprise Software training classes were provided. Staff delivered Lawson Time Entry and Lawson Self-Service training classes and GIS training for OEP staff. New and updated job aids were posted on the MIS How-to page on the INTRANet. SMART Board demos were also provided.

# Legal Matters

## 3rd Quarter FY14

### PROJECT ASSISTANCE

#### COURT AND ADMINISTRATIVE ORDER

- **Boston Harbor Litigation and CSO:** Reviewed and Filed Compliance and Progress Report and CSO Annual Report with US District Court in compliance with Schedule Seven of the Boston Harbor Case
- **NPDES:** Drafted letters notifying EPA and DEP of two essential maintenance projects (replacement of RSL valves and scum tip tubes) at DITP scheduled to commence in April and May 2014 respectively and of the work being performed on the pumps at the Cottage Farm and Prison Point CSO treatment and storage facilities.

#### REAL ESTATE, CONTRACT AND OTHER SUPPORT

- **Section 36/W11C/Shaft 9-A11 Site, Arlington and Medford:** Sent out Notices of Taking/Offer to Convey re: the acquisition of permanent easements on sixty-six (66) parcels of land in private roadways in Arlington.
- **JJCWTP/Town of Marlborough:** Met with the Mayor of Marlborough's staff to resolve ownership issues in a parcel of land needed for the construction of a security facility at JJCWTP; Marlborough staff agreed to take the parcel by eminent domain and provide MWRA with a permanent easement in a portion of that parcel.
- **Fore River Staging Area:** Drafted an access agreement between Quincy Shipyard and MWRA/FRRC relative to Quincy Shipyard's access to and from its offices located at the former Fore River Shipyard during the operation of the FRRC railroad.
- **Fore River Railroad:** Drafted letter of agreement by and between MWRA, FRRC, and Quincy Shipyard, LLC relating to the grant of a railroad easement in the former Fore River Shipyard from Quincy Shipyard, LLC to MWRA/FRRC in exchange for MWRA/FRRC's extinguishment of an existing railroad easement for the purpose of straightening a curve in the existing railroad tracks.
- **Ware Disinfection Facility:** Recorded grant of easement from DCAM to MWRA for MWRA's Ware disinfection facility.
- **FRRC:** Recorded Order of Conditions issued by Braintree Conservation Commission for FRRC work for Adams Street Grade Crossing and Commercial Street Bridge Replacement in Braintree.
- **Cost Recovery:** Drafted a Tolling Agreement with a design consultant to suspend the statutes of Limitation and Repose for a period of one year pending review of the consultant's performance on eight (8) construction projects.
- **Cross Harbor Cable:** Responded to NSTAR's proposal for the interconnection agreement for the cross-harbor cable.
- **Weston Water Main:** Finalized the settlement agreement with all defendants for the full and final settlement of the litigation in the amount of \$3.1M.

#### MISCELLANEOUS

- Reviewed and approved twenty (21) Section 8(m) Permits.

### LABOR, EMPLOYMENT AND ADMINISTRATIVE

#### New Matters

Eight demands for arbitration were filed.

A Charge was filed at the Massachusetts Commission Against Discrimination alleging that the MWRA discriminated against an employee on the basis of race.

## **Matters Concluded**

Settled a charge of discrimination and harassment filed against the MWRA at the MCAD.

## **LITIGATION/TRAC**

### **New Matters**

During the Third Quarter of FY 2014, three new lawsuits were received, and one has been re-activated.

Wells Fargo Bank v. (Current Employee) and MWRA: This is a wage garnishment action that was filed by the creditor in Lynn District Court. On January 30, 2014, MWRA appeared on a motion to dismiss the trustee action as to improper venue. That motion was allowed by the court. The creditor may re-file its action.

Portfolio Recovery Associates, LLC assignee of Capital One Bank (USA) NA vs. (Current Employee) and MWRA, Trustee: Summons to Trustee (MWRA) was served on February 7, 2014 in an action brought against (current employee) in the amount of \$3, 963.10.

PHEAA v. (Current Employee): On March 14, 2014, the Law Division received this wage garnishment action from the debtor to collect student loan funds in the amount of \$39,236.73. On March 27, 2014 PHEAA forwarded a fax indicating that the Order has been withdrawn. The matter is closed.

Citibank, NA v. (Current Employee) and MWRA, Trustee: This is a wage garnishment matter from the debtor to collect \$17,948.19 that has been re-activated. A new Summons to Trustee was received on March 26, 2014.

Current employee: The law division was called upon to provide personnel and payroll records in connection with an employee's divorce proceeding, in which a support order was previously served on MWRA.

### **Significant Developments**

Daniel O'Connell Sons, Inc. v. MWRA: MWRA initiated a third-party lawsuit against Allied-Locke Industries, Inc. in which that company has now been joined as an additional party to the pending litigation brought by O'Connell's Sons against MWRA in December, 2013.

### **Matters Concluded**

One case closed during the Third Quarter FY 2014.

(Former Employee) v. MWRA: Plaintiff was terminated by MWRA in January 2012 because of an altercation he had with another MWRA employee. As a result of his termination, Plaintiff filed a Complaint in Suffolk Superior Court asserting he was terminated from MWRA in violation of G.L. c. 145, §185, the Massachusetts Whistleblower Act. Plaintiff alleged that a series of disciplinary actions, including his termination, were imposed in retaliation for his alleged whistleblower activity, and that these retaliatory actions violated G.L. c. 145, §185. MWRA denied the allegation. On October 10, 2013, the Court dismissed this action and entered final judgment against Plaintiff for failing to adequately respond to MWRA's discovery requests. While the ten day period has passed in which Plaintiff could seek to alter or amend this judgment, Plaintiff has up to one year to seek relief under Mass. R. Civ. P. 60, to set aside the judgment based on error, mistake, excusable neglect, fraud, or newly discovered evidence. MWRA legal staff believes it is unlikely that the Plaintiff will prevail on a motion to set aside this judgment should he choose to file it.

