



MASSACHUSETTS WATER RESOURCES AUTHORITY

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ADMINISTRATION, FINANCE & AUDIT COMMITTEE MEETING

Chair: H. Vitale
Vice-Chair: A. Pappastergion
Committee Members:
A. Blackmon
J. Carroll
K. Cotter
J. Foti
B. Peña
J. Walsh

to be held on

Wednesday, September 14, 2016

Location: 100 First Avenue, 2nd Floor
Charlestown Navy Yard
Boston, MA 02129

Time: 10:00 a.m.

AGENDA

A. Information

1. FY 2016 Fourth Quarter Orange Notebook
2. Internal Audit Annual Activities Report – FY2016
3. Delegated Authority Report – July and August 2016
4. FY16 Year-end Capital Improvement Program Spending Report
5. FY16 Year-end Financial Update and Summary

B. Approvals

1. Memorandum of Understanding and Financial Assistance Agreement with the City of Somerville
2. Bond Defeasance of Future Debt Service

C. Contract Amendments/Change Orders

1. Security Equipment Maintenance and Repair Services: Viscom Systems, Inc., Contract EXE-034, Change Order 2

STAFF SUMMARY

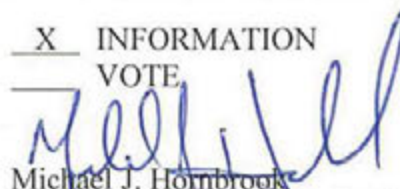
TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: FY16 Fourth Quarter Orange Notebook



COMMITTEE: Administration, Finance & Audit

X INFORMATION
VOTE

Carolyn M. Fiore, Deputy Chief Operating Officer
Stephen Estes-Smargiassi, Director, Planning & Sustainability
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

For information only. The Board of Directors Report on Key Indicators of MWRA Performance (the Orange Notebook) is prepared at the close of each quarter of the fiscal year.

DISCUSSION:

The Orange Notebook presents performance indicators for operational, financial, workforce, and customer service parameters tracked by MWRA management each month. Significant outcomes for the fourth quarter and fiscal year are noted below.

Flows, And Electrical Use and Cost at Deer Island WWTP

The extreme dry weather has affected both water and wastewater systems. A detailed discussion of the drought's impact on the water system is presented in a separate staff summary today.

For Deer Island, total wastewater flow was 11.5 percent below budget, resulting in electrical power use being 5.4 percent below budget for the year. In addition to electrical use being down, the unit cost of electricity purchased was 14.4 percent below budgeted levels (prices through May). Combined these two factors resulted in the total cost of electricity at Deer Island being 18.1 percent (\$1.56 million) below budget (costs through May). (Page 1)

Wastewater flow at Deer Island broke a number of low flow records, including total fiscal year records for total plant flow (286.87 million gallons per day – mgd), North System flow (189.08 mgd) and South System flow (97.79 mgd). (Page 2)

The decreased flows increase the strength of the wastewater, resulting in higher dosing for chemicals such as sodium hypochlorite (chlorine). During the fourth quarter, the chlorine dose (measured as milligrams per liter) was 19 percent above budget, but combined with the lower flows, total usage during the quarter was 6.4 percent below budget (measured in total pounds used). (Page 2)

Deer Island Yearly Maintenance Metrics

Each year in the fourth quarter Orange Notebook, staff present a longer term look at maintenance metrics for the Deer Island WWTP. (Pages 5, 6, and 7)

The maintenance program continues to perform at or better than industry benchmarks, and several metrics show year over year improvements as staff incrementally optimize maintenance processes. Of critical importance is equipment availability, with an industry benchmark of at least 97 percent of critical equipment being available. In FY16, availability was 99.7 percent, the highest recorded since this metric was tracked beginning in FY06. (Page 6)

Water Distribution Pipeline Leak Detection and Repair

Just under 40 miles of MWRA distribution system pipes were inspected for leaks during the quarter and 6 leaks were detected. Over the fiscal year, 175 miles of pipe were inspected, not quite reaching the annual target of 210 miles, but improving compared to past several years. Ten leaks were repaired during the quarter, including one which had been detected in January, but was not able to be worked on until June due to on-going work by the state Department of Transportation on the Arborway near Forest Hills. Another leak in that area will need to wait for further progress on the DOT construction, and should be repaired later this fall. Both pipes had been isolated and were not actively leaking. There were only five leaks in the backlog at the end of June, and all are dependent on reduced demands to allow shutdowns, or work by other agencies to be completed before MWRA can make the repair. (Page 8)

Leak detection and metering staff continue to provide a significant amount of community technical assistance. MWRA staff provided leak detection technical assistance in April to Newton, Medford, Somerville, and Malden; in May to Waltham; and in June to Malden, Medford, Milton, Newton, Boston, and Waltham. MWRA metering staff will alert communities if there is an unexpected increase in flows, and if the community is unable to easily locate the suspected leak, MWRA leak detection or pipeline crews will provide assistance. (Page 8)

Disinfection By-Products

Staff periodically report on performance metrics which continue to be interesting. Disinfectants such as ozone or chlorine inactivate or kill any pathogens which may be present in the raw water, but can react with natural organic material in the water to form potentially harmful disinfection byproducts. EPA changed the regulatory structure for chlorine disinfection by-products in 2006 with compliance required by 2014. MWRA is required to sample at 32 sites in the service area of the John J. Carroll Water Treatment Plant and to report compliance at the site with the highest annual average, rather than averaging across all the sites. Even with this new stricter standard, compliance results remain in the single digit to low teens each quarter, performing better than originally expected when the plant was designed. In the Chicopee Valley Aqueduct (CVA) region, each of the three communities provides some of its own treatment, so each has a separate compliance calculation. The Orange Notebook shows data from all three communities. All three meet the new standards; although results are higher than the metro Boston and MetroWest values as the William A. Brusch Water Treatment Facility serving the CVA system uses free chlorine rather than mono-chloramine. (Page 27)

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

for

Fourth Quarter FY2016

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
September 14, 2016

Board of Directors Report on Key Indicators of MWRA Performance

Fourth Quarter FY2016

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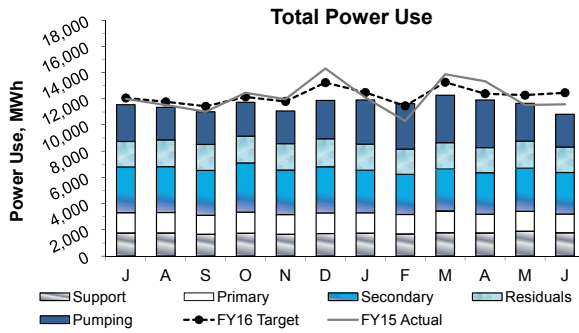
This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's board of directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for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

Frederick A. Laskey, Executive Director
 Michael J. Hornbrook, Chief Operating Officer
 September 14, 2016

OPERATIONS AND MAINTENANCE

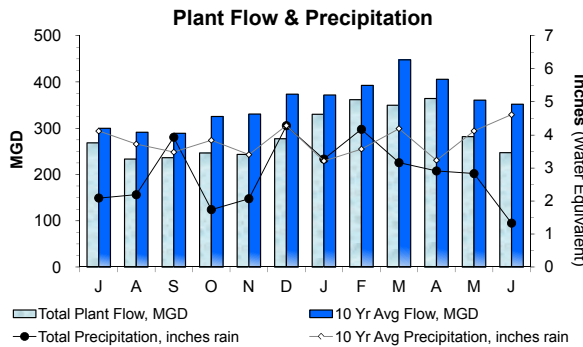
Deer Island Operations

4th Quarter - FY16



Total power usage in the 4th Quarter was 7.4% below target as Total Plant Flow for the quarter was 11.9% below target with the 3 year average plant flow. Total Power usage for wastewater pumping operations was 17.5% below target in the quarter due to the lower plant flow. **Overall, total power usage in FY16 was 5.4% below target as the 3 year total plant flow average was 11.5% below target.**

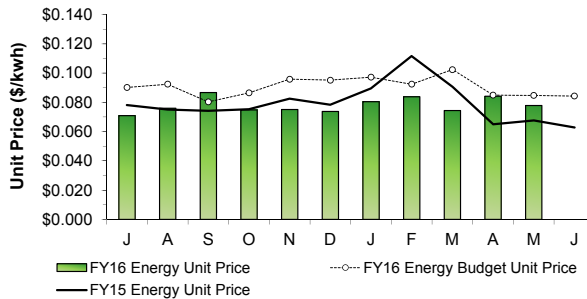
Note: Power usage projections are based on 3 year averages.



Total Plant Flow for the 4th Quarter was 20.1% below target with the 10 year average plant flow (298.0 MGD actual vs. 373.3 MGD expected) as precipitation for the quarter was 41% lower than target (7.07 inches actual vs. 11.97 inches expected). **Total Plant Flow in FY16 was 18.9% below target as precipitation was 25.8% below target.**

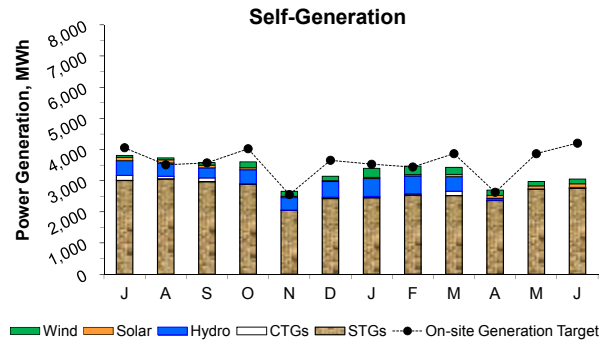
Total Electricity Pricing

(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 Total Energy Unit Price in the 4th Quarter (actuals for April and May only) was 4.5% lower than the FY16 budget estimate for the same period. The Total Energy Unit Price information for June is not yet available as the complete invoice for this month is still pending receipt and/or review as of reporting time. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges. **The Total Energy Unit Price for FY16 (through May) was 14.4% lower than budgeted.**

Note: Only the actual energy prices are reported. Therefore, the dataset lags by one (1) month due to the timing of invoice receipt.

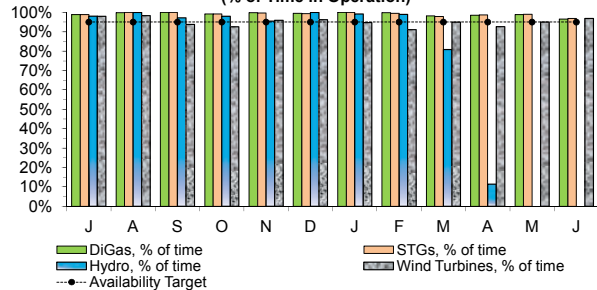


Power generated on-site during the 4th Quarter was 18.4% below target. While generation by the STGs, Wind Turbines, and Solar Panels met or exceeded their target, generation by the CTGs and the Hydro Turbines was below target. The CTGs generated 92% less power than expected during the quarter as the 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 3.6 hours during the 4th Quarter for a demand response test event on June 15 and for maintenance/checkout purposes. The Hydro Turbines were affected by mechanical issues that left them inoperable for most of the 4th Quarter. **Overall, power generation was 7.8% below target for FY16.**

Note: Power generation data for the Solar Panels and the Wind Turbines may be difficult to see as the amount of power generated is low within the current scale of this graph; a total of 305.1 MWh was generated by the Solar Panels and 462.3 MWh was generated by the Wind Turbines in the 4th Quarter.

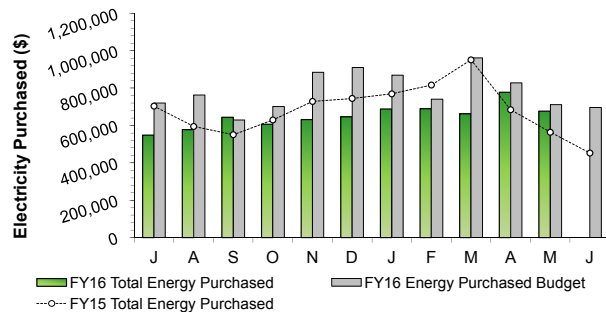
Self-Generation Equipment On-Line

(% of Time in Operation)



The DiGas, STGs, and Wind Turbines met or exceeded the 95% availability target for the 4th Quarter, while the Hydro Turbines were inoperable for most of the Quarter due to electrical and mechanical issues. **Overall in FY16, the DiGas, STGs, and Wind Turbines met or exceeded the 95% availability target, while Hydro Turbine availability was 21.7% below target.**

Total Cost of Electricity

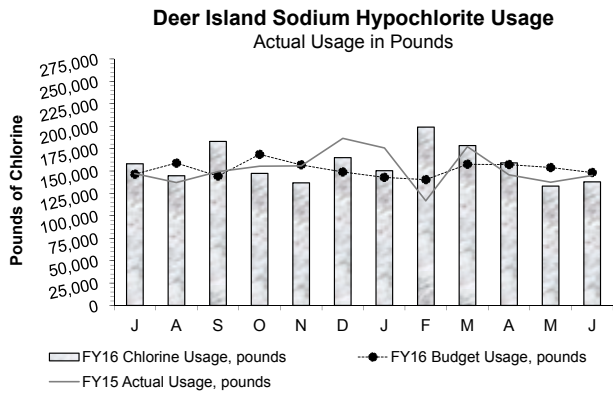
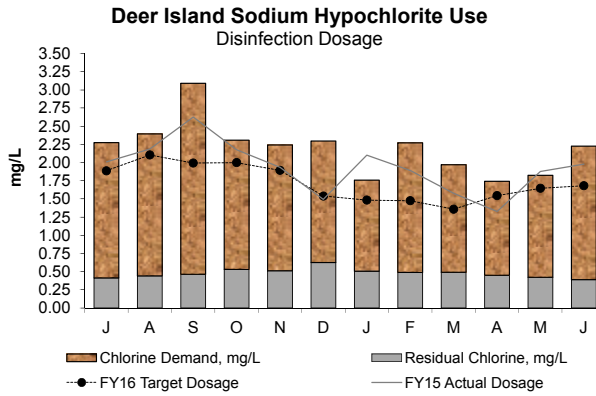


The total cost of Electricity Purchased during the 4th Quarter (actuals for April and May only) was 5.6% lower than budgeted due mainly to lower than expected energy prices in the quarter (as reported), as well as to slightly lower than expected electricity purchased. **Year-to-date Total Cost of Electricity is \$1,575,848 (18.1%) lower than budgeted through May as the Total Energy Unit Price and the Total Electricity Purchased are both lower than budgeted by 14.4% and 4.0%.**

Note: Only months with complete Electricity Purchased data are reported. Therefore, the dataset lags by one (1) month due to the timing of invoice receipt.

Deer Island Operations

4th Quarter - FY16



The disinfection dosing rate in the 4th Quarter was 19% higher than the target. DITP maintained an average disinfection chlorine residual of 0.42 mg/L this quarter with an average dosing rate of 1.93 mg/L (as chlorine demand was 1.51 mg/L). Chlorine dosing was higher than expected due to lower than expected plant flow resulting in a higher chlorine demand. However, actual sodium hypochlorite usage in pounds of chlorine was 6.4% below target this quarter. **Overall in FY16, disinfection dosing was 28% above target and sodium hypochlorite usage in pounds of chlorine was 3.7% above target.**

Please note: The reported chlorine dosing and the hypochlorite usage in pounds is falsely biased high for a portion of February and March due to inaccurately high flow readings from the sodium hypochlorite feed pump in operation. The issue was discovered on March 8 and the pump was taken out of operation for repair.

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

99.7% of all flows were treated at full secondary in the 4th 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 9.77 hours of blending and 68.47 Mgal of flow blended with secondary effluent. The Maximum Secondary Capacity for the quarter was 700 MGD.

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	2	2	0	99.5%	8.00
F	2	2	0	99.9%	4.42
M	0	0	0	100.0%	0.00
A	1	1	0	99.4%	8.20
M	1	1	0	99.96%	1.57
J	0	0	0	100.0%	0.00
Total	10	10	0	99.7%	40.75

Overall in FY16, 99.7% of all flows were treated at full secondary. There were a total of 10 separate secondary blending events in FY16, all due to high plant flows resulting from heavy rain. The 10 secondary blending events combined produced a total of 40.75 hours of blending and 264.63 Mgal of flow blended with secondary effluent.

Secondary permit limits were met at all times during the 4th Quarter, as well as during all of FY16.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The plant achieved a maximum average hourly flow rate of 1,087.9 MGD on the evening of April 7 during a rain event that produced 1.03 inches of precipitation. Overall, Total Plant Flow in the 4th Quarter was 20.1% below the 10 year average plant flow target for the quarter, and 18.9% below target for FY16.

Due to these low flows, several low flow records, post DITP startup (July 1998), were broken this quarter:

Total Plant Flow in May – 282.03 MGD set in May 2016 (previous May record was 283.43 MGD in 2015),
 South System Flow in May – 96.47 MGD set in May 2016 (previous May record was 97.39 MGD in 2013).

Total Plant Flow in June – 247.35 MGD in set in June 2016 (previous June record was 271.13 MGD in 1999),
 North System Flow in June – 167.30 MGD set in June 2016 (previous June record was 182.06 MGD in 2014),
 South System Flow in June – 80.05 MGD set in June 2016 (previous June record was 87.85 MGD in 1999).

The continued low flows also produced a number of fiscal year low flow records as well -

Total Plant Flow – 286.87 MGD set in FY16 (previous fiscal year record was 301.65 MGD in FY14),
 North System Flow – 189.08 MGD set in FY16 (previous fiscal year record was 195.22 MGD in FY14),
 South System Flow – 97.79 MGD set in FY16 (previous fiscal year record was 97.87 MGD in FY02).

The precipitation in FY16 was the second lowest amount recorded post DITP startup with a total of 33.97 inches of precipitation. The lowest fiscal year total precipitation post startup was 32.41 inches set in FY99.

Deer Island Operations

4th Quarter - FY16

Deer Island Operations & Maintenance Report (continued)

Environmental/Pumping (continued):

Cleaning of the North Main Pump Station riser shafts occurred between May 9 and May 12. The ten-foot diameter North Metropolitan Relief Tunnel riser shaft yielded approximately 1 cubic yard of material, or one foot of depth, with a disposal weight of 0.65 tons. The eleven-foot diameter Boston Main Drainage Tunnel riser shaft yielded an estimated 14 cubic yards, which included two feet in depth of somewhat drier material, as well as two feet of material pressure washed from the wall, for a total disposal weight of 8.8 tons. Material was disposed utilizing a line item in the grit and screenings hauling and disposal contract. The removal of this floating material reduces the risk of pumping system malfunctions during low flow and pump-down 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. Construction related to the physical replacement of the tip tubes was completed well ahead of schedule. Performance testing and adjustments to several of the newly installed tip tubes are both currently in progress.

Secondary Treatment:

Annual turnaround maintenance was performed on Train #2 at the Cryogenic Oxygen Facility in April. 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 will be performed on Train #1 in the fall.

Flow to Secondary Battery A was suspended on two (2) separate days in June to allow for inspections of the Secondary Battery A scum line due to suspected leaks causing Secondary A effluent to continually leak into the scum line and into the scum collection system. These inspections identified a number of couplings in the common scum line header that had failed due to corrosion, causing openings in the scum line, thereby allowing secondary effluent to continually enter the scum header. Staff are preparing a plan for the future repairs needed for the secondary scum headers.

Odor Control:

Contractors were on DI on April 27 to clean dust and chemical residue from the ductwork that had been identified during inspections in the Residuals Odor Control (ROC) and in the North Pumping Odor Control (NPOC) Facilities in March. Both facilities were shutdown for approximately 4 to 5 hours to allow for this cleaning.

Activated carbon in carbon adsorber unit #3 in the North Pumping Odor Control Facility, units #1, #2, and #3 in the East Odor Control Facility, units #3 and #8 in the West Odor Control Facility, units #1 and #2 in the Secondary Odor Control Facility, and units #2 and #4 in the Residuals Odor Control Facility was replaced during the 4th quarter as part of routine practice to replace spent carbon.

Energy and Thermal Power Plant:

Solar power generation accounted for 3.50% (305.1 MWh) and Wind Turbine generation accounted for 5.30% (462.3 MWh) of the total power generated on-site in the 4th Quarter. Overall, total power generated on-site accounted for 25.4% of Deer Island's total power use for the quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 25.2% of Deer Island's total electrical power use for the quarter. **Overall in FY16, total power generated on-site accounted for 28.5% of Deer Island's total power use, and renewable power generated on-site accounted for 28.0% of total power use.**

Both Boilers 101 and 201 were taken out of service, one at a time, for a significant burner management system replacement project which involved the replacement of the PLC control system, fuel control valves, and air dampers. Before each boiler could be returned to service, the new control system needed to be fully checked, valve performance tuned, and the boiler test operated in stages to ensure all safety interlocks were functional prior to actual start up. This work was completed in April-May for Boiler 101 and in May-June for Boiler 201.

The scheduled annual overhaul maintenance of CTG-2B began on April 11 and was completed on April 15. CTG-1A remained available for operation during the CTG-2B maintenance and could have been returned to operation within 2 hours had there been a need. Additionally, both CTG units were taken out of service for 18 hours on two (2) separate days in June to allow for the insurance inspector to examine the start-air tank on each unit. The start-air tank on each CTG was inspected and found to be in good condition.

The DITP hot water/heat loop was taken offline from June 6 into the morning of June 9 to allow both DITP Maintenance staff and contractors to make scheduled repairs to the dump condenser and to the hot water/heat loop. A leaking 20 inch expansion joint in a heat loop section located in the Secondary Battery C clarifier gallery was replaced by a contractor. In addition, DITP Maintenance staff utilized the scheduled heat loop downtime to replace several valves on the heat loop. Simultaneously, on June 6, a separate contractor completed the annual dump condenser clean-out. The boiler was returned to operation during the evening of June 6, following the dump condenser work, to restore steam production and steam turbine power generation. The hot water/heat loop was returned to operation on the morning of June 9 following the heat loop expansion joint and valve repair work.

DITP took delivery of 210,000 gallons of #2 fuel oil (a total of 22 tanker trucks) without incident over the course of four days in April. This fuel oil is used for CTG operation, for boiler startup operations, and for supplemental fuel for boiler operation during periods of low or unstable digester gas production.

Daily Wind Turbine generation on May 15 broke the Top 10 List for DITP Wind Turbine generation. The 26,997.17 kWh wind turbine output on May 15 ranks number seven (7) on the Top 10 List. Wind speed averaged 11.4 m/s (25.5 mph) on May 15.

Clinton AWWTP: The rehabilitation of the primary clarifiers and anaerobic digesters is complete.

Instrumentation: Win 911 software was installed on SCADA system and connected to phone line for 24 hour monitoring.

Primary Clarifiers: All work was completed and tanks were filled and tested.

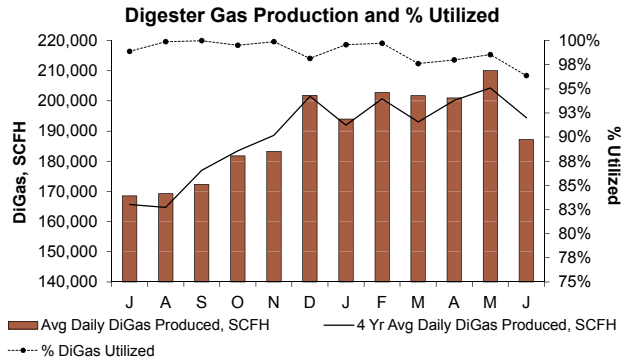
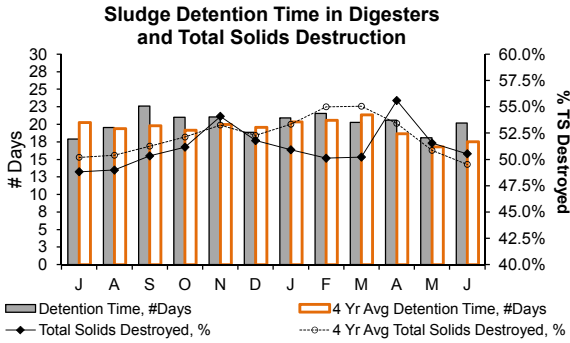
Primary Digester: Started the new Ovivo Linear Motion mixer.

Trickling Filter #2: Machined and installed new sleeve on center column pedestal. A new bronze bearing, thrust bearing and seal kit was installed. The center column and distribution arms were reinstalled and cleaned, repainted and put back in service.

Chemical Building: Replaced return activated sludge pump # 3 with a new motor and pump assembly.

Deer Island Operations and Residuals

4th Quarter - FY16



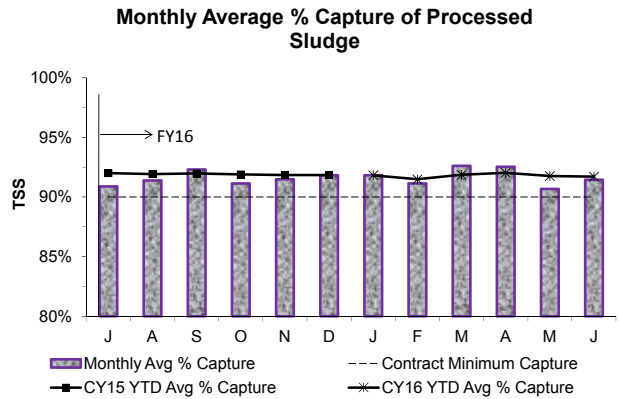
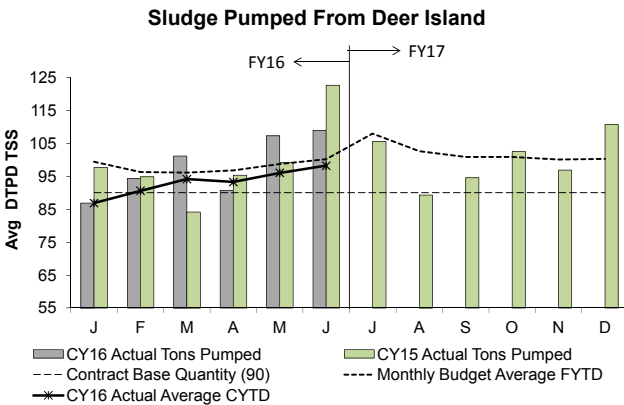
Total solids (TS) destruction following anaerobic sludge digestion averaged 52.6% during the 4th Quarter, higher than the 4 year average of 51.3% for the same period. The sludge detention time in the digesters of 19.6 days was higher than the 4 year average of 17.6 days as DI operated with an average of 8 digesters during the 4th Quarter. The shifting around of sludge during much of FY16 as a result of various digesters being taken in and out of service for maintenance, impacted overall solids destruction resulting in much lower than expected TS destruction for several months in FY16. The sludge digestion process is a biological process which requires a period of time before returning to stable digestion rates following changes in digester operation. TS destruction appears to have returned to expected levels during the 4th Quarter. **Overall in FY16, TS destruction averaged 51.2%, lower than the 4 year average of 52.2%. Sludge detention time was 20.2 days, similar to the 4 year average of 19.4 days.**

The Avg Daily DiGas Production in the 4th Quarter was on target with the 4 Year Avg Daily DiGas Production for the same period. On average, 97.6% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant. **Overall in FY16, the Avg Daily DiGas Production was also on target (+0.4%), with 98.8% of all the DiGas produced utilized at the Thermal Power Plant.**

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.

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).



The average total quantity of sludge pumped to the Pellet Plant in the 4th Quarter of FY16 was 102.3 DTPD - higher than FY16's average budget of 100.2 DTPD. The slightly higher amount of sludge pumped from Deer Island in the 4th Quarter in comparison to the FY16 budget average is due to higher than average sludge production during late spring, which is typically the period of highest sludge production during the year on Deer Island. **Overall in FY16, the average total amount of sludge pumped from Deer Island was 99.1 DTPD, 1.1% lower than the target of 100.2 DTPD.**

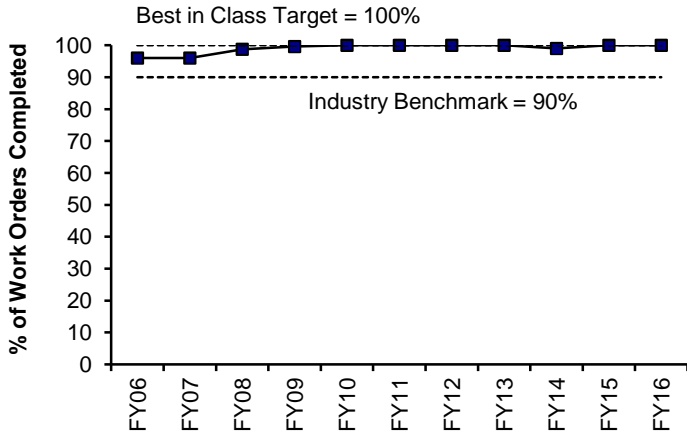
The contract requires NEFCo to capture at least 90% of the solids delivered to the Biosolids Processing Facility in Quincy. The CY16 YTD average capture is 91.71%.

Deer Island Yearly Maintenance Metrics

4th Quarter FY16

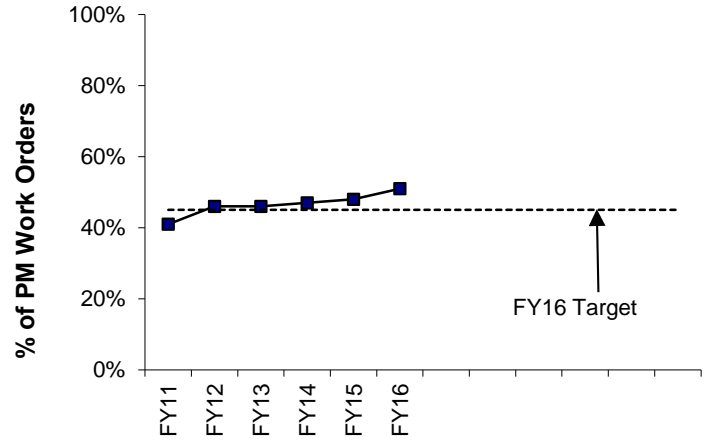
Proactive and Productivity Measures

Preventive Maintenance



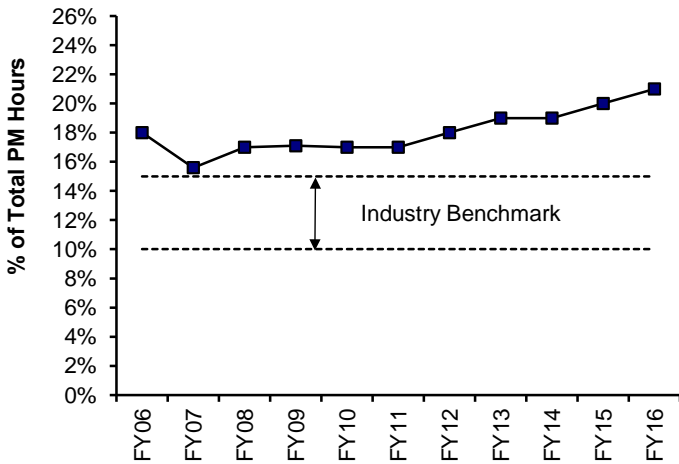
The industry benchmark is 90% for Preventive Maintenance (PM) completion. Upon reaching the 90% goal in FY05, the target goal was increased to the "Best in Class" Target of 100% PM completion. Since then, the percentage of PM work order completion has been at 99% or higher. Reliability-Centered Maintenance (RCM) and PM optimization efforts have continued since FY01. PM completion rate was 99.9% in FY16.

Preventive Maintenance Kitting



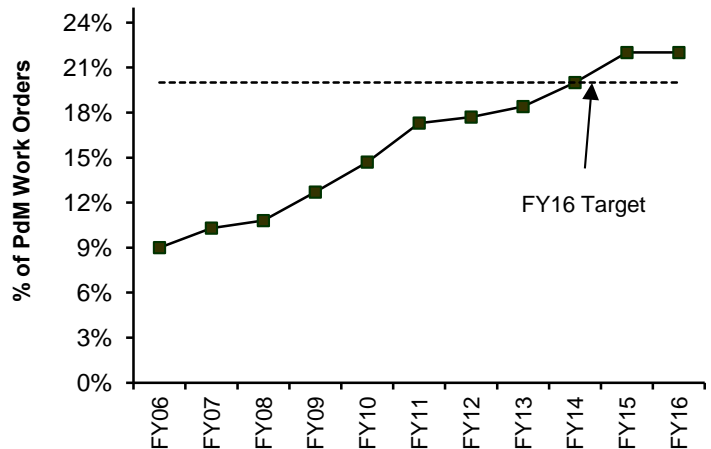
Preventive Maintenance (PM) inventory items were loaded into Maximo to assign spare parts for equipment to PM work orders. DITP reached the PM kitting goal of 100% in FY10. In FY11 a new graph (above) was developed to track kitting of all maintenance work orders in an effort to increase wrench time. Staff continues to fine-tune the process to "kit" all maintenance work orders. Kitting is considered a best practice by maintenance and reliability professionals. It entails staging parts necessary to complete maintenance work. Kitting allows maintenance staff to spend more time "turning the wrench" and less time waiting for parts at the stockroom window. Kitting for FY16 was 51%.

Operations Light Maintenance PMs



The percentage of preventive maintenance work order hours completed by Operations staff (not maintenance staff) increased from less than 1% in January 2002 to the current level of 21% in FY16. DITP reached the industry benchmark range of 10-15% in April 2003 and has exceeded the goal through FY16. Operations completes approximately 600 PM work orders per month.

Predictive Maintenance

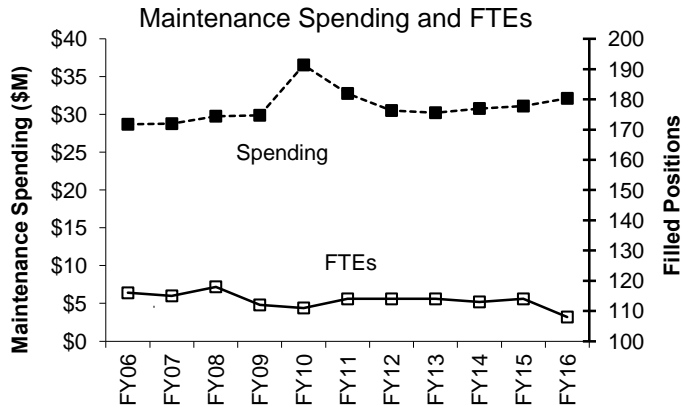


Predictive maintenance has steadily increased from 2% in FY03 to 22% in FY16, surpassing DITP's FY16 goal of 20%. The increase in predictive maintenance was achieved through the expanded use of lubrication, vibration, thermography, and acoustic ultrasonic testing techniques. The Condition Monitoring Group continually reviews and investigates new opportunities and initiatives to expand condition monitoring testing and analysis.

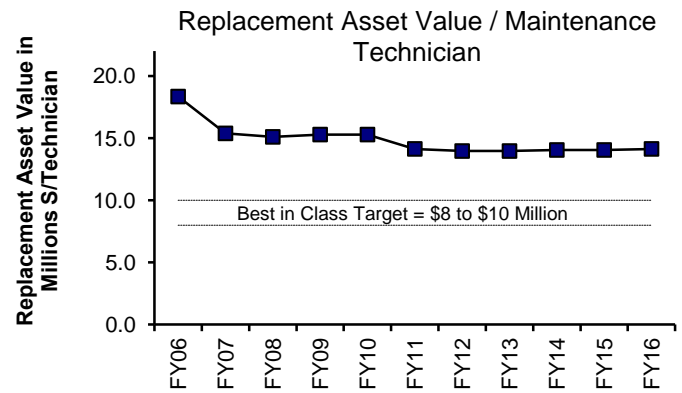
Deer Island Yearly Maintenance Metrics

4th Quarter - FY16

Overall Maintenance Program Measures

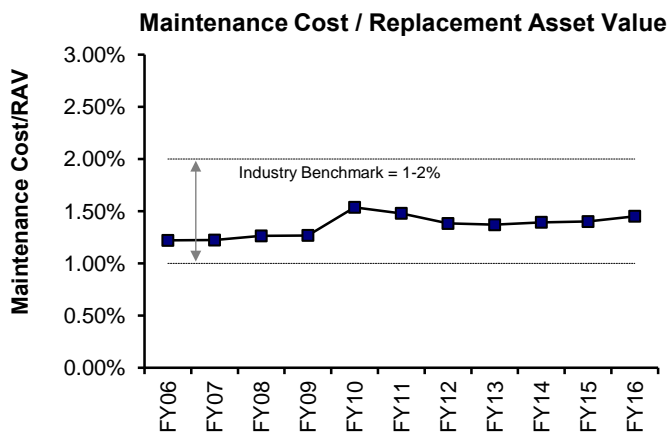


DITP's Maintenance staff is currently at 108 FTE's. Maintenance has been successful in meeting its goals through implementation of numerous maintenance efficiencies including: Operations staff performing light maintenance, cross-functional training and flexibility, and Reliability-Centered Maintenance

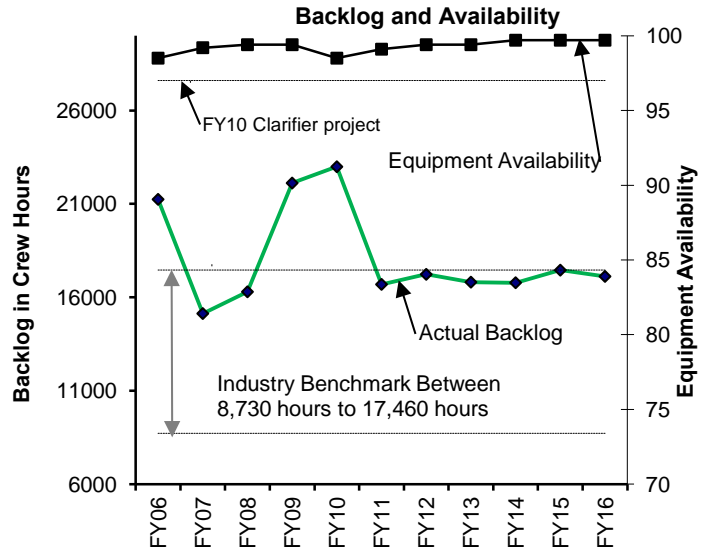


DITP adopted a "best in class" target of \$8-\$10 Million/Technician for maintenance staffing. Even after a period of downward trending, DITP remains above this Best in Class target range. However, as the plant ages and additional equipment replacements are expected, DITP management will reassess staffing as needed.

The Maintenance Spending graph shows actual annual maintenance spending and large asset replacements (equipment costs only). Maintenance budgeting continues to evaluate plant assets and requirements for replacement of obsolete equipment to ensure the plant operates at maximum efficiency. In FY16, overall spending slightly increased from FY15 due to an increase in CIP Projects. CIP projects during FY16 included: North Main Pump Station and Winthrop Terminal Facility Valve replacement, Secondary Reactor and North Main Pump Station VFD replacement, Electrical equipment upgrades, Cryo Chiller replacement and the Primary/Sedondary Scum Tip-Tube replacement project. The large spike in FY10 and FY11 is attributed to the Clarifier Rehabilitation project (\$58M), which was on-going during that period.



The industry benchmark for annual maintenance spending is between 1% to 2% of replacement asset value. The plant's replacement asset value is calculated at approximately \$2.4 billion dollars. DITP's current maintenance spending is within the industry benchmark. As the plant ages and equipment replacement is required, spending is expected to increase. DITP Maintenance CEB spending is \$11.8 million coupled with CIP spending which funded Electrical Equipment upgrades, North Main Pump Station and Winthrop Terminal Facility Valve replacement, and the Primary/Secondary Scum Tip-Tube replacement projects.



Industry benchmarks are 97% for equipment availability and 8,730 to 17,460 hours for maintenance backlog based on current staffing.

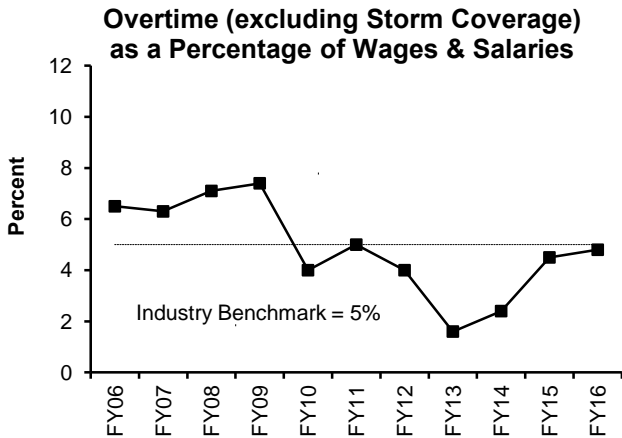
Over the last ten years, equipment availability exceeded that benchmark. In FY16 the availability was 99.7%, the highest availability attained to date.

Total average backlog for FY16 was 17,119 hours, which is at the top of the industry benchmark. The increase in backlog is attributed to additional HVAC equipment replacements and maintenance vacancies created through numerous retirements. Management continues to prioritize work and closely monitor DITP's backlog.

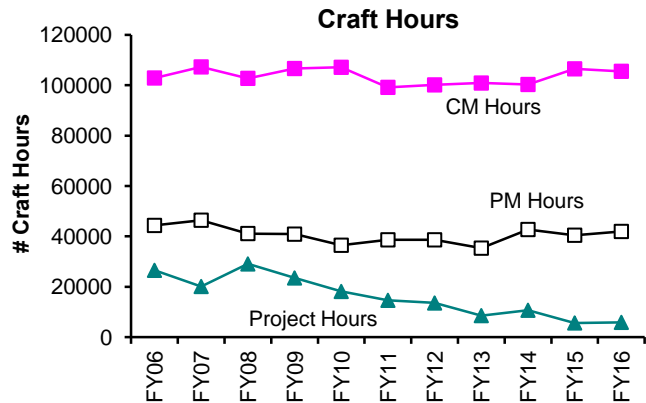
Deer Island Yearly Maintenance Metrics

4th Quarter - FY16

Overall Maintenance Program Measures (cont.)

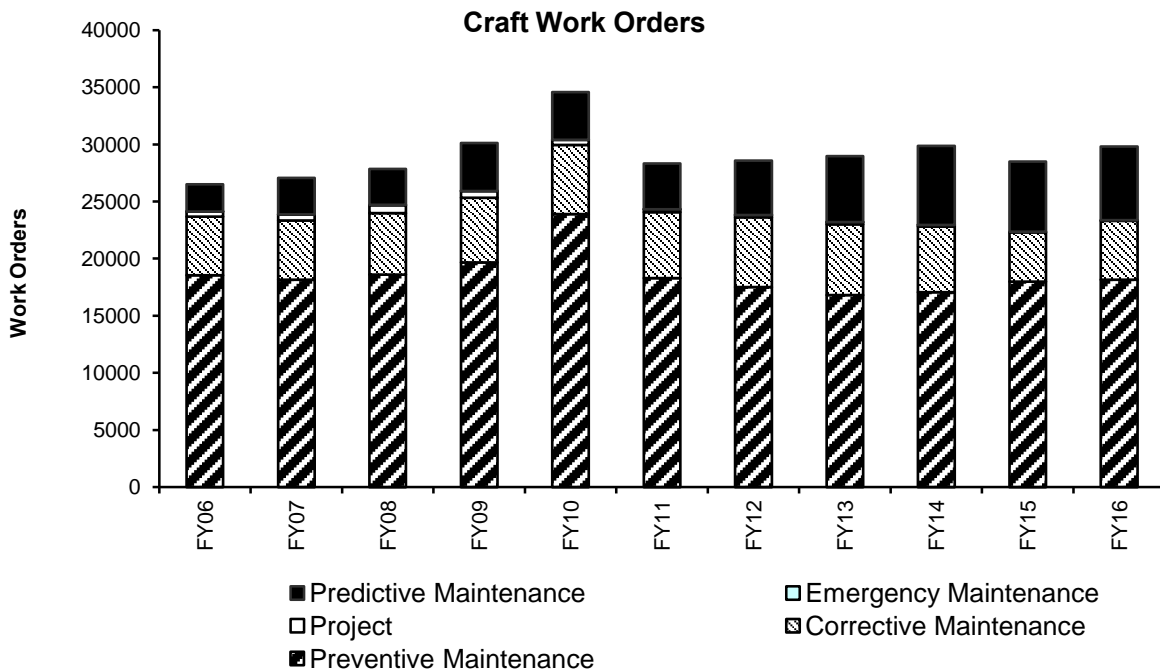


Management continues its effort to keep overtime below the industry benchmark. DITP maintenance overtime was 4.8% for FY16. Management has taken steps to reduce overtime spending by limiting overtime to repair critical equipment and systems only. DITP has been on or under budget from FY09 through FY16. The increase in overtime during the last year was due to plant shutdowns and HVAC equipment replacements.



Continued optimization of the Preventive Maintenance (PM) program through the transfer of some light maintenance tasks from Maintenance to Operations staff (21% of PM hours at the end of FY16), elimination of duplicate work orders, increasing PM frequency due to equipment history and performance, increasing PM Reliability-Centered Maintenance (RCM) recommendations resulted in a significant decrease of 2,388 hours in maintenance staff PM hours from FY06 to FY16. Corrective Maintenance (CM) hours decreased from last year due to additional large HVAC equipment replacement. Project Maintenance hours remained the same due to a number of CIP projects on-going during FY16.

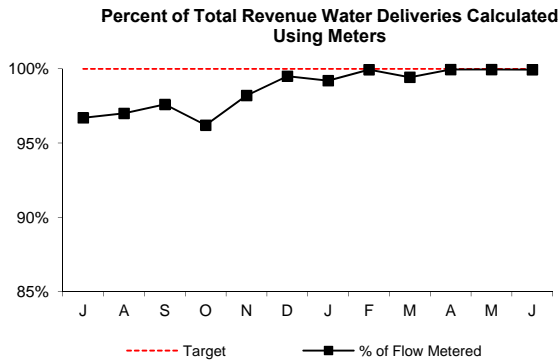
During FY16, the number of work orders increased by 1,484 from the previous year due to the increase in Condition Monitoring Program. While the number of Corrective Maintenance (CM) work orders increased, the overall (CM) hours decreased from last year. The Planning department is streamlining work orders while ensuring all work by various trades are captured on one work order ensuring all costs are available for reporting and/or reimbursement if needed.



Operations Division Metering

4h Quarter - FY16

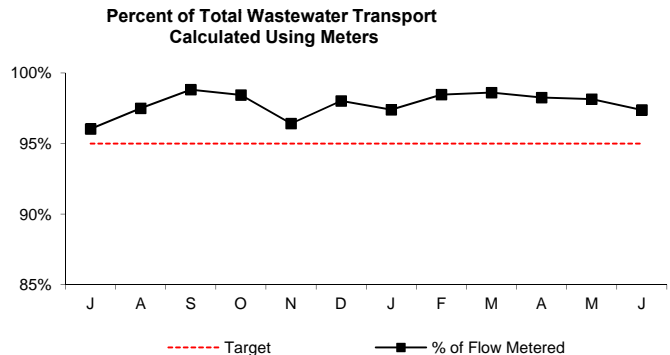
WATER METERS



The target for revenue water deliveries calculated using meters is 100%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house and capital construction projects. During the 4th Quarter of FY16, meter actuals accounted for 99.95% of flow; only 0.05% of total revenue water deliveries were estimated. The following is the breakdown of reasons for estimations:

- In-house and Capital Construction Projects - 0.04%
- Instrumentation Failure - 0.01%

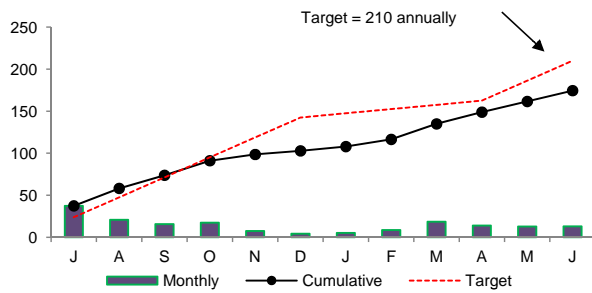
WASTEWATER METERS



The target for revenue wastewater transport calculated using meters is 95%. Estimates are generated for meters missing data due to instrument failure and/or erratic meter behavior. Estimates are produced using data from previous time periods under similar flow conditions. During the 4th Quarter of FY16, meter actuals accounted for 97.9% of flow, 2.1% of wastewater transport was estimated.

WATER DISTRIBUTION SYSTEM PIPELINES

Miles Surveyed for Leaks



During the 4th Quarter of FY16, 39.56 miles of water mains were inspected. The total inspected for the fiscal year to date is 174.49 miles.

Leak Backlog Summary

Month	J	A	S	O	N	D	J	F	M	A	M	J
Leaks Detected	3	3	1	4	0	0	7	4	1	2	2	2
Leaks Repaired	1	4	1	4	3	1	3	4	1	3	3	4
Backlog	10	9	9	9	6	5	9	9	9	8	7	5
Avg. Lag Time	25.7	44.1	59.4	61.1	72.4	82.1	68.8	68.6	75.0	78.4	80.8	81.7

During the 4th Quarter of FY16, six leaks were detected and ten repaired. Five leaks remain unrepaired, of which, four are carried over from FY15. Refer to FY16 Leak Report below for details. Additionally during Q4 community assistance, ranging from individual leak location work to hydrant surveys were conducted in the following cities:

- * April - Newton, Medford, Somerville and Malden
- * May - Waltham
- * June - Malden, Medford, Milton, Newton, Waltham

FY16 Leak Report - 4th Quarter

Date Detected	Location of Leaks	Repaired
5/9/2014	General Edward Bridge, Revere/Lynn	8/31/2015
5/7/2015	West Street, Hyde Park Boston Proper	7/8/2015
8/7/2015	DCR Foss Park Broadway, Somerville	8/7/2015
8/11/2015	Broadway @ Mt Pleasant, Somerville	8/18/2015
7/21/2015	Broad Street @ Union Street, Lynn	8/20/2015
7/1/2015	Fellsway East Ext @ Pond Street, Stoneham	9/2/2015
6/22/2015	825 University Ave., Norwood	10/5/2015
10/6/2015	General Lawrence Bridge, Medford	10/21/2015
10/6/2015	#49 Lynn Street @ Shute Street, Everett	10/28/2015
10/26/2015	Mystic Valley Parkway @ Rte 16, Medford	10/30/2015
9/28/2015	Winthrop Ave. @ Summer Street, Revere	11/5/2015
5/12/2015	129 West Street, Hyde Park	11/10/2015
10/27/2015	Woodland road @ Pond Street, Stoneham	11/23/2015
8/3/2015	630 Squire Rd., Revere	12/30/2015
1/6/2016	644 Pleasant St., Belmont	1/20/2016
1/19/2016	Columbus Park Sewer Station, S. Boston	1/20/2016
1/7/2016	Common St., at Spring St., Watertown	1/25/2016
2/1/2016	376 Revere Beach Parkway, Revere	2/10/2016
1/5/2016	Forest Street @ Summer Street, Arlington	2/11/2016
1/31/2016	Pleasant Street @ Lake Street, Belmont	2/16/2016
2/10/2016	45 Felton Street @ Water Street, Waltham	2/23/2016

Date Detected	Location of Leaks (cont)	Repaired
2/19/2016	Mount Vernon @ Albion Street, Somerville	3/18/2016
3/23/2016	Charles River - Section 80, Weston	4/8/2016
1/28/2016	Charles St., @ Canal St., Malden	4/27/2016
2/22/2016	307-309 Waverly Oaks Rd., Waltham	4/29/2016
4/26/2016	Waverly Oaks Rd., @ Marianne, Waltham	5/9/2016
4/18/2016	Riverside Ave., @ Spring Street, Medford	5/17/2016
5/15/2016	472 Boston Ave., @ College Ave., Medford	5/23/2016
5/4/2016	Mystic Valley Pkwy @ Route 16, Medford	6/7/2016
1/31/2016	215 Pleasant Street, Arlington	6/10/2016
6/7/2016	Morton Street @ American Legion Hgwy, W. Roxbury	6/10/2016
1/6/2016	3642 Washington St., @ Arborway, W. Roxbury	6/27/2016

Date Detected	Location of Leaks/Unrepaired
1/11/2015	Arborway @ St Joseph St., West Roxbury - Working on Traffic plan
6/8/2015	Allandale Rd. @ Grove St., Brookline - Requires a shutdown
6/17/2015	Washington St @ Lower E. Street, Dedham -Requires Night Shutdown
7/16/2015	Captain Robert Cook Dr., Needham - Difficult to isolate -on hold till Winter
6/1/2016	Comm Ave @ Oakland Ave, Newton - can't shut off till Fall-major pipeline

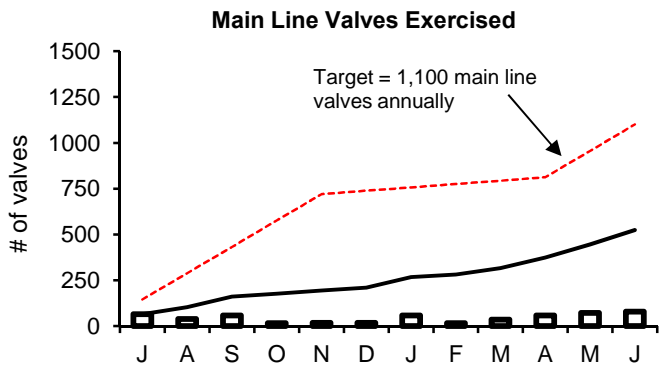
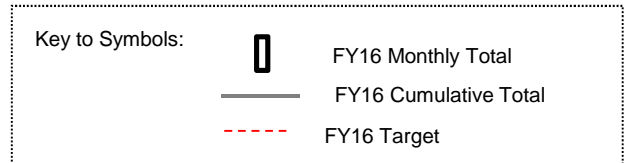
Water Distribution System Valves

4th Quarter - FY 16

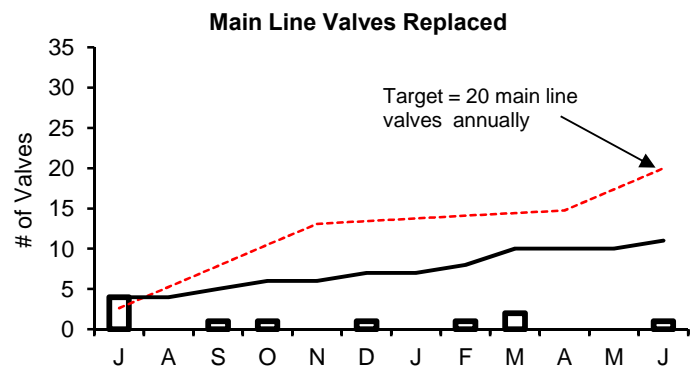
Background

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.

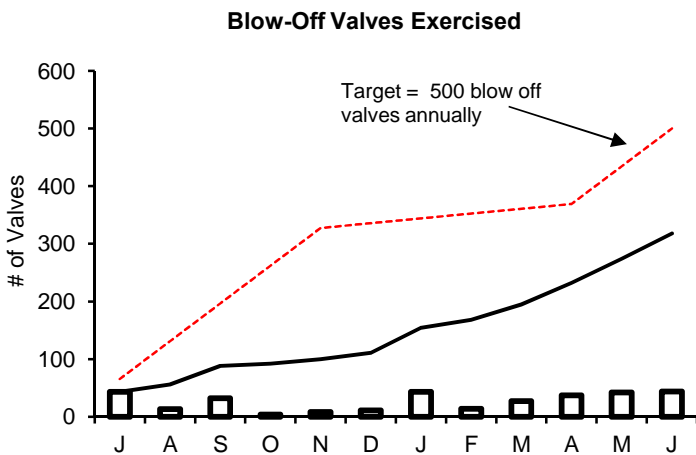
Type of Valve	Inventory #	Operable Percentage	
		FY16 to Date	FY16 Targets
Main Line Valves	2,159	96.5%	95%
Blow-Off Valves	1,317	95.2%	95%
Air Release Valves	1,380	93.6%	95%
Control Valves	49	100.0%	95%



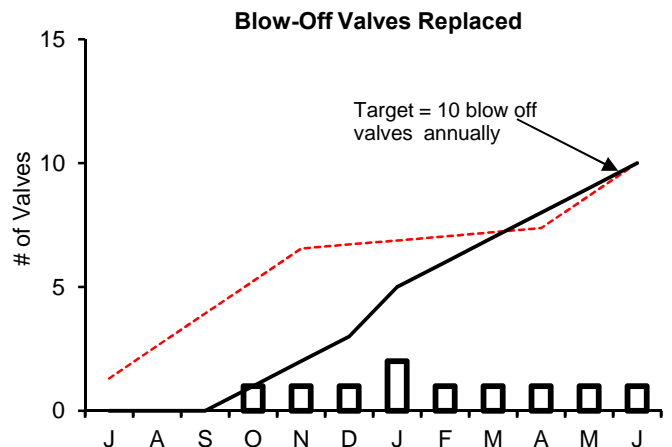
During the 4th Q of FY16, staff exercised 208 main line valves. The total exercised for the fiscal year is 524. Below target due to staffing shortage* and high priority CIP projects.



During the 4th Q of FY16, staff replaced one main line valve. The total replaced for the fiscal year is eleven. Year end target not met due to number of leak repairs as well as work on the cathodic protection program.



During the 4th Q of FY16, staff exercised 123 blow off valves. The total exercised for the fiscal year is 318. Below target due to staffing shortage* and high priority CIP projects.



During the 4th Q of FY16, staff replaced three blow off valves. The total replaced for the fiscal year is ten.

