

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report
On
Key Indicators of MWRA Performance
For
Second Quarter FY16

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
February 10, 2016

Board of Directors Report on Key Indicators of MWRA Performance

Second Quarter FY16

Table of Contents

Operations and Maintenance

DITP Operations-	1
Total Power Use/Self-Generation	
Plant Flow & Precipitation	
Total Cost of Electricity/Pricing	
DITP Operations-	2
DI Sodium Hypochlorite Use	
Disinfection Dosage	
Secondary Blending Events	
DI Operations & Maintenance Report	3
Residuals Processing	4
Sludge Detention Time in Digesters &	
Total Solids Destruction	
Digester Gas Production & % Utilized	
Sludge Pumped From Deer Island	
Monthly Average % Capture of Processed Sludge	
DITP Maintenance	5
Operations Division–Metering & Leak Detection	6
Water Distribution System–Valves	7
Wastewater Pipeline/Structures	8
FOD Metro Facility & Equipment Maintenance	9
Renewable Electricity Generation-1	10
Renewable Electricity Generation-2	11
Toxic Reduction and Control	12
Field Operations– Narrative Topics	13
Laboratory Services	15

Construction Programs

Projects in Construction	16
CSO Control Update	18
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	
Infiltration / Inflow Local Financial Assist. Prog.	31
Local Pipeline & Water System Assist. Prog.	32
Community Support Programs	33
Community Water - System Leak Detection	
- Conservation Outreach	

Business Services

Procurement	34
Materials Management	35
MIS Program	36
Legal Matters	37
Internal and Contract Audits	40

Other Management

Workforce Management	41
Workplace Safety Program	42
Job Group Representation	43
MBE/WBE Expenditures	44
CEB Expenses	45
Cost of Debt	46
Investment Income	47

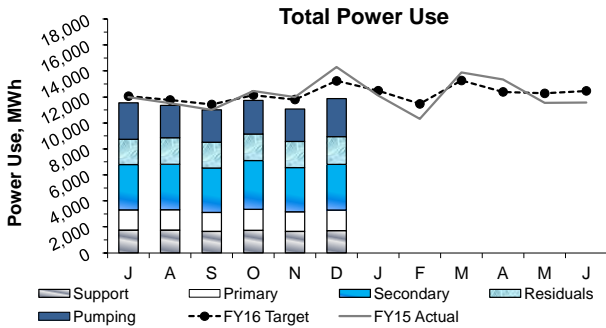
This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's board of directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for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

Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
February 10, 2016

OPERATIONS AND MAINTENANCE

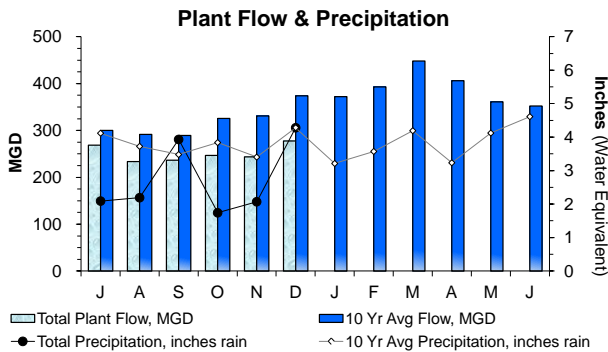
Deer Island Operations

2nd Quarter - FY16



Total power usage in the 2nd Quarter was 6.7% below target as Total Plant Flow for the quarter was 21.0% below the 3 year average plant flow for the same period. Total Power usage for wastewater pumping operations was 21.0% below target due to the lower plant flow.

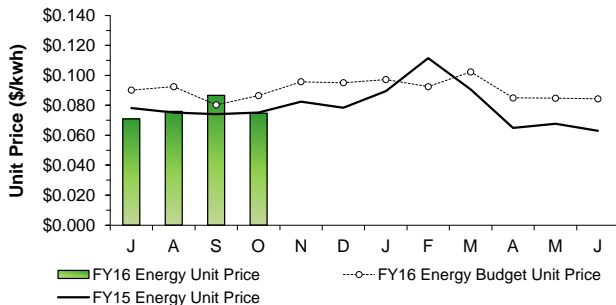
Note: Power usage projections are based on 3 year averages.



Total Plant Flow for the 2nd Quarter was 25.5% below target with the 10 year average plant flow (255.9 MGD actual vs. 343.5 MGD expected) as precipitation for the quarter was 30% lower than target (8.09 inches actual vs. 11.52 inches expected).

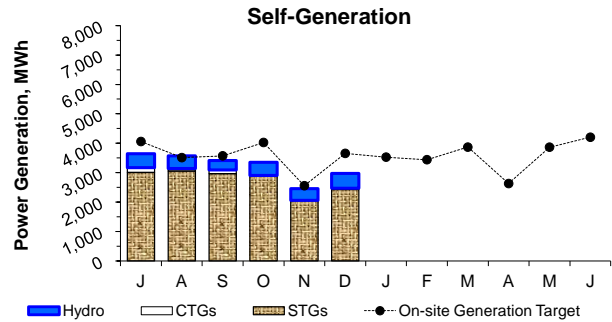
Total Electricity Pricing

(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 2nd Quarter (actuals for October only) was 13.5% lower than the FY16 budget estimate for the same period. The Total Energy Unit Price information for November and December are not yet available as the complete invoice for these months are still pending receipt as of reporting time. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

Note: Only the actual energy prices are reported. Therefore, the dataset lags by two (2) months due to the timing of invoice receipt.

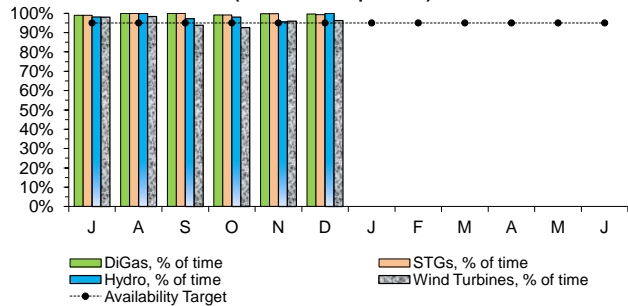


Power generated on-site during the 2nd Quarter was 8.1% below target. While generation by the Hydro Turbines, STGs, and Solar Panels met or exceeded their targets, generation by the CTGs and Wind Turbines was below target. The CTGs generated 94.0% less power than expected during the quarter as the target assumed the CTGs would be operated for several wet weather events, but CTG operation during storms was not needed. The CTGs were however operated for approximately 4.5 hours during the 2nd Quarter for an ISO-NE demand response audit event (winter) and for maintenance/checkout purposes.

Note: Power generation data for 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 135.2 MWh was generated by the Solar Panels and 493.4 MWh was generated by the Wind Turbines in the 2nd Quarter.

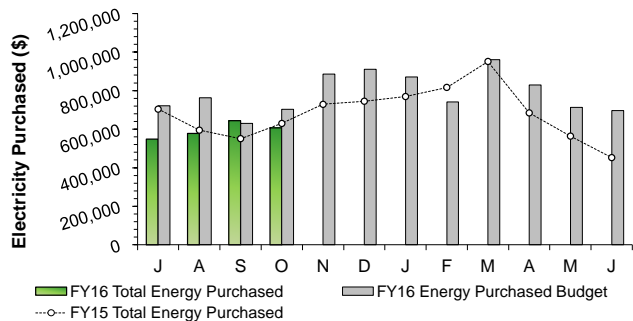
Self-Generation Equipment On-Line

(% of Time in Operation)



The DiGas, STGs, Wind Turbines, and Hydro Turbines, all met or exceeded the 95% availability target for the 2nd Quarter.

Total Cost of Electricity

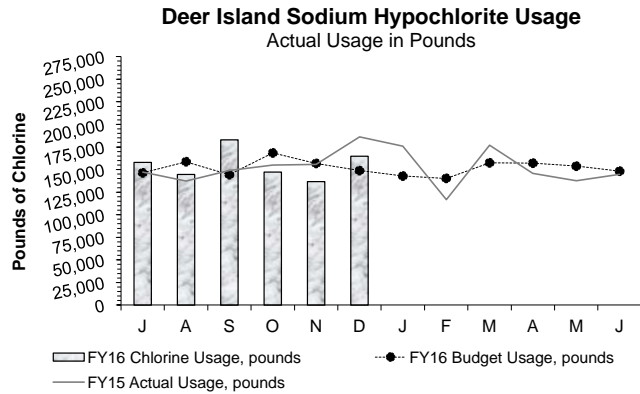
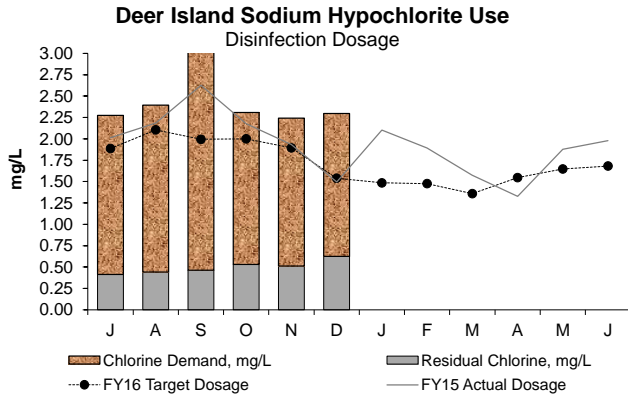


The total cost of Electricity Purchased during the 2nd Quarter (actuals for October only) was 13.6% lower than budgeted due mainly to lower than expected energy prices in the quarter (as reported). Year-to-date costs are \$439,566 (15.6%) lower than budgeted through October as the Total Energy Unit Price and the Total Electricity Purchased are both lower than budgeted by 11.8% and 4.1% through October.

Note: Only months with complete Electricity Purchased data are reported. Therefore, the dataset lags by two (2) months due to the timing of invoice receipt.

Deer Island Operations

2nd Quarter - FY16



The disinfection dosing rate in the 2nd Quarter was 26% higher than the target while the usage in pounds of chlorine was 5.4% lower than the target. DITP maintained an average disinfection chlorine residual of 0.56 mg/L this quarter with an average dosing rate of 2.28 mg/L (as chlorine demand was 1.73 mg/L). Chlorine dosing was higher than expected due to much lower than expected plant flow resulting in a higher chlorine demand. Chlorine usage in pounds was lower than expected as lower flow often results in the need for less overall chlorine for disinfection.

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	1	1	0	99.8%	3.97
A	0	0	0	100.0%	0.00
S	1	1	0	98.5%	10.63
O	1	1	0	99.96%	1.50
N	0	0	0	100.0%	0.00
D	1	1	0	99.97%	2.46
J	0	0	0		
F	0	0	0		
M	0	0	0		
A	0	0	0		
M	0	0	0		
J	0	0	0		
Total	4	4	0	99.7%	18.55

99.98% of all flows were treated at full secondary in the 2nd Quarter. There were a total of two (2) separate secondary blending events in the quarter; both due to high plant flows resulting from heavy rain. The two (2) secondary blending events combined produced a total of 3.95 hours of blending and 5.99 Mgal of flow blended with secondary effluent. The Maximum Secondary Capacity for the quarter was 700 MGD.

Secondary permit limits were met at all times during the 2nd Quarter of FY16.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The plant achieved a maximum average hourly flow rate of 788.2 MGD in the early morning of October 29 as a result of a rain event that dropped a total of 1.09 inches of rain over a two (2) day period. Overall, Total Plant Flow in the 2nd Quarter was 25.5% below the 10 year average plant flow target for the quarter.

Additionally, two low flow records were broken this quarter:

- Monthly Average North System Flow for December – 186.41 MGD set December 2015 (previous December record was 187.68 MGD in 2013),
- 365 Dry Day Flow – 255.9 MGD set December 2015 (previous record was 261.2 MGD in January 2014).

A number of North Main Pump Station (NMPS) and Winthrop Terminal Headworks (HW) Facility shutdowns are planned through July 2017 as part of a significant maintenance project to replace a large number of isolation valves in the NMPS and in the Winthrop Terminal HW Facility. There have been a total of 11 contractor construction shutdowns, seven (7) full North System shutdowns and four (4) Winthrop Terminal Headworks Facility only shutdowns, since the start of the project in September through the end of December 2015. MWRA projects upwards of 60 total shutdowns.

Deer Island Operations

2nd Quarter - FY16

Deer Island Operations & Maintenance Report (continued)

Environmental/Pumping (continued):

The full North System shutdowns involved stopping all flow from the North Influent System (at Winthrop Terminal HW, Ward Street HW, Columbus Park HW, and Chelsea Creek HW Facilities). Wastewater flow was stopped at approximately 11:00 p.m. on the night of the shutdown and wastewater pumping to DITP was restarted approximately 5 to 7 hours later after completion of the scheduled work. South System influent wastewater flows to DITP remained under normal operation during each of these shutdowns.

The Winthrop Terminal HW Facility only shutdowns took place during the day and involved suspending flow to this facility at approximately 6:45 a.m. on the morning of the shutdown and wastewater pumping through the Winthrop Terminal HW facility was restarted approximately 4 to 8.5 hours later after completion of the scheduled work. The flows from the Caruso Pump Station were redirected to the Chelsea Creek/NMPS starting on the day prior to and during these shutdowns, thereby reducing the total amount of flow going to the Winthrop Terminal HW Facility. No issues were encountered at DITP or in the collection system during any of the full North System or Winthrop Terminal HW Facility only shutdowns or during the activities to restart the wastewater pumping.

Cleaning of the North Main Pump Station riser shafts occurred between October 13 and October 27. The ten-foot diameter North Metropolitan Relief Tunnel riser shaft yielded an estimated 2.5 cubic yards of material, or a bit less than one foot of depth, with a disposal weight of 4.27 tons. The eleven-foot diameter Boston Main Drainage Tunnel riser shaft yielded an estimated 4.5 cubic yards, just over one foot of depth of somewhat drier material, with a disposal weight of 5.66 tons. The removal of this floating material reduces the risk of pumping system malfunctions during low flow events at the North Main Pump Station.

Primary and Secondary Treatment:

Progress on the major Primary and Secondary Scum Tip Tube Replacement Project continues. The primary scope of this project is to replace 88 of the 96 primary treatment tip tubes, 72 treatment tip tubes in Secondary Batteries A and B, and modification of 36 secondary tip tubes in Secondary Battery C. The contractor is limited by the construction documents to working in no more than four (4) primary clarifiers (preferably limited to one battery) and three (3) secondary clarifiers (one or two per battery to minimize capacity constraints so as to not reduce the overall secondary capacity). Construction related to the physical replacement of the tip tubes is currently ahead of schedule. Progress on the electrical, instrumentation, and miscellaneous metals framing work associated with this replacement project continues.

Secondary Treatment:

Annual turnaround maintenance was performed on Train #1 at the Cryogenic Oxygen Facility in October. This turnaround maintenance is performed on roughly half of the components and systems in the Cryo Facility and allows the remaining half of the facility to continue to operate and produce oxygen uninterrupted. The same turnaround maintenance was completed on Train #2 in April 2015.

Residuals Treatment:

DITP polymer trial testing using polymer from several vendors as part of the bidding process for a new polymer contract took place in December. Four separate polymer vendors participated in the trial testing and each vendor was scheduled for one day of vendor trial testing. Polymer from each vendor was added to the waste sludge at varying doses under the same testing conditions for each vendor and samples for laboratory testing to determine solids percent capture were collected during the trial. Each vendor was on-site during their specific vendor trial and observed the testing process of their polymer. The data from the testing is in the process of being evaluated by DITP staff prior to working with the Procurement Department to determine the vendor that will be awarded the new contract.

Odor Control:

Activated carbon media in carbon adsorber (CAD) units #3 and #5 in the East Odor Control (EOC) Facility and unit #4 in the West Odor Control (WOC) Facility was replaced in November as part of the routine practice to replace spent carbon.

The East Odor Control (EOC) and the West Odor Control (WOC) Facilities were taken out of operation on two (2) separate days for several hours each in December in order to perform scheduled essential preventative maintenance. The work in both facilities consisted of cleaning the viewing windows on each wet chemical scrubber unit, power washing the heat exchanger coils associated with each of the carbon adsorber (CAD) units, and cleaning the two (2) viewing windows on each heat exchanger unit. There are a total of 11 wet chemical scrubber units and 16 CAD units between the two (2) facilities. Buildup of material on the surface of the viewing windows makes it difficult for staff to monitor the effectiveness of these units. Buildup on the heat exchanger coils can restrict the flow of process air into the CAD units. Maintenance staff pre-staged the necessary equipment needed to perform this maintenance and performed as much preparation work in advance of the shutdown as was possible to minimize the duration of the facility shutdowns. These planned shutdowns are reported in the Semiannual Compliance Monitoring Summary and Certification Report to the Department of Environmental Protection (DEP) as required under the DITP Air Quality Operating Permit.

Energy and Thermal Power Plant:

Solar power generation accounted for 1.44% (135.2 MWh) and Wind Turbine generation accounted for 5.24% (493.4 MWh) of the total power generated on-site in the 2nd Quarter. Overall, total power generated on-site accounted for 27.1% of Deer Island's total power use for the quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 26.9% of Deer Island's total electrical power use for the quarter.

Other:

Based on the treatment plant's performance in 2015, Deer Island is expected to receive NACWA's (National Association of Clean Water Agencies) Platinum Award for Peak Performance which recognizes member agency facilities for outstanding compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. The Platinum award is given to agencies in recognition of 100% compliance with NPDES permits over a consecutive five year period. Deer Island is qualified for its fifth consecutive Platinum Award for having operated with no permit violations over nine (9) years from 2007 through 2015. Deer Island's last permit violation occurred in August 2006.

Clinton AWWTP:

The rehabilitation of the primary clarifiers and anaerobic digesters is moving forward. The following items were started this quarter.

Primary Clarifiers 1 & 2: Thiemec coating was applied to tanks. Railings were reinstalled around tanks and earth was backfilled around tanks to original grade level. Contractors have started installing gear drives and flights in tanks.

Primary Digester:

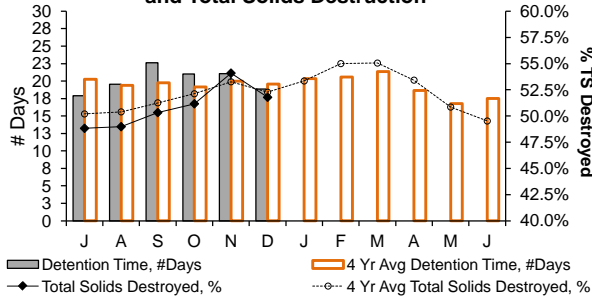
Contractor used a portable belt filter press to dewater and clean digester. The perimeter inside the digester was sealed. New piping installed inside tank. Cut hole in center of fixed cover and poured concrete for the new Ovivo Linear Motion mixer.

Based on the treatment plant's performance in 2015, Clinton Treatment Plant is expected to receive NACWA's (National Association of Clean Water Agencies) Gold Award for Peak Performance which recognizes member agency facilities for compliance of their National Pollutant Discharge

Deer Island Operations and Residuals

2nd Quarter - FY16

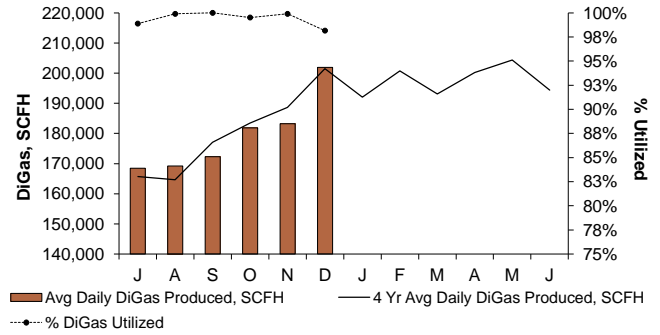
Sludge Detention Time in Digesters and Total Solids Destruction



Total solids (TS) destruction following anaerobic sludge digestion averaged 52.3% during the 2nd Quarter, similar to the 4 year average of 52.6% for the same period. The sludge detention time in the digesters of 20.3 days was also similar to the 4 year average of 19.6 days as DI operated with an average of 7.7 digesters during the 2nd Quarter. The sludge digestion process is a biological process which requires a period of time to reach stable digestion rates. All eight (8) active digesters have been rotated in and out of operation for varying lengths of time over the last two (2) quarters to allow for scheduled essential maintenance to be performed. This shifting around of sludge does have an impact on the overall solids destruction.

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.

Digester Gas Production and % Utilized



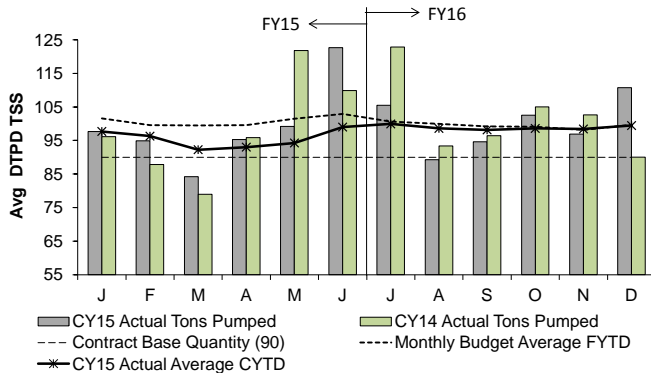
The Avg Daily DiGas Production in the 2nd Quarter was within 1.2% of the 4 Year Avg Daily DiGas Production for the same period. On average, 99.2% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant.

DiGas production during portions of the day from December 24 through December 27 exceeded the Thermal Power Plant's capacity. Therefore, excess DiGas that could not be utilized was flared as waste gas during these periods. DiGas production was very high during this period due to several days of wet weather that resulted in high, readily digestible, primary solids production.

Residuals Pellet Plant

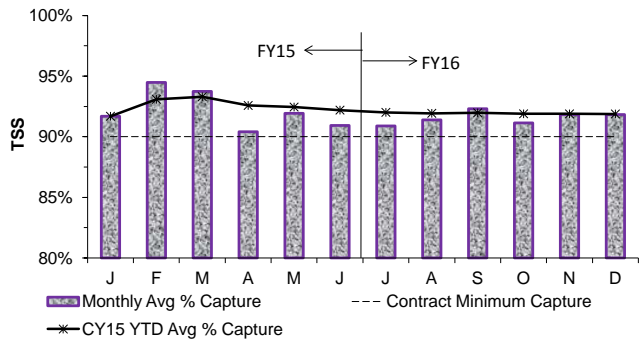
MWRA pays a fixed monthly amount for the calendar year to process up to 90 DTPD/TSS as an annual average. The monthly invoice is based on 90 DTPD/TSS (Dry Tons Per Day/Total Suspended Solids) times 365 days divided by 12 months. At the end of the year, the actual totals are calculated and additional 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 (FY15's budget is 102.9 DTPD/TSS and FY16's budget is 100.2 DTPD/TSS).

Sludge Pumped From Deer Island



The average total quantity of sludge pumped in the 2nd Quarter of FY16 was 103.4 DTPD - higher than FY16's average budget of 100.2 DTPD. The slightly higher amount is due mainly to slightly higher sludge production in December as a result of several days of wet weather that resulted in high, readily digestible, primary solids production.

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 CY15 Year End average capture is 92.24%.

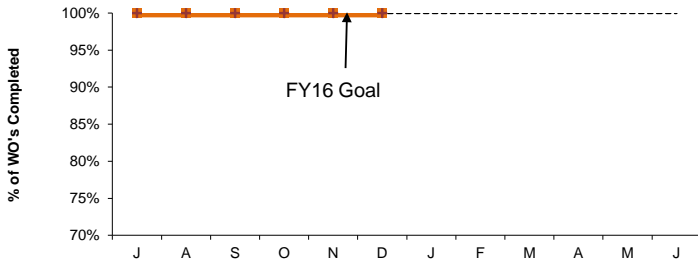
Deer Island Maintenance

2nd Quarter FY16

Productivity Initiatives

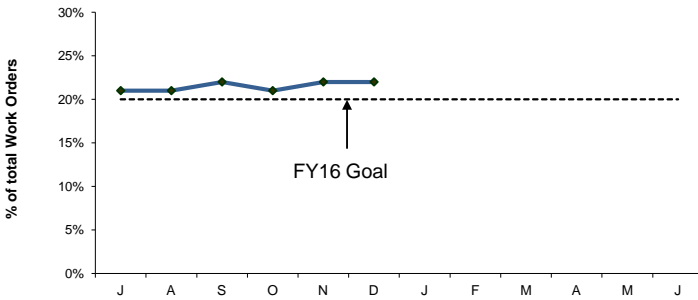
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

Predictive Maintenance Compliance



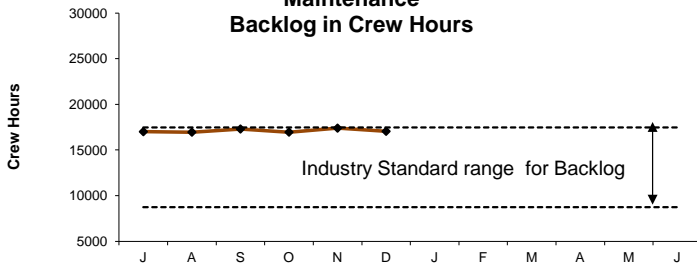
Deer Island's FY16 predictive maintenance goal is 100%. DITP completed 100% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program.

Predictive Maintenance



Deer Island's FY16 predictive maintenance goal is 20% of all work orders to be predictive. 22% 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.

Maintenance Backlog in Crew Hours



DITP's maintenance backlog at Deer Island is 17,129 hours this quarter. DITP is within the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by four vacancies, a Welder/Fabricator and three Operations and Maintenance Specialists. Management continues to monitor backlog and to ensure all critical systems and equipment are available.

Proactive Initiatives

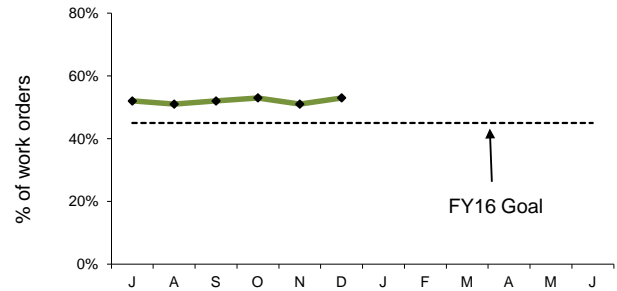
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

Preventive Maintenance Compliance



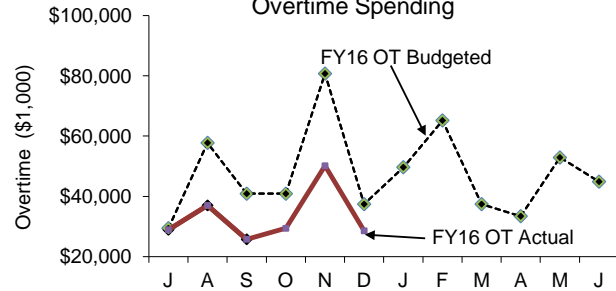
Deer Island's FY16 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 100% of all PM work orders this quarter.