### **Subpoenas**

During the Third Quarter of FY 2014, one new subpoena was received and no subpoenas were pending at the end of the Third Quarter FY 2014.

### **Public Records**

During the Third Quarter of FY 2014 two new public records request were received and three public records requests were closed.



**INTERNAL & CONTRACT AUDIT PROGRAM**  
3rd Quarter FY14

**Highlights**

MBE/WBE Program Contracting Goals Internal Audit (IA) reviewed the process used to measure and report on the attainment of MBE/WBE contracting goals. IA staff reviewed supporting documentation for setting the FY14 goals. The MWRA's goals for construction, professional services and goods and services are based on a 10 year old availability study that may no longer be relevant. Recommendations centered on considering adopting the DEP's disadvantaged MBE/WBE goals.

Expenditures reported in the ONB/YNB have been both under and over reported. Recommendations were made to update expenditures quarterly rather than monthly to allow time for a more accurate accumulation of expenditures. A further recommendation was made to include more explanatory information on the ONB/YNB page.

**Status of Open Audit Recommendations** (5 recommendations closed in the 3rd quarter)

The Internal Audit Department follows up on open recommendations on a continuous basis. All pending recommendations have target implementation dates. 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 98% of recommendations have been implemented.

Report Title (date)	Recommendations Pending Implementation	Closed Recommendations
Warehouse Practices (9/30/10)	1	9
Facility Card Access Controls (2/22/11)	2	18
DITP Data Center Access Controls (10/14/11)	2	20
Chelsea Facility Physical Security (12/31/12)	7	25
Hardware Equipment Management (5/22/13)	19	17
Review of Purchase Card Activity (6/28/13)	1	2
Bay State Fertilizer (9/3/13)	4	1
Follow-up Report on Fleet Services Activities (12/31/13)	6	11
MBE/WBE Program Contracting Goals (3/14/14)	<u>10</u>	<u>0</u>
<b>Total Recommendations</b>	<b>52</b>	<b>103</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.

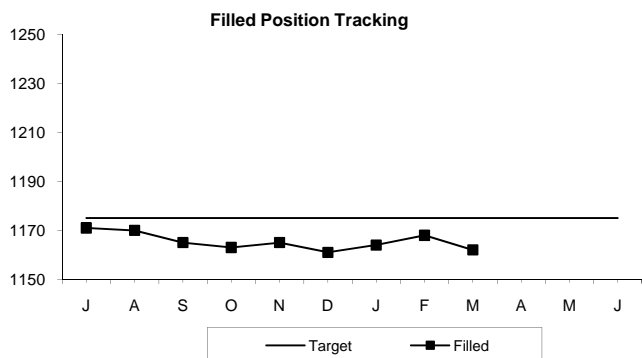
Savings	FY10	FY11	FY12	FY13	FY14 (3Q)	TOTAL
<b>Consultants</b>	\$194,238	\$520,176	\$259,245	\$587,314	\$128,872	\$1,689,845
<b>Contractors &amp; Vendors</b>	\$599,835	\$3,129,538	\$435,760	\$2,153,688	\$187,387	\$6,506,208
<b>Internal Audits</b>	\$206,282	\$152,478	\$407,350	\$391,083	\$870,104	\$2,027,297
<b>Total</b>	<b>\$1,000,355</b>	<b>\$3,802,192</b>	<b>\$1,102,355</b>	<b>\$3,132,085</b>	<b>\$1,186,363</b>	<b>\$10,223,350</b>

## OTHER MANAGEMENT



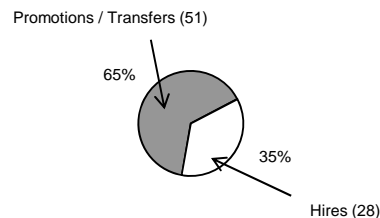
# Workforce Management

## 3rd Quarter FY14



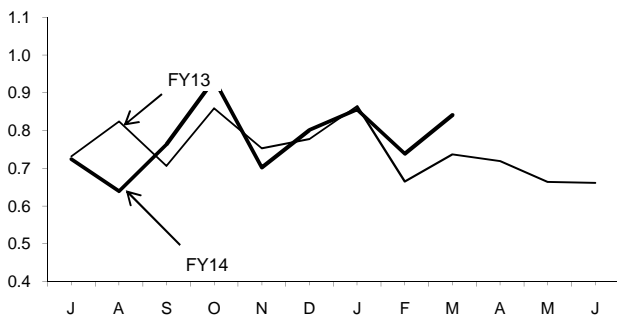
FY14 Target for Filled Positions = 1175  
 Filled Positions as of March 2014 = 1162

**Positions Filled by Hires/Promotions**  
FY14-YTD



	Pr/Trns	Hires	Total	
FY11	48 (62%)	30 (38%)	78	
FY12	42 (61%)	27 (39%)	69	
FY13	82 (64%)	47 (36%)	129	
FY14	80 (66%)	41 (34%)	121	(To Date)

**Average Monthly Sick Leave Usage**  
Per Employee



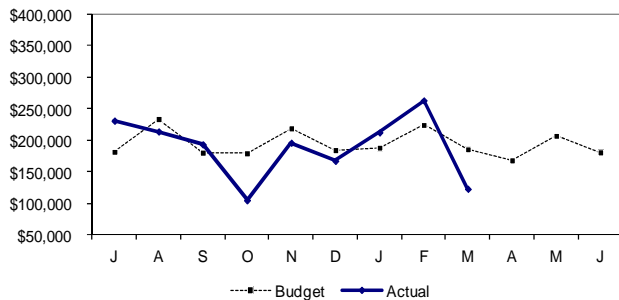
Average monthly sick leave for the 3rd Quarter of FY14 increased as compared to the 2nd Quarter (9.13 to 9.33 days).