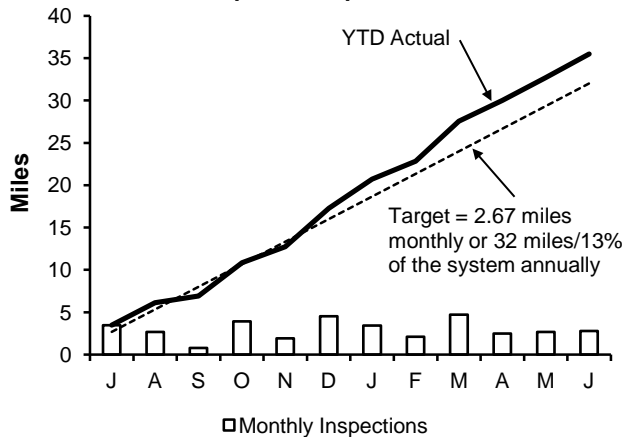
*Three of the four Valve Program Foreman positions have been vacant for part of the past year. One position has remained vacant after a promotion for almost a year. Second Foreman was out from late September through December 2015 due a a non-work related accident. A third position has been vacant since March due to a promotion, and is in the process of being backfilled.

Wastewater Pipeline and Structure Inspections and Maintenance

4th Quarter - FY 16

Inspections

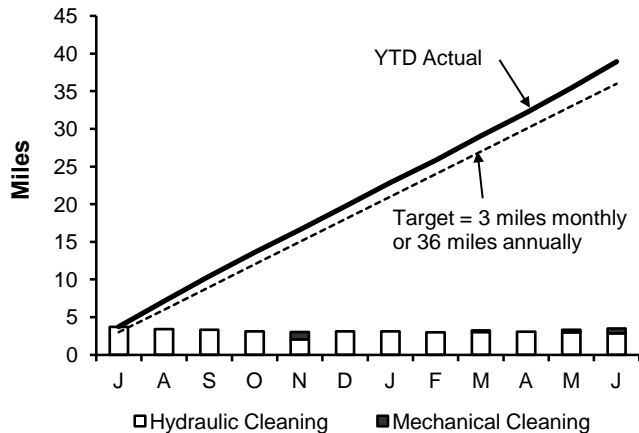
Pipeline Inspections



Staff internally inspected 7.94 miles of MWRA sewer pipeline during this quarter. The year to date total is 35.48 miles. No Community Assistance was provided this quarter.

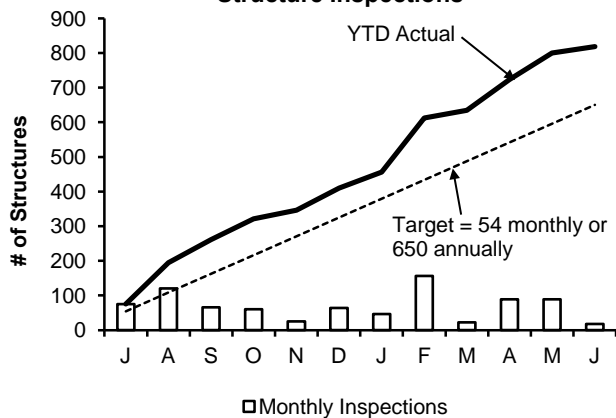
Maintenance

Pipeline Cleaning



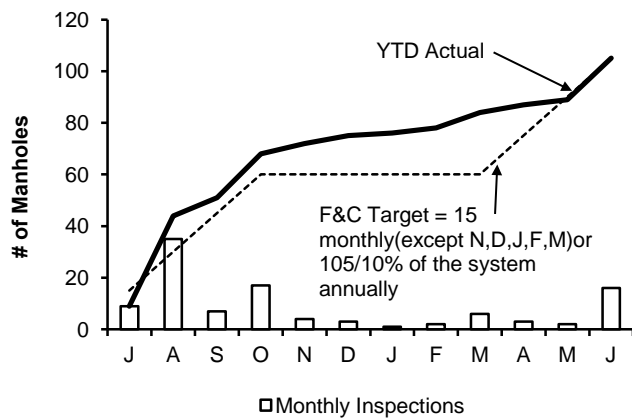
Staff cleaned 8.93 miles of MWRA's sewer system and removed 40 yards of grit and debris during this quarter. The year to date total is 38.94 miles. No Community Assistance was provided this quarter.

Structure Inspections



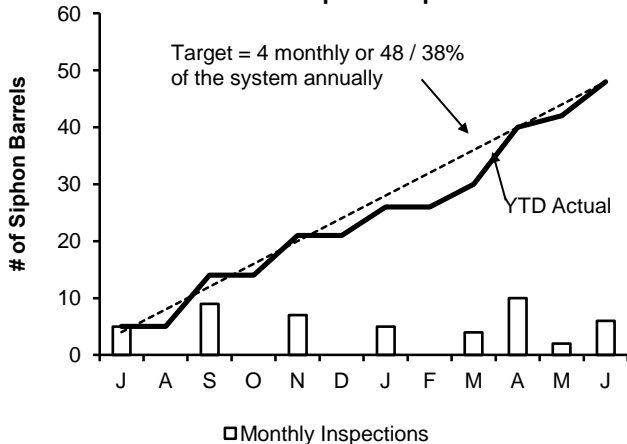
Staff inspected the 36 CSO structures and performed 160 additional manhole/structure inspections during this quarter. The year to date total is 818 inspections.

Manhole Rehabilitation



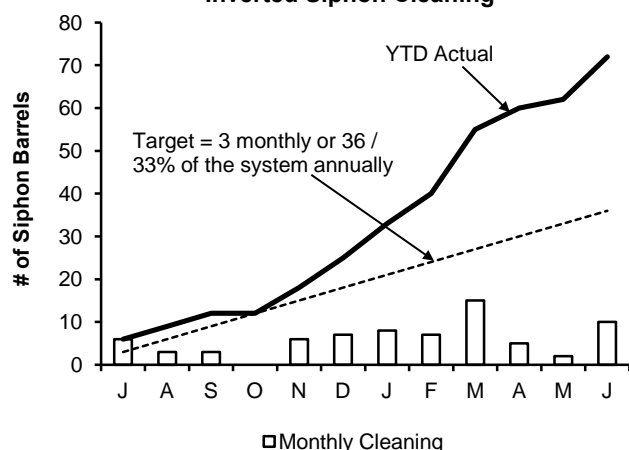
Staff replaced 21 frames & covers during this quarter. The year to date total is 105.

Inverted Siphon Inspections



Staff inspected 18 siphon barrels this quarter. Year to date total is 48 inspections.

Inverted Siphon Cleaning



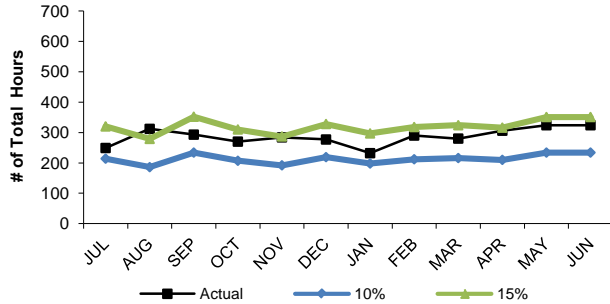
Staff cleaned 17 siphon barrels during this quarter. The year to date total is 72 barrels.

Field Operations' Metropolitan Equipment & Facility Maintenance

4th Quarter - FY16

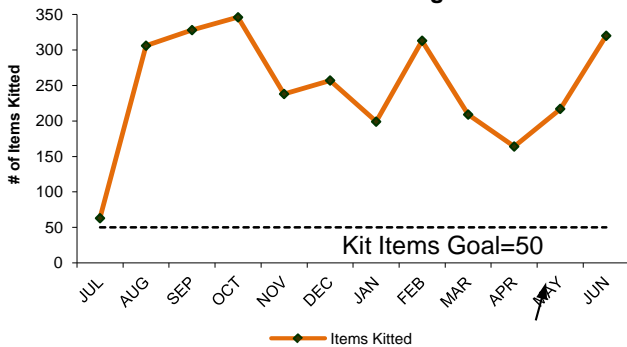
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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

Operations Light Maintenance PM Hours



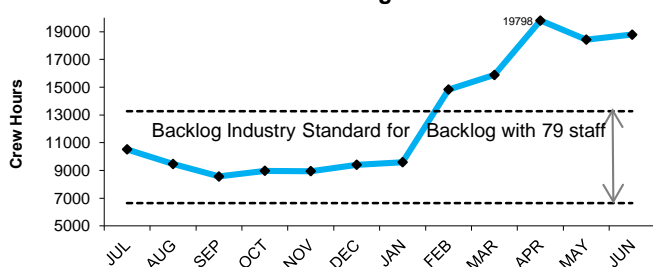
Operations staff averaged 318 hours of preventive maintenance during the 4th Quarter, an average of 14% of the total PM hours for the 4th Quarter, which is within the industry benchmark of 10% to 15%.

Items Kitted Utilizing Maximo



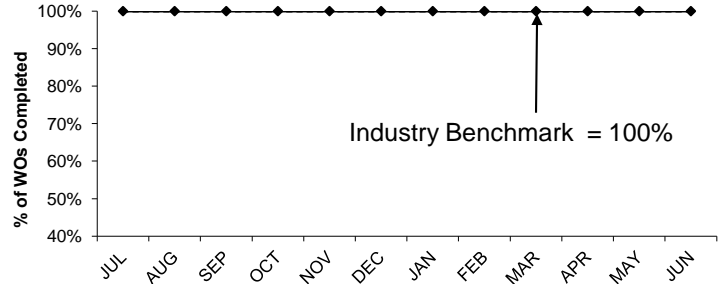
In an effort to more efficiently complete work, maintenance staff and work coordination staff have utilized the Lawson/Maximo interface to better kit stock and non stock material. The goal for FY16 is to "kit" 50 stock and non stock items total per month. An average of 234 items were kitted each month during the 4th Quarter.

Maintenance Backlog in Crew Hours



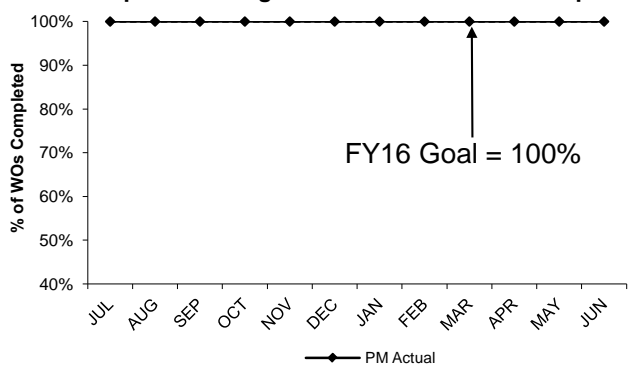
The 4th Quarter backlog average is 19003 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6450 to 12,940 hours. Backlog hours are above the industry benchmark due to the Nut Island Incident response, critical maintenance repairs and staging for wet weather events.

Overall Preventive Maintenance



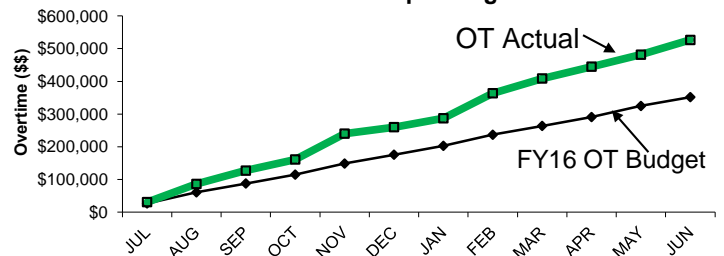
The Field Operations Department (FOD) preventive maintenance goal for FY16 is 100% of all PM work orders. Staff completed an average of 100% of all PM work orders in the 4th Quarter.

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 4th Quarter.

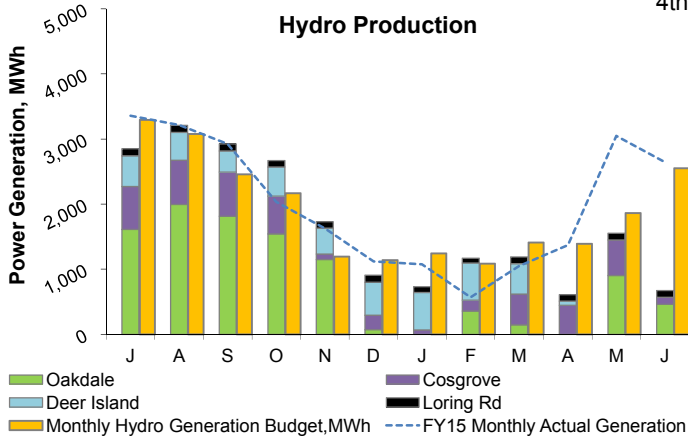
Overtime Spending



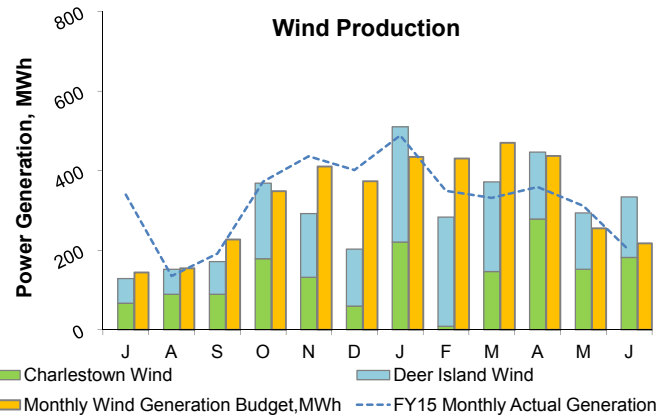
Maintenance overtime was \$30k over budget for the 4th Quarter and \$175k over budget for FY16. Overtime was used for staging for weather events, critical maintenance repairs, and the Nut Island Incident Response. The year end total of overtime spending was \$527k for FY16.

Renewable Electricity Generation: Savings and Revenue

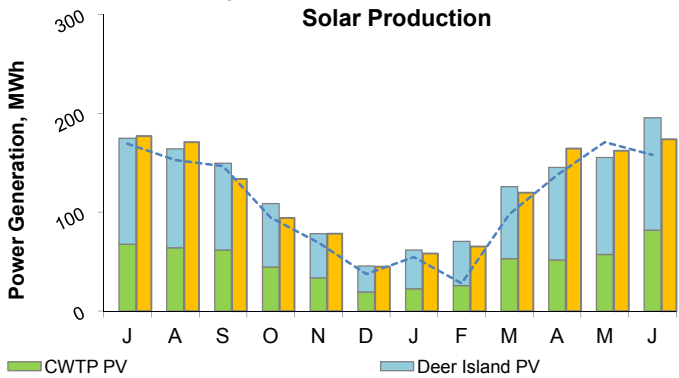
4th Quarter - FY16



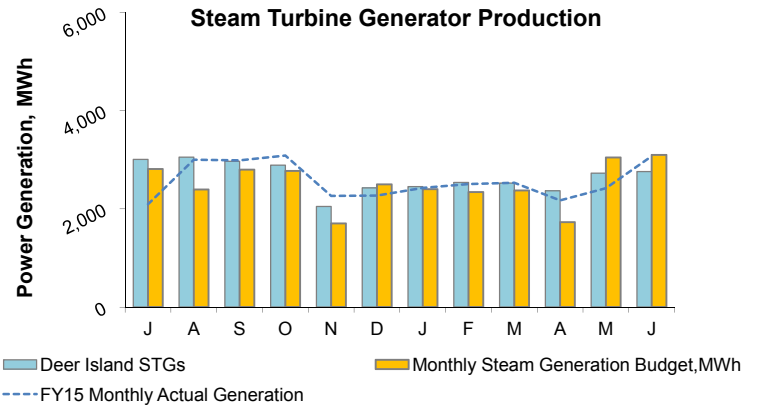
In the 4th Quarter, the renewable energy produced from all hydroelectric facilities totaled 2,837 MWh; 51% below budget³, due to Deer Island hydro turbines being off-line with mechanical issues, Cosgrove operating at a lower rate for testing, and Oakdale undergoing maintenance work. The total energy produced to date in FY16 is 20,209 MWh; 12% below budget³. The total savings and revenue² to date in FY16 (actuals through May¹) is \$793,920; 31% below budget³, partly due to the fact that the actual electricity unit price for Deer Island has been 14% below the budgeted³ estimate for the same period, and due to Oakdale receiving a 48% 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).



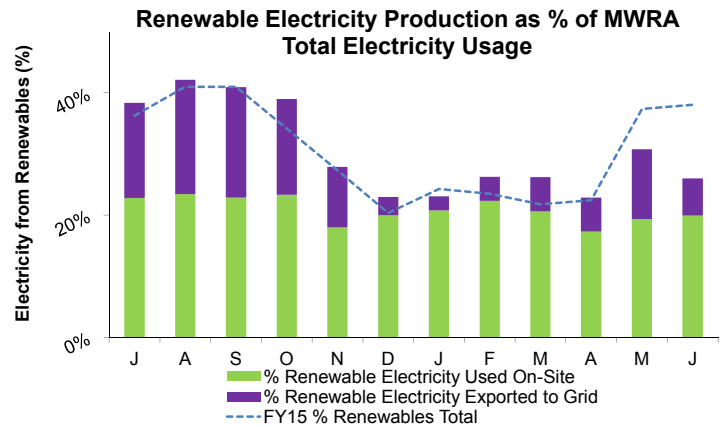
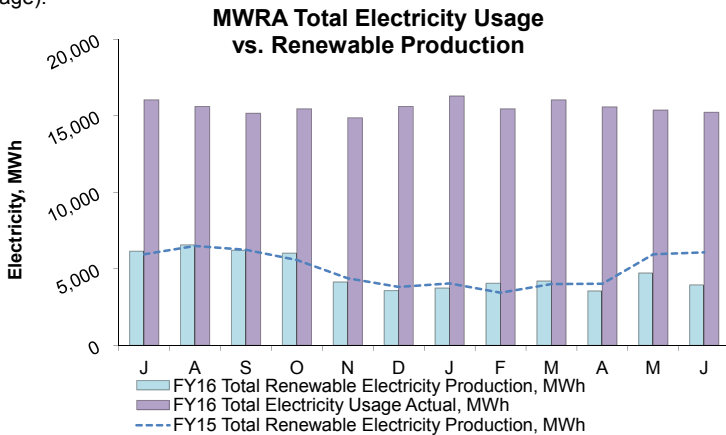
In the 4th Quarter, the renewable energy produced from all wind turbines totaled 1,073 MWh; 18% above budget³. The total energy produced to date in FY16 is 3,552 MWh; 9% below budget³, in part due to Charlestown Wind Turbine undergoing repairs of its main power converter in February. The total savings and revenue² to date in FY16 (actuals through May¹) is \$425,995; 11% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In the 4th Quarter, the renewable energy produced from all solar PV systems totaled 496 MWh; 1% below budget³. The total energy produced to date in FY16 is 1,474 MWh; 2% above budget³. The total savings and revenue² to date in FY16 (actuals through May¹) is \$152,607; 8% above budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In the 4th Quarter, the renewable energy produced from all steam turbine generators totaled 7,851 MWh; equal to budget³. The total energy produced to date in FY16 is 31,760 MWh; 6% above budget³. The total savings and revenue² to date in FY16 (actuals through May¹) is \$2,260,163; 7% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



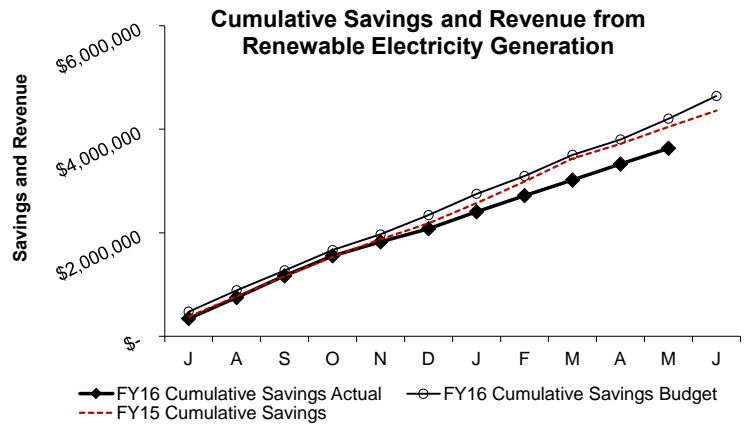
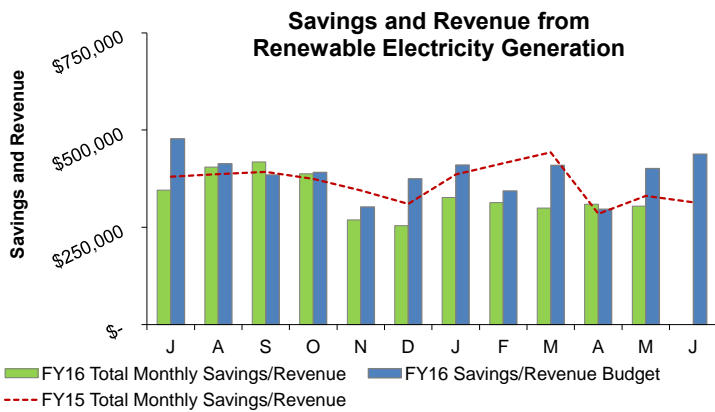
In the 12 months of FY16, MWRA's electricity generation by renewable resources totaled 56,996 MWh. MWRA's total electricity usage was approximately 186,791 MWh. The MWRA total electricity usage is the sum of all electricity purchased for Deer Island and FOD plus electricity produced and used on-site at these facilities. Approximately 99% 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 FY16, green power generation represented approximately 31% 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.

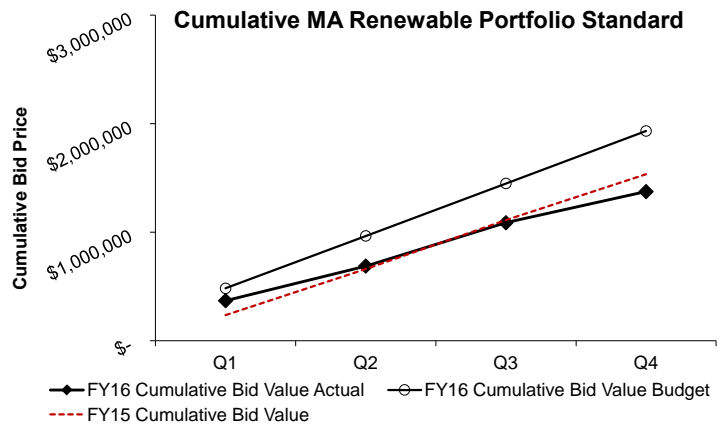
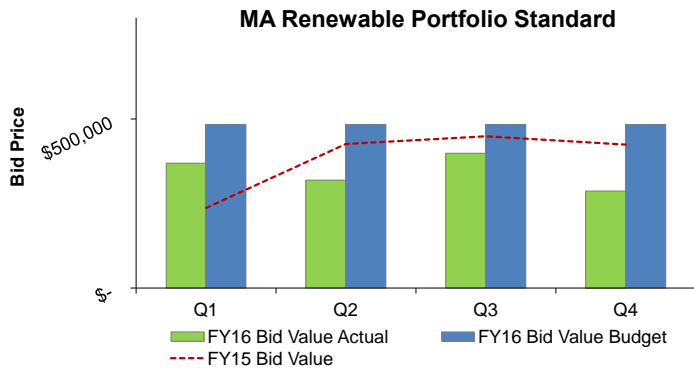
- Notes:
1. Only the actual energy prices are being reported. Therefore, some of the data lags up to 2 months due to timing of invoice receipt.
 2. Savings and Revenue: Savings refers to any/all renewable energy produced that is used on-site therefore saving the cost of purchasing that electricity, and 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

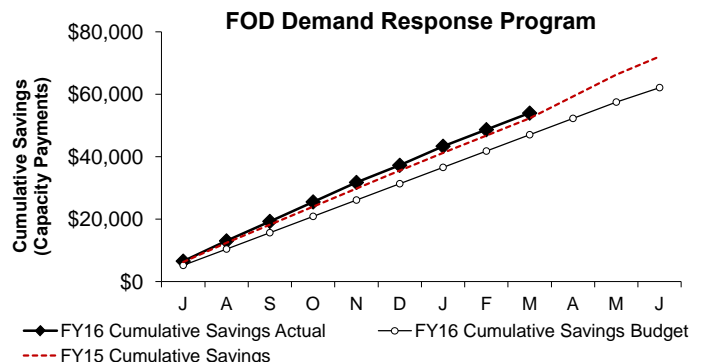
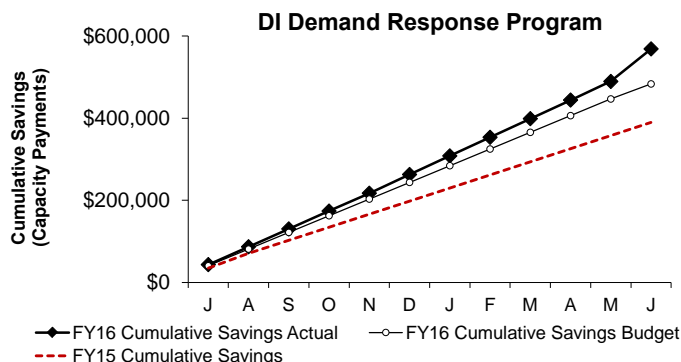
4th Quarter - FY16



Savings and revenue from MWRA renewable electricity generation in the first 11 months of FY16 (actuals only through May¹) is \$3,632,684; which is 14% below the budget³, partly due to the fact that the actual electricity unit price for Deer Island has been 14% 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 4th Quarter¹ from MWRA's renewable energy assets; 6,924 Q4 CY2015 Class I Renewable Energy Certificates (RECs), 4,702 Q4 CY2015 Class II RECs and 45 Q4 CY2015 Solar RECs were sold for a total value of \$286,879 RPS revenue; which is 41% below the budget³ for the quarter. REC values reflect the bid value on the date that bids are accepted, even though the RECs were produced during Q4 of CY2015. Cumulative bid values reflects the total value of bids received to date.



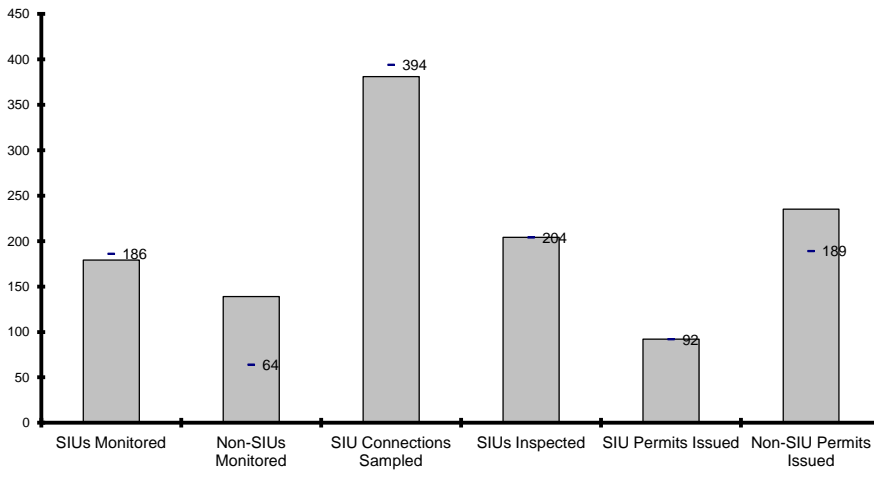
Deer Island, 2 Water, and 4 Wastewater facilities⁴ participate in the ISO-New England Demand Response Programs. By agreeing to have its generators available to run and thus relieve the New England energy grid of some of MWRA's load during times of high energy demand, MWRA receives monthly Capacity Payments 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 June¹ total \$568,509 for DI and \$53,993 for FOD through March¹. As of June 2016, some of the FOD facilities are no longer eligible to participate in the Demand Response program due to changes in EPA regulations. MWRA is currently investigating the cost to upgrade the generators emissions controls that would allow us to participate. The cost of these upgrades will be compared to the projected revenue in order to decide whether it is cost effective.

- 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

4th Quarter - FY16

Inspections, Monitoring Events, Permits Issued, Year to Date



EPA Required SIU Monitoring Events

for FY16: 186
YTD: 179

Required Non-SIU Monitoring Events

for FY16: 64
YTD: 139

SIU Connections to be Sampled

For FY16: 394
YTD: 381

EPA Required SIU Inspections

for FY16: 204
YTD: 204

SIU Permits due to Expire

In FY16: 92
YTD: 92

Non-SIU Permits due to Expire

for FY16: 189
YTD: 235

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 or cease discharge and cannot be monitored. Some discharges were infrequent and were re-categorized as non-SIU resulting in reduced numbers.

TRAC staff also exceeded the EPA required program goals for monitoring by completing the following # of events: SIU 666 events, nonSIU 232 events, 297 total other events (CSO tanks, CSO NPDES, Carroll water plant, Clinton NPDES and Local limits, Oakdale)

	Number of Days to Issue a Permit						Total Permits Issued	
	0 to 120		121 to 180		181 or more		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	4	14	0	3	3	0	7	17
Feb	4	17	0	4	0	0	4	21
Mar	9	17	0	0	0	0	9	17
Apr	6	19	0	1	0	2	6	22
May	4	22	0	2	0	1	4	25
Jun	12	17	0	0	0	1	12	18
% YTD	96%	91%	1%	6%	3%	3%	92	235

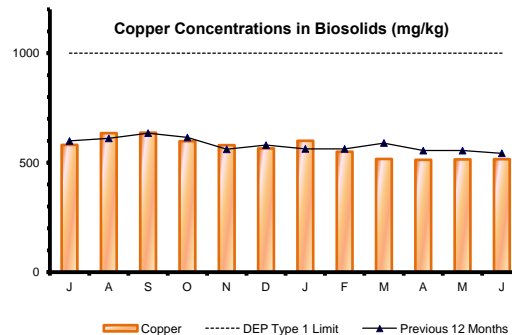
EPA requires MWRA to issue or renew 90% of SIU permits within 120 days of receipt of the application or the permit expiration date - whichever is later. EPA also requires the remaining 10% of SIU permits to be issued within 180 days. The first benchmark was achieved for this fiscal year but three SIU permits were issued after the 180-day timeframe. These permits were issued to MassDOT and were delayed by the permit writing staff while EPA drafted their NPDES permits. Their NPDES permits impact TRAC's permits.

In the 4th Quarter of FY16, 87 permits were issued, 22 of which were SIUs. All permits except for 7 non-SIUs were issued in the 120-day timeframe. Three non-SIU permits were issued in the 120-day to 180-day timeframe and four non-SIU permits were issued beyond the 180-day period. Late payment of permit fees continue to occur and together with delays due to industry responses, new industry start-up issues and information gathering for the determination of the permit category, some permits were issued late.

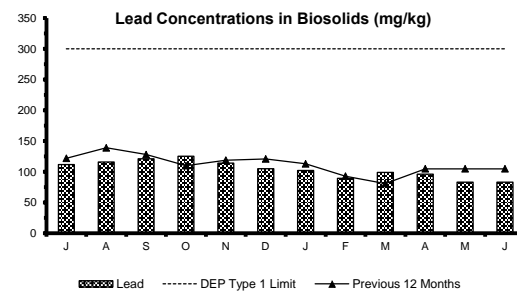
Copper, lead, and molybdenum are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer. Cooling tower usage typically causes a seasonal spike in molybdenum concentrations due to the blowdown on large AC systems 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.

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 4th quarter of FY16, the level of molybdenum has been below the DEP type 1 Limit but the overall readings for FY16 have been higher than those during FY15. MWRA and its contractor (NEFCO) generally do not distribute product in Massachusetts July to January, under its approval of suitability.

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.

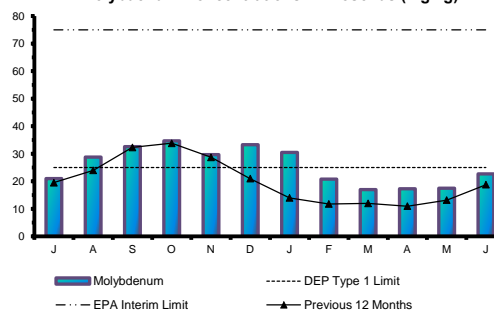


Legend: Copper (orange bar), DEP Type 1 Limit (dotted line), Previous 12 Months (line with triangles)



Legend: Lead (hatched bar), DEP Type 1 Limit (dotted line), Previous 12 Months (line with triangles)

Molybdenum Concentrations in Biosolids (mg/kg)



Legend: Molybdenum (blue bar), DEP Type 1 Limit (dotted line), EPA Interim Limit (dashed line), Previous 12 Months (line with triangles)

Field Operations Highlights

4th Quarter – FY16

Western Water Operations and Maintenance

- Quabbin Aqueduct Shaft 12 Intake: Operations Staff, in coordination with Engineering and a consultant, performed an underwater ROV Inspection of the Shaft 12-Intake Structure to evaluate the condition of the stop logs, stop shutters and the overall condition of the subsurface structure. This will support the upcoming design of a shutoff device for flow from the Quabbin Reservoir.
- Hultman Aqueduct: Valve Maintenance and Operations Staff completed the reactivation of the lower Hultman Aqueduct from Norumbega to Shaft 5. This section of the aqueduct had been shut down and dewatered to facilitate an interior pipe joint repair. After the repair work was completed, the pipeline was disinfected, pressure tested, flushed and sampled before reactivation.
- Reservoir Operations: Western Maintenance Grounds Staff reported water surfacing from a manhole at the toe of the Sudbury Dam in April. Further evaluation by Reservoir Operations concluded this was part of the dam's Toe Drain System. Wastewater Operations staff performed internal TV Inspection which revealed drain-line blockages due to iron sludge buildup over many years. Wastewater crews jetted the Toe Drain lines restoring functionality and eliminating the overflow.

Metro Water Operations and Maintenance

- Valve Program: Cambridge continued to take water through the quarter, with service in both the MWRA System and Cambridge systems remaining normal. Winchester stopped taking additional water through the MWRA Northern Intermediate High Service area on May 31, as they completed the valve project in their reservoir system. Water was supplied from the Deer Island water system back to the Point Shirley Area of Winthrop for 5 days during water main improvements within the town's system.
- Contract #6438-Cathodic Protection: Coordinated the purchase of cathodic protection equipment and the training of staff. Engineering and Operations are working with the contractor to create a handbook containing SOPs for testing of the Cathodic Protection Test Stations throughout the water system.

Operations Engineering:

GPS Collection Project: The GPS Data Collection Project for Metropolitan Boston continues and several interns returned from winter break. The project is now 80% complete and collection continues this summer.

- 8-M Permit Support Developed the Dewatering and Filling Plan for DOT Casey Overpass pipeline work in Jamaica Plain; Coordinated the activation of Section 57 which allowed Chelsea to complete roadway and drainage work on Everett Avenue. Continued working on plans for dewatering, filling and pressure testing for the Larz Anderson Bridge and Section 10 for DOT work. The west 30-inch main is unable to pass the pressure test. In June, the contractor removed a 30-inch valve thought to be the reason. The valve was cleaned, pressure tested, and reinstalled, but again failed. The contractor continues to look for the problem.

Wastewater Operations & Maintenance -- Wastewater Operations

- Nut Island Fire in Odor Control: In May, Operations Staff attended a meeting regarding the proposed repairs to the facility freight elevator, attended training on how to respond to an odor complaint and attended Coordination Meetings regarding repairs to the Fire Protection System and HVAC Building Management system. In June, both Operations and Maintenance Staff started preparing for the removal of the #4 Fire Pump that was damaged after the fire. Electrical work is still ongoing by Electricians on site.
- Nut Island Headworks Odor Control, HVAC and Energy Management Evaluation Services: Operations Staff continues to assist Engineering with this project. The scope has changed as a result of the fire at Nut Island. Operations Staff reviewed the Draft Evaluation Report and met with Engineering Staff to provide comments and recommendations.
- Upgrades to Chelsea Screen House-Contract: Operations Staff continues to assist Construction Staff with the upgrades to the Chelsea Screen House. Staff provided onsite operational support, reviewed gate testing procedures and attended biweekly meetings in May regarding the construction coordination of this project. Gates #1, 2, 5 and 9 have been installed and tested by the contractor and accepted by Wastewater Operations. Construction is ongoing.
- Alewife Brook Pump Station Rehabilitation: Operations Staff is reviewing the contractor's bypass pump submittal.
- Carbon Replacement-Contract #4203: The activated carbon for the Odor Control System was replaced at the Braintree/Weymouth Replacement Pump Station and the Houghs Neck Lift Station.

Toxics Reduction and Control:

TRAC held its Annual Significant Industrial User Meetings at Deer Island in May. Attendees received 3 TCHs for wastewater license renewals after a tour of the treatment facilities, a presentation by senior TRAC Staff on compliance issues, and a Q&A session.

- In FY16, Compliance Staff issued 104 Notices of Violations, 1 Demand Letter for stipulated penalties, 18 Notices of Noncompliance and 4 Return to Permit Letter. TRAC issued permit fees which was collected and totaled \$1,724,373.69.

TRAC met its program required goals in FY16. 100% of all SIU Permits were issued within the 180-day timeframe, with the exception of 3 MASS DOT Permits, that were awaiting EPA processing and thus unable to be completed.

- In FY16, TRAC Staff monitored Septage Receiving Sites 91 times. Staff conducted 3 Septage Hauler Inspections necessary to renew and update Septage Hauler Permits. Staff inspected 415 existing and 105 new gasoline/oil separators.
- In FY16, TRAC Staff met the required program goals for inspections. TRAC Staff conducted 116 Annual SIU Inspections and 409 other inspections. Annual SIU Inspections are required under TRAC's EPA approved Industrial Pretreatment Program. Other inspections include inspections for enforcement, permit renewal, followup, out-of-business facility, group permit audits and survey.
- TRAC issued and/or renewed a total of 327 MWRA Sewer Use Discharge Permits to its sewer users including 235 SIUs and 92 NonSIUs.
- In FY16, TRAC Staff exceeded the EPA required program goals for monitoring by completing: SIU 666 Events, NonSIU 232 Events, 297 total other Events (CSO Tanks, CSO NPDES, Carroll Water Plant, Clinton NPDES and Local limits, Oakdale).
- On March 25, 2016, TRAC responded to Chestnut Hill Reservoir to collect samples from the surface at the reservoir's edge. A concerned college student observed strange yellow outlines around the rocks at the edge of the reservoir and a dead fish. Samples were brought to Deer Island for analysis where it was determined to be very similar to Scots Pine pollen in the water.

Environmental Quality - Water:

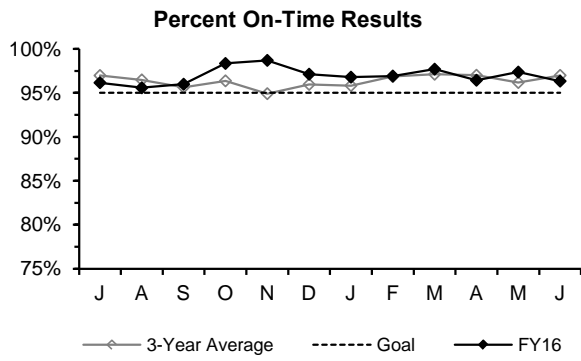
- Community Support: Staff provided community sampling assistance to Milton from June 27th-29th, conducting tank and outside sample tap testing for a new water storage tank. Staff provided emergency sampling support on June 10th and 11th to DCR in response to a water quality concern in the Quabbin Reservoir Watershed. At the request of Somerville Water Department, Water Staff provided a Water Quality Complaint Report for tests conducted for a on Perry Street.
- Water Managers gave presentations at the community Emergency Response Plan Training on May 12th. DEP Drinking Water Regulations require Annual Emergency Response Training. MWRA provides annual training to Community Staff.
- Contaminant Monitoring System (CMS) Staff, along with the vendor, installed new mounting systems on Buoys 3 and 4 for crude and refined oil monitoring on May 3rd. Staff completed new mooring locations (input from DCR), and successfully programmed and deployed Buoys 3 and 4 on May 4th-5th.

Environmental Quality—Wastewater:

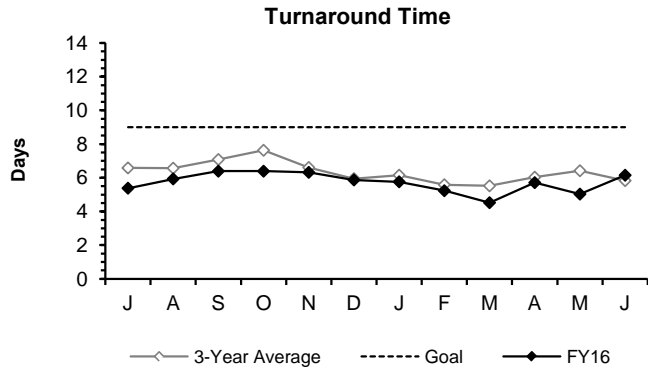
- Ambient Monitoring: The Annual Monitoring Review Workshop, an essential step in the preparation of permit-required monitoring reports, occurred on April 14 with participation from both contract teams. Three more Water Quality Monitoring Surveys and the Annual Flounder Survey were completed this quarter. Due to elevated counts of the red tide phytoplankton species *Alexandrium fundyense* in northern Massachusetts Bay, initiated permit-required weekly red tide surveys, consisting of two surveys in May-June, as *A. fundyense* abundances dropped to near zero throughout Mass. Bay by June. There was no exceedance of any of the Contingency Plan thresholds tested, red tide, winter/spring chlorophyll, nuisance algae, or flounder liver disease. Completed reports on water quality modeling of Massachusetts Bay and on bacterial water quality monitoring near the Mass Bay outfall.
- CSO Receiving Water Monitoring: Regulatory agencies were provided information about the refocused CSO Receiving Water Monitoring Program, which will provide data to understand water quality changes post-storm, while continuing to meet the requirements of the Charles and Alewife/Mystic variances. Receiving water monitoring under the new daily schedule continues.
- Harbor/Beach Monitoring: Biweekly monitoring of the harbor and rivers continued through the quarter. With the start of the beach season Memorial Day weekend, staff began posting beach results on the MWRA Website. Hosted presentation of preliminary results from an UMass/Boston Microbial Source Tracking Study, using samples collected near Tenean Beach by DLS Staff in summer 2015.

Laboratory Services

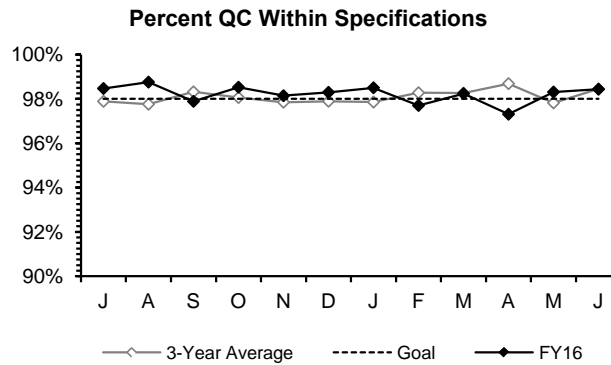
4th Quarter - FY16



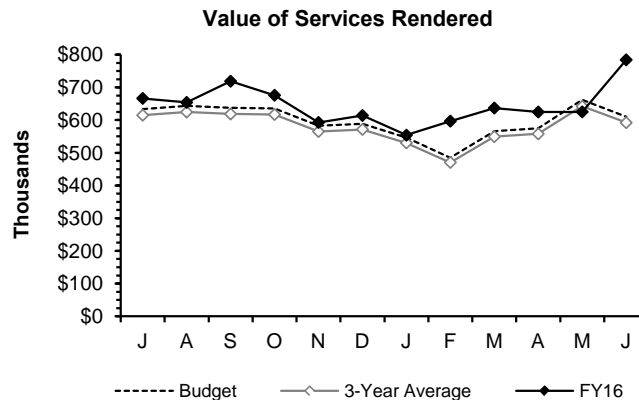
The Percent On-Time measurement was above the 95% goal each month of the Quarter.



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



Percent of QC tests meeting specifications was above the 98% in-house goal two out of three months of the quarter.



Value of Services Rendered was above the seasonally adjusted budget projection two out of three months of the quarter and above the projection for the fiscal year.

Highlights:

Presentations were given at the NEWEA Lab Specialty Conference on Lab Ethics and Laboratory Information Management System (LIMS).

Lab Services has met or exceeded its on-time results and turnaround time goals each month for the past 30 months.

Quality Assurance: The five laboratory locations passed 97.5% of the 2016 microbiology Proficiency Test samples on the first try. We have until the end of the calendar year to pass one retest.

Drinking Water: We have increased our capacity to test drinking water samples for lead in support of the schools special project and continue to test lead samples from our communities as quickly as they come in. In the quarter we completed 1,944 lead and copper tests, primarily on school samples, with an average turnaround time of 5 days.

Provided rush turnaround time to test Quabbin Reservoir/Tributary samples over a weekend for a potential water contamination emergency in cooperation with DCR.

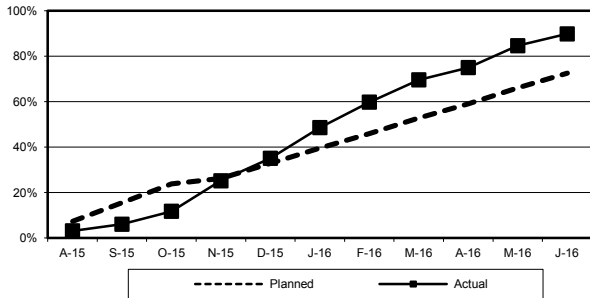
CONSTRUCTION PROGRAMS

Projects In Construction

4th Quarter - FY16

(Progress Percentages based on Construction Expenditures)

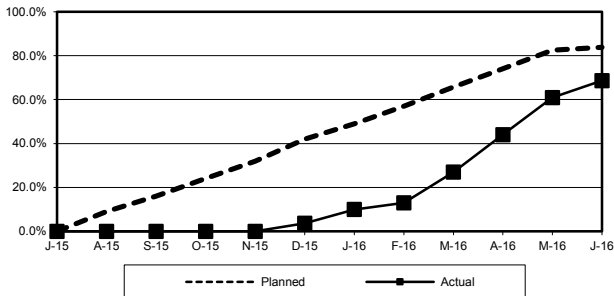
Southborough Water Quality Lab Progress – June 2016



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 June, the roof work was approximately 97% complete, acoustical ceiling 96% complete and cabinetry installation 90% complete. The installation of the paving, fire alarm, communications, tile and carpet have all been completed.

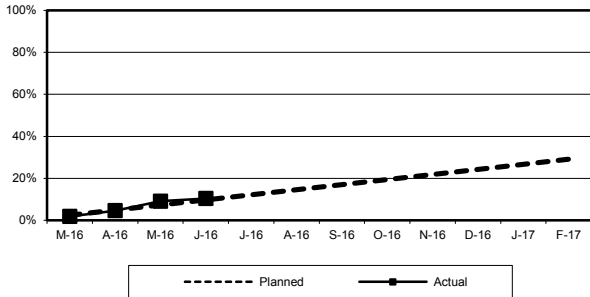
Upgrades to Chelsea Screen House Progress – June 2016



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 June, the Contractor completed the grout demo Screen #3, installed a 66in inflatable plug and installed a bulkhead between the 66in and 54in incoming lines in the channel before Screen's 3&4, after which they removed the demo debris from the Screen #3 channel.

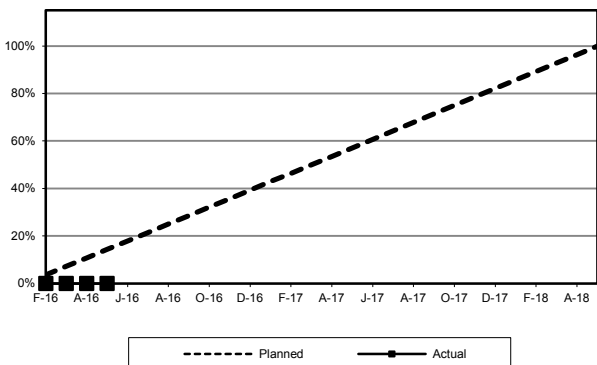
Wachusett Aqueduct Pumping Station Progress – June 2016



Project Summary: This project involves the construction of a 240 MGD pump station to supply water from the Wachusett Aqueduct to the Carroll Water Treatment Plant.

Status and Issues: As of June, the Contractor excavated/transported an additional 7,000 cy of material from the PS site to the DFA for a total of 27,000 cy. The ozone building conduits were installed and the footing for the Guard House foundation was completed.

Alewife Brook Pump Station Rehabilitation Progress – June 2016



Project Summary: This project involves the replacement of wet-weather pumps, motors, gear drives, VFD's, MCC, screens, sluice gates, standby generator, roof, PLC's and HVAC. Also, the remediation of PCB's and asbestos and the installation of a flow meter on the 66-inch downstream Alewife Brook Conduit.

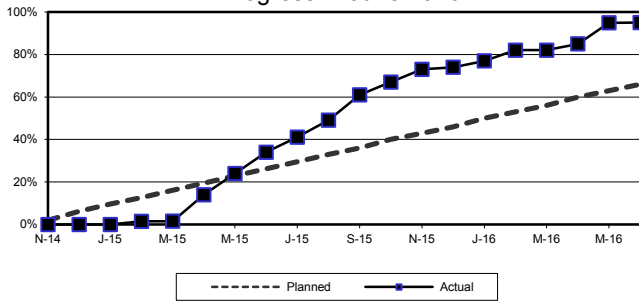
Status and Issues: As of June, the Contractor continued submitting shop drawings for the project. Also, the vendors and subcontractors continued visiting the site.

Projects In Construction

4th Quarter - FY16

(Progress Percentages based on Construction Expenditures)

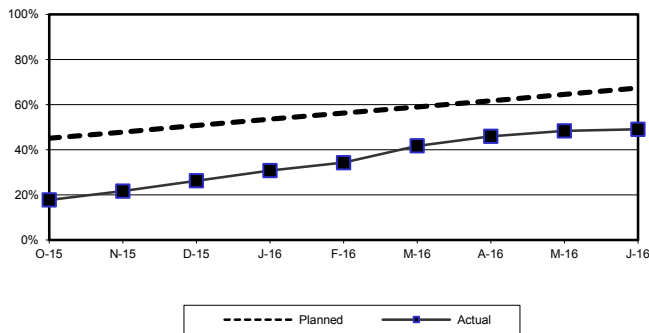
Water Mains: Section 36, W11C and S9-A
Progress – June 2016



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: As of June, the Contractor completed the sidewalk panel restoration. A partial project walkthrough with Operations was completed, with the remainder to be re-scheduled. The Contractor has de-mobilized from the site.

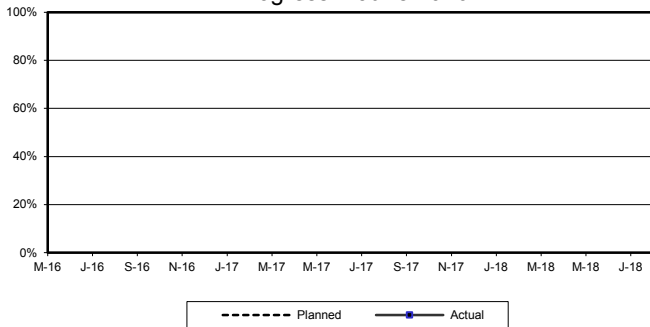
Valves and Piping Replacements
Progress - June 2016



Project Summary: This project involves the replacement of the twenty 60" butterfly valves and ten 60" flow meters in the North Main Pump Station; three 48", twelve 36" plug/check valves, six 30" flow meters and six 30-36" gate valves in the Winthrop Terminal Facility.

Status and Issues: The mechanical subcontractor continued the installation of the temporary trolley rail in the Pretreatment Gallery in preparation of Primary Sludge Line pipe replacement. They also replaced the rusty pipe support beam at the Winthrop Terminal Facility.

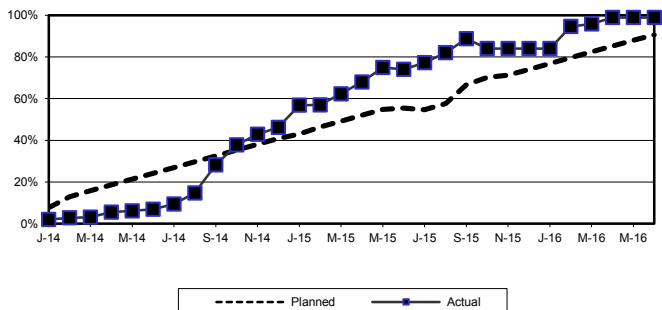
Winthrop Terminal VFD and Motor Replacement
Progress - June 2016



Project Summary: This project involves the replacement of 6, 600-HP motors, VFDs and associated electrical components in the Winthrop Terminal Facility.

Status and Issues: This project was awarded at the April 13th Board of Director's Meeting. Work on this contract has not yet begun.

Primary and Secondary Clarifier Scum Tip Tubes
Progress - June 2016



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 instrumentation work is 98.5% complete. The material for the tube extensions has been received. Approximately 4 out of the 13 units have been installed.

CSO CONTROL PROGRAM

4th Quarter - FY16

All 35 projects in the Long-Term CSO Control Plan are complete, in compliance with Schedule Seven. Remaining CSO related capital spending totaling \$13 million is scheduled through December 2020. Remaining work includes Cambridge's completion of surface restoration work associated with the Alewife/CAM004 sewer separation contracts, BWSC's removal of additional inflow from its sewers in the South Dorchester Bay sewer separation areas of Dorchester, and the federal court mandated CSO post-construction monitoring and performance assessment (2018-2020).

Project/Item	Status as of June 30, 2016
Reserved Channel Sewer Separation	BWSC attained substantial completion in December 2015, in compliance with Schedule Seven. BWSC continues to prepare as-built plans and close out its engineering and construction contracts. MWRA staff are conducting final eligibility reviews of the construction contracts for this and other CSO projects that were implemented by BWSC with MWRA funding.
South Dorchester Bay Sewer Separation Post-Construction Inflow Removal	As previously reported, BWSC has completed its investigation of alternatives for removing additional stormwater inflow from its Dorchester Interceptor, following the completion of sewer separation and the closing of CSOs several years ago. MWRA's CIP includes \$5.4 million for the inflow removal effort, of which approximately \$2.7 million has been transferred to the BWSC CSO account to fund related design and construction contracts. Additional funding will follow decisions by BWSC on its recommendations and schedule for removing additional inflow.
Cambridge/Alewife Brook Sewer Separation	The City of Cambridge attained substantial completion and permanently closed Outfall CAM004 in December 2015, in compliance with Schedule Seven. Stormwater removed from the Cambridge and MWRA sewer systems now drains to the Alewife Wetland. Extensive surface restoration work eligible for MWRA funding at a remaining cost of approximately \$7 million is currently scheduled to continue through June 2017. Cambridge recently submitted a request for an amendment to the CSO Memorandum of Understanding and Financial Assistance Agreement ("MOU/FAA") that would increase the total award amount by \$1.6 million, from \$98.7 million to \$100.3 million and extend the MOU/FAA term by six months to December 2017 due to construction change orders and Cambridge's necessity to complete its ineligible water main replacement prior to completing CSO-eligible roadway restoration on Huron Avenue.
Extension of Charles River and Alewife Brook/Upper Mystic River CSO Variances	<u>August 2016:</u> DEP issued its Final Determinations extending the CSO variances for the Charles River and the Alewife Brook/Upper Mystic River by three years, to 2019. Pursuant to the CSO agreement MWRA reached with EPA and DEP in 2006, DEP will reissue, and EPA will approve, the CSO variances through 2020. The recent variance extensions include a condition that MWRA submit a draft scope of its court-ordered three-year CSO performance assessment (below) to EPA and DEP by May 1, 2017.
MWRA CSO Performance Assessment	Staff have had preliminary discussions with EPA and DEP and are reviewing the requirements of the EPA National CSO Control Policy, including Guidance on CSO Post-Construction Monitoring, to support the development of an approach and scope for the three-year performance assessment Schedule Seven requires MWRA to conduct in the period 2018-2020. MWRA's FY17 CIP includes funds for the performance assessment.