Maintenance Kitting



Deer Island's FY16 maintenance kitting goal is 45% of all work orders to be kitted. 52% 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.

Overtime Spending



Maintenance overtime was under budget by \$55K this quarter and \$92k under for the FY16. Management continues to monitor backlog and to ensure all critical equipment and systems are available. This quarters overtime was predominately used for Storm Coverage, North Main Pump Station Valve Replacement Project, East and West Odor Control Scrubber Maintenance, Liquid Train RSL Actuator Installation Project and the Head Shaft Bearing Replacement on Primary Clarifier D-10.

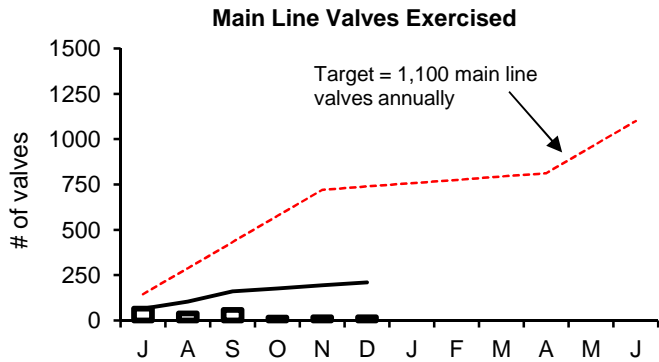
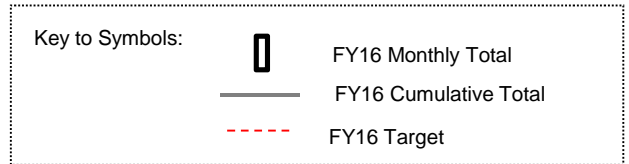
Water Distribution System Valves

2nd Quarter - FY16

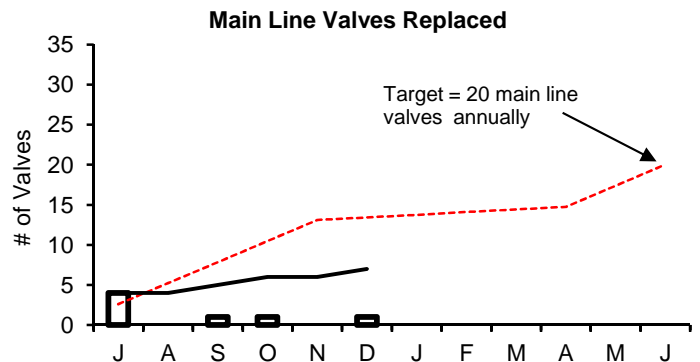
Background

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.

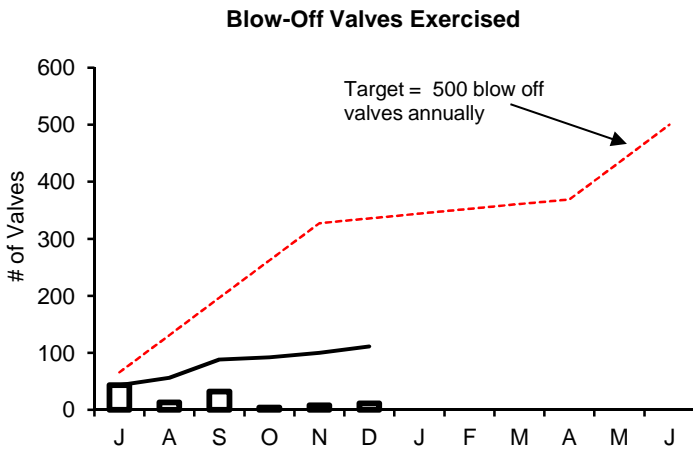
Type of Valve	Inventory #	Operable Percentage	
		FY16 to Date	FY16 Targets
Main Line Valves	2,159	96.2%	95%
Blow-Off Valves	1,317	92.5%	95%
Air Release Valves	1,380	91.9%	95%
Control Valves	49	100.0%	95%



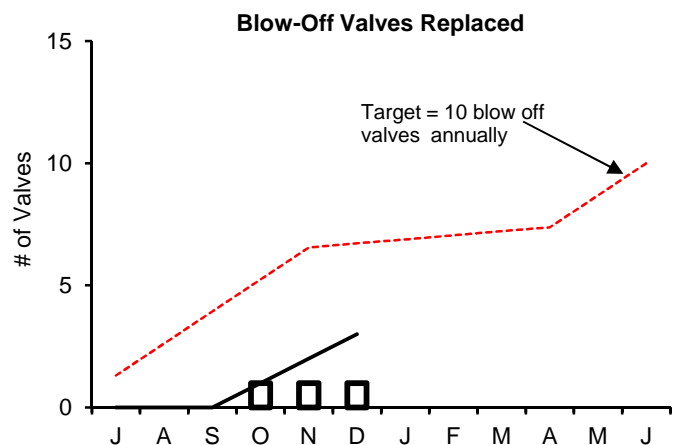
During the 2nd Q of FY16, staff exercised 49 main line valves. The total exercised for the fiscal year is 210. Below target due to staffing shortage and high priority CIP projects.



During the 2nd Q of FY16, staff replaced two main line valves. The total replaced for the fiscal year is seven.



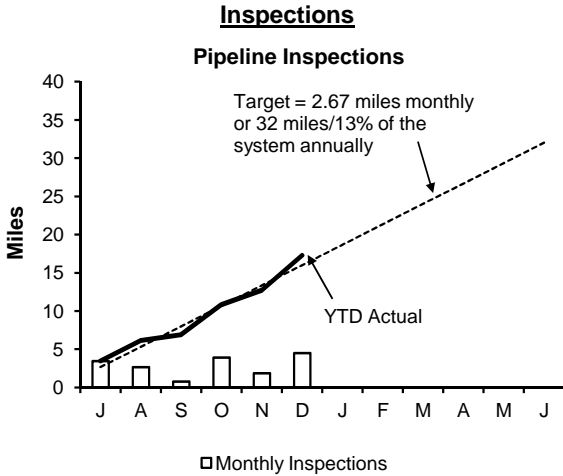
During the 2nd Q of FY16, staff exercised 23 blow off valves. The total exercised for the fiscal year is 111. Below target due to staffing shortage and high priority CIP projects.



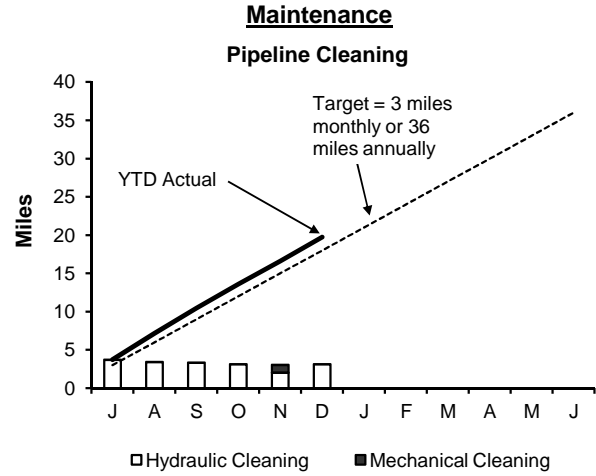
During the 2nd Q of FY16, staff replaced three blow off valves. The total replaced for the fiscal year is three.

Wastewater Pipeline and Structure Inspections and Maintenance

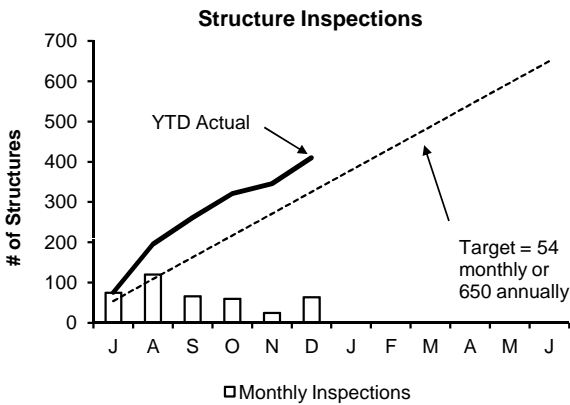
2nd Quarter - FY 16



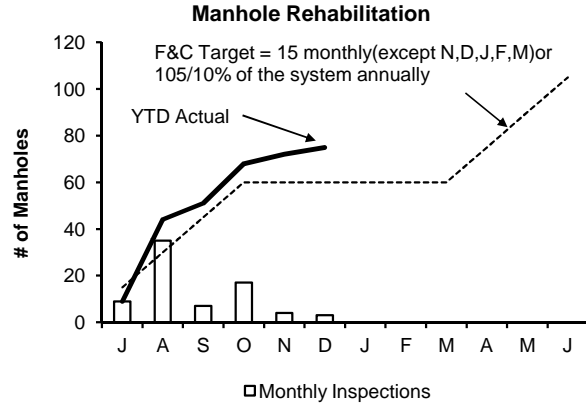
Staff internally inspected 10.35 miles of MWRA sewer pipeline during this quarter. The year to date total is 17.27 miles. Community Assistance was provided to the city of Somerville this month. Staff inspected 2,937 linear feet of 24" sewer pipe and discovered a collapse.



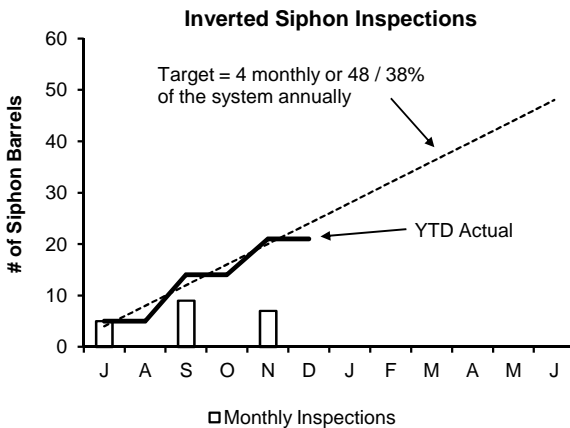
Staff cleaned 8.27 miles of MWRA's sewer system and removed 75 yards of grit and debris during this quarter. The year to date total is 19.73 miles. No Community Assistance was provided this quarter.



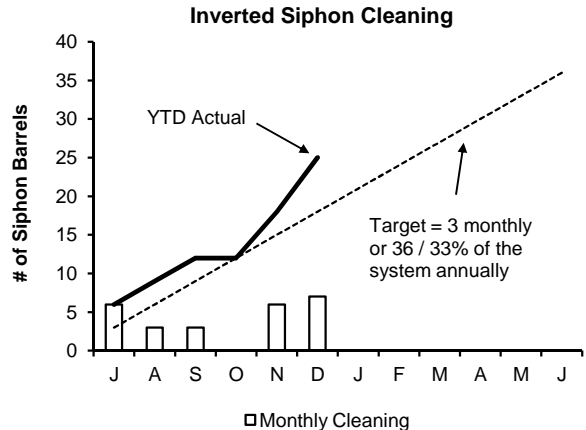
Staff inspected the 36 CSO structures and performed 113 additional manhole/structure inspections during this quarter. The year to date total is 413 inspections.



Staff replaced 24 frames & covers during this quarter. The year to date total is 75.



Staff inspected 7 siphon barrels this quarter. Year to date total is 21 inspections.



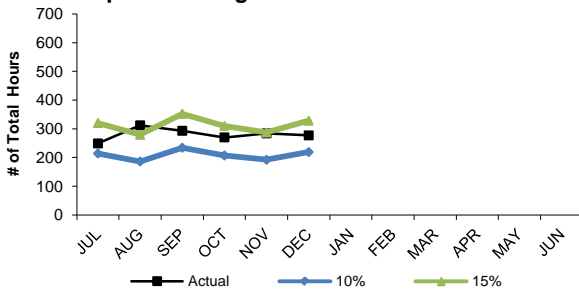
Staff cleaned 13 siphon barrels during this quarter. The year to date total is 25 barrels.

Field Operations' Metropolitan Equipment & Facility Maintenance

2nd Quarter - FY16

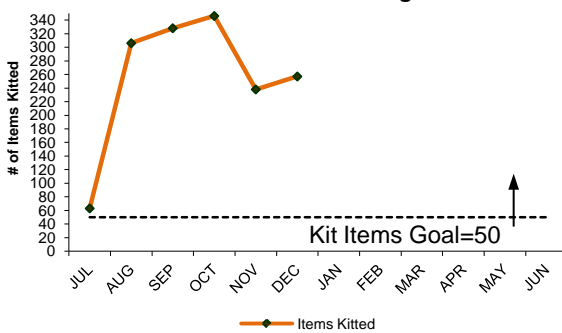
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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

Operations Light Maintenance PM Hours



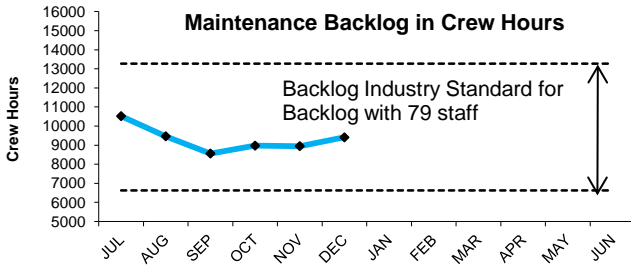
Operations staff averaged 277 hours of preventive maintenance during the 2nd Quarter, an average of 13% of the total PM hours for the 2nd Quarter, which is within the industry benchmark of 10% to 15%.

Items Kitted Utilizing Maximo



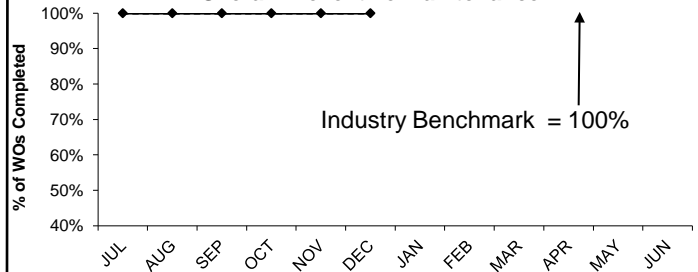
In an effort to more efficiently complete work, maintenance staff and work coordination staff have utilized the Lawson/Maximo interface to better kit stock and non stock material. The goal for FY16 is to "kit" 50 stock and non stock items total per month. An average of 280 items were kitted during the 2nd Quarter

Maintenance Backlog in Crew Hours



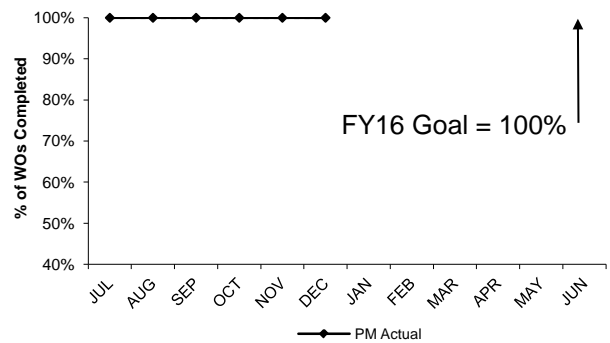
The 2nd Quarter backlog average is 9111 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6450 to 12,940 hours.

Overall Preventive Maintenance



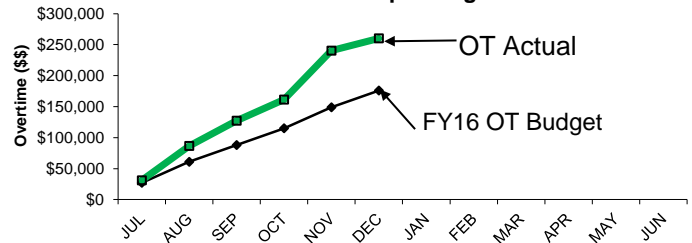
The Field Operations Department (FOD) preventive maintenance goal for FY16 is 100% of all PM work orders. Staff completed an average of 100% of all PM work orders in the 2nd Quarter.

Operations Light Maintenance % PM Completion



Wastewater Operators complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY16 PM goal is completion of 100% of all PM work orders assigned. Operations completed an average of 100% of PM work orders in the 2nd Quarter.

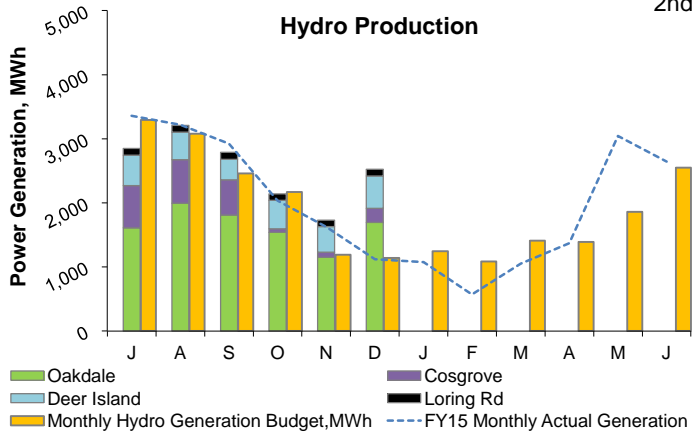
Overtime Spending



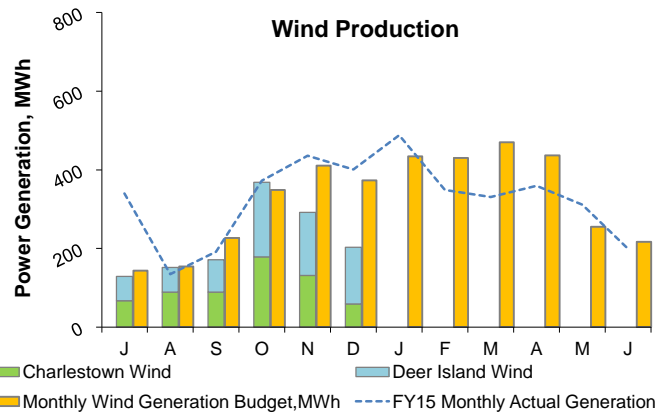
Maintenance overtime was \$45k over budget for the 2nd Quarter. Overtime was used for staging for weather events, critical maintenance repairs, and Deer Island Treatment Plant North System Shutdown.

Renewable Electricity Generation: Savings and Revenue

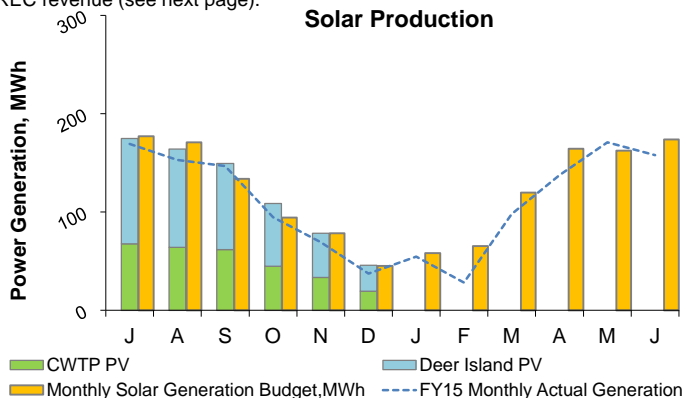
2nd Quarter - FY16



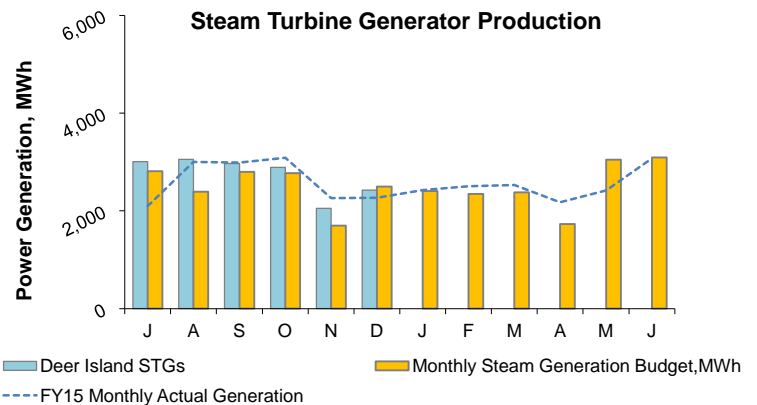
In the 2nd quarter, the renewable energy produced from all hydroelectric facilities totaled 6,394 MWh; 42% above budget³; mostly due to Oakdale generating over 100% above budget in November and December. Oakdale generation values are recorded by the utility; this data was much higher than MWRA estimates and is currently being investigated. The total energy produced to date in FY16 is 15,240 MWh; 14% above budget³. The total savings and revenue² to date in FY16 (actuals through October¹) is \$432,834; 22% below budget³, partly due to the fact that the actual electricity unit price for Deer Island has been 11% below the budgeted³ estimate for the same period, and due to Oakdale receiving a 29% on average lower than budget³ price/kWh for the same period. Oakdale budget is based on a 3-year revenue average (FY12-FY14). The savings and revenue value does not include RPS REC revenue (see next page).



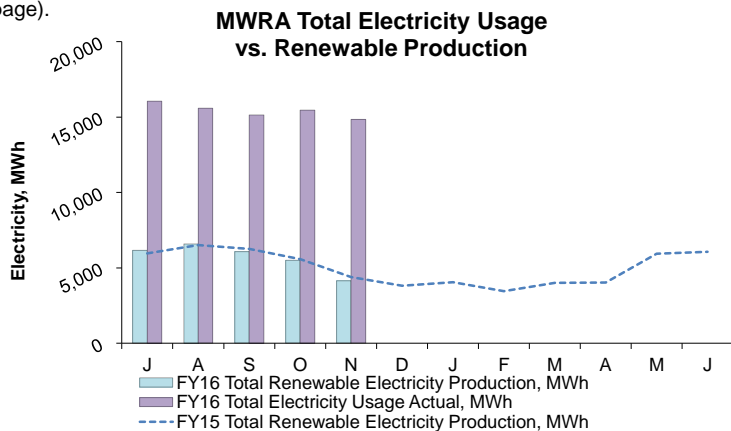
In the 2nd quarter, the renewable energy produced from all wind turbines totaled 862 MWh; 24% below budget³; partly due to decreased production from Charlestown Wind during intermittent troubleshooting of turbine trips. The total energy produced to date in FY16 is 1,314 MWh; 21% below budget³. The total savings and revenue² to date in FY16 (actuals through October¹) is \$115,005; 9% above budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In the 2nd quarter, the renewable energy produced from all solar PV systems totaled 233 MWh; 7% above budget³. The total energy produced to date in FY16 is 721 MWh; 3% above budget³. The total savings and revenue² to date in FY16 (actuals through October¹) is \$67,085; 6% above budget³. The savings and revenue value does not include RPS REC revenue (see next page).

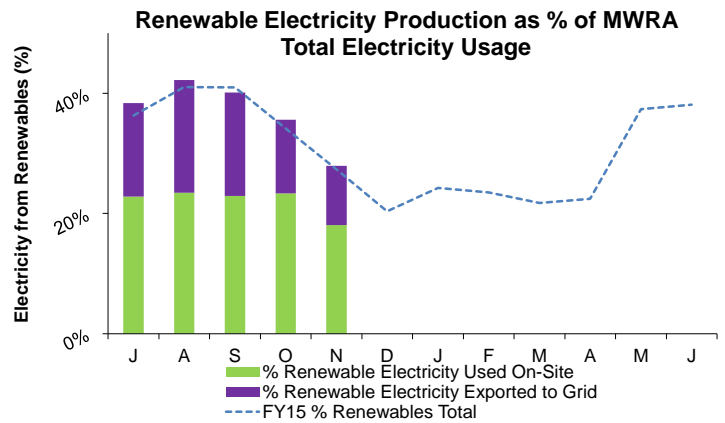


In the 2nd quarter, the renewable energy produced from all steam turbine generators totaled 7,365 MWh; 6% above budget³. The total energy produced to date in FY16 is 16,394 MWh; 10% above budget³. The total savings and revenue² to date in FY16 (actuals through October¹) is \$918,281; 2% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In the first 5 months of FY16, MWRA's electricity generation by renewable resources totaled 28,467 MWh. MWRA's total electricity usage was approximately 77,100 MWh. The MWRA total electricity usage is the sum of all electricity purchased for Deer Island and FOD plus electricity produced and used on-site at these facilities. Approximately 97% of FOD electrical accounts are accounted for by actual billing statements; minor accounts that are not tracked on a monthly basis such as meters and cathodic protection systems are estimated based on this year's budget.

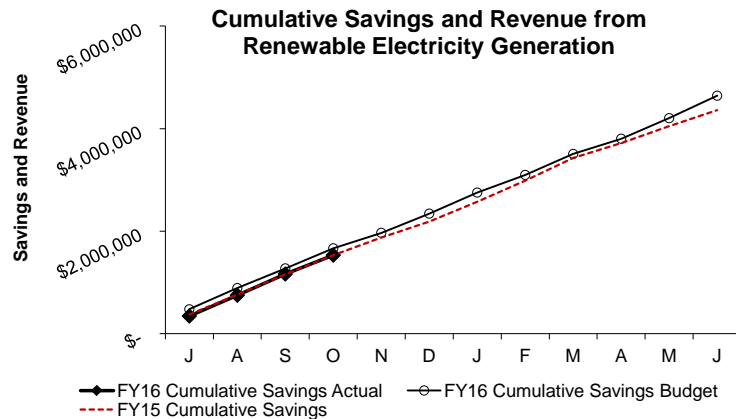
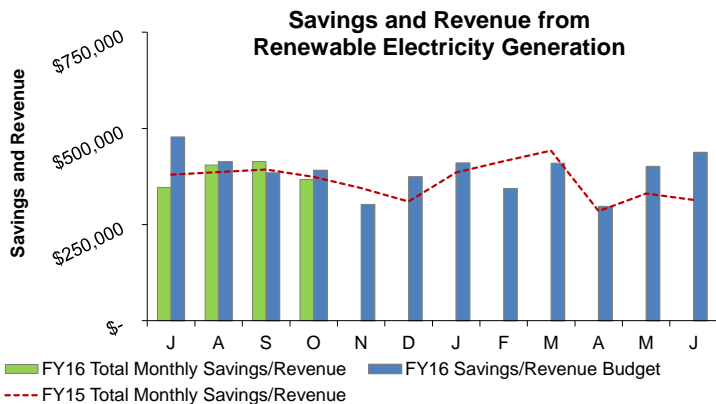
In the first 5 months of FY16, green power generation represented approximately 37% of total electricity usage. All renewable electricity generated on DI is used on-site (this accounts for more than 50% of MWRA renewable generation). Almost all renewable electricity generated off-DI is exported to the grid.