In Q3 of FY14, the average quarterly sick leave usage has increased 1% from the same time last year.

	Number of Employees	YTD	Annualized Total	Annual FMLA %	FY13
A&F	181	7.73	10.32	40.6%	8.48
Aff. Action	6	9.96	11.63	35.5%	12.25
Executive	5	3.67	10.02	0.0%	3.08
Int. Audit	8	5.71	9.97	0.0%	7.36
Law	16	7.78	8.99	16.4%	11.80
OEP	6	12.95	7.74	62.5%	5.89
Operations	941	6.80	7.27	22.6%	9.02
Pub. Affs.	12	9.52	5.10	42.0%	9.08
<b>MWRA Avg</b>	<b>1175</b>	<b>7.01</b>	<b>9.33</b>	<b>26.0%</b>	<b>8.95</b>

Percent of sick leave usage attributable to Family and Medical Leave Act (FMLA) leave is 26.0% for the 3rd Quarter of FY14.

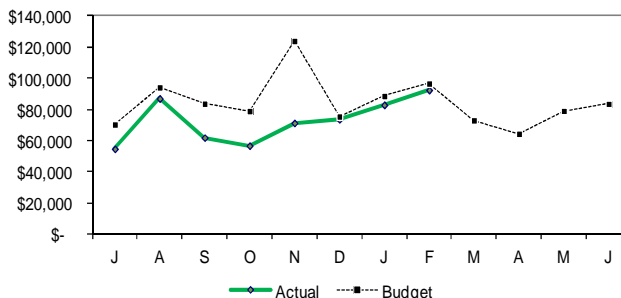
**Field Operations**  
Current Month Overtime \$



Total Overtime for **Field Operations** for the third quarter of FY14 was \$599,304 which is (\$638) under budget. Emergency overtime was \$321k, which was \$256 over budget, due to higher than anticipated snow removal. Spending in Q3 included \$138k for snow removal, \$87k for rain events, \$39k for emergency maintenance, \$32k for emergency operations. Coverage overtime was \$121k, which was (\$302) under budget. Planned overtime was \$158k or \$682 over budget, mainly for maintenance off-hours work at \$45k, and half-plant operations at Carroll for \$35k.

Year-to-date March FY14, FOD's overtime was \$1.7m, which was (\$71k), or (\$4%) under budget, mainly due to lower than anticipated wet weather response.

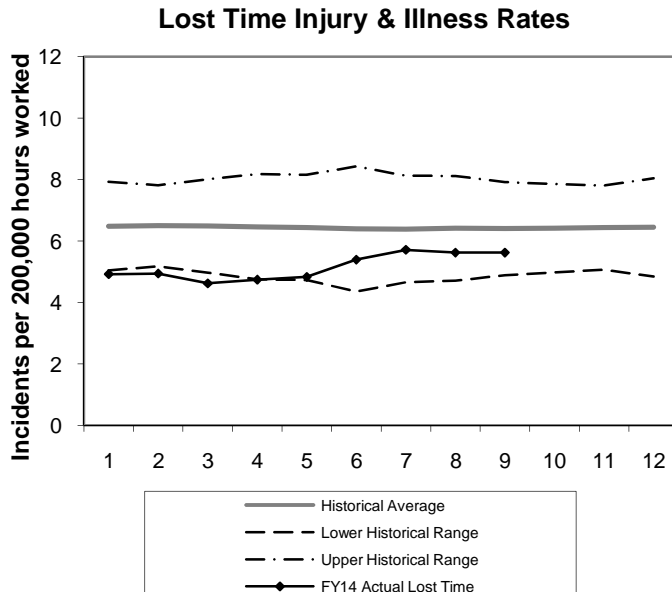
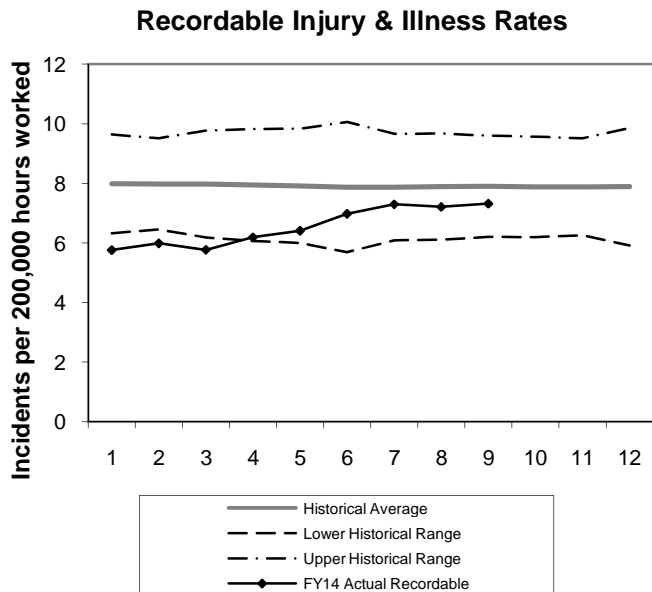
**Deer Island Treatment Plant**  
Current Month Overtime \$



**Deer Island's** total overtime expenditure in February 2014 was \$92K, which was (\$4K) or (4.4%) under budget. The variance reflects less than anticipated storm coverage requirement, (\$5K), along with Management's continued efforts to control overtime spending by allowing overtime for maintenance or repair of critical systems and equipment only. These items are partially offset by slightly higher than anticipated shift coverage overtime, \$1K.