CIP Expenditures 4th Quarter – FY16

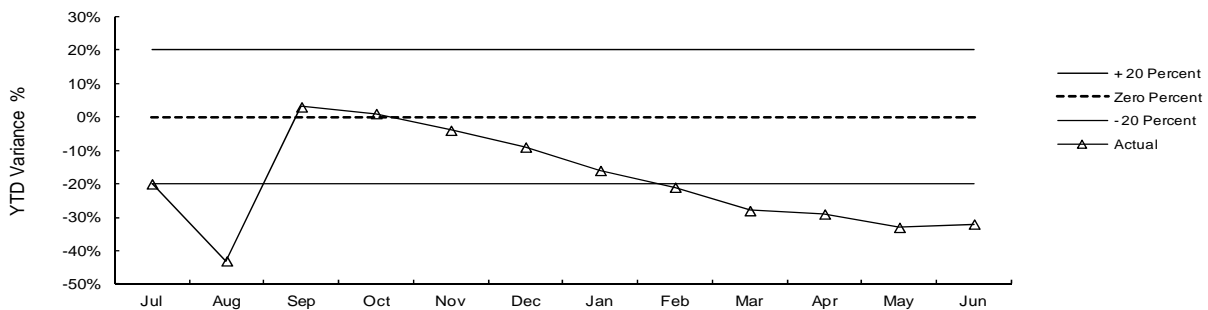
The Year-To-Date variances are highlighted below:

FY16 Capital Improvement Program Expenditure Variances through June by Program (\$000)				
Program	FY16 Budget Through June	FY16 Actual Through June	Variance Amount	Variance Percent
Wastewater	88,109	64,185	(23,924)	-27%
Waterworks	43,430	26,725	(16,706)	-39%
Business and Operations Support	8,583	4,235	(4,349)	-51%
Total	\$140,123	\$95,144	(\$44,979)	-32%

Underspending within Wastewater is primarily due to updated schedules for Chelsea Creek Upgrades, Alewife Brook Pump Station Rehabilitation, Winthrop Terminal Facility VFD Replacement, Caruso Pump Station Improvements, Gravity Thickener Rehabilitation, Barge Berth & Facility Replacement, Combined Heat & Power Design, less than anticipated community requests for grants and loans, reduction in scope and timing for Electrical Equipment Upgrades, timing of work for North Main Pump Stations VFD Replacements, Digester Sludge Pump Replacement Phase 2, and updated cost estimates for the Reserved Channel Sewer Separation project. 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 award less than budget and updated schedules for the Wachusett Aqueduct Pump Station and Section 89/29 Redundancy Phase 1B contracts, timing of Watershed Land purchases, WASM 3 Design due to ongoing redundancy tunnel alternatives review, legal settlement for Carroll Treatment Plant Ultraviolet Construction, and lower than anticipated requests for Local Water System loans. This was partially offset by contractor progress on Section 36/C/S9-A11 Valve and Carroll Water Treatment Plant Existing Facilities Modifications CP-7 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 6/30/2016	\$117.2 million
Unused capacity under the debt cap:	\$1.083 billion
Estimated date for exhausting construction fund without new borrowing:	MAR-17
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper/Revolving loan outstanding:	\$128 million
Commercial paper capacity:	\$350 million
Budgeted FY16 capital spending*:	\$116 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

4th Quarter – FY16

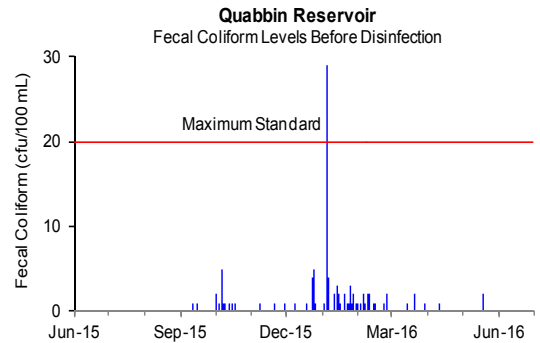
Source Water – Microbial Results

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

All samples collected during the 4th Quarter were below 20 cfu/100ml. **For the current six-month period, 0.06% of the samples have exceeded a count of 20 cfu/100mL, compared to the allowable 10%.**

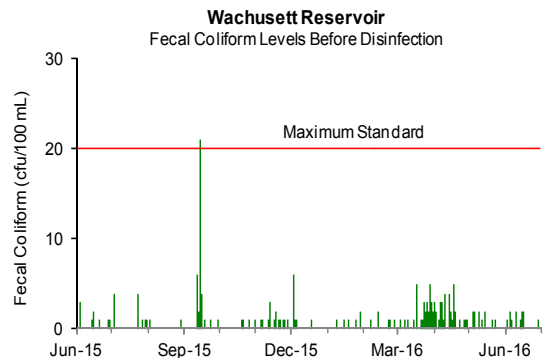


Sample Site: Wachusett Reservoir

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 4th Quarter were below 20 cfu/100ml. **For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100mL.**

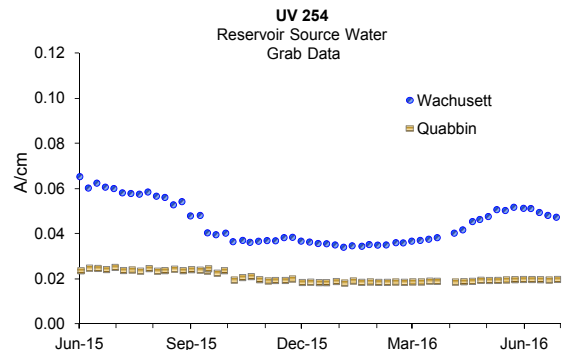


Source Water – UV Absorbance

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 0.020 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.047 A/cm.



Source Water – Turbidity

4th Quarter – FY16

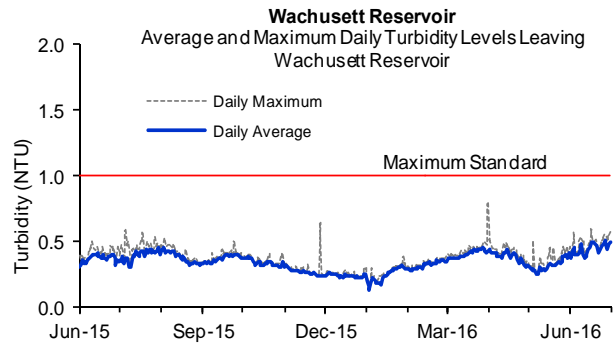
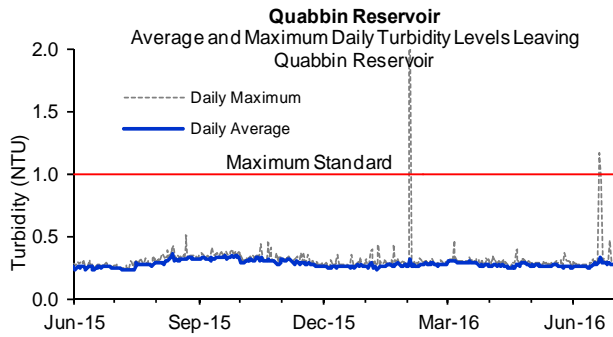
Turbidity is a measure of suspended and colloidal particles including clay, silt, organic and inorganic matter, algae and microorganisms. The effects of turbidity depend on the nature of the matter that causes the turbidity. High levels of particulate matter may have a higher disinfectant demand or may 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 Brutsch Water Treatment Facility (BWTF) 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.

•On June 20, valve operations being performed at Winsor Power Station created a short term turbidity spike at BWTF. The online turbidity exceeded 1 NTU for 15 minutes and grab samples confirmed the elevated turbidity. During this event, CT was met, disinfection was maintained, and all daily samples taken at Ludlow Monitoring Station were absent of total coliform. There was no regulatory impact.

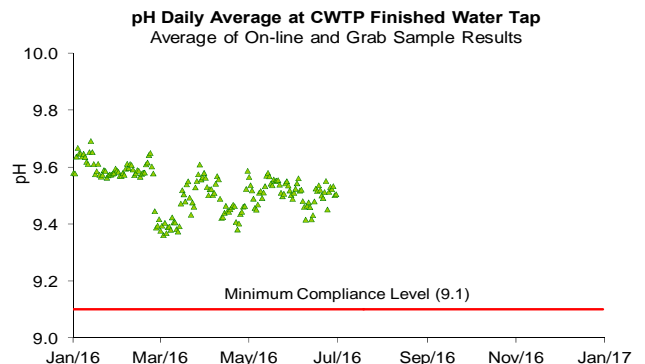
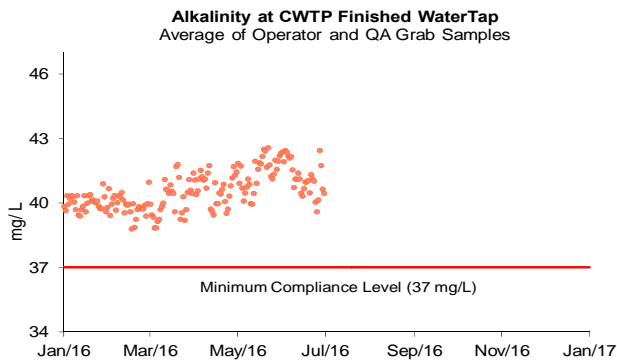


Treated Water – pH and Alkalinity Compliance

MWRA adjusts the alkalinity and pH of Wachusett water at CWTP 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 June 8 and 9, 2016. Distribution system sample pH ranged from 9.4 to 9.6 and alkalinity ranged from 42 to 44 mg/L. No sample results were below DEP limits for this quarter.



Treated Water – Disinfection Effectiveness

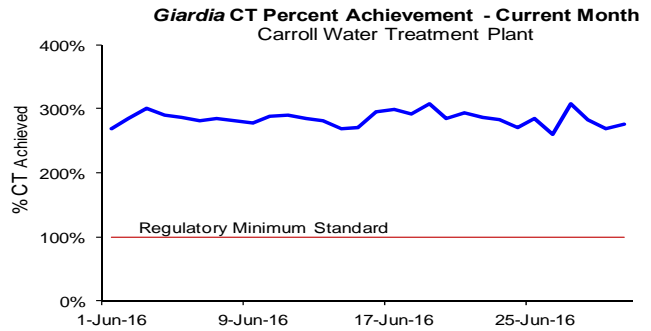
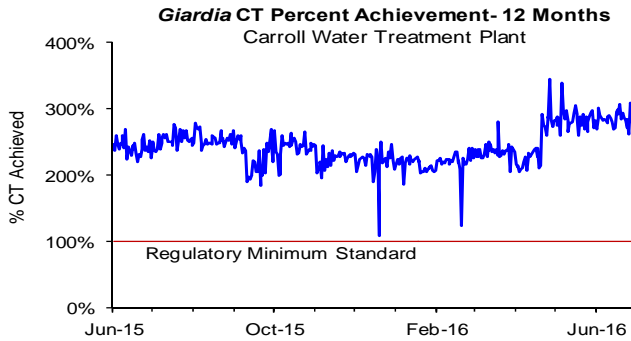
4th Quarter – FY16

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.

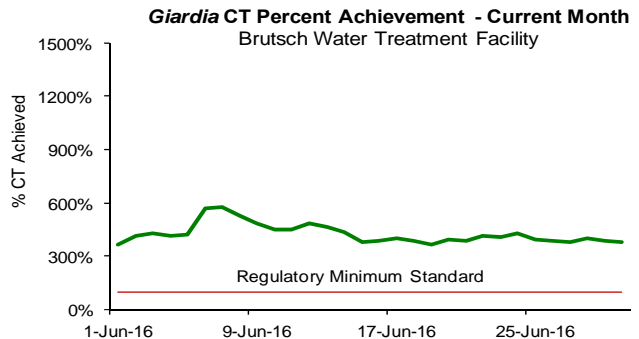
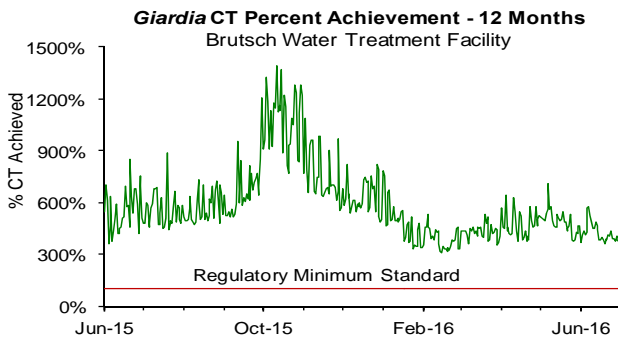
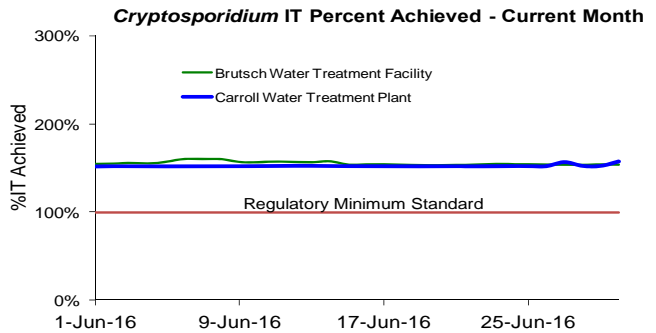
Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 1.2 to 1.9 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%.
- On May 5 and May 11, CWTP was shut down and restarted for routine maintenance. A small amount of off-spec water was generated during these events.
- On May 30, CWTP staff shut down and restarted the plant when a SCADA control card for the CWTP water pumps failed.
- On June 3, a turbine trip at Cosgrove caused the loss of vacuum in the ozone contactors at the CWTP plant, triggering a shut down and restart of the plant. A small amount of off-spec water was generated during this event.
- There was no regulatory impact during the plant shutdowns and startups.



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

- The chlorine dose at BWTF 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 BWTF ranged from 1.3 to 1.6 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%.



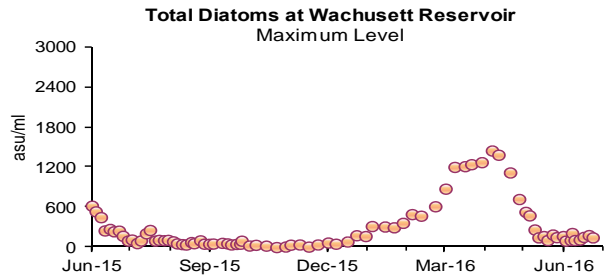
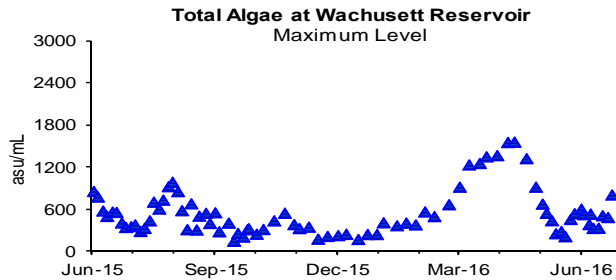
Source Water - Algae

4th 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 4th Quarter, nine complaints which may be related to algae were reported from local water departments.



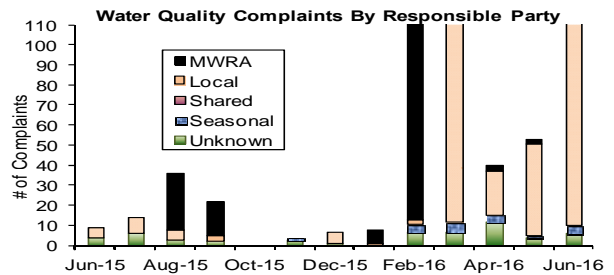
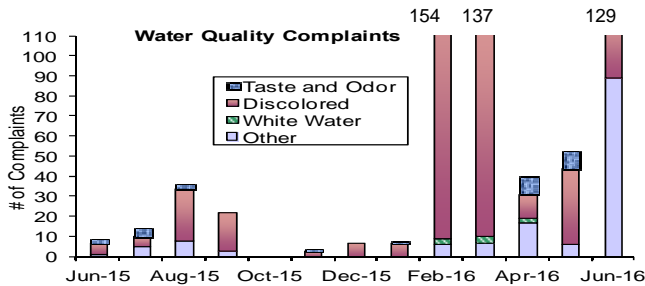
Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 182 complaints during the quarter compared to 36 complaints for 4th Quarter of FY15. Of these complaints, 71 were for “discolored water” and 16 were for “taste and odor”, and 95 were for “other”. Of these complaints, 164 were local community issues, 2 were MWRA related, 6 were seasonal in nature, and 10 were unknown in origin.

- On May 26, Stoughton reported twelve discolored water complaints due to the local Water Department performing hydrant flushing.
- On June 2, Belmont reported twenty discolored water complaints due to a local main break.
- On June 7, Everett reported eighty no water complaints when the town shut down a local water main to repair a leak. The water main was reactivated shortly afterwards.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

4th 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 4th Quarter, none of the 6,202 community samples submitted to MWRA labs for analysis tested positive for total coliform. None of the 1,998 MWRA samples tested positive for total coliform. No sample tested positive for *E. coli*. Only 0.6% of the samples had a 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	388	0 (0%)	0		1.96	2.36
		Shared Community/MWRA sites	1610	0 (0%)	0		0.04	2.07
		Total: MWRA	1998	0 (0%)	0		0.04	2.14
Fully Served		ARLINGTON	169	0 (0%)	0		0.03	1.85
		BELMONT	104	0 (0%)	0		0.08	2.02
		BOSTON	780	0 (0%)	0		1.79	2.29
		BROOKLINE	223	0 (0%)	0		0.95	2.06
		CHELSEA	169	0 (0%)	0		1.38	1.95
		DEER ISLAND	52	0 (0%)	0		1.94	2.05
		EVERETT	169	0 (0%)	0		0.15	1.99
		FRAMINGHAM	234	0 (0%)	0		0.54	2.12
		LEXINGTON	117	0 (0%)	0		1.79	2.21
		LYNNFIELD	18	0 (0%)	0		0.75	1.64
		MALDEN	234	0 (0%)	0		0.04	1.99
		MARLBHEAD	72	0 (0%)	0		0.87	2.02
		MEDFORD	221	0 (0%)	0		1.13	1.87
		MELROSE	117	0 (0%)	0		0.93	1.91
		MILTON	100	0 (0%)	0		0.41	1.94
		NAHANT	30	0 (0%)	0		0.03	1.91
		NEWTON	276	0 (0%)	0		0.38	2.08
		NORTHBOROUGH	48	0 (0%)	0		1.65	2.14
		NORWOOD	99	0 (0%)	0		0.89	2.02
		QUINCY	299	0 (0%)	0		0.38	2.04
		READING	130	0 (0%)	0		0.23	1.83
		REVERE	180	0 (0%)	0		1.58	2.08
		SAUGUS	104	0 (0%)	0		1.36	1.83
		SOMERVILLE	275	0 (0%)	0		1.15	2.09
		SOUTHBOROUGH	30	0 (0%)	0		0.09	1.92
		STONEHAM	91	0 (0%)	0		1.24	2.08
		SWAMPSCOTT	54	0 (0%)	0		1.56	2.02
		WALTHAM	216	0 (0%)	0		1.24	2.09
		WATERTOWN	130	0 (0%)	0		1.09	2.08
		WESTBORO HOSPITAL	15	0 (0%)	0		0.09	0.69
		WESTON	48	0 (0%)	0		1.92	2.31
		WINTHROP	72	0 (0%)	0		0.89	2.01
		Total: Fully Served	4876	0 (0%)				
CVA & Partially Served		BEDFORD	53	0 (0%)	0		0.58	1.86
		CANTON	87	0 (0%)	0		0.13	1.15
		HANSCOM AFB	27	0 (0%)	0		0.42	2.09
		MARLBOROUGH	125	0 (0%)	0		0.70	2.61
		NEEDHAM	123	0 (0%)	0		0.11	0.93
		PEABODY	234	0 (0%)	0		1.47	2.06
		WAKEFIELD	144	0 (0%)	0		0.51	1.62
		WELLESLEY	113	0 (0%)	0		0.05	0.85
		WILMINGTON	86	0 (0%)	0		1.16	2.02
		WINCHESTER	91	0 (0%)	0		0.23	2.11
		WOBBURN	195	0 (0%)	0		0.03	1.04
	c	SOUTH HADLEY FD1	48	0 (0%)	0		0.11	0.55
	Total: CVA & Partially Served	1326	0 (0%)					
	Total: Community Samples	6202	0 (0.00%)					

(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

4th 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 locational running annual average (LRAA) standard is 80 µg/L for TTHMs and 60 µg/L for HAA5s.

The locational running annual average at each individual sampling location must be below the standard. The charts below show the highest and lowest single values for all sites, and the LRAA of the highest location each quarter.

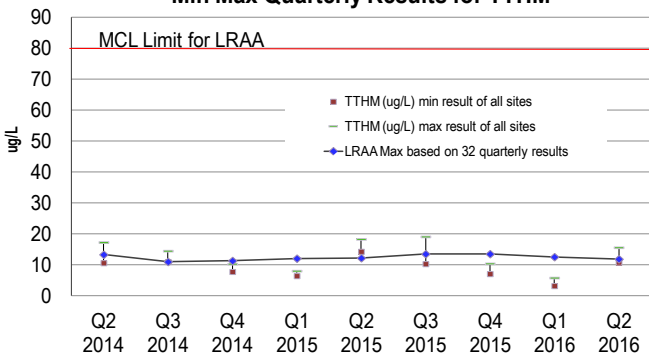
Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results. The chart below combines all three CVA communities data (Chicopee, Wilbraham and South Hadley FD1).

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.

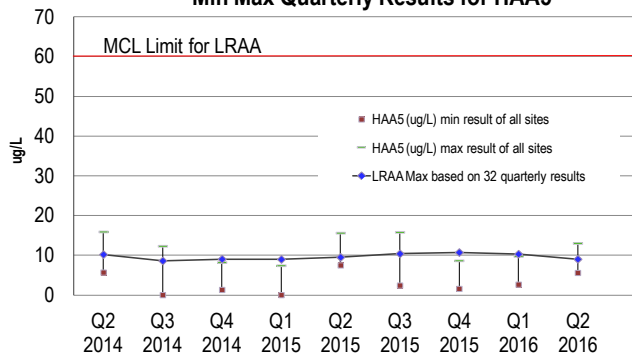
The LRAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The Max LRAA in the quarter for TTHMs = 11.9 µg/L; HAA5s = 9.0 µg/L. The current RAA for Bromate = 0.0 µg/L. CVA's DBP levels continue to be below current standards.

MetroBoston Disinfection By-Products

Min Max Quarterly Results for TTHM

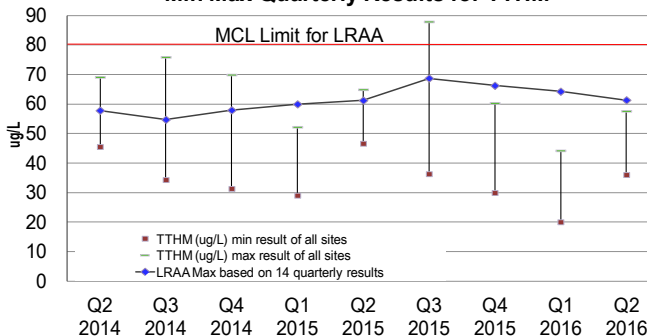


Min Max Quarterly Results for HAA5

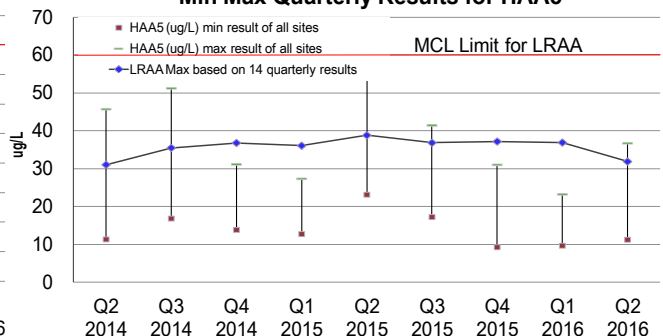


CVA Disinfection By-Products (Combined Results)

Min Max Quarterly Results for TTHM



Min Max Quarterly Results for HAA5



Water Supply and Source Water Management

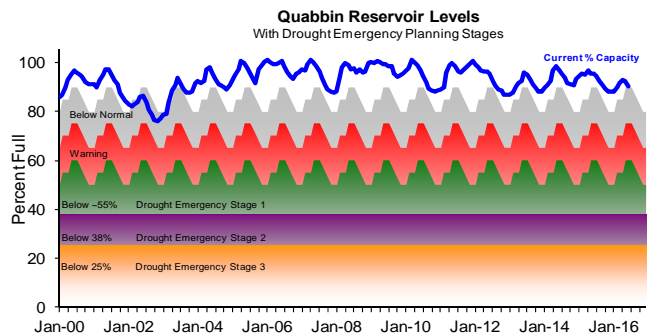
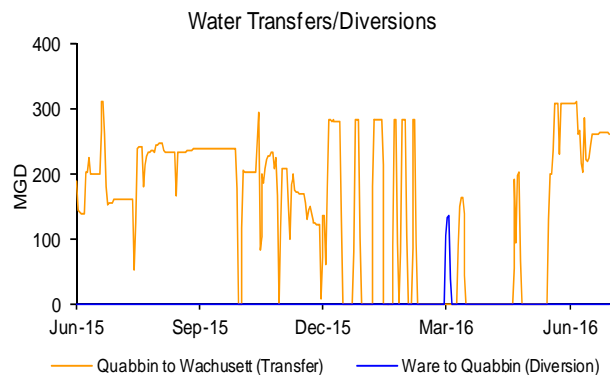
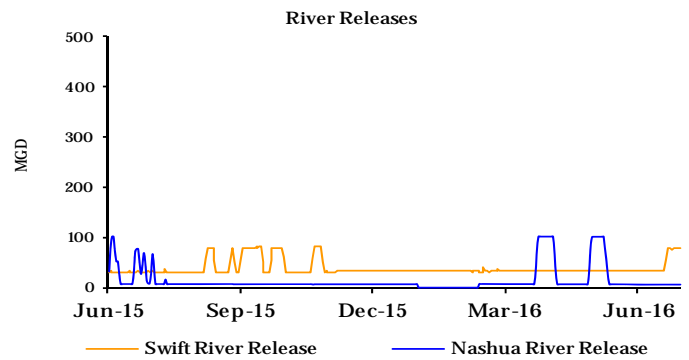
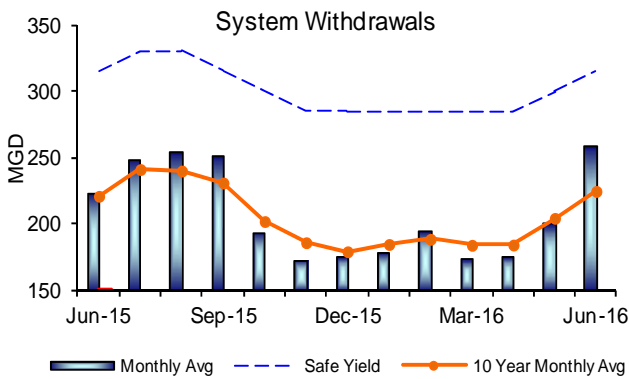
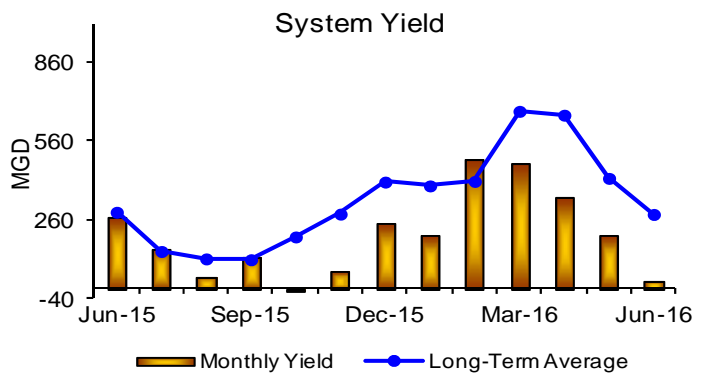
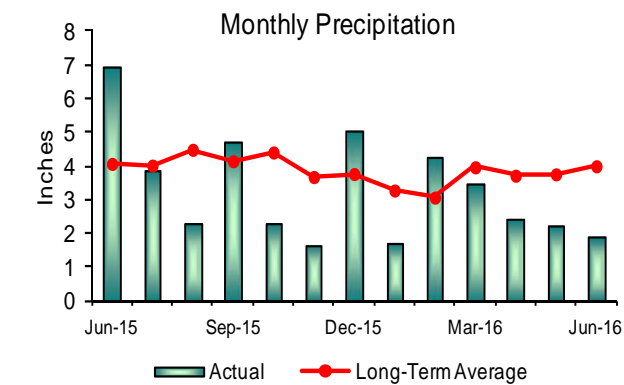
4th Quarter – FY16

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 remained within the normal operating range for this period of the year. The volume of the Quabbin Reservoir was at 90.2% as of June 30, 2016; a 1.5% decrease for the quarter, which represents a reduction of more than 6.5 billion gallons of storage. Yield and precipitation for the quarter were below quarterly long term averages. System withdrawal continues to be below its long-term average.



WASTEWATER QUALITY

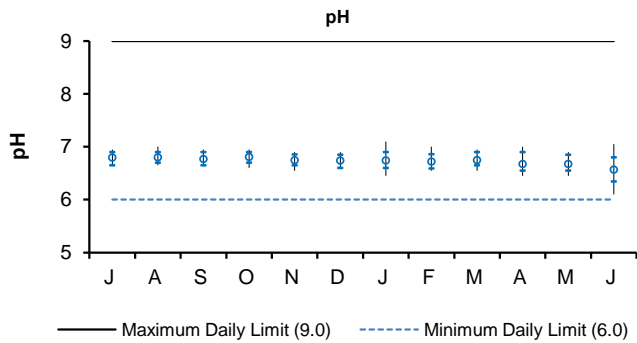
NPDES Permit Compliance: Deer Island Treatment Plant

4th Quarter - FY16

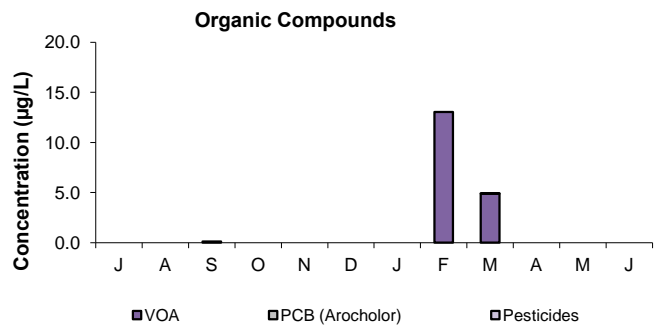
NPDES Permit Limits

Effluent Characteristics		Units	Limits	April	May	June	4th Quarter Violations	FY16 YTD Violations
Dry Day Flow:		mgd	436	264.6	263.6	261.1	0	0
cBOD:	Monthly Average	mg/L	25	5.8	4.9	5.5	0	0
	Weekly Average	mg/L	40	6.9	6.0	6.3	0	0
TSS:	Monthly Average	mg/L	30	10.7	7.1	8.9	0	0
	Weekly Average	mg/L	45	13.6	7.1	10.2	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	6	6	7	0	0
	Weekly Geometric Mean	col/100mL	14000	11	20	14	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	6.5-7.0	6.0-7.0	6.1-7.1	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	100	100	100	0	0
	Inland Silverside	%	≥1.5	50	100	50	0	0

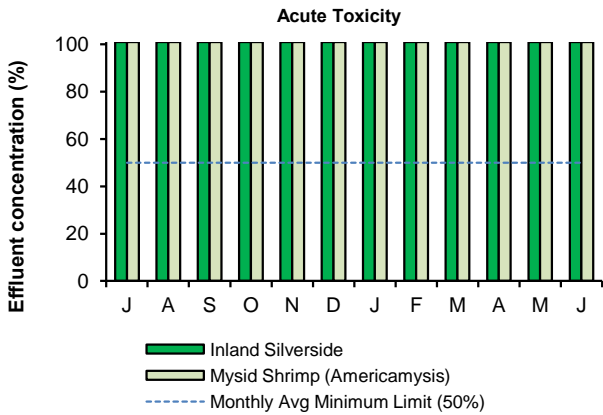
There have been no permit violations in FY16 to date at the Deer Island Treatment Plant.



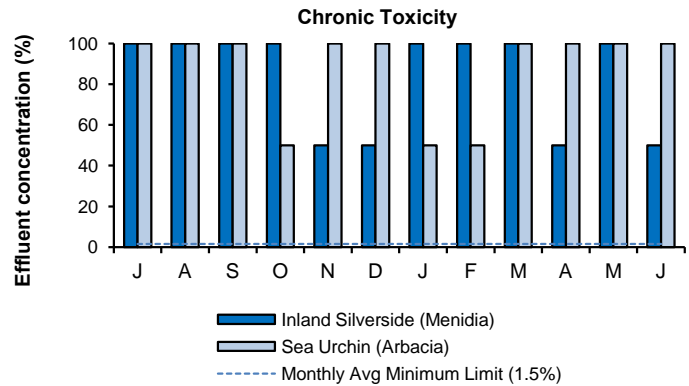
pH is a measure of alkalinity or acidity. Fluctuations in effluent pH are unlikely to impact on marine environments, which have significant buffering capacity. Because of the pure oxygen used in the activated sludge process, effluent pH tends to be at the lower end of the permit-required range. All pH measurements for the 4th 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 4th 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 4th 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 4th Quarter for both the inland silverside and sea urchin.

NPDES Permit Compliance: Clinton Wastewater Treatment Plant
4th Quarter - FY16

NPDES Permit Limits

Effluent Characteristics	Units	Limits	April	May	June	4th Quarter Violations	FY16 YTD Violations	
Flow:	mgd	3.01	2.56	2.59	2.54	0	0	
BOD:	Monthly Average:	mg/L	2.5	2.0	1.7	0	0	
	Weekly Average:	mg/L	3.1	2.3	2.3	0	0	
TSS:	Monthly Average:	mg/L	4.6	2.7	3.9	0	0	
	Weekly Average:	mg/L	5.9	4.3	4.2	0	0	
pH:	SU	6.5-8.3	7.2-7.5	6.5-7.5	7.2-7.6	0	0	
Dissolved Oxygen:	Daily Minimum:	mg/L	6	6.9	7.4	0	0	
Fecal Coliform:	Daily Geometric Mean:	col/100mL	400	5	4	6	0	0
	Monthly Geometric Mean:	col/100mL	200	3	3	3	0	0
TCR:	Monthly Average:	ug/L	50	0	0.0	0.2	0	0
	Daily Maximum:	ug/L	50	6.7	0.0	6.7	0	0
Total Ammonia Nitrogen: November 1 - March 31								
	Monthly Average:	mg/L	2.0	0.00	0.00	0.01	0	0
	Daily Maximum:	mg/L	3.0	0.00	0.00	0.04	0	0
Copper:	Monthly Average:	ug/L	20	5.8	6.1	9.2	0	0
Phosphorus: May 1 - Oct 31								
	Monthly Average:	mg/L	1.0	--	0.33	0.38	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.

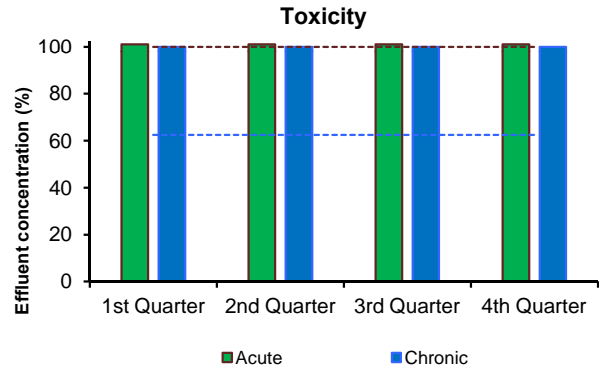
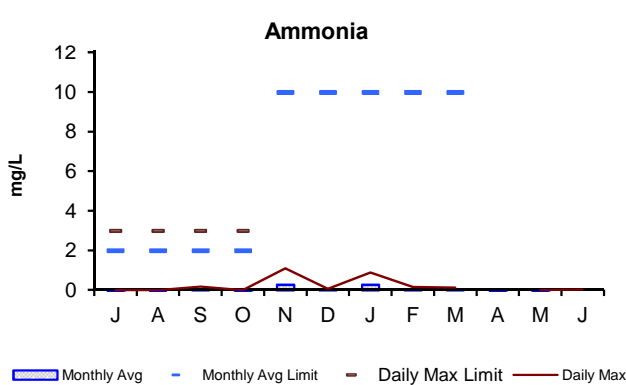
1st Quarter: There had been no permit violations in the first quarter.

2nd Quarter: There have been no permit violations in the second quarter.

3rd Quarter: There had been no permit violations in the third quarter.

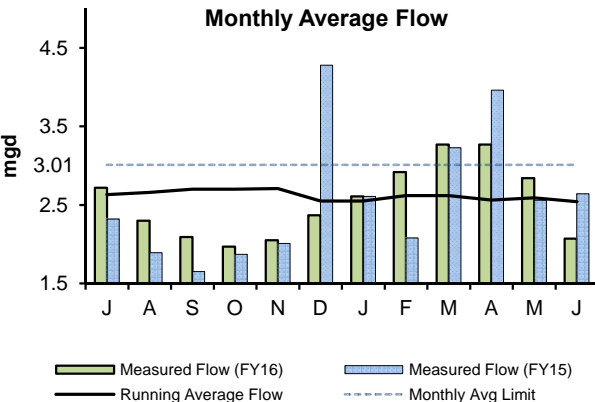
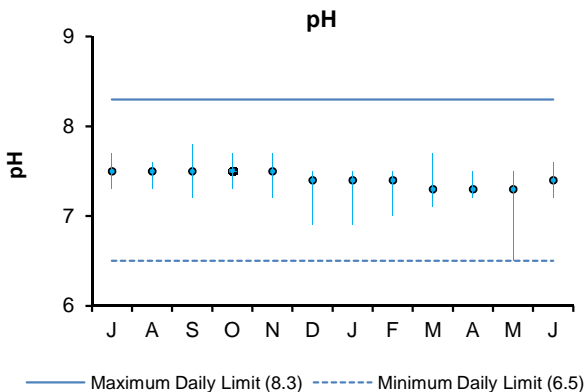
4th Quarter: There have been no permit violations in the fourth quarter.

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



The 4th Quarter's monthly average and daily maximum concentrations were below the permit limits. The monthly average and daily maximum limits for the 4th Quarter are 2 mg/L and 3 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 4th Quarter.



pH is a measure of the alkalinity or acidity of the effluent. All daily pH results for the 4th 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. April's high flow did not cause the running annual average to exceed permit limits this quarter.

COMMUNITY FLOWS AND PROGRAMS

Total Water Use MWRA Core Customers 4th Quarter - FY16

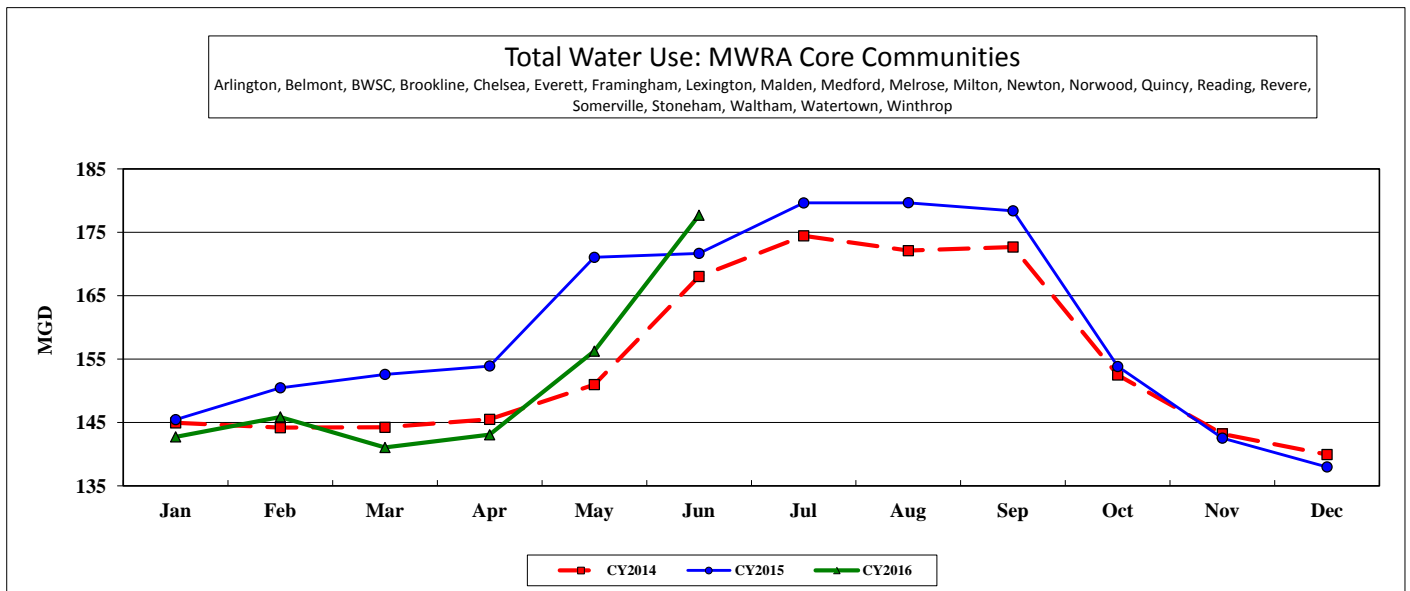
Water Supplied: MWRA Fully Served Core Communities*

* Receive 100% MWRA Water Service

YTD CHANGES (CY16 vs. CY15)
Core Communities Water Supplied
-3.6%

MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Average
CY2014	144.952	144.193	144.251	145.510	150.994	168.049	174.461	172.119	172.696	152.513	143.221	139.960	144.474	154.461
CY2015	145.466	150.488	152.603	153.932	171.068	171.693	179.652	179.689	178.407	153.846	142.547	138.005	157.600	159.839
CY2016	142.748	145.901	141.073	143.079	156.265	177.712							151.085	151.085

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Total	Total
CY2014	4,493.498	4,037.400	4,471.778	4,365.293	4,680.819	5,041.483	5,408.299	5,335.689	5,180.887	4,727.900	4,296.634	4,338.762	13,002.676	56,378.442
CY2015	4,509.447	4,213.655	4,730.692	4,617.960	5,303.114	5,150.793	5,569.210	5,570.350	5,352.198	4,769.225	4,276.398	4,278.141	28,525.660	58,341.183
CY2016	4,425.193	4,231.133	4,373.264	4,292.372	4,844.214	5,331.365							27,497.542	27,497.542



The June 2016 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 2016 water use will be used to allocate the FY18 water utility rate revenue requirement.

June 2016 water supplied of 236.8 mgd (for all revenue generating users) is up 19.2 mgd or 8.8% compared to June 2015. June 2016 water use includes 3.9 mgd provided to the City of Cambridge.

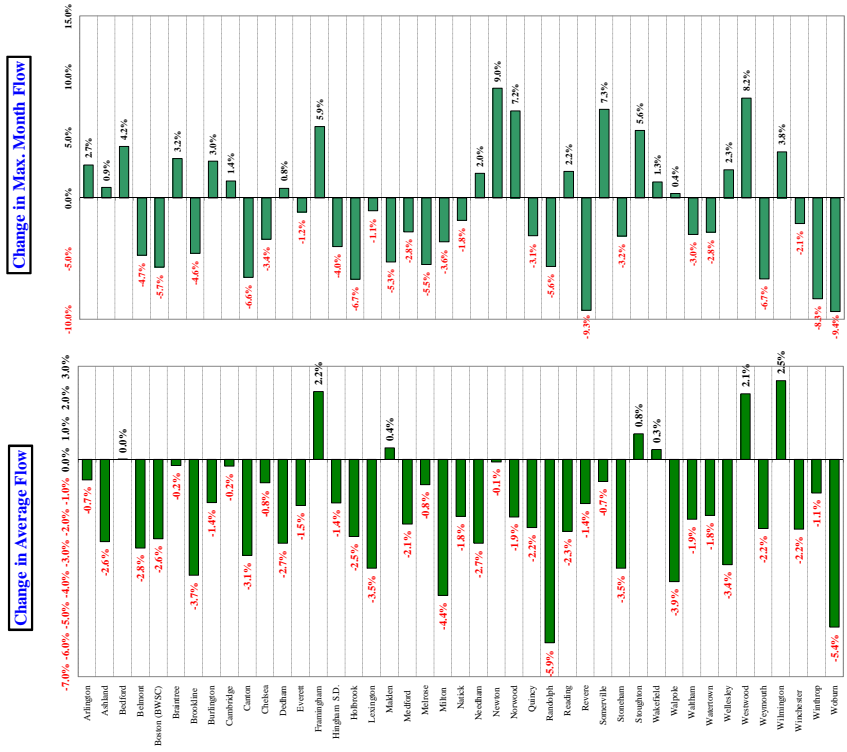
System-wide year to date consumption for (for all revenue generating users) CY16 remains lower than CY15 with 187.1 mgd being supplied to MWRA customers through June. This is 3.3 mgd lower than CY15, and is a decrease of 1.8%.

Community Wastewater Flows

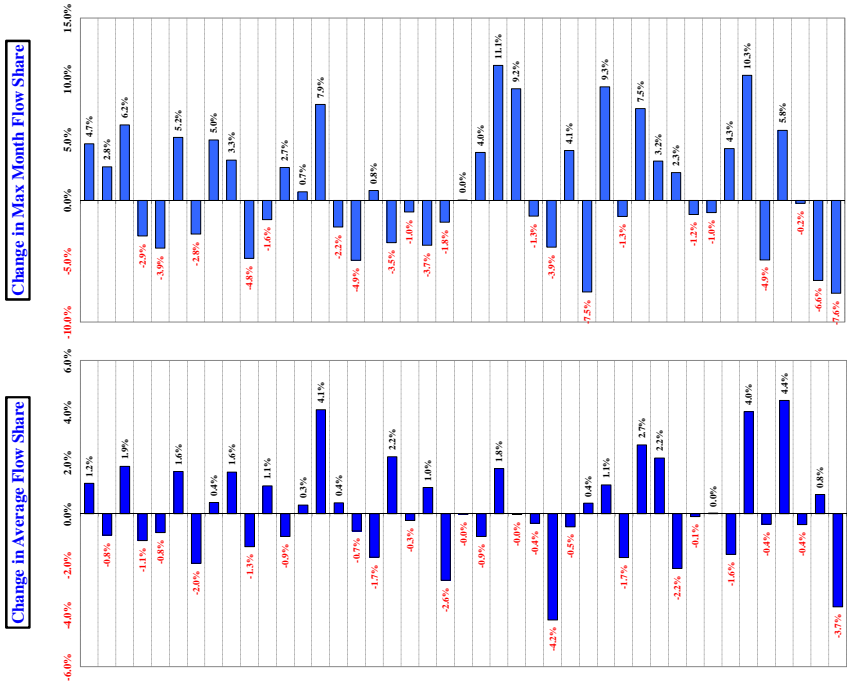
4th Quarter - FY16

How Projected CY2016 Community Wastewater Flows Could Effect FY2018 Sewer Assessments 1.2-3

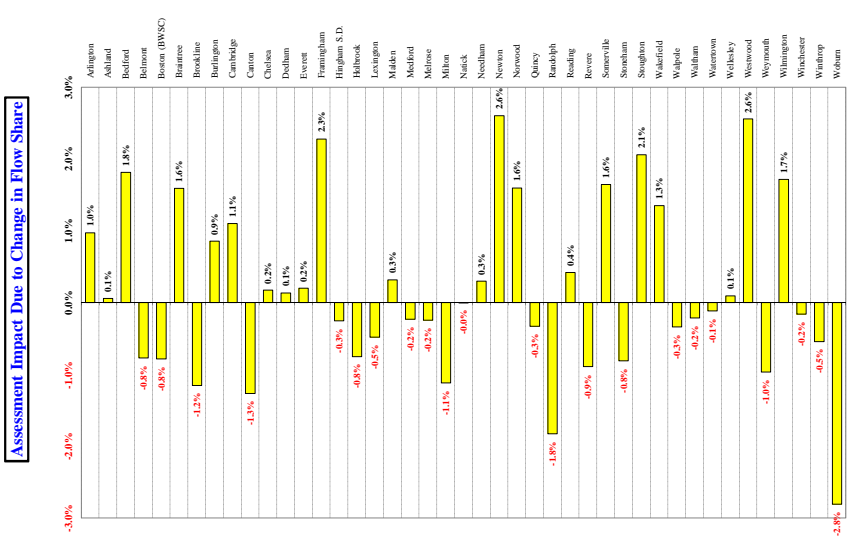
The flow components of FY2018 sewer assessments will be calculated using a 3-year average of CY2014 to CY2016 wastewater flows compared to FY2017 assessments that used a 3-year average of CY2013 to CY2015 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2014 to CY2016 flow share compared to CY2013 to CY2015 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.



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 CY2013 to CY2016 average wastewater flows as of 08/05/16. Flow data is preliminary and subject to change pending additional MWRA and community review.

³ CY2013 to June CY2016 wastewater flows based on actual meter data. July to December 2016 flows based on the average of the prior three years.

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

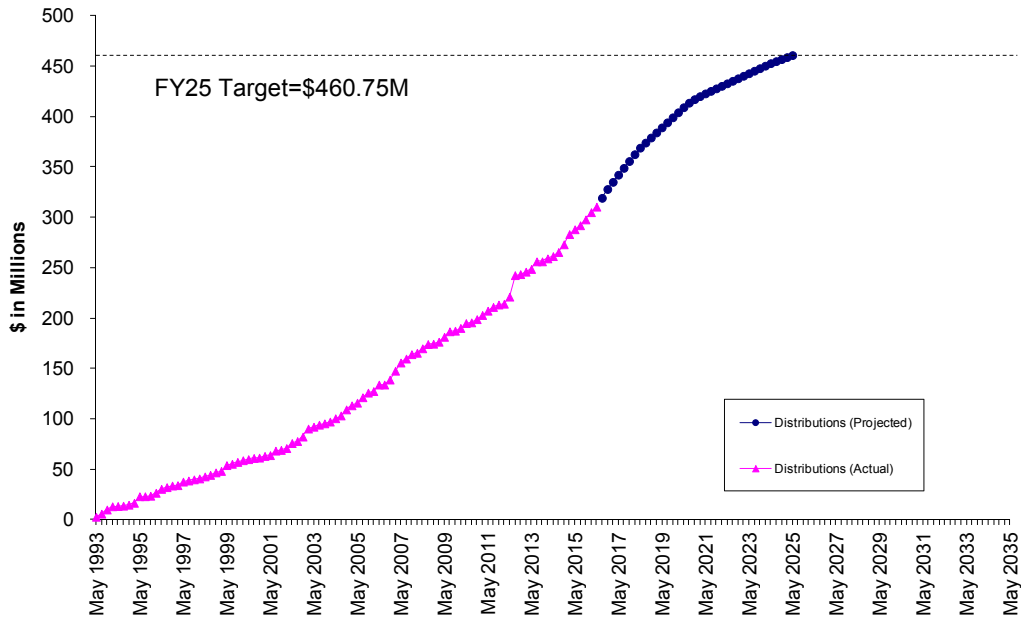
Community Support Programs

4th Quarter – FY16

Infiltration/Inflow Local Financial Assistance Program

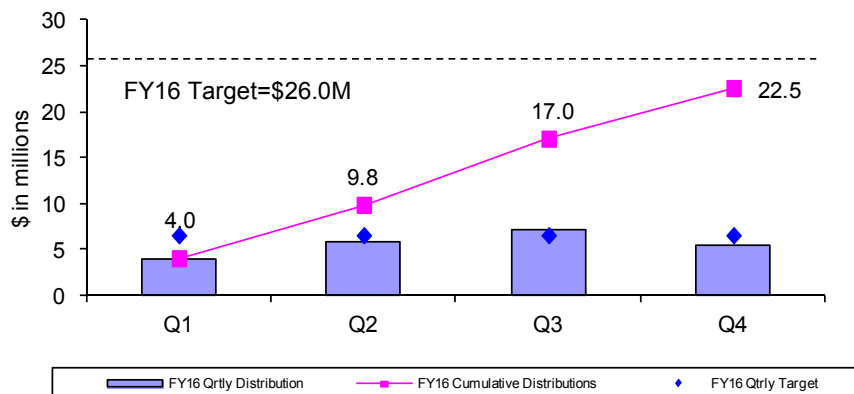
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$460.75 million in grants and interest-free loans (average of about \$14 million per year from FY93 through FY25) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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 4th Quarter of FY16, \$5.5 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Burlington, Chelsea, Dedham, Milton, Quincy, Westwood and Winthrop. Total grant/loan distribution for FY16 is \$22.4 million. From FY93 through the 4th Quarter of FY16, all 43 member sewer communities have participated in the program and more than \$310 million has been distributed to fund 508 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

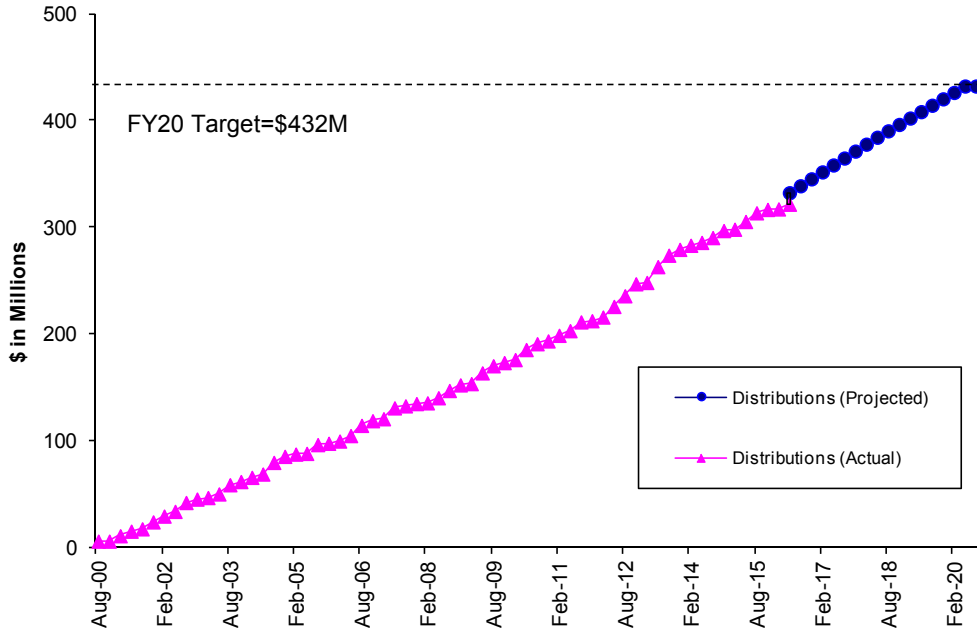


Community Support Programs 4th Quarter – FY16

Water Local Pipeline and Water System Assistance Programs

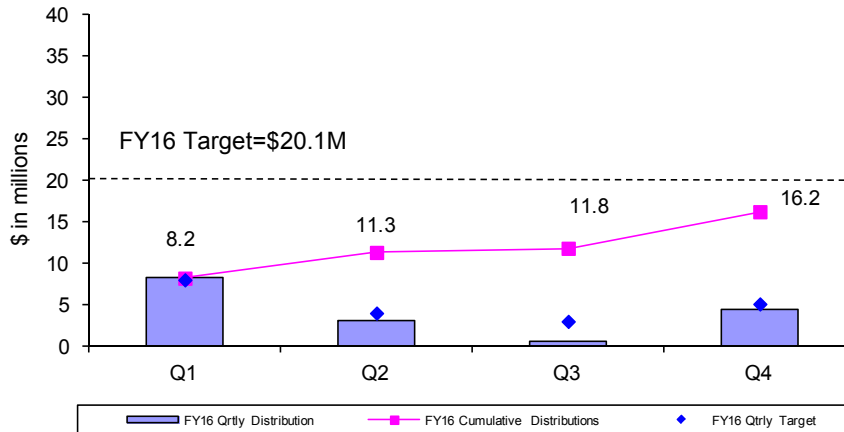
MWRA's Local Pipeline and Water System Assistance Programs (LPAP and LWSAP) provide \$432 million in interest-free loans (an average of about \$22 million per year from FY01 through FY20) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution 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 4th Quarter of FY16, \$4.4 million in interest-free loans was distributed to fund local water projects in Arlington, Chelsea, Lynnfield, Milton, Quincy and Somerville. Total loan distribution for FY16 is \$16.2 million. From FY01 through the 4th Quarter of FY16, more than \$322 million has been distributed to fund 366 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.

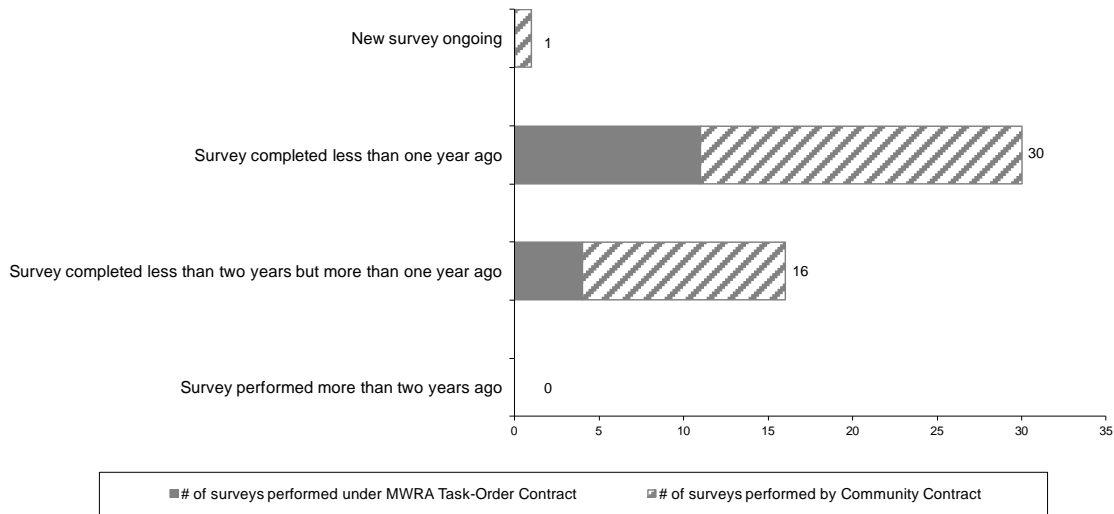
FY16 Quarterly Distributions of Water Loans



Community Support Programs 4th 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 4th Quarter of FY16, all member water communities were in compliance with MWRA’s Leak Detection Regulation.



Community Water Conservation Outreach

MWRA’s Community Water Conservation Program helps to maintain average water demand below the regional water system’s safe yield of 300 mgd. Current 5-year average water demand is less than 210 mgd. The local Water Conservation Program includes distribution of water conservation education brochures (indoor and outdoor bill-stuffers) and low-flow water fixtures and related materials (shower heads, faucet aerators, toilet leak detection dye tabs, and instructions), all at no cost to member communities or individual customers. The Program’s annual budget is \$25,000 for printing and purchase of materials. Annual distribution targets and totals are provided in the table below. Distributions of water conservation materials are made based on requests from member communities and individual customers.

	Annual Target	Q1	Q2	Q3	Q4	Annual Total
Educational Brochures	100,000	1,066	19,283	104,102	3,008	127,459
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	2,924	2,210	3,158	2,107	10,399
Toilet Leak Detection Dye Tablets	-----	1,688	2,446	1,553	1,108	6,795

BUSINESS SERVICES

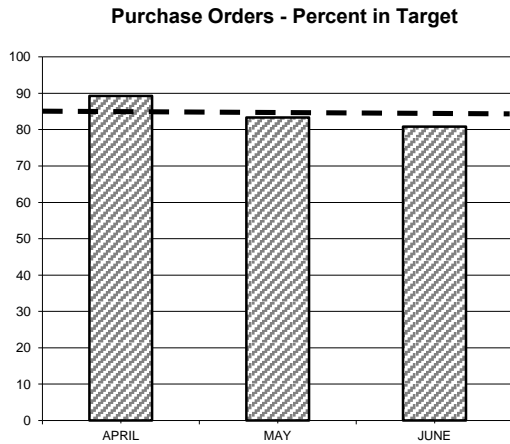
Procurement: Purchasing and Contracts

4th Quarter - FY16

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

Outcome: Processed 84% of purchase orders within target; Average Processing Time was 5.46 days vs. 6.23 days in Qtr 4 of FY15. Processed 80% (12 of 15) of contracts within target timeframes; Average Processing Time was 92 days vs. 74 days in Qtr 4 of FY15.