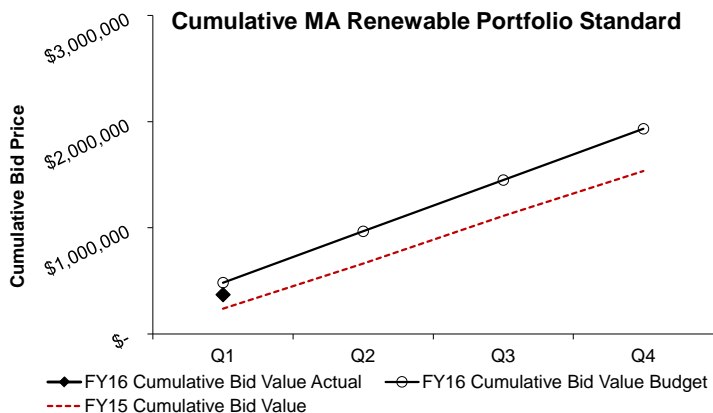
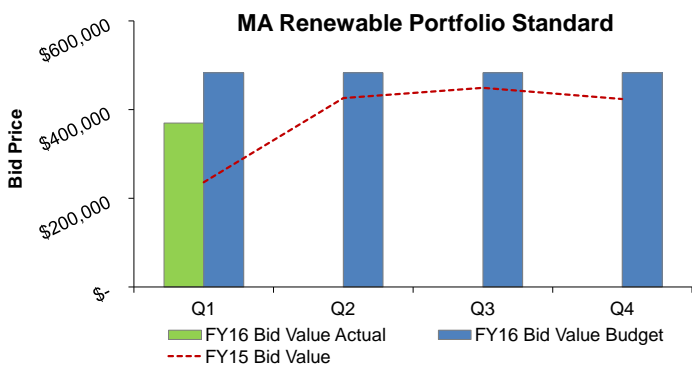
- Notes:
1. Only the actual energy prices are being reported. Therefore, some of the data lags up to (2) months due to timing of invoice receipt.
 2. Savings and Revenue: Savings refers to any/all renewable energy produced that is used on-site therefore saving the cost of purchasing that electricity, and revenue refers to any value of renewable energy produced that is sold to the grid.
 3. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.

Renewable Electricity Generation: Savings and Revenue

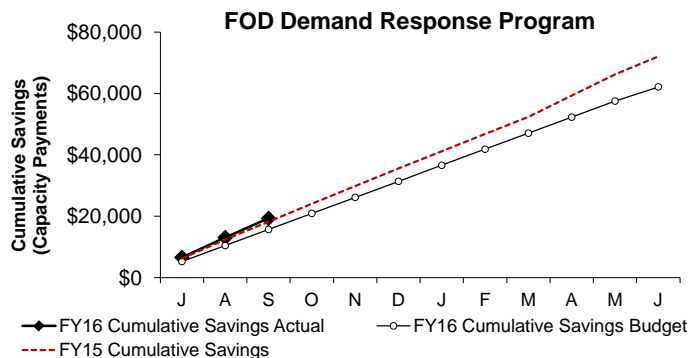
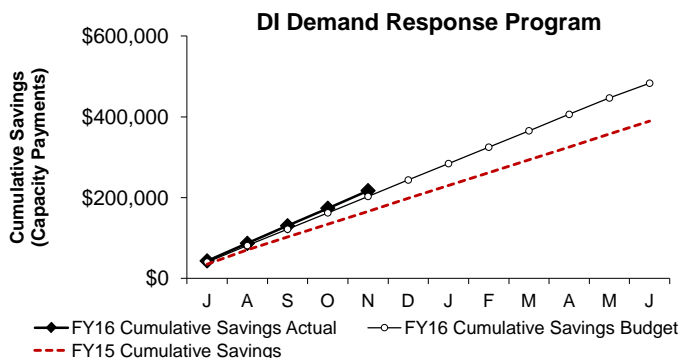
2nd Quarter - FY16



Savings and revenue from MWRA renewable electricity generation in the first 4 months of FY16 (actuals only through October¹) is \$1,533,206; which is 8% below the budget³, partly due to the fact that the actual electricity unit price for Deer Island has been 11% below the budgeted³ estimate for the same period. Savings and revenue² from all renewable energy sources include wind turbines, hydroelectric generators, solar panels, and steam turbines (DI). This includes savings and revenue due to electricity generation (does not include avoided fuel costs and RPS RECs). The use of DITP digester gas as a fuel source provides the benefit of both electricity generation from the steam turbine generators, and provides thermal value for heating the plant, equivalent to approximately 5 million gallons of fuel oil per year (not included in charts above).



Bids were awarded during the 1st Quarter¹ from MWRA's renewable energy assets; 6,715 Q1 CY2015 Class I Renewable Energy Certificates (RECs), 1,297 Q1 CY2015 Class II RECs and 53 Q1 CY2015 Solar RECs were sold for a total value of \$369,753 RPS revenue; which is 23% below the budget³. REC values reflect the bid value on the date that bids are accepted, even though the RECs were produced during Q1 of CY2015. Cumulative bid values reflects the total value of bids received to date.



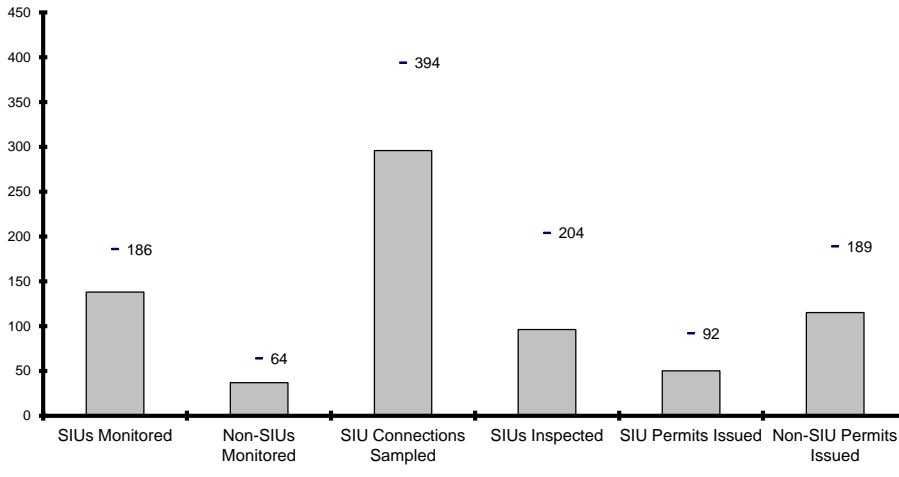
Deer Island, 2 Water, and 4 Wastewater facilities⁴ participate in the ISO-New England Demand Response Programs. By agreeing to have its generators available to run and thus relieve the New England energy grid of some of MWRA's load during times of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates back-up generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. FY16 Cumulative savings (Capacity Payments only) through November¹ total \$217,261 for DI and \$19,306 for FOD through September¹.

- Notes:
1. Only the actual energy prices are being reported. Therefore, some of the data lags up to (2) months due to timing of invoice receipt.
 2. Savings and Revenue: Savings refers to any/all renewable energy produced that is used on-site therefore saving the cost of purchasing that electricity, and revenue refers to any value of renewable energy produced that is sold to the grid.
 3. Budget values are based on historical averages for each facility and include operational impacts due to maintenance work.
 4. FOD Facilities include: CWTP, Loring Road, Chelsea Creek, Columbus Park, Ward St., and Nut Island.

Toxic Reduction and Control

2nd Quarter - FY16

Inspections, Monitoring Events, Permits Issued, Year to Date



EPA Required SIU Monitoring Events for FY16: 186
YTD: **138**

Required Non-SIU Monitoring Events for FY16: 64
YTD: **37**

SIU Connections to be Sampled For FY16: 394
YTD: **296**

EPA Required SIU Inspections for FY16: 204
YTD: **96**

SIU Permits due to Expire In FY16: 92
YTD: **50**

Non-SIU Permits due to Expire for FY16: 189
YTD: **115**

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	4	20	1	3	0	0	5	23
Aug	10	11	0	1	0	0	10	12
Sep	7	9	0	0	0	0	7	9
Oct	8	25	0	0	0	1	8	26
Nov	14	20	0	0	0	0	14	20
Dec	6	23	0	1	0	1	6	25
Jan							0	0
Feb							0	0
Mar							0	0
Apr							0	0
May							0	0
Jun							0	0
% YTD	98%	94%	2%	4%	0%	2%	50	115

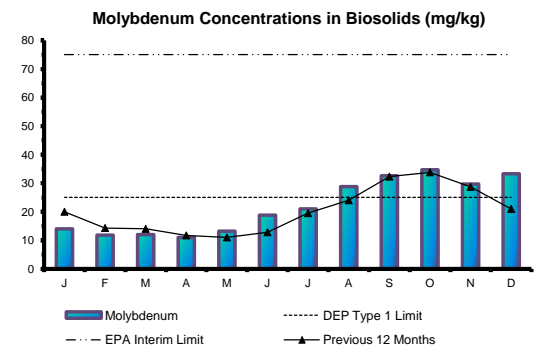
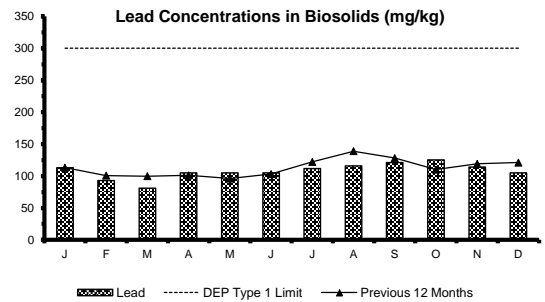
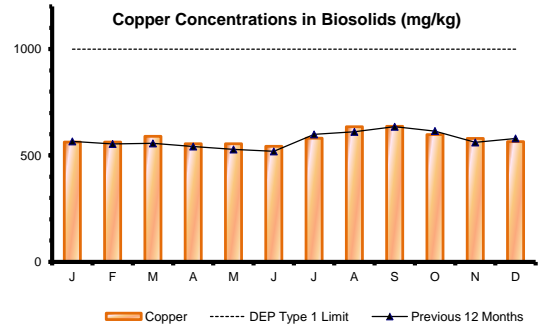
EPA requires MWRA to issue or renew 90% of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later. EPA also requires the remaining 10% of SIU permits to be issued within 180 days.

In this the 2nd Quarter of FY16, ninety-nine permits were issued, twenty-eight of which were SIUs. All the SIU and sixty-eight of the non-SIU permits were issued in the 120-day timeframe while one non-SIU permit was issued in the 120-day to 180-day timeframe with two other non-SIU permits issued beyond 180-days.

Late payment of permit fees continue to be one of the reasons for the late issuing of permits.

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 the situation may necessitate considering additional regulatory options.

During this second quarter of FY16, the level of molybdenum has been above the DEP type 1 Limit. MWRA and its contractor (NEFCO) generally do not distribute product in Massachusetts between July and January under its approval of suitability.



Field Operations Highlights

2nd Quarter – FY16

Western Water Operations and Maintenance

Western Operations Field Staff: Portable Pump Training was held for staff that would be potentially involved with deploying mobile pumping capacity. The staff was broken down into small working groups, each group set up, and test ran the pumps simulating an actual event. This training, combined with the lessons learned, will result in having trained staff available when it comes time to deploy this equipment.

Weston Reservoir: Facility Maintenance Staff completed the installation of two dam seepage-monitoring weirs. These weirs consist of a cement formed barrier wall that will channel the seepage to a single point in the weir that is equipped with a calibrated V Notch. This V Notch will allow Dam Operations Staff to monitor seepage at these locations.

Carroll Water Treatment Plant: Plant Operations and Maintenance Staff completed the annual half-plant shutdown for Side “A” of the treatment plant. This process involves transferring all of the flow and treatment to Side “B”, draining all of the tanks and flushing all of the systems. The primary contactors and storage tanks are then cleaned and maintenance tasks completed on all offline systems. The maintenance included replacing the rupture discs on the primary contactors, replacing back pressure valves on chemical feed systems, replacing UV Lamps that have reached the end of the service life as well many other tasks that can only be completed during the annual shutdown. Plumbing Staff also replaced the fill, suction and vent lines for the Ammonia System.

Metro Water Operations and Maintenance

Water Supply to Lynn: Temporary water supply to Lynn continued through into November. Lynn completed the work on the new cover for their low service reservoir, and returned it to service on November 10. The MWRA connection was closed the same day. Water supply in Lynn remained normal throughout the temporary supply, and through the transition off of MWRA water.

Water Pipeline Program: Leaks were repaired on Section 44 in Hyde Park, on Section 32 in Revere on Section 29 in Stoneham, and on Section 108 on University Avenue in Norwood. The repair on Section 44 required that the Mobile Pump Unit (MPU) be set up in Milton, as the original isolation of Section 44 to attempt the leak repair had the potential to cause lower than normal pressure in the higher elevations of Milton. Water Pipeline Staff set up traffic control plans for several days for the safe inspection of Section 56 under the General Edwards Bridge between Revere and Lynn as the first phase of the feasibility study for Section 56. One lane was taken on the bridge to allow for the use of a bridge inspection vehicle (aka “snooper truck”).

Valve Program: Cell 2 of the new Spot Pond Storage Tank was activated on November 19. Prior to activation, the tank was flushed, disinfected, filled, and sampled. The Pressure Reducing Valve (PRV) at Shaft 9A was outfitted with SCADA Control by a combination of the valve, SCADA, and Electrical Staff. This provides two sources of automated control to the new Spot Pond Tanks, as the Nonantum Road PRV also continues in operation. The two sites were used in conjunction to control the tank level during the balance of the quarter.

Operations Engineering

Spot Pond Tank and Pump Station Coordinated with E&C and the Contractor to complete the disinfection and activation of Cell Two; Supported Construction with the repair to Cell 2 outlet pipe using carbon fiber material. Met with DEP representatives for a site visit and discuss tank and pump station activation issues. Coordination continues for the pump testing, pipe leakage testing and disinfection, instrumentation and other issues for completion.

Section 56 Assisted E&C with the inspection of Section 56 at and under the General Edwards Bridge in Lynn. This section has been isolated since February 2014 due to numerous leaks and the poor condition of the pipe. The MWRA consultant inspected the condition of the pipe bridge and is performing a feasibility study for the replacement of the river crossing.

Emergency Planning Continued training MWRA Staff on the City Tunnel and City Tunnel Extension Emergency Action Plans. Conducted tours to several shafts to familiarize staff with the locations and the equipment at each site

Newton Support Working with the City of Newton to help identify the source of water loss in their community, and also assisting them with the updating of their Emergency Action Plan (EAP) to isolate their covered storage tank. There is a possibility that the tank will need to be isolated to help identify the water loss source.

Wastewater Operations & Maintenance

North Main Pump Station Shutdowns: Operations Staff continued to assist with the North Main Pump Station equipment upgrade contract and were onsite to ensure the proper operation of all wastewater facilities during the shutdowns. Staff

provided system operating conditions and developed operational control strategies for the shutdowns. Six shutdowns were conducted in October and November. The Winthrop Terminal was shut down four times in November and December.

Chemical Receiving Training: Staff attended Chemical Receiving Training, focusing on the proper procedures of receiving chemicals and fuel oil, including ensuring adequate capacity in receiving tanks, testing chemicals and reviewing paperwork.

Metro Equipment and Facility Maintenance

Meter Systems: Staff continues to draft a new Scope of Services for the Wastewater Meter Replacement Contract. Staff converted thirty-two (32) more water sites to wireless. Notified Arlington, Brookline, Lexington, Medford, Milton (2), Nahant, Newton, Quincy, Somerville (3), Swampscott, Waltham (3) and Weston of increases in demand

TRAC

TRAC and Nestlé Waters North America entered into a Settlement Agreement, effective November 4, 2015, to resolve violations of MWRA's regulations at its Framingham facility. Nestle operated without a licensed pretreatment operator, failed to submit pH logs by the due dates, provided false information, discharged wastewater with pH outside the acceptable range, failed to report pH violations, bypassed its pretreatment system, failed to provide adequate pretreatment, and failed to comply with record keeping requirements. The agreement requires Nestlé Waters to pay a \$561,000 administrative penalty and to pay stipulated penalties for any discharge and reporting violations for a period of two years.

TRAC and The Leavitt Corporation entered into a Settlement Agreement, effective December 23, 2015, to resolve all issues related to the November 2014 Penalty Assessment Notice (PAN) and Supplemental Order to Comply (SOC), based Leavitt's discharge of excessive levels of Fats, Oil and Grease into the MWRA's sanitary sewer system, from its Everett facility. The total amount of the penalty assessed was \$128,500. Leavitt appealed the PAN and SOC. The Settlement Agreement requires Leavitt to pay an \$80,000 administrative penalty and pay stipulated penalties for a period of two years.

On December 3, 2015, TRAC issued a Penalty Assessment Notice (PAN) and Supplemental order to Comply (SOC) to Nova Biomedical Corporation related to discharge of excessive levels of formaldehyde into the MWRA system, after the issuance of a Notice of Noncompliance and Order. The amount of the penalty is \$143,100.00. Nova has appealed the PAN and SOC.

TRAC's annual bills to sewer use discharge permit holders were issued on December 2, 2015. The amount invoiced totaled \$1,985,672.00. Permittees have 30 days to pay and/or appeal the charges.

Environmental Quality—Water

On October 8th, ENQUAL Staff, in conjunction with Western Operations and RP&EM Staff, conducted pollution prevention walkthroughs at the Oakdale Power Station and Cosgrove Intake Facilities in fulfillment for an inspection requirement associated with the NPDES Best Management Practices Plan.

Data Management prepared mapping tools for emergency reservoir data collection and viewing, and executed automated map views of reservoir sampling data during the railroad spill drill on 10/15.

Staff assembled and deployed two new buoy based water quality sensor arrays into Wachusett Reservoir. The wind storm from October 28 to 30 damaged three of the four buoys. Staff was able to retrieve parts that sank. The vendor inspected the damaged buoys and MWRA is waiting for a report from them. All buoys were removed from the reservoir and are being prepared for winter storage.

Contaminant Monitoring System

The Contaminant Warning System (CWS) went live on November 13th. Staff participated in a joint tabletop Consequence Management Program Exercise on November 4th. Managers and staff completed training on the CMS System in preparation for go live. During the month of December 2015, one alarm was registered by the Contaminant Warning System (CWS). It was determined the alarm was related to a major pipeline operation.

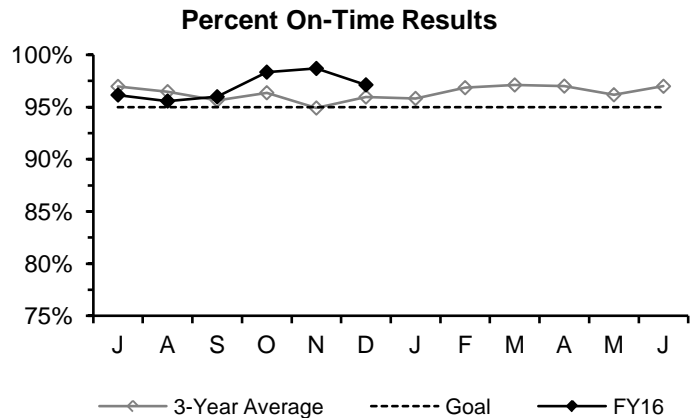
Environmental Quality—Wastewater

NPDES Reporting: A new web page with near-real-time reporting of sanitary sewer overflows was created. Staff continued to submit permit-required monthly, quarterly, and annual reports, as well as required incident notifications. The annual Pretreatment Report was submitted to EPA and DEP by TRAC, as required by the DITP and CLTP Permits.

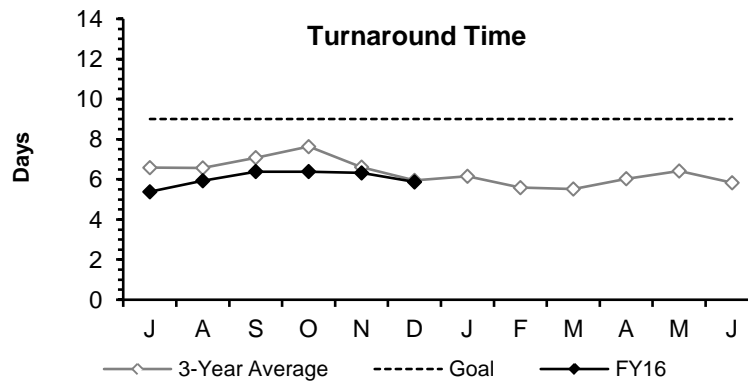
Cooperative Projects with other Agencies: Mass. Dept of Public Health: After collaborating with stakeholders including MWRA, beach communities, and harbor advocates submitted its request to EPA to leave State beach posting limits for bacteria unchanged, instead of adopting new, more stringent EPA recommendations that would result in an increase in beach postings statewide.

Laboratory Services

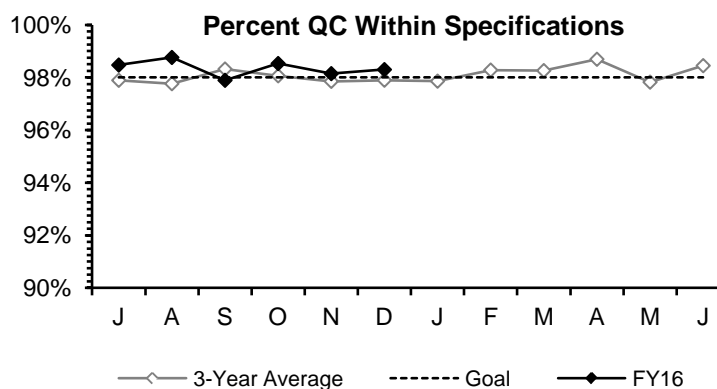
2nd Quarter - FY16



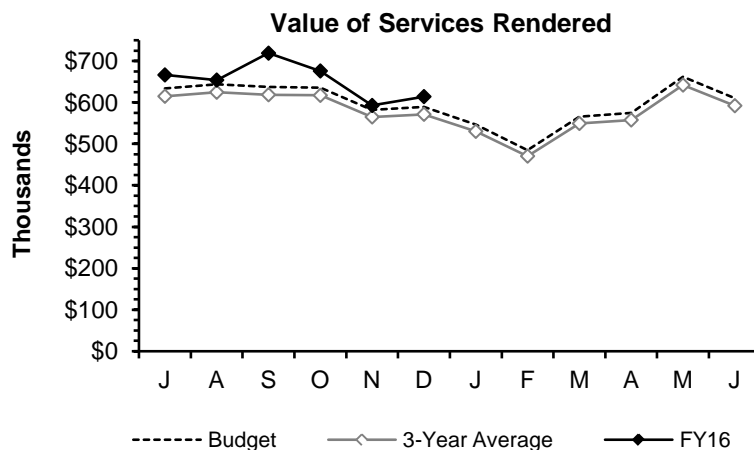
The Percent On-Time measurement was above the 95% goal each month of the quarter.



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



Percent of QC tests meeting specifications met the 98% in-house goal each month of the quarter.



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

Highlights:

Lab Services has met or exceeded its on-time results and turnaround time goals each month for the past 24 months.

Quality Assurance:

The every other year DEP certification audit of the Quabbin Laboratory found no deficiencies.

Mobile Lab.

Participated in the Wachusett Reservoir railroad drill. Additional staff to operate the Mobile Lab instruments are being trained. The Mobile Lab standby coverage rotation began in November.

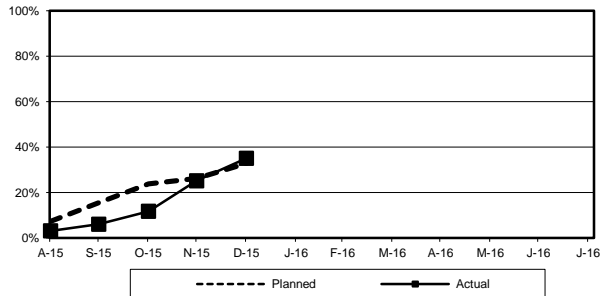
CONSTRUCTION PROGRAMS

Projects In Construction

2nd Quarter – FY16

(Progress Percentages based on Construction Expenditures)

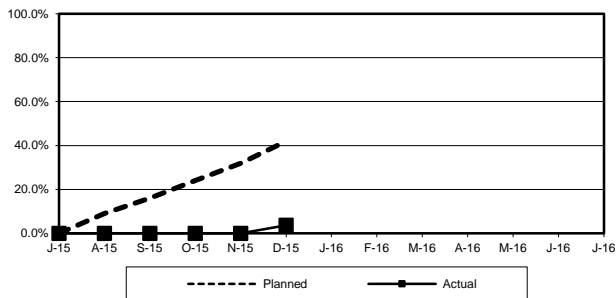
Southborough Water Quality Lab
Progress – December 2015



Project Summary: This project involves the rehabilitation of the Southborough Water Quality Laboratory. The work includes replacement of the roof, windows, doors and flooring, as well as modifications to the electrical, HVAC and fire protection systems.

Status and Issues: As of December, the Contractor completed the demolition of the SWQL existing ceiling grid, corridor lights and ceiling and the abatement of the interior asbestos. The roof truss system and roof metal deck installation is in progress.

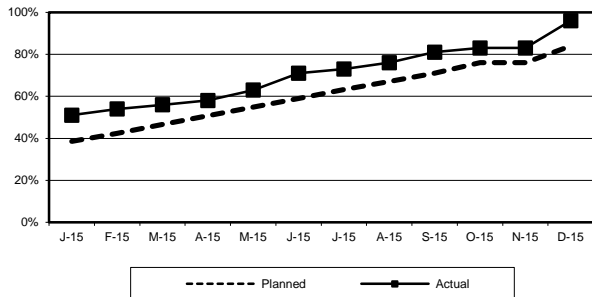
Upgrades to Chelsea Screen House
Progress – December 2015



Project Summary: This project involves the replacement of two dry side screens, seven gates and the rehabilitation of two wet side screens and the addition of two new gates. Also, a SCADA system will be added to the wet side to allow for remote wet weather operation.