Year-to-date February 2014, Deer Island's overtime was \$581K, which was (\$131K) or (18.4%) under budget, mainly due to less than anticipated storm coverage requirements, (\$147K), along with Management's continued efforts to control overtime spending by allowing overtime for maintenance or repair of critical systems and equipment only, (\$73K). These items are partially offset by higher than anticipated shift coverage overtime in Thermal due a vacancy, IA and FMLA, of a 2nd class engineer, \$56K, and and higher Operations shift coverage requirements, \$34K.

## Workplace Safety 3rd Quarter FY 14



- 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 FY13. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively. FY14 actual incident rates can be expected to fall within this historical range.

### Workers Compensation Claims Highlights - Third Quarter FY14

	New	Closed	Open Claims
Lost Time	13	10	72
Medical Only	32	39	26
Report Only	17	17	
	<b>New</b>		<b>YTD Light Duty Returns</b>
Light Duty Returns	3		9

#### Highlights/Comments:

##### Light Duty Returns

**Jan** 3 employees returned to work light duty from IA  
1 employee returned to light duty assignment after 5 days on IA

**Feb** 1 employee returned to light duty assignment after 3 days on IA

**Mar** None

##### Regular Duty Returns

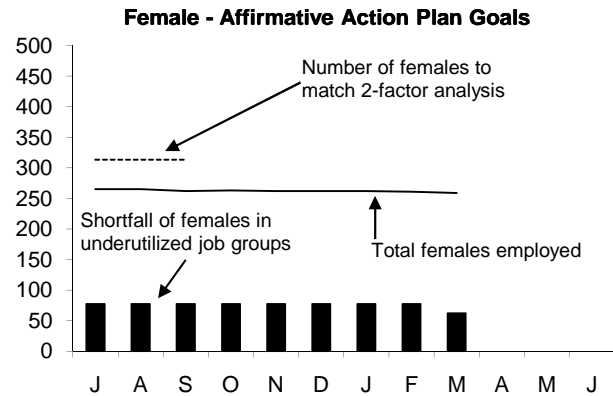
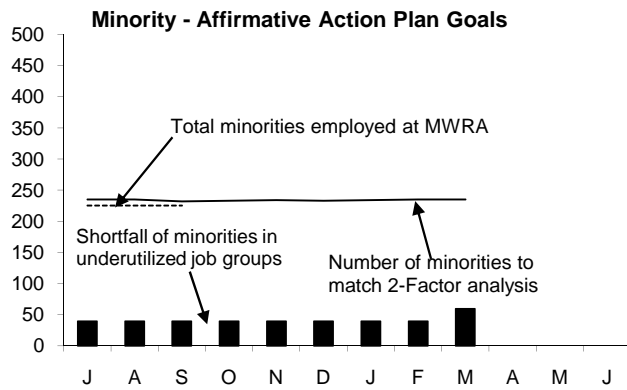
**Jan** 5 employees returned to work full duty from IA

**Feb** 2 employees returned to work full duty from IA  
1 employee returned to work full duty from a light duty assignment

**Mar** 3 employees returned to work full duty from IA  
1 employee returned to work full duty from a light duty assignment

## MWRA Job Group Representation

Q3 - FY14



### Highlights:

At the end of Q3 FY14, 10 job groups or a total of 59 positions are underutilized by minorities as compared to 10 job groups or a total of 39 positions at the end of Q3 FY13; for females 13 job groups or a total of 62 positions are underutilized by females as compared to 14 job groups or a total of 76 positions at the end of Q3 FY13. During Q3, 5 minorities and 2 females were hired. During this same period, 2 minorities and 5 females terminated.