Purchasing



	No.	TARGET	PERCENT IN TARGET
\$0 - \$500	927	3 DAYS	71.5%
\$500 - \$2K	780	7 DAYS	91.9%
\$2K - \$5K	396	10 DAYS	97.4%
\$5K - \$10K	74	25 DAYS	89.1%
\$10K - \$25K	72	30 DAYS	93.0%
\$25K - \$50K	16	60 DAYS	68.7%
Over \$50K	38	90 DAYS	81.5%

The Purchasing Unit processed 2303 purchase orders, 308 less than the 2611 processed in Qtr 4 of FY15 for a total value of \$10,425,430 versus a dollar value of \$10,878,750 in Qtr 4 of FY15.

The purchase order processing target was not met for the \$0 - \$500 due to vendor sourcing and the over \$25k-\$50k due to bid review and staff summary requirements.

Contracts, Change Orders and Amendments

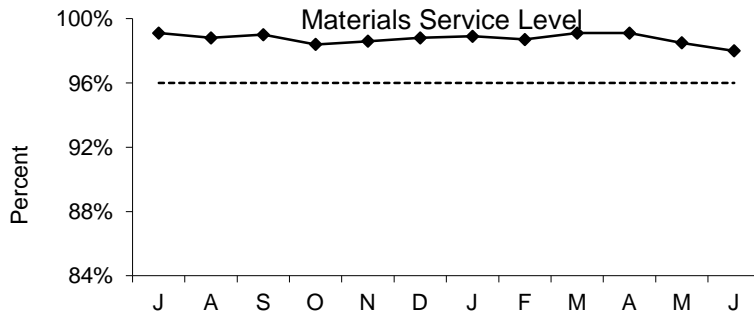
Three contracts were not processed within the target timeframes; one due to specification changes by the project manager, another due to revisions to schedule and compensation tables and the third due to a delay in the receipt of a certificate of authorization by the consultant.

Procurement processed fifteen contracts with a value of \$21,331,076 and fourteen amendments with a value of \$2,217,709. Twenty three change orders were executed during the period. The dollar value of all non-credit change orders during Q4 FY16 was \$2,907,820 and the value of credit change orders was (\$557,847).

Staff reviewed 50 proposed change orders and 40 draft change orders.

Materials Management

4th Quarter, FY16



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 8,837 (98.5%) of the 8,973 items requested in Q4 from the inventory locations for a total dollar value of \$1,730,550

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 – elbows, couplings, butterfly valves, clamp motor, relay, vfd chiller and transducer for HVAC; grease, pressure release valve, bushings and lithium batteries for Residuals; temperature switch, o2 sensors, wire transmitters and calibration fittings for I&C; calibration gas, PVC tees and cord caps for Liquid Train; fan belts, flow meter and turbine oil for Power & Pump.
- Chelsea – power steering hoses, exhaust pipes, condensers and wiper arms for Fleet Services; solenoid valve, dampeners, fan belts, sump pump, media cones and heater for Work Order Coordination Group; bearings and pump gaskets for Wastewater Operations; copper tubing, labeling tape, motors, controller, transformer and wire tray cables for Maintenance.
- Southboro – clips for Facilities Maintenance; reader glasses and toner for Administration; Lead test kits for Lab.

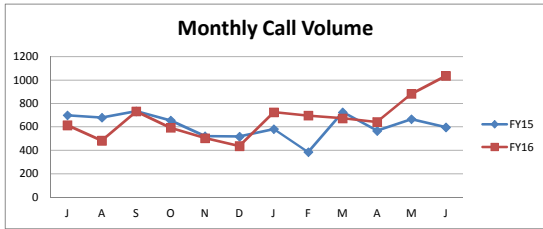
Property Pass Program:

- Three audits were conducted during Q4.
- Numerous obsolete projectors, laptops, keyboards, printers and monitors have been received into Property Pass as surplus. Disposition is being handled as part of our ongoing recycling efforts.
- Scrap revenue received for Q4 amounted to \$8,020. Year to date revenue received amounted to \$33,117.
- Revenue received from online auctions held during Q4 amounted to \$91,560. Year to date revenue received amounted to \$287,691.

Items	Base Value July 15	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory	7,663,973	7,493,366	-108,512
Spare Parts Inventory Value	8,263,059	8,466,045	-378,049
Total Inventory Value	15,927,032	15,959,411	-486,561

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.

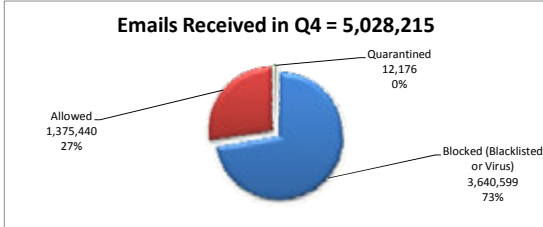
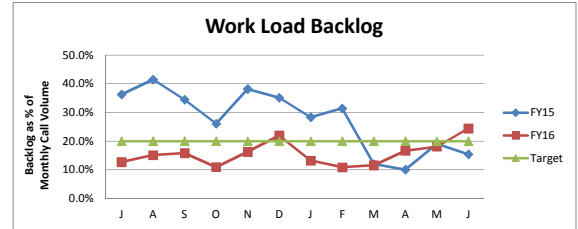
MIS Program 4th Quarter FY16



Performance and Backlog

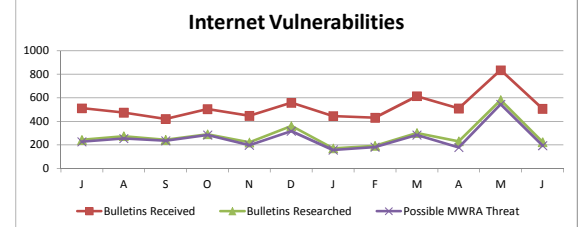
Call Volume: Peaked in June. FY16-Q4 call volume increased by 40% from FY15-Q4 last year.

Call Backlog: Peaked in June. FY16-Q4 backlog average is 0.3% below the targeted benchmark of 20%.



Information Security

During Q4, pushed security fixes/updates to desktops/servers to protect against 187 vulnerabilities. LANDesk Antivirus quarantined 28 distinct viruses from 33 PCs. PCs are current with anti-virus providers' signatures for all known malware.



Infrastructure:

Citrix Mobile Application Design and Development: Citrix infrastructure has been moved out of Proof of Concept and into production. 246 iPhones/iPads are being managed with XenMobile Mobile Device Management. Citrix Receiver is delivering 29 business applications to mobile devices. Sharefile is being used for file transfer with external entities.

Applications/Training/Records Center:

e-Construction Project: 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. MWRA is planning on piloting an e-Construction system on the Chelsea Creek Headworks rehabilitation project to assess tools and functionalities and develop workflows.

Library Catalog Replacement Project (InMagic): Completed all migration tasks from the old catalog to Genie (Administrative module). Installed TextWorks user administrator query/database/publishing tool on library staff PCs. Created a search widget on the library page to search the Massachusetts Library databases and sample RSS feeds using the EPA's water news source.

Talent Acquisition Application: Significant work has been done on the new Talent Acquisition Application of the job application module scheduled to be implemented in Q1. Continued working with Subject Matter Expert and stakeholders to set up user configurations, and email and job templates. User job-aids were developed; users were trained. Participated in a demo of the employee application process for the Union Officers. Modified the new annual Applicant Flow Log report and created documentation on how to export data from ApplicantPro and load it into the reporting database that will run Affirmative Action reports. Conducted demos for Senior and Hiring managers from all sites.

Miscellaneous Lawson Support: 1) Worked with Infor Consulting Services on the triggers that will be used for the Lawson Maximo interfaces. 2) Completed submission of new 1095c electronic file to the IRS. Successfully, performed a dry run for weekly payroll processing using the new Century Bank account numbers. Accounts Payable payments went live 6/28; Payroll will go live 7/5. 3) Supported FY-end tasks such as validating employee health and basic life insurance rate changes effective 6/1. Performed preliminary fiscal year end reports for Federal Government Equal Opportunity and Veterans reports for AACU in preparation for running the first week of July, Tested and installed BSI Tax software cyclical bulletin 10.1 on all three Lawson servers. 4) Implemented warehouse window scanning at Southborough.

Information Security Program: New security awareness training launched in April 2016 encompassing 11 training modules to be completed through 12/2016.

Scada/PI Data Diode Project: The replacement of the existing PI interfaces with data diodes is complete. There were a total of three interfaces completed during this project (Eastern Ops., Transport, and Carroll Water Treatment Plant).

Maximo Upgrade Project: Completed the hardware and base software installation of the new Maximo 7.6 server environment on the development, test, and production servers. Completed initial data merge/migration on the development and the test systems.

Library & Records Center: The Library fulfilled 31 (161 YTD) research requests, provided 77 (770 YTD) periodicals, standards, books & reports, and supported 222 (775 YTD) staff online searches. Research topics included blood lead level in children, dam seepage, watershed data mapping, and pipeline redundancy. The Records Center added 136 (337 YTD) boxes, handled 885 boxes YTD, and attended 2 Records Conservation Board Meetings. Trained 15 staff on records management policy. Distributed disposal lists for 4,146 boxes of which 1,709 were released by departments, and forwarded to Law Division for review.

IT Training: For the quarter, 97 staff attended 19 classes. 35% of the workforce has attended at least one class year-to-date. ITIL Foundation training was held. Crystal Reports – Report Design. LANDesk Boot Camp. Everbridge Dispatcher training classes were offered. 14 Security Awareness training sessions held in Chelsea and Deer Island were attended by 115 staff members. Developed new job-aids for new Audio Visual Equipment installed in Chelsea Conference Rooms.

Legal Matters

4th Quarter - FY16

PROJECT ASSISTANCE

COURT AND ADMINISTRATIVE ORDER

- **Boston Harbor Litigation and CSO:** Provided support on a letter to EPA and DEP providing a written description of MWRA's proposed approaches for its three-year performance assessment of its CSO Long-Term Control Plan and implementation of CSO variance requirements for the Alewife Brook/Upper Mystic River and the Lower Charles River/Charles River Basin; Reviewed draft fact sheets for three-year CSO variance extensions for the Alewife Brook/Upper Mystic River and the Lower Charles River/Charles River Basin; reviewed and filed Semi-Annual Compliance and Progress Report.
- **NPDES:** Reviewed letters to EPA and DEP requesting three-year CSO variance extensions for the Alewife Brook/Upper Mystic River and the Lower Charles River/Charles River Basin. Reviewed MWRA's CSO discharge estimates and rainfall analyses for 2015 submittal to EPA and DEP.
- **Residuals:** Drafted comment letter on the Massachusetts Department of Agricultural Resource's new regulations at 330 CMR 31.00 (Plant Nutrient Application Requirements for Agricultural Land and Land Not Used for Agricultural Land) as they relate to the marketing and use of MWRA's biosolids within Massachusetts.
- **Administrative 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 AND OTHER SUPPORT

- **Memorandum of Agreement:** Drafted Memorandum of Agreement between the Town of Stoneham and MWRA for MWRA's access to and use of town land adjacent to Stoneham High School for the purpose of supporting and completing construction of MWRA Contracts 7478 and 7067 as part of the Northern Intermediate High Pipeline Project.
- **Public Access:** Drafted public access 8(m) permit for Town of Needham and an amendment to the Town of Wellesley's public access 8(m) permit for use of portions of the Sudbury Aqueduct. Drafted 8(m) permit for the Pine Brook Country Club for use of portions of the Weston Aqueduct in Weston, MA.
- **Cosgrove Hydroelectric Facility:** Sent Notice of Termination of the PPA with NGRID for the Cosgrove Facility to allow MWRA to remain in compliance with the safe harbor provisions of U.S. Treasury regulation 1.141-7(f)(3); finalized and executed a successor PPA.
- **Deer Island:** Drafted Amendment No. 1 to the Restated License Agreement with Ogin, Inc., f/k/a FloDesign Wind Turbine Corp., to extend the term until December 31, 2017.
- **McLaughlin Fish Hatchery:** Completed amendments to existing MOA to document additional \$200,000 contribution from MA Fish & Game for the hatchery pipeline project.
- **Licenses:** Provided comments to staff regarding a License Agreement with Inflection Point Solutions, LLC ("IPS") whereby IPS would provide the source code for IPS' software and allow MWRA to modify it to enable MWRA to be compliant with federal reporting requirements; drafted a License with **MaDEP** to allow MaDep to enter MWRA's water supply aqueduct right-of-way located in Northborough and Berlin, Massachusetts, between Whitney Street, Northborough, MA and Belleview Road, Berlin, MA in order to take ground water samples; drafted a license for access over MWRA property on the south and east sides of Building 11 in the Fore River Shipyard.
- **Public Access:** Finalized public access 8(m) permits for: the Town of Needham; an amendment to the Town of Wellesley's public access 8(m) permit for use of portions of the Sudbury Aqueduct; the Town of Wayland for use of portions of the Weston Aqueduct; Babson College and Franklin W. Olin College of Engineering to allow for public access in conjunction with the Town of Needham's 8(m) public access permit.
- **Contract 7335 – Section 4 Webster Avenue Pipeline and Utility Bridge Replacement Project:** Drafted letters to both the construction contractor and the designer reserving MWRA's rights to seek recovery in the event that it is determined that either or both are at fault for the problems which have occurred on the project.
- **Watershed Acquisition:** Reviewed and approved the acquisition in fee of the property of the Deborah Smith Selkow Trust in Sterling, MA. DCR # W-001166.
- **Order of Conditions:** Recorded Order of Conditions DEP No. 297-0383 for Northern Intermediate Pipeline Project in Stoneham, Design Contract 6906.
- **Cross Harbor Cable:** Continued discussions with the U.S. Attorney regarding a draft stipulation for settlement of ACoE's claim of a permit violation for failure to place the cable in the location required by permit.

- **MOA:** Drafted agreement to memorialize amendments to MWRA watershed land acquisition program's debt service payments due to Commonwealth.

MISCELLANEOUS

- Reviewed and approved sixty-five (65) Section 8(m) Permits and two (2) Direct Connect Permits.
- Reviewed and approved a sewer connection agreement (Jancaterino Realty Trust) and a water continuation agreement (Wellesley).

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters

Five demands for arbitration were filed.

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

Matters Concluded

Received an arbitrator's decision in favor of MWRA finding that the MWRA did not violate a collective bargaining agreement when it suspended an employee.

Received a dismissal from the MCAD for lack of probable cause of a charge of discrimination on the basis of age.

SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of June 2016	As of March 2016	As of Dec 2015
Construction/Contract/Bid Protest (other than BHP)	5	5	5
Tort/Labor/Employment	1	2	2
Environmental/Regulatory/Other	2	2	1
Eminent Domain/Real Estate	0	0	0
total – all defensive cases	8	9	8
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>	2	2	2
total – all pending lawsuits	10	11	10
Significant claims not in suit:	0	2	2
Bankruptcy	2	2	2
Wage Garnishment	14	14	13
TRAC/Adjudicatory Appeals	2	3	3
Subpoenas	0	0	0
TOTAL – ALL LITIGATION MATTERS	28	32	30

LITIGATION/TRAC

New Matters There are no new lawsuits to report.

Significant Claim

Not in Court There are no Significant Claims to report.

Significant Developments

MWRA v. NSTAR and HEEC: Counsel for the parties presented their oral arguments upon Defendants' Motion to Dismiss the Complaint on May 3, 2016. Since that date, MWRA and the Defendants have kept the Court aware of developments in the Mass. Department of Public Utilities tariff proceeding including orders of DPU dated May 5, 2016 and June 3, 2016 which relate in part to issues of DPU's primary jurisdiction. On June 28, 2016, the Superior Court

allowed NStar/HEEC's motion to dismiss (without prejudice) and MWRA has timely appealed that dismissal.

Daniel O'Connell's Sons v. MWRA v. Allied Locke: MWRA prepared motion papers to supplement its counterclaim against Daniel O'Connell's Sons and its Third-Party Claim against Allied Locke. MWRA staff arranged for the delivery of the components involved in the second bull sprocket failure to Altran and arranged for testing in June. Met with Altran staff to discuss results of future analysis of second failed sprocket.

MWRA v. Mosby: Completed recovery of sums owed by former employee.

Matters Concluded

Current Employee) v. MWRA: Plaintiff is a current employee assigned as a machinist to MWRA's Southboro facility. Plaintiff alleged that he was denied a promotion in 2011 to a Unit Supervisor position because of his age which at the time was 59 years. Plaintiff further alleged that he was retaliated against by MWRA when he subsequently complained to his union that he was being discriminated against. He alleged that MWRA refused to interview him for two subsequent 2012 job openings in retaliation for making the internal age discrimination complaint. MWRA filed a Motion for Summary Judgment in September 2015. On March 17, 2016, the Court entered Judgment on MWRA's Motion for Summary Judgment, in favor of MWRA. The Court dismissed Plaintiff's Complaint. Plaintiff had until May 17, 2016, to appeal. No appeal was filed.

Antonio Rosa Claim: The personal injury claim of Antonio Rosa has been settled for the total sum of \$25,000. On November 22, 2013, Mr. Rosa was on his bicycle, crossing Griffin Way along Eastern Avenue in Chelsea, when his bicycle and an MWRA vehicle operated by an MWRA employee collided. Mr. Rosa fell from his bicycle and sustained injuries. He received emergency room treatment, treatment from his primary care physician, and approximately six months of chiropractic care. The total settlement included a check issued to East Boston Chiropractic & Rehabilitation Clinic (\$4,400) in exchange for a release of the Clinic's medical lien, and a check for the balance (\$20,600) to Mr. Rosa and his attorneys.

Mark Poli Claim: Mr. Poli slipped on ice and fell while walking his dog at or about the entrance gate to Nut Island in Quincy on December 31, 2012. Poli allegedly suffered a fractured right leg with hardware implementation and a prolonged absence from work and sent an initial notice of claim made on February 12, 2013. On October 7, 2013, Plaintiff's attorney made a settlement demand in the amount of \$275,000. By letter dated October 21, 2013, Risk Management denied Mr. Poli's claim, based on the Recreational Use Statute, G.L. c. 21 §17C. The Statute of Limitations has run as of December 31, 2015, and there was no additional contact from Mr. Poli and/or his attorney. The matter is closed.

Subpoenas

During the Fourth Quarter of FY 2016, no new subpoenas were received and no subpoenas were pending at the end of the Fourth Quarter FY 2016.

Public Records

During the Fourth Quarter of FY 2016, nine public records requests were received and eight public records requests were closed.

TRAC/MISC.

New Appeals

No new cases were received.

Settlement by Agreement of Parties

No cases were settled by Agreement of Parties in the 4th Quarter FY 2016.

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 Decisions

No Tentative Decisions were issued in the 4th Quarter FY 2016.

Final Decisions

One Final Decision was issued in the 4th Quarter FY 2016.

School of the Museum of Fine Arts Boston; MWRA Docket No. 15-01

INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES 4TH Quarter - FY16

Highlights

During the 4th quarter, Internal Audit (IA) completed four construction labor burden reviews and the audit of Fay, Spofford & Thorndike. Completed vendor audits include the Marlboro lease, NEFCo and the 2015 HEEC true-up. A review of the AVL tracking system was performed to verify the AVL status for each vehicle and to ensure all applicable vehicles had an AVL installed. The Maximo work orders system was reviewed to ensure all vehicles with a AVL have a step to reinstall the device after work is performed. IA also prepared a report on a review of the Department of Unemployment Assistance's claims paid for unemployment benefits.

Status of Recommendations

There were 55 recommendations made in FY16. A total of 54 recommendations were closed from prior and current fiscal years.

IA follows-up on open recommendations on a continuous basis. All open recommendations have target dates for implementation. When a recommendation has not been acted on within 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 (issue dates)	Audit Recommendations		
	Total	Closed	Open
Hardware Equipment Management Report (5/22/13)	36	29	7
Follow-Up Report on Fleet Services Activities (12/31/13)	17	13	4
8(m) Permit Fees (11/17/14)	6	4	2
Records Management (12/5/14)	8	6	2
Unmatched Receipts and Accruals (6/30/15)	10	5	5
Halon Inspections at DITP (9/30/15) & Caruso and DeLauri (12/31/15)	18	14	4
Warehouse Cycle Counts at DITP (11/5/15), Southboro (11/6/15) and Chelsea (12/4/15)	25	18	7
Security System Alarms (3/3/16)	3	1	2
AVL Tracking 2016 (5/06/16)	9	3	6
Total Recommendations	132	93	39

Cost Savings

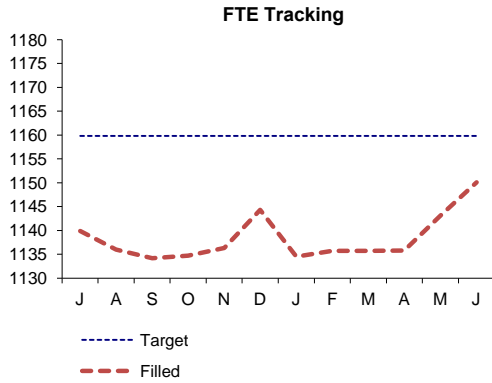
IA's target is to achieve at least \$1 million in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of work in prior years.

Cost Savings	FY12	FY13	FY14	FY15	FY16	TOTAL
Consultants	\$259,245	\$587,314	\$294,225	\$87,605	\$88,312	\$1,316,701
Contractors & Vendors	\$435,760	\$2,153,688	\$415,931	\$1,146,742	\$1,772,422	\$5,924,543
Internal Audits	\$407,350	\$391,083	\$923,370	\$543,471	\$220,929	\$2,486,203
Total	\$1,102,355	\$3,132,085	\$1,633,526	\$1,777,818	\$2,081,663	\$9,727,447

OTHER MANAGEMENT

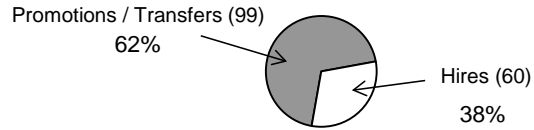
Workforce Management

4th Quarter FY16



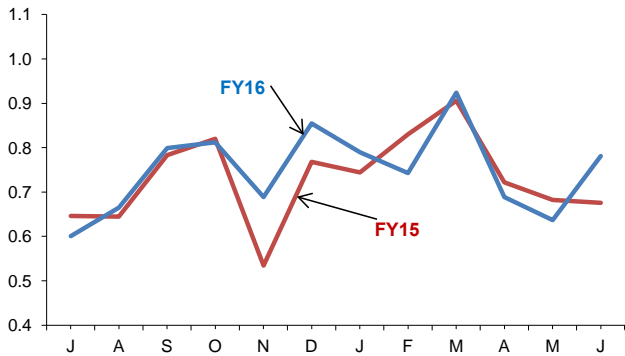
FY16 Target for FTE's = 1159.8
 FTE's as of June 2016 = 1150.1

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	99 (62%)	60 (38%)	159

Average Monthly Sick Leave Usage
 Per Employee



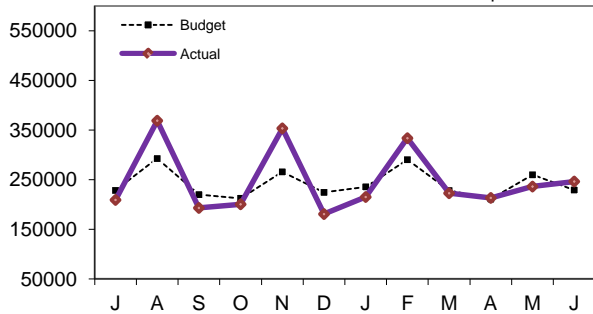
Average monthly sick leave for the 4th Quarter of FY16 increased as compared to the 4th Quarter of FY15 (8.32 to 8.43 days).

In Q4 of FY16, the average quarterly sick leave usage has increased 1.32% from the same time last year.

	Number of Employees	YTD	Annualized Total	Annual FMLA %	FY15
Admin	140	8.31	8.31	21.6%	9.61
Aff. Action	6	8.05	8.05	4.3%	16.89
Executive	5	11.53	11.53	80.1%	7.20
Finance	38	8.95	8.95	32.7%	5.56
Int. Audit	7	4.44	4.44	12.0%	5.56
Law	16	11.41	11.41	25.7%	11.30
OEP	6	6.62	6.62	0.0%	13.28
Operations	937	9.06	9.06	18.4%	8.53
Pub. Affs.	14	9.16	9.16	35.9%	7.26
MWRA Avg	1169	8.98	8.98	19.7%	8.75

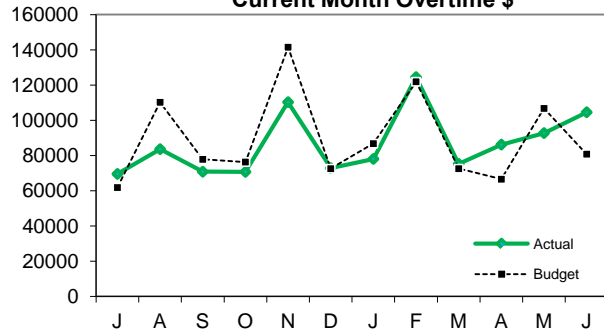
Percent of sick leave usage for FY16, attributable to Family and Medical Leave Act (FMLA) is 19.7% .

Field Operations
 Current Month Overtime \$



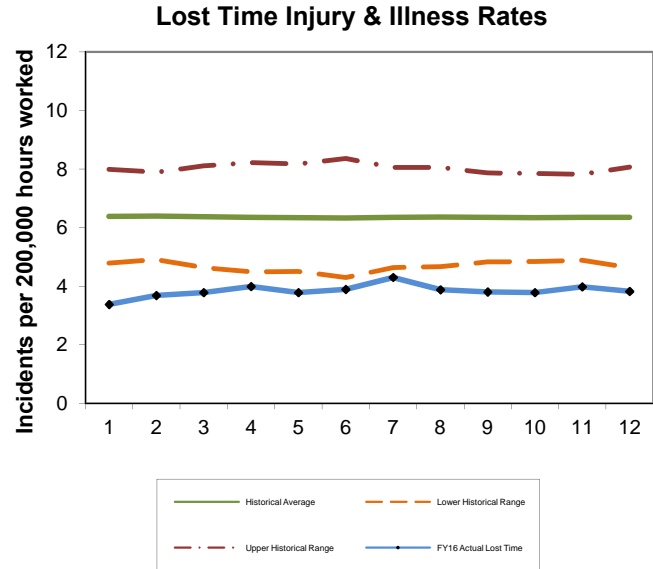
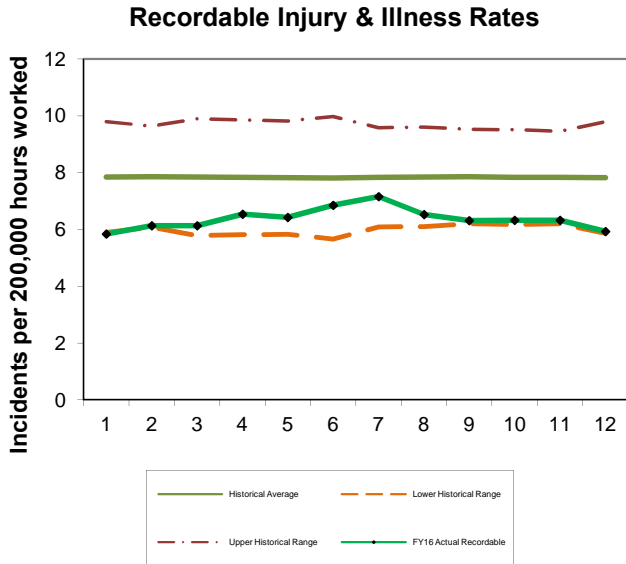
Total Overtime for **Field Operations** for the fourth quarter of FY16 was \$694,912 which is (\$4k) under budget. Emergency overtime was \$260k, which was (\$30k) under budget. Emergency maintenance totaled \$62k for the quarter, \$20k of which was for response to the Nut Island Fire. Coverage overtime was \$260k, which was \$6k over budget, reflecting the shift coverage requirements for the period. Planned overtime was \$288k or \$20k over budget, mainly for maintenance off-hours work at \$96k, maintenance work completion at \$46k, and maintenance major project deadline at \$24k. YTD, Field Operations has spent \$2,969,600 on overtime which is \$85k over budget.

Deer Island Treatment Plant
 Current Month Overtime \$



Total Overtime for **Deer Island** for the fourth quarter of FY16 was \$283,487 which was \$29k over budget. Higher than anticipated combination of planned/unplanned overtime, \$67K combined with greater than budgeted shift coverage requirements, \$23K, are offset in part by less than anticipated storm coverage requirements, (\$61K). YTD Deer Island has spent \$1,038,986 on overtime, which was (\$36K) under budget.

Workplace Safety 4th 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 - 4th Quarter FY16

	New	Closed	Open Claims
Lost Time	6	19	6
Medical Only	23	32	6
Report Only	24	36	
	New		
Regular Duty Returns	5		6
Light Duty Returns	6		6

Highlights/Comments:

Light Duty Returns

April Two employees returned to light duty from IA
 May Three employees returned to light duty from IA
 June One employee returned to light duty from workers comp

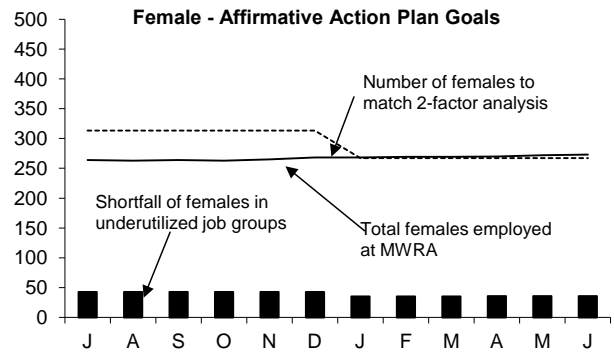
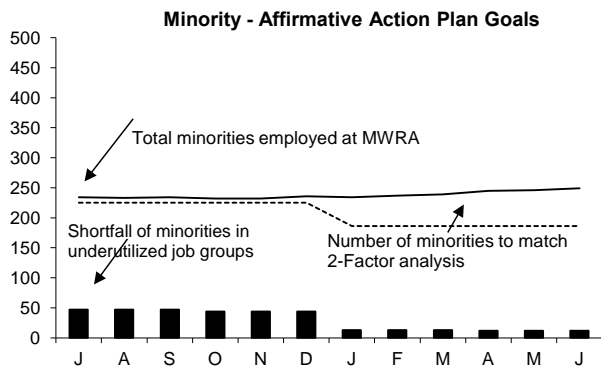
Regular Duty returns

April Three employees returned to regular duty from IA
 May One employee returned to regular duty from workers comp
 June Two employees returned to regular duty from workers comp

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
4th Quarter - FY16



Highlights:

At the end of Q4 FY16, 6 job groups or a total of 12 positions are underutilized by minorities as compared to 11 job groups or a total of 52 positions at the end of Q4 FY15; for females 9 job groups or a total of 36 positions are underutilized by females as compared to 11 job groups or a total of 42 positions at the end of Q4FY15. During Q4, 6 minority and 6 female were hired. During this same period 5 minorities and 3 female terminated.

Underutilized Job Groups - Workforce Representation

Job Group	Employees	Minorities	Achievement Level	Minority	Females	Achievement Level	Female
	as of 6/30/2016	as of 6/30/2016		Over or Under	As of 6/30/2016		Over or Under
Administrator A	21	2	2	0	7	6	1
Administrator B	22	1	3	-2	2	6	-4
Clerical A	40	15	6	9	34	36	-2
Clerical B	33	7	8	-1	12	17	-5
Engineer A	81	19	13	6	12	11	1
Engineer B	56	17	11	6	11	7	4
Craft A	108	17	14	3	0	6	-6
Craft B	150	30	18	12	3	4	-1
Laborer	69	19	16	3	4	3	1
Management A	99	14	16	-2	37	25	12
Management B	45	9	4	5	11	11	0
Operator A	67	5	10	-5	1	9	-8
Operator B	66	11	2	9	4	1	3
Professional A	32	4	5	-1	21	13	8
Professional B	164	47	35	12	81	67	14
Para Professional	57	17	11	6	27	30	-3
Technical A	54	14	11	3	5	11	-6
Technical B	7	1	2	-1	1	2	-1
Total	1171	249	187	74/-12	273	265	32/-36

AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/ Transfers	AACU Ref. External	Position Status
Craft A	M&O Specialist	1	Int/Ext	1	1	Promo = WM
Craft B	Jr. Instrument Technician	1	Int/Ext	0	1	In Progress
Clerical B	Warehouse Materials Handler	1	Int/Ext	0	1	NH = WM
Engineer A	Program Manager, Chemistry	1	Int/Ext	0	1	NH = BF
Engineer B	Project Manager	1	Int/Ext	0	0	NH = BM
Laborers	OMC Laborer	5	Int/Ext	0	5	(5) NH = WM
Management A	Budget Manager	1	Int/Ext	0	0	NH = WF
Management A	Manager, Operations Administration	1	Int	1	0	Promo = BM
Management A	Deputy Contracts Manager	1	Int/Ext	0	1	In Progress
Management B	Area Manager, CLTP	1	Int	1	0	Transfer = WM
Management B	Network Administrator III	1	Int/Ext	0	1	NH = AM
Professional B	Assistant Finance Manager	1	Int	1	0	Promo = AM
Professional B	Security Services Administrator	1	Int/Ext	0	0	NH = WM
Professional B	Systems Administrator III	1	Int/Ext	0	1	In Progress
Professional B	Senior Accountant	1	Int/Ext	0	2	In Progress
Professional B	Library Specialist	1	Int/Ext	0	1	Rehire = WF
Professional B	Sr. Laboratory Technician	1	Int/Ext	0	1	In Progress
ParaProfessional	Helpline Coordinator	1	Int/Ext	0	1	NH = BM
Technical A	Senior Field Service Technician	1	Int/Ext	0	0	Vol Demo = WM
Technical A	Communication & Control Technician	1	Int/Ext	0	1	In Progress

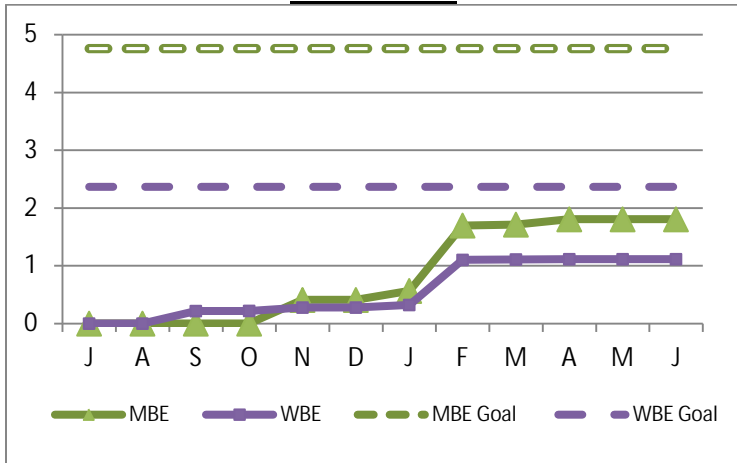
MBE/WBE Expenditures

4th Quarter - FY16

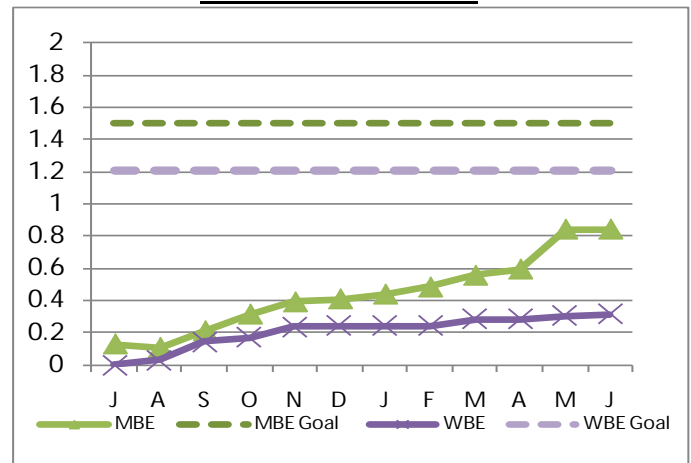
Background: MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY16 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they have no MBE/WBE spending goals.

MBE/WBE percentages are the results from a 2002 Availability Analysis, and MassDEP's 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 June.

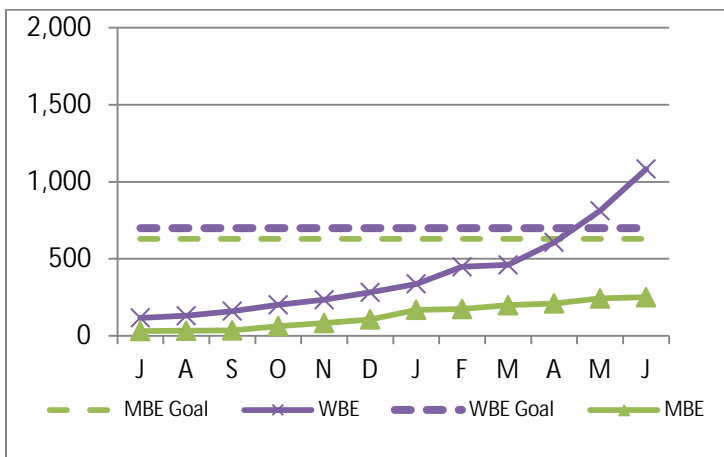
Construction



Professional Services



Goods/Services



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	1,805,604	37.9%	2,314,979	106.5%	1,114,916	47.1%	3,566,302	146.8%
Professional Svc.	828,841	55.3%	633,926	55.4%	314,752	26.1%	345,476	37.6%
<u>Goods & Svcs.</u>	<u>255,324</u>	<u>40.6%</u>	<u>387,847</u>	<u>69.9%</u>	<u>1,124,374</u>	<u>160.7%</u>	<u>870,175</u>	<u>180.3%</u>
Total	2,889,769	41.9%	3,336,752	86.2%	2,554,042	59.8%	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
4th Quarter - FY16

	JUNE 2016 Year-to-Date					
	Period 12 YTD Budget	Period 12 YTD Actual	Period 12 YTD Variance	%	FY16 Approved	% Expended
EXPENSES						
WAGES AND SALARIES	\$ 99,363,168	\$ 96,118,427	\$ (3,244,741)	-3.3%	\$ 99,363,168	96.7%
OVERTIME	4,219,293	4,355,586	136,293	3.2%	4,219,293	103.2%
FRINGE BENEFITS	19,326,756	19,131,139	(195,617)	-1.0%	19,326,756	99.0%
WORKERS' COMPENSATION	2,343,000	2,350,369	7,369	0.3%	2,343,000	100.3%
CHEMICALS	9,790,848	9,297,550	(493,298)	-5.0%	9,790,848	95.0%
ENERGY AND UTILITIES	23,164,822	18,744,867	(4,419,955)	-19.1%	23,164,822	80.9%
MAINTENANCE	28,698,772	30,978,045	2,279,273	7.9%	28,698,772	107.9%
TRAINING AND MEETINGS	413,714	370,752	(42,962)	-10.4%	413,714	89.6%
PROFESSIONAL SERVICES	5,819,611	5,886,715	67,104	1.2%	5,819,611	101.2%
OTHER MATERIALS	6,164,589	6,186,216	21,627	0.4%	6,164,589	100.4%
OTHER SERVICES	23,529,902	22,628,385	(901,517)	-3.8%	23,529,902	96.2%
TOTAL DIRECT EXPENSES	\$ 222,834,475	\$ 216,048,051	\$ (6,786,424)	-3.0%	\$ 222,834,475	97.0%
INSURANCE	\$ 2,160,797	\$ 1,953,053	\$ (207,744)	-9.6%	\$ 2,160,797	90.4%
WATERSHED/PILOT	28,096,233	59,469,847	31,373,614	111.7%	28,096,233	211.7%
BEG PAYMENT	1,946,157	1,342,141	(604,016)	-31.0%	1,946,157	69.0%
MITIGATION	1,400,000	1,520,000	120,000	8.6%	1,400,000	108.6%
ADDITIONS TO RESERVES	(34,927)	(34,927)	-	0.0%	(34,927)	100.0%
RETIREMENT FUND	8,159,521	8,159,521	-	0.0%	8,159,521	100.0%
POST EMPLOYEE BENEFITS	5,224,848	5,224,848	-	0.0%	5,224,848	100.0%
TOTAL INDIRECT EXPENSES	\$ 46,952,629	\$ 77,634,483	\$ 30,681,854	65.3%	\$ 46,952,629	165.3%
STATE REVOLVING FUND	\$ 81,876,277	\$ 78,131,559	\$ (3,744,718)	-4.6%	\$ 81,876,277	95.4%
SENIOR DEBT	283,024,431	275,085,817	(7,938,614)	-2.8%	283,024,431	97.2%
CORD FUND	-	-	-	---	-	---
DEBT SERVICE ASSISTANCE	-	(873,804)	(873,804)	---	-	0.0%
CURRENT REVENUE/CAPITAL	11,200,000	11,200,000	-	0.0%	11,200,000	100.0%
SUBORDINATE MWRA DEBT	49,222,442	49,222,442	-	0.0%	49,222,442	100.0%
LOCAL WATER PIPELINE CP	4,149,240	262,498	(3,886,742)	-93.7%	4,149,240	6.3%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%	3,217,060	100.0%
VARIABLE DEBT	-	(12,873,173)	(12,873,173)	---	-	0.0%
BOND REDEMPTION SAVINGS	-	-	-	---	-	---
DEFEASANCE ACCOUNT	-	-	-	---	-	---
TOTAL DEBT SERVICE	\$ 432,689,450	\$ 403,372,399	\$ (29,317,051)	-6.8%	\$ 432,689,450	93.2%
TOTAL EXPENSES	\$ 702,476,554	\$ 697,054,933	\$ (5,421,622)	-0.8%	\$ 702,476,554	99.2%
REVENUE & INCOME						
RATE REVENUE	\$ 672,440,000	\$ 672,440,000	\$ -	0.0%	\$ 672,440,000	100.0%
OTHER USER CHARGES	8,683,898	8,783,469	99,571	1.1%	8,683,898	101.1%
OTHER REVENUE	12,000,066	15,749,464	3,749,398	31.2%	12,000,066	131.2%
RATE STABILIZATION	-	-	-	---	-	---
INVESTMENT INCOME	9,352,590	10,303,841	951,251	10.2%	9,352,590	110.2%
TOTAL REVENUE & INCOME	\$ 702,476,554	\$ 707,276,774	\$ 4,800,220	0.7%	\$ 702,476,554	100.7%

As of June 2016 (period 12), total expenses were \$697.1 million, \$5.4 million or 0.8% lower than budget and total revenue was \$707.3 million, \$4.8 million or 0.7% higher than budget, for a net variance of \$10.2 million.

Direct Expenses are \$216.1 million, \$6.8 million or 3.0% lower than budget.

- Utilities** are underspent by \$4.4 million or 19.1% due to lower Electricity of \$2.4 million mainly due to Deer Island with underspending of \$1.8 million for lower commodity and T&D costs, lower plant flows resulted in reduced electricity demand; and an overaccrual at the end of FY15. Additionally, lower diesel prices contributed \$1.9 million to the variance.
- Wages & Salaries** are under budget by \$3.2 million or 3.3%. At the end of June the average Full Time Equivalent (FTE) positions were 1,138, 22 positions less than the 1,160 budgeted FTE's.
- Maintenance** is over budget by \$2.3 million or 7.9%, of which \$2.5 million is attributed to the Nut Island fire incident and timing of energy efficiency projects.
- Other Services** spending was lower than budget by \$902k or 3.8% due to lower spending of \$610k for sludge pelletization services for lower inflation; \$127k for Space Lease Rentals for the Chelsea facility lease due to an overpayment of escrow for insurance; \$128k for Grit and Screenings disposal services due to lower quantities; and \$83k for Other Rentals. Lower spending is offset by higher spending on Telephone Services of \$66k associated with new and more SCADA lines and Other Services of \$46k for Ward Street Headworks tower demolition.
- Chemicals** are under budget by \$493k or 5.0% due to lower than budgeted spending on Soda Ash of \$385k due to lower usage to meet corrosion control targets and timing of deliveries, Sodium Bisulfite of \$141k due to lower usage at the CWTP, timing of deliveries at DI and lower flows there. This is partially offset by overspending on Hydrogen Peroxide of \$207k due to increased pretreatment of hydrogen sulfide gas in response to lower DI plant flows.

Indirect Expenses of \$77.6 million, \$30.7 million or 65.5% over budget. In June 2016, the MWRA prepaid \$32 million in Watershed debt to the Commonwealth. This prepayment defeased the obligation of the Authority to reimburse the Commonwealth for the debt service associated with the bonds utilized to purchase the land within the Quabbin, Wachusett, and Ware River watersheds.

Debt Service Expenses totaled \$403.4 million, which was \$29.3 million below budget, reflecting the lower variable rate of \$12.9 million and \$3.9 million for the commercial paper program. Senior Debt was also under budget by \$8.0 million and SRF by \$3.7 million. The unbudgeted \$873k in Debt Service Assistance received contributed to the underspending.

Revenue / Income through June is \$707.3 million, \$4.8 million over budget mainly due to higher Non-Rate revenue of \$3.8 million due to \$562k for TRAC Penalties, \$594k and \$1.2M from unplanned water purchase from the Cities of Lynn and Cambridge, respectively, \$296k for U.S. Treasury rebates, Energy Rebates of \$438k, higher surplus equipment sales of \$331k, and greater Investment Income of \$951k.

Cost of Debt 4th 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

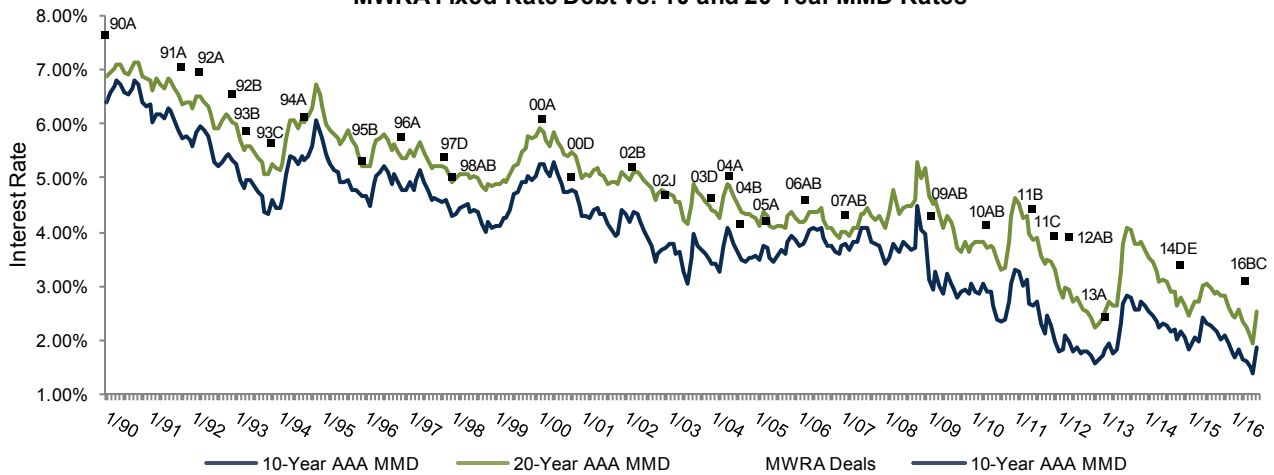
Fixed Debt (\$3,724)	3.99%
Variable Debt (\$484.2)	0.60%
SRF Debt (\$1,036)	1.37%

Weighted Average Debt Cost (\$5,447) 3.16%

Most Recent Senior Fixed Debt Issue May 2016

2016 Series B and C (\$747.6) 3.12%

MWRA Fixed Rate Debt vs. 10 and 20 Year MMD Rates

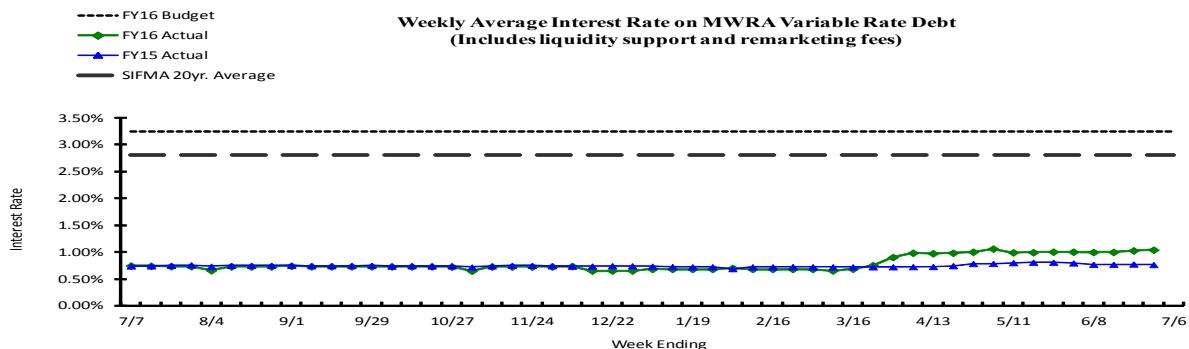


Bond Deal	1991A	1992A	1992B	1993B	1993C	1994A	1995B	1996A	1997D	1998AB	2000A	2000D	2002B	2002J
Rate	7.08%	6.98%	6.58%	5.89%	5.66%	6.15%	5.34%	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%
Avg Life	19.8 yrs	22.6 yrs	6.3 yrs	19.8 yrs	19.1 yrs	19.5 yrs	20.5 yrs	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs

Bond Deal	2003D	2004A	2004B	2005A	2006AB	2007AB	2009AB	2010AB	2011B	2011C	2012AB	2013A	2014DEF	2016BC
Rate	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%	3.12%
Avg Life	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	17.4 yrs

Weekly Average variable Interest Rates vs. Budget

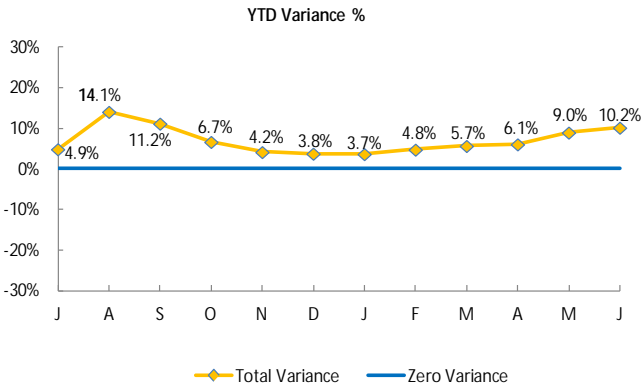
MWRA currently has ten variable rate debt issues with \$1.0 billion outstanding, excluding commercial paper. Of the ten outstanding series, five have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In June, SIFMA rates ranged from 0.43% to 0.39% for the 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

4th Quarter - FY16

Year To Date

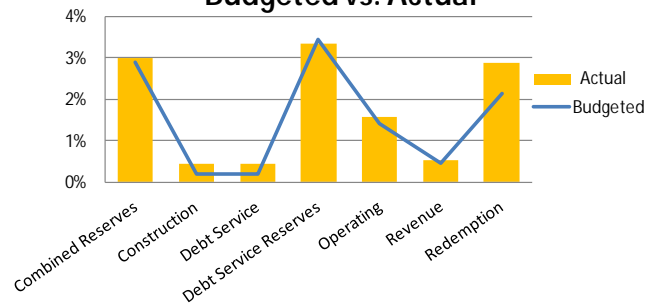


	YTD BUDGET VARIANCE			
	(\$000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	\$3	\$70	72	4.0%
Construction	(\$17)	\$158	140	96.6%
Debt Service	(\$1)	\$391	390	119.8%
Debt Service Reserves	\$36	(\$28)	8	0.2%
Operating	\$26	\$67	93	10.9%
Revenue	\$29	\$22	51	11.3%
Redemption	\$3	\$194	196	34.9%
Total Variance	\$78	\$873	\$951	10.2%

YTD Average Balances Budgeted vs. Actual

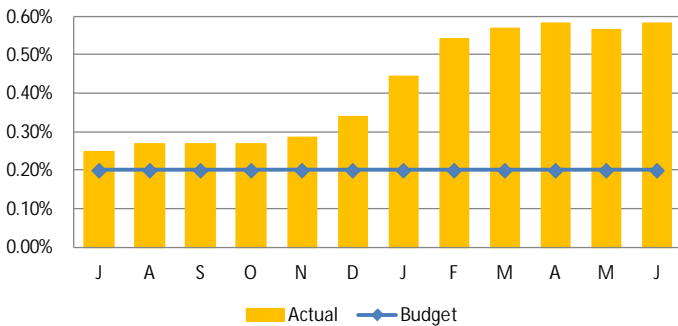


YTD Average Interest Rate Budgeted vs. Actual

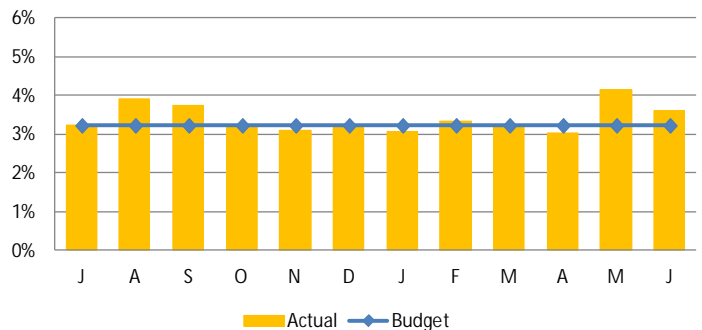


Monthly

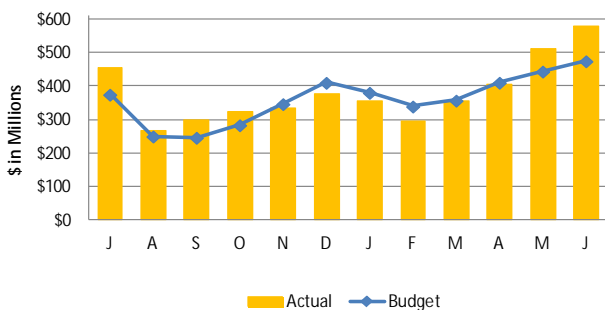
Short-Term Interest Rates



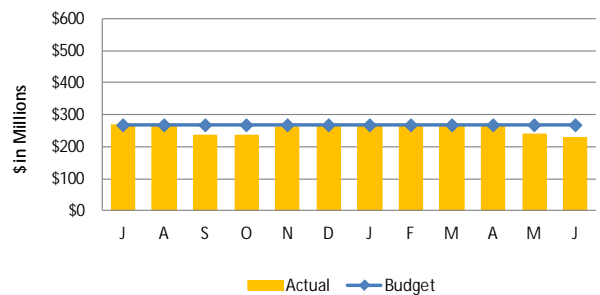
Long-Term Interest Rates



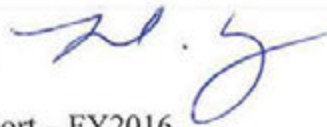
Short-Term Average Balances



Long-Term Average Balances



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Internal Audit Department Activities Report – FY2016

COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE

Brian A. Rozowsky, Director, Internal Audit
Preparer/Title

RECOMMENDATION:

For information only. Internal Audit presents annually to the Board the results of completed assignments and the status of active and planned assignments. Every quarter, Internal Audit utilizes the Orange Notebook to briefly discuss recently issued reports and to report on the status of open audit recommendations and cost savings. This Staff Summary includes a discussion of activities since Internal Audit's last report to the Board in September 2015.

DISCUSSION:

In FY2016, a total dollar impact of \$2,081,663 million was recognized from 52 assignments, including internal audits, management advisory services, consultant incurred cost audits, consultant preliminary reviews, construction labor burden reviews, the true-up of HEEC CY15 billings and a review of the Marlborough lease agreement.

Internal Audit's goal is to provide sufficient audit coverage to give reasonable assurance that internal management controls are functioning as intended and that only reasonable, allowable and allocable costs are paid to consultants, contractors and vendors. Audit coverage is provided through performance audits that analyze and evaluate MWRA programs and activities to determine if they are being carried out effectively and efficiently, compliance audits that focus on adherence to MWRA policies and procedures, contractual requirements, rules or regulations and management advisory services.

The development of the Annual Audit Plan is based on Internal Audit's risk assessment of program and management controls, as well as input from MWRA senior managers and the Advisory Board. The actual scheduling and completion of audit assignments depends on staff availability which can be impacted by control issues needing immediate attention or by unscheduled special requests for management advisory services.

Attachment 1 lists assignments completed since Internal Audit's last report to the Board, assignments currently in process and additional assignments planned to commence in FY2017.

INTERNAL AUDITS AND MANAGEMENT ADVISORY SERVICES

Warehouse Cycle Counts

Internal Audit conducted compliance audits at three MWRA warehouses to determine if cycle counts performed during the year complied with MWRA Cycle Count Procedures which require all inventory items to be counted at least once during the year.

At the time of our review, there were approximately 27,000 active inventory items in these warehouses comprised of 21,000 consumable items and 6,000 spare parts with a total value of \$15.9 million.

The audit confirmed that the warehouses were generally complying with the requirement to count all items at least once per year. Recommendations included continuing efforts to identify and review potential obsolete inventory in the warehouses and to consider items identified as candidates for disposal. Of the 25 recommendations, 16 had closed with future dates scheduled for the remainder.

Halon Inspections

Internal Audit conducted compliance audits of MWRA locations protected by Halon fire extinguishing systems which included Deer Island, the Caruso Pump Station, and the DeLauri Pump Station. Halon is a "clean agent" fire extinguishing system that extinguishes fire without leaving a residue that could damage assets being protected, which makes it a popular choice to protect computer and communication rooms.