Status and Issues: As of December, there was no physical progress due to long lead time items. Bar Screens 1&2 are expected in February. Bar Screens 3&4 have a 20 week lead time. The new replacement gates are expected to be delivered in late March. One new gate is pending final approval and is scheduled for installation in June.

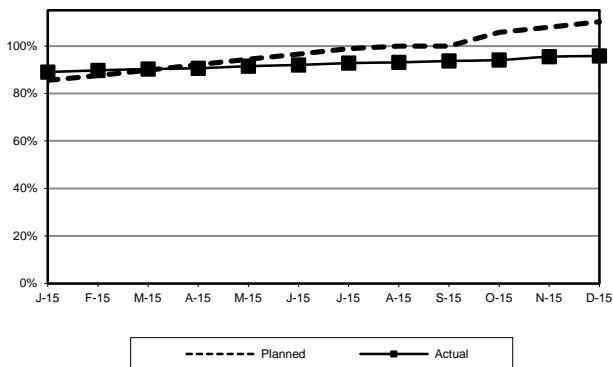
Clinton Digester and Primary Clarifier Rehab
Progress – December 2015



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: As of December, the Contractor worked on installing the mechanical equipment in Clarifiers 1 & 2. The replacement of the digester roof is almost complete and the old piping within the fixed cover digester was demolished and the new mixer was installed.

Spot Pond Water Storage Facility
Progress – December 2015



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.

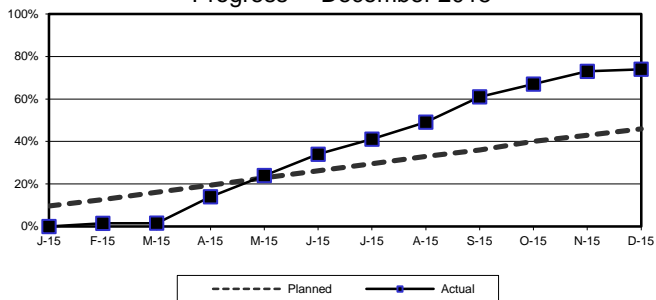
Status and Issues: As of December, all tank work was 100% complete. The Contractor continued working on pump station and yard piping vault punchlist items, as well as the HVAC startup. In addition, they completed the diesel generator installation, startup and testing.

Projects In Construction

2nd Quarter – FY16

(Progress Percentages based on Construction Expenditures)

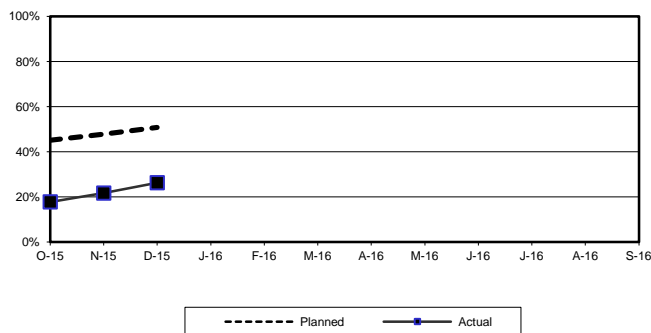
Water Mains: Section 36, W11C and S9-A
Progress – December 2015



Project Summary: This project includes the replacement of Section 36 in Arlington; the installation of a new water main (Section W11C); and the replacement of an inoperable 48-inch butterfly valve on Shaft 9-A pipeline in Medford.

Status and Issues: The WASM pipe line between the 54" and 36" butterfly valves and the 36" main on Brunswick Road and Hillsdale Road were pressure tested and passed. The 12" meter 86 pipe and valves were completed including the valve for section 45.

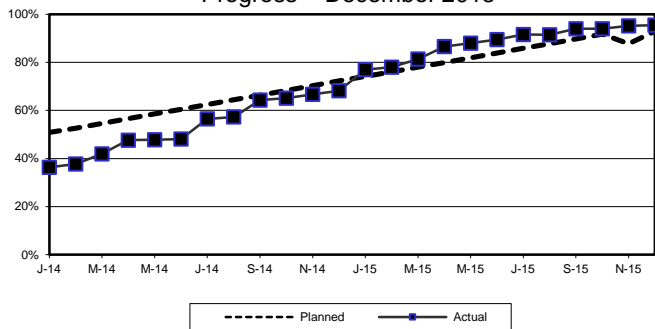
Deer Island Valves and Piping Replacements
Progress - December 2015



Project Summary: This project involves the replacement of the twenty 60" butterfly valves and ten 60" flow meters in the NMPS; three 48", twelve 36" plug/check valves, six 30" flow meters and six 30-36" gate valves in the WTF.

Status and Issues: The Contractor installed a new 36" plug valve, knife gate and flow meter for Pump #1 at the Winthrop Terminal Facility and then put the train back into service during a daytime shutdown. Primary Battery B was taken out of service so that the contractor could begin replacing the 14" PSL piping in the gallery.

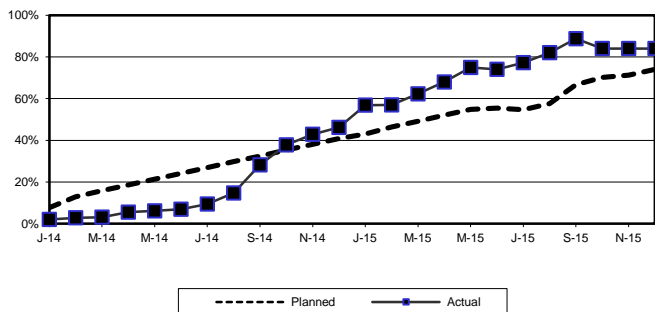
North Main Pump Station VFDs & Motors
Progress - December 2015



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: During December the installation of VFD 10, and the motor connections and terminations were completed. The ductwork in the VFD room that had been removed for the installations was reinstalled and testing commenced on VFD and Motor 10. To date all 10 VFD's and Motors have been replaced.

Primary and Secondary Clarifier Scum Tip Tubes
Progress - December 2015



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 scum skimmer installation in the Primary Area is 99% complete and 95% complete in the Secondary Area. The instrumentation work is 87% complete and the electrical work is 99% complete.

CSO CONTROL PROGRAM

2nd Quarter - FY16

All 35 projects in the Long-Term CSO Control Plan are complete. CSO related capital spending will continue, to complete the surface restoration work of the Cambridge CAM004 sewer separation contracts, to continue to fund BWSC work to remove additional inflow from its sewers within the South Dorchester Bay sewer separation areas of Dorchester, and to perform a federal court mandated CSO post-construction monitoring and performance assessment in the period January 2018 through December 2020.

Project		Court Milestones in Schedule Seven			Status as of December 31, 2015																																				
		Commence Design	Commence Construction	Complete Construction																																					
Reserved Channel Sewer Separation		Jul 2006	May 2009	Dec 2015	<p>BWSC attained substantial completion of contracts 5, 6 and 8 as of December 11, 2015, bringing the project to completion in compliance with Schedule Seven.</p> <table border="0"> <tr> <td>Contract 1</td> <td>CSO outfall rehab</td> <td>\$ 3.9 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>\$11.8 M</td> <td>Complete</td> </tr> <tr> <td>Contract 3B</td> <td>Sewer separation</td> <td>\$13.6 M</td> <td>Complete</td> </tr> <tr> <td>Contract 4</td> <td>Sewer separation</td> <td>\$13.8 M</td> <td>Complete</td> </tr> <tr> <td>Contract 5</td> <td>Cleaning & Lining</td> <td>Ineligible</td> <td>Subst. complete</td> </tr> <tr> <td>Contract 6</td> <td>Downspout Disconnect</td> <td>\$ 0.2 M</td> <td>Subst. complete</td> </tr> <tr> <td>Contract 7</td> <td>Pavement restoration 1</td> <td>\$ 1.3 M</td> <td>Complete</td> </tr> <tr> <td>Contract 8</td> <td>Pavement restoration 2</td> <td>\$ 4.8 M</td> <td>Subst. complete</td> </tr> </table>	Contract 1	CSO outfall rehab	\$ 3.9 M	Complete	Contract 2	Sewer separation	\$ 5.9 M	Complete	Contract 3A	Sewer separation	\$11.8 M	Complete	Contract 3B	Sewer separation	\$13.6 M	Complete	Contract 4	Sewer separation	\$13.8 M	Complete	Contract 5	Cleaning & Lining	Ineligible	Subst. complete	Contract 6	Downspout Disconnect	\$ 0.2 M	Subst. complete	Contract 7	Pavement restoration 1	\$ 1.3 M	Complete	Contract 8	Pavement restoration 2	\$ 4.8 M	Subst. complete
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Cambridge/Alewife Brook Sewer Separation	CAM004 Sewer Separation	Jan 1997	Jul 1998 Sep 2012	Dec 2015	<p>The City of Cambridge attained substantial completion of the last of its construction contracts (Contract 9) for this project on December 21, 2015, in compliance with Schedule Seven. Stormwater removed from the Cambridge and MWRA sewer systems now drains to the Alewife Wetland, and Cambridge has permanently closed Outfall CAM004 to CSO discharges.</p> <table border="0"> <tr> <td>Contract 8A</td> <td>Sewer separation</td> <td>\$17.8 M</td> <td>Subst. complete</td> </tr> <tr> <td>Contract 8B</td> <td>Sewer separation</td> <td>\$18.2 M</td> <td>Subst. complete</td> </tr> <tr> <td>Contract 9</td> <td>Sewer separation</td> <td>\$ 6.7 M</td> <td>Subst. complete</td> </tr> <tr> <td>Concord Lane</td> <td>Sewer separation</td> <td>\$1.8 M</td> <td>Subst. complete</td> </tr> </table>	Contract 8A	Sewer separation	\$17.8 M	Subst. complete	Contract 8B	Sewer separation	\$18.2 M	Subst. complete	Contract 9	Sewer separation	\$ 6.7 M	Subst. complete	Concord Lane	Sewer separation	\$1.8 M	Subst. complete																				
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Concord Lane	Sewer separation	\$1.8 M	Subst. complete																																						
	MWR003 Gate and Rindge Ave. Siphon Relief	Apr 2012	Aug 2014	Oct 2015	MWRA attained substantial completion on October 28, 2015, in compliance with Schedule Seven. The contractor continues with punch list items.																																				
South Dorchester Bay Sewer Separation Post-Construction Inflow Removal		N/A	N/A	N/A	As previously reported, BWSC has completed its investigation of alternatives for removing additional stormwater inflow from its Dorchester Interceptor. Meanwhile, BWSC continues with a construction contract to remove some of the remaining inflow sources. The contract amount is \$562,261, of which \$204,000 is eligible for MWRA funding under the BWSC CSO MOU and FAA. MWRA's CIP includes \$5.4 million for the inflow removal effort, of which approximately \$2.7 million has funded awarded design and construction contracts. Additional funding will follow decisions by BWSC on its recommendations and schedule for removing additional inflow.																																				

CIP Expenditures 2nd Quarter – FY16

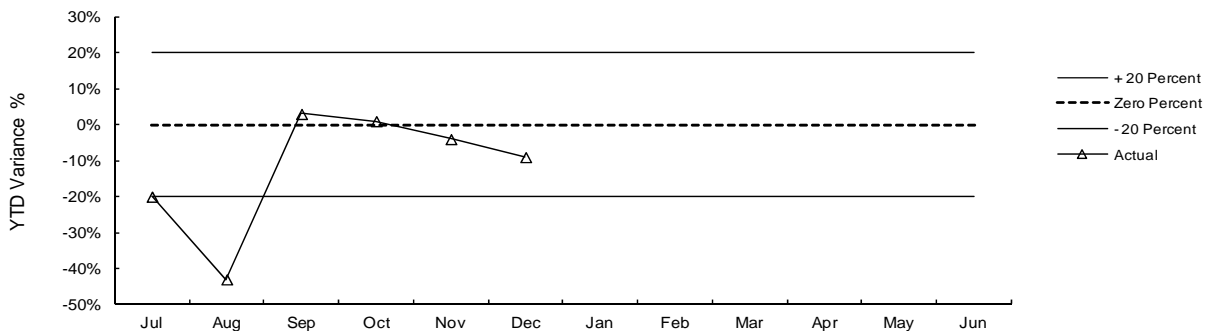
The Year-To-Date variances are highlighted below:

FY16 Capital Improvement Program Expenditure Variances through December by Program (\$000)				
Program	FY16 Budget Through December	FY16 Actual Through December	Variance Amount	Variance Percent
Wastewater	35,382	34,170	(1,212)	-3%
Waterworks	15,513	13,597	(1,915)	-12%
Business and Operations Support	3,404	1,721	(1,683)	-49%
Total	\$54,299	\$49,488	(4,810)	-9%

Underspending within Wastewater is primarily due to less than anticipated community requests for grants and loans, timing of work for Chelsea Screenhouse Upgrades, North Main Pump Stations VFD Replacements, Thermal Power Plant Boiler Control Replacement, MWR003 Gate & Siphon, updated cost estimates for the Reserved Channel Sewer Separation project, less than anticipated As-Needed Design services, energy rebate for Steam Turbine Generator Modifications contract, and schedule change for Alewife Brook Pump Station Rehabilitation. This was partially offset by water use charges and updated cost estimates due to unforeseen conditions for Cambridge Sewer Separation and contractor progress on the North Main Pump Station and Winthrop Terminal Facility Butterfly Valve contract. Underspending in Waterworks is primarily due to updated schedule for the Wachusett Aqueduct Pump Station, timing of Watershed Land purchases, and lower than anticipated requests for Local Water System loans and amended community repayment schedule. This was partially offset by contractor progress on Section 36/C/S9-A11 Valve, Carroll Water Treatment Plant Existing Facilities Modifications CP-7, and Section 4 Webster Ave Pipe Rehabilitation contracts.

CIP Expenditure Variance

Total FY16 CIP Budget of \$140,498,000.



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 12/26/2015	\$42 million
Unused capacity under the debt cap:	\$1.091 billion
Estimated date for exhausting construction fund without new borrowing:	MAR-16
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper/Revolving loan outstanding:	\$149 million
Commercial paper capacity:	\$350 million
Budgeted FY16 capital spending*:	\$155 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

2nd Quarter – FY16

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 William A. Brusch Water Treatment Facility (formerly Ware Disinfection Facility) raw water tap before being treated and entering the CVA system.

All samples collected during the 2nd 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.

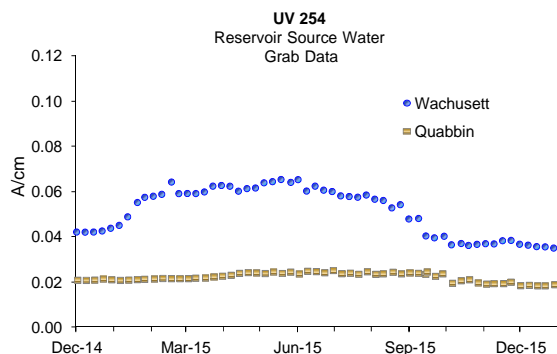
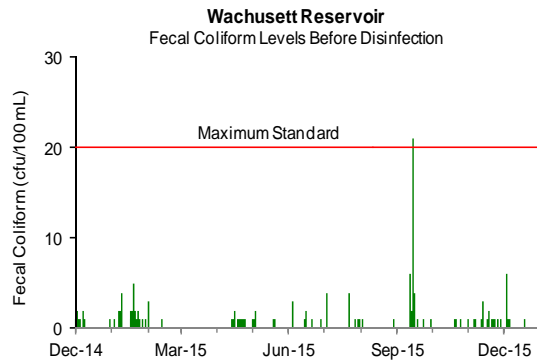
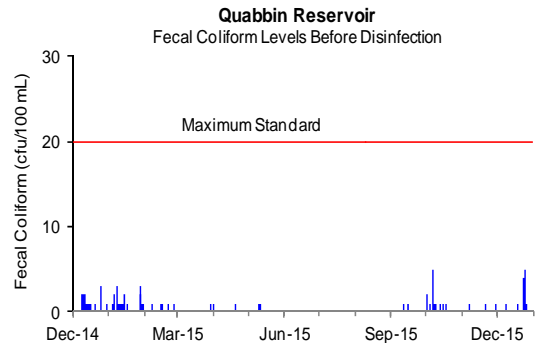
All samples collected during the 2nd Quarter were below 20 cfu/100ml. **For the current six-month period, 0.6% of the samples exceeded a count of 20 cfu/100mL, compared to allowable 10%.**

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.

Quabbin Reservoir UV-254 levels are currently around 0.019 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.035 A/cm.



Source Water – Turbidity

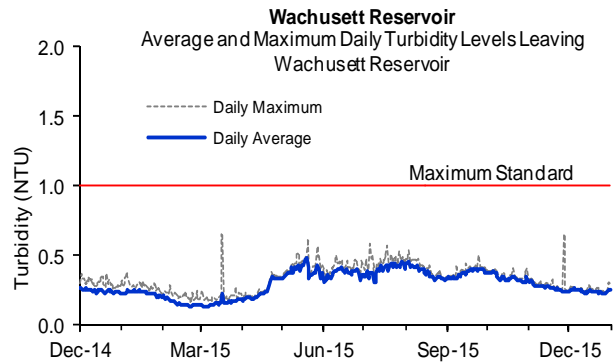
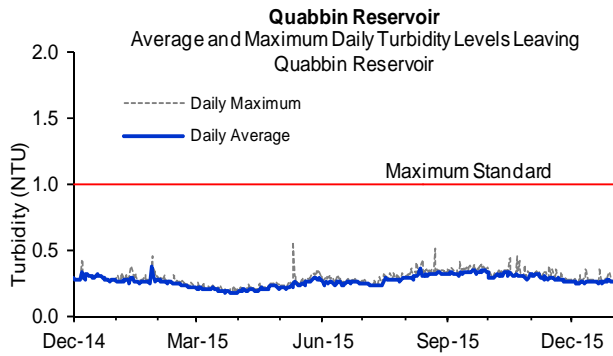
2nd Quarter – FY16

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 William A. Brusch Water Treatment Facility (WABWTF) before UV and chlorine disinfection. Turbidity of Wachusett Reservoir is monitored continuously at the Carroll Water Treatment Plant (CWTP) before ozonation and UV disinfection.

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

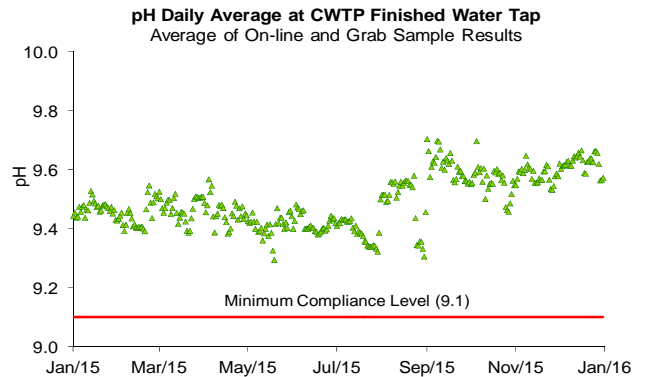
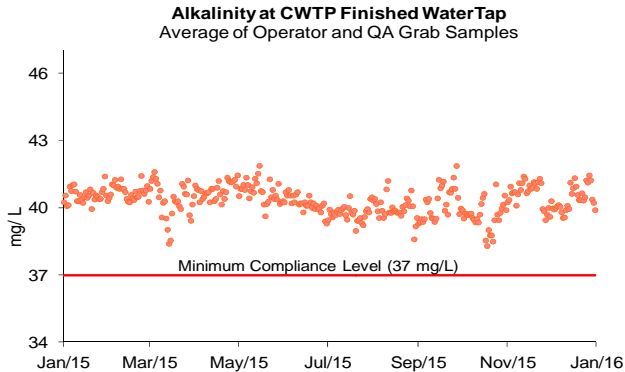


Treated Water – pH and Alkalinity Compliance

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.

Each CVA community provides its own corrosion control treatment. See the CVA report: www.mwra.com/water/html/awqr.htm.

Distribution system samples were collected on December 9 and 10, 2015. Distribution system sample pH ranged from 9.4 to 9.6 and alkalinity ranged from 39 to 41 mg/L. No sample results were below DEP limits for this quarter.



Treated Water – Disinfection Effectiveness

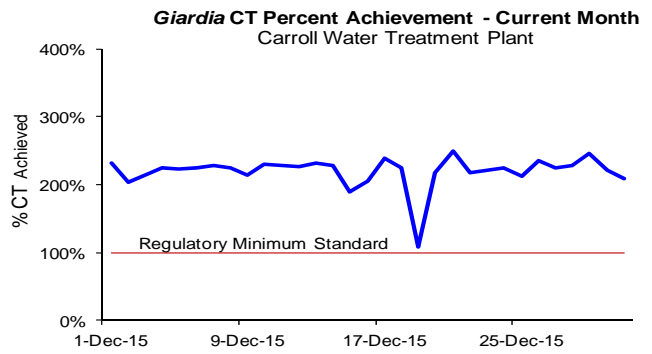
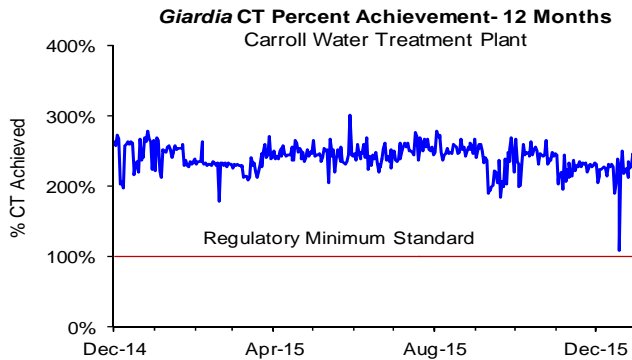
2nd Quarter – FY16

At the Carroll Water Treatment Plant (CWTP), MWRA meets the required 99.9% (3-log) inactivation of *Giardia* using ozone (reported as CT: concentration of disinfectant x contact time) and the required 99% (2-log) inactivation of *Cryptosporidium* using UV (reported as IT: intensity of UV x time). MWRA calculates inactivation rates hourly and reports *Giardia* inactivation at maximum flow and *Cryptosporidium* inactivation at minimum UV dose. MWRA must meet 100% of required CT and IT.

CT achievement for *Giardia* assures CT achievement for viruses, which have a lower CT requirement. For *Cryptosporidium*, there is also an "off-spec" requirement. Off-spec water is water that has not reached the full required UV dose or if the UV reactor is operated outside its validated ranges. No more than 5% off-spec water is allowed in a month.

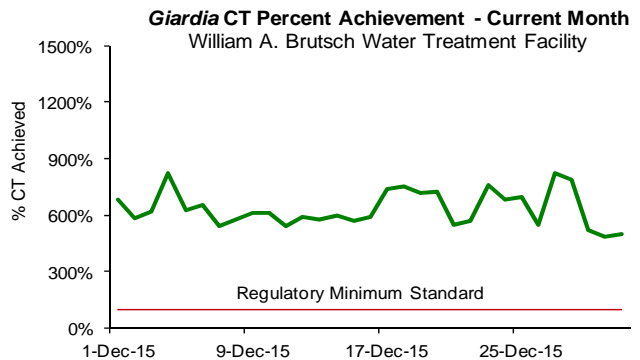
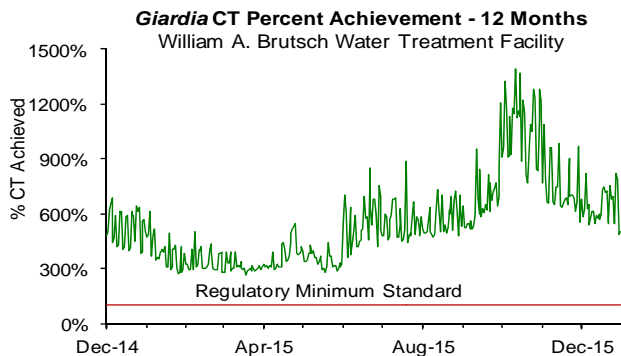
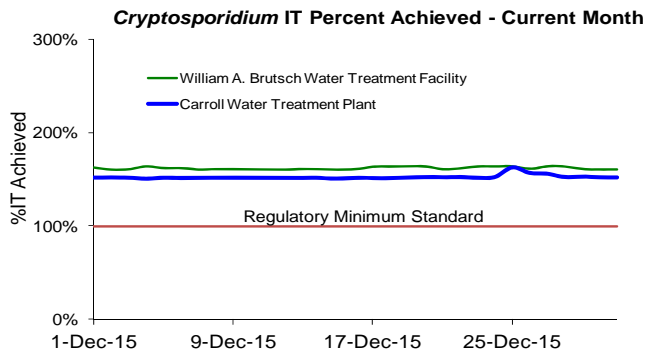
Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 1.2 to 1.3 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.
- Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.
- A dip to 108% CT Achieved occurred on December 19 at 12:15pm, when analyzer 5 for ozone contactor 2 failed and was removed from service. This is shown in the 'Giardia CT Achieved' graph below. The analyzer was replaced and put back into service on December 21 at 12:30pm. Analyzer 5 provides significant credit for reported CT, so while there was no impact on treatment, the calculated credit was lower than typical. There was no regulatory impact.



Quabbin Reservoir (CVA Supply) at: William A. Brutsch Water Treatment Facility

- The chlorine dose at WABWTF is adjusted in order to achieve MWRA's seasonal (June 1 – October 31) target of ≥ 1.0 mg/L at Ludlow Monitoring Station.
- The chlorine dose at WABWTF ranged from 1.4 to 1.7 mg/L for the quarter.
- Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system for the quarter.
- Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.



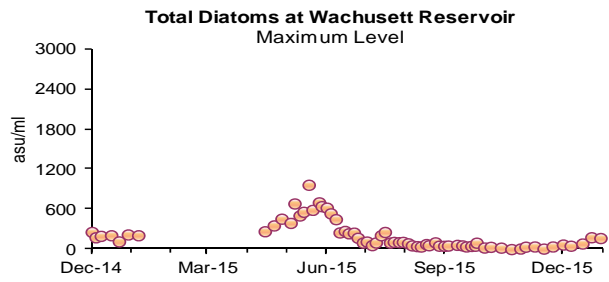
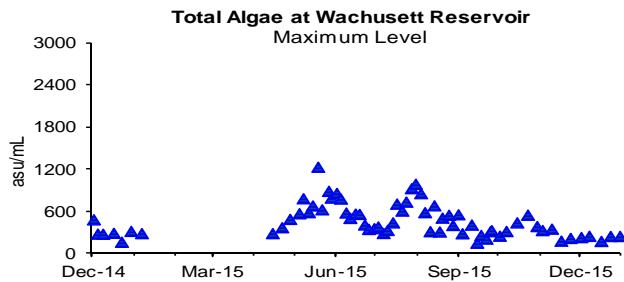
Source Water - Algae

2nd Quarter – FY16

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 2nd Quarter, no complaints which may be related to algae were reported from local water departments.