### Underutilized Job Groups - Workforce Representation

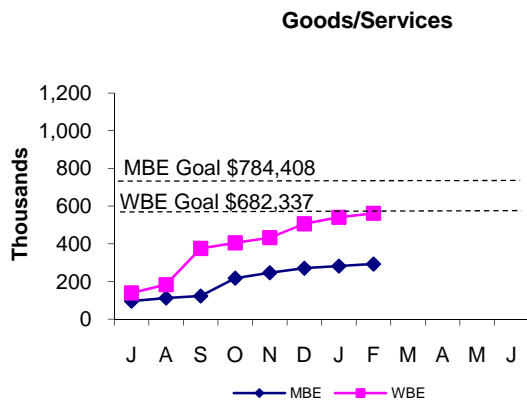
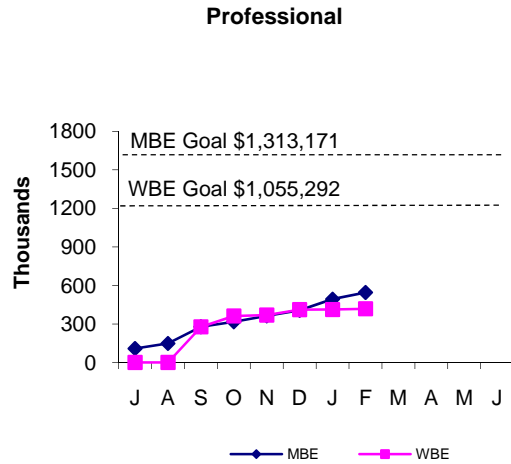
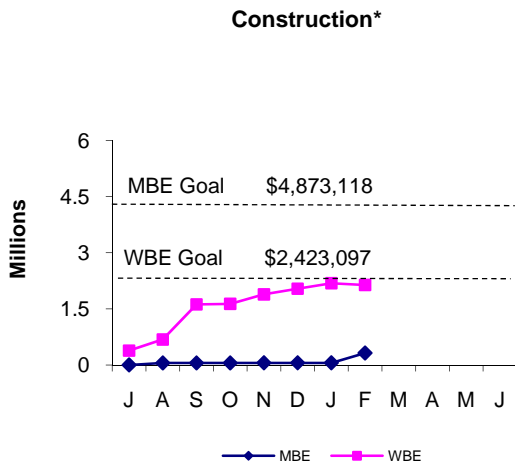
Job Group	Employees	Minorities	Achievement	Minority	Females	Achievement	Female
	as of 3/31/2014	as of 3/31/2014	Level	Over or Under Under utilized	As of 3/31/2014	Level	Over or Under Under utilized
Administrator A	20	3	2	1	4	6	-2
Administrator B	21	0	3	-3	3	6	-3
Clerical A	43	18	11	7	37	17	20
Clerical B	33	7	11	-4	12	2	10
Engineer A	79	14	21	-7	11	16	-5
Engineer B	51	13	12	1	7	13	-6
Craft A	114	13	22	-9	0	3	-3
Craft B	151	32	27	5	3	5	-2
Laborer	72	27	17	10	3	4	-1
Management A	102	13	24	-11	33	46	-13
Management B	46	9	12	-3	13	19	-6
Operator A	67	4	7	-3	2	4	-2
Operator B	68	7	17	-10	4	3	1
Para Professional	53	12	16	-4	24	37	-13
Professional A	35	3	8	-5	23	14	9
Professional B	163	45	43	2	75	74	1
Technical A	51	14	8	6	5	8	-3
Technical B	6	1	1	0	0	2	-2
<b>Total</b>	<b>1175</b>	<b>235</b>	<b>262</b>	<b>32/-59</b>	<b>259</b>	<b>279</b>	<b>41/-62</b>

### AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/ Transfers	AACU Ref. External	Position Status
Craft A	Unit Supervisor, Electrical	1	Int	1	0	Promo = WM
Craft A	M&O Specialist	2	Int/Ext	0	0	NH=WM, D=WM
Craft B	Electrician	1	Int/Ext	0	1	NH = WM
Craft B	Warehouse Materials Handler	1	Int/Ext	1	1	Promo = WM
Clerical B	Principal Storekeeper	1	Int	1	0	Promo = WM
Engineer A	Laboratory Manager	1	Int/Ext	1	0	Promo = WM
Engineer A	Sr. Staff Engineer, Electrical	1	Int/Ext	0	0	In Progress
Engineer A	Sr. Program Manager, SCADA	1	Int	0	0	In Progress
Engineer A	Project Engineer, PM	1	Int/Ext	1	0	Promo = WM
Engineer A	Sr. Monitoring & Control Engineer	1	Int/Ext	0	0	NH = WM
Engineer A	Junior Civil Engineer	1	Int/Ext	0	0	NH = WM
Laborers	OMC Laborer	4	Int/Ext	0	0	NH=(3) WM & (1) BM
Management A	Project Manager	1	Int	1	0	Transfer = WF
Management B	Facilities Manager	1	Int	0	0	In Progress
Management B	Manager, Process Control	1	Int	0	0	In Progress
Management B	Trans Courier Supervisor	1	Int	1	0	Promo = WM
Professional B	Sr. Sampling Associate	1	Int			In Progress
Professional B	Systems Analyst/ Programmer II	1	Int/Ext	0	0	NH = WM
Professional B	Chemist I	2	Int/Ext	2	0	T = WM, Promo = HM
ParaProfessional	Contract Assistant	1	Int	0	0	NH = WF
Technical A	Systems Administrator III	1	Int/Ext	0	0	In Progress

## MBE/WBE Expenditures Q3 - FY14

**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 February.



FY14 spending and percentage of goals achieved, as well as FY13 performance are as follows:

	MBE				WBE			
	FY14 Year-to-Date		FY13		FY14 Year-to-Date		FY13	
	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>	<u>Amount</u>	<u>Percent</u>
<b>Construction</b>	318,795	7.7%	5,364,613	121.7%	2,137,728	104.1%	4,522,050	206.4%
<b>Professional Svc.</b>	545,664	41.6%	1,477,040	134.3%	418,431	39.7%	557,922	63.1%
<b><u>Goods &amp; Svcs.</u></b>	<u>292,461</u>	<u>37.3%</u>	<u>1,128,359</u>	<u>378.4%</u>	<u>561,287</u>	<u>82.3%</u>	<u>578,379</u>	<u>223.0%</u>
<b>Total</b>	1,156,920	18.6%	\$7,970,012	137.3%	3,117,446	82.2%	\$5,658,351	169.7%

MBE/WBE dollar totals include MBE and WBE payments to prime contractors, consultants and vendors.

\*Note: The MBE shortfall is the result of changes in contract schedules and therefore projected MBE work for FY14 did not ensue.