Halon systems should be maintained and inspected in accordance with the National Fire Protection Association (NFPA) 12A Standard. The purpose of this review was to determine if inspections, signage, and training and licenses associated with MWRA's Halon protected areas are in compliance with MWRA contract requirements and current NFPA Standards.

The audit identified that inspections were not being performed as frequently as required by NFPA standards. Recommendations included performing inspections at least semi-annually, performing any needed repairs at once, posting required warning and instructional signs, and obtaining copies of required licenses and certifications from vendor technicians who perform inspections. In addition, it was recommended that all personnel working in Halon areas should receive training regarding Halon safety issues. Of the 18 recommendations, 13 had closed with future dates scheduled for the remainder.

Automated Vehicle Locator Tracking

MWRA initiated the Automated Vehicle Locator (AVL) Tracking Program in 2013 by contracting with a vendor (Location Technologies, Inc.) to provide 388 tracking devices which the MWRA leases and installs in its fleet vehicles. The devices provide information such as general physical location, average speed, and last position date/time. The initial three-year contract recently expired and has been extended for six months.

The purpose of this review was to verify the AVL status for each vehicle in the current fleet in classes 1-5, and to determine the currency of AVL information reported by the vendor.

The results of the audit indicated that some vehicles had not been equipped with an AVL device, while other vehicles had an AVL device installed that was not working. Recommendations included contacting managers regarding 88 vehicles that reported no AVL activity in over 30 days to determine if the installed devices are working, as well as installing AVL devices in 62 vehicles identified as needing the tracking device. Other recommendations included developing procedures to ensure that AVL devices are reinstalled and verified as working properly (transmitting) after being serviced by Vehicle Maintenance, and developing procedures for removing devices upon final disposition. Of the nine recommendations, six closed with future dates scheduled for the remainder.

Security Alarm Review

A presentation made at a Security Task Force meeting showed unusually high alarm event counts in the MWRA's Honeywell Win-Pak Pro that monitors the alarm security system for the month of October 2015. The purpose of this review was to determine what caused the alarm counts to be so high.

Internal Audit's review found that the alarm counts were effectively being double counted since the system considered both the alarm event (on) and the return-to-normal event (off) as two separate events when it is actually one. In addition, it was noted that many of the alarms were generated by motion detectors going off inside the facilities when maintenance workers enter a facility. Once the alarm is triggered by their entry, any subsequent activity constantly triggers additional alarms while they are moving about the facility which keeps adding to the alarm event count.

Recommendations included increasing the number of facilities where the alarms can be shunted to 30, which is the current maximum capacity on the Shunt Panel. Shunting of alarms means to bypass or ignore the alarm for a specified period of time, where alarms can be shunted by an event or a time zone. The 15 facilities with the most alarm activity were added to the existing Shunt Panel to reduce the number of alarms. In addition, Internal Audit recommended that an SOP be established (along with training) for field staff to call security before and after entering alarmed facilities so that security systems can be shunted in an effort to reduce the unnecessary alarms. Of the three recommendations, one closed with future dates scheduled for the remaining two.

BWSC CSO Financial Assistance Agreement

The Boston Water and Sewer Commission (BWSC) entered into a Memorandum of Understanding and Financial Assistance Agreement with the MWRA to fund Combined Sewer Overflow (CSO) projects required by the Federal Court Order in the Boston Harbor Case.

Internal Audit conducts periodic reviews to validate that the payments to BWSC have been deposited into the account from which withdrawals may be made for eligible design and construction costs and staff time (force account charges).

In FY2016, a true-up of BWSC CY15 payments included adjustments from a reduced overhead rate for the Staff Accountant and ineligible contractor costs withdrawn from the account. Subsequent to the audit, BWSC withdrew the eligible CY15 force account costs and deposited the excess contractor costs withdrawn.

Internal Audit previously recommended closing out individual contracts, and a number of final eligibility reviews and close-out certifications have been completed.

Marlborough Lease Agreement

MWRA has a lease agreement for the Marlborough Records Center/Storage Facility.

Internal Audit reviewed the lease payments for CY15 to determine the landlord's compliance with the terms of the agreement. A previous recommendation included a follow-up of litigation between the landlord and the City of Marlborough that has resulted in a refund to the MWRA of \$35,121.

Other Management Advisory Services

Annually, management advisory services include calculating MWRA's fringe and indirect cost rates, verifying unemployment benefit calculations, and providing support and review services to the Fore River Railroad Corporation (FRRC).

In FY2016, numerous other management advisory services were also performed by Internal Audit that included a review of the PCB issue at Cottage Farm, 8(m) permit fee management, AVL management, resolving unsupported charges billed by the Department of Unemployment Assistance, providing financial analyses services in support of the HEEC cable negotiations, the NEFCo (pelletizing plant) contract extension, participating in negotiations on a proposal to add solar to the Chelsea facility, reviewing the Bay State Fertilizer program, and performing numerous vendor financial capability reviews and analyses in support of Procurement (bidders and contract assignments/extensions), and Risk Management (insurance requirements).

In FY2016, the annual savings resulting from internal audits and management advisory services totaled \$1,129,479.

CONTRACT AUDITS AND RELATED REVIEWS

In FY2016, a dollar impact of \$952,184 was recognized from the following contract audit and related assignments:

Consultant Incurred Cost Audits

An incurred cost audit determines that billed labor costs are supported by the consultant's time reports and project cost records, other direct costs are supported by valid payments, final indirect costs have been calculated in accordance with the contract, and that final indirect cost rates have been properly applied to labor billings. The extent of fieldwork required to complete an assignment is based on a risk assessment that starts with an invoice analysis and a review of a consultant's annual cost disclosure submittal. The fieldwork is usually conducted at the consultant's office, but may be reduced to a desk review to verify that costs billed were supported.

In FY2016, eight incurred cost audits were completed for total contract costs paid of \$34 million. These include CDM Smith, Aecom and Fay, Spofford & Thorndike. A total of \$34,556 was recovered or avoided.

Consultant Preliminary Reviews

When a new contract is awarded, Internal Audit performs a consultant preliminary review to determine that proposed direct labor, indirect costs, and other direct costs are supported, and notifies Procurement and the project manager of any issues, including any unsupported proposed costs that might be available for re-allocation to another cost element. Internal Audit reviews and accepts provisional indirect cost rates proposed by consultants for billing both new and active contracts. Approved provisional indirect cost rates are reported to project managers and Procurement as a reference source for reviewing invoices and pricing contracts and amendments.

In FY2016, four consultant preliminary reviews were completed with a total value of \$4.7 million. A total of \$53,756 in unsupported proposed costs was identified for potential reallocation.

Construction Labor Burden Rate Reviews

A construction labor burden review establishes provisional labor burden rates to be used in the pricing of future change orders. Typical adjustments to contractor proposed rates include the application of effective versus statutory Federal and State unemployment tax rates, applying appropriate experience modifications and other adjustments to workers compensation rates, and determination of the basis for general liability and umbrella insurances and bond premium.

In FY2016, sixteen labor burden rate reviews were completed with an estimated \$690,650 in cost savings.

Harbor Electric Energy Corporation (Heec) 2015 True-Up

The purpose of this assignment was to verify the capacity charge calculation and operations and maintenance (O&M) charges billed under the HEEC agreement for CY15. The capacity charge calculation uses a complex formula to determine the annual payment for the use of the cross-harbor cable. The major variable cost in the formula is the effective interest rate charged on the

net value of the cable, after accumulated depreciation. The effective interest rate takes into account the interest paid on HEEC's bonds, less interest earned on the debt service reserve. The O&M charge includes labor costs, materials needed to maintain the cable and insurance for the cable.

In FY2016, savings of \$171,721 were recognized from earlier negotiated changes to both the gross investment base and effective interest rate calculations used in the capacity charge calculation and included \$45,864 that was reimbursed to the MWRA for a true-up of CY15 capacity charges and O&M costs.

Operation And Maintenance Of The Pelletizing Plant

The New England Fertilizer Company (NEFCo) has operated the Pelletizing Plant since 2001. Its 15-year contract expired in December 2015 and was extended for five years through December 2020. This assignment reviewed the invoicing and application of indices to the pricing of the base and excess quantities, contract deliverables, insurances and minimum wage rates.

The results of the review found NEFCo to have complied with the deliverables, insurances and minimum wage rates; indices were correctly applied to the amounts originally bid and excess quantities above the base were properly computed.

Construction Claim And Change Orders

At the request of the Law Division, Internal Audit performed a review of a construction claim that is in litigation. The results of the review identified numerous issues related to questioned costs and itemized elements of claim which are disallowed for extra work claim under MWRA contract specifications. The claim has not yet been resolved.

Internal Audit reviewed the labor burden on a proposed change order where the rate was reduced resulting in savings of \$1,501.

ATTACHMENT:

Status of Internal Audit Assignment FY2016 and FY2017

Status of Internal Audit Assignment FY 16 and FY 17

<u>COMPLETED</u>	<u>Date</u>	<u>IN PROCESS & PLANNED TO START IN FY17</u>
Internal Audit/Management Advisory Services		
Halon Compliance Reviews	Dec-15	Vulnerability Assessment
Cycle Count Compliance Reviews	Dec-15	Fleet Management
Security Alarm Review	Mar-16	BWSC FAA 2016
BWSC FAA 2015	Mar-16	Cambridge FAA Force Account
WAC 2016 Financial Review	Apr-16	Prevailing Wage
AVL Tracking	May-16	Deer Island Purchase Card Usage
		Workers Compensation
		Uniform Debit Card Program
		Alarm Testing for DEP
		SRF Documentation Requirements
		Gas Card Usage for Domiciles
Reviews of Agreements and Contracts		
Claim - Daniel O'Connell's Sons	Feb-16	Chelsea Lease (completed)
Marlboro Lease Agreement 2015	Apr-16	CNY Lease
HEEC 2015 True-up	May-16	HEEC 2016 True-up
Change Order - Dagle Electric	May-16	Elevator Maintenance Contract
NEFCo Contract Pricing & Billing	Jun-16	
Consultant Incurred Cost Audits		
Aztec Technologies	Sep-15	Regina Villa Associates (completed)
Black & Veatch	Oct-15	Brown & Caldwell
AI Engineers	Oct-15	Arcadis
Baker Wohl	Nov-15	Corr Tech
AECOM	Jan-16	Stantec
CDM	Feb-16	Green Int'l Affiliates
City Point Partners	Mar-16	Bryant
FST	Apr-16	Dewberry
		FST
		Keville
Consultant Preliminary Reviews		
Chelsea Screenhouse, 7490, Dewberry	Sep-15	DI As Needed (7501,7502,7503) \$4.2M
Nut Island, 7494, Hazen & Sawyer	Oct-15	Chelsea Creek Upgrade (6802) \$3.7M
DITP Fire Alarm, 6904, RDK	Dec-15	Prison Point Rehab (7359) \$2.5M
Reading Extension Sewer, 7163, Arcadis	Dec-15	New Connecting Mains CP3 (6385) \$3M
		Cambridge Branch Study (7511) \$1M
		Wastewater Meter System (6739) \$2.7M
		Nut Island Odor & HVAC (7517) \$2.8M
		Section 4,5,6 & 186 Study (7423) \$1.5M
		DI Cathodic Protection (6880) \$1M
		North Main Pump Motor Control (7419) \$2.5M
		DI Combined Heat & Power (6963) \$6M
		Quabbin Aqueduct (7509) \$2.2M
		Sect 89 & 29 Rehab (7116) \$1.5
		Windsor Power Station (7460) \$1.9M
		Interceptor Renewal 3, Dorchester (7512) \$1M
		DI Odor Control Rehab (7088) \$5.2M
		DI HVAC (7094) \$2M
Construction Labor Burden Rate Reviews		
Chelsea Screenhouse Upgrades, 7431, WES	Sep-15	SEH Redundancy & Storage 1, 6454, Gioioso (completed)
Southboro Lab Upgrade, 6650A, Paul Rogan	Sep-15	Beacon St Line Repair, 7458, Zoppo (completed)
DITP Valve Replacement, 7275, Egan	Oct-15	NIH Redundancy & Storage 1C (7478) \$17.2M
DI Fuel System Mods, 7061A, JF White	Dec-15	Chelsea Creek Upgrade (7161) \$62M
NIH Sec 89/29 Ph 1B, 7471, Albanese	Jan-16	Residuals Facilities Upgrade (7146) \$10M
Wachusett Aqueduct Pump, 7157, BHD/BEC	Mar-16	NIH Phase 2 (7067) \$18.2M
Alewife Brook PS Rehab, 6797, Barletta	Mar-16	Barge Berth & Facility Replacement (7168) \$2.3M
Caruso Pump Improvements, 7362, Waterline	Apr-16	DI Gravity Thickeners Rehab (7428) \$14.1M
Rosemary Brook Building Repair, 7472, Calhess	Apr-16	CVA Screen Replacement (7488) \$1M
Hatchery Pipeline, 7235, Waterline	Apr-16	SEH Redundancy & Storage 3 (7505) \$7.4M
Quabbin Comm & Security, 7338, Ewing	May-16	Clinton Roofing Rehab (7450) \$1.2M
Clinton Phosphorus Removal, 7411, DOC	May-16	DI HVAC (7110) \$29.5M
DI Digester Pump Replace, 6821, Walsh	Jun-16	CWTP Existing Facilities Mods CP7, B&C (6650) \$3.1M
DI WTF VFD Replacement, 6875, JF White	Jun-16	SEH Redundancy & Storage 2 (7504) \$10.8M
		Chestnut Hill Gate House #1 (7382) \$1M
		Reading Extension Sewer (7164) \$4.3M
		DI Switchgear (7059) \$8M
		DI Expansion Joint Repair 3 (6705) \$1.9M
		DI VFD Replacements (7131) \$5.3M
		DI Sodium Hypo & Bisulfate Tanks (7449) \$5M

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Delegated Authority Report – July and August 2016



COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE

Barbie Aylward, Administrator A & F
Joanne Gover, Admin. Systems Coordinator
Preparer/Title


Michele S. Gillen

Director, Administration


Carolyn Francisco Murphy

Director of Procurement

RECOMMENDATION:

For information only. Attached is a listing of actions taken by the Executive Director under delegated authority for the period July 1, 2016 – August 31, 2016.

This report is broken down into three sections:

- Awards of Construction, non-professional and professional services contracts and change orders and amendments in excess of \$25,000, including credit change orders and amendments in excess of \$25,000;
- Awards of purchase orders in excess of \$25,000; and
- Amendments to the Position Control Register, if applicable.

BACKGROUND:

The Board of Directors' Management Policies and Procedures, as amended by the Board's vote on October 14, 2009, delegate authority to the Executive Director to approve the following:

Construction Contract Awards:

Up to \$1 million if the award is to the lowest bidder; or up to \$500,000 if the award is to other than the lowest bidder.

Change Orders:

Up to 25% of the original contract amount or \$250,000, whichever is less, where the change increases the contract amount, and for a term not exceeding an aggregate of six months; and for any amount and for any term, where the change decreases the contract amount. The delegations for cost increases and time can be restored by Board vote.

Professional Service Contract Awards:

Up to \$100,000 and one year with a firm; or up to \$50,000 and one year with an individual.

Non-Professional Service Contract Awards:

Up to \$250,000 if a competitive procurement process has been conducted, or up to \$100,000 if a procurement process other than a competitive process has been conducted.

Purchase or Lease of Equipment, Materials or Supplies:

Up to \$1 million if the award is to the lowest bidder; or up to \$500,000 if the award is to other than the lowest bidder.

Amendments:

Up to 25% of the original contract amount or \$250,000, whichever is less, and for a term not exceeding an aggregate of six months.

Amendments to the Position Control Register:

Amendments which result only in a change in cost center.

BUDGET/FISCAL IMPACT:

Recommendations for delegated authority approval include information on the budget/fiscal impact related to the action. For items funded through the capital budget, dollars are measured against the approved capital budget. If the dollars are in excess of the amount authorized in the budget, the amount will be covered within the five-year CIP spending cap. For items funded through the Current Expense Budget, variances are reported monthly and year-end projections are prepared at least twice per year. Staff review all variances and projections so that appropriate measures may be taken to ensure that overall spending is within the MWRA budget.

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS JULY 1 - 31, 2016

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	07/13/16	HVAC BUILDING AUTOMATION AND HVAC UNIT REPLACEMENT PRELIMINARY DESIGN, FINAL DESIGN AND ENGINEERING SERVICES DURING CONSTRUCTION DEER ISLAND TREATMENT PLANT REVISE CONSTRUCTION DESIGN DOCUMENTS TO INCLUDE THE REMOVAL OF TEMPORARY OFFICE TRAILERS IN THE ADMINISTRATION/LABORATORY AND WAREHOUSE BUILDINGS.	7111	2	ARCADIS, U.S., INC.	\$25,144.00
C-2.	07/15/16	VFD ADDITIONS, SECONDARY OXYGEN REACTOR BATTERIES 1, B AND C DEER ISLAND TREATMENT PLANT REMOVE DETERIORATED EXISTING CONDUCTORS; FURNISH AND INSTALL CONDUCTORS AND MAKE CONNECTIONS.	6877	1	DAGLE ELECTRICAL CONSTRUCTION CORP.	\$30,828.43
C-3.	07/25/16	WACHUSETT AQUEDUCT PUMPING STATION CONSTRUCTION SHEETING IN LIEU OF SECANT PILES FOR SUPPORT OF EXCAVATION; USE OF DESIGNATED FILL AREA FOR EXCAVATED SOILS IN LIEU OF OFF SITE LOCATION; DECREASE CONTRACT TERM BY 180 CALENDAR DAYS FROM AUGUST 13, 2019 TO FEBRUARY 14, 2019.	7157	1	BHD/BEC, JOINT VENTURE 2015	(\$1,500,000.00)
C-4.	07/25/16	REPLACEMENT OF SKIMMERS DEER ISLAND TREATMENT PLANT FURNISH AND INSTALL EXTENDERS ON TWELVE SCUM SKIMMERS TO ENSURE PROPER ELEVATIONS.	7396	2	WALSH CONSTRUCTION COMPANY	\$83,759.55
C-5.	07/25/16	VALVE REPLACEMENTS VARIOUS FACILITIES DEER ISLAND TREATMENT PLANT INSTALL REPLACEMENT PLUG VALVES IN SECONDARY BATTERY GALLERIES A, B AND C IN THREE DAYS IN LIEU OF SEVEN DAYS; DEMOLISH, FURNISH AND INSTALL FOUR ADDITIONAL ELBOWS; DEMOLISH, FURNISH AND INSTALL A NEW 48-INCH PIPE SUPPORT BEAM IN THE WINTHROP TERMINAL FACILITY; FURNISH AND INSTALL 14-INCH GROOVED TEES ON PRIMARY SLUDGE LINES IN PRIMARY GALLERIES C AND D IN LIEU OF THE SPECIFIED FLANGED TEES; FURNISH AND INSTALL STAINLESS STEEL BOLTS AND GASKETS ON THE EXISTING FLANGE ASSEMBLY IN LIEU OF CARBON STEEL STUDS AND GASKETS.	7275	4	CARLIN CONTRACTING COMPANY, INC.	\$141,775.18
C-6.	07/25/16	HYDRAULIC EQUIPMENT SERVICE AWARD OF CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE ANNUAL MAINTENANCE AND INSPECTION, NON-EMERGENCY AND EMERGENCY REPAIR SERVICES FOR HYDRAULIC SYSTEMS WITHIN THE MWRA SERVICE AREA FOR A TERM OF 730 CALENDAR DAYS.	OP-327	AWARD	R. ZOPPO CORP.	\$320,694.00

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS AUGUST 1 - 31, 2016

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	08/16/16	TREATMENT STRATEGIES TO MINIMIZE THE ADVERSE IMPACTS OF AN OIL SPILL IN WACHUSETT RESERVOIR ON MWRA'S FINISHED WATER AWARD OF SOLE SOURCE RESEARCH CONTRACT FOR AN INVESTIGATION TO DETERMINE HOW THE EXISTING JOHN J. CARROLL WATER TREATMENT PLANT'S TREATMENT PROCESSES (OZONE, UV, BISULFITE AND CHLORINE) OR OTHER MODIFICATIONS TO THE TREATMENT PROCESS WOULD IMPACT AND TRANSFORM SPILLED OIL CONTAMINANTS AND WHAT THE IMPACT WOULD BE ON DRINKING WATER QUALITY FOR A TERM OF ONE YEAR.	W311	AWARD	UNIVERSITY OF MASS/AMHERST	\$93,907.00
C-2.	08/16/16	UPGRADES TO CHELSEA SCREEN HOUSE FURNISH, INSTALL AND PROGRAM A GAS MONITORING CONTROL PANEL, FOUR REMOTE GAS SENSORS WITH CONDUIT AND WIRING, TWO EXTERIOR AND ONE INTERIOR STROBE AND HORN; REMOVE AND REPLACE CORRODED CONDUITS AND WIRE FOR TWO 120v OUTLETS, TWO OVERHEAD DOOR CONTROL UNITS, TWO FIRE ALARM PULL STATIONS AND TWO UNIT HEATERS LOCATED IN THE SCREEN ROOM TO THE ELECTRICAL POWER PANEL IN THE MECHANICAL ROOM; FURNISH AND INSTALL 16/3 SHIELDED CABLE IN 3/4-INCH PVC COATED CONDUIT FROM THE EXISTING UPSTREAM AND DOWNSTREAM LEVEL SENSORS TO THE EXISTING FEEDER CONDUITS ON THE CONDUIT RACK AND TEMPORARILY WIRE THE EXISTING LEVEL SENSORS TO THEIR ASSOCIATED LEVEL TRANSMITTERS AT BAR SCREEN CHANNELS 1 THROUGH 4; REMOVE TWO 480v OUTLETS FROM THE EXISTING NORTH AND SOUTH WALL LOCATIONS IN THE SCREEN ROOM AND REINSTALL ONE EACH ON THE NORTH AND SOUTH WALL AT ELEVATION 119-FT. AND FURNISH AND INSTALL CONDUIT AND WIRE FROM THE 480v OUTLETS TO THE ELECTRICAL POWER PANEL LOCATED IN THE MECHANICAL ROOM.	7431	3	WES CONSTRUCTION CORP.	\$148,541.53
C-3.	08/16/16	SUCTION AND DISCHARGE PIPING REHABILITATION AT PRISON POINT CSO FACILITY AWARD OF CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE CLEANING, PATCHING, EPOXY LINING AND PLACEMENT OF NEW SUPPORTS FOR THE MAIN PUMP SUCTION AND DISCHARGE HEADER AT THE PRISON POINT CSO FACILITY FOR A TERM OF 240 CALENDAR DAYS.	7459	AWARD	JOHN W. DANFORTH, INC.	\$466,200.00
C-4.	08/19/16	VFD ADDITIONS, SECONDARY OXYGEN REACTOR BATTERIES A, B AND C DEER ISLAND TREATMENT PLANT FURNISH AND INSTALL DV/DT OUTPUT FILTERS AND MAKE CONNECTIONS ON THE LOAD SIDE OF VFD TERMINALS.	6877	2	DAGLE ELECTRICAL CONSTRUCTION CO.	\$36,000.00
C-5.	08/25/16	ELECTRICAL EQUIPMENT UPGRADE CONSTRUCTION 4 DEER ISLAND TREATMENT PLANT DELETE THE WORK TO WIRE AND COMPONENT MODIFY 43 SWITCHGEARS, FURNISH A 1 MW STANDBY BACKUP GENERATOR, MULTIPLE 4160 VOLT GENERATORS, CABLES, OPERATORS AND ALL OTHER APPURTENANCES.	6901	2	DAGLE ELECTRICAL CONSTRUCTION CO.	(\$3,052,162.51)

PURCHASING DELEGATED AUTHORITY ITEMS - July 1 - 31, 2016

NO.	TITLE AND EXPLANATION	CONTRACT #	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-1. 7/7/16	ONE NEW RUBBER TRACKED COMPACT HYDRAULIC EXCAVATOR AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ONE NEW RUBBER TRACKED COMPACT HYDRAULIC EXCAVATOR. THE WATER PIPELINE PROGRAM IN METROPOLITAN OPERATIONS IS RESPONSIBLE FOR 300 MILES OF LARGE DIAMETER WATER TRANSMISSION PIPELINES WITHIN AN AREA ROUGHLY CONTAINED BY BOSTON HARBOR AND ROUTE 128. WHEN CONDITIONS RESTRICT THE CREW'S ABILITY TO POSITION A DUMP TRUCK NEXT TO THE OPEN WORK SITE FOR LOADING/UNLOADING OF FILL AND MATERIAL, THE EXTENDED REACH OF THE EXCAVATOR ALLOWS THE TRUCKS TO BE PARKED AT A SAFER DISTANCE. THIS PURCHASE IS FOR A ZERO TAIL SWING UNIT, WHICH WILL ALLOW FOR EXCAVATIONS TO OCCUR IN THE MOST DEMANDING SITUATIONS AND IN ALL TYPES OF TERRAIN.	WRA-4214		MILTON CAT, INC.	\$99,599.00
P-2. 7/13/16	LABOR, MATERIALS AND EQUIPMENT TO INSPECT THE NORUMBEGA COVERED STORAGE TANK AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO PROVIDE LABOR, MATERIALS, AND EQUIPMENT TO PROVIDE AN UNDERWATER INSPECTION TO THE NORUMBEGA COVERED STORAGE TANK.	WRA-4202Q		DIVING SERVICES, INC.	\$56,485.00
P-3. 7/20/16	PROVIDE PREVENTATIVE AND CORRECTIVE SERVICES AWARD OF A THREE YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO PROVIDE PREVENTATIVE AND CORRECTIVE MAINTENANCE FOR THE DEPARTMENT OF LABORATORY SERVICES' SPECTRO XRF X-RAY FLUORESCENCE SPECTROMETER.	WRA-4237Q		THE REMI GROUP, LLC	\$26,589.60
P-4. 7/20/16	ENHANCEMENTS TO THE DISTRIBUTED ANTENNA SYSTEM AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ENHANCEMENTS TO THE DISTRIBUTED ANTENNA SYSTEM (DAS) AT THE DEER ISLAND TREATMENT PLANT. THIS PROJECT WILL ENHANCE THE CURRENT CELL SIGNAL AND PREVENT LOSS OF CELL SERVICE BY ADDING COMPONENTS TO THE EXISTING DAS LOCATED IN THE ADMINISTRATION BUILDING AND BY STRATEGICALLY LOCATING FOUR EXTERNAL ANTENNAE ON BUILDINGS THAT EXIST NORTH, SOUTH, EAST AND WEST ON DEER ISLAND.	WRA-4236Q		IN-BUILDING CELLULAR	\$39,927.00
P-5. 7/20/16	SENIOR NETWORK ENGINEER CONSULTANT AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO PROCURE A SENIOR NETWORK ENGINEER CONSULTANT TO SUPPORT GENERAL EMAIL AND NETWORK SERVICES FOR 18 WEEKS. THE MIS DEPARTMENT HAD A NEED FOR A SENIOR NETWORK ENGINEER CONSULTANT TO SUPPORT THE MISSION CRITICAL EMAIL SYSTEM AND THE WORK LOAD THAT RESULTED FROM THE PROMOTION OF A NETWORK ENGINEER TO OTHER DUTIES AND TO DATE, MWRA HAS NOT BEEN ABLE TO SUCCESSFULLY BACKFILL THE POSITION. THE CONSULTANT WILL TROUBLESHOOT ALL ASPECTS OF THE MWRA MESSAGING SOLUTION INCLUDING SEVERAL EXCHANGE 2010 SYSTEMS, LOAD BALANCERS AND EMAIL SECURITY GATEWAY. THE SELECTED CANDIDATE HAS ADDITIONAL SKILLS TO IMMEDIATELY CONTRIBUTE TO SUPPORTING AREAS OF SYSTEM MANAGEMENT AND ALL ASPECTS OF THE MICROSOFT NETWORK, INCLUDING ACTIVE DIRECTORY, DNS, DHCP AND WINDOWS OPERATING SYSTEMS.	WRA-4195Q IT553		PEOPLE SERVE, INC.	\$73,575.00
P-6. 7/20/16	MAXIMO TECHNICAL CONSULTANT APPROVAL OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO PROVIDE MAXIMO TECHNICAL CONSULTANT SERVICES. ON MAY 13, 2015, THE BOARD AWARDED A CONTRACT TO UPGRADE MWRA'S COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM. THE ONGOING MAXIMO UPGRADE EFFORT HAS TEMPORARILY BUT SIGNIFICANTLY INCREASED THE WORK LOAD ON THE MIS PROGRAM MANAGER. ADDITIONALLY, TWO STAFF MEMBERS WHO PROVIDED CRITICAL SUPPORT TO THE EXISTING MAXIMO PROGRAM HAVE LEFT MWRA, ONE RETIRED AND ONE RESIGNED. TO DATE, MWRA HAS NOT BEEN ABLE TO SUCCESSFULLY BACKFILL THOSE POSITIONS. BECAUSE OF THE ONGOING MAXIMO UPGRADE AND THE STAFF DEPARTURES, STAFF RECOMMENDED THAT AN OUTSIDE CONSULTANT BE HIRED TO TEMPORARILY MANAGE THE DAY-TO-DAY MAXIMO SUPPORT AND TO PROVIDE OCCASIONAL, AS NEEDED SUPPORT OF THE UPGRADE EFFORT. PERIOD IS FOR 26 WEEKS.	WRA-4249Q IT553		RANDSTAD TECHNOLOGIES	\$92,625.00
P-7. 7/20/16	MAINTENANCE OF SCADA SOFTWARE AWARD OF A ONE-YEAR SOLE SOURCE PURCHASE ORDER FOR THE MAINTENANCE OF SCADA SOFTWARE. MWRA'S SCADA SYSTEM IS CONTROLLED USING INTERFACE SOFTWARE DEVELOPED BY GE INTELLIGENT PLATFORMS, INC. CALLED PROFICY IFIX. MWRA CURRENTLY HAS ONE HUNDRED THIRTY-FOUR IFIX LICENSES; THERE ARE EIGHTY LICENSES ASSOCIATED WITH THE WATER SYSTEM AND FIFTY-FOUR LICENSES ASSOCIATED WITH THE WASTEWATER SYSTEM. AN ANNUAL MAINTENANCE AGREEMENT IS REQUIRED TO PROVIDE SOFTWARE UPGRADES AND TECHNICAL SUPPORT TO ENSURE THAT MWRA'S SCADA SYSTEM REMAINS CURRENT AND OPERATES RELIABLY AND WITHOUT INTERRUPTION. CONTRACT IS FOR PERIOD OF JULY 15, 2016 THROUGH JULY 14, 2017.			GE INTELLIGENT PLATFORMS, INC.	\$143,241.07
P-8. 7/20/16	TELECOMMUNICATIONS INFRASTRUCTURE EXTENSION AND WIRELESS ANTENNA INSTALLATION AWARD OF A PURCHASE ORDER FOR TELECOMMUNICATIONS INFRASTRUCTURE EXTENSION AND WIRELESS ANTENNA INSTALLATION FOR THE QUABBIN POWER, COMMUNICATION AND SECURITY IMPROVEMENTS PROJECT. THE MWRA CURRENTLY USES VERIZON AS THE PRIMARY PROVIDER OF ITS NETWORK INFRASTRUCTURE AND COMMUNICATIONS SERVICES, INCLUDING VOICE, VIDEO, DATA AND WIRELESS SERVICES. THE EXISTING VERIZON INFRASTRUCTURE DOES NOT REACH ALL MWRA FACILITIES IN THE QUABBIN AREA. UNDER THIS PURCHASE ORDER, VERIZON WILL EXTEND ETHERNET FIBER OPTIC SERVICES AND PROVIDE CELLULAR WIRELESS ANTENNAS TO THE FOLLOWING FACILITIES: BRUTSCH WATER TREATMENT FACILITY, NASH HILL COVERED STORAGE, QUABBIN ADMINISTRATION BUILDING AND SHAFT 12 INTAKE SITE.	ITT46		VERIZON BUSINESS NETWORK SERVICES, INC.	\$228,417.66
P-9. 7/25/16	ONE NEW MOWER TRACTOR AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ONE NEW MOWER TRACTOR FOR GROUNDS MAINTENANCE WEST TO REPLACE WRA-569 A 22-YEAR OLD JOHN DEERE 970 TRACTOR WHICH HAS REACHED THE END OF ITS USEFUL LIFE. THE JOHN DEER 970 IS NO LONGER IN PRODUCTION. THE JOHN DEER 4320 COMPACT TRACTOR IS THE CURRENT EQUIVALENT AND INCLUDES AN ENCLOSED CAB FOR DRIVER PROTECTION AND INCREASED VERSATILITY.	WRA-4225		146 SUPPLY CENTER, INC.	\$53,668.83

PURCHASING DELEGATED AUTHORITY ITEMS - July 1 - 31, 2016

NO.	TITLE AND EXPLANATION	CONTRACT #	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-10. 7/27/16	<p>MAINTENANCE AND SUPPORT OF CISCO SMARTNET SWITCHES APPROVAL OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR RENEWAL OF A ONE YEAR MAINTENANCE AND SUPPORT AGREEMENT FOR 101 CISCO SMARTNET SWITCHES. MIS UTILIZES CISCO'S SWITCHES TO PROVIDE LOCAL AREA NETWORK CONNECTIVITY FOR ALL MIS COMPUTER DEVICES AND PCS. THESE SWITCHES ARE A VITAL COMPONENT IN PROVIDING NETWORK CONNECTIVITY AT ALL NETWORKED SITES AND MUST BE SUPPORTED WITH AN APPROPRIATE MAINTENANCE CONTRACT TO CONTINUE RECEIVING SOFTWARE UPDATE AND SUPPORT. THIS IS AN ANNUAL ONGOING MAINTENANCE EXPENSE. CONTRACT IS FOR THE PERIOD AUGUST 1, 2016 TO JULY 31, 2017.</p>	WRA-4248Q		PRESIDIO NETWORKED SOLUTIONS, INC.	\$39,280.46
		ITTS0			
P-11. 7/27/16	<p>HEWLETT PACKARD EQUIPMENT ANNUAL MAINTENANCE AND SUPPORT APPROVAL OF A PURCHASE ORDER FOR HEWLETT PACKARD EQUIPMENT MAINTENANCE AND SUPPORT CONTRACT. THE MWRA USES HEWLETT PACKARD SERVERS TO HOST ENTERPRISE AND DEPARTMENTAL APPLICATIONS, INTERNET/INTRANET COMPUTING, PRINT QUEUE MANAGEMENT AND FILE STORAGE NEEDS. ANNUALLY, THE MWRA ENTERS INTO A COMPREHENSIVE MAINTENANCE AGREEMENT WHICH LEVERAGES THE COMMONWEALTH'S BLANKET DISCOUNT PRICING. THE AGREEMENT PROVIDES 24/7 HARDWARE/OPERATING SYSTEM COVERAGE ON CRITICAL SYSTEMS, 4-HOUR AND/OR NEXT DAY SERVICE ON LESS CRITICAL SERVERS, AND TRADITIONAL OPERATING SYSTEM SOFTWARE MAINTENANCE, SECURITY PATCHES AND UPDATES. CONTRACT IS FOR THE PERIOD OF JULY 1, 2016 THROUGH JUNE 30, 2017.</p>	ITC47		HEWLETT PACKARD ENTERPRISE COMPANY	\$174,739.25
P-12. 7/29/16	<p>MAINTENANCE AND SUPPORT RENEWAL CONTRACT FOR THE CISCO IRONPORT EMAIL GATEWAY SOLUTION AWARD OF A THREE YEAR PURCHASE ORDER CONTRACT FOR THE MAINTENANCE AND SUPPORT OF THE CISCO IRONPORT EMAIL GATEWAY. MWRA RECEIVES APPROXIMATELY 1.7 MILLION EMAILS EVERY MONTH. THE CISCO IRONPORT EMAIL GATEWAY SOLUTION THAT MWRA HAS OWNED FOR THE LAST SEVEN YEARS IS A CRUCIAL PART OF MWRA'S MULTI-LAYERED "DEFENSE IN DEPTH" SECURITY STRATEGY; IT IS THE FIRST LINE OF DEFENSE AGAINST MALWARE, VIRUSES, SPAM, AND OTHER EMAIL-BASED ATTACKS AGAINST MWRA. THE IRONPORT MAINTENANCE AND SUPPORT RENEWAL ENSURES THAT THE MWRA CONTINUES TO RECEIVE SERVICE UPDATES AND UPGRADES TO PROTECT MWRA'S NETWORK AS WELL AS ADDRESS POTENTIAL APPLIANCE FAILURES. SUPPORT CONSISTS OF 24 HOURS A DAY/7 DAYS A WEEK COVERAGE FOR SOFTWARE ISSUES AND 8 HOURS A DAY/3 DAYS A WEEK COVERAGE FOR APPLIANCE ISSUES. THE MIS DEPARTMENT RECENTLY PROCURED THREE NEW IRONPORT APPLIANCES AND EXPECTS TO USE THEM FOR AT LEAST THE NEXT THREE YEARS. THEREFORE, BY ENTERING INTO A THREE-YEAR AGREEMENT, THE MWRA WILL SAVE \$20,222.50, WHICH EQUALS A FREE FULL YEAR OF SUPPORT.</p>	WRA-4239Q		K LOGIX, LLC	\$40,445.00

PURCHASING DELEGATED AUTHORITY ITEMS - August 1 - 31, 2016

NO.	TITLE AND EXPLANATION	CONTRACT #	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-1.	8/16/16 CRYSTAL REPORTS DEVELOPER APPROVAL OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO PROVIDE CRYSTAL REPORTS DEVELOPER SERVICES FOR A PERIOD OF 26 WEEKS UNDER STATE BLANKET CONTRACT ITS63 CATEGORY 1. ON MAY 13, 2015, THE BOARD AWARDED A CONTRACT TO UPGRADE MWRA'S MAXIMO SYSTEM FROM VERSION 5.2 TO 7.6. THE CURRENT MAXIMO SYSTEM HAS 181 REPORTS THAT NEED TO BE CONVERTED TO WORK WITH VERSION 7.6. CRYSTAL REPORTS IS A REPORT WRITER APPLICATION USED TO DESIGN AND GENERATE THESE REPORTS. TWO STAFF MEMBERS ASSIGNED TO THIS PROJECT HAVE LEFT MWRA AND NO CANDIDATES SCREENED FOR THESE POSITIONS HAVE MET THE MINIMUM QUALIFICATIONS.	WRA-4233Q	ITS63	TRILLIUM TECHNICAL INC.	\$85,800.00
P-2.	8/16/16 PREVENTATIVE AND CORRECTIVE MAINTENANCE AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO PROVIDE PREVENTATIVE AND CORRECTIVE MAINTENANCE FOR THE DEPARTMENT OF LABORATORY SERVICES' AGILENT TECHNOLOGIES, INC.'S INSTRUMENTS FOR A TERM OF THREE YEARS. THE TEN INSTRUMENTS TO BE COVERED UNDER THIS NEW MAINTENANCE AGREEMENT INCLUDE SEVEN GAS CHROMATOGRAPH/MASS SPECTROMETERS, TWO GAS CHROMATOGRAPHS, AND ONE LIQUID CHROMATOGRAPH.	WRA-4255		FULL SPECTRUM ANALYTICS, INC.	\$114,696.00
P-3.	8/16/16 TWO NEW SOUND ATTENUATED TRAILER MOUNTED HYDRAULIC POWER PACKS AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR TWO SOUND ATTENUATED TRAILER MOUNTED HYDRAULIC POWER PACKS WITH TWO 6-INCH SUBMERSIBLE PUMPS AND HOSES. THESE PUMPS WILL PROVIDE THE AUTHORITY WITH ADDITIONAL HIGH CAPACITY PUMPS TO SUPPORT EMERGENCY WASTEWATER WET WEATHER EVENTS AND IF NECESSARY SUPPORT WATER OPERATIONS RELATED TO EMERGENCY RESERVOIR LEVEL CONTROL. THESE PUMPS WILL ALSO BE UTILIZED BY MAINTENANCE STAFF FOR ROUTINE PREVENTATIVE MAINTENANCE BY DEWATERING DEEP SEWER FACILITY WET WELLS TO REMOVE GRIT AND DEBRIS.	WRA-4240		QUADEX LINING SYSTEMS, LLC.	\$131,148.00
P-4.	8/16/16 SUPPLY AND DELIVERY OF AQUA AMMONIA AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF AQUA AMMONIA TO THE JOHN J. CARROLL WATER TREATMENT PLANT.	WRA-4254		UNIVAR USA, INC.	\$204,981.00
P-5.	8/16/16 PREVENTATIVE AND CORRECTIVE SERVICES AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO PROVIDE PREVENTATIVE AND CORRECTIVE MAINTENANCE FOR THE DEPARTMENT OF LABORATORY SERVICES' FOR PERKIN ELMER METALS INSTRUMENTS FOR A THREE-YEAR TERM. THE INFORMATION GENERATED FROM THESE VARIOUS INSTRUMENTS IS CRITICAL IN DOCUMENTING MWRA'S COMPLIANCE WITH REGULATORY AGENCY PERMIT REQUIREMENTS AND LIMITS FOR BOTH DRINKING WATER AND WASTEWATER, AS WELL AS ENSURING COMPLIANCE BY INDUSTRIAL USERS WHOSE SAMPLES ARE MONITORED BY MWRA'S TOXIC REDUCTION AND CONTROL UNIT.	WRA-4256		PERKIN ELMER	\$205,273.00
P-6.	8/16/16 SUPPLY AND DELIVERY OF HYDROFLUOROSILICIC ACID AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF HYDROFLUOROSILICIC ACID TO THE JOHN J. CARROLL WATER TREATMENT PLANT.	WRA-4253		PENCCO, INC.	\$381,510.00
P-7.	8/18/16 ALL TERRAIN LITTER SWEEPER AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ONE NEW ALL TERRAIN LITTER VACUUM (ATLV) FOR THE CHELSEA FACILITY COMPLEX AND, ON AN AS NEEDED BASIS, FOR AUTHORITY WIDE USE. THIS ATLV WILL REPLACE THE SMALL YARD SWEEPER PURCHASED IN 1989 THAT WAS RECENTLY SURPLUSED. THE ATLV RIDE-ON OUTDOOR VACUUM IS USABLE ON ASPHALT, CONCRETE, TURF AND GRASS AND CAN CLEAN ALONG FENCE LINES AND CORNERS, MAKING IT USABLE OUTSIDE AS WELL AS IN MAINTENANCE BUILDING AND GARAGE AREAS.	WRA-4250Q		GRAINGER, INC.	\$41,506.62
P-8.	8/19/16 PROVIDE SERVICES TO OUTFIT ONE AUTHORITY PROVIDED TRAILER AWARD OF A PURCHASE ORDER FOR SERVICES TO OUTFIT ONE AUTHORITY PROVIDED TRAILER INTO A MOBILE WATER QUALITY TRAILER. IN AN EFFORT TO LEVERAGE EXISTING SUPPORT INFRASTRUCTURE, STAFF RECOMMENDED THAT MWRA FIT-OUT A MOBILE WATER QUALITY TRAILER (MWQT) TO PROVIDE A MOBILE PLATFORM FOR WATER QUALITY MONITORING, INVESTIGATION AND RESPONSE. ONE OF THE BENEFITS FROM THE UTILIZATION OF THIS SYSTEM IS ACCESS TO REAL-TIME WATER QUALITY INDICATORS. IN ADDITION TO MONITORING, THE MWQT CAN ACT AS A FIELD CENTER OR LABORATORY SPACE TO SUPPORT AND ASSIST EXTENDED FIELD INVESTIGATIONS.	WRA-4242Q		FLEET ELECTRICAL SERVICES, INC.	\$30,692.00
P-9.	8/19/16 PORTABLE MULTI-GAS METERS AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR PORTABLE MULTI-GAS METERS FOR THE DEER ISLAND TREATMENT PLANT. FOR MORE THAN TWENTY YEARS, MWRA HAS PUT PROGRAMS IN PLACE PROTECTING THE HEALTH AND SAFETY OF STAFF FROM THE HAZARDS ASSOCIATED WITH ENTERING AND WORKING IN CONFINED SPACES, INCLUDING THE MANDATORY USE OF PERSONAL GAS DETECTORS. MONITORING EQUIPMENT ON DEER ISLAND INCLUDES BOTH FIXED GAS SYSTEMS AND PERSONAL PORTABLE GAS METERS/SENSORS. IN MANHOLES AND OTHER CONFINED SPACES, AS A BACK-UP TO THE FIXED GAS SYSTEMS, IT IS NECESSARY FOR THE PLANT PERSONNEL TO WEAR/CARRY PORTABLE GAS MONITORS. THE EXISTING PORTABLE GAS METERS USED AT DEER ISLAND ARE OVER TEN YEARS OLD AND ARE AT THE END OF THEIR RELIABLE AND SERVICEABLE LIFE. THE HARSH ENVIRONMENT IN WHICH THESE INSTRUMENTS ARE USED HAS CONTRIBUTED TO ACCELERATED WEAR AND TEAR OF THE EQUIPMENT. REPAIR COSTS INCREASE AS THE EQUIPMENT AGES AND OLDER TECHNOLOGY IS NO LONGER SUPPORTED BY SUPPLIERS AND MANUFACTURERS. AS A RESULT, BROKEN UNITS HAVE BEEN SALVAGED FOR PARTS WHICH ARE USED TO MAINTAIN THE SHRINKING INVENTORY. IT'S UNDER THESE CONDITIONS THAT SENIOR STAFF MADE THE DECISION TO REPLACE ALL EXISTING PERSONAL GAS METERING EQUIPMENT.	WRA-4247		APOLLO SAFETY, INC.	\$120,509.37

PURCHASING DELEGATED AUTHORITY ITEMS - August 1 - 31, 2016

NO.	TITLE AND EXPLANATION	CONTRACT #	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-10. 8/25/16	TWO ORACLE DATABASE APPLIANCES AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR TWO ORACLE DATABASE APPLIANCES (XS-2) WITH ONE YEAR SUPPORT AND IMPLEMENTATION SERVICES. ON OCTOBER 16, 2013, THE BOARD APPROVED THE PURCHASE OF TWO FIRST GENERATION ORACLE DATABASE APPLIANCES (ODA V1) IN LINE WITH THE MIS STRATEGIC PLAN, TO BUILD THE FOUNDATION FOR A NEW INFRASTRUCTURE TO SUPPORT DATABASE SERVER CONSOLIDATION EFFORTS. AN ORACLE DATABASE APPLIANCE (ODA) IS A FULLY INTEGRATED SYSTEM WITH SOFTWARE, SERVERS, STORAGE AND NETWORKING IN A SINGLE ENCLOSURE, WHICH COMBINES THE BENEFITS OF VIRTUALIZATION WITH HARDWARE REDUNDANCY TO PROVIDE HIGH AVAILABILITY SERVERS IN A SINGLE BOX. IT IS NOW NECESSARY TO UPGRADE THE EXISTING PRODUCTION ODA V1 IN CHELSEA WITH THE NEW GENERATION APPLIANCE (ODA XS-2) AND IMPLEMENT A DISASTER RECOVERY (DR) ENVIRONMENT AT THE DEER ISLAND TREATMENT PLANT (DITP) WITH A SECOND ODA XS-2. THE PRODUCTION ODA XS-2 WILL PROVIDE THE ADDITIONAL CAPACITY REQUIRED FOR MIGRATING THE NEW, ADVANCED LAWSON (FINANCIAL MANAGEMENT) AND MAXIMO (ASSET MANAGEMENT) APPLICATIONS, AND ADDRESS THE CONSTANTLY GROWING BUSINESS APPLICATIONS REQUIREMENTS FOR ADDITIONAL DATA AND IMAGES IN THE ORACLE DATABASES. THE DISASTER RECOVERY ODA XS-2 FOR DITP WILL DUPLICATE THE PRODUCTION ENVIRONMENT TO PREVENT DISRUPTION OF MWRA CRITICAL BUSINESS APPLICATIONS IN CASE OF A CATASTROPHIC EVENT IN THE CHELSEA FACILITY.	WRA-4263Q ITC47		MYTHICS INC.	\$188,228.64
P-11. 8/29/16	SUPPLY AND DELIVERY OF HYDROGEN SULFIDE CONTROL CHEMICALS AWARD OF A ONE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THE SUPPLY AND DELIVERY OF HYDROGEN SULFIDE CONTROL CHEMICALS FOR THE FRAMINGHAM EXTENSION SEWER AND FRAMINGHAM EXTENSION RELIEF SEWER.	WRA-4260		EVOQUA WATER TECHNOLOGIES, LLC	\$67,775.53
P-12. 8/30/16	MWRA CONSUMER CONFIDENCE REPORT APPROVAL OF AMENDMENT 1 FOR PRINTING SERVICES FOR THE ANNUAL "MWRA CONSUMER CONFIDENCE REPORT". THE SAFE DRINKING WATER ACT AMENDMENTS OF 1996 CONTAIN A REQUIREMENT FOR OWNERS OF COMMUNITY WATER SYSTEMS TO PROVIDE ANNUAL REPORTING ON THE STATE OF DRINKING WATER QUALITY TO ITS CUSTOMERS, THE CONSUMER CONFIDENCE REPORT ("CCR"). IN THE PROCUREMENT FOR THE CCR, BIDDERS WERE ASKED TO PRICE A SIX PAGE AND EIGHT PAGE REPORT - SHOULD ONE BE NECESSARY. AFTER EXECUTION OF THE PURCHASE ORDER AND INITIAL PLANNING WITH SHAWMUT PRINTING, STAFF DETERMINED THAT AN EIGHT PAGE CCR WAS NECESSARY. WITH THE LEAD CRISIS IN FLINT, MICHIGAN, STAFF DECIDED THAT THE CCR SHOULD ALSO INCLUDE INFORMATION REGARDING SOURCES OF LEAD IN TAP WATER AND LEAD SERVICE LINES. STAFF ARE ASSUMING THAT THE LONGER REPORT WILL STILL BE NECESSARY IN THE SECOND YEAR. SHAWMUT'S BID PRICE FOR EACH PRINTING AND MAILING OF THE 8 PAGE REPORT WAS \$233,204.65, OR \$41,719.17 MORE THAN BID PRICE FOR THE 6 PAGE REPORT (\$191,485.48). SHAWMUT PRINTING HONORED ITS BID PRICE FOR AN ADDITIONAL TWO PAGES IN THE CCR FOR YEAR ONE AND WILL HONOR IT FOR YEAR TWO.	WRA-4148	1	SHAWMUT PRINTING	\$83,438.34
P-13. 8/30/16	SERVICE AGREEMENT FOR UV REACTORS AWARD OF A SOLE SOURCE SERVICE AGREEMENT TO PROVIDE TECHNICAL SUPPORT ON A SCHEDULED AND EMERGENCY BASIS FOR THE UV LIGHT REACTORS AT THE JOHN J. CARROLL AND WILLIAM A. BRUTSCH WATER TREATMENT FACILITIES FOR A TERM OF TWO YEARS.			CALGON CARBON CORPORATION	\$96,000.00

POSITION CONTROL REGISTER (PCR) LOCATION CHANGES AUGUST 2016



<u>DATE OF CHANGE</u>	<u>POSITION TITLE</u>	<u>CURRENT PCR#</u>	<u>CURRENT COST CENTER</u>	<u>NEW PCR #</u>	<u>NEW COST CENTER</u>	<u>REASON FOR CHANGE</u>
7/12/2016	Administrative Systems Coordinator	5210053	Operations Administration	2915018	DI Directors Office	To meet staffing needs at Deer Island WW Treatment Plant
8/27/2016	Account Coordinator	4510030	Treasury	8310018	Fleet Services	To meet staffing needs in the Fleet Services Department

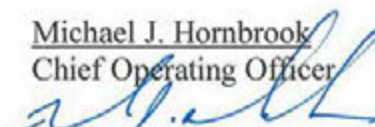

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Fiscal Year 2016 Year-End Capital Improvement Program Spending Report

COMMITTEE: Administration, Finance & Audit

 VOTE
 X INFORMATION


Kathy Soni, Budget Director

Louise L. Miller, Budget Manager
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

Thomas J. Durkin
Director, Finance

At the end of each fiscal year, staff present the Board with a recap of the Capital Improvement Program (CIP).

FY16 was the third year of MWRA's five-year base-line spending cap for FY14-18 established at \$791.7 million. The FY16 capital budget was \$140.1 million. The FY16 capital spending totaled \$95.1 million, \$45.0 million or 32.1% lower than budget.

In terms of overall spending, FY16 has followed previous year's underspending trends which are driven by a multitude of factors that impact both design and construction projects, such as: delays in awards, changes in schedules, scope and priorities; removal of projects from the CIP due to work being done in-house; permitting issues; and revision or deletion of projects after further re-evaluation.

In December 2015, the Authority reached substantial completion of its court mandated CSO Control Plan, the last major milestone in the Clean Water Act case at an approximate total cost of \$907 million. In FY16, the Authority also reached substantial completion of the Spot Pond Storage Facility, providing distribution storage for the Northern Low Service area and achieving water redundancy to the Gillis Pump Station supplying the Northern High and Northern Intermediate High service areas.

The Authority made significant progress on several major projects at the Deer Island, including the North Main Pump Station and Winthrop Terminal Butterfly Valve Replacement and the Scum Skimmer Replacement. MWRA also completed the Deer Island North Main Pump Station Variable Frequency Drives Construction and Electrical Equipment Upgrade Construction 4 contracts.

In FY16, MWRA managed 61 design and construction contracts and awarded 34 new contracts valued at \$150.9 million.

RECOMMENDATION:

For information only. The Fiscal Year 2016 Year-End Capital Program Spending Report highlights MWRA's major capital program accomplishments during FY16 and explanations for spending variances. *Please see Attachment A for the full Report.*

DISCUSSION:

Projects that were completed or reached substantial completion in FY16 included:

- Spot Pond Storage Facility Design/Build - \$50.5 million
- Deer Island North Main Pump Station Variable Frequency Drives Replacement Construction - \$24.5 million
- Cambridge Sewer Separation Contract 8B - \$21.9 million
- Deer Island Electrical Upgrade Construction 4 - \$8.3 million
- Cambridge Sewer Separation Contract 9 - \$7.2 million
- Prison Point/Cottage Farm Engine Upgrades/Pumps and Gearbox Rebuilds - \$6.4 million
- Clinton Wastewater Treatment Plant Digester Rehabilitation - \$4.6 million
- Reserved Channel Sewer Separation Contract 8 (BWSC) - \$4.5 million
- MWR003 Gate and Siphon Construction 2 - \$2.6 million
- Cambridge Sewer Separation Concord Lane - \$2.4 million
- Information Technology System Architecture - \$1.0 million
- Hultman Leak Shaft 5A - \$0.2 million
- Reserved Channel Sewer Separation Contract 6 (BWSC) - \$0.2 million

MWRA made significant progress on a number of water and wastewater projects, including:

- Deer Island Scum Skimmer Replacement Construction – 99% complete
- North Main Pump Station and Winthrop Terminal Facility Butterfly Valve Replacement – 51% complete
- Chelsea Screenhouse Upgrades – 68% complete
- Application Improvement Program Maximo Upgrade contract – 38% complete
- Weston Aqueduct Supply Mains Section 36/W11S 9-A11 Valve – 90% complete
- Southborough Water Quality Laboratory Upgrades – 91% complete
- Deer Island Cryogenics Chillers Replacement – 73% complete

MWRA pipeline rehabilitated in FY16 through the various projects totaled 2.2 miles for wastewater projects and 1.2 miles for water projects. *Please see Attachment D for a detailed breakdown of the linear footage by project for FY16.*

Major contracts awarded by MWRA in FY16 with the following Notice to Proceed dates include:

- Southborough Water Quality Laboratory Upgrades Construction – August 2015.

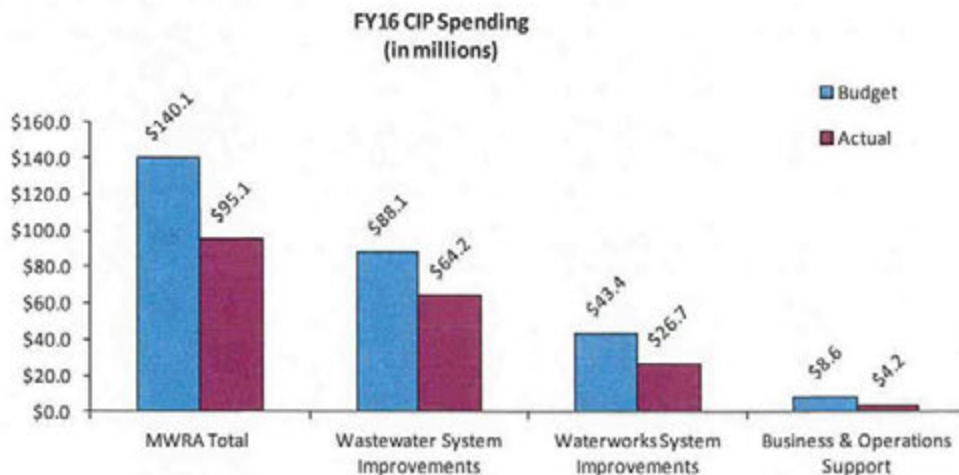
- Deer Island Fuel System Modifications - November 2015.
- Alewife Brook Pump Station Rehabilitation Construction - January 2016.
- Northern Intermediate High Redundancy and Storage Phase 1B Section 110 Construction - January 2016.
- Quabbin Power, Communications, and Security Construction - February 2016.
- Caruso Pump Station Improvements - March 2016.
- Clinton Wastewater Treatment Plant Phosphorus Reduction Construction - March 2016.
- Winsor Station Hatchery Pipeline Construction - March 2016.
- Rosemary Brook Building Repair - March 2016.
- Wachusett Aqueduct Pump Station Construction - March 2016.
- Southern Extra High Redundancy Pipeline Section 111 Phase 1 Construction - May 2016.
- Beacon Street Line Repair Construction - May 2016.
- Deer Island Winthrop Terminal Facility Variable Frequency Drives Replacement Construction - June 2016.