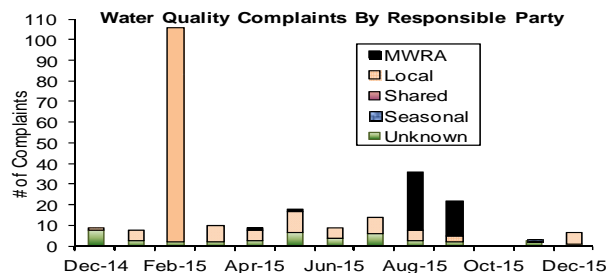
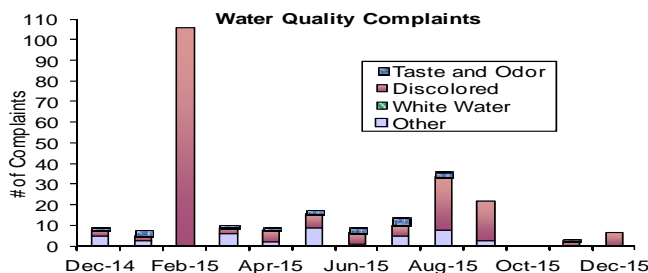


Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 10 complaints during the quarter compared to 7 complaints for 2nd Quarter of FY15. Of these complaints, 10 were for “discolored water” and 1 was for “taste and odor” Of these complaints, 6 were local community issues, 1 was seasonal in nature, and 4 were unknown in origin.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

2nd Quarter – FY16

While all communities collect bacteria samples and chlorine residual data for the Total Coliform Rule (TCR), data from the 44 systems that use MWRA's Laboratory are reported below.

The MWRA TCR program has 142 sampling locations. These locations include sites along MWRA's transmission system, water storage tanks and pumping stations, as well as a subset of the community TCR locations.

The TCR requires that no more than 5% of all samples in a month may be total coliform positive (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 whose presence likely indicates potential contamination of fecal origin. If *E.coli* are detected in a drinking water sample, this is considered evidence of a potential 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 2nd Quarter, 14 of the 6,243 community samples (0.22% system-wide) submitted to MWRA labs for analysis tested positive for coliform (Malden, Melrose, Quincy, Waltham, and Winthrop - October). Winthrop violated the TCR in October. Three of the 1,954 MWRA samples (0.15%) tested positive for total coliform. On October 5, Finished Water Tap B at CWTP tested positive for *E.coli*. Tank B was taken offline until repeat samples were clear. Repeat samples were all clear for both *E.coli* and total coliform and Tank B was placed back in service on October 7. The treatment process was steady and there was no regulatory impact. Repeat samples did not confirm for total coliform or *E.coli*. Only 2.8% 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)	
MWRA	d	MWRA Locations	339	2 (0.59%)	1	No	1.87	2.55
		Shared Community/MWRA sites	1615	1 (0.06%)	0	No	0.05	2.10
		Total: MWRA	1954	3 (0.15%)	1	No	0.05	2.19
Fully Served		ARLINGTON	156	0 (0%)	0		0.04	1.85
		BELMONT	104	0 (0%)	0		0.10	1.80
		BOSTON	795	0 (0%)	0		1.17	2.50
		BROOKLINE	221	0 (0%)	0		0.59	2.13
		CHELSEA	169	0 (0%)	0		0.79	2.03
		DEER ISLAND	52	0 (0%)	0		1.81	2.20
		EVERETT	169	0 (0%)	0		1.01	1.21
		FRAMINGHAM	234	0 (0%)	0		0.09	2.25
		LEXINGTON	116	0 (0%)	0		0.49	2.39
		LYNNFIELD	18	0 (0%)	0		0.16	0.86
		MALDEN	240	2 (0.83%)	0	No	0.05	2.07
		MARBLEHEAD	72	0 (0%)	0		0.36	1.91
		MEDFORD	204	0 (0%)	0		1.17	1.99
		MELROSE	123	2 (1.63%)	0	No	0.05	1.59
		MILTON	99	0 (0%)	0		0.00	1.61
		NAHANT	30	0 (0%)	0		0.48	1.82
		NEWTON	276	0 (0%)	0		0.28	2.09
		NORTHBOROUGH	48	0 (0%)	0		0.04	1.45
		NORWOOD	99	0 (0%)	0		0.04	1.62
		QUINCY	302	1 (0.33%)	0	No	0.05	1.85
		RAJING	130	0 (0%)	0		0.05	1.31
		REVERE	180	0 (0%)	0		1.17	2.11
		SAUGUS	104	0 (0%)	0		1.49	1.87
		SOMERVILLE	274	0 (0%)	0		1.03	1.94
		SOUTHBOROUGH	30	0 (0%)	0		0.09	2.04
		STONEHAM	98	0 (0%)	0		0.36	1.94
		SWAMPSCOTT	53	0 (0%)	0		0.06	1.46
		WALTHAM	219	1 (0.46%)	0	No	0.17	2.14
		WATERTOWN	140	0 (0%)	0		0.74	2.05
		WESTBORO HOSPITAL	15	0 (0%)	0		0.06	0.26
		WESTON	48	0 (0%)	0		1.87	2.37
		WINTHROP	87	8 (9.20%)	0	Yes	0.17	1.88
			Total: Fully Served	4905	14 (0.29%)			
CVA & Partially Served		BEDFORD	54	0 (0%)	0		0.16	1.59
		CANTON	85	0 (0%)	0		0.01	0.79
		HANSCOM AFB	27	0 (0%)	0		0.13	0.48
		MARLBOROUGH	126	0 (0%)	0		0.59	2.40
		NEEDHAM	123	0 (0%)	0		0.05	0.65
		PEABODY	234	0 (0%)	0		0.15	1.93
		WAKFIELD	154	0 (0%)	0		0.20	1.46
		WELLESLEY	114	0 (0%)	0		0.03	0.62
		WILMINGTON	87	0 (0%)	0		0.10	1.53
		WINCHESTER	91	0 (0%)	0		0.11	1.40
		WOBURN	195	0 (0%)	0		0.16	0.96
		SOUTH HADLEY FD1	48	0 (0%)	0		0.14	0.49
			Total: CVA & Partially Served	1338	0 (0%)			
		Total: Community Samples	6243	14 (0.22%)				

(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

2nd Quarter – FY16

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.

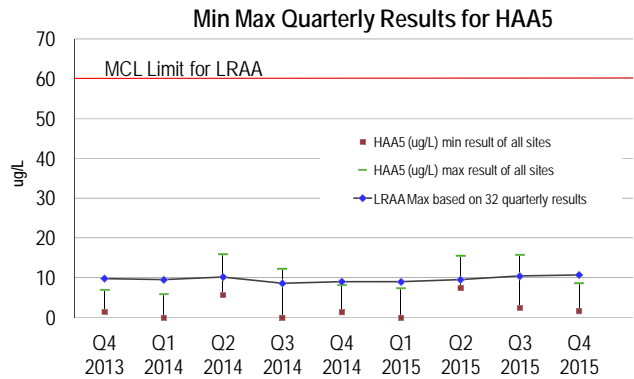
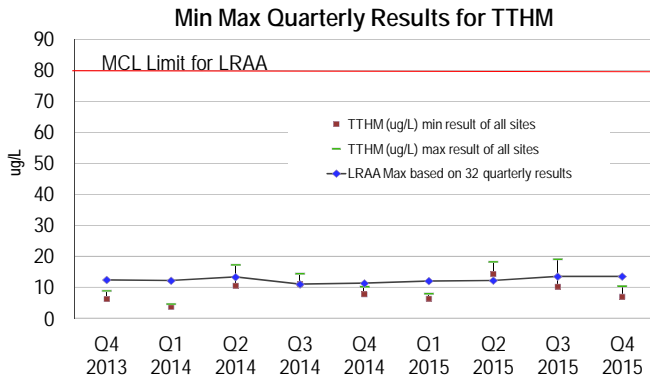
For the CVA communities, effective Q3 2013, under the Stage 2 DBP Rule, compliance is based on a LRAA for each community. Sampling locations have increased from 12 to 14 each quarter. The chart below combines all three CVA communities data.

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

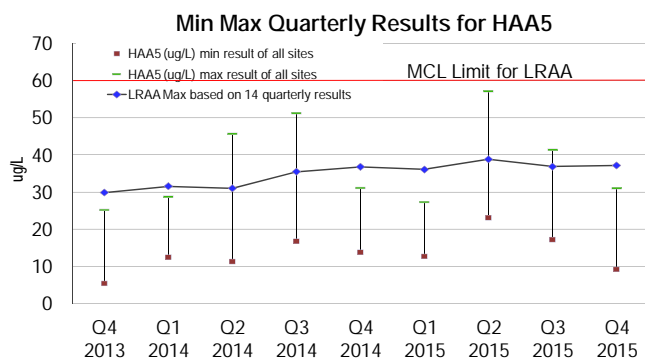
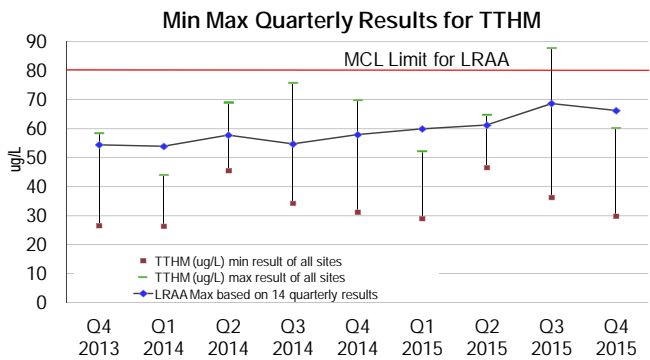
Bromate is tested monthly per DEP requirements for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA's RAA MCL standard for bromate is 10 µg/L.

The LRAA 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 = 13.5 µg/L; HAA5s = 10.7 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 (Combined Results)



Water Supply and Source Water Management

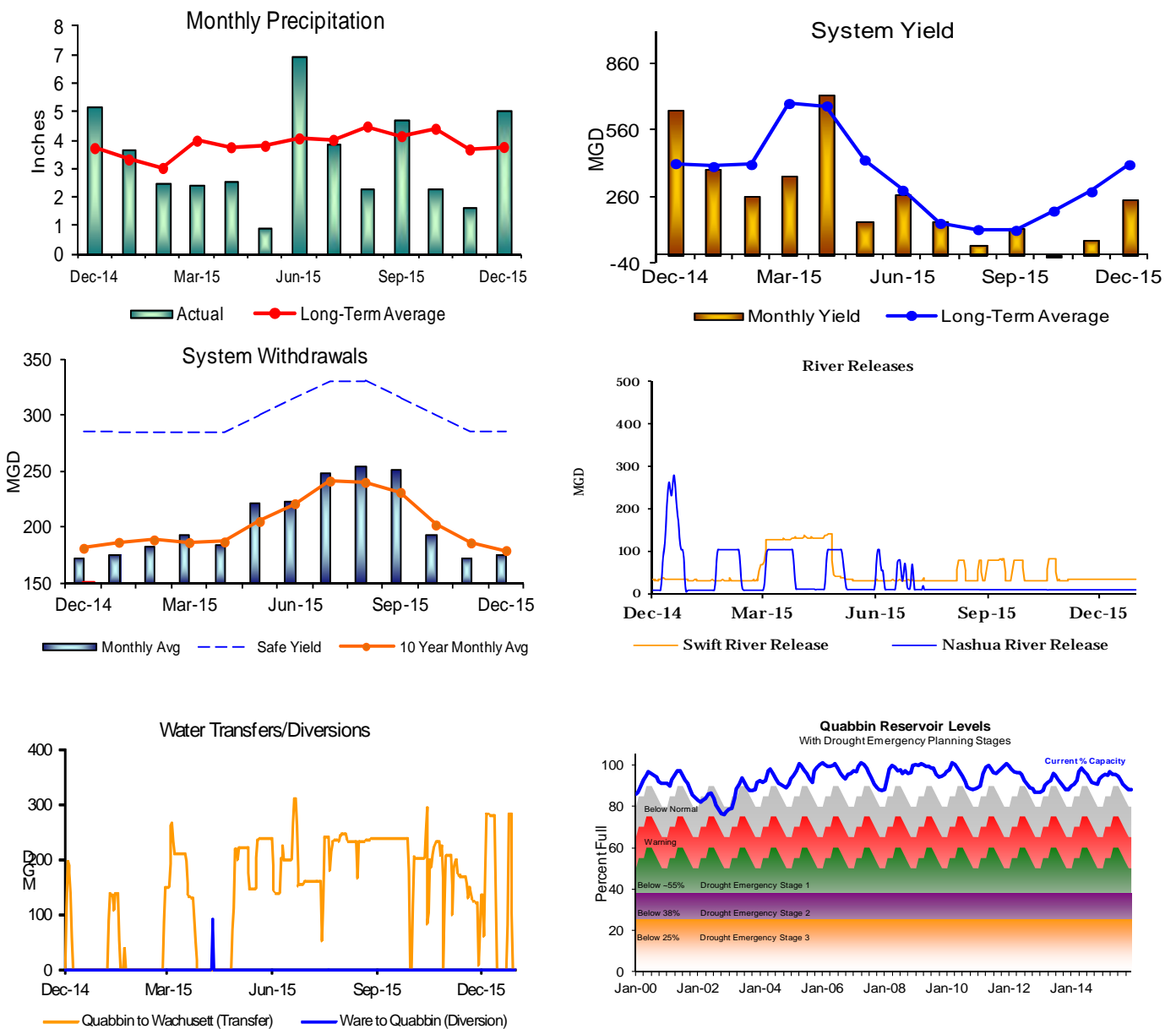
2nd Quarter – FY16

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 88.3% as of December 31, 2015; a 2.8% decrease for the quarter, which represents a decrease of 11.5 billion gallons of storage. Yield and precipitation for the quarter were below their respective quarterly long term averages. System withdrawal continues to be below its long-term average.



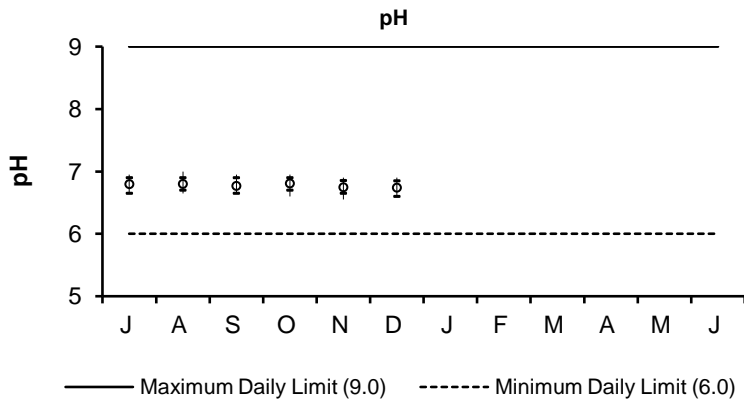
WASTEWATER QUALITY

NPDES Permit Compliance: Deer Island Treatment Plant 2nd Quarter - FY16

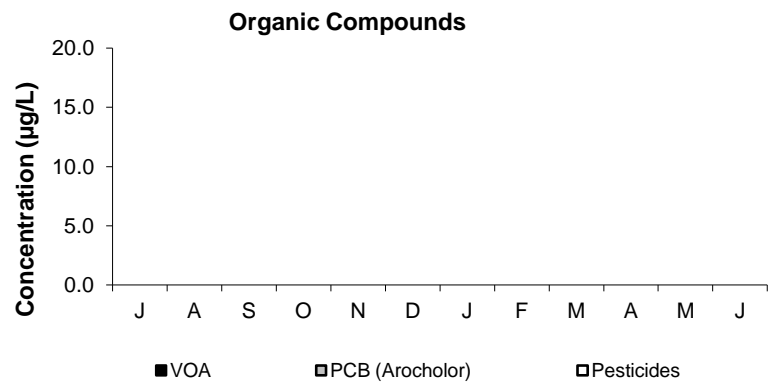
NPDES Permit Limits

Effluent Characteristics		Units	Limits	October	November	December	2nd Quarter Violations	FY16 YTD Violations
Dry Day Flow:		mgd	436	270.9	266.6	255.9	0	0
cBOD:	Monthly Average	mg/L	25	5.0	4.6	6.1	0	0
	Weekly Average	mg/L	40	7.8	6.0	7.3	0	0
TSS:	Monthly Average	mg/L	30	5.6	5.4	6.7	0	0
	Weekly Average	mg/L	45	10.7	7.1	8.4	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	17	19	5	0	0
	Weekly Geometric Mean	col/100mL	14000	8	7	9	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	6.6-7.0	6.6-6.9	6.6-6.9	0	0
PCB, Aroclors:	Monthly Average	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	50	100	100	0	0
	Inland Silverside	%	≥1.5	100	50	50	0	0

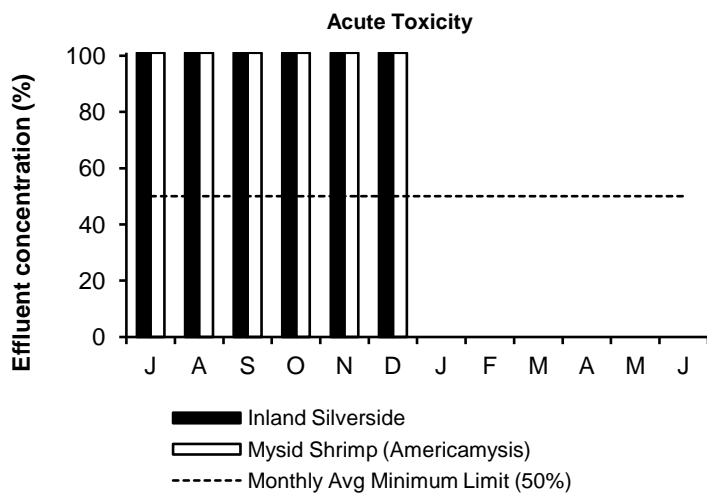
There have been no permit violations in FY16 to date at the Deer Island Treatment Plant.



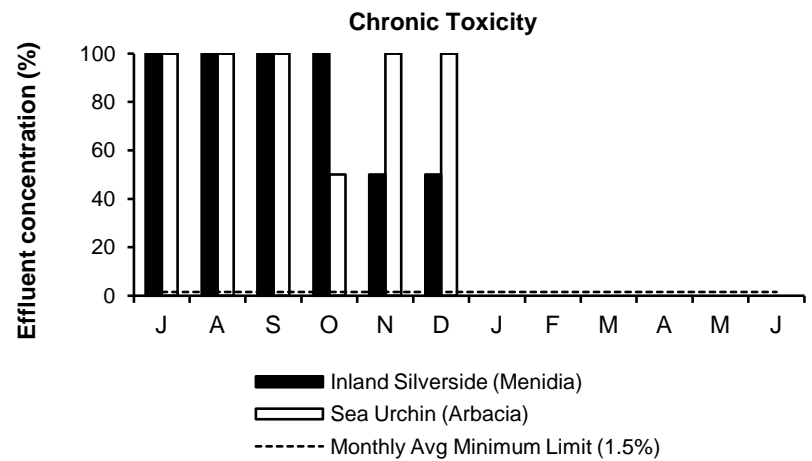
pH is a measure of alkalinity or acidity. Fluctuations in effluent pH are unlikely to impact on marine environments, which have significant buffering capacity. Because of the pure oxygen used in the activated sludge process, effluent pH tends to be at the lower end of the permit-required range. All pH measurements for the 2nd 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 significantly reduces organic compounds in the effluent stream. In the 2nd Quarter, no organic compounds were detected in the effluent.



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 2nd Quarter for both the inland silverside and mysid shrimp.



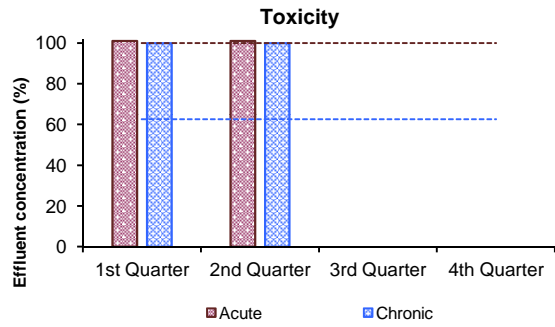
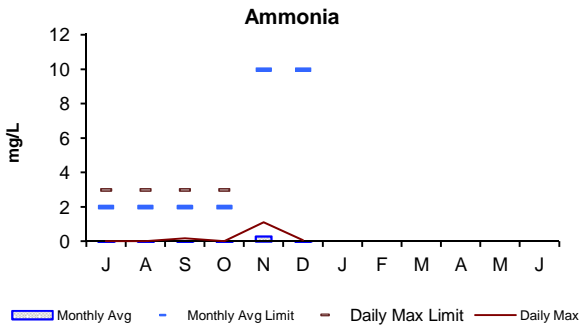
Typically, effects of chronic exposures differ from those of acute exposures. Because of this, chronic toxicity responses are not necessarily related to acute toxicity. The chronic toxicity test simulates the long-term toxic effects of chemicals in wastewater effluent on marine animals. To meet permit 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 2nd Quarter for both the inland silverside and sea urchin.

NPDES Permit Compliance: Clinton Wastewater Treatment Plant 2nd Quarter - FY16

NPDES Permit Limits

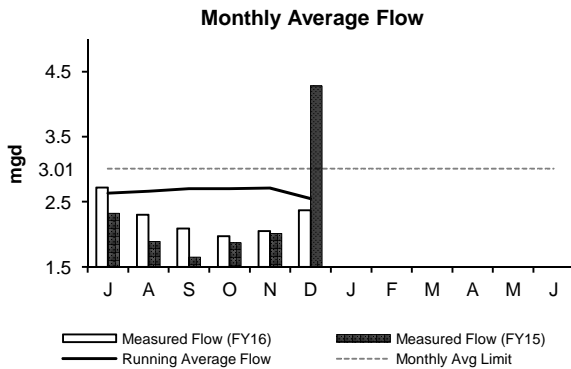
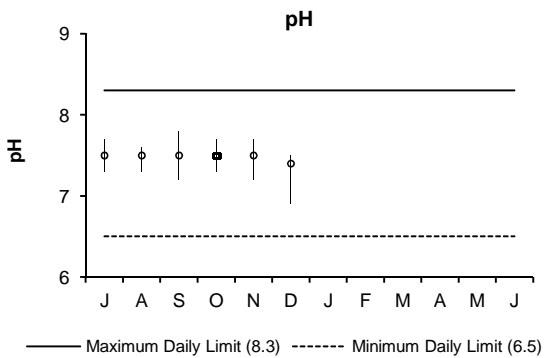
Effluent Characteristics		Units	Limits	October	November	December	2nd Quarter Violations	FY16 YTD Violations
Flow:		mgd	3.01	2.70	2.71	2.55	0	0
BOD:	Monthly Average:	mg/L	20	3.1	3.0	3.7	0	0
	Weekly Average:	mg/L	20	3.4	3.0	5.2	0	0
TSS:	Monthly Average:	mg/L	20	4.1	4.7	4.3	0	0
	Weekly Average:	mg/L	20	4.4	6.5	5.2	0	0
pH:		SU	6.5-8.3	7.3-7.7	7.2-7.7	6.9-7.5	0	0
Dissolved Oxygen:	Daily Minimum:	mg/L	6	7.5	8.5	7.6	0	0
Fecal Coliform:	Daily Geometric Mean:	col/100mL	400	20	7	7	0	0
	Monthly Geometric Mean:	col/100mL	200	4	3	4	0	0
TCR:	Monthly Average:	ug/L	50	0	0.0	0.0	0	0
	Daily Maximum:	ug/L	50	6.7	0.0	0.0	0	0
Total Ammonia Nitrogen: November 1 - March 31								
Monthly Average:		mg/L	10.0	0.00	0.28	0.02	0	0
Daily Maximum:		mg/L	35.2	0.00	1.10	0.06	0	0
Copper: Monthly Average:		ug/L	20	2.3	4.8	6.1	0	0
Phosphorus: May 1 - Oct 31								
Monthly Average:		mg/L	1.0	--	0.00	0.00	0	0
Acute Toxicity:	Daily Minimum:	%	≥100	*N/A	*N/A	> 100	0	0
Chronic Toxicity:	Daily Minimum:	%	≥62.5	*N/A	*N/A	100	0	0

There have been no permit violations in FY16 at the Clinton Treatment Plant.
2nd Quarter: There have been no permit violations in the second quarter.
 *Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



The 2nd Quarter's monthly average and daily maximum concentrations were below the permit limits. The monthly average and daily maximum limits for the 2nd Quarter are 0.02 mg/L and 0.06 mg/L, respectively. 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. Toxicity limits were met during the 2nd Quarter.



pH is a measure of the alkalinity or acidity of the effluent. All daily pH results for the 2nd Quarter were within the range set 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 2nd Quarter were below the NPDES permit limit.