## MWRA FY14 CEB Expenses through Q3 – FY14

	March 2014 Year-to-Date (\$000)					
	Budget	Actual	Variance	%	FY14 Budjet	%
<b>EXPENSES</b>						
WAGES AND SALARIES	\$ 69,515	\$ 67,259	\$ (2,256)	-3.2%	\$ 94,874	70.9%
OVERTIME	2,735	2,509	(227)	-8.3%	3,580	70.1%
FRINGE BENEFITS	13,502	13,509	7	0.0%	18,064	74.8%
WORKERS' COMPENSATION	1,500	1,966	466	31.1%	2,000	98.3%
CHEMICALS	7,983	7,788	(195)	-2.4%	10,671	73.0%
ENERGY AND UTILITIES	17,157	16,945	(212)	-1.2%	22,761	74.4%
MAINTENANCE	19,642	20,101	459	2.3%	27,762	72.4%
TRAINING AND MEETINGS	214	211	(3)	-1.5%	331	63.8%
PROFESSIONAL SERVICES	3,897	3,538	(359)	-9.2%	6,083	58.2%
OTHER MATERIALS	2,710	3,322	612	22.6%	5,969	55.6%
OTHER SERVICES	16,481	16,032	(448)	-2.7%	22,279	72.0%
<b>TOTAL DIRECT EXPENSES</b>	<b>\$ 155,336</b>	<b>\$ 153,179</b>	<b>\$ (2,156)</b>	<b>-1.4%</b>	<b>\$ 214,374</b>	<b>71.5%</b>
INSURANCE	\$ 1,570	\$ 1,462	\$ (108)	-6.9%	\$ 2,094	69.8%
WATERSHED/PILOT	20,411	20,281	(130)	-0.6%	27,215	74.5%
BEC <sub>o</sub> PAYMENT	2,513	2,506	(7)	-0.3%	3,347	74.9%
MITIGATION	1,175	1,134	(41)	-3.5%	1,567	72.4%
ADDITIONS TO RESERVES	127	127	-	0.0%	169	75.0%
RETIREMENT FUND	12,432	12,447	16	0.1%	12,432	100.1%
<b>TOTAL INDIRECT EXPENSES</b>	<b>\$ 38,228</b>	<b>\$ 37,958</b>	<b>\$ (271)</b>	<b>-0.7%</b>	<b>\$ 46,823</b>	<b>81.1%</b>
STATE REVOLVING FUND	\$ 54,192	\$ 54,192	\$ -	0.0%	\$ 75,961	71.3%
SENIOR DEBT	152,503	152,503	-	0.0%	204,471	74.6%
CORD FUND	-	-	-	---	132	0.0%
DEBT SERVICE ASSISTANCE	-	(854)	(854)	---	-	0.0%
CURRENT REVENUE/CAPITAL	6,900	6,900	-	0.0%	9,200	75.0%
SUBORDINATE MWRA DEBT	74,939	74,939	-	0.0%	100,117	74.9%
LOCAL WATER PIPELINE CP	3,096	3,096	-	0.0%	4,128	75.0%
CAPITAL LEASE	2,413	2,413	-	0.0%	3,217	75.0%
VARIABLE DEBT	-	(9,544)	(9,544)	---	-	0.0%
DEFEASANCE ACCOUNT	-	9,544	9,544	---	-	0.0%
<b>TOTAL DEBT SERVICE</b>	<b>\$ 294,043</b>	<b>\$ 293,189</b>	<b>\$ (854)</b>	<b>-0.3%</b>	<b>\$ 397,226</b>	<b>73.8%</b>
<b>TOTAL EXPENSES</b>	<b>\$ 487,606</b>	<b>\$ 484,326</b>	<b>\$ (3,281)</b>	<b>-0.7%</b>	<b>\$ 658,423</b>	<b>73.6%</b>
<b>REVENUE &amp; INCOME</b>						
RATE REVENUE	\$ 471,541	\$ 471,541	\$ -	0.0%	\$ 628,721	75.0%
OTHER USER CHARGES	5,894	5,847	(47)	-0.8%	8,127	71.9%
OTHER REVENUE	5,261	6,655	1,394	26.5%	6,444	103.3%
RATE STABILIZATION	2,625	2,625	-	0.0%	3,500	75.0%
INVESTMENT INCOME	9,064	9,270	205	2.3%	11,631	79.7%
<b>TOTAL REVENUE &amp; INCOME</b>	<b>\$ 494,385</b>	<b>\$ 495,937</b>	<b>\$ 1,553</b>	<b>0.3%</b>	<b>\$ 658,423</b>	<b>75.3%</b>

As of March 2014, total revenue was \$495.9 million, \$1.6 million or 0.3% higher than budget and total expenses were \$484.3 million, \$3.3 million or 0.7% less than budget for a net variance of \$4.8 million.

### Expenses –

- **Direct Expenses** are \$153.2 million, \$2.2 million or 1.4% less than budget.
- **Wages and Salaries** are underspent by \$2.3 million or 3.2% due to lower headcount, mix of salaries for people retiring and new hires, and higher than budgeted use of accrued leave time.
- **Other Materials** are over budget by \$612,000 or 22.6% mainly due to vehicle purchases of \$713,000 and unbudgeted gas detection equipment of \$120,000 offset by lower equipment/furniture of \$204,000.
- **Workers Compensation** expenses are higher than budget by \$466,000 or 31.1%. The majority of the variance is due to higher than budgeted medical expenses of \$372,000.
- **Maintenance** is overspent by \$459,000 or 2.3% year-to-date. Material purchases are greater than budgeted by \$1.4 million and services are underspent by \$904,000. Some of the variance is timing related.
- **Other Services** are underspent by \$448,000 or 2.7% due to lower sludge quantities of \$501,000, Other Services of \$69,000, and Grit & Screenings Removal of \$60,000 offset by higher space/lease rentals of \$91,000, police details of \$55,000, and Membership/dues of \$49,000.
- **Professional Services** are underspent by \$359,000 or 9.2% mainly for lower as-needed engineering support of \$244,000 as well as lower report preparation for the Harbor Monitoring program of \$80,000.
- **Overtime** is underspent by \$227,000 or 8.3% mainly due to lower than projected emergency wet weather events.
- **Utilities** are over budget by \$212,000 or 1.2% due to lower purchase and favorable pricing for diesel fuel of \$288,000 mainly at Deer Island offset by higher Electricity of \$130,000 mainly for winter congestion pricing.
- **Chemicals** are underspent by \$195,000 or 2.4% mainly due to lower Nitrazyme of \$190,000 due to Framingham modifications, Liquid Oxygen of \$159,000 for lower pricing and volume, and Sodium Bisulfite of \$111,000, offset by higher Hydrogen Peroxide of \$115,000 due to pretreatment for hydrogen sulfide gas as well as Soda Ash of \$106,000.
- **Indirect Expenses** are \$38.0 million, \$271,000 or 0.7% under budget mainly due to lower Payment in Lieu of Taxes (PILOT) expense of \$134,000 and lower insurance expenses of \$108,000, mostly related to claims.
- **Debt Service Expenses** totaled \$293.2 million, \$854,000 or 0.3% below budgeted level after the transfer of \$9.5 million of a favorable year-to-date variance to the Defeasance Account. The underspending is due to the receipt of Debt Service Assistance from the Commonwealth which will be used in FY15 to lower community assessments.