Please See attachment C FY16 Planned versus Actual/Revised CIP Notices to Proceed for a complete list of contracts awarded.

FY16 also included MWRA spending of \$38.6 million for the community financing assistance programs on both the water and wastewater side (\$24.2 million in loans and \$14.4 million in Inflow and Infiltration (I/I) grants) offset by \$30.3 million in prior period loan repayments for net spending of \$8.3 million.

Major Variances to FY16 Budget

For FY16, total Capital Improvement Program spending was budgeted at \$140.1 million. Total spending was \$95.1 million, which was \$45.0 million or 32.1% below budget. Underspending was reported in Wastewater of \$23.9 million, Waterworks of \$16.7 million, and Business and Operations Support of \$4.3 million.



The table below reports the FY16 spending and variances by major program:

\$ in Millions	Budget	Actuals	\$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	20.1	6.6	-13.5	-67.0%
Treatment	37.6	27.3	-10.3	-27.4%
Residuals	0.0	0.0	0.0	N/A
CSO	13.2	16.7	3.4	25.9%
Other	17.2	13.6	-3.6	-20.9%
Total Wastewater System Improvements	\$88.1	\$64.2	-\$23.9	-27.2%
Waterworks System Improvements				
Drinking Water Quality Improvements	6.4	7.1	0.7	10.7%
Transmission	19.5	8.1	-11.4	-58.5%
Distribution & Pumping	17.4	15.0	-2.4	-14.0%
Other	0.1	-3.4	-3.5	N/A
Total Waterworks System Improvements	\$43.4	\$26.7	-\$16.7	-38.5%
Business & Operations Support	\$8.6	\$4.2	-\$4.3	-50.7%
Total MWRA	\$140.1	\$95.1	-\$45.0	-32.1%

The \$45.0 million variance is the net of \$53.8 million in less than budgeted spending on 31 projects offset by \$8.8 million in more than budgeted spending on 14 projects. The main reasons for the variances were:

Wastewater Interception & Pumping: Net underspending of \$13.5 million

- \$8.1 million for Chelsea Creek Upgrades – Construction: contract not awarded in FY16
- \$3.3 million for Alewife Brook Pump Station Rehab Construction and Construction Phase Engineering: contract awarded later than budgeted
- \$1.3 million for Caruso Pump Station Improvements Construction: contract awarded later than budgeted
- \$0.4 million for Wastewater Metering Planning/Study/Design: contract not awarded in FY16.

Wastewater Treatment: Net underspending of \$10.3 million

- \$3.2 million for Electrical Equipment Upgrade – Construction 4: reduction in scope and timing of work
- \$1.9 million for Winthrop Terminal Facility VFD Replacement: contract awarded later than budgeted
- \$1.6 million for North Main Pump Station Variable Frequency Drives (VFDs) Construction: work anticipated in FY16 completed in FY15
- \$1.1 million for Gravity Thickener Rehabilitation: contract not awarded in FY16
- \$1.1 million for Digester Sludge Pump Replacement Phase 2: project schedule change and award lower than budget
- \$0.8 million for Barge Berth and Facility Replacement: contract not awarded in FY16
- \$0.8 million for Combined Heat & Power Design: contract not awarded in FY16
- \$0.5 million for Steam Turbine Generator System Modifications Construction: energy efficiency rebate received

- The underspending was partially offset by overspending on Butterfly Valve Replacement of \$1.3 million and Secondary Reactor VFDs of \$0.5 million due to progress of construction.

Combined Sewer Overflow (CSO): Net overspending of \$3.4 million

- \$6.0 million in overspending at Cambridge Sewer Separation due to water use during construction and updated cost estimates for unforeseen utility locations and private utility coordination, subsurface conditions, and additional engineering services during construction
- The overspending was partially offset by underspending for Reserved Channel Sewer Separation of \$1.6 million due to updated cost estimates and MWR003 Gate & Siphon of \$0.5 million due to timing of final work.

Wastewater Other: Underspending of \$3.6 million

- primarily due to less than anticipated community requests for grants and loans under the Infiltration and Inflow (I/I) program.

Drinking Water Quality Improvements: Net overspending of \$0.7 million

- primarily due to construction progress on Existing Facilities CP-7 of \$0.6 million and Spot Pond Storage Facility Design/Build of \$0.9 million, and Brutsch Treatment Facility of \$0.3 million due to additional construction administration services.
- The overspending was offset by \$1.0 million litigation settlement for Carroll Water Treatment Plant's Ultraviolet Disinfection Construction.

Waterworks Transmission: Net underspending of \$11.4 million

- \$9.3 million for Long Term Redundancy primarily due to later and lower than budgeted contract award
- \$1.5 million due to the timing of Watershed Land acquisitions
- \$0.5 million caused by a schedule change for the Sudbury/Weston Aqueduct Repairs.

Water Distribution and Pumping: Net underspending of \$2.4 million

- \$1.4 million for NIH Redundancy & Storage - Section 89/29 Redundancy Construction Phase 1B and Construction Phase Engineering: later than budgeted contract award
- \$1.1 million for WASM 3 - MEPA/Design: ongoing alternatives review of options for metropolitan redundancy
- \$0.8 million for Valve Replacement: less than anticipated need.
- The underspending was partially offset by overspending on Weston Aqueduct Supply Mains Section 36/C/S9-A11 Valve of \$0.9 million due to contractor progress, and Southern Extra High Redundancy Design of \$0.5 million due to consultant progress.

Waterworks Other: Underspending of \$3.5 million

- due to lower community requests for Local Water System Loans of \$3.1 million, and miscellaneous Waterworks Facility Asset Protection projects of \$0.7 million due to schedule changes.
- The underspending was offset by overspending for Quabbin Power, communication & Security Design and Construction of \$0.3 million due to progress of construction.

Business and Operations Support: Underspending of \$4.3 million

- due to lower than budgeted spending on multiple projects, including
 - \$2.3 million due to timing of IT Strategic Plan implementation
 - \$1.2 million due to timing of vehicle purchases
 - \$0.9 million due to lower than projected use of as-needed technical assistance contracts.

Please see Attachment B for detailed FY16 CIP variance explanations of all FY16 projects.

FY17 Outlook

Looking ahead to FY17, the projected capital spending is \$164.4 million including contingency of \$8.7 million. Projects with the largest budgeted spending in FY17 include Facility Asset Protection of \$25.1 million, Long-Term Redundancy of \$20.0 million, Infiltration/Inflow Local Financial Assistance of \$18.8 million, Northern Intermediate High Redundancy and Storage of \$18.5 million, Deer Island Treatment Plant Asset Protection of \$13.3 million, and Southern Extra High Redundancy and Storage of \$11.6 million.

Staff will be completing the design and progressing to the bid and award stage on several major projects such as Chelsea Creek Headworks Upgrade, Deer Island (DI) HVAC Equipment Replacement Construction, Waterworks Supervisory Control and Data Acquisition System (SCADA)/Program Logic Controller (PLC) Upgrades, NIH Section 89/29 Redundancy Construction Phase 2, DI Gravity Thickener Rehabilitation, Southern Extra High Redundancy & Storage Redundancy Pipeline Section III - Construction 2 and Construction 3, DI Switchgear Replacement – Construction, DI Miscellaneous Variable Frequency Drives Replacements – Construction, DI Sodium Hypochlorite and Bisulfite Tanks Rehabilitation, and Interceptor Renewal 1, Reading Extension Sewer – Construction. As of June 30, 2016, Northern Intermediate High Section 89 & 29 Redundancy Phase 1C Construction, originally anticipated to be awarded in late FY16, is now scheduled for FY17. *Please see Attachment E for FY17 Planned Contract Awards.*

Staff will continue to provide oversight for the CSO Community Managed projects including South Dorchester Bay Commercial Point of \$3.6 million, Reserved Channel of \$0.4 million and Cambridge Sewer Separation contracts of \$6.9 million.

ATTACHMENTS:

- A. Fiscal Year 2016 Year-End Capital Program Spending Report
- B. FY16 CIP Year-End Variance Report
- C. FY16 Planned versus Actual/Revised CIP Notice to Proceeds

- D. Linear Footage of Rehabilitated or New Pipelines in FY16
- E. FY17 Planned Capital Contract Awards

MASSACHUSETTS WATER RESOURCES AUTHORITY

Capital Program Spending Report

for

Fiscal Year 2016



September 14, 2016

Fiscal Year 2016 Year-End Capital Program Spending Report

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Introduction

Since its inception in 1986, MWRA has expended \$8.0 billion on capital initiatives. Of this spending 72% has supported improvements to Wastewater treatment, interception, pumping and combined sewer overflow (CSO) systems, 26% has supported Waterworks treatment, transmission, distribution and water protection improvements, and 2% has supported Business and Operations Support initiatives. Through FY16, nearly 80% of the capital spending has been for court mandated projects. The long-term strategy for capital work is identified in the Authority's Master Plan which was first published in 2006, updated in 2013, and serves as a road map for inclusion of projects in the Capital Improvement Program (CIP) in every budget cycle. Going forward, MWRA expects to spend nearly \$2.2 billion on system improvements between FY17-FY26 with main emphasis on Asset Protection and Water System Redundancy initiatives.

MWRA Capital Spending FY1986 - FY2026 (in millions)				
Program	Expenditures FY86 - FY16		Planned Expenditures FY17 - FY26	
	Amount	% of Total	Amount	% of Total
Wastewater	\$5,783	72%	\$1,097	50%
Waterworks	\$2,133	26%	\$1,062	48%
Business & Operations Support	\$125	2%	\$40	2%
Total MWRA	\$8,042	100%	\$2,199	100%

To date, MWRA has spent \$901.2 million on the Wastewater CSO program and plans to spend an additional \$10.5 million through FY21.

To date, MWRA has distributed \$135.5 million in grants and \$174.7 million in no-interest loans to fund 508 separate projects in 43 communities under the I/I Local Financial Assistance Program. Additionally, \$322.1 million in Local Water Pipeline Assistance Program loans has been distributed to member communities.

FY16 Spending

Total CIP spending in FY16 was \$95.1 million which was \$45.0 million or 32.1% less than the \$140.1 million budgeted.

Spending by program in FY16 was:

Program	FY16 Budget (in millions)	FY16 Actuals (in millions)	Variance	% Variance
Wastewater	\$88.1	\$64.2	(\$23.9)	-27.2%
Waterworks	\$43.4	\$26.7	(\$16.7)	-38.5%
Business & Operations Support	\$8.6	\$4.2	(\$4.3)	-50.7%
Total	\$140.1	\$95.1	(\$45.0)	-32.1%

FY16 included spending of \$38.6 million not directly under MWRA's control, most notably the Inflow and Infiltration (I/I) program, the Local Water Pipeline program, and the community managed Combined Sewer Overflow (CSOs) projects. These programs are either loan or grant programs to support the MWRA's member communities' local water and sewer infrastructure. In FY16, MWRA expended \$24.2 million in water and I/I loans and \$14.4 million in I/I grants offset by \$30.3 million in prior period loan repayments for net spending of \$8.3 million. After accounting for programs which are not directly under MWRA's control, the FY16 CIP underspending is \$42.3 million or 37.5%, as shown in the table below.

Program	FY16 Budget (in millions)	FY16 Actuals (in millions)	Variance	% Variance
Wastewater less I/I and Community CSO	\$58.5	\$34.1	(\$24.4)	-41.7%
Waterworks less Water Loans	\$45.6	\$32.0	(\$13.6)	-29.8%
Business & Operations Support	\$8.6	\$4.2	(\$4.3)	-50.7%
Total	\$112.6	\$70.4	(\$42.3)	-37.5%

FY16 Capital Program Highlights

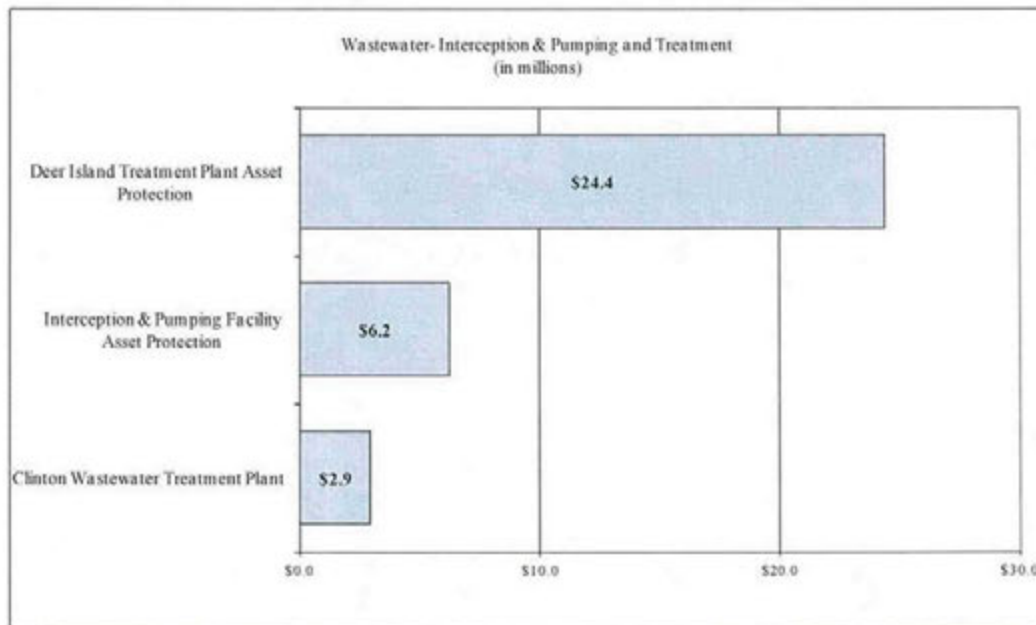
This section highlights the spending and key accomplishments by major program categories and projects.

Wastewater System

During FY16, the MWRA spent \$64.2 million on Wastewater system projects: \$6.6 million for Interception & Pumping projects, \$27.3 million for Treatment projects, \$16.7 million for CSO projects, and \$13.6 million for Other Wastewater projects.

Wastewater Interception & Pumping and Treatment Projects

Total FY16 spending for Interception & Pumping, including corrosion and odor control was \$6.6 million and Treatment was \$27.3 million. The largest spending occurred on the following:



Key Accomplishments in Wastewater - Interception and Pumping:

- Chelsea Screenhouse Upgrades
 - Notice to Proceed (NTP) for construction contract issued August 2015.
 - NTP for construction resident engineering services issued September 2015.
 - Project 68% completed in FY16.
- Reading Extension Sewer and Metropolitan Sewer Rehabilitations Design, Construction Administration and Resident Engineer/Inspection Services
 - NTP issued August 2015.
- Nut Island System-Wide Odor Control Evaluation
 - NTP issued September 2015.
- Prison Point/Cottage Farm Engine Upgrades/Pumps and Gearbox Rebuilds
 - \$6.4 million project substantially complete in November 2015.

- Alewife Brook Pump Station Rehabilitation Construction
 - NTP issued January 2016.
- Caruso Pump Station Improvements Construction
 - NTP issued March 2016.
- Chelsea Creek Headworks Resident Engineering/Inspection services
 - Contract awarded in June 2016.

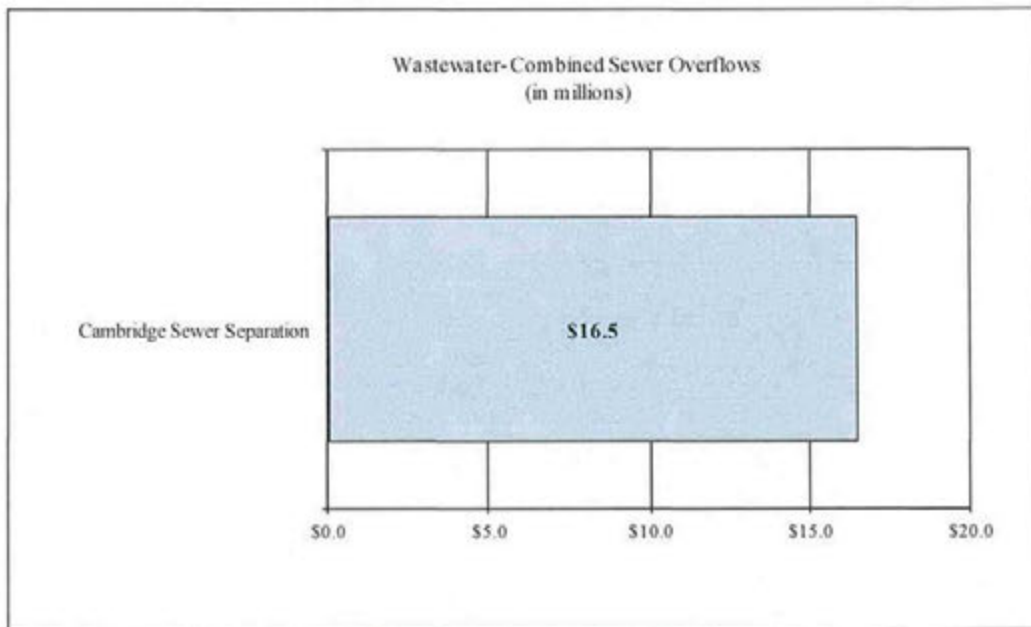
Key Accomplishments in Wastewater – Treatment:

- Deer Island Treatment Plant (DITP) North Main Pump Station Variable Frequency Drive
 - \$24.5 million project substantially complete in March 2016.
- DITP Fuel System Modifications
 - NTP issued November 2015.
- DITP Fire Alarm System Replacement Design/Construction Engineering Services
 - NTP issued December 2015.
- DITP Sludge Pump Replacement Phase 2
 - NTP issued January 2016.
- Clinton Wastewater Treatment Plant Phosphorus Reduction Construction
 - NTP issued March 2016.
- Clinton National Grid Gas Line
 - Contract awarded in May 2016.
- Clinton Digesters Rehabilitation
 - \$4.6 million project substantially complete in April 2016.
- DITP Electrical Equipment Upgrade Construction 4
 - \$8.3 million project substantially complete in May 2016.
- DITP Winthrop Terminal Facility Variable Frequency Drives Replacement Construction
 - NTP issued June 2016.
- DITP Scum Skimmer Replacement Construction
 - Significant progress made on project in FY16 – contract 99% complete
- DITP North Main Pump Station and Winthrop Terminal Facility Butterfly Valve Replacement
 - Significant progress was made on project in FY16 – contract 55% complete.

- DITP Cryogenics Chillers Replacement
 - Significant progress was made on project in FY16 – contract 73% complete

Wastewater System – Combined Sewer Overflow (CSO) Projects

Total FY16 spending for CSO projects was \$16.8 million. Of this amount, the community managed projects totaled \$16.5 million and MWRA managed projects totaled \$0.3 million. The largest spending relates to the Cambridge Sewer Separation contract:



Key Accomplishments in CSO:

- The remaining CSO Sewer Separation projects including Boston Water & Sewer's Reserved Channel contracts 6 and 8, totaling \$4.7 million and Cambridge Sewer Separation contracts 8B, 9 totaling \$29.1 million and Concord Lane totaling \$2.4 million all reached substantial completion in compliance with Schedule Seven.
- MWRA-managed MWR003 Gate & Siphon Construction 2 contract for \$2.6 million was substantially complete in October 2015.

Wastewater - Other

In FY16, this category includes only the community managed Infiltration/Inflow (I/I) Local Financial Assistance Program.

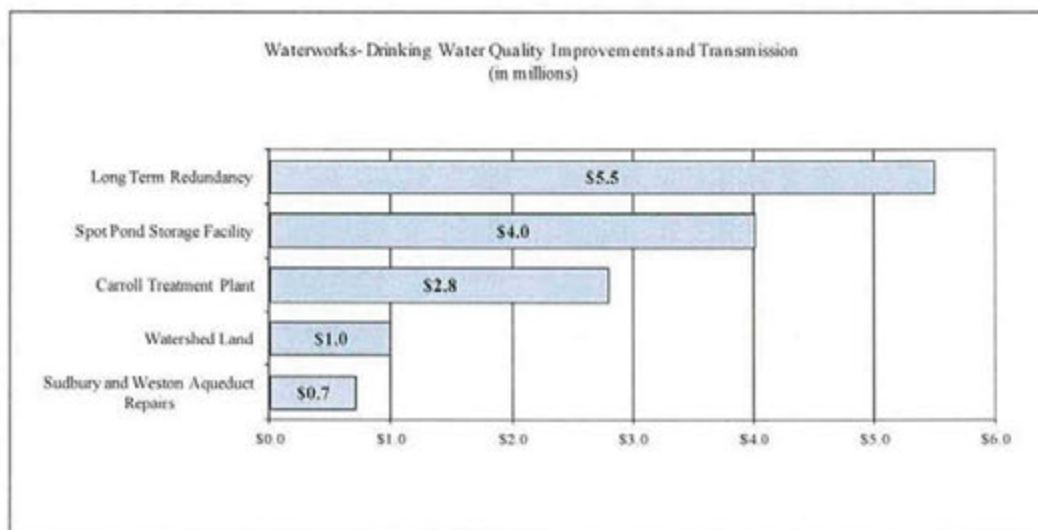
In FY16, MWRA distributed \$14.4 million in grants and \$8.0 million in no-interest loans which is offset by repayment of prior-period loans of \$8.8 million resulting in net spending of \$13.6 million.

Waterworks System

During FY16, the MWRA spent \$26.7 million on Waterworks system projects: \$7.1 million for Drinking Water Quality Improvement projects, \$8.1 million for Transmission projects, \$14.9 million for Distribution and Pumping projects, and netted receipts of \$3.4 million for Other Waterworks projects.

Waterworks System – Drinking Water Quality Improvements and Transmission

Total FY16 spending for Drinking Water Quality Improvements and Transmission projects was \$7.1 million and \$8.1 million, respectively. Projects with the largest spending are listed below:



Key Accomplishments in Drinking Water Quality Improvements:

- Southborough Water Quality Laboratory Upgrades
 - NTP issued August 2015.
 - Significant progress was made on project in FY16 – contract 91% complete.
- Spot Pond Storage Facility Design/Build
 - \$50.5 million project substantially complete in December 2015.
- Weston Aqueduct Supply Mains Sections 36/W11S 9-A11 Valve
 - Significant progress was made on project in FY16 – contract 90% complete.

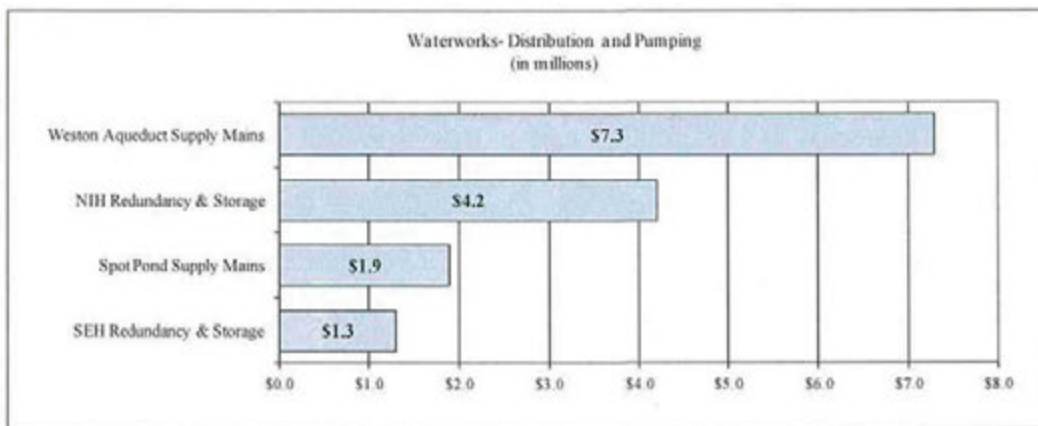
Key Accomplishments in Transmission:

- Wachusett Aqueduct Pump Station Construction
 - NTP issued March 2016.

- Winsor Station Hatchery Pipeline Construction
 - NTP issued March 2016.
- Rosemary Brook Building Repair
 - NTP issued March 2016.
- Hultman Shaft 5A Leak Repair
 - \$0.2 million repair project substantially complete in May 2016.

Waterworks System - Distribution and Pumping

Total FY16 spending for Distribution and Pumping projects totaled \$14.9 million. Projects with the largest spending are listed below:



Key Accomplishments in Distribution and Pumping:

- Cathodic Protection Testing Evaluation Program
 - NTP issued August 2015.
- Northern High Service Section 56 Feasibility Study
 - NTP issued January 2016.
- Northern Intermediate Redundancy & Storage - Phase 1B Section 110
 - NTP issued January 2016.
- Southern Extra High Redundancy - Pipeline Section 111 Phase 1 Construction
 - Contract awarded May 2016.

Waterworks – Other

This category includes the community assistance program for the local water pipelines and other MWRA Waterworks projects.

In FY16, MWRA distributed \$16.2 million in Local Water Pipeline Assistance Program loans to member communities offset by repayment of prior-period loans of \$21.5 million which resulted in total net receipts of \$5.3 million.

Key Accomplishments in Other Waterworks:

- Quabbin Power Communication & Security Construction
 - NTP issued February 2016.
- Beacon Street Line Repair Construction
 - NTP issued June 2016.

Business & Operations Support

Total FY16 spending for Business and Operations Support totaled \$4.2 million.

Key Accomplishments in Business & Operations Support:

- Information Technology System Architecture
 - \$1.0 million project substantially complete in October 2015.
- Application Improvements Program Enterprise Performance Management Enhancements
 - NTP issued March 2016.
- Information Security Protection Infrastructure Upgrades
 - NTP issued March 2016.
- Maximo Upgrade
 - Significant progress was made on contract in FY16 – 38% complete.

Total New or Rehabilitated Pipeline

In addition to measuring spending on CIP projects, MWRA tracks the mileage of pipeline that is rehabilitated or added to its infrastructure. During FY16, the MWRA rehabilitated or replaced over two miles of wastewater pipeline including CSO Community Managed pipeline and over one mile of water pipeline. These numbers do not include the rehabilitated or replaced pipelines of our member communities which are funded through our Inflow/Infiltration (I/I) and Water Loan programs as referenced above. *Refer to Attachment D for the specific linear footage of rehabilitated or new pipelines by project in FY16.*

FY16 Spending and Schedule Variances

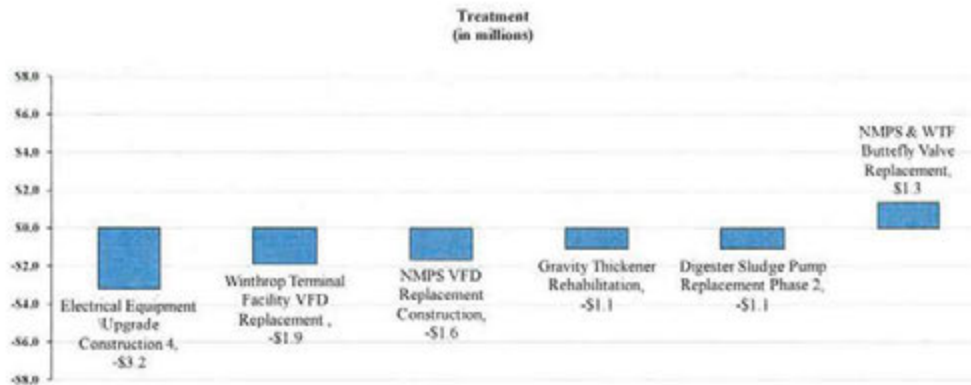
Total FY16 capital spending was \$95.1 million which was \$45 million or 32.1% less than the \$140.1 million budget. The variance is primarily due to underspending for the Interception & Pumping Facility Asset Protection, Deer Island Treatment Plant Asset Protection, Long-Term Redundancy, lower community requests for loans and grants for the Infiltration/Inflow (I/I) Local Financial Assistance Program and for the Water Loan Assistance Program partially offset by water use during construction and unforeseen conditions for the Cambridge Sewer Separation project.

Program	Budgeted Spending	Actual Spending	Variance to Budget		% Actual Spending to Total Spending
			\$	%	
Total Wastewater System	\$88,109	\$64,185	(\$23,925)	-27.2%	67%
Interception & Pumping	\$20,101	\$6,635	(\$13,467)	-67.0%	7%
Treatment	\$37,567	\$27,268	(\$10,299)	-27.4%	29%
Residuals	\$0	\$0	\$0	0.0%	0%
Combined Sewer Overflow	\$13,228	\$16,660	\$3,432	25.9%	18%
Other Wastewater Programs	\$17,213	\$13,622	(\$3,591)	-20.9%	14%
Total Waterworks System	\$43,430	\$26,725	(\$16,706)	-38.5%	28%
Drinking Water Quality Improvements	\$6,431	\$7,121	\$690	10.7%	7%
Transmission	\$19,504	\$8,089	(\$11,415)	-58.5%	9%
Distribution and Pumping	\$17,389	\$14,957	(\$2,432)	-14.0%	16%
Other Waterworks Programs	\$107	-\$3,443	(\$3,549)	-3322.3%	-4%
Business & Operations Support	\$8,583	\$4,235	(\$4,349)	-50.7%	4%
Total MWRA	\$140,123	\$95,144	(\$44,979)	-32.1%	100%

FY16 Variances for Major Projects

Please see Attachment B for the full FY16 CIP variance explanations by project.

Wastewater – Treatment



Deer Island Treatment Plant Asset Protection:

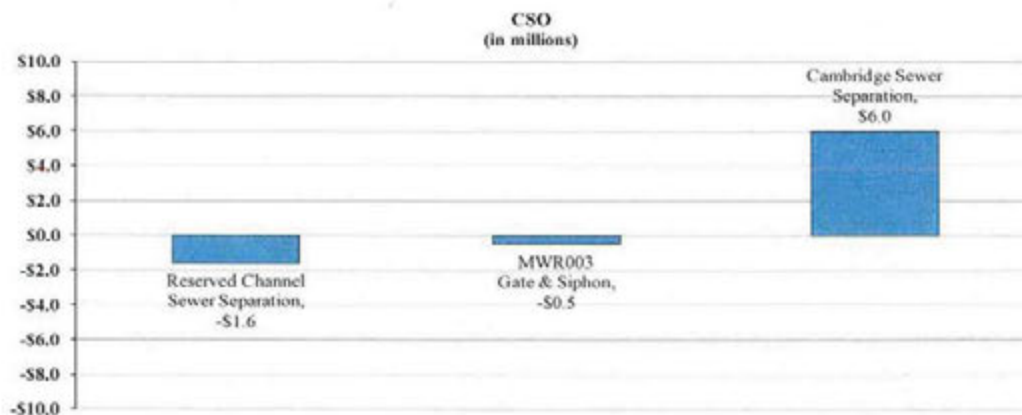
- Total FY16 Budget: \$35 million
- Total FY16 Expended: \$24.4 million
- \$10.6 million less than budgeted spending
 - Underspending on projects totaling \$13 million, including
 - \$3.2 million for Electrical Equipment Upgrade – Construction 4: reduction in scope and timing of work
 - \$1.9 million for Winthrop Terminal Facility VFD Replacement: later than budgeted Notice to Proceed issued for June 2016

- \$1.6 million for North Main Pump Station Variable Frequency Drives (VFDs) Construction: work anticipated in FY16 completed in FY15 -
- \$1.1 million for Gravity Thickener Rehabilitation: contract not awarded in FY16
- \$1.1 million for Digester Sludge Pump Replacement Phase 2: project schedule change and lower than budget award
- \$0.8 million for Barge Berth and Facility Replacement: contract not awarded in FY16
- \$0.8 million for Combined Heat & Power Design: contract not awarded in FY16
- \$0.5 million for Steam Turbine Generator System Modifications Construction: energy efficiency rebate received
- Offset by overspending totaling \$2.4 million, including:
 - \$1.3 million for Butterfly Valve Replacement of \$1.3 million: greater than budgeted construction progress
 - \$0.5 million for Secondary Reactor VFDs of \$0.5 million: greater than budgeted construction progress.

Clinton Wastewater Treatment Plant:

- Total FY16 Budget: \$2.6 million
- Total FY16 Expended: \$2.9 million
- \$0.3 million more than budgeted spending due to timing of National Grid gas line payment of \$0.4 million

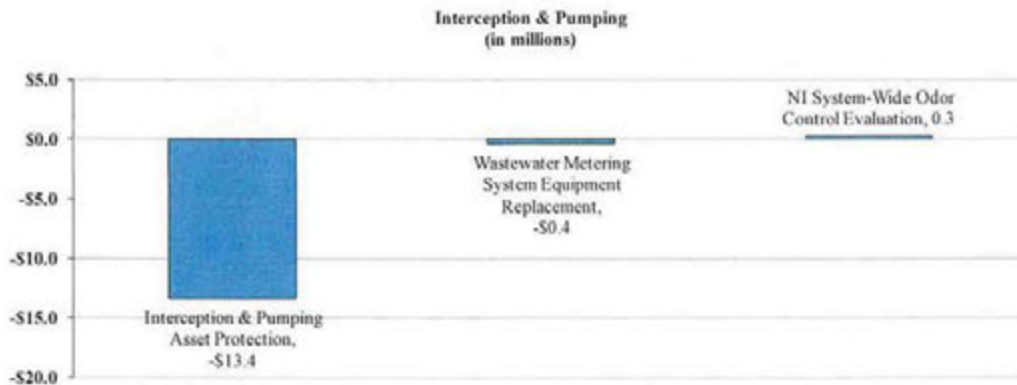
Wastewater - Combined Sewer Overflows (CSO's)



- Total FY16 Budget: \$13.2 million
- Total FY16 Expended: \$16.7 million
- \$4.4 million more than budgeted spending
 - \$6.0 million in overspending at Cambridge Sewer Separation due to water use during construction and updated cost estimates for unforeseen utility locations and private utility coordination, subsurface conditions, and additional engineering services during construction

- offset by underspending for Reserved Channel Sewer Separation of \$1.6 million due to updated cost estimates and MWR003 Gate & Siphon of \$0.5 million due to timing of final work.

Wastewater - Interception & Pumping

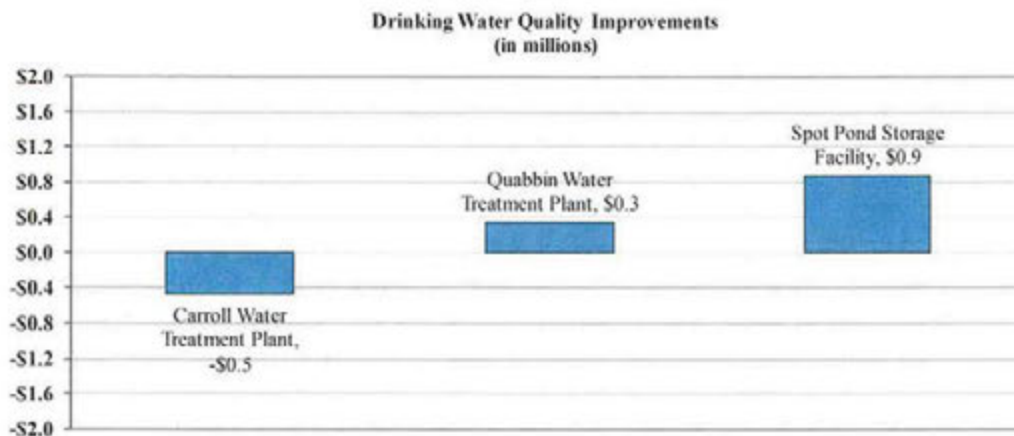


- Total FY16 Budget: \$20.1 million
- Total FY16 Expended: \$6.6 million
- \$13.5 million less than budgeted spending
 - Underspending in Interception & Pumping Facility Asset Protection totaling \$13.4 million, including
 - \$8.1 million for Chelsea Creek Upgrades – Construction: contract not awarded in FY16
 - \$3.3 million for Alewife Brook Pump Station Rehab Construction and Construction Phase Engineering: contract awarded later than budgeted
 - \$1.3 million for Caruso Pump Station Improvements Construction: contract awarded later than budgeted
 - Underspending in Wastewater Metering System Equipment Replacement totaling \$0.4 million due to updated schedule for Planning/Study/Design contract.
 - Offset by overspending of \$0.3 million for Nut Island System-Wide Odor Control Evaluation due to contractor progress.

Wastewater - Other

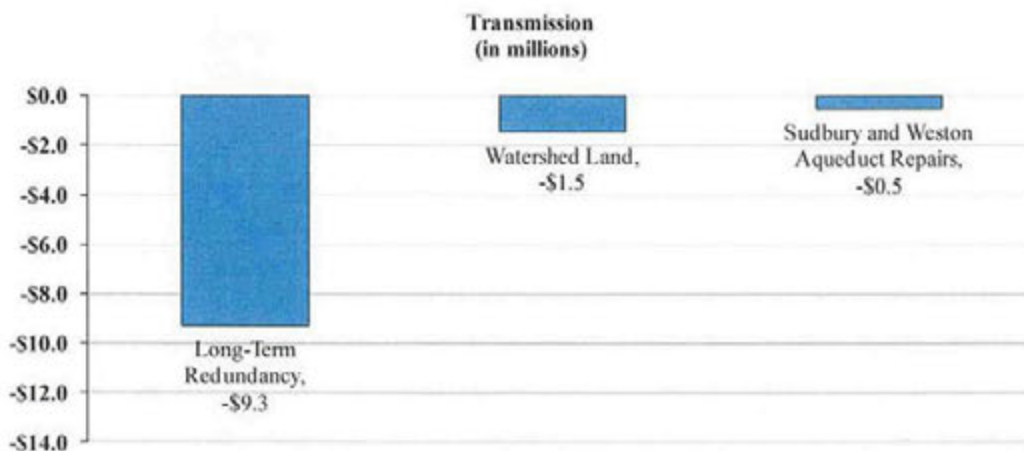
\$3.6 million less than budgeted spending for I/I Local Financial Assistance resulting from \$2.1 million in less than budgeted grant distributions and \$1.5 million in less than budgeted no-interest loans.

Waterworks - Drinking Water Quality Improvements



- Total FY16 Budget: \$6.4 million
- Total FY16 Expended: \$7.1 million
- \$0.7 million more than budgeted spending
 - Overspending of \$1.2 million on various projects, including
 - \$0.9 million for Spot Pond Storage Facility primarily due to project progress
 - \$0.5 million for Existing Facilities Upgrades CP-7 Southborough Water Quality Laboratory Upgrades Construction due to project progress
 - \$0.3 million for Brutsch Water Treatment Plant primarily due to additional construction administration and resident engineering services.
 - Offset by receipt of litigation settlement of \$1.0 million for Carroll Water Treatment Plant Ultraviolet Disinfection Construction litigation settlement.

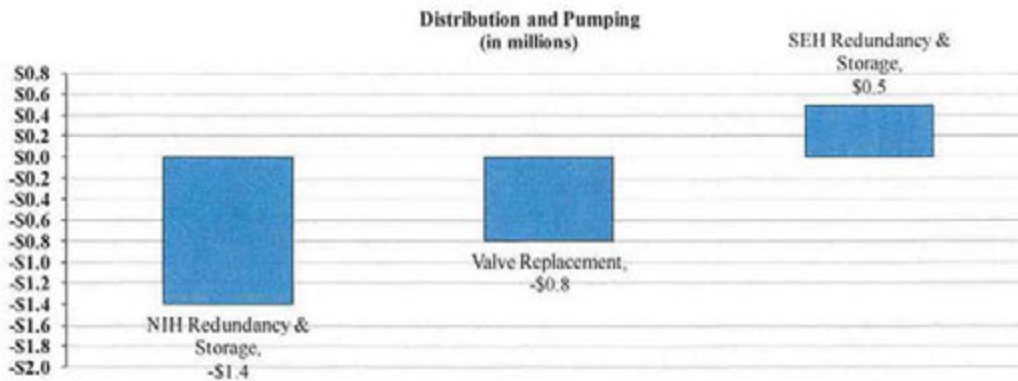
Waterworks – Transmission



- Total FY16 Budget: \$19.5 million
- Total FY16 Expended: \$8.1 million
- \$11.4 million less than budgeted spending

- Underspending of \$11.7 million on various projects, including
 - \$9.3 million for Long Term Redundancy primarily due to updated schedule, and ongoing design review for the Wachusett Aqueduct Pump Station Construction as well as later and lower than budgeted contract award
 - \$1.5 million due to the lower than budgeted Watershed Land acquisitions
 - \$0.5 million caused by a schedule change for the Sudbury/Weston Aqueduct Repair (Rosemary Brook Building Repair contract).
- Offset by overspending of \$0.3 million due to consultant and contractor progress on Hatchery Pipeline project and greater than budgeted award.

Waterworks - Distribution and Pumping



- Total FY16 Budget: \$17.4 million
- Total FY16 Expended: \$15.0 million
- \$2.4 million less than budgeted spending
 - Underspending of \$2.4 million on various projects, including
 - \$1.4 million for Northern Intermediate High (NIH) Redundancy & Storage - Section 89/29 Redundancy Construction Phase 1B and Construction Phase Engineering: later than budgeted contract award
 - \$1.1 million for WASM 3 - MEPA/Design: ongoing alternatives review of options for metropolitan redundancy
 - \$0.8 million for Valve Replacement: less than anticipated need.
 - Offset by overspending on Weston Aqueduct Supply Mains Section 36/C/S9-A11 Valve of \$0.9 million due to contractor progress, and Southern Extra High Redundancy Design of \$0.5 million due to consultant progress.

Waterworks - Other

Local Water Pipeline Improvement Loan Program: \$3.1 million less than budgeted spending which resulted from \$3.9 million in lower than projected loan distributions and \$0.8 million in higher than projected repayment of prior period loans.

Business & Operations Support

- Total FY16 Budget: \$8.6 million
- Total FY16 Expended: \$4.2 million
- \$4.3 million less than budgeted spending
 - Management Information Systems (combined): \$2.3 million less than budgeted spending primarily due to timing of Information Technology initiatives.
 - Centralized Equipment Purchase: \$1.2 million less than budgeted spending primarily due to timing of vehicle purchases and award of equipment contracts.
 - Capital Maintenance Planning/Development: \$0.9 million less than budgeted spending primarily due to lower than projected task order work for As-Needed Design contracts 11-13 and updated schedules for contracts 14 and 15.

FY16 CIP Contract Awards

The FY16 CIP planned the award of 49 contracts with a value of \$224.8 million. During FY16, the MWRA awarded 34 contracts valued at \$150.9 million, representing 69.4% of contracts and 67.1% of contract funding. Of the 49 planned awards, 26 contracts were awarded, 15 are expected to be awarded in FY17, 1 has been rescheduled beyond FY17, and 7 were deleted or being done in-house. In addition to FY16 planned awards, 8 contracts were awarded: 4 projects originally planned in FY15, 1 contract for work that was broken out from an existing phase of a project, 1 contract that was expected to begin in FY17, and 2 unplanned contracts, 1 for a new sub-phase added to an existing project and 1 for emergency work, bringing the total number of contracts awarded in FY16 to 34.

A comparison of the FY16 budgeted projects, the mid-year revised projection based on the FY17 Proposed CIP, and the FY16 actual contract awards are detailed below:

FY16 Contracts (\$ in Millions)				
Program	Budget		Actual	
	#	\$	#	\$
Total MWRA	49	224.8	34	150.9
Wastewater	22	125.8	16	61.5
Waterworks	14	91.1	13	83.6
Business Operations & Support	13	7.9	5	5.8

Please refer to Attachment C for a full listing of contracts planned to be awarded in FY16 and actual awards.

Change Orders and Consultant Performance Review

Management of change orders remains a top priority. Total change orders for MWRA-managed capital projects were 8.5% of award value through June 2016. Change orders as a percent of award

value for completed and ongoing work in the FY16 CIP are 9.0% and 1.3%, respectively. These percentages remain within the target of 10% for change orders as a percentage of awards.

Master Plan and the FY16 CIP Process

The draft updated Water and Wastewater System Master Plans were used in the Fall 2013 to help guide development of the spending cap for the FY14-18 time period. Planning staff worked with Operations and Engineering to update information, identify additional capital projects, and to review priorities for the most critical projects. The 2013 Master Plans were presented to the Board of Directors in 2013.

The updated Master Plans are focused on capital needs over the next 40-years and are intended to be the principal framework for annual capital planning. The Plans focused on projects that require capital spending during the two 5-year CIP cap cycles: FY14-18 and FY19-23. Potential capital needs during the next 10-year (FY24-33) and 20-year (FY34-53) planning periods were also identified.

The FY14 CIP established the FY14-18 Base-Line Cap budget at \$791.7 million. The following is a breakdown of the FY14-18 Cap components:

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

The cap is updated every year based on the actual expenditures for the prior fiscal year. In FY16, 2 new projects from the Master Plans for SCADA/PLC upgrades for water and sewer systems, with a total contract value of \$25.5 million, were prioritized and added to the FY16 CIP. Even with the additional projects, the FY16 CIP is well below the FY14-18 Base-Line Cap.

FY17 Outlook Based on FY17 CIP

The Final FY17 CIP budget anticipates total actual spending of \$618.7 million during the FY14-18 Cap period: capital expenditures of \$661.2 million, contingency of \$26.0 million and inflation of \$5.1 million offset by \$65.8 million in Community Loan Program Support and \$7.8 million in Chicopee Valley Aqueduct adjustments. The total Final FY17 projected FY14-18 Cap spending of \$618.7 million is \$173.0 million or 21.9% less than the Base-Line Cap.

FY17 Final		FY14	FY15	FY16	FY17	FY18	Total FY14-18
	Projected Expenditures	\$102.2	\$103.6	\$101.3	\$155.7	\$198.4	\$661.2
Contingency	0.0	0.0	5.2	8.7	12.1	26.0	
Inflation on Unawarded Construction	0.0	0.0	0.0	1.1	4.0	5.1	
Less: I/I Program	0.0	(17.5)	(13.7)	(18.8)	(15.5)	(65.5)	
Less: Water Loan Program	0.0	1.4	5.3	(2.5)	(4.6)	(0.3)	
Less: Chicopee Valley Aqueduct Projects	(5.6)	(1.2)	(0.4)	(0.2)	(0.4)	(7.8)	
FY17 Proposed FY14-18 Spending	\$96.6	\$86.3	\$97.7	\$144.1	\$194.0	\$618.7	

FY17 Final vs. FY14-18 Base-Line Cap						
	FY14	FY15	FY16	FY17	FY18	Total FY14-18
Projected Expenditures	(\$40.3)	(\$43.9)	(\$48.0)	\$13.9	\$61.6	(\$56.7)
Contingency	(7.6)	(9.5)	(4.9)	(1.0)	2.8	(20.1)
Inflation on Unawarded Construction	(0.8)	(4.2)	(8.4)	(10.0)	(9.5)	(32.8)
Less: I/I Program	0.0	(17.5)	(13.7)	(18.8)	(15.5)	(65.5)
Less: Water Loan Program	0.0	1.4	5.3	(2.5)	(4.6)	(0.3)
Less: Chicopee Valley Aqueduct Projects	(0.6)	0.9	1.0	1.1	0.0	2.5
FY14-18 Cap (\$ Change)	(\$49.2)	(\$72.7)	(\$68.7)	(\$17.2)	\$34.9	(\$173.0)
FY14-18 Cap (% Change)	-33.8%	-45.7%	-41.3%	-10.7%	21.9%	-21.9%

Projected capital spending for FY17 is \$155.7 million excluding contingency. Projects with the largest budgeted spending in FY17 include Facility Asset Protection of \$25.1 million, Long-Term Redundancy of \$20.0 million, Infiltration/Inflow Local Financial Assistance of \$18.8 million, Northern Intermediate High Redundancy and Storage of \$18.5 million, Deer Island Treatment Plant Asset Protection of \$13.3 million, and Southern Extra High Redundancy and Storage of \$11.6 million.

In FY17, 41 contracts or phases of projects with a total budget of \$241.6 million are expected to be awarded. Staff will be completing the design and progressing to the bid and award stage on several major projects such as Chelsea Creek Headworks Upgrade, DITP HVAC Equipment Replacement Construction, Waterworks Supervisory Control and Data Acquisition System (SCADA)/Program Logic Controller (PLC) Upgrades, NIH Section 89/29 Redundancy Construction Phase 2, DITP Gravity Thickener Rehabilitation, Southern Extra High Redundancy & Storage Redundancy Pipeline Section III - Construction 2 and Construction 3, DI Switchgear Replacement – Construction, DITP Miscellaneous Variable Frequency Drives Replacements – Construction, DI Sodium Hypochlorite and Bisulfite Tanks Rehabilitation, Interceptor Renewal 1, Reading Extension Sewer – Construction, Chestnut Hill Gatehouse #1 Repairs, Chicopee Valley Aqueduct Motorized Screens Replacement Construction, Section 80 Replacement, Hingham/Quincy Pump Station Fuel Storage Upgrades, DITP Barge Berth and Facility Replacement, and Expansion Joint Repair Construction 3. As of June 30, 2016, Northern Intermediate High Section 89 & 29 Redundancy Phase 1C Construction, originally anticipated to be awarded in late FY16, is now scheduled for FY17. *Please see Attachment E for FY17 Planned Contract Awards.*

Other major initiatives in FY17 include completion of several construction contracts including Chelsea Screenhouse Upgrades, Deer Island Secondary Reactor Variable frequency Drives (VFDs), DI Scum Skimmer Replacement, DI Cryogenics Chillers Replacement, Caruso Pump Station Improvements Construction, DI Fuel System Modifications, Weston Aqueduct Supply Mains Section 36/W11S 9-A11 Valve Construction, and North Main Pump Station & Winthrop Terminal Facility Butterfly Valve Replacement.

ATTACHMENT B
FY16 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - BY PROJECT (\$000s)

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
Total MWRA	\$ 140,123	\$ 95,144	\$ (44,979)	-32%	
Wastewater System Improvements	\$ 88,109	\$ 64,185	\$ (23,925)	-27%	
Interception & Pumping	\$ 20,101	\$ 6,635	\$ (13,466)	-67%	
Corrosion & Odor Control	\$ 88	\$ 371	\$ 284	324%	
NI System-wide Odor Control - Evaluation	\$ 88	\$ 363	\$ 275	315%	Overspending due to consultant progress.
Wastewater Process Optimization	\$ 65	\$ 39	\$ (26)	-40%	
Wastewater Metering Study	\$ 359	\$ -	\$ (359)	-	Underspending due to schedule change.
Interception & Pumping (I&P) Facility Asset Protection	\$ 19,590	\$ 6,225	\$ (13,365)	-68%	
Alewife Brook Pump Station Rehab Construction	\$ 3,100	\$ -	\$ (3,100)	-	
Chelsea Creek Upgrades - Construction	\$ 8,099	\$ -	\$ (8,099)	-	
Caruso Pump Station Improvements - Construction	\$ 1,921	\$ 579	\$ (1,342)	-70%	Underspending due to schedule change.
Prison Point Piping Rehab	\$ 234	\$ -	\$ (234)	-	
Chelsea Screenhouse Upgrades	\$ 3,609	\$ 3,374	\$ (235)	-7%	
Nut Island Fire Pump Building Study	\$ 240	\$ -	\$ (240)	-	Contract eliminated from CIP during FY17 budget cycle.
Treatment	\$ 37,567	\$ 27,268	\$ (10,299)	-27%	
DITP Asset Protection	\$ 34,961	\$ 24,354	\$ (10,606)	-30%	
NMPS & WTF Butterfly Valve Replacement	\$ 4,500	\$ 5,806	\$ 1,306	29%	
Secondary Reactor VFDs	\$ 1,302	\$ 1,832	\$ 530	41%	Overspending due to progress of construction.
HVAC Equipment Replacement - Design/ESDC	\$ 356	\$ 667	\$ 311	87%	
DSL Pump Replacement Phase 2	\$ 1,582	\$ 503	\$ (1,080)	-68%	Underspending due to schedule change and lower than budgeted award.
Electrical Equipment Upgrades - Construction 4	\$ 4,228	\$ 1,045	\$ (3,182)	-75%	Underspending due to reduction in scope and accelerated timing of work in FY15 (reduced scope will be included in a later project).
NMPS VFD Replacement - Construction	\$ 3,757	\$ 2,185	\$ (1,572)	-42%	Underspending due to work anticipated in FY16 completed in FY15.
Gravity Thickener Rehab	\$ 1,150	\$ -	\$ (1,150)	-	Underspending due to contract yet to be awarded.
Barge Berth & Facility Replacement	\$ 750	\$ -	\$ (750)	-	
Combined Heat & Power - Design	\$ 750	\$ -	\$ (750)	-	Underspending due to schedule change.
Fire Alarm System Replacement - Design	\$ 583	\$ 173	\$ (411)	-70%	
As-Needed Design 7-1, 7-2 & 7-3	\$ 1,608	\$ 750	\$ (858)	-53%	Underspending due to less than anticipated design services.
WTF VFD Replacement - Construction	\$ 1,867	\$ -	\$ (1,867)	-	Underspending due to schedule change. Notice-to-Proceed issued 6/15/16.
STG System Modifications - Construction	\$ -	\$ (450)	\$ (450)	-	Underspending due to energy efficiency rebate.
Gravity Thickener Improvements - Construction	\$ -	\$ 300	\$ 300	-	Overspending due to litigation settlement.
Co-Digestion Temporary Facilities	\$ 250	\$ -	\$ (250)	-	Underspending due to ongoing evaluation.

ATTACHMENT B
FY16 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - BY PROJECT (\$000s)

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
Clinton Wastewater Treatment Plant	\$ 2,606	\$ 2,914	\$ 307	12%	
NGRID Gas Line	\$ -	\$ 396	\$ 396	-	Overspending due to timing of work.
Residuals	\$ -	\$ -	\$ -	-	
Residuals Asset Protection	\$ -	\$ -	\$ -	-	
CSO	\$ 13,228	\$ 16,660	\$ 3,432	26%	
MWRA-Managed	\$ 787	\$ 190	\$ (597)	-76%	
North Dorchester Bay	\$ -	\$ (88)	\$ (88)	-	
MWR003 Gate & Siphon	\$ 787	\$ 277	\$ (509)	-65%	Underspending due to timing of work. Project is complete.
Community-Managed	\$ 12,423	\$ 16,465	\$ 4,041	33%	
Dorchester Bay Sewer Sep. (Commercial Point)	\$ 400	\$ -	\$ (400)	-	Underspending due to project schedule.
Cambridge Sewer Separation	\$ 10,430	\$ 16,465	\$ 6,035	58%	
Design/CS/RI	\$ 1,570	\$ 3,541	\$ 1,971	126%	Overspending due to updated cost estimates as a result of unforeseen conditions and water use during construction activities.
Construction	\$ 8,860	\$ 12,924	\$ 4,064	46%	
Morrissey Boulevard Drain	\$ (2)	\$ -	\$ 2	-	
Reserved Channel Sewer Separation	\$ 1,596	\$ -	\$ (1,596)	-	Underspending due to updated cost estimates.
Planning and Support	\$ 18	\$ 6	\$ (12)	-68%	
Other	\$ 17,213	\$ 13,622	\$ (3,591)	-21%	
I/I Local Financial Assistance	\$ 17,213	\$ 13,622	\$ (3,591)	-21%	Underspending due to lower community requests for grants and loans. Total community repayments will equal total loan distributions by the end of the program (FY35).
Grants	\$ 16,500	\$ 14,408	\$ (2,092)	-13%	
Loans	\$ 9,500	\$ 8,036	\$ (1,464)	-15%	
Repayments	\$ (8,787)	\$ (8,823)	\$ (35)	0%	
Waterworks System Improvements	\$ 43,430	\$ 26,725	\$ (16,706)	-38%	
Drinking Water Quality Improvements	\$ 6,431	\$ 7,121	\$ 690	11%	
Spot Pond Storage Facility	\$ 3,075	\$ 3,955	\$ 879	29%	Overspending due to project progress.
Design / Build	\$ 2,061	\$ 2,659	\$ 598	29%	
Owners' Representative	\$ 374	\$ 635	\$ 261	70%	
Carroll Water Treatment Plant	\$ 3,248	\$ 2,769	\$ (479)	-15%	
CWTP Ultraviolet Disinfection - Construction	\$ -	\$ (952)	\$ (952)	-	Underspending due to litigation settlement.
Existing Facilities Modifications - CP7	\$ 2,493	\$ 3,073	\$ 580	23%	Overspending due to timing of work.
CWTP Ultraviolet Disinfection - Design/ESDC/REI	\$ 355	\$ 516	\$ 161	45%	Project is complete.
Blue Hills Covered Storage	\$ 54	\$ -	\$ (54)	-	
Brusch Water Treatment Facility	\$ 54	\$ 397	\$ 344	642%	
Brusch UVWTP - Design/CA/REI	\$ 54	\$ 397	\$ 344	642%	Overspending due to additional construction administration and resident engineering services.