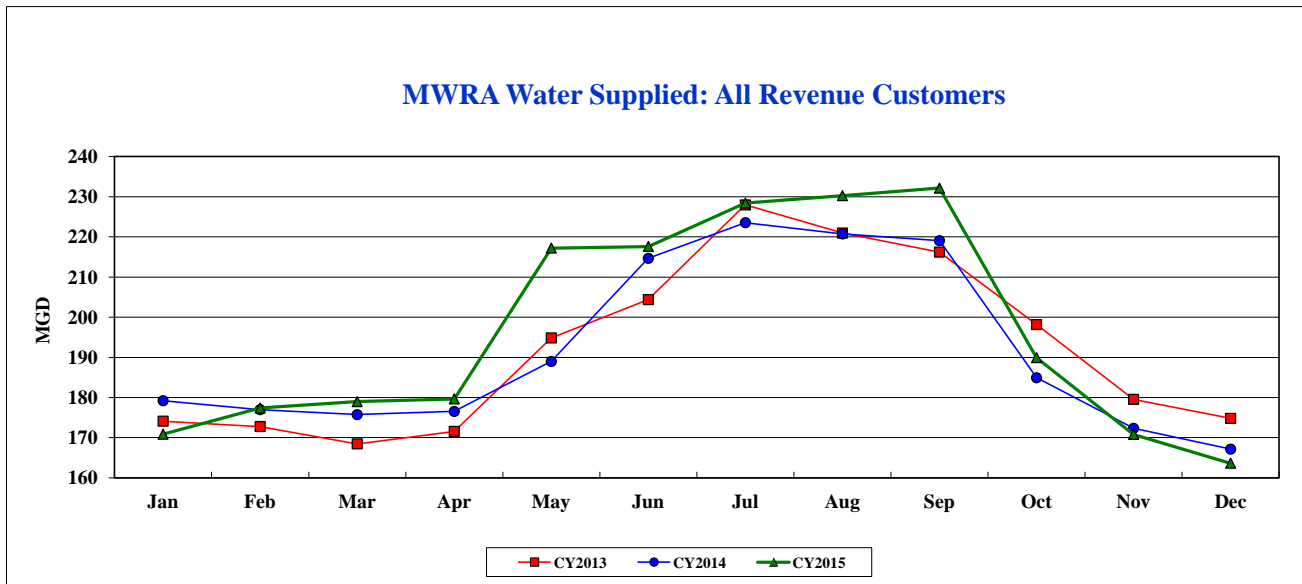
COMMUNITY FLOWS AND PROGRAMS

Total Water Use: MWRA Core Customers 2nd Quarter FY16

YTD CHANGES
(CY15 vs. CY14)
Water Supplied
2.5%

MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
CY2013	174.117	172.782	168.462	171.569	194.838	204.384	227.963	220.962	216.216	198.168	179.548	174.814	192.133	192.133
CY2014	179.212	176.987	175.736	176.536	188.974	214.660	223.544	220.734	219.049	184.918	172.333	167.145	191.729	191.729
CY2015	170.874	177.386	178.975	179.653	217.221	217.619	228.433	230.271	232.142	189.938	170.829	163.650	196.532	196.532

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Total	Annual Total
CY2013	5,397.612	4,837.906	5,222.328	5,147.061	6,039.966	6,131.507	7,066.855	6,849.826	6,486.467	6,143.217	5,386.450	5,419.236	70,128.430	70,128.430
CY2014	5,555.575	4,955.629	5,447.807	5,296.068	5,858.182	6,439.790	6,929.849	6,842.752	6,571.479	5,732.472	5,169.979	5,181.506	69,981.088	69,981.088
CY2015	5,297.089	4,966.801	5,548.216	5,389.596	6,733.842	6,528.559	7,081.416	7,138.389	6,964.253	5,888.090	5,124.872	5,073.150	71,734.273	71,734.273



The December 2015 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 2015 water use will be used to allocate the FY17 water utility rate revenue requirement.

December 2015 water supplied of 163.7 mgd (for revenue generating users) is down 3.5 mgd or 2.1% compared to December 2014. System-wide annual water use for CY15 was higher than CY14 with 196.5 mgd being supplied to MWRA customers through December.

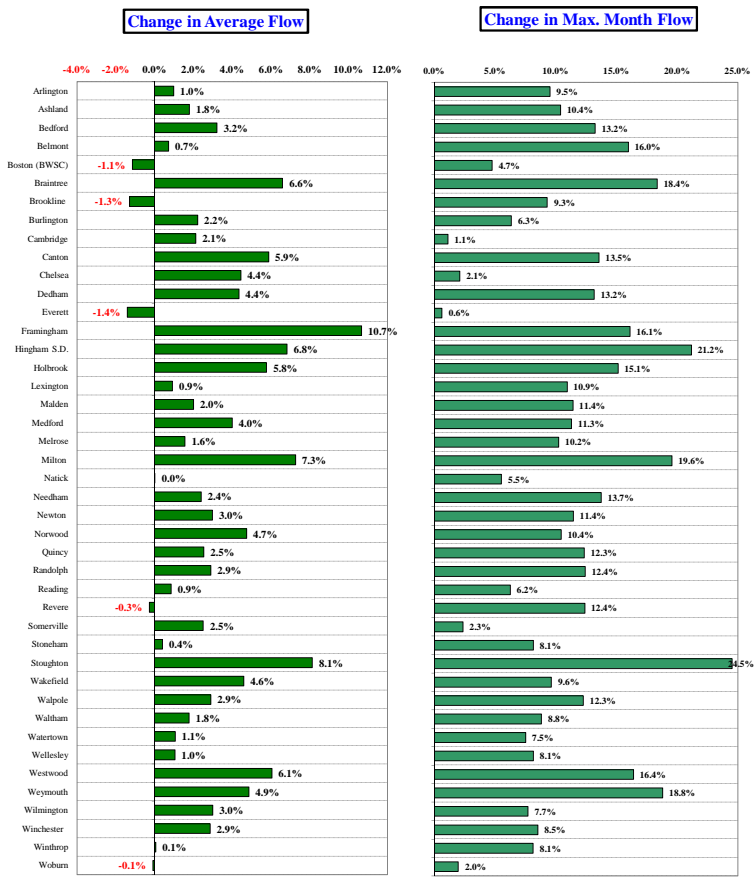
This is 4.8 mgd higher than CY14, and is an increase of 2.5%.

The above figures include water in excess of what is usually supplied to the cities of Lynn and Cambridge.

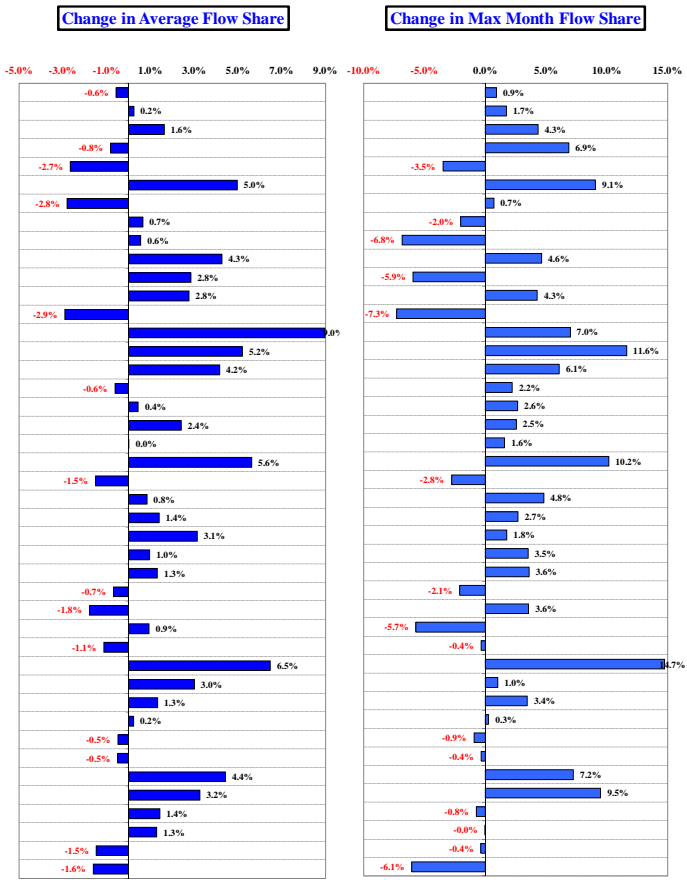
Community Wastewater Flows 2nd Quarter - FY16

How Projected CY2015 Community Wastewater Flows Could Effect FY2017 Sewer Assessments ^{1,2,3}

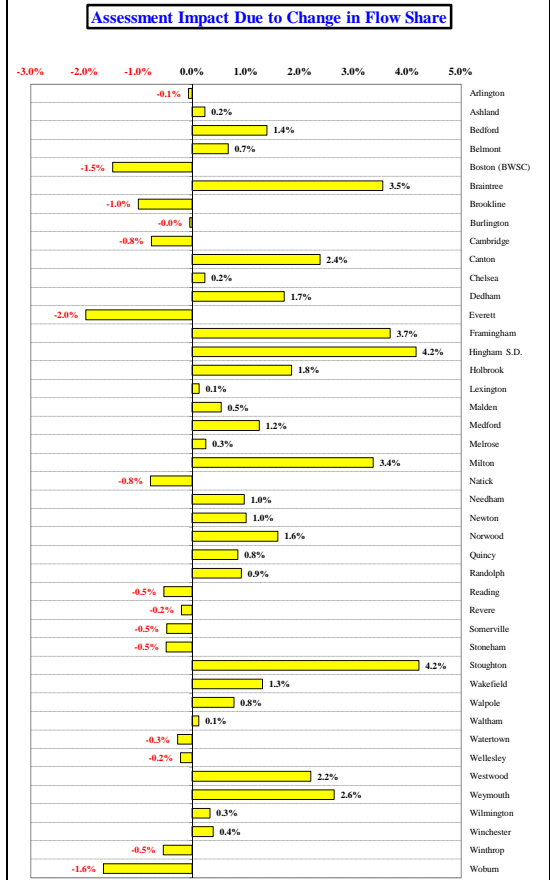
The flow components of FY2017 sewer assessments will be calculated using a 3-year average of CY2013 to CY2015 wastewater flows compared to FY2016 assessments that will use a 3-year average of CY2012 to CY2014 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2013 to CY2015 flow share compared to CY2012 to CY2014 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. ⁴



Notes:

¹ 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.

² Based on CY2012 to CY2015 average wastewater flows as of 12/10/15. Flow data is preliminary and subject to change pending additional MWRA and community review.

³ CY2012 to CY2014 wastewater flows based on actual meter data. CY2015 flows based on actual meter data for January to October and projected flows for November to December.

⁴ Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.

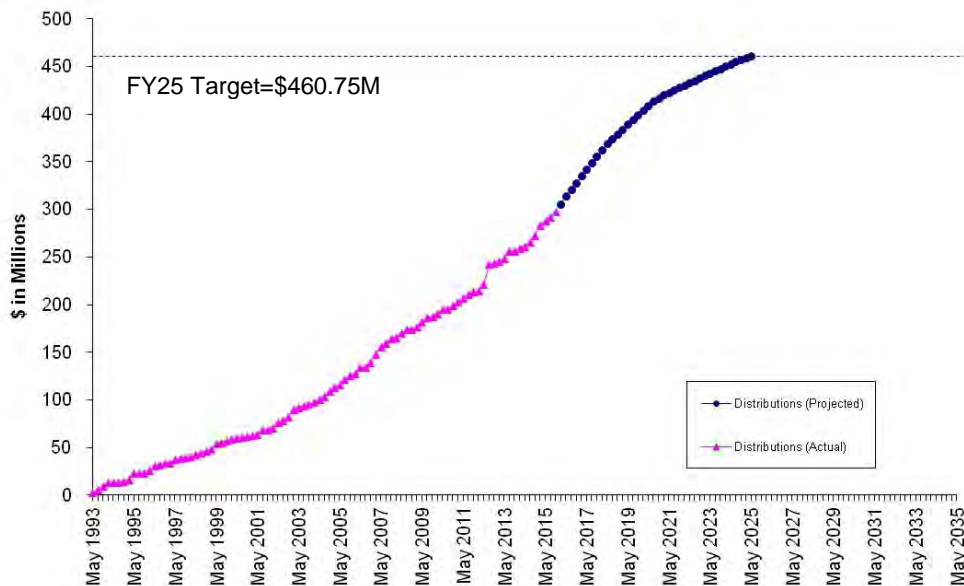
Community Support Programs

2nd Quarter – FY16

Infiltration/Inflow Local Financial Assistance Program

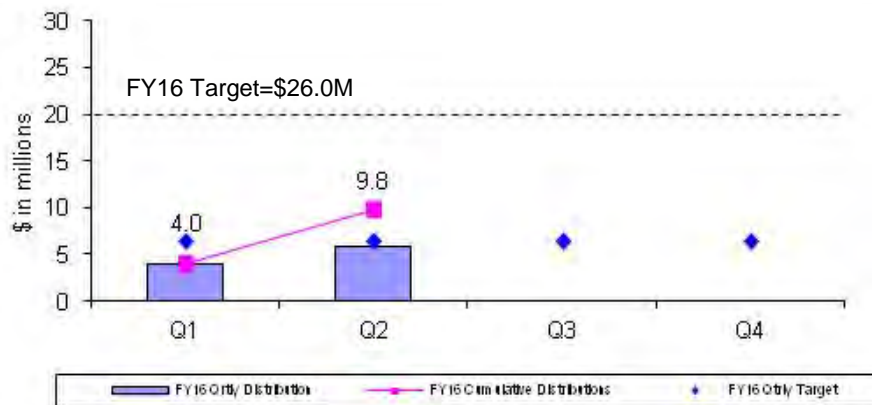
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$460.75 million in grants and interest-free loans (average of about \$14 million per year from FY93 through FY25) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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. Phase 1-8 funds (total \$300.75 million) were distributed as 45% grants/55% loans with interest-free loans repaid to MWRA over a five-year period. Phase 9 and 10 funds (total \$160 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period.

I/I Local Financial Assistance Program Distribution FY93-FY25



During the 2nd Quarter of FY16, \$5.8 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Everett, Newton, Reading, Stoneham and Watertown. Total grant/loan distribution for FY16 is \$9.8 million. From FY93 through the 2nd Quarter of FY16, all 43 member sewer communities have participated in the program and more than \$297 million has been distributed to fund 491 local I/I reduction and sewer system rehabilitation projects. Distribution of the remaining funds has been approved through FY25 and community loan repayments will be made through FY36. All scheduled community loan repayments have been made.

FY16 Quarterly Distributions of Sewer Grant/Loans



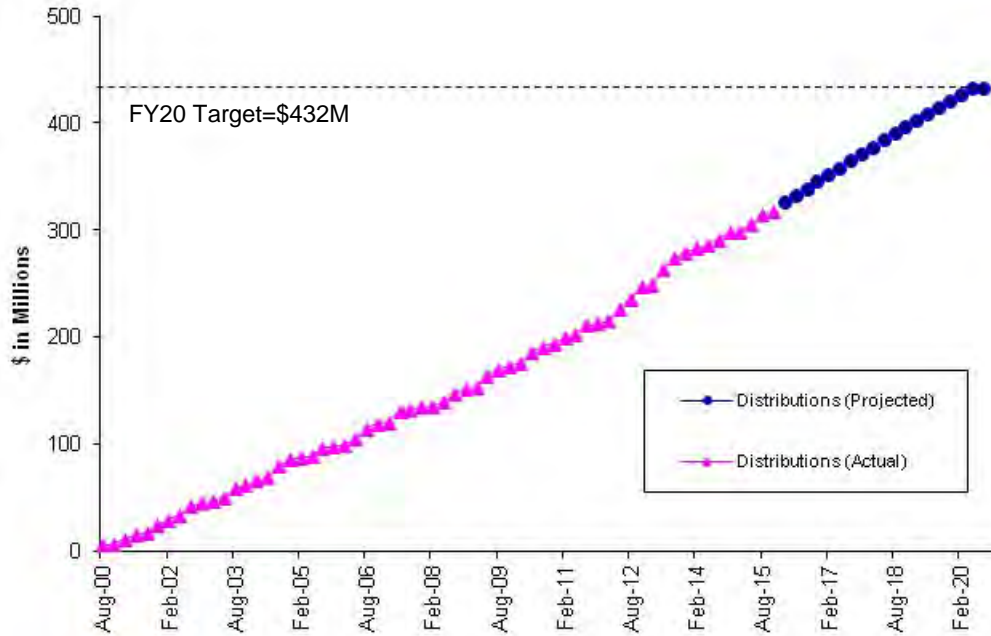
Community Support Programs

2nd Quarter – FY16

Water Local Pipeline and Water System Assistance Programs

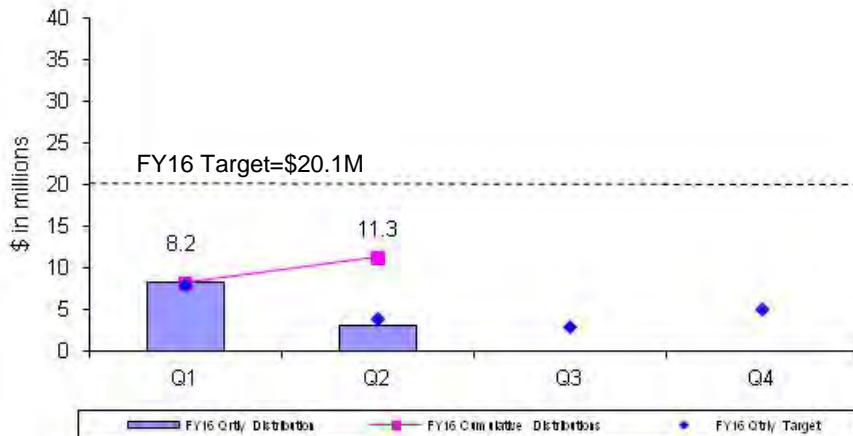
MWRA's Local Pipeline and Water System Assistance Programs (LPAP and LWSAP) provide \$432 million in interest-free loans (an average of about \$22 million per year from FY01 through FY20) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution 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.

Local Pipeline and Water System Assistance Programs Distribution FY01-FY20



During the 2nd Quarter of FY16, \$3.1 million in interest-free loans was distributed to fund local water projects in Bedford, Newton and Stoneham. Total loan distribution for FY16 is \$11.3 million. From FY01 through the 2nd Quarter of FY16, more than \$317 million has been distributed to fund 359 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.

FY16 Quarterly Distributions of Water Loans

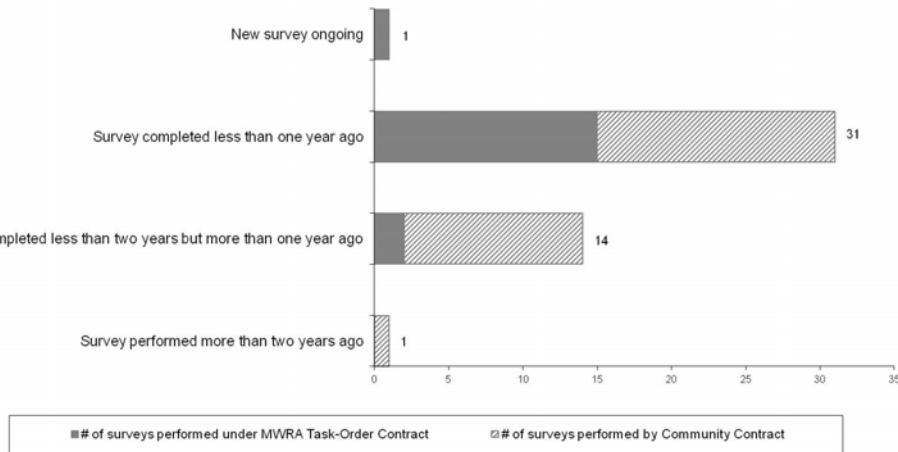


Community Support Programs

2nd Quarter – FY16

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 1st Quarter of FY16, only one member water community was not 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.

	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	100,000	1,066	19,283			20,349
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	2,924	2,210			5,134
Toilet Leak Detection Dye Tablets	-----	1,688	2,446			4,134

BUSINESS SERVICES

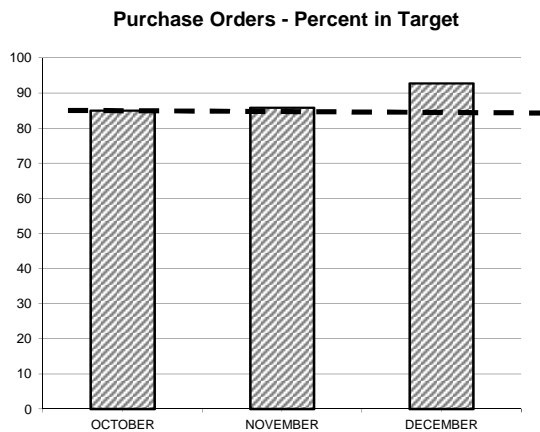
Procurement: Purchasing and Contracts

Second Quarter, FY16

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

Outcome: Processed 88.0% of purchase orders within target; Average Processing Time was 4.92 days vs. 6.76 days in Qtr 2 of FY15. Processed 91 % (29 of 32) of contracts within target timeframes; Average Processing Time was 72 days vs. 95 days in Qtr 2 of FY15.

Purchasing



	No.	TARGET	PERCENT IN TARGET
\$0 - \$500	942	3 DAYS	79.9%
\$500 - \$2K	883	7 DAYS	94.9%
\$2K - \$5K	365	10 DAYS	92.3%
\$5K - \$10K	77	25 DAYS	88.3%
\$10K - \$25K	52	30 DAYS	80.7%
\$25K - \$50K	16	60 DAYS	87.5%
Over \$50K	25	90 DAYS	84.0%

The Purchasing Unit processed 2360 purchase orders, 98 less than the 2458 processed in Qtr 2 of FY15 for a total value of \$21,846,994 versus a dollar value of \$11,705,441 in Qtr 2 of FY15.

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

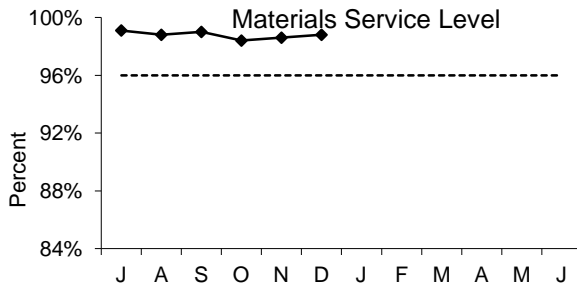
Contracts, Change Orders and Amendments

Three contracts were not processed within the target timeframes for the following reasons: One to obtain additional information from the vendor prior to the award; another due to a delay in receipt of a parental guaranty; and the third was held until the services were needed.

Procurement processed 32 contracts with a value of \$16,696,041 and seven amendments with a value of \$5,307,751. Sixteen change orders were executed during the period. The dollar value of all non-credit change orders during the 2nd quarter FY16 was \$526,834 and the value of credit change orders was (\$500).

Staff reviewed 35 proposed change orders and 17 draft change orders.

Materials Management 2nd Quarter, FY16



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 8,579 (98.6%) of the 8,702 items requested in Q2 from the inventory locations for a total dollar value of \$1,223,720.

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 FY16 goal is to reduce consumable inventory from the July '15 base level (\$7.6 million) by 2.0% (approximately \$154,371), to \$7.5 million by June 30, 2016 (see chart below).

Items added to inventory this quarter include:

- Deer Island – terminals, screen strainers and indicators for I&C; mechanical seals, belt drives and safety valves for HVAC; abrasive discs and carbide tools for Machine Shop; torch caps for Welding Shop.
- Chelsea – transmission fluid, tire gauges, fuel lines, coolant hoses, brake calipers, headlights, tail light assemblies, mirrors and wheel bearings for Fleet Services; washers, disc flaps, submersible pumps and power supply base for Work Order Coordination Group; cables, antennas, sensor cable and connectors for Metering; fuses, circuit board relays and PC boards for Engineering and Construction; hymax couplings, manhole frames and test stations for Pipeline; ice trekkers and boot studs for Office of Emergency Preparedness.
- Southboro – roof melt, welding wire, propane torch and submersible pump for Facilities Maintenance; motor oil, windshield deicer, windshield wipers, starter fluid and harnesses for Equipment Maintenance.

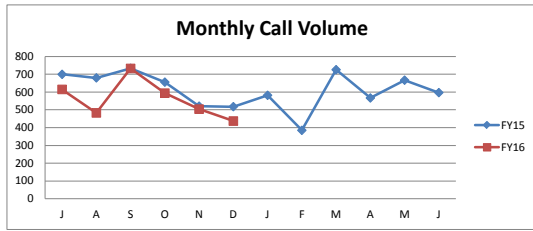
Property Pass Program:

- Five audits were conducted during Q2.
- Numerous obsolete battery jumpers, monitors, computers, printers, PCs, fax machines, projectors, laptops, servers, power supplies, cell phones and mice have been received into Property Pass as surplus. Disposition is being handled as part of our ongoing recycling efforts.
- Scrap revenue received for Q2 amounted to \$2,838. Year to date revenue received amounted to \$12,593.
- Revenue received from online auctions held during Q2 amounted to \$112,139. Year to date revenue received amounted to \$170,451.

Items	Base Value July-15	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	7,663,973	7,691,344	-37,326
Spare Parts Inventory Value	8,263,059	8,412,429	-125,843
Total Inventory Value	15,927,032	16,103,773	-163,169

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.

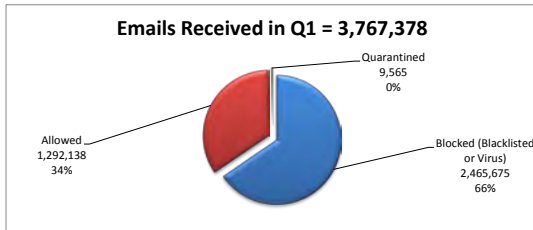
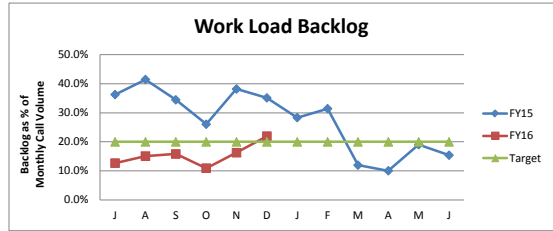
MIS Program 2nd Quarter FY16



Performance and Backlog

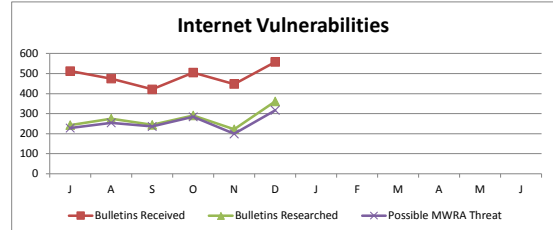
Call Volume: Peaked in October. FY16-Q2 call volume decreased by 9.4% from FY15-Q2 last year.

Call Backlog: Peaked in December. FY16-Q2 backlog average is 3.6% below the targeted benchmark of 20%.



Information Security

During Q2, pushed security fixes/updates to desktops/servers to protect against 321 vulnerabilities. LANDesk Antivirus quarantined 25 distinct viruses from 30 PCs. PCs are current with anti-virus providers' signatures for all known malware.



Infrastructure:

Citrix Mobile Application Design and Development: Device migration to XenMobile10 production environment 40% complete. iOS update in December halted migration due to compatibility issues. Exchange to new SDX Citrix Netscaler Gateway produced unanticipated issues, working with vendor support for resolution, as a result, Netscaler DR implementation on hold. Two additional virtual servers added to Citrix farm to evaluate alternate application delivery method.