### Revenue and Income –

- **Total Revenue / Income** for March is \$495.9 million, \$1.6 million or 0.3% higher than budget due to Non-Rate Revenue of \$1.3 million and Investment Income of \$205,000. The higher Non-Rate Revenue is due to \$427,000 for the sale of emergency water for the Town of Hudson, \$233,000 for a Homeland Security grant for the Carroll Plant security gate, \$186,000 for the sale of surplus equipment, \$152,000 for energy revenue due to Demand Response and Renewable Portfolio Standard (RPS) sales, and approximately \$349,000 for of vendor rebates and other smaller items.

## Cost of Debt Q3-FY14

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.

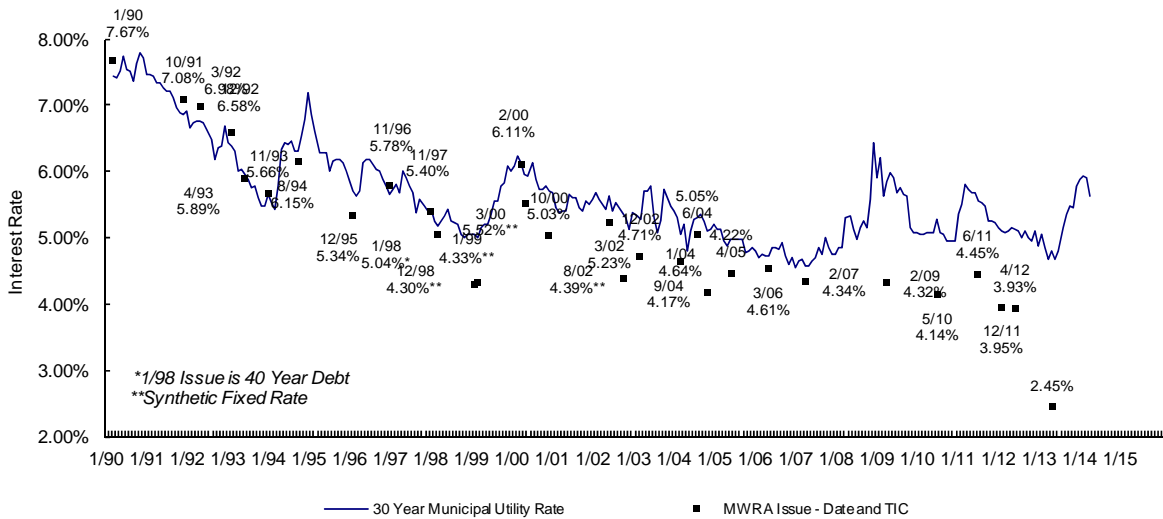
### Average Cost of MWRA Debt

Fixed Debt (\$4,040)	4.34%
Variable Debt (\$484.3)	0.70%
SRF Debt (\$1,023)	1.22%
<b>Weighted Average Debt Cost (\$5,556)</b>	<b>3.44%</b>

### Most Recent Senior Fixed Debt Issue March 2013

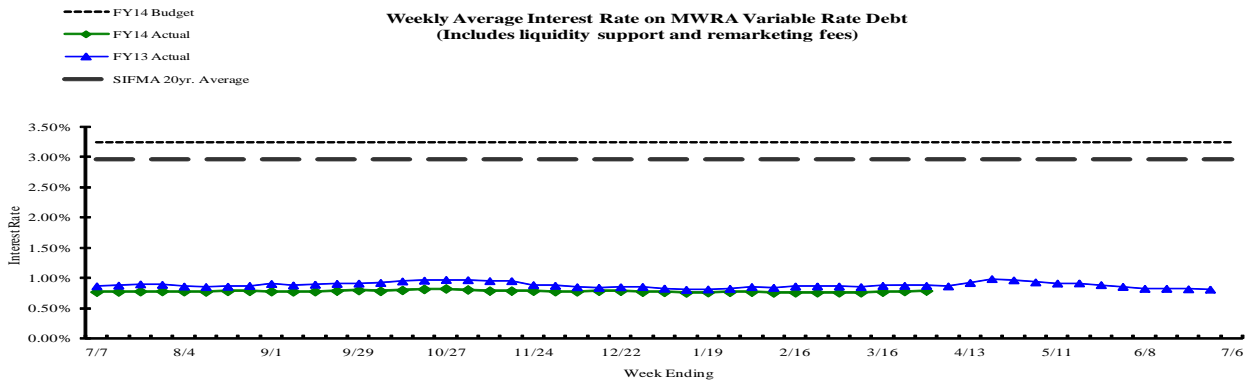
2013 Series A (\$170.6) 2.45%

### MWRA Fixed Rate Debt vs. 30 Year Municipal Utility Interest Rate



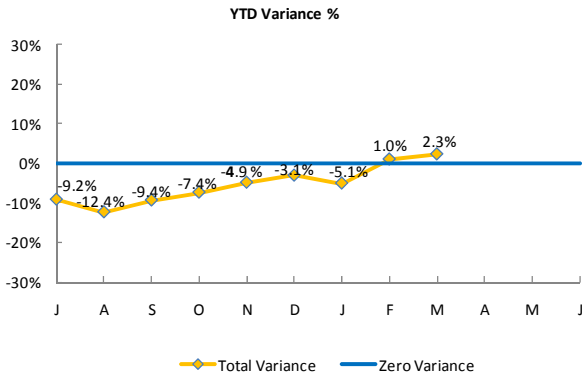
### Weekly Average variable Interest Rates vs. Budget