ATTACHMENT B
FY16 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - BY PROJECT (\$000s)

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
Transmission	\$ 19,504	\$ 8,089	\$ (11,415)	-59%	
Watershed Land	\$ 2,500	\$ 1,029	\$ (1,471)	-59%	
Land Acquisition	\$ 2,500	\$ 1,029	\$ (1,471)	-59%	Underspending due to timing of land acquisitions.
Long Term Redundancy	\$ 14,807	\$ 5,460	\$ (9,347)	-63%	
Sudbury Aqueduct Pressurization/MEPA Review	\$ 600	\$ 204	\$ (396)	-66%	Underspending due to ongoing tunnel alternatives review for metropolitan redundancy.
Wachusett Aqueduct Pump Station - Design/ESDC/RI	\$ 1,000	\$ 344	\$ (656)	-66%	Underspending due to ongoing design review.
Wachusett Aqueduct Pump Station Construction	\$ 13,207	\$ 4,906	\$ (8,301)	-63%	Underspending due to bid award substantially under project budget and schedule change.
Sudbury/Weston Aqueduct Repairs	\$ 1,226	\$ 712	\$ (514)	-42%	
Rosemary Brook Building Repair	\$ 1,200	\$ 712	\$ (488)	-41%	Underspending the result of late start-up due to acceptance of the Health and Safety Plan.
Winsor Station/Pipeline Improvements	\$ 738	\$ 624	\$ (114)	-15%	
Quabbin Aqueduct & WPS Upgrades - Design/CA/RI	\$ 430	\$ 32	\$ (398)	-93%	Underspending due to additional scope of work necessitating establishment of two additional design contracts for Quabbin Aqueduct and Winsor Power Station separately as reflected in the FY17 CIP.
Hatchery Pipeline - Construction	\$ 206	\$ 308	\$ 102	49%	Overspending due to contractor progress and greater than budgeted award.
Hatchery Pipeline - Design/ESDC/RI	\$ 101	\$ 283	\$ 182	179%	Overspending due to consultant progress and scope changes.
Dam Projects	\$ 0	\$ 23	\$ 23	-	
MetroWest Tunnel	\$ 234	\$ 242	\$ 8	3%	
Distribution And Pumping	\$ 17,389	\$ 14,957	\$ (2,432)	-14%	
Valve Replacement	\$ 836	\$ -	\$ (836)	-	
Equipment Purchase	\$ 836	\$ -	\$ (836)	-	Underspending due to lower than projected need.
Northern High Service - Section 27 Improvements	\$ 5	\$ -	\$ (5)	-	
Cathodic Protection of Distribution Mains	\$ 254	\$ 67	\$ (187)	-74%	
NHS - Revere & Malden Pipeline Improvements	\$ 460	\$ 122	\$ (338)	-73%	
Section 53 Connections - Design CA/RI	\$ 360	\$ -	\$ (360)	-	Underspending due to schedule change.
Northern Extra High Service - New Pipelines	\$ 36	\$ -	\$ (36)	-	
Spot Pond Supply Mains Rehab	\$ 1,730	\$ 1,905	\$ 175	10%	
Southern Spine Distribution Mains	\$ 1	\$ 2	\$ 0	36%	
NIH Redundancy & Storage	\$ 5,614	\$ 4,196	\$ (1,418)	-25%	
Sections 89 & 29 Redundancy Construction Phase 1B	\$ 4,500	\$ 2,759	\$ (1,741)	-39%	Underspending due to lower than budgeted award and schedule change.
Section 89 & 29 Redundancy - Design Easements	\$ 804	\$ 1,219	\$ 415	52%	Overspending due to consultant progress.
Easements	\$ 275	\$ -	\$ (275)	-	Underspending due to lower than projected need.
West St. Pipe Reading - Construction Phase 1A		\$ 217	\$ 217	-	Overspending due to work scheduled for FY15 performed in FY16. Contract is complete.
Weston Aqueduct Supply Mains	\$ 7,585	\$ 7,342	\$ (243)	-3%	
Section 36/W11/S9-A11 Valve	\$ 6,040	\$ 6,933	\$ 893	15%	Overspending due to contractor progress.

ATTACHMENT B
FY16 CIP VARIANCE EXPLANATIONS THROUGH JUNE (Q4) - BY PROJECT (\$000s)

	BUDGET	ACTUALS	VARIANCE		VARIANCE EXPLANATIONS
			(\$)	%	
WASM 3 - MEPA/Design/CA/RI	\$ 1,195	\$ 57	\$ (1,138)	-95%	Underspending due to ongoing alternatives review for metropolitan tunnels redundancy.
SEH Redundancy & Storage	\$ 853	\$ 1,323	\$ 470	55%	
Redundancy/Storage Phase 1 - Final Design/CA/RI	\$ 803	\$ 1,322	\$ 519	65%	Overspending due to consultant progress.
Northern Low Service Rehabilitation - Section 8 & 57	\$ 14	\$ -	\$ (14)	-	
Other	\$ 107	\$ (3,443)	\$ (3,549)	-	
Local Water Pipeline Improvement Loan Program	\$ (2,157)	\$ (5,297)	\$ (3,140)	-	Underspending due to lower community requests for Local Water System
Community Loans	\$ 20,100	\$ 16,203	\$ (3,897)	-19%	Loans. Total community repayments will equal total loan distributions by the
Repayments	\$ (22,257)	\$ (21,500)	\$ 756	-3%	end of the program (FY30).
Central Monitoring System	\$ 1,494	\$ 1,774	\$ 280	19%	
Quabbin Power, Communication & Security - Design	\$ 228	\$ 316	\$ 88	39%	Overspending due to consultant and contractor progress.
Quabbin Power, Communication & Security - Construction	\$ 1,133	\$ 1,335	\$ 202	18%	
Waterworks Facility Asset Protection	\$ 769	\$ 80	\$ (689)	-90%	
Beacon Street Line Repair - Construction	\$ 500	\$ -	\$ (500)	-	Underspending due to schedule change.
Business & Operations Support	\$ 8,583	\$ 4,235	\$ (4,349)	-51%	
Application Improvement Program	\$ 1,566	\$ 992	\$ (574)	-37%	
IT Infrastructure Program	\$ 1,683	\$ 30	\$ (1,653)	-98%	Underspending due to timing of IT Strategic Plan implementation.
Information Security Program	\$ 352	\$ 361	\$ 9	3%	
Information Technology Management Program	\$ 58	\$ -	\$ (58)	-	
Alternative Energy Initiatives	\$ 52	\$ 67	\$ 15	28%	
Equipment Purchase	\$ 3,001	\$ 1,780	\$ (1,221)	-41%	
Security Equipment & Installation	\$ 1,039	\$ 346	\$ (693)	-67%	Underspending due to delay in award of equipment contracts.
FY14-18 Vehicle Purchases	\$ 1,962	\$ 1,010	\$ (952)	-49%	Underspending due to the timing of purchases.
FY14-18 Major Lab Instrumentation	\$ -	\$ 425	\$ 425	-	Overspending due to the timing of purchases.
Capital Maintenance Planning & Development	\$ 1,871	\$ 1,005	\$ (866)	-46%	Underspending due to lower than projected use of as-needed technical assistance.

ATTACHMENT C
FY16 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Project	Subphase	FY16 Budget NTP	FY17 Final Budget NTP	FY16 Budget Contract Amount	Award Amount	Vendor	Schedule Change Reason Code*
Information Technology Management Program	Service Delivery & Best Practices	Jul-15	Jun-16	\$ 0.1			3
Information Technology Infrastructure Program	E-Mail Upgrades	Jul-15	Jun-16	0.2			3
Cathodic Protection Of Distribution Mains	Cathodic Protecting Testing Evaluation Program	Jul-15	Aug-15	0.5	0.2	Ark Engineering & Technical Services, Inc.	1
Carroll Water Treatment Plant	Existing Facilities Modifications - CP7	Jul-15	Aug-15	6.7	3.1	Paul J. Rogan Co.	1
Facility Asset Protection	Alewife Brook Pump Station Rehabilitation - Construction	Aug-15	Jan-16	10.4	12.6	Barletta Engineering Corp.	1
NIH Redundancy & Storage	Section 89/29 Redundancy Construction Phase 1B	Aug-15	Jan-16	11.0	9.9	Albanese D&S, Inc.	1
MetroWest Tunnel	Shaft 5A/5 Surface Pipe Cathodic Protection Design Construction Administration	Aug-15	Scope of work moved to Cathodic Protection Project	0.5			2
Corrosion & Odor Control	Nut Island System-wide Odor Control-Evaluation	Sep-15	Sep-15	0.3	0.5	Hazen and Sawyer, P.C.	1
DI Treatment Plant Asset Protection	Winthrop Terminal Facility Variable Frequency Drive Replacement - Construction	Sep-15	Jun-16	4.2	11.9	J.F. White Contracting Co.	1
DI Treatment Plant Asset Protection	Thermal Power Plant Fuel System Modifications Resident Engineer Inspection	Sep-15	Work being done In-house	0.8			2
Long Term Redundancy	Wachusett Aqueduct Pump Station Construction	Sep-15	Mar-16	60.5	47.0	BHD/BEC JV	1
DI Treatment Plant Asset Protection	Fuel System Modifications	Sep-15	Nov-15	4.3	4.6	J.F. White Contracting Co.	1
Applications Improvements Program	Lawson Enhancements	Oct-15	May-16	1.8			3
Facility Asset Protection	Prison Point Piping Rehabilitation	Oct-15	Jun-16	0.4			3
DI Treatment Plant Asset Protection	Digester Sludge Pump Replacement Phase 2	Oct-15	Jan-16	4.7	2.6	Walsh Construction	1
DI Treatment Plant Asset Protection	Barge Berth and Facility Replacement	Oct-15	Nov-16	2.3			3

**ATTACHMENT C
FY16 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	FY16 Budget NTP	FY17 Final Budget NTP	FY16 Budget Contract Amount	Award Amount	Vendor	Schedule Change Reason Code*
NHS - Revere & Malden Pipeline Improvements	Sect 53 Connections Design/Construction Administration/Resident Inspection	Oct-15	Mar-18	2.1			6
Carroll Water Treatment Plant	Technical Assistance 8	Oct-15	Jan-16	0.6	0.8	Stantec Consulting Services, Inc.	1
Central Monitoring System	Quabbin Power Communications & Security	Oct-15	Feb-16	3.4	3.2	Ewing Electrical Company, Inc.	1
DI Treatment Plant Asset Protection	As-Needed Design 8-1	Nov-15	Jun-16	1.6	1.6	Brown and Caldwell	1
DI Treatment Plant Asset Protection	As-Needed Design 8-2	Nov-15	Jun-16	1.6	1.6	Stantec Consulting Services, Inc.	1
DI Treatment Plant Asset Protection	As-Needed Design 8-3	Nov-15	Jun-16	1.5	1.6	AECOM Technical Services, Inc.	1
Wastewater Meter System-Equipment Replacement	Planning / Study / Design	Dec-15	Oct-16	2.0			3
Facility Asset Protection	Chelsea Creek Upgrades Resident Engineer Inspection	Dec-15	Jun-16	2.3	3.6	CDM Smith Inc.	1
Facility Asset Protection	Chelsea Creek Upgrades Construction	Dec-15	Jul-16	54.8			3
Facility Asset Protection	Caruso PS Improvements - Construction	Dec-15	Mar-16	2.9	4.1	Waterline Industries Corp.	1
DI Treatment Plant Asset Protection	Gravity Thickener Rehabilitation	Dec-15	Nov-16	5.8			3
Clinton Wastewater Treatment Plant	Clinton Roofing Rehabilitation	Dec-15	Dec-16	0.5			3
July 2015 - December 2015	28 Contracts Planned, 16 contracts awarded			\$ 187.5	\$ 108.9		
Capital Maintenance Planning	As-Needed Design Contract 14	Jan-16	May-16	1.0	1.5	Stantec Consulting Services, Inc.	1
Capital Maintenance Planning	As-Needed Design Contract 15	Jan-16	May-16	1.0	1.5	Hazen and Sawyer, P.C.	1
Capital Maintenance Planning	As-Needed Design Contract 16	Jan-16	Deleted	1.0			2
Alternative Energy Initiatives	Renewable Energy Technical Assistance-Wind-Solar	Jan-16	Deleted	0.7			2
Applications Improvements Program	Enterprise Performance Mgmt Enhancements	Jan-16	Mar-16	0.2	0.1	Webject Systems, Inc.	1
Information Security Program (ISP)	Information Security Protection Infrastructure Upgrade	Jan-16	Mar-16	1.0	2.1	NWN Corp	1
DI Treatment Plant Asset Protection	Combined Heat & Power Design	Jan-16	Dec-16	6.0			3
NHS - Revere & Malden Pipeline Improvements	Section 56 Feasibility Study	Jan-16	Jan-16	0.2	0.2	Weston & Sampson Engineers, Inc.	1

**ATTACHMENT C
FY16 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	FY16 Budget NTP	FY17 Final Budget NTP	FY16 Budget Contract Amount	Award Amount	Vendor	Schedule Change Reason Code ⁴
Spot Pond Storage Facility	Fells Reservoir Microwave Tower Replacement Construction	Jan-16	Deleted	0.3			2
Waterworks Facility Asset Protection	Beacon Street Line Repair	Jan-16	May-16	1.0	1.6	R.Zoppo Corp.	1
Sudbury/Weston Aqueduct Repairs	Rosemary Brook Building Repair	Jan-16	Mar-16	1.8	1.7	Calhess Restoration and Weatherproofing Corporaton	1
Sudbury/Weston Aqueduct Repairs	Evaluation Farm Pond Bldgs-Waban Arches	Jan-16	Jul-16	0.1	0.3	Green International Affiliates, Inc.	1
Clinton Wastewater Treatment Plant	Phosphorus Reduction Construction	Feb-16	Mar-16	7.1	7.3	Daniel O'Connell's Sons, Inc.	1
Winsor Station/Pipeline Improvements	Hatchery Pipeline - Construction	Feb-16	Mar-16	2.4	3.7	Waterline Industries Corp.	1
DI Treatment Plant Asset Protection	Odor Control Rehabilitation Design/Engineering Services During Construction	Apr-16	Jun-17	4.3			3
Applications Improvements Program	Pre-Treatment Information Management System (PIMS) Enhancements	Jun-16	Sep-16	0.4			3
Information Technology Management Program	Implement Information Technology Task Force	Jun-16	Deleted	0.1			2
Information Technology Management Program	Information Technology Project Management Methodology	Jun-16	Jun-16	0.2			3
Information Technology Management Program	Software Development Life Cycle (SDLC)	Jun-16	Jun-16	0.4			3
DI Treatment Plant Asset Protection	Switchgear Replacement - Design	Jun-16	Deleted	1.6			2
DI Treatment Plant Asset Protection	Sodium Bisulfite & Hypochlorite Tanks Rehabilitation	Jun-16	Jun-17	6.6			3 & 5

January 2016 - June 2016
49 FY16 Planned Awards

21 Contracts Planned, 10 contract awarded

\$ 37.3 \$ 19.9
\$ 224.8

Unplanned Awards

Facility Asset Protection	Chelsea Screenhouse Engineering Services During Construction/Resident Engineer Inspection	Jun-15	Sep-15	0.4	0.9	Dewberry Engineers Inc.	1
Facility Asset Protection	Chelsea Screenhouse Upgrades Construction	Jun-15	Aug-15	3.6	4.9	WES Construction Corp.	1

ATTACHMENT C
FY16 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Project	Subphase	FY16 Budget NTP	FY17 Final Budget NTP	FY16 Budget Contract Amount	Award Amount	Vendor	Schedule Change Reason Code*
Facility Asset Protection	Reading Extension Sewer and Metropolitan Sewer Rehabilitations Design, Construction Administration and Resident Engineering/Inspection Services	May-15	Aug-15	1.0	1.2	Arcadis U.S., Inc.	1
DI Treatment Plant Asset Protection	Fire Alarm System Replacement Design and Engineering Services During Construction	Jun-15	Nov-15	2.1	2.1	RDK Engineers	1
Equipment Purchases	Miscellaneous Fencing		Feb-16	0.5	0.7	Premier Fence, LLC	1
MetroWest Tunnel	Hultman Leak Shaft 5A Repair		Mar-16	-	0.2	R.Zoppo Corp.	1
Clinton Wastewater Treatment Plant	NGRID Gas Line		Apr-16	-	0.5	National Grid	1
SEH Redundancy & Storage	Redundancy Pipeline Section 111 Construction 1	Aug-16	May-16	11.8	11.8	P. Gioioso and Sons, Inc.	1
8 Unplanned Awards				\$ 19.3	\$ 22.1		
49 FY16 Contract Awards Planned				\$ 224.8			
34 contracts awarded as of 6/16					\$ 150.9		

ATTACHMENT D

**Linear Footage Of Rehabilitated Or New Pipelines
FY16 (July 2015-June 2016)**

	<u>Contract #</u>	<u>Type</u>	<u>Linear Feet</u>
<u>WASTEWATER PROJECTS</u>			
CSO Community Managed-Cambridge Sewer Separation (1)	6255	New	11,230
MWR003 Gate & Siphon Construction 2	7409	Rehab	320
<u>WATERWORKS PROJECTS</u>			
Weston Aqueduct Supply Mains Section 36/W11/S9-A11 Valve	7448	New	578
Weston Aqueduct Supply Mains Section 36/W11/S9-A11 Valve (Arlington Portion)		New	1,416
NIH Section 110 Reading & Woburn	7471	New	2,795
NIH Section 110 Reading & Woburn (Reading Portion)		New	1,081
Hatchery Pipeline and Hydroelectric Construction	7235	New	600
(1) Project involves storm drain construction for sewer separation and CSO control, and the new pipelines are owned by Cambridge.			
<u>TOTAL PIPELINE REHABILITATED OR CONSTRUCTED IN FY16</u>			
	<u>Linear Feet</u>		<u>Miles</u>
Wastewater Projects	11,550		2.2
Water Projects	6,470		1.2
Total	18,020		3.4

**ATTACHMENT E
FY17 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

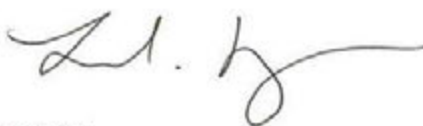
Project	Subphase	NTP	FY17 Budget
Facility Asset Protection	Prison Point Rehabilitation - Design/Construction Administration/Resident Inspection	Jul-16	\$ 2.5
Facility Asset Protection	Chelsea Creek Upgrades - Construction	Jul-16	62.0
New Connect Mains-Shaft 7 to WASM 3	CP3 (Sect 23,24,47) - Final Design/Construction Administration/Resident Inspection	Jul-16	3.0
Chestnut Hill Connecting Mains	Chestnut Hill Gatehouse # 1 Repairs Construction	Jul-16	1.0
NIH Redundancy & Storage	Section 89 & 29 Redundancy Construction Phase 2	Jul-16	18.2
Winsor Station Pipeline Improvements	Quabbin Aqueduct - Final Design/Construction Administration/Resident Inspection	Jul-16	2.2
Sudbury/Weston Aqueduct Repairs	Weston Aqueduct Flow Control Valve	Jul-16	0.4
Sudbury/Weston Aqueduct Repairs	Evaluation of Farm Pond Buildings-Waban Arches	Jul-16	0.1
Application Improvements Program	Pre-Treatment Information Management Systems (PIMS) Enhancements	Sep-16	0.4
Facility Asset Protection	Cambridge Branch 23, 24, 26, 27 - Study	Sep-16	1.0
NHS - Revere & Malden Pipeline Improvements	Section 53 and 99 Improvements Study	Sep-16	0.4
Rehabilitation of Other Pump Stations	Commonwealth Ave Pump Station Redundancy- Design/Construction Administration/Resident Inspection	Sep-16	0.8
SEH Redundancy & Storage	Redundancy Pipeline Sect III - Construction 2	Sep-16	10.8
Quabbin Transmission System	Chicopee Valley Aqueduct Motorized Screens Replacement- Construction	Sep-16	1.0
Wastewater Meter System-Equipment Replacement	Planning / Study / Design	Oct-16	2.7
Residuals Asset Protection	Residuals Facility Upgrades - Construction	Oct-16	10.0
Central Monitoring System	Waterworks Supervisory Control and Data Acquisition System (SCADA)/Program Logic Controller (PLC) Upgrades	Oct-16	18.5
Section 80 Rehabilitation	Section 80 Replacement	Oct-16	0.7
Corrosion & Odor Control	Nut Island Headworks Odor Control and HVAC Improvements Design/Construction Administration/Resident Engineer Inspection	Nov-16	2.8
Facility Asset Protection	Sections 4, 5, 6, 186 - Study	Nov-16	1.5
Facility Asset Protection	Hingham/Quincy PS Fuel Storage Upgr Const	Nov-16	0.5
DI Treatment Plant Asset Protection	Cathodic Protection - Design/ESDC	Nov-16	1.0
DI Treatment Plant Asset Protection	Barge Berth and Facility Replacement	Nov-16	2.3
DI Treatment Plant Asset Protection	North Main Pump Station Motor Control Center Phase 2 Design/Engineering Services During Construction/Resident Inspection	Nov-16	2.5
DI Treatment Plant Asset Protection	Gravity Thickener Rehabilitation	Nov-16	14.1
DI Treatment Plant Asset Protection	Combined Heat & Power - Design	Dec-16	6.0
Clinton Wastewater Treatment Plant	Clinton Roofing Rehabilitation	Dec-16	1.2
SEH Redundancy & Storage	Redundancy Pipeline Section III - Construction 3	Dec-16	7.4
July 2016 - December 2016	28 Contracts Planned		\$ 174.9
Facility Asset Protection	Interceptor Renewal 3 Dorchester Interceptor Sewer Design Construction Administration/Resident Inspection	Jan-17	1.0
DI Treatment Plant Asset Protection	Eastern Seawall Design - 1	Jan-17	0.6
DI Treatment Plant Asset Protection	HVAC Equipment Replacement - Construction	Jan-17	29.5
NIH Redundancy & Storage	Section 89 & 29 Rehabilitation - Design	Jan-17	1.5
Winsor Station Pipeline Improvements	Winsor Power Station Final Design/Construction Administration/Resident Inspection	Jan-17	1.9
Facility Asset Protection	Interceptor Renewal 1, Reading Extension Sewer - Construction	Mar-17	4.3

**ATTACHMENT E
FY17 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Subphase	NTP	FY17 Budget
DI Treatment Plant Asset Protection	HVAC Equipment Replacement Resident Engineer Inspection	Mar-17	2.0
DI Treatment Plant Asset Protection	Switchgear Replacement - Construction	Apr-17	8.0
Distribution Systems Facilities Mapping	Update of Record Drawings	Apr-17	0.5
DI Treatment Plant Asset Protection	Expansion Joint Repair - Construction 3	May-17	1.9
DI Treatment Plant Asset Protection	Future Miscellaneous Variable Frequency Drives Replacements - Construction	May-17	5.3
DI Treatment Plant Asset Protection	Odor Control Rehabilitation - Design/Engineering Services During Construction	Jun-17	5.2
DI Treatment Plant Asset Protection	Sodium Hypochlorite and Bisulfite Tanks Rehabilitation	Jun-17	5.0
January 2017 - June 2017	13 Contracts Planned		\$ 66.8
41 FY17 Contract Awards Planned			\$ 241.6

STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: FY16 Year-End Financial Update and Summary



COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE


Kathy Soni, Budget Director


Louise L. Miller, Budget Manager

Preparer/Title


Thomas J. Durkin

Director, Finance

RECOMMENDATION:

For information only. This staff summary provides the financial update and variance highlights for Fiscal Year 2016, based on the final year-end financial close.

DISCUSSION:

Total year-end expenses were lower than budgeted by \$5.4 million or 0.8%. Total revenues were higher than budgeted by \$4.8 million or 0.7% for a total FY16 budget variance of \$10.2 million.

Staff are recommending that approximately \$9.3 million FY16 surplus be used to defease debt to provide targeted rate relief for communities in future challenging years. This defeasance strategy has proven to be very effective in the past few years in managing assessment increases over time. The proposed defeasance scenario is being presented to the Board at this meeting in a separate staff summary. The balance of the surplus represents \$874,000 for Debt Service Assistance received in April, which is applied against the FY17 budget.

FY16 Current Expense Budget

The expense variances for Fiscal Year 2016 by major budget category were:

- Net Lower Direct Expenses of \$6.8 million for lower spending on Energy and Utilities, Wages and Salaries, Other Services, Chemicals, Fringe Benefits, and Training and Meetings. This is offset by higher spending for Maintenance, Overtime, Professional Services, and Other Materials.
- Higher Indirect Expenses of \$30.7 million mostly due to prepayment of \$32.0 million for FY17-22 watershed debt service to the Commonwealth.

- Lower Debt Service expenses of \$29.3 million due to favorable short-term interest rates, less than budgeted State Revolving Fund, later than anticipated new borrowing, favorable commercial paper rate for the Water Pipeline Program, and receipt of unbudgeted Debt Service Assistance of \$874,000.

It is important to note that the defeasance strategy has proven to be very successful in managing long-term, multi-year assessments to our communities, since 2006 the Authority defeased debt in excess of \$483 million. Continuing with the defeasance strategy in FY16, \$36.9 million defeasance plus the additional \$9.3 million in this Board package brings to total FY16 defeasance to \$46.2 million. Of the \$36.9 million, \$32.0 million was used to prepay the Commonwealth for the remaining FY17-22 watershed debt service obligation and a \$4.9 million additional defeasance executed in June.

FY16 Budget and FY16 Actual Year to Date Variance by Expenditure Category

	FY16 Budget YTD	FY16 Actual YTD	\$ Variance	% Variance
Direct Expenses	\$222.8	\$216.0	-\$6.8	-3.0%
Indirect Expenses	\$47.0	\$77.6	\$30.7	65.3%
Debt Service	\$432.7	\$403.4	-\$29.3	-6.8%
Total	\$702.5	\$697.1	-\$5.4	-0.8%

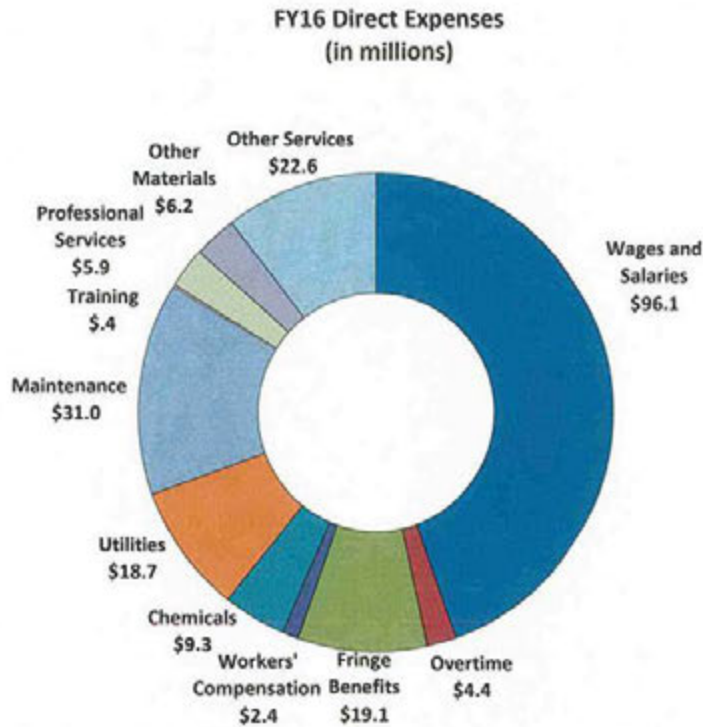
Revenues exceeded budget by \$4.8 million due to higher non-rate revenue related to higher than expected TRAC penalty fees, unbudgeted water revenues from the cities of Lynn and Cambridge, US Treasury bond proceeds for arbitrage rebate refund, energy rebates and FEMA grants for 2015 winter storm related costs.

Please refer to Attachment 1 for a more detailed comparison by line item of the budget variances for the month of June and for FY16.

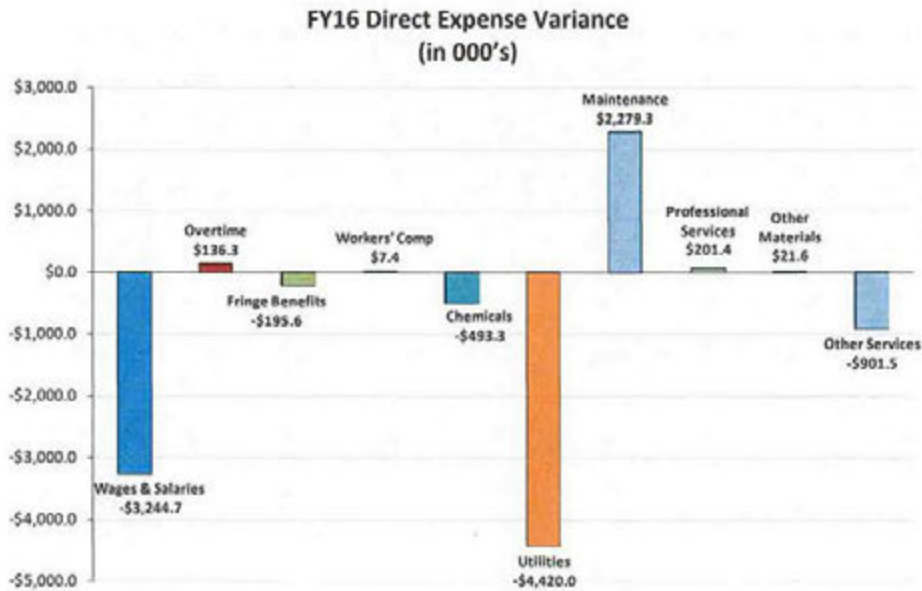
Please refer to Attachment 4 for a more detailed comparison by line item of FY16 Actual vs. FY16 Year-End Projection.

Direct Expenses

Year-to-date direct expenses totaled \$216 million, \$6.8 million or 3% less than budgeted.



The underspending on direct expenses is mostly related to Energy and Utilities, Wages and Salaries, Other Services, Chemicals, and Fringe Benefits; offset by overspending for Maintenance, Professional Services, Overtime, Other Materials, and Worker's Compensation.



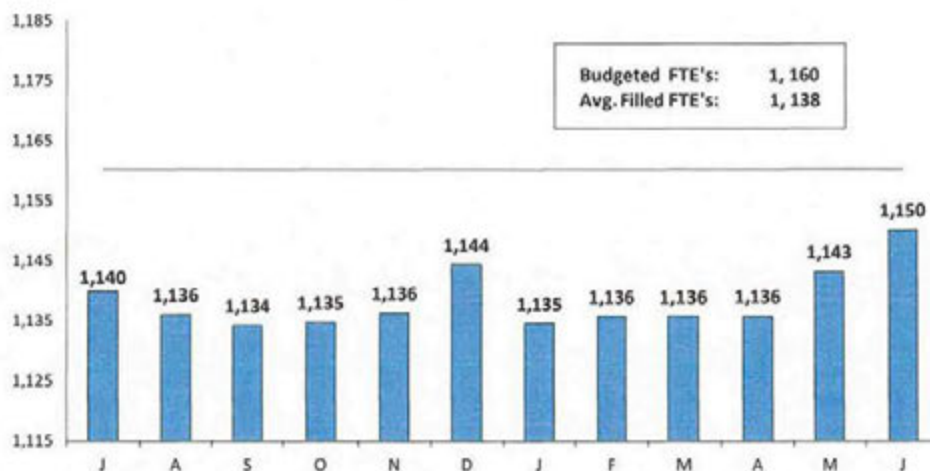
Energy and Utilities

Energy and Utilities were underspent by \$4.4 million or 19.1%. Lower electricity costs of \$2.4 million were mainly due to lower spending at Deer Island of \$1.9 million for lower commodity and transmission and distribution costs, lower flows which resulted in less pumping demand, and an over accrual at the end of FY15. Diesel Fuel spending is under budget by \$1.9 million because of lower pricing and less usage due to the relatively mild winter.

Wages and Salaries

Wages and Salaries were underspent by \$3.2 million or 3.4% mainly as a result of lower average Full Time Equivalent positions (FTEs) than budgeted, the timing of backfilling vacant positions, and the salary mix differential between staff retiring and new hires. The average FTEs through June were 1,138, which was 22 positions lower than the 1,160 FTEs budgeted. Additionally, the Authority had four temporary employees.

FY16 MWRA Full Time Equivalent (FTE) Position Trend



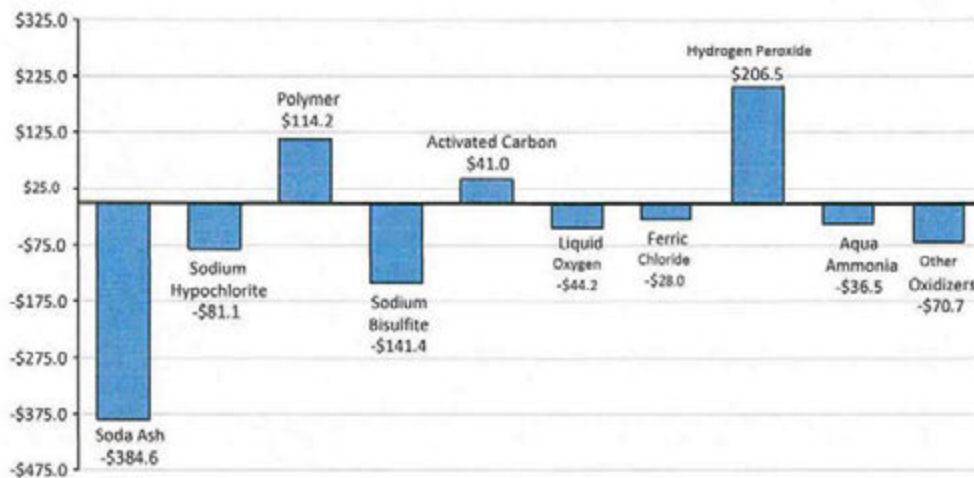
Other Services

Other Services spending was lower than budget by \$902,000 or 3.8% due to lower spending of \$610,000 for sludge pelletization services because of lower than anticipated inflation; \$128,000 for Grit and Screenings disposal services primarily due to lower quantities; \$127,000 for Space Lease Rentals for the Chelsea facility lease due to the recovery of an overpayment of escrow for insurance; and \$83,000 for Other Rentals. The underspending is offset by higher spending on Telephone Services of \$66,000 associated with Field Operations SCADA lines for the water and wastewater facilities both for more lines and technology change; and Other Services of \$46,000 for Ward Street Headworks radio tower demolition.

Chemicals

Chemical expenses were lower than budgeted by \$493,000 or 5% mainly because of lower than budgeted spending on Soda Ash of \$385,000 due to lower use to meet corrosion control targets and timing of deliveries for Soda Ash; Sodium Bisulfite of \$141,000 at Carroll Water Treatment Plant due to lower usage because of UV treatment and at Deer Island due to lower plant flows; Sodium Hypochlorite of \$81,000 due to more pretreatment with Hydrogen Peroxide for odor control requiring less Sodium Hypochlorite and timing of deliveries at Deer Island and lower usage in Field Operations; Other Oxidizers of \$71,000 due to less usage than planned and lower pricing for the new contract; and Ozone of \$44,000 due to higher water quality and change in operating target resulting from UV disinfection. The underspending is offset by overspending on Hydrogen Peroxide of \$207,000 due to increased need for pretreatment of hydrogen sulfide gas due to plant flows; Polymer of \$114,000 and Activated Carbon of \$41,000 at Deer Island.

FY16 Chemical Expense Variances
(in 000's)



Fringe Benefits

Fringe Benefits spending was lower than budgeted by \$196,000 or 1% for Health Insurance of \$268,000 and Dental Insurance of \$43,000 due to fewer than budgeted filled positions. This was offset by higher spending in Medicare costs of \$55,000 and Tuition Reimbursement of \$29,000.

Maintenance

Maintenance expenses were higher than budgeted by \$2.3 million or 7.9% for the fiscal year due to \$2.5 million associated with the remediation effort for the Nut Island fire incident.

Overtime

Overtime was higher than budgeted by \$136,000 or 3.2% for greater spending in Water Valve Maintenance to reconfigure system flows associated with providing Lynn water, respond to a Cambridge water main break, and start-up at Spot Pond; in Treatment and Transmission

Operation for half plant maintenance at Carroll Water Treatment Plant; in Field Operations in response to the Nut Island fire; and for Lab Services and MIS. The overspending is partially offset by fewer weather events and fewer planned shutdowns related to the North Main Pump Station valve replacement project.

Professional Services

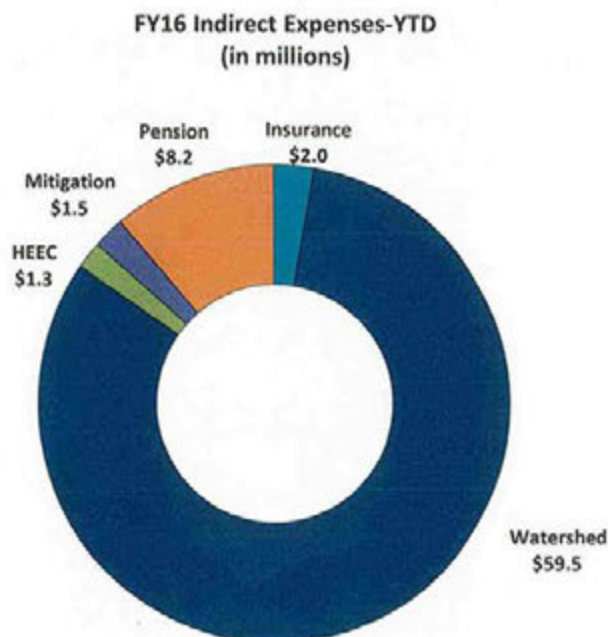
Professional Services were higher than budget by \$67,000 or 1.2% due to higher Legal Services of \$132,000 in Law; Other Services of \$117,000 in Law, Human Resources and Treasury; and Engineering Services of \$43,000 for Nut Island fire remediation. This is offset by underspending in Lab & Testing Analysis of \$175,000 in Operations.

Other Materials

Other Materials were higher than budget by \$22,000 or 0.4% mainly due to Computer Hardware of \$143,000; Lab and Testing Supplies of \$130,000 mainly due to receipt of equipment ordered in FY15 and received in the first Quarter of FY16; Health and Safety of \$45,000; Work Clothes of \$41,000; and Vehicle Purchases of \$38,000. The overspending is offset by lower spending for Vehicle Expenses of \$377,000 mostly due to lower fuel prices.

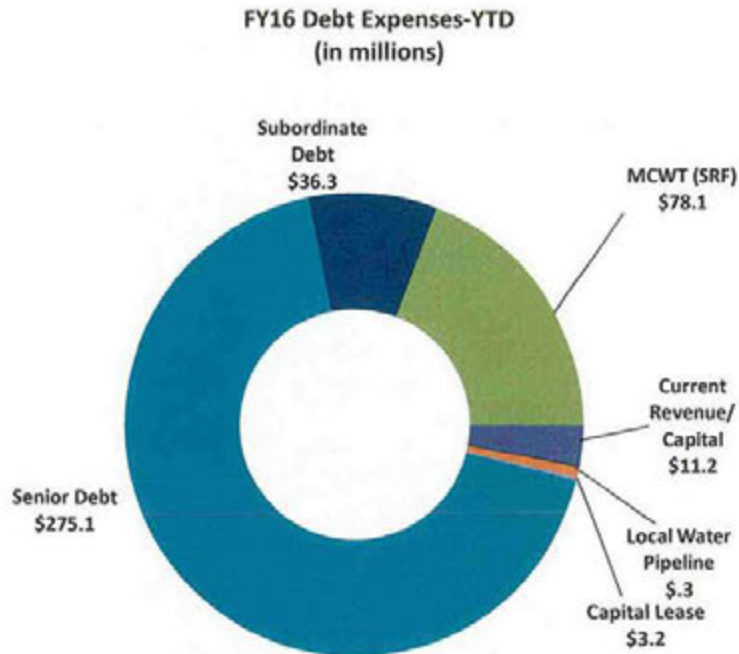
Indirect Expenses

For the fiscal year, Indirect Expenses totaled \$77.6 million, \$30.7 million or 65.3% higher than budget. The majority of the FY16 overspending is related to prepayment of the remaining FY17-22 watershed debt service owed to the Commonwealth for financing of previously purchased watershed land.



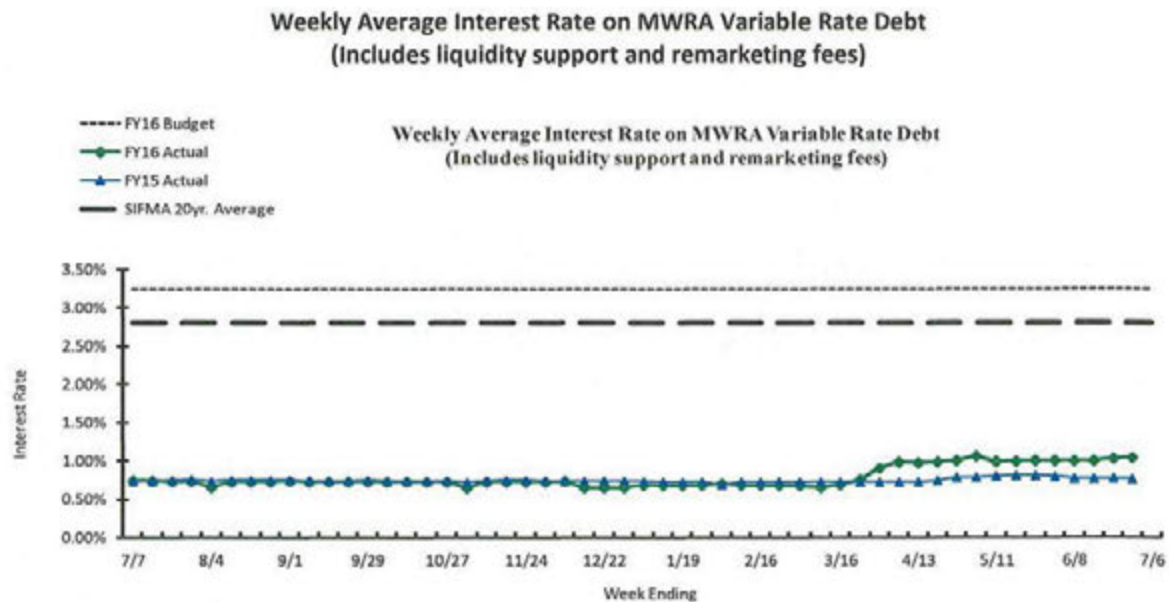
Debt Service

Debt Service expenses include the principal and interest payment for fixed debt, the variable subordinate debt, and the Massachusetts Clean Water Trust (MCWT) obligation, the commercial paper program for the local water pipeline projects, current revenue for capital, and the Chelsea facility lease payment.



Debt Service expenses for the fiscal year totaled \$403.4 million, which was \$29.3 million or 6.8% lower below budget, reflecting lower variable rate of \$12.9 million and \$3.9 million for the commercial paper for the Water Pipeline Program. Senior debt was also under budget by \$7.9 million, due to the effect of last year's defeasance, refunding, and lower costs for new money borrowing. The SRF was \$3.7 million lower due to timing and lower borrowing and \$874,000 was received in unbudgeted Debt Service Assistance. These favorable variances were offset by \$4.9 million for a defeasance executed in June.

The graph below reflects the FY16 actual variable rate trend by week over the past year and the FY16 Budget.



Revenue & Income

Revenue for the fiscal year totaled \$707.3 million which was \$4.8 million or 0.7% higher than budget.

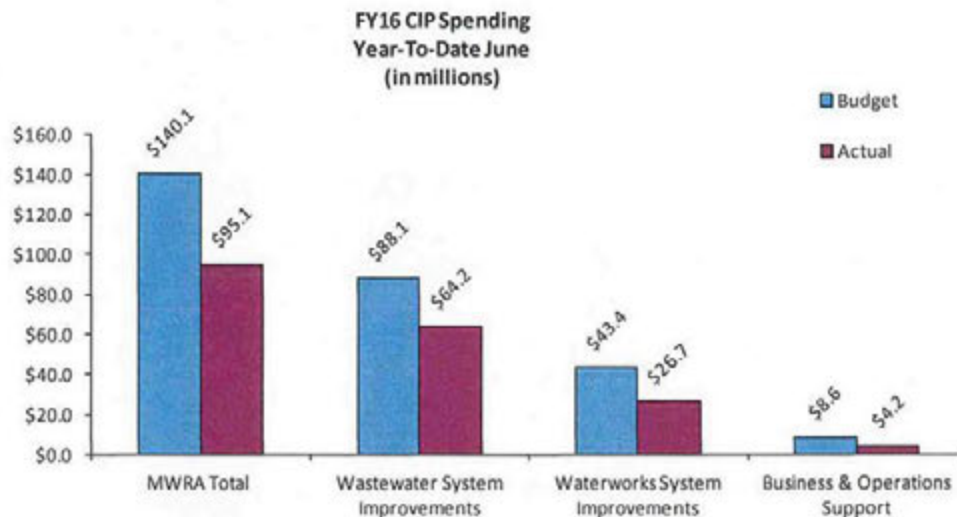
The higher non-rate Revenue is due to Other Revenue of \$3.7 million, including Cambridge water use of \$1.2 million related to maintenance work on their water system and electricity peak shaving; \$662,000 for TRAC Penalties mainly attributed to a large settlement with a company that had a series of discharge violations to the MWRA sewer, which since then have been addressed and corrective measures implemented; \$593,000 for City of Lynn MWRA water use while they completed maintenance work on their water system; energy rebates of \$438,000; higher surplus equipment sales of \$331,000; US Treasury rebate of \$296,000; and greater Investment Income of \$951,000 due to higher than budgeted short-term interest rates.

Please refer to Attachment 2 for a more detailed variance explanation by line item.

FY16 Capital Improvement Program

Spending in FY16 totals \$95.1 million, \$45.0 million or 32.1% below budget. After accounting for programs which are not directly under MWRA's control, most notably the Inflow and Infiltration (I/I) program, the Local Water Pipeline program, and the community managed Combined Sewer Overflow (CSOs) projects, underspending totals \$42.3 million or 37.5%. Underspending was reported across all three programs with Wastewater underspent by \$23.9 million, Waterworks posting underspending of \$16.7 million and Business and Operations Support and \$4.3 million, respectively.

Spending By Program:



\$ In Millions	Budget	Actuals	\$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	20.1	6.6	-13.5	-67.0%
Treatment	37.6	27.3	-10.3	-27.4%
Residuals	0.0	0.0	0.0	N/A
CSO	13.2	16.7	3.4	25.9%
Other	17.2	13.6	-3.6	-20.9%
Total Wastewater System Improvements	\$88.1	\$64.2	-\$23.9	-27.2%
Waterworks System Improvements				
Drinking Water Quality Improvements	6.4	7.1	0.7	10.7%
Transmission	19.5	8.1	-11.4	-58.5%
Distribution & Pumping	17.4	15.0	-2.4	-14.0%
Other	0.1	-3.4	-3.5	N/A
Total Waterworks System Improvements	\$43.4	\$26.7	-\$16.7	-38.5%
Business & Operations Support	\$8.6	\$4.2	-\$4.3	-50.7%
Total MWRA	\$140.1	\$95.1	-\$45.0	-32.1%

The main reasons for the project spending variances in order of magnitude are:

Interception & Pumping: Net underspending of \$13.5 million

- \$8.1 million for Chelsea Creek Upgrades – Construction: contract not awarded in FY16
- \$3.3 million for Alewife Brook Pump Station Rehab Construction and Construction Phase Engineering: contract awarded later than budgeted
- \$1.3 million for Caruso Pump Station Improvements Construction: contract awarded later than budgeted
- \$0.4 million for Wastewater Metering Planning/Study/Design: contract not awarded in FY16.

Waterworks Transmission: Net underspending of \$11.4 million

- \$9.3 million for Long Term Redundancy primarily due to lower than budgeted contract award
- \$1.5 million due to the timing of Watershed Land acquisitions
- \$0.5 million caused by a schedule change for the Sudbury/Weston Aqueduct Repairs.

Wastewater Treatment: Net underspending of \$10.3 million

- \$3.2 million for Electrical Equipment Upgrade – Construction 4: reduction in scope and timing of work
- \$1.9 million for Winthrop Terminal Facility VFD Replacement: contract awarded later than budgeted
- \$1.6 million for North Main Pump Station Variable Frequency Drives (VFDs) Construction: work anticipated in FY16 completed in FY15
- \$1.1 million for Gravity Thickener Rehabilitation: contract not awarded in FY16
- \$1.1 million for Digester Sludge Pump Replacement Phase 2: project schedule change and award lower than budgeted
- \$0.8 million for Barge Berth and Facility Replacement: contract not awarded in FY16
- \$0.8 million for Combined Heat & Power Design: contract not awarded in FY16
- \$0.5 million for Steam Turbine Generator System Modifications Construction: energy efficiency rebate received
- The underspending was partially offset by overspending on Butterfly Valve Replacement of \$1.3 million and Secondary Reactor VFDs of \$0.5 million due to progress of construction.

Business and Operations Support: Underspending of \$4.3 million

- due to lower than budgeted spending on multiple projects, including
 - \$2.3 million due to timing of IT Strategic Plan implementation
 - \$1.2 million due to timing of vehicle purchases
 - \$0.9 million due to lower than projected use of as-needed technical assistance contracts

- security equipment of \$0.7 million due to delay in award of equipment contracts.

Wastewater Other: Underspending of \$3.6 million

- primarily due to less than anticipated community requests for grants and loans under the Infiltration and Inflow (I/I) program.

Waterworks Other: Underspending of \$3.5 million

- due to lower community requests for Local Water System Loans of \$3.1 million, and miscellaneous Waterworks Facility Asset Protection projects of \$.7 million due to schedule changes.
- The underspending was offset by overspending for Quabbin Power, communication & Security Design and Construction of \$.3 million due to progress of construction.

Combined Sewer Overflow (CSO): Net overspending of \$3.4 million

- \$6.0 million in overspending at Cambridge Sewer Separation due to water use during construction and updated cost estimates for unforeseen utility locations and private utility coordination, subsurface conditions, and additional engineering services during construction
- The overspending was partially offset by underspending for Reserved Channel Sewer Separation of \$1.6 million due to updated cost estimates and MWR003 Gate & Siphon of \$0.5 million due to timing of final work.

Drinking Water Quality Improvements: Net overspending of \$0.7 million

- primarily due to construction progress on Existing Facilities CP-7 of \$0.6 million and Spot Pond Storage Facility Design/Build of \$0.6 million, and Brutsch Treatment Facility of \$0.3 million due to additional construction administration services.
- The overspending was offset by \$1.0 million litigation settlement for Carroll Water Treatment Plant's Ultraviolet Disinfection Construction.

Water Distribution and Pumping: Net underspending of \$2.4 million

- \$2.1 million for NIH Redundancy & Storage - Section 89/29 Redundancy Construction Phase 1B and Construction Phase Engineering: later than budgeted contract award
- \$1.1 million for WASM 3 - MEPA/Design: ongoing alternatives review of options for metropolitan redundancy
- \$0.8 million for Valve Replacement: less than anticipated need.
- The underspending was partially offset by overspending on Weston Aqueduct Supply Mains Section 36/C/S9-A11 Valve of \$0.9 million due to contractor progress, and Southern Extra High Redundancy Design of \$0.5 million due to consultant progress.

Construction Fund Balance

The construction fund balance is \$117 million as of June 30, 2016. Commercial Paper available for construction projects is \$222 million.

Attachment 1 – Variance Summary June 2016

Attachment 2 – Current Expense Budget Variance Explanations

Attachment 3 – Capital Improvement Program Variance Explanations

Attachment 4 – FY16 Budget vs. FY16 Projections

ATTACHMENT 1

	June 2016 Year-to-Date					
	Period 12 YTD Budget	Period 12 YTD Actual	Period 12 YTD Variance	%	FY16 Approved	% Expended
EXPENSES						
WAGES AND SALARIES	\$ 99,363,168	\$ 96,118,427	\$ (3,244,741)	-3.3%	\$ 99,363,168	96.7%
OVERTIME	4,219,293	4,355,586	136,293	3.2%	4,219,293	103.2%
FRINGE BENEFITS	19,326,756	19,131,139	(195,617)	-1.0%	19,326,756	99.0%
WORKERS' COMPENSATION	2,343,000	2,350,369	7,369	0.3%	2,343,000	100.3%
CHEMICALS	9,790,848	9,297,550	(493,298)	-5.0%	9,790,848	95.0%
ENERGY AND UTILITIES	23,164,822	18,744,867	(4,419,955)	-19.1%	23,164,822	80.9%
MAINTENANCE	28,698,772	30,978,045	2,279,273	7.9%	28,698,772	107.9%
TRAINING AND MEETINGS	413,714	370,752	(42,962)	-10.4%	413,714	89.6%
PROFESSIONAL SERVICES	5,819,611	5,886,715	67,104	1.2%	5,819,611	101.2%
OTHER MATERIALS	6,164,589	6,186,216	21,627	0.4%	6,164,589	100.4%
OTHER SERVICES	23,529,902	22,628,385	(901,517)	-3.8%	23,529,902	96.2%
TOTAL DIRECT EXPENSES	\$ 222,834,475	\$ 216,048,051	\$ (6,786,424)	-3.0%	\$ 222,834,475	97.0%
INSURANCE	\$ 2,160,797	\$ 1,953,053	\$ (207,744)	-9.6%	\$ 2,160,797	90.4%
WATERSHED/PILOT	28,096,233	59,469,847	31,373,614	111.7%	28,096,233	211.7%
BECo PAYMENT	1,946,157	1,342,141	(604,016)	-31.0%	1,946,157	69.0%
MITIGATION	1,400,000	1,520,000	120,000	8.6%	1,400,000	108.6%
ADDITIONS TO RESERVES	(34,927)	(34,927)	-	0.0%	(34,927)	100.0%
RETIREMENT FUND	8,159,521	8,159,521	-	0.0%	8,159,521	100.0%
POST EMPLOYEE BENEFITS	5,224,848	5,224,848	-	0.0%	5,224,848	100.0%
TOTAL INDIRECT EXPENSES	\$ 46,952,629	\$ 77,634,483	\$ 30,681,854	65.3%	\$ 46,952,629	165.3%
STATE REVOLVING FUND	\$ 81,876,277	\$ 78,131,559	\$ (3,744,718)	-4.6%	\$ 81,876,277	95.4%
SENIOR DEBT	283,024,431	275,085,817	(7,938,614)	-2.8%	283,024,431	97.2%
CORD FUND	-	-	-	---	-	---
DEBT SERVICE ASSISTANCE	-	(873,804)	(873,804)	---	-	0.0%
CURRENT REVENUE/CAPITAL	11,200,000	11,200,000	-	0.0%	11,200,000	100.0%
SUBORDINATE MWRA DEBT	49,222,442	49,222,442	-	0.0%	49,222,442	100.0%
LOCAL WATER PIPELINE CP	4,149,240	262,498	(3,886,742)	-93.7%	4,149,240	6.3%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%	3,217,060	100.0%
VARIABLE DEBT	-	(12,873,173)	(12,873,173)	---	-	0.0%
BOND REDEMPTION SAVINGS	-	-	-	---	-	---
DEFEASANCE ACCOUNT	-	-	-	---	-	---
TOTAL DEBT SERVICE	\$ 432,689,450	\$ 403,372,399	\$ (29,317,051)	-6.8%	\$ 432,689,450	93.2%
TOTAL EXPENSES	\$ 702,476,554	\$ 697,054,933	\$ (5,421,622)	-0.8%	\$ 702,476,554	99.2%
REVENUE & INCOME						
RATE REVENUE	\$ 672,440,000	\$ 672,440,000	\$ -	0.0%	\$ 672,440,000	100.0%
OTHER USER CHARGES	8,683,898	8,783,469	99,571	1.1%	8,683,898	101.1%
OTHER REVENUE	12,000,066	15,749,464	3,749,398	31.2%	12,000,066	131.2%
RATE STABILIZATION	-	-	-	---	-	---
INVESTMENT INCOME	9,352,590	10,303,841	951,251	10.2%	9,352,590	110.2%
TOTAL REVENUE & INCOME	\$ 702,476,554	\$ 707,276,774	\$ 4,800,220	0.7%	\$ 702,476,554	100.7%

**ATTACHMENT 2
Current Expense Variance Explanations**

Total MWRA	FY16 Budget YTD June	FY16 Actuals YTD June	FY16 YTD Actual vs. FY16 Budget		Explanations
			\$	%	
Direct Expenses					
Wages & Salaries	99,363,168	96,118,427	(3,244,740)	-3.3%	Underspending is mainly the result of lower average Full Time Equivalent positions (FTEs) than budgeted and the timing of backfilling vacant positions and the salary mix differential between staff retiring and new hires. The average FTEs for the fiscal year was 1,138, which was 22 positions lower than the 1,160 FTEs budgeted. Additionally, the Authority had four temporary employees.
Overtime	4,219,293	4,355,586	136,293	3.2%	Overspending mainly in Water Valve Maintenance to reconfigure system flows associated with providing Lynn water, responding to a Cambridge water main break, and start-up at Spot Pond, Treatment & Transmission Operations for planned operator half plant maintenance, in FOD in response to the Nut Island fire; Lab Services and MIS. This is offset by fewer wet weather events and shutdowns related to the North Main Pump Station valve replacement project.
Fringe Benefits	19,326,756	19,131,139	(195,617)	-1.0%	Lower than budget mainly due to Health Insurance of \$268,000 and Dental Insurance of \$43,000 due to fewer than budgeted filled positions, offset by overspending for Medicare of \$55,000; Tuition Reimbursement of \$29,000; Unemployment Insurance of \$11,000.
Worker's Compensation	2,343,000	2,350,369	7,369	0.3%	Overspending due to higher other expenses, offset by lower medical payments of \$75,000 and compensation payments of \$10,000. In June actual spending was \$134,000 over budget. It is important to note that spending on this line item can change significantly depending on future claims and severity of cases.
Chemicals	9,790,848	9,297,550	(493,298)	-5.0%	Lower year-to-date spending primarily due to lower than budgeted spending on Soda Ash of \$385,000 due to lower usage to meet corrosion control targets and timing of deliveries; Sodium Bisulfite of \$141,000 due to lower usage at the Carroll Water Treatment Plant due to UV treatment, and at DITP due to lower plant flows; Sodium Hypochlorite of \$81,000 mainly at DITP due to more pretreatment with Hydrogen Peroxide for odor control requiring less Sodium Hypochlorite and timing of deliveries; Other Oxidizers of \$71,000 due to less usage than planned and lower pricing for the new contract; and Ozone of \$44,000 due to higher water quality and change in operating target resulting from UV disinfection. The underspending is offset by overspending on Hydrogen Peroxide of \$207,000 due to increased need for pretreatment of hydrogen sulfide gas due to plant flows; Polymer of \$114,000 due to low flows requiring more Polymer to thicken the sludge; and Activated Carbon of \$41,000 at DITP.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY16 Budget YTD June	FY16 Actuals YTD June	FY16 YTD Actual vs. FY16 Budget		Explanations
			\$	%	
Utilities	23,164,822	18,744,867	(4,419,955)	-19.1%	Underspending due to lower Electricity of \$2.4 million mainly due to underspending at Deer Island of \$1.9 million for lower commodity and transmission and distribution costs, lower flows which resulted in less pumping demand, and an over accrual at the end of FY15. There is also underspending in Diesel Fuel of \$1.9 million primarily in FOD and DITP, Natural Gas of \$72,000, #2 Fuel Oil of \$54,000 and Propane of \$51,000. This is offset by higher water usage of \$80,000 at DITP, the Headworks, and JCWTP.
Maintenance	28,698,772	30,978,045	2,279,272	7.9%	Materials were overspent by \$2.7 million and Services were underspent by \$433,000. Nut Island fire remediation efforts have costs \$2.5 million through June for both materials and services.
Training & Meetings	413,714	370,752	(42,962)	-10.4%	Underspending in Administration, Emergency Preparedness and Operations.
Professional Services	5,819,611	5,886,715	67,104	1.2%	Higher spending on Legal Services of \$132,000 primarily in Law; Other Services of \$117,000 in Law, HR and Treasury; and Engineering Services of \$43,000 in Operations for NI fire remediation. This is offset by lower spending in Lab Testing & Analysis of \$175,000 in ENQUAL-Wastewater.
Other Materials	6,164,589	6,186,216	21,627	0.4%	Higher than budget mainly due to Computer Hardware of \$143,000; Lab and Testing Supplies of \$130,000 mainly due to receipt of equipment ordered in FY15 and received in the first Quarter of FY16; Health and Safety of \$45,000; Work Clothes of \$41,000 and Vehicle Purchase of \$38,000. The overspending is offset by lower spending for Vehicle Expenses of \$377,000 mostly due to lower fuel prices.
Other Services	23,529,902	22,628,385	(901,517)	-3.8%	Lower than budgeted spending of \$610,000 for sludge pelletization services for lower year to date inflation; \$128,000 for Grit and Screenings disposal services primarily due to lower quantities; \$127,000 for Space Lease Rentals for the Chelsea facility lease due to an overpayment of escrow for insurance; and \$83,000 for Other Rentals. The underspending is offset by higher spending on Telephone Services of \$66,000 associated with Field Operations SCADA lines for the water and wastewater facilities both for more lines and technology change; and Other Services of \$46,000 for Ward Street Headworks radio tower demolition.
Total Direct Expenses	222,834,475	216,048,050	(6,786,425)	-3.0%	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY16 Budget YTD June	FY16 Actuals YTD June	FY16 YTD Actual vs. FY16 Budget		Explanations
			\$	%	
Indirect Expenses					
Insurance	2,160,797	1,953,053	(207,744)	-9.6%	Lower Premiums of \$132,000 and Claims of \$76,000.
Watershed/PILOT	28,096,233	59,469,847	31,373,614	111.7%	Overspending due to prepayment of \$32 million for watershed debt payments for FY17 through FY22.
HEEC Payment	1,946,157	1,342,141	(604,017)	-31.0%	Lower O&M charges and timing of actual billing.
Mitigation	1,400,000	1,520,000	120,000	8.6%	Higher cost due to current agreements being signed after the budget was established.
Addition to Reserves	(34,927)	(34,927)	-	0.0%	
Pension Expense	8,159,521	8,159,521	-	0.0%	
Post Employee Benefits	5,224,848	5,224,848	-	0.0%	
Total Indirect Expenses	46,952,629	77,634,483	30,681,853	65.3%	
Debt Service					
Debt Service	432,689,450	404,246,203	(28,443,247)	-6.6%	The favorable variance of \$28.4 million was used to defease the watershed debt payments which appear in the Indirect Expenses - Watershed/PILOT line. The short-term rates related variance is \$12.9 million. Additionally, the Authority recognized \$7.9 million in underspending as a result of the favorable impact of defeasances related to reserve releases, not borrowing senior debt scheduled for November until May, and the impact of favorable refunding.
Debt Service Assistance	-	(873,804)	(873,804)		Unbudgeted Debt Service Assistance received in April.
Total Debt Service Expenses	432,689,450	403,372,399	(29,317,051)	-6.8%	
Total Expenses	702,476,554	697,054,933	(5,421,622)	-0.8%	
Revenue & Income					
Rate Revenue	672,440,000	672,440,000	-	0.0%	
Other User Charges	8,683,898	8,783,469	99,571	1.1%	
Other Revenue	12,000,066	15,749,464	3,749,398	31.2%	Cities of Cambridge \$1.2 million and Lynn \$593,000 water non-rate revenue for use of MWRA water while they completed maintenance work on their water system; TRAC penalty payment of \$662,000; energy rebates of \$438,000; higher sale of surplus equipment of \$331,000; and US Treasury rebates of \$296,000.
Rate Stabilization	-	-	-		
Investment Income	9,352,590	10,303,841	951,251	10.2%	Investment Income is over budget by \$951,000, due to higher than budgeted short-term interest rates.
Total Revenue	702,476,554	707,276,774	4,800,220	0.7%	
Net Revenue in Excess of Expenses	(0)	10,221,841	10,221,841		

ATTACHMENT 3
Capital Improvement Program Variance Explanations
(000's)

	FY16 Budget YTD June	FY16 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Wastewater					
Interception & Pumping (I&P)	\$20,101	\$6,635	(\$13,466)	-67.0%	<u>Underspending</u> Chelsea Creek Upgrades - Construction: \$8.1M (not yet awarded) Alewife Brook Pump Station Rehab Final Design/CA/REI and Construction: \$3.3M (schedule change) Caruso Pump Station Improvements Construction: \$1.3M (schedule change) Wastewater Meter System - Equipment Replacement Planning / Study / Design: \$359,000 (not yet awarded) Nut Island Fire Pump Building Study: \$240,000 (project cancelled) Chelsea Screenhouse Upgrades of \$235,000 (schedule change) Prison Point Piping Rehab: \$234,000 (not yet awarded in FY16) Other smaller projects totaling \$202,000 (schedule change) <u>Overspending Offset</u> Nut Island System-wide Odor Control - Evaluation: \$275,000 (budget increase based on award and progress) Nut Island Headworks Electric, Grit & Screenings Conveyance Design and Construction: \$229,000 (timing of final work)
Residuals	\$0	\$0	\$0	-	
CSO	\$13,228	\$16,660	\$3,432	25.9%	<u>Overspending</u> Cambridge Sewer Separation: \$6.0M due to water use during construction activities and updated cost estimates as a result of unforeseen conditions <u>Underspending Offset</u> Reserved Channel Sewer Separation :\$1.6M (updated cost estimates), MWR003 Gate & Siphon : \$509,000 (timing of work - project completed). South Dorchester Bay Sewer Separation (Commercial Point): \$400,000 (project schedule).
Other Wastewater	\$17,213	\$13,622	(\$3,591)	-20.9%	<u>Underspending</u> Infiltration and Inflow (I/I) due to lower community requests for grants and loans.