Applications/Training/Records Center:

Lawson Support: The program that produces the Health Insurance Coverage data for the 1095c forms for employees was modified to support the new requirements. A test file was sent successfully to Valli Systems for review. The program will be run in January and the actual output file will be sent to Valli Systems again for final 1095c processing and mailing. Staff updated and tested the 2015 changes to the program that produces the W2 form and the file for Social Security information on active employees. The file used to validate Social Security numbers was sent to SSA for validation.

Everbridge Mass Communication and Notification Subscription System: The self registration/subscription services module was implemented allowing the public to register for notifications such as construction project updates. Development efforts have shifted to the Employee and Community Notifications modules. These modules will replace both the current vendor solution, Communicator! NXT, and an internally developed solution, MWRA R911. The Employee Notification module is expected to go live by the middle of January 2016 once priority staff is trained. Subsequent training sessions to follow until all staff are trained on Employee and Community Notifications. The Community Notifications module is expected to go live in Q3.

Talent Acquisition Application (LTA): MIS and HR held several webex sessions with ApplicantPro to begin the design and implementation of the job application and on-boarding hiring processes. These are two separate modules that are being implemented in Q3.

Library System Upgrade Project: MWRA is consolidating several legacy MWRA Library applications with a commercial-off-the-shelf (COTS) vendor supported application. The new system will support searching across internal and 3rd party information assets and provide a single venue for managing, finding and sharing library resources. MIS and Library staff participated in a workshop with the vendor to review options for importing and uploading data including OpenLibrary.org offers a web service using title, author, and publish year as search criteria to find ISBN numbers for the book records. Staff created a console application to download the ISBN data. Extensive data mapping and migrating continues focusing on periodicals, reports, and books.

Archiving & e-Discovery Project: MIS staff participated in a project kickoff conference with VERITAS who requested that MIS run analyzer tools to collect data on the Exchange and File Systems. Workshops were held in December with the consultant and the design pilot groups with the main goal of preparing the draft business policies for archiving Exchange emails and File System folders to a central repository, Enterprise Vault. A Solution Design Workshop is scheduled in January for the infrastructure design.

Records Management System Replacement Project: The MWRA needs to replace the legacy Records Management application, InfoStar, used by the Records Center, DI Technical Information Center (TIC), and E&C to ensure application operability, respond to Internal Audit findings, support legal and regulatory compliance requirements, safeguard vital information, and minimize litigation risks. Staff documented workflows for the Records Center and met with TIC team to review workflows for handling Construction Submittals, shop drawings, and other workflow processes. Also met with E&C to review all the Access databases (12) used to track drawings and other related information.

e-Construction Project: The MWRA has initiated an e-Construction project to improve communication and make construction management practices more efficient. e-Construction is a paperless construction administration delivery process that includes electronic submission of all construction documentation by all stakeholders, electronic document routing/approvals (e-signature), and digital management of all construction documentation in a secure environment allowing distribution to all project stakeholders through mobile devices. The project includes: evaluating applications and processes used by other government agencies, most importantly MassDOT which has begun a similar project, following Federal Highway Administration e-Construction guidelines, and evaluating and Enterprise Content Management (ECM) related applications in use today and in the marketplace.

Electronic Laboratory Notebook (ELN): Phase One (Drinking Water Laboratories) 87% complete; anticipated completion in Q3.

Maximo Upgrade Project: Maximo is used to manage maintenance activities for Water and Wastewater assets. All quarter goals of the Maximo Upgrade (Contract #7287) have been met and the project is on schedule. Conducted multiple weekly workshop to define requirements for several Maximo modules.

Library & Records Center: The Library fulfilled 38 (81 YTD) research requests, cataloged 95 (207 YTD) books and Reports, provided 242 (484 YTD) periodicals, standards, books & reports, supported 199 (411 YTD) staff online searches [i.e. Gale, ASCE]. Research topics included; hydraulic modeling, Chestnut Hill Gatehouse #1, General Edwards Bridge, allowable pipe settlement from blasting vibrations, lightning protection systems, CSOs facility design, CSOs as virus source, toxicity of effluent, adhesive for chlorine tablets, water extractable phosphorus, contracts for cyber security services, cleaning indoor plumbing systems after contamination. The Records Center added 76 (177 YTD) boxes, and attended 2 Records Conservation Board Meetings.

IT Training: For the quarter, 86 staff attended 19 classes. 23% of the workforce has attended at least one class year-to-date. Citrix XenMobile Foundations and Management training was offered. Everbridge training was offered.

Legal Matters

2nd Quarter - FY16

PROJECT ASSISTANCE

COURT AND ADMINISTRATIVE ORDER

Boston Harbor Litigation and CSO: Submitted annual report to EPA and DEP providing updated information on the landfill sites that NEFCO identified as acceptable landfill sites for use as part its emergency residuals disposal back up plan in accordance with the September 28, 2005 Order in the Boston Harbor case issued pursuant MWRA's Motion to Vacate the Second Long-Term Residuals Management Scheduling Order; Reviewed and filed Compliance and Progress Report with Federal District Court.

NPDES: Reviewed and edited letter to EPA and DEP concerning an unintentional discharge of sodium chlorite to a catch basin and storm drain at MWRA's Framingham Pump Station; reviewed comment letter relative to Section 428, FY16 Interior, Environment and Related Agencies Appropriations package which would require the elimination of CSO discharges to the Great Lakes; Reviewed licensed site professional's findings relative to chemical spill at Framingham Pump Station.

- **Consent Order (DITP power outages):** Reviewed and submitted updated semi-annual *Consultant's Deer Island Energy Recommendations Tracking Sheet* to DEP and EPA.

REAL ESTATE, CONTRACT, ENVIRONMENTAL AND OTHER SUPPORT

- **Non-Disclosure Agreements (NDA):** Drafted a non-disclosure agreement with a video consultant relative to the MWRA's and the Department of Conservation and Recreation participation in a multi-agency emergency response drill simulating a train derailment and chemical release into the Wachusett Reservoir. Reviewed and provided comments on a draft NDA with NGRID relative to providing NGRID with infrastructure information.
- **MWRA Contract No. OP-158 - DPS fine:** Filed an appeal with the Department of Public Safety appealing the fine levied by DPS in the amount of \$20,000 for failure to apply for a safety inspection of the elevator at MWA's Ward Street facility. The contractor has paid MWRA the sum of \$20,000 to be held in escrow pending the result of the appeal.
- **Alewife Brook Pump Station Rehabilitation:** Continued to respond to the bid protest of Fall River Electrical Associates Co., Inc. regarding the filed sub-bids and general bid of Waterline Industries Corporation for the Alewife Brook Pump Station Rehabilitation, Contract No. 6797. Hearings were held on September 29 and October 20 at the Office of the Attorney General.
- **Licenses:** Finalized license for access to and the use of the Massachusetts State College Building Authority's Tree House Residence Hall to install and operate radio equipment that was previously located at Ward Street Headworks.
- **Order of Conditions:** Recorded four orders of conditions (DEP File Nos. 104-963, 104-971, 317-424, and 317-425) at Hampshire Registry of Deeds - two for Fish Hatchery Pipeline and Hydro Electric Project Contract No. 7235 in Ware and Belchertown and two for Quabbin Security Project Contract No. 7338 in Ware and Belchertown.
- **Enterprise Engines MWRA Contract No. WRA-2880S:** Drafted and finalized a letter agreement with the purchaser to dismantle and remove the engines from DITP.
- **Chelsea Headworks:** Finalized deed for the conveyance of property from the City of Chelsea to MWRA and license between Chelsea and MWRA relative to the upgrades to the Chelsea Headworks facility.
- **Public Access:** Finalized 8(m) permit for Wellesley Country Club. Drafted amendment to public access 8(m) permit for the Town of Wellesley.
- **Newton MOA:** Executed MOA with the City of Newton to enable enable the City to use MWRA land in the vicinity of Willow and Lyman streets for a retaining wall needed for access to Newton's planned new Fire Station in return for assistance in future MWRA projects.

Miscellaneous:

- Reviewed and approved fifty-eight (58) Section 8(m) Permits.

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters

- Received a Charge filed at the MCAD alleging the MWRA retaliated against the Complainant.

Matters Concluded

- Received an arbitrator's decision in favor of MWRA finding that the MWRA did not violate a collective bargaining agreement when an employee was not compensated for stand-by duty.
- Received a Department of Unemployment Assistance decision in favor of a claimant granting unemployment benefits.
- Received a Department of Unemployment Assistance decision in favor of the MWRA denying unemployment benefits.

SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of Dec 2015	As of Sept 2015	As of June 2015
Construction/Contract/Bid Protest (other than BHP)	5	5	3
Tort/Labor/Employment	2	3	3
Environmental/Regulatory/Other	1	1	1
Eminent Domain/Real Estate	0	0	0
total – all defensive cases	8	9	7
Affirmative cases not in suit:	0	0	0
Other Litigation matters (restraining orders, etc.) <u>MWRA v. Thomas Mercer</u> <u>MWRA v. NSTAR and HEEC</u>			
total – all pending lawsuits	10	10	8
Significant claims not in suit: <u>Rosa, Antonio</u> <u>Poli, Mark</u>	2	4	6
Bankruptcy	2	1	1
Wage Garnishment	13	13	15
TRAC/Adjudicatory Appeals	3	2	1
Subpoenas	0	0	0
TOTAL – ALL LITIGATION MATTERS	30	30	31

LITIGATION/TRAC

New Matters

MWRA v. NSTAR and HEEC

This is a civil action seeking a declaratory judgment to preclude MWRA from being billed by EEC for the costs that HEEC will incur during the upcoming Army Corps of Engineers harbor dredging project, which costs will be directed at protecting the cross-harbor cable. MWRA believes that the construction cost cap negotiated in our 1990 agreement with HEEC and BECo is enforceable against NSTAR and HEEC as to these cable protection costs because the nature of the cable protection work is not maintenance-related, but instead directly related to HEEC's failure during construction to place the cable deeply enough in the channel and harbor sea bed, all pursuant to the requirements of the Army Corps' permit issued at the time of initial construction and trenching operations. MWRA is seeking a declaratory judgment and, as necessary, injunctive relief, as well as damages for breaches of contract which MWRA alleges were committed by HEEC and NSTAR prior to the expiration of the term of the 1990 agreement.

HEEC Tariff Petition to Massachusetts Department of Public Utilities (DPU 15-157)

Among the breaches of contract which MWRA is asserting in the above-described civil action is HEEC's failure to seek the next tariff from the Federal Energy Regulatory Commission which would have improved MWRA's chances of obtaining rights to export power off Deer Island. MWRA has intervened in the DPU proceeding principally to seek its dismissal and to argue that since MWRA is HEEC's sole customer that HEEC is obligated to negotiate a "special contract" with MWRA rather than applying for a tariff. In addition, MWRA has intervened to challenge the excessively high rate of HEEC's proposed cost of capital for future expenditures relative to capacity charges payable by MWRA.

(Former Employee) v. MWRA

This action arises out of plaintiff's termination on April 10, 2015. Plaintiff was terminated on the grounds he misrepresented his ability to work during medical leave, that he received salary to which he was not entitled, and that he failed to be truthful during an interview concerning these matters. Plaintiff has filed suit alleging: handicap discrimination, failure to accommodate, and retaliation under General Laws chapter 151B and the ADA; discrimination, interference with rights, and retaliation under the FMLA; all allegedly stemming from the termination of plaintiff due to disability, use of medical leave, and the need for further medical leave. Plaintiff seeks reinstatement and money damages, including interest, costs and attorneys' fees.

Significant Claims Not in Suit There are no Significant Claims Not in Suit to report.

Significant Developments There are no Significant Developments to report.

Matters Concluded

Dora Gonzalez – Personal Injury Claim This former Risk Management matter arose out of a personal injury claim from a motor vehicle accident that occurred on February 19, 2014 at the intersection of Cary Avenue and Tudor Street in Chelsea, MA. An MWRA employee, operating an MWRA vehicle, slid on ice and struck the rear of Ms. Gonzalez’s vehicle. The Claimant’s vehicle sustained minor bumper damage but there was no damage to the MWRA vehicle. Ms. Gonzalez claimed medical bills in excess of \$14,000 and lost wages in excess of \$4,000. Risk Management received a letter on September 10, 2014 from counsel for Gonzalez, demanding \$50,000 for personal injuries and lost wages. This claim settled for \$17,500 paid to Gonzalez and \$5,047.28 paid to Plymouth Rock Assurance Company for the subrogation claim for the medical pay provision of the claimant’s policy.

Salvador Tejada v. Patnod dba, et al. Salvador Tejada was a truck driver for Patnod Trucking, a subcontractor to Barletta Engineering on MWRA Contract 6975, the Hultman Aqueduct Interconnections Project. Mr. Tejada was injured when the dump truck he was driving overturned at the work site. Mr. Tejada alleged medical expenses of more than \$37,134.58, lost wages and compensation, permanent disability and pain and suffering. Barletta’s insurer, Travelers, accepted MWRA’s tender of its defense in this matter. MWRA filed cross-claims against co-defendant Patnod Trucking for indemnification and for failure to obtain required insurance. The entire case was stayed as a result of the bankruptcy of co-defendant Patnod Trucking. The case has been settled for \$125,000 to be paid in equal shares by Safety Insurance and Travelers, with no contribution by MWRA.

Oscar Melara v. MWRA and Black & Veatch Oscar Melara v. MWRA and Black & Veatch: This personal injury matter has been settled. Oscar Melara was an employee of RJV Construction Corp., the general contractor for MWRA on the Southern Spine Distribution Mains Project. The plaintiff alleged that on September 2, 2010 at the Southern Spine job site, he sustained serious and permanent injuries, including blindness and an anoxic brain injury, when he opened a manhole cover and entered a recently installed meter vault on his own to retrieve a tool and was found unconscious by co-workers. The meter vault was later determined to be an oxygen deficient environment. Plaintiff alleged that MWRA and Black & Veatch, the consulting engineer for MWRA on the Southern Spine Project, were negligent in connection with the condition of the worksite, alleged failure to warn of dangers and/or to provide safety equipment, all of which allegations MWRA denied. Both defendants denied liability, and asserted that, under the contract, the general contractor assumed sole responsibility for job site safety and the safety of its employees. Travelers Insurance Company, the insurer for RJV Construction Corp. agreed to defend and indemnify MWRA and Black & Veatch pursuant to the insurance and indemnification provisions of the Contract. Travelers settled the litigation on behalf of MWRA and Black & Veatch within the limits of the available insurance coverage, and with no out-of-pocket contribution by MWRA.

Subpoenas During the Second Quarter of FY 2016, no new subpoenas were received and no subpoenas were pending at the end of the Second Quarter FY 2016.
Public Records During the 2nd Quarter of FY 2016 seven public records requests were received and seven public records requests were closed.

TRAC Pending Appeals

New Appeals: There was one new TRAC appeal received in the 2nd Quarter FY 2016.
Digital Silver Imaging, LLC; MWRA Docket No. 15-02

Settlement by Agreement of Parties
One case was settled by Agreement of Parties in the 2nd Quarter FY 2016.
Leavitt Corporation; MWRA Docket 14-01

Stipulation of Dismissal No cases were dismissed by Stipulation of Dismissal, fine waived.

Notice of Dismissal Fine paid in full
No cases were dismissed by Joint Stipulation of Dismissal with Prejudice, fine paid in full.

Tentative Decision No Tentative Decisions were issued in the 2nd Quarter FY 2016.

Final Decisions No Final Decisions were issued during the 2nd Quarter FY 2016.

INTERNAL AUDIT AND CONTRACT AUDIT PROGRAM
2nd Quarter FY16

Highlights

Staff issued one labor burden review for a new construction contract and two consultant preliminary reviews on new professional services contracts. Incurred cost audits were completed for four firms, including AECOM. Staff also completed unannounced compliance reviews of Halon fire extinguishing system inspections at Caruso and DeLauri Pump Stations, and cycle counts at three warehouses, with many of the recommendations having been addressed and closed. Management advisory services performed this quarter included:

- A review of liquid aluminum sulfate purchases
- Participated in meetings on solar power for various facilities
- Various matters with the Law Division
- Continuous advisory services for the Fore River Railroad Corporation.

Status of Recommendations (43 recommendations made and 20 closed through FY16, Q2)

The Internal Audit Department follows-up on open recommendations on a continuous basis. All pending recommendations have target dates for implementation. 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)	Audit Recommendations		
	Total	Open	Closed
Physical Security at the Chelsea Facility (12/31/12)	32	2	30
Hardware Equipment Management (5/22/13)	36	9	27
Follow-Up Report on Fleet Services Activities (12/31/13)	17	4	13
MBE/WBE Program Contracting Goals (3/14/14)	10	2	8
Expanded Affirmative Action Requirements (9/30/14)	16	1	15
8(m) Permit Fee (11/17/14)	6	2	4
Records Management (12/5/14)	8	7	1
AVL Tracking System, Contract A586 (4/22/15)	5	4	1
Unmatched Receipts and Accruals (6/30/15)	10	5	5
Halon Inspections at DITP (9/30/15) & Caruso and DeLauri (12/31/15)	18	6	12
Warehouse Cycle Counts: DITP (11/5/15),Southboro (11/6/15),and Chelsea (12/4/15)	25	9	16
Total Recommendations	183	51	132

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.

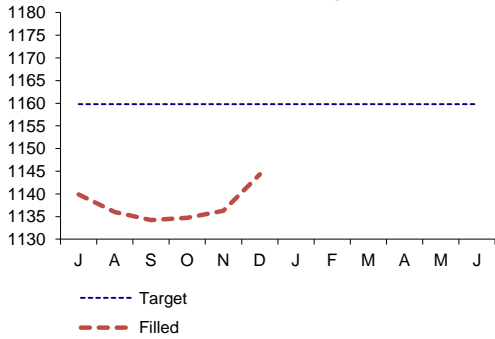
Savings	FY12	FY13	FY14	FY15	FY16 Q2	TOTAL
Consultants	\$259,245	\$587,314	\$294,225	\$87,605	\$73,389	\$1,301,778
Contractors & Vendors	\$435,760	\$2,153,688	\$415,931	\$1,146,742	\$198,513	\$4,350,634
Internal Audits	\$407,350	\$391,083	\$923,370	\$543,471	\$25,000	\$2,290,274
Total	\$1,102,355	\$3,132,085	\$1,633,526	\$1,777,818	\$296,902	\$7,942,686

OTHER MANAGEMENT

Workforce Management

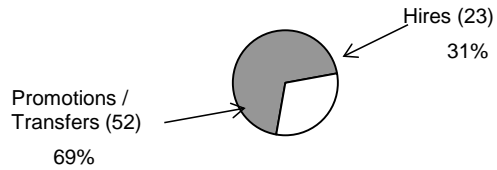
2nd Quarter - FY16

FTE Tracking



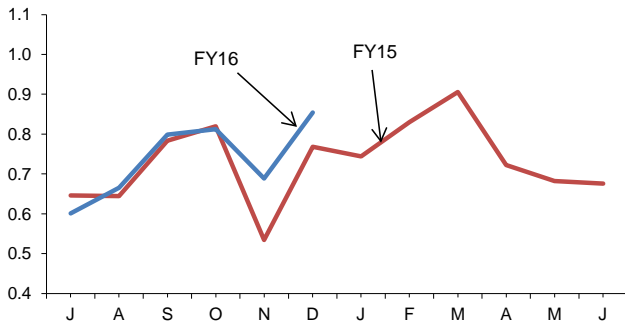
FY16 Target for FTE's = 1159.8
 FTE's as of Dec 2015 = 1144.3

Positions Filled by Hires/Promotions
 FY16-YTD



	Pr/Trns	Hires	Total	
FY13	82 (64%)	47 (36%)	129	
FY14	111 (69%)	51 (31%)	162	
FY15	133 (67%)	65 (33%)	198	
FY16	52 (69%)	23 (31%)	75	YTD

Average Monthly Sick Leave Usage
 Per Employee



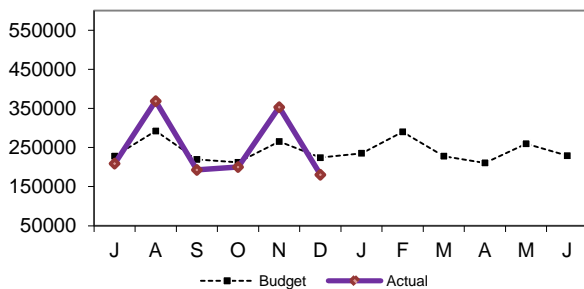
Average monthly sick leave for the 2nd Quarter of FY16 increased as compared to the 2nd Quarter of FY15 (8.49 to 9.42 days). Although sick leave increased in this quarter, the annualized total for FY16 to date remains below both the FY14 and FY15 annual rate.

In Q2 of FY16, the average quarterly sick leave usage has increased 11% from the same time last year.

	Number of Employees	YTD	Annualized Total	Annual FMLA %	FY15
Admin	140	4.14	8.29	18.0%	9.61
Aff. Action	6	3.89	7.78	0.0%	16.89
Executive	5	9.86	19.72	88.5%	7.20
Finance	36	4.94	3.76	36.7%	5.56
Int. Audit	7	1.88	3.76	28.4%	5.56
Law	15	4.63	9.25	20.1%	11.30
OEP	5	2.53	5.06	0.0%	13.28
Operations	936	4.42	8.85	16.9%	8.53
Pub. Affs.	14	5.54	11.08	36.7%	7.26
MWRA Avg	1164	4.42	8.84	18.6%	8.75

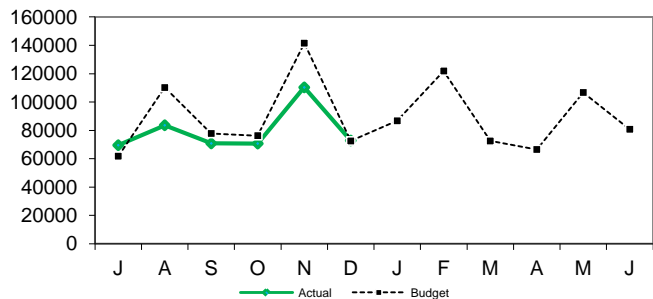
Percent of sick leave usage for FY16, attributable to Family and Medical Leave Act (FMLA) is 18.6% .

Field Operations
 Current Month Overtime \$



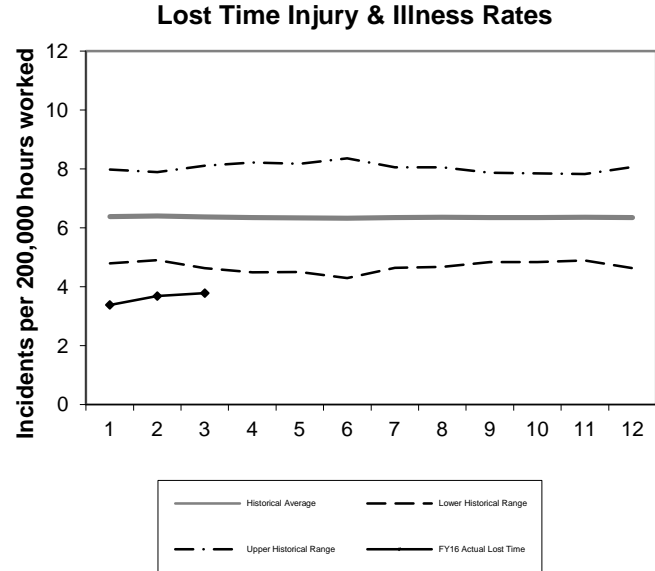
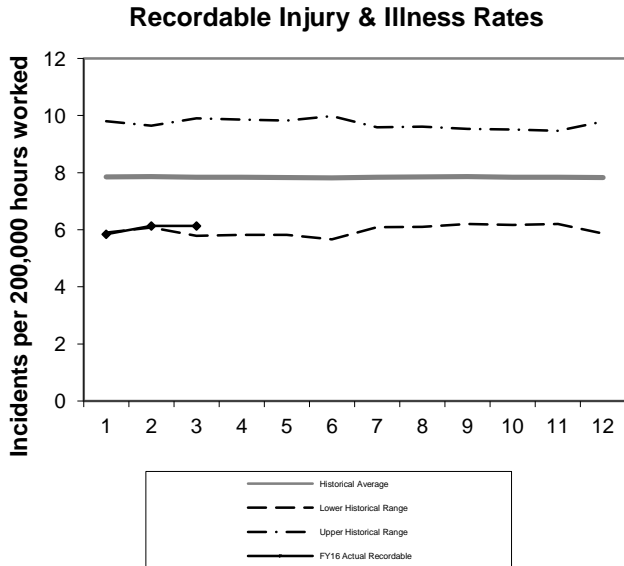
Total Overtime for Field Operations for for the second quarter of FY16 was \$737,446 which is \$36k over budget. Emergency overtime was \$196k, which was (\$104k) under budget, mainly due to relatively low wet weather response, which totaled \$103k for the quarter. Coverage overtime was \$123k, which was (\$3k) under budget, reflecting the month's shift coverage requirements. Planned overtime was \$418k or \$139k over budget, mainly for Planned Operations at \$177k, \$117k of which was for the North Main Pump Station Rehab project, and maintenance off-hours work at \$75k, and half plant operations at Carrol for \$38k. YTD, Field Operations has spent \$1,504,043 on overtime which is \$62k over budget.

Deer Island Treatment Plant
 Current Month Overtime \$



Total overtime for Deer Island for the second quarter of FY16 was \$253,992, which is (\$37k) or (12.6%) under budget. The variance is primarily due less than anticipated wet weather/high plant flow coverage overtime, (\$96k) offset in part by higher planned/unplanned maintenance overtime due to repair of critical systems and equipment and for trial shutdowns in support of the North Main Pump Station rehab project , \$29k, a greather than anticipated shift coverage overtime, \$31k. YTD, Deer Island spent \$477,691 on overtime, which was (\$62k) under budget.

Workplace Safety 1st Quarter FY16



- 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 FY14. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively. FY15 actual incident rates can be expected to fall within this historical range.

Workers Compensation Claims Highlights - 1st Quarter FY16

	New	Closed	Open Claims
Lost Time	5	8	62
Medical Only	20	21	23
Report Only	20	20	
	New		YTD Light Duty Returns
Light Duty Returns	1		1

Highlights/Comments:

Light Duty Returns

July none
August none
Sept none

Regular Duty returns

July 1 employee returned to full duty for one week (from workers' compensation then worked light duty 2 weeks and then returned to full duty).