MWRA currently has ten variable rate debt issues with \$1.0 billion outstanding, excluding commercial paper. Of the ten 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. In March, SIFMA rates fluctuated with a high of 0.06% and a low of 0.03%. 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.



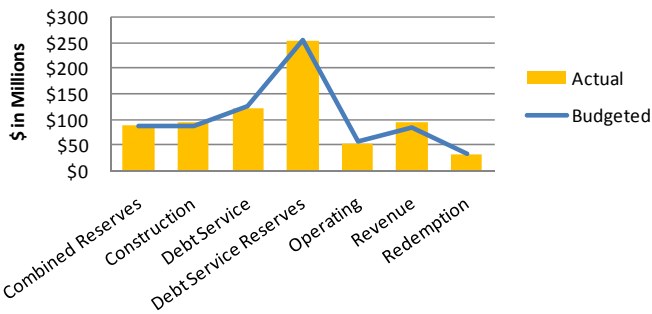
# Investment Income Q3 -FY14

## Year To Date

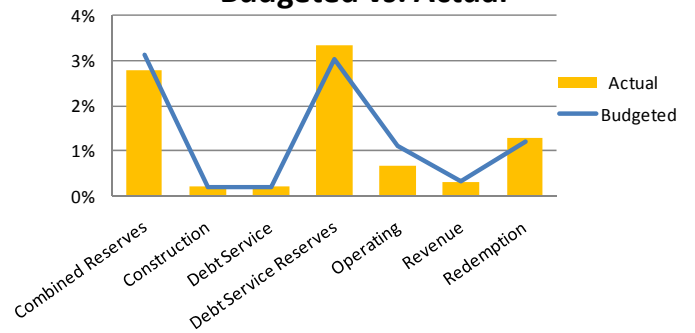


	YTD BUDGET VARIANCE			
	(\$000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	\$47	(\$254)	(207)	-10.1%
Construction	\$7	(\$3)	4	3.4%
Debt Service	(\$10)	(\$5)	(15)	-7.9%
Debt Service Reserves	\$0	\$590	590	10.3%
Operating	(\$22)	(\$177)	(198)	-42.5%
Revenue	\$23	(\$17)	6	2.9%
Redemption	\$0	\$24	25	8.4%
<b>Total Variance</b>	<b>\$46</b>	<b>\$159</b>	<b>\$205</b>	<b>2.3%</b>

### YTD Average Balances Budgeted vs. Actual

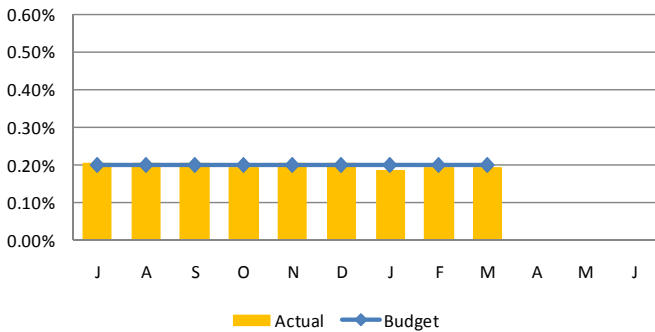


### YTD Average Interest Rate Budgeted vs. Actual

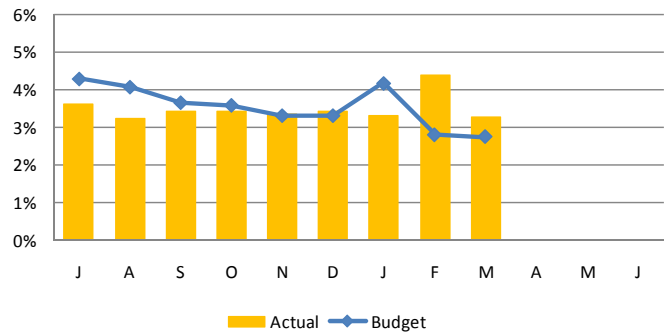


## Monthly

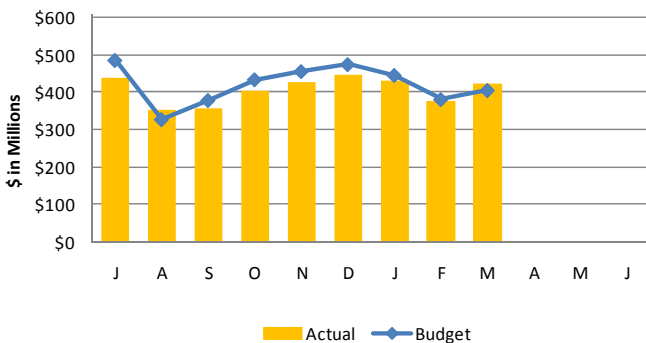
### Short-Term Interest Rates



### Long-Term Interest Rates



### Short-Term Average Balances



### Long-Term Average Balances