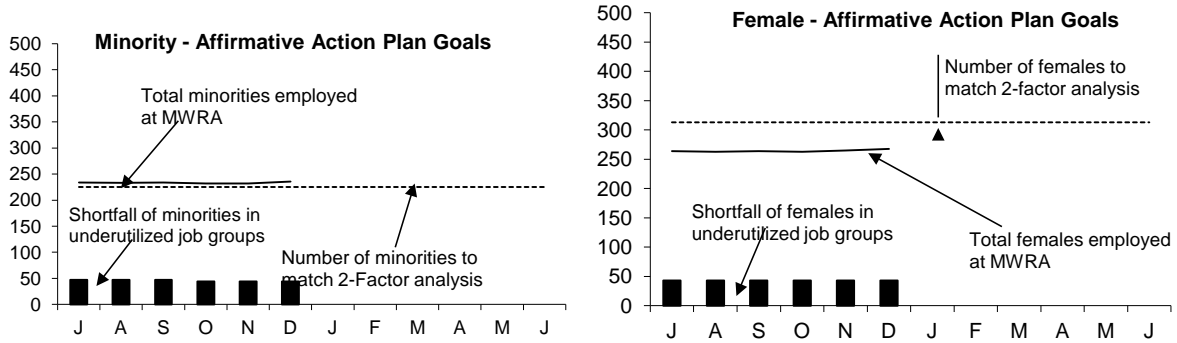
August 1 employee returned to full duty.

Sept none

Note: Claims may initially be counted in one category and changed to another category at a later date. Examples include a medical treatment only claim (no lost time from work) but the employee may require surgery at a later date resulting in the claim becoming a lost time claim. At that time we would only count the claim as opened but not as a new claim.

*Report only claims are closed the month they are filed.

MWRA Job Group Representation
2nd Quarter - FY16



Highlights:

At the end of Q2 FY16, 11 job groups or a total of 44 positions are underutilized by minorities as compared to 11 job groups or a total of 53 positions at the end of Q2 FY15; for females 10 job groups or a total of 43 positions are underutilized by females as compared to 11 job groups or a total of 59 positions at the end of Q2 FY15. During Q2, 5 minority and 7 female were hired. During this same period, 3 minorities and 3 females terminated.

Underutilized Job Groups - Workforce Representation

Job Group	Employees	Minorities	Achievement Level	Minority	Females	Achievement Level	Female
	as of 12/31/2015	as of 12/31/2015		Over or Under Underutilized	As of 12/31/2015		Over or Under Underutilized
Administrator A	21	2	3	-1	6	7	-1
Administrator B	20	0	5	-5	2	3	-1
Clerical A	38	15	5	10	32	34	-2
Clerical B	35	8	9	-1	12	15	-3
Engineer A	83	20	21	-1	13	34	-21
Engineer B	56	14	11	3	10	12	-2
Craft A	113	16	21	-5	0	5	-5
Craft B	146	30	35	-5	3	6	-3
Laborer	65	19	15	4	3	3	0
Management A	101	14	23	-9	36	20	16
Management B	42	7	11	-4	9	6	3
Operator A	66	5	8	-3	1	5	-4
Operator B	66	11	18	-7	4	3	1
Professional A	34	4	7	-3	21	15	6
Professional B	164	42	36	6	83	70	13
Para Professional	56	13	8	5	27	20	7
Technical A	53	15	10	5	5	6	-1
Technical B	7	1	1	0	1	0	1
Total	1166	236	247	33/-44	268	264	47/-43

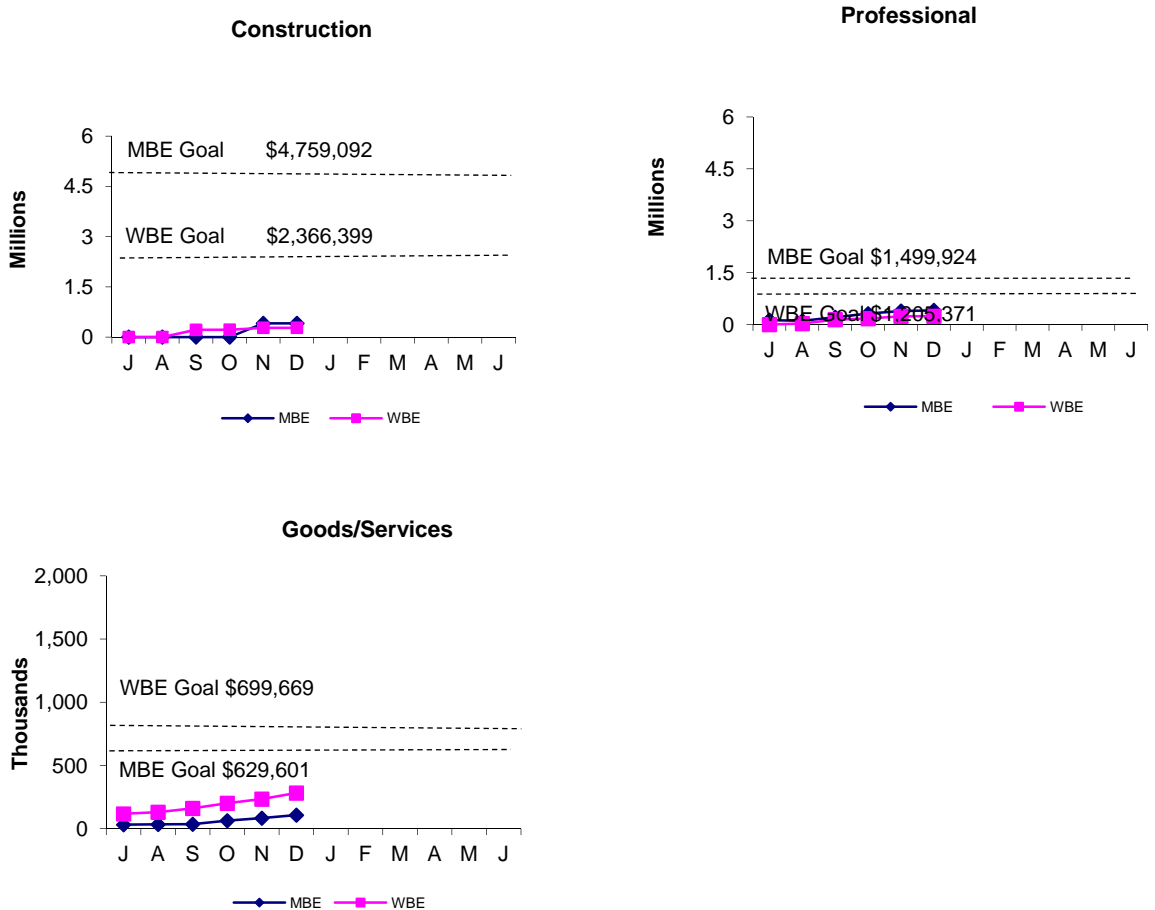
AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/ Transfers	AACU Ref. External	Position Status
Administrator B	Deputy Chief Engineer	1	Int	1	0	Promo=WM
Craft A	WSS Foreman	1	Int	1	0	Promo=WM
Craft A	Sr. Medium Volt. Electrical Specialist	1	Int	1	0	Promo=WM
Craft B	Heavy Equipment Operator	2	Int/Ext	1	0	Promo=WM; Vol Demo=WM
Craft B	Electrician	1	Int	0	0	NH=WM
Clerical B	Messenger/Courier	1	Int/Ext	0	0	NH=BM
Clerical B	Warehouse Materials Handler	3	Int	3	0	Promo=WM & BF; L=WF
Engineer A	Program Manager, Electrical	2	Int	2	0	Promo=CM & BM
Engineer A	Program Manager, Monitor and Control	1	Int/Ext	0	0	NH=WM
Engineer A	Sr. Civil Engineer	1	Int	1	0	Transfer=WM
Engineer A	Project Engineer	1	Int	1	0	Promo=HM
Engineer B	Project Manager, Water Quality Assurance	1	Int/Ext	1	0	Promo=WM
Laborers	OMC Laborer	3	Int/Ext	1	0	NH=(2)WM; L=WM
Laborers	Buildings & Grounds Worker	4	Int/Ext	0	0	NH=(2)WM, WF & BM
Management A	Construction Coordinator	1	Int/Ext	0	0	In Progress
Operator A	Research Vessel Operator	1	Int/Ext	0	0	In Progress
Professional B	Senior Laboratory Technician	1	Int/Ext	0	0	NH=WF
Professional B	Senior Accountant	1	Int/Ext	0	1	NH=WF
ParaProfessional	Administrative Systems Coordinator	1	Int	1	0	Promo=WF
ParaProfessional	Special Projects Coordinator	1	Int/Ext	0	0	NH=WF
Technical A	Sr. Field Service Technician	1	Int/Ext	0	0	NH=WM

MBE/WBE Expenditures

Second Quarter FY16

Background: MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. MBE/WBE percentage goals are the results from a 2002 Availability Analysis, and MassDEP's 2010 Availability Analysis. As a result of the Availability Analyses, the category of Non-Professional Services is included in Goods/Services. Consistent with contractor reporting requirements, MBE/WBE expenditure data is available through December.



FY16 spending and percentage of goals achieved, as well as FY15 performance are as follows:

	MBE				WBE			
	FY16 Year-to-Date		FY15		FY16 Year-to-Date		FY15	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Construction	409,461	8.6%	2,314,979	106.5%	277,667	11.7%	3,566,302	146.8%
Professional Svc.	409,094	27.3%	633,926	55.4%	239,682	19.9%	345,476	37.6%
<u>Goods & Svcs.</u>	<u>106,396</u>	<u>16.9%</u>	<u>387,847</u>	<u>69.9%</u>	<u>281,791</u>	<u>40.3%</u>	<u>870,175</u>	<u>180.3%</u>
Total	924,951	3.6%	3,336,752	86.2%	799,140	18.7%	4,781,953	124.8%

FY15 MBE/WBE dollar totals do not include MBE and WBE payments to prime contractors and consultants.

**MWRA FY16 CEB Expenses through
2nd Quarter – FY16**

	December 2015 Year-to-Date					
	Period 6 YTD Budget	Period 6 YTD Actual	Period 6 YTD Variance	%	FY16 Approved	% Expended
EXPENSES						
WAGES AND SALARIES	\$ 47,023,076	\$ 45,495,060	\$ (1,528,016)	-3.2%	\$ 99,363,168	45.8%
OVERTIME	2,097,315	2,133,645	36,330	1.7%	4,219,293	50.6%
FRINGE BENEFIT'S	9,584,545	9,507,895	(76,650)	-0.8%	19,326,756	49.2%
WORKERS' COMPENSATION	1,171,500	863,990	(307,510)	-26.2%	2,343,000	36.9%
CHEMICALS	5,023,585	4,955,002	(68,583)	-1.4%	9,790,848	50.6%
ENERGY AND UTILITIES	10,086,088	9,526,136	(559,952)	-5.6%	23,164,822	41.1%
MAINTENANCE	12,322,388	13,255,806	933,418	7.6%	28,698,772	46.2%
TRAINING AND MEETINGS	170,881	150,168	(20,713)	-12.1%	413,714	36.3%
PROFESSIONAL SERVICES	2,849,920	2,741,341	(108,579)	-3.8%	5,819,611	47.1%
OTHER MATERIALS	2,036,598	2,076,403	39,805	2.0%	6,164,589	33.7%
OTHER SERVICES	11,944,581	11,948,422	3,841	0.0%	23,529,902	50.8%
TOTAL DIRECT EXPENSES	\$ 104,310,477	\$ 102,653,868	\$ (1,656,607)	-1.6%	\$ 222,834,475	46.1%
INSURANCE	\$ 1,080,399	\$ 874,922	\$ (205,477)	-19.0%	\$ 2,160,797	40.5%
WATERSHED/PILOT	14,048,117	13,793,005	(255,112)	-1.8%	28,096,233	49.1%
BEC ₀ PAYMENT	1,134,068	998,017	(136,051)	-12.0%	1,946,157	51.3%
MITIGATION	700,000	700,000	60,000	8.6%	1,400,000	54.3%
ADDITIONS TO RESERVES	(17,463)	(17,463)	-	0.0%	(34,927)	50.0%
RETIREMENT FUND	8,159,521	8,159,521	-	0.0%	8,159,521	100.0%
POST EMPLOYEE BENEFIT'S	-	-	-	---	5,224,848	0.0%
TOTAL INDIRECT EXPENSES	\$ 25,104,642	\$ 24,568,002	\$ (536,640)	-2.1%	\$ 46,952,629	52.3%
STATE REVOLVING FUND	\$ 38,216,507	\$ 38,216,507	\$ -	0.0%	\$ 81,876,277	46.7%
SENIOR DEBT	139,032,429	134,532,149	(4,500,280)	-3.2%	283,024,431	47.5%
CORD FUND	-	-	-	---	-	---
DEBT SERVICE ASSISTANCE	-	-	-	---	-	---
CURRENT REVENUE/CAPITAL	5,600,000	5,600,000	-	0.0%	11,200,000	50.0%
SUBORDINATE MWRA DEBT	24,396,234	24,396,234	-	0.0%	49,222,442	49.6%
LOCAL WATER PIPELINE CP	2,074,620	2,074,620	-	0.0%	4,149,240	50.0%
CAPITAL LEASE	1,608,530	1,608,530	-	0.0%	3,217,060	50.0%
VARIABLE DEBT	-	(7,699,171)	(7,699,171)	---	-	0.0%
BOND REDEMPTION SAVINGS	-	-	-	---	-	---
DEFEASANCE ACCOUNT	-	12,199,451	12,199,451	---	-	0.0%
TOTAL DEBT SERVICE	\$ 210,928,320	\$ 210,928,320	\$ -	0.0%	\$ 432,689,450	48.7%
TOTAL EXPENSES	\$ 340,343,440	\$ 338,150,190	\$ (2,193,248)	-0.6%	\$ 702,476,554	48.1%
REVENUE & INCOME						
RATE REVENUE	\$ 336,220,000	\$ 336,220,000	\$ -	0.0%	\$ 672,440,000	50.0%
OTHER USER CHARGES	4,028,779	4,227,018	198,239	4.9%	8,683,898	48.7%
OTHER REVENUE	9,750,865	11,198,242	1,447,377	14.8%	12,000,066	93.3%
RATE STABILIZATION	-	-	-	---	-	---
INVESTMENT INCOME	4,543,650	4,718,245	174,595	3.8%	9,352,590	50.4%
TOTAL REVENUE & INCOME	\$ 354,543,294	\$ 356,363,505	\$ 1,820,211	0.5%	\$ 702,476,554	50.7%

As of December 2015, total expenses were \$338.2 million, \$2.2 million or 0.6% lower than budget and total revenue was \$356.4 million, \$1.8 million or 0.5% higher than budget, for a net variance of \$4.0 million.

Direct Expenses are \$102.7 million, \$1.7 million or 1.6% lower than budget.

- **Wages & Salaries** are under budget by \$1.5 million or 3.3%. At the end of December the average Full Time Equivalent (FTE) positions were 1,138, 22 positions less than the 1,160 budgeted FTE's.
- **Workers' Compensation** is underspent by \$308k or 26.2% due to lower Compensation Payments of \$168k and Medical Payments of \$167k.
- **Utilities** are underspent by \$560k or 5.6% due to lower Electricity of \$685k mainly due to underspending at Deer Island of \$720k for over accrual at the end of FY15, lower commodity and transmission and distribution costs, partially offset by overspending for Diesel Fuel of \$133k mainly due to accelerated purchase at Deer Island to take advantage of favorable pricing.
- **Maintenance** is over budget by \$933k or 7.6%. Materials were overspent by \$1.2 million due to the purchase of items planned for FY15, but received in FY16. Services are lower than budget by \$241k due to some schedule shifts for some planned projects.
- **Professional Services** are underspent by \$109k or 3.8% due to lower Lab & Testing & Analysis spending.
- **Chemicals** are under budget by \$69k or 1.4% mainly due to lower than budgeted spending on Soda Ash of \$158,000 and Carbon Dioxide of \$10,000 due to lower usage to meet corrosion control targets and timing of deliveries for Soda Ash; Sodium Bisulfite of \$79,000 due to time of deliveries at DITP and lower usage at the Carroll Water Treatment Plant for Ozone residual removal; and Other Oxidizers of \$54,000 due to timing of deliveries and lower pricing for the new contract. This is offset by overspending on Hydrogen Peroxide of \$187,000 due to increased need for pretreatment of hydrogen sulfide gas due to plant flows; Polymer of \$71,000 due to treating high volume of sludge; and Sodium Hypochlorite of \$46,000 due to timing of deliveries at DITP.

Indirect Expenses of \$24.6 million \$537k or 2.1% lower than budget mainly due lower Watershed reimbursement of \$255k due to FY15 overaccrual and lower Insurance of \$205k mainly due to lower claims and lower premiums of \$156k and \$50k, respectively, and lower HECC cost of \$136k, partially offset by higher spending of \$60k for Winthrop and Quincy mitigation.

Debt Service Expenses totaled \$198.7 million, which was \$12.2 million lower than budget mostly due to lower than budgeted variable interest rates and the favorable impact of defeasances related to reserve releases. A \$12.2 million transfer to the Defeasance Account brought debt service to \$210.9 million. The short-term rates related variance is \$7.7 million and an additional \$4.5 million in underspending is due to earlier defeasances and a deferred senior debt issue scheduled for November.

Revenue / Income for December is \$356.4 million, \$1.8 million over budget mainly due to higher Non-Rate due to \$522k for TRAC Penalties; higher Miscellaneous Revenue of \$756k of which \$595k came from a short-term water purchase from City of Lynn, higher surplus equipment sales of \$187k, and greater Investment Income of \$175k.

Cost of Debt 2nd Quarter – FY16

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

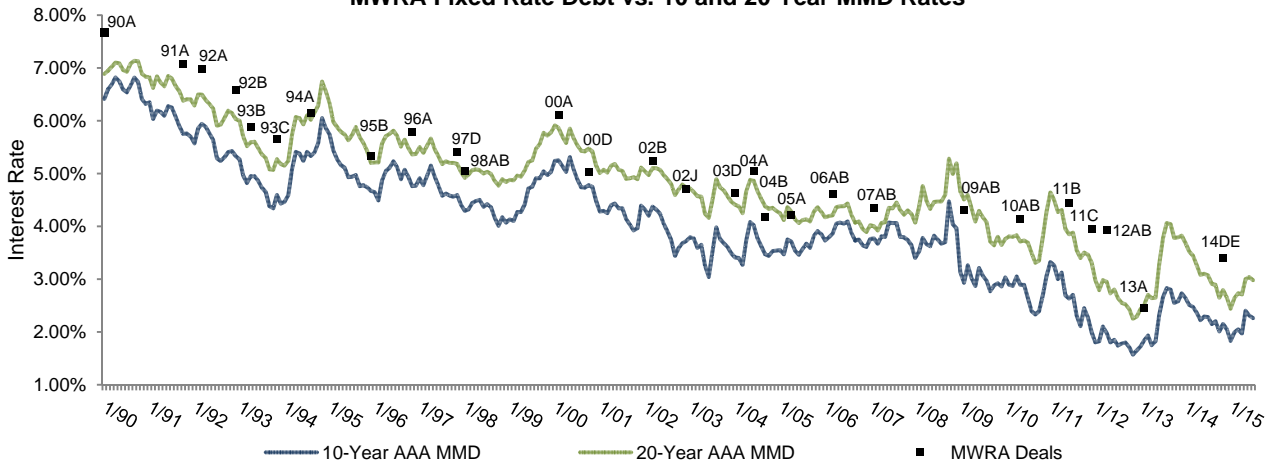
Average Cost of MWRA Debt

Fixed Debt (\$3,738)	4.23%
Variable Debt (\$484.2)	0.54%
SRF Debt (\$987.7)	1.32%
 Weighted Average Debt Cost (\$5,210)	 3.34%

Most Recent Senior Fixed Debt Issue November 2014

2014 Series D-F (\$243.9)	3.41%
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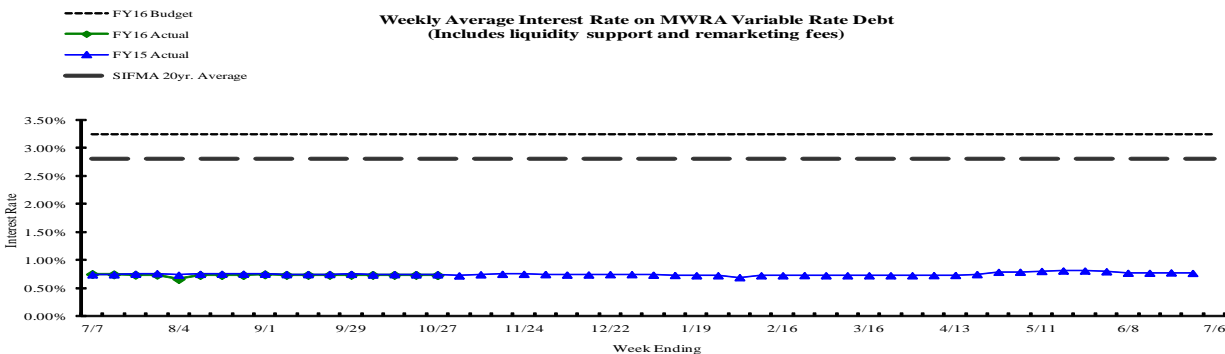
MWRA Fixed Rate Debt vs. 10 and 20 Year MMD Rates



Bond Deal	1990A	1991A	1992A	1992B	1993B	1993C	1994A	1995B	1996A	1997D	1998AB	2000A	2000D	2002B
Rate	7.67%	7.08%	6.98%	6.58%	5.89%	5.66%	6.15%	5.34%	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%
Avg Life	21.8 yrs	19.8 yrs	22.6 yrs	6.3 yrs	19.8 yrs	19.1 yrs	19.5 yrs	20.5 yrs	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs
Bond Deal	2002J	2003D	2004A	2004B	2005A	2006AB	2007AB	2009AB	2010AB	2011B	2011C	2012AB	2013A	2014DE
Rate	4.71%	4.64%	5.05%	4.17%	4.22%	4.61%	4.34%	4.32%	4.14%	4.45%	3.95%	3.93%	2.45%	3.41%
Avg Life	19.6 yrs	18.4 yrs	19.6 yrs	13.5 yrs	18.4 yrs	25.9 yrs	24.4 yrs	15.4 yrs	16.4 yrs	18.8 yrs	16.5 yrs	17.9 yrs	9.9 yrs	15.1 yrs

Weekly Average variable Interest Rates vs. Budget

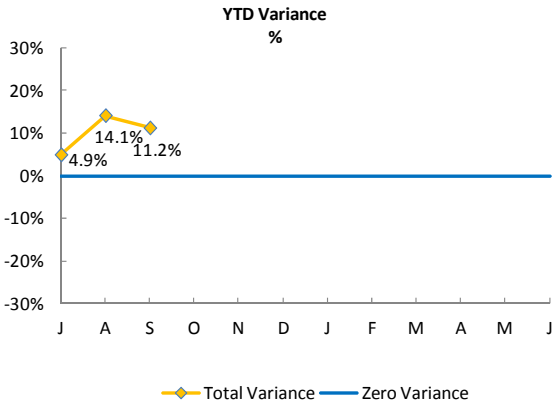
MWRA currently has ten variable rate debt issues with \$1.0 billion outstanding, excluding commercial paper. Of the ten outstanding series, five have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In December, SIFMA rates set at 0.01% for the entire month. 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

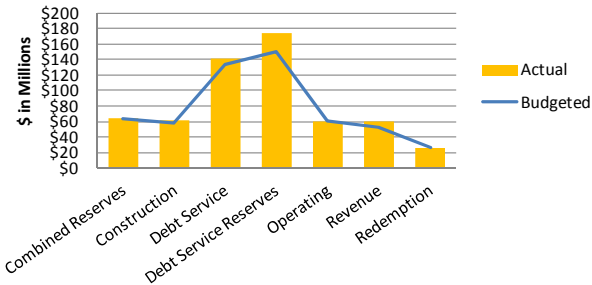
1st Quarter FY16

Year To Date



	YTD BUDGET VARIANCE			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	\$2	\$90	92	20.8%
Construction	\$3	\$9	12	41.3%
Debt Service	\$4	\$20	24	36.8%
Debt Service Reserves	\$13	\$111	124	9.9%
Operating	(\$5)	(\$4)	(8)	-4.1%
Revenue	\$6	(\$1)	5	5.2%
Redemption	\$1	(\$1)	(0)	-0.1%
Total Variance	\$23	\$225	\$247	11.2%

YTD Average Balances Budgeted vs. Actual

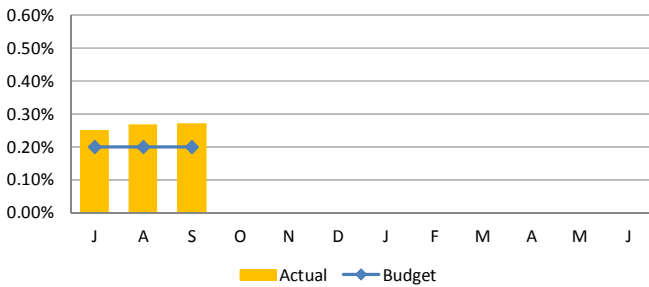


YTD Average Interest Rate Budgeted vs. Actual

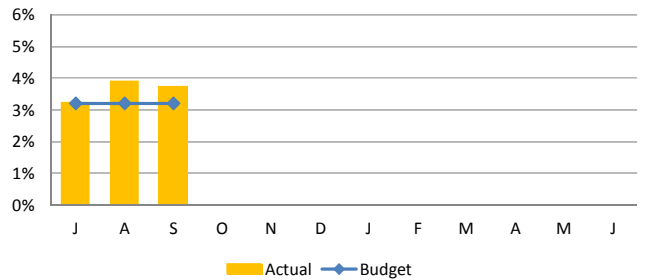


Monthly

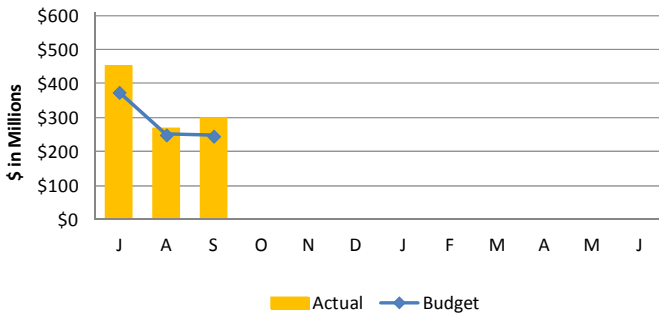
Short-Term Interest Rates



Long-Term Interest Rates



Short-Term Average Balances



Long-Term Average Balances