ATTACHMENT 3
Capital Improvement Program Variance Explanations
(000's)

	FY16 Budget YTD June	FY16 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Treatment	\$37,567	\$27,268	(\$10,299)	-27.4%	<u>Underspending</u> Electrical Equipment Upgrade - Construction 4: \$3.2M due to reduction in scope and accelerated timing of work in FY15 (reduced scope will be included in a later project) North Main Pump Station VFD Replacements: \$1.6M (work budgeted in FY16 completed in FY15) As-Needed Design 7-2, 7-3: \$923,000 As-Needed Design 8-1, 8-2, 8-3: \$495,000 Digester Sludge Pump Replacement Phase 2: \$1.1M (schedule change and lower than budget award) Fire Alarm System Replacement - Design of \$411,000 (schedule change) Winthrop Terminal Facility VFD Replacements of \$1.9M (schedule change - 6/15/16 NTP) Gravity Thickener Rehabilitation of \$1.1M (not yet awarded) Barge Berth and Facility Replacement of \$750,000 (not yet awarded) Combined Heat & Power - Design of \$750,000 (schedule change) Steam Turbine Generator System Modifications Construction: \$450,000 (energy efficiency rebate) Clinton Wastewater Treatment Plant multiple projects totaling \$307,000 Co-Digestion Temporary Facilities: \$250,000 (pending evaluation) Clarifier Rehab Phase 2 - Design: \$227,000, and other smaller projects totaling \$475,000. <u>Overspending Offset</u> Butterfly Valve Replacement of \$1.3M (progress of construction) Secondary Reactor VFDs of \$530,000 (progress of construction) HVAC Equipment Replacement Construction Design/Engineering Services: \$311,000 (progress of construction) Gravity Thickener Improvements - Construction: \$300,000 (litigation settlement) Cryogenics Chillers Replacement: \$248,000 (progress of construction)
Total Wastewater	\$88,109	\$64,185	(\$23,925)	-27.2%	

ATTACHMENT 3
Capital Improvement Program Variance Explanations
(000's)

	FY16 Budget YTD June	FY16 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Waterworks					
Drinking Water Quality Improvements	\$6,431	\$7,121	\$690	10.7%	<u>Overspending</u> Existing Facilities CP-7: \$580,000 Spot Pond Storage Facility Design/Build: \$598,000 and Owners' Representative: \$261,000 (project progress) Carroll Water Treatment Plant's Ultraviolet Disinfection - Design/Engineering Services During Construction/ Resident Engineer Inspection: \$161,000 (project completion) Brutsch Treatment Facility: \$344,000 (additional construction administration and resident engineering services) <u>Underspending Offset</u> Carroll Water Treatment Plant's Ultraviolet Disinfection - Construction: \$952,000 (litigation settlement) As-Needed Technical Assistance 7 and 8: \$268,000 (less than projected need)
Transmission	\$19,504	\$8,089	(\$11,415)	-58.5%	<u>Underspending</u> Wachusett Aqueduct Pump Station: \$9.3M (bid award substantially under project budget, schedule change, and ongoing design review) Watershed Land: \$1.5M (timing of land acquisitions) Rosemary Brook Building Repair: \$488,000 (late start-up due to acceptance of the Health and Safety Plan) <u>Overspending Offset</u> Hatchery Pipeline Design/Engineering Services During Construction/Resident Engineer Inspection of \$182,000 due to consultant progress and scope changes.

ATTACHMENT 3
Capital Improvement Program Variance Explanations
(000's)

	FY16 Budget YTD June	FY16 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Distribution & Pumping	\$17,389	\$14,957	(\$2,432)	-14.0%	<u>Underspending</u> NIH Redundancy & Storage: \$1.4M (lower than budgeted award and schedule change for Sections 89 & 29 Redundancy Construction Phase 1B of \$1.7M offset by Sections 89 & 29 Redundancy - Design of \$415,000 due to consultant progress) WASM 3 - MEPA/Design/CA/RI: \$1.1M (ongoing alternatives review for metropolitan tunnels redundancy) Valve Replacement of \$836,000 (lower than projected need) Section 53 Connection Design/CA/RI : \$360,000 (schedule change), and other projects totaling \$148,000 <u>Offset Overspending</u> Weston Aqueduct Supply Mains Section 36/C/S9 - A11 Valve of \$893,000 (contractor progress) Southern Extra High Redundancy & Storage Final Design/CA/RI of \$519,000 due to consultant progress.
Other Waterworks	\$107	(\$3,443)	(\$3,549)	-	<u>Underspending</u> Local Water System Loans: \$3.1M (lower community requests for loans) Waterworks Facility Asset Protection: \$689,000 (schedule shifts) <u>Offset Overspending</u> Quabbin Power, Communication & Security Design and Construction: \$290,000 (consultant and contractor progress)
Total Waterworks	\$43,430	\$26,725	(\$16,706)	-38.5%	


ATTACHMENT 3
Capital Improvement Program Variance Explanations
(000's)

	FY16 Budget YTD June	FY16 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Business & Operations Support					
Business & Operations Support	\$8,583	\$4,235	(\$4,349)	-50.7%	Underspending on MIS-related projects of \$2.3M due to timing of IT Strategic Plan implementation, Vehicle Purchases of \$952,000 due to timing, \$866,000 due to lower than projected use of as-needed technical assistance, and Security Equipment of \$693,000 due to delay in award of equipment contracts.
Total Business & Operations Support	\$7,553	\$4,235	(\$3,318)	-43.9%	
Total MWRA	\$140,123	\$95,144	(\$44,979)	-32.1%	

Attachment 4
FY16 Actual versus FY16 Year-End Projection

TOTAL MWRA	FY16 Projection	FY16 Actual	Change FY16 Actual vs. FY16 Projection	
			\$	%
EXPENSES				
WAGES AND SALARIES	\$ 96,319,662	\$ 96,118,427	\$ (201,235)	-0.2%
OVERTIME	4,248,719	4,355,586	106,867	2.5%
FRINGE BENEFITS	19,264,831	19,131,139	(133,692)	-0.7%
WORKERS' COMPENSATION	2,407,780	2,350,369	(57,411)	-2.4%
CHEMICALS	9,300,808	9,297,550	(3,258)	0.0%
ENERGY AND UTILITIES	18,839,430	18,744,867	(94,563)	-0.5%
MAINTENANCE	30,786,045	30,978,045	192,000	0.6%
TRAINING AND MEETINGS	404,086	370,752	(33,334)	-8.2%
PROFESSIONAL SERVICES	6,038,611	5,886,715	(151,896)	-2.5%
OTHER MATERIALS	6,164,588	6,186,216	21,628	0.4%
OTHER SERVICES	23,041,297	22,628,385	(412,912)	-1.8%
TOTAL DIRECT EXPENSES	\$ 216,815,857	\$ 216,048,051	\$ (767,806)	-0.4%
INSURANCE	\$ 2,014,296	\$ 1,953,053	\$ (61,243)	-3.0%
WATERSHED/PILOT	27,519,959	27,469,847	(50,112)	-0.2%
PREPAYMENT OF WATERSHED DEBT	32,000,000	32,000,000	-	0.0%
HEEC PAYMENT	1,787,353	1,342,141	(445,212)	-24.9%
MITIGATION	1,520,000	1,520,000	-	0.0%
ADDITIONS TO RESERVES	(34,927)	(34,927)	-	0.0%
RETIREMENT FUND	8,159,521	8,159,521	-	0.0%
POSTEMPLOYMENT BENEFITS	5,224,848	5,224,848	-	0.0%
TOTAL INDIRECT EXPENSES	\$ 78,191,050	\$ 77,634,483	\$ (556,567)	-0.7%
DEBT SERVICE				
State Revolving Funds (SRF)	78,131,558	78,131,558	\$ -	0.0%
Senior Debt	269,626,855	270,147,623	520,768	0.2%
Subordinate Debt	49,222,442	49,222,442	-	0.0%
Local Water Pipeline CP	262,500	262,500	-	0.0%
Capital Lease	3,217,060	3,217,060	-	0.0%
Current Revenue for Capital	11,200,000	11,200,000	-	0.0%
Variable Rate Debt	(12,686,885)	(12,873,173)	(186,288)	1.5%
Defeasance Account	-	-	-	-
Debt Service Assistance	(873,804)	(873,804)	-	-
Debt Service before Defeasance	398,099,726	398,434,206	334,480	0.1%
Projected/Actual Defeasance	5,000,000	4,938,194	(61,806)	-1.2%
TOTAL DEBT SERVICE	\$ 403,099,725	\$ 403,372,400	272,675	0.1%
TOTAL EXPENSES	\$ 698,106,632	\$ 697,054,933	\$ (1,051,698)	-0.2%
REVENUE & INCOME				
RATE REVENUE	\$ 672,440,000	\$ 672,440,000	\$ -	0.0%
OTHER USER CHARGES	8,683,898	8,783,469	99,571	1.1%
OTHER REVENUE	14,725,088	15,749,464	1,024,376	7.0%
RATE STABILIZATION	-	-	-	-
INVESTMENT INCOME	10,052,590	10,303,841	251,251	2.5%
TOTAL REVENUE & INCOME	\$ 705,901,576	\$ 707,276,774	\$ 1,375,198	0.2%
Surplus after Defeasance	\$ 7,794,944	\$ 10,221,841	\$ 2,426,896	31.1%

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Memorandum of Agreement between MWRA and the City of Somerville

COMMITTEE: Administration & Finance & Audit

 INFORMATION
 X VOTE

A. Navanandan, P.E., Chief Engineer
Michael J. Hornbrook, Chief Operating Officer
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to execute a Memorandum of Agreement with the City of Somerville, substantially in the form attached, for the cost sharing and coordination of the rehabilitation of a combined sewer utilized by both the City and MWRA, in an amount for MWRA not to exceed \$1.4 million.

BACKGROUND:

MWRA owns and operates the Somerville Marginal Combined Sewer Overflow Facility located on Mystic Avenue in Somerville (see Attachment A). The Somerville Marginal Facility is part of MWRA's approved Long-Term Combined Sewer Overflow Control Plan and its treated discharges are subject to the Federal District Court Order in the Boston Harbor case. The 2006 CSO Stipulation entered in the federal court order contains long-term levels of CSO control at each outfall including annual activation frequency and discharge volume that MWRA must meet.

The Somerville Marginal Facility receives flow primarily from two major Somerville-owned combined sewers: an 85-inch by 90-inch brick pipe and a 60-inch diameter brick pipe. Wet weather flows entering the Somerville Marginal Facility are treated (screening, disinfection and dechlorination) prior to discharge to the Mystic River.

DISCUSSION:

An internal inspection of the 85-inch by 90-inch brick sewer has revealed extensive serious cracks and fractures at the crown of the pipe. Metal road plates have been placed over the section of this pipe beneath Mystic Avenue to spread the live loads over a greater area and the Massachusetts Department of Transportation has expressed concern regarding the temporary metal plates and having the long-term repair completed.

The City of Somerville retained an engineering consultant to evaluate the condition of the 85-inch by 90-inch sewer and to recommend a long-term rehabilitation method. The consultant evaluated the following rehabilitation methods: Sliplining with a smaller diameter pipe;

Shotcrete and Rebar; Centrifugally Cast Concrete Replacement; Grout-In-Place Spiral Wound Liner; and a structural Cured in Place Pipe (CIPP) Liner.

Somerville's engineering consultant recommended sliplining as the preferred method for the brick sewer at an estimated cost of \$3 million. While sliplining would provide the necessary structural integrity to the pipe, it would result in a reduced inside diameter and therefore reduce both the in-system storage and conveyance capacity by 33% compared to the current 85-inch by 90-inch brick pipe.

MWRA's CSO Control Plan utilizes both the in-line storage and conveyance capacity of the current brick sewer to control and reduce the treated CSO volume discharged to the Mystic River. The large Somerville sewer not only provides in-system storage for the City's flows that are unable to enter the surcharged MWRA system in large storms, but also accommodates backwater from the MWRA interceptor, which serves parts of Somerville and Medford.

Sliplining the sewer with a smaller diameter pipe will reduce its conveyance and storage capacity. MWRA modeling predicts that this capacity reduction will increase the annual volume of treated CSO discharged to the Mystic River by up to 22 million gallons and could re-open MWRA's federal court requirements for additional and likely more expensive CSO control in this area, such as underground storage or sewer separation. In addition, in large storm events, the MWRA regional system flows "relieve" into this Somerville brick sewer where it is then treated at MWRA's Somerville Marginal Facility. Downsizing the Somerville sewer will also reduce this regional benefit to the MWRA system.

Another internal rehabilitation method that would provide the same structural support and not reduce the conveyance or storage capacity of the Somerville brick sewer is Cured-In-Place Pipe (CIPP) lining. The CIPP would result in minimal reduction in cross section area and would slightly increase conveyance capacity due to the smoothness of the lining. It would not decrease the in-system storage capacity in the pipe. The estimated total cost estimate for the CIPP lining is \$4.2 million.

Staff recommend that MWRA share the cost of the CIPP liner rehabilitation with the City of Somerville in order to accomplish each party's respective needs and goals. MWRA's share of the rehabilitation costs would be based upon MWRA funding the cost of the cross sectional area needed for CSO storage and conveyance that would be lost if the sliplining method (need 33% additional cross section area) were used. Staff recommend that MWRA enter into the Memorandum of Agreement with the City of Somerville with a MWRA not-to-exceed cost share of \$1.4 million of the total cost of \$4.2 million for this CIPP rehabilitation lining project.

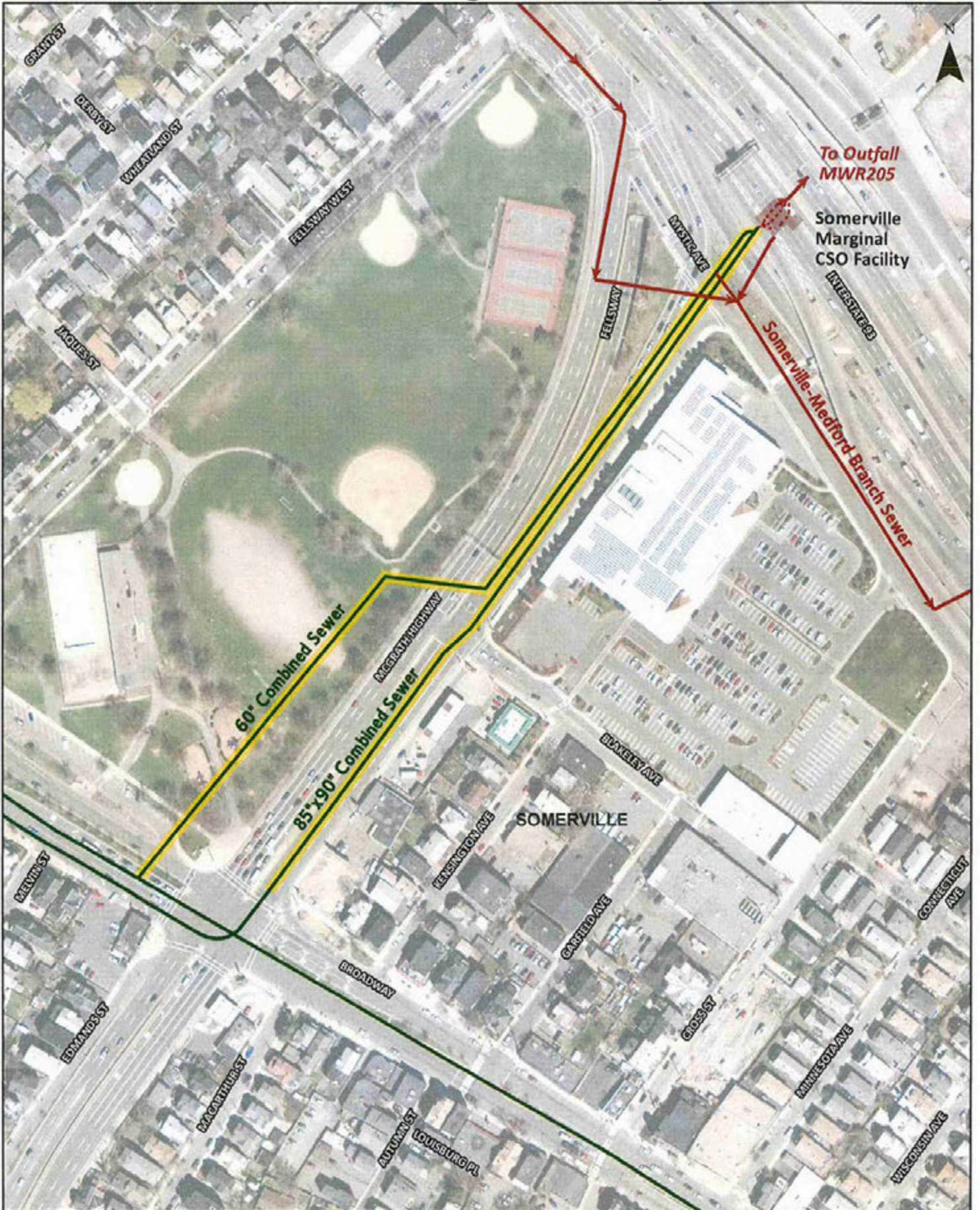
BUDGET/FISCAL IMPACT:

This unanticipated project is not included in the current approved FY17 CIP. The \$1.4 million will be absorbed within the 5-year CIP Cap.

ATTACHMENTS:

- Project Location Map
- Draft Memorandum of Agreement between MWRA and the City of Somerville

Somerville Marginal Interceptors



0 100 200 400 Feet

MEMORANDUM OF AGREEMENT
BETWEEN
MASSACHUSETTS WATER RESOURCES AUTHORITY
AND
CITY OF SOMERVILLE

This MEMORANDUM OF AGREEMENT is made this _____ day of _____, 2016, by and between the MASSACHUSETTS WATER RESOURCES AUTHORITY a body corporate and politic and an independent authority pursuant to St. 1984, c.372 of the laws of the Commonwealth of Massachusetts ("MWRA"), and the CITY OF SOMERVILLE, duly incorporated as a City under the laws of the Commonwealth of Massachusetts ("Somerville"). MWRA and Somerville may hereafter be referred to as "Party" or "Parties."

RECITALS

WHEREAS, MWRA owns and operates the Somerville Marginal Combined Sewer Overflow Facility ("the Somerville Marginal Facility") located on Mystic Avenue in Somerville. The Somerville Marginal Facility is part of MWRA's federally approved Long Term Combined Sewer Overflow Control Plan; and

WHEREAS, The MWRA Somerville Marginal CSO Control Facility receives and stores wet weather flow from two major Somerville-owned combined sewers: an 85-inch by 90-inch brick pipe and a 60-inch diameter brick pipe ("Combined Sewers") which is treated at MWRA's Somerville Marginal facility and eventually discharged to the Mystic River; and

WHEREAS, an inspection of the Combined Sewers has revealed that extensive cracks and fractures have formed at the crown of the pipes requiring that metal road plates be placed over the section of this pipe beneath Mystic Avenue to even the load over the pipes to minimize further damage; and

WHEREAS, Mass DOT has expressed concern regarding the temporary metal plates and is desirous of having the Combined Sewers repair being complete; and

WHEREAS, it has been determined that the Combined Sewers should be repaired using a cured-in-place pipe lining method ("CIPP") that will provide structural support and maintain conveyance and storage capacity of the Combined Sewers; and

WHEREAS, it is in both Parties interest, as well as the public interest in general, to repair the Combined Sewers to maintain the requirements of CSO Control Plan and the environmental benefits to the region; and

WHEREAS, Somerville and the MWRA wish to enter into this Memorandum of Agreement ("MOA") regarding certain aspects of the payment for, and sharing of, costs with respect to the repair of the Combined Sewers ("CIPP Project").

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. AWARD OF CONTRACT

1.1 Somerville agrees that it shall design, publicly bid in accordance with the public bid laws, award a contract for the CIPP Project. Somerville will enter into a contract with the successful bidder and be responsible for construction of the CIPP Project.

2. COST SHARING

2.1 The cost of the CIPP Project is estimated to be Four Million Two Hundred Thousand Dollars (\$4,200,000).

2.2 Somerville agrees that, subject to further contents of this section, its share will be Two Million Eight Hundred Thousand Dollars (\$2,800,000)

2.3 MWRA agrees to share the cost of the CIPP Project based upon MWRA funding the cost of the cross sectional area needed for CSO storage and conveyance that would be lost with other methods of repair. MWRA agrees that it will pay Somerville an amount not to exceed One Million Four Hundred Thousand Dollars (\$1,400,000) as the full, final and complete amount of its share of the CIPP Project.

2.4 Any costs in excess estimated CIPP Project will be borne solely by Somerville, with no further contribution from MWRA.

3. SOMERVILLE RESPONSIBILITIES/RIGHTS

3.1 Somerville shall be solely responsible for all aspects of the design, effectiveness and construction of the CIPP Project.

3.2 To the extent permitted by law, Somerville and its successors and assigns agrees to indemnify, hold harmless the MWRA and its successors and assigns from all damages and/or claims arising out of, or in any way connected, with the CIPP Project.

3.3 Somerville agrees that it is and shall remain solely liable for any liabilities with respect to any release or threat of release of any oil or other hazardous material on or migrating from or through the land on or under which the Combined Sewers are located and MWRA shall not be made liable hereunder for any such oil or hazardous material which requires remediation.

4. TERM

4.1 The term of this Agreement shall, unless otherwise agreed to by the parties, commence on the date written above and continue until final completion of the CIPP Project.

5. PAYMENT BY MWRA

5.1 MWRA shall make payment to Somerville of the amounts listed in Paragraph 2.3 as follows: **TBD**

6. AMENDMENTS

6.1 The parties to this MOA may amend this MOA only by a writing duly executed by both parties.

7. SEVERABILITY

7.1 If any part of this MOA is determined to be invalid, illegal or unenforceable, such determination shall not affect the validity, legality or enforceability of any other part of the Agreement and the remaining parts of this Agreement shall be enforced as if such invalid, illegal or unenforceable part were not contained herein.

8. NOTICE

8.1 Whenever, by the terms of this instrument, notices may or are to be given either to Somerville or the MWRA, such notice shall be deemed to have been given, if in writing and either delivered by hand or by US mail to the following addresses:

To Somerville:

To MWRA:

9. ENTIRE AGREEMENT

9.1 This agreement, constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements, understandings, expectations, negotiations, and discussions of the parties, whether oral or written. There are no representations by either party which are not specifically set forth in this agreement.

10. GOVERNING LAW

10.1 This agreement shall be executed and delivered in the Commonwealth of Massachusetts and shall be construed and enforced in accordance with, and shall be governed by, the laws of the Commonwealth of Massachusetts.

11. COUNTERPARTS

11.1 This agreement shall be executed in duplicate counterparts, each of which shall be deemed an original and both of which shall constitute one and the same instrument.

12. AUTHORITY

12.1 Each person signing below in an official or representative capacity warrants that he or she is duly authorized to act for his or her principal as indicated below and that he or she is so acting when signing this Agreement.

IN WITNESS WHEREOF, the Parties hereto have set their hands and seals on the day and year first written above.

MASSACHUSETTS WATER RESOURCES
AUTHORITY

CITY OF SOMERVILLE.

By: _____
Frederick A. Laskey
Executive Director

By: _____



STAFF SUMMARY

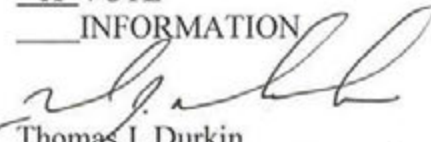
TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Bond Defeasance of Future Debt Service



COMMITTEE: Administration, Finance & Audit

VOTE
 INFORMATION

Matthew R. Horan, Treasurer 
Sean R. Cordy, Sr. Financial Analyst 
Preparer/Title


Thomas J. Durkin
Director of Finance

Consistent with MWRA's multi-year rates management strategy, MWRA staff are recommending the execution of an approximately \$9.3 million defeasance in September 2016 to reduce future year rate increases. The \$9.3 million in available funds is derived from the FY16 surplus and will be used to prepay debt service coming due in FY18 through FY20 (\$8.5 million in principal and \$847,500 in interest). The defeasance of debt, coupled with diligent management of operational expenses, have been the keys to MWRA's ability to keep assessment increases sustainable, predictable and reasonable.

RECOMMENDATION:

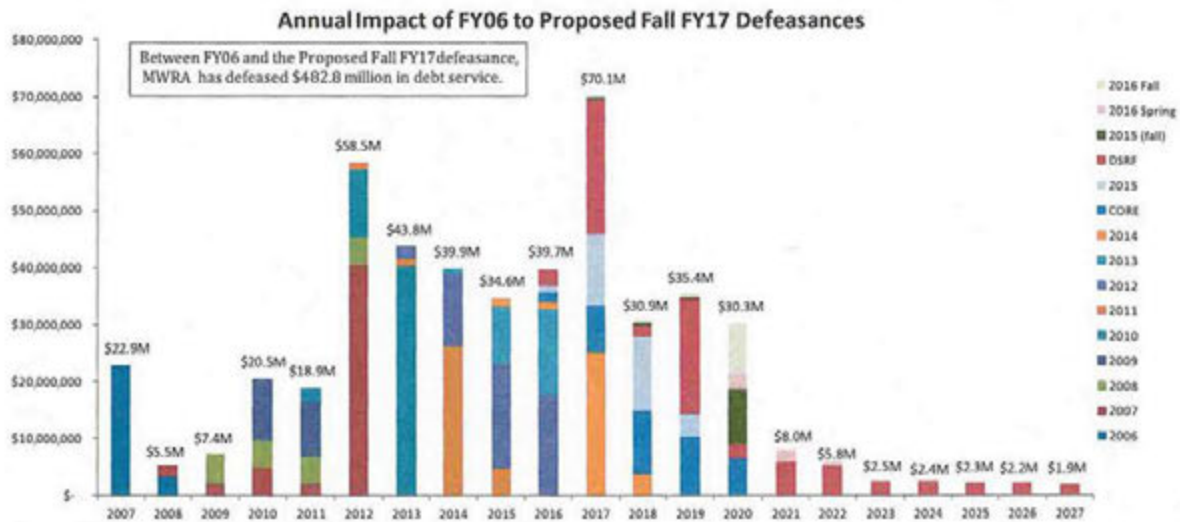
To authorize the Executive Director or his designee, on behalf of the Authority, to enter into, execute and deliver all necessary agreements and other instruments and to take such other actions necessary to effectuate the redemption and defeasance of an aggregate principal amount of approximately \$8,475,000 of outstanding MWRA senior bonds including to cause the escrow of cash and/or securities in an amount necessary to fund such redemption and defeasance, in order to reduce the debt service requirement by approximately \$9,746,250 in the FY18 through FY20 timeframe.

DISCUSSION:

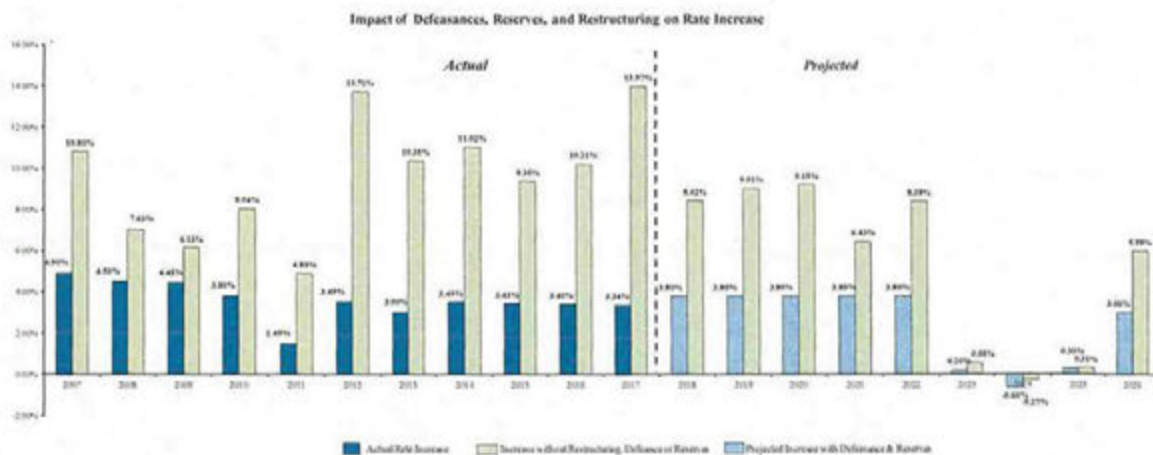
As described in more detail in the FY16 Year-end Financial Update and Summary Staff Summary, MWRA has approximately \$9.3 million available from the FY16 budget to execute a defeasance of outstanding debt. These funds are available after the use of \$32.0 million to prepay MWRA's remaining obligation to pay the Commonwealth's debt service for prior watershed land purchases for FY17 to FY22, and the defeasance of \$4.9 million in MWRA debt service.

MWRA's ongoing use of defeasances has had a significant impact lowering future debt service payments and limiting annual rate revenue increases. Including this transaction, MWRA has

deceased \$482.8 million in debt service since 2006. The following chart details the multi-year impact of those defeasances.



The application of these defeasances has had a significant impact on rate increases. The chart below shows the estimated rate increase without the application of the defeasances.



Staff reviewed all available defeasance candidates, and have identified the August 1, 2020 maturity of the 2009 Series B as an advantageous defeasance candidate. The proposed defeasance reduces debt service by a total of \$9.7 million between FY18 and FY20. The total debt service reduction attributable to the defeasance is approximately \$423,750 higher than the defeasance cost because the 2009 Series B bonds are callable on August 1, 2019. The payment of these bonds on the call date will yield interest savings, as a result of paying off the bonds prior to maturity without interest accruing.

	Budget Reduction by Fiscal Year			Total CEB
	2018	2019	2020	Savings
2009 Series B	\$ 423,750	\$ 423,750	\$ 8,898,750	\$ 9,746,250

The funds will be utilized to purchase governmental securities in an amount sufficient to make all future interest and principal payments on the bonds to be defeased, offset by the interest earned on the securities.

The governmental securities purchased are deposited with an escrow agent (bond trustee). Once established, an escrow is irrevocable, replacing any future debt service payments due for the bonds being escrowed, and therefore reducing the rate revenue requirement. Establishing an escrow reduces debt service requirements for each fiscal year from the time it is executed until the defeased bonds mature.

Establishing an escrow to defease debt requires that MWRA's bond counsel draft an agreement to this effect and an independent verification agent must certify that the funds in the escrow are sufficient to pay the remaining debt service. Bonds that are escrowed to maturity are not included in the MWRA's debt cap or debt service coverage calculations. Staff will continue to monitor market conditions and the maturities available to be defeased to ensure that the bonds selected provide MWRA with the highest available debt service savings.

BUDGET/FISCAL IMPACT:

The defeasance of these bonds will decrease the FY18 through FY20 debt service requirement by \$9.7 million. The cost associated with bond counsel and financial advisory services will be paid out of the Treasury Department's professional services budget.

STAFF SUMMARY

AF&A C.1
IV.C.1
9/14/16


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Security Equipment Maintenance and Repair Services
Viscom Systems, Inc.
Contract EXE-034, Change Order 2



COMMITTEE: Administration, Finance & Audit

 INFORMATION
 X VOTE

Victor L'Esperance, Deputy Director, Emergency Plan. and Prep.
Andrew Hildick-Smith, Director, Emergency Plan. and Prep.
Preparer/Title


Michael J. Hornbrook
Chief Operating Office

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 2 to Contract EXE-034, Security Equipment Maintenance and Repair Services, with Viscom Systems, Inc., for an amount not to exceed \$68,657.60, increasing the contract amount from \$1,152,450.55 to \$1,221,108.15, with no increase in contract term.

DISCUSSION:

Contract EXE-034 is a two-year contract that provides preventive and scheduled maintenance and repair services for all components of MWRA's extensive security system. Provisions for software integration and response to unforeseen emergencies are also included in the contract. The security system covered by this contract protects 132 structures at 46 facilities with 174 cameras, 296 card readers and 911 monitoring points. MWRA's Office of Emergency Preparedness has developed an appropriate preventive maintenance schedule for each piece of equipment and determines on a case-by-case basis when to call the contractor in to repair critical equipment outside of normal business hours. Contract EXE-034 will expire on December 31, 2016.

This Change Order

Change Order 2 consists of the following two items:

Non-Emergency On-Call Maintenance and Repair Services and Miscellaneous Work \$56,679.04

The original contract included 1,900 service person hours of non-emergency on-call maintenance and repair services and other miscellaneous work at \$73.04 per hour for a not-to-exceed amount of \$138,776. Change Order 1 added 1,400 hours to this bid item, revising the total hours to 3,300 hours for a revised not-to-exceed amount of \$241,032. To date, 3,199 hours have been used. This change order is primarily needed to complete several upcoming tasks that were not known at the time the contract was awarded. These include restoring security monitoring and access control to the refurbished Southborough Laboratory, consolidating the security system

fiber optic communications at the Nash Hill covered storage facility to better share local communication resources with the SCADA system, and work being identified under a facility security inspection project.

Therefore, staff estimate that an additional 776 hours are needed to perform non-emergency on-call maintenance, repair services and other miscellaneous work for the remainder of the contract to ensure continued operation and maintenance of the security system. The approved PCO for this item has been identified by MWRA staff as an unforeseen condition. MWRA staff and the Contractor have agreed to a not-to-exceed amount of \$56,679.04.

Integration and Programming Services \$11,978.56

The contract includes 1,600 service person hours integration and programming services at \$73.04/hour for a not-to-exceed amount of \$116,864. To date, 1,352 hours have been used. This change order is primarily needed to complete several upcoming tasks that were not known at the time the contract was awarded. These include integration and programming services associated with restoring security monitoring and access control to the refurbished Southborough Laboratory, new access control and video monitoring being provided under the Quabbin Power, Communications and Security contract, and work being identified under a facility security inspection project.

Therefore, staff estimate that an additional 164 hours are needed to perform integration and programming services for the remainder of the contract to ensure continued operation and maintenance of the security system. The approved PCO for this item has been identified by MWRA staff as an unforeseen condition. MWRA staff and the Contractor have agreed to a not-to-exceed amount of \$11,978.56.

CONTRACT SUMMARY:

	AMOUNT	TIME	DATED
Original Contract:	\$941,302.75	730 Days	01/01/15
CHANGE ORDERS:			
Change Order 1*	\$211,147.80	0 Days	02/24/16
Change Order 2	<u>\$68,657.60</u>	<u>0 Days</u>	Pending
Total Change Orders	\$279,805.40	0 Days	
Adjusted Contract:	\$1,221,108.15	730 Days	

*Approved under delegated authority

If Change Order 2 is approved, the cumulative total value of all change orders to this contract will be \$279,805.40 or 30% of the original contract amount. Work on this contract is approximately 81% complete.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the Office of Emergency Preparedness' FY17 Current Expense Budget for this change order.

MBE/WBE PARTICIPATION:

There were no MBE/WBE participation requirements established for this contract because of limited opportunities for subcontracting.



MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

WASTEWATER POLICY & OVERSIGHT COMMITTEE MEETING

Chair: P. Flanagan
Vice-Chair: J. Walsh
Committee Members:
A. Blackmon
J. Carroll
J. Foti
A. Pappastergion
B. Peña
H. Vitale

to be held on

Wednesday, September 14, 2016

Location: 100 First Avenue, 2nd Floor
Charlestown Navy Yard
Boston, MA 02129

Time: Immediately following AF&A Comm.

AGENDA

A. Approvals

1. Approval of New Wastewater Advisory Committee Member

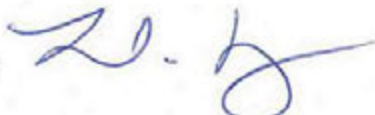
B. Contract Awards

1. Struvite, Scum, Sludge, and Grit Removal Services at the Deer Island Treatment Plant: Clean Harbors Environmental Services, WRA-4257
2. Cambridge Branch Sewer: Hazen and Sawyer, Contract 7511
3. Chelsea Creek Headworks Upgrade: BHD/BEC JV, A Joint Venture, Contract 7161

C. Contract Amendments/Change Orders

1. Remote Headworks Upgrades: Arcadis US, Inc., Contract 7206, Amendment 4
2. Caruso Pump Station Improvements: Dewberry Engineers Inc., Contract 7037, Amendment 3
3. Valve and Piping Replacement: Carlin Contracting Co., Contract 7275, Change Order 5


STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Approval of One New Member of the Wastewater Advisory Committee

COMMITTEE: Wastewater Policy & Oversight

 INFORMATION

 X VOTE

Wendy Leo, Senior Program Manager
Preparer/Title 

Sean Navin
Director, Intergovernmental Affairs 

RECOMMENDATION:

To approve the addition of one new member, Mr. James Guidod of the MWRA Advisory Board staff, to the Wastewater Advisory Committee.

DISCUSSION:

In addition to the critical oversight functions of the Advisory Board, many of MWRA's policy decisions are made with advice and support from two standing citizens' advisory committees, the Water Supply Citizens Advisory Committee (WSCAC) and the Wastewater Advisory Committee (WAC).

The Wastewater Advisory Committee was created in 1990 to offer independent recommendations on wastewater programs and policies; it is a successor to the Facilities Planning Citizen Advisory Committee, which was established during the planning of the new Deer Island Treatment Plant. WAC's members include citizen advocates, representatives from the Metropolitan Area Planning Council, watershed associations, the engineering and business communities, environmental law, and the science and education fields. The Advisory Board has historically appointed a member as well.

WAC elects its chairman and employs an Executive Director (selected by WAC's membership with the concurrence and approval of MWRA's Public Affairs Department). WAC's current chairman is Taber Keally and WAC's current Executive Director is Andreae Downs.

The WAC Contract provides that WAC shall have a maximum of twenty members approved by MWRA's Board of Directors; the Contract prohibits alternates or designees.

The current thirteen members on WAC are: Mary Adelstein, citizen advocate; Craig Allen, Commonwealth Research Group, Inc.; Adriana Cillo of the Boston Water and Sewer Commission; Wayne Chouinard, Town of Arlington DPW; Zhanna Davidovitz, Massachusetts Institute of Technology; Karen Golmer, New England Water Innovation Network; Stephen

Greene, Howland-Greene Consultants; Taber Keally (WAC Chairman), Neponset River Watershed Association; Karen Lachmayr, Harvard University; Beth Miller, independent engineer; James Pappas, retired engineer; Martin Pillsbury, Metropolitan Area Planning Council; Dan Winograd, Woodard & Curran.

In accordance with the current Agreement, the MWRA Advisory Board has recommended the following individual for WAC membership:

James Guidod

Mr. Guidod joined the MWRA Advisory Board staff in December 2015 as a Finance and Policy Analyst. He has a Bachelors degree from the University of Vermont and Masters degree from the University of Rhode Island (URI). At URI, Mr. Guidod's research focused on the transitional budgeting process of towns that converted from Town Meeting to mayoral city systems in the Commonwealth. Prior to joining the Advisory Board staff, Mr. Guidod worked in the private sector as a financial analyst.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Struvite, Scum, Sludge and Grit Removal Services at the Deer Island Treatment Plant
Clean Harbors Environmental Services, Inc.
Contract WRA-4257

COMMITTEE: Wastewater Policy & Oversight

 INFORMATION

 X VOTE


Michele S. Gillen

Director of Administration

David Duest, Director, Wastewater Treatment
Carolyn Francisco Murphy, Director of Procurement
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the award of a two-year purchase order contract to provide struvite, scum, sludge and grit removal services at the Deer Island Treatment Plant to the lowest responsive bidder, Clean Harbors Environmental Services, Inc. and to authorize the Executive Director, on behalf of the Authority, to execute said purchase order contract in an amount not to exceed \$672,300 for a period of two years.

DISCUSSION:

Staff have previously informed the Board of past problems concerning the precipitation of struvite, a by-product of anaerobic sludge digestion, within the sludge centrifuges and digested sludge pipelines. Struvite is a crystallized compound forming from solubilized phosphate, ammonia and magnesium, which can form a matrix with digested sludge solids and coat pipelines or other surfaces. An example of struvite build-up can be seen in the picture on the right.



Struvite build-up is a concern because of the operational problems that it can cause. Struvite can impact process equipment and piping and can result in the loss of digester and sludge thickening capacity.



Although staff have been mitigating struvite build-up with the addition of ferrous and/or ferric chloride (depending on cost and availability - both have proven equally effective) to the digesters, which binds up soluble phosphate preventing the formation of struvite, struvite build-up can still occur and when it does, it typically requires the specialized services and industrial equipment of specialty contractors, often working in confined spaces. MWRA has competitively bid these services several times in the past and at the present time.

Staff also have used these specialized services to clean severe blockages and the build-up of rags, scum, sludge and grit in a number of other process areas of the plant. While struvite build-up has only occurred in the Deer Island Residuals complex, staff have found other types of blockages in the gravity thickeners, primary clarifiers, influent channels and scum receiving wells.

Contracted services are utilized only as a last-resort measure as MWRA staff are generally the first option in clearing these types of blockages. Deer Island has utilized MWRA vector trucks to clean some of the blockages, but contracted services are required when blockages reach a level that is beyond in-house capability or when the rag/scum/sludge/grit material is of such a thick consistency that processing it through the plant could cause plant upset conditions or the potential for equipment damage.

The thickness, weight and, in some cases, the location of the material that creates these blockages make it impractical and potentially unsafe for MWRA staff to remove by conventional methods, without the availability of the specialized equipment specifically designed for this purpose. In the previous contract, approximately 25% of the contract value was expended on struvite cleaning and removal; the remaining 75% was used to address other types of blockages in the Deer Island treatment systems, most significantly blockages in the gravity thickeners.

Procurement Process

Bid WRA-4257 was advertised in the following publications: Boston Herald, Goods and Services Bulletin, El Mundo, and Banner Publications. In addition, bids were made available for public downloading on MWRA's e-procurement system (Event 2528), and six potential bidders were solicited through the e-Portal.

On July 22, 2016, Event 2528 closed, with the following results:

Vendor	Total Bid Price
Clean Harbors Environmental Services	\$ 672,300.00
Moran Environmental Recovery	\$ 829,700.00

Staff attempted to contact the four solicited vendors which did not submit a bid. Three of the four vendors responded. One vendor missed the email solicitation; another vendor did not bid because it does not own most of the equipment required to complete the work; and a third vendor chose not to bid because much of its manpower and equipment are committed to another large project.

The scope of services and estimated quantities for this contract includes 200 days of field work as defined by MWRA, 100 days with a five-person work crew and 100 days with a three-person work crew and all necessary special cleaning equipment, to be used on an as-needed basis. In addition, bid prices were submitted for the hauling and disposal of an estimated 600 tons of solid material and 150,000 gallons of wet material during a two-year period based on previous contracts. These are estimates only and not a guaranteed commitment to the vendor; MWRA will incur costs only for the services provided and satisfactory documentation of quantities removed (e.g., weight slips from licensed landfills or disposal sites) during the two-year contract term.

In addition, this contract includes 500 hours of off-hour work; 250 hours with a five-person crew and 250-hours with a three person crew which are to be used on an as-needed basis. Again these bid items will only be used on an as-needed basis if treatment processes are impacted such that crews need to be either extended beyond the normal working day or if crews need to be called in during off-hours. The estimated cost of these services is \$147,500.

Staff have been able to considerably reduce the hours required in the scope of this contract, by about 40%. This was due in part by improving the scum removal in the facility. The replacement of the scum skimmers performed under Contract WRA-7396 has reduced the need for an outside contractor to clear away scum blockages.

Staff reviewed Clean Harbors Environmental Services, Inc.'s (Clean Harbors) bid and have determined that it meets all of the requirements of the bid specifications. The difference in bid prices between Clean Harbors and Moran Environmental Recovery is made up primarily in labor costs (a delta of \$117,500) and material disposal costs (a delta of \$33,900). Clean Harbors has previously performed these services and staff were satisfied with its performance. Therefore, staff recommend the award of this purchase order contract to Clean Harbors as the lowest responsive bidder.

BUDGET/FISCAL IMPACT:

The FY17 Current Expense Budget includes sufficient funds for the first portion of this contract. Appropriate funding will be included in subsequent Proposed CEB requests for the remaining term of this two year contract.

MBE/WBE PARTICIPATION:

Clean Harbors Environmental Services, Inc. is not a certified Minority- or Women-owned business.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Cambridge Branch Sewer Study
Hazen and Sawyer, P.C.
Contract 7511



COMMITTEE: Wastewater Policy & Oversight

John P. Vetere, Deputy Chief Operating Officer
A. Navanandan, P.E., Chief Engineer
Kathleen Cullen, P.E., Project Manager
Preparer/Title

 INFORMATION

VOTE

Carlynn Francis Murphy
Michele S. Gillen
Director of Administration
Michael J. Hornbrook
Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the recommendation of the Consultant Selection Committee to award Contract 7511, Cambridge Branch Sewer Study to Hazen and Sawyer, P.C., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the amount of \$686,953.85, for a contract term of 15 months from the Notice to Proceed.

BACKGROUND:

The Cambridge Branch Sewer runs through in Cambridge, Somerville, Charlestown and Everett (see Attachment A) and consists of Sections 23 through 28 and 154, which were built between 1892 and 1895 of brick in a mixture of circular, catenary, and basket-handle shapes. Portions of Section 25, the siphon beneath the Mystic River, are also lined with paraffin-soaked elm hoops set in mortar. The Cambridge Branch Sewer ranges in size from 5-feet in diameter to over 6-feet wide by 7-feet high.

The Cambridge Branch Sewer carries flow from portions of Cambridge, Charlestown, Medford and Somerville to the DeLauri Pump Station, and receives local Everett flows downstream of the DeLauri Pump Station. The Cambridge Branch Sewer is a tributary to the North Metropolitan Sewer, which continues to the Chelsea Creek Headworks. The total length of the Cambridge Branch Sewer is approximately 17,000 feet. The Cambridge Branch Sewer is located in very dense urban areas and portions are located beneath heavily congested roadways.

The condition of Sections 23, 24, 26 and 27 have been rated "poor" by MWRA staff based upon internal Closed Circuit Television (CCTV) inspections. When considered with vulnerability, consequence, and risk of failure these sections of the Cambridge Branch Sewer are ranked in the

bottom ten of MWRA interceptors for condition. The rehabilitation of Section 23, 24, 26 and 27 are included in the 2013 Master Plan as Interceptor Renewal/Asset Projection Projects #3 and #4. Until recently, MWRA did not have equipment that was able to inspect Section 25, and previous video quality of Section 154 was poor due to previous CCTV limitations. Sonar inspection of portions of Section 25 and video inspection of Section 154 with newer CCTV technology was recently performed by MWRA and also found to be in poor condition.

DISCUSSION:

Contract 7511 is a 15-month contract to assess the condition of Sections 23, 24, 25, 154, 26 and 27, including review of CCTV and sonar inspection tapes, additional physical inspection of manholes and structures, analysis of sewer sediment, corrosivity evaluation, traffic and permitting assessments, and hydraulic capacity evaluation. The Consultant will identify and evaluate various rehabilitation methods. The Consultant will also provide recommendation in a final report to address future rehabilitation needs, including a recommended repair method, limits of work, potential access points, bypass procedures, temporary construction impacts and costs.

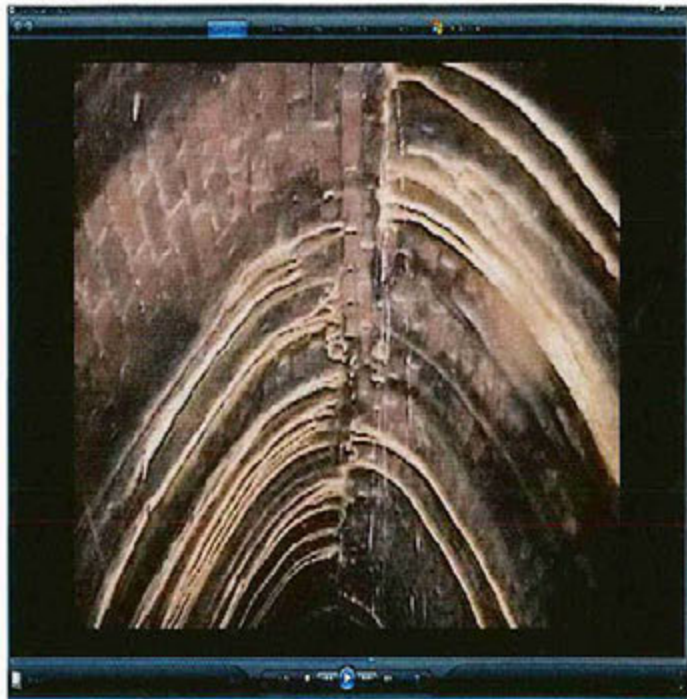


Figure 1 - CCTV Photo of Section 26

The FY17 CIP contains two follow-up design and construction contracts to address potential recommendations for repair resulting from Contract 7511.

Procurement Process

On June 22, 2016, MWRA issued a one-step Request for Qualifications Statements/Proposals (RFQ/P). In addition notice of its advertising was sent directly to nine firms. Twenty-six firms requested the RFQ/P documents; nine of which were potential prime consultants.

The RFQ/P included the following evaluation criteria: Cost - 35 points; Qualifications and Key Personnel - 20 points; Similar Experience/Past Performance on Non-Authority Projects - 15 points; Technical Approach/ Organization and Management Approach - 15 points; Past Performance on Authority Projects - 12 points; and MBE/WBE participation - 3 points.

On July 29, 2016, MWRA received proposals from three firms: Arcadis U.S., Inc; Hazen and Sawyer, P.C.; and Stantec Consulting Services Inc.

Staff contacted the other firms that had received the RFQ/P to find out why they did not submit proposals. Business reasons offered for not submitting a proposal included: the inspection and environmental assessments scope of services was outside of the firm's local core services; the scope of the study was too in-depth for a smaller size firm to serve as a prime consultant; and one firm was now owned by one of the firms that did submit a proposal.

The proposal costs are presented below:

PROPOSER	PROPOSED CONTRACT COST	LEVEL OF EFFORT
<i>Engineer's Estimate</i>	<i>\$685,000.00</i>	<i>4,912 hours</i>
Hazen and Sawyer, P.C.	\$686,953.85	4,508 hours
Stantec Consulting Services Inc.	\$873,053.68	7,000 hours
Arcadis U.S., Inc	\$966,495.53	7,346 hours

The five voting members on the Selection Committee reviewed, scored, and ranked the proposals as follows:

PROPOSER	TOTAL POINTS	*ORDER OF PREFERENCE/ TOTAL SCORE	FINAL RANKING
Hazen and Sawyer, P.C.	451	5	1
Stantec Consulting Services Inc.	415	10	2
Arcadis U.S., Inc	360	15	3

*Order of Preference represents the sum of the individual Selection Committee members' rankings where the firm receiving the highest number of points is assigned a "1," the firm receiving the next highest number of points is assigned a "2," and so on.

Hazen and Sawyer, P.C. was unanimously ranked first by the Selection Committee. The Selection Committee was in agreement that Hazen and Sawyer's proposal, both lowest in cost and number of hours, presented an appropriate level of effort for the project. In particular, Hazen and Sawyer's proposed hours and cost for the engineering services of the contract aligned very closely with the estimate prepared by staff, demonstrating the firm's clear understanding of both the project scope and the amount of work required to complete the study. The difference in hours from the Engineer's Estimate consisted of administration hours and would not affect the quality of the work. Hazen and Sawyer's proposed staffing and project team has excellent qualifications, experience, and capacity. Based in Boston, Hazen and Sawyer's proposed engineering team has worked together on numerous relevant projects directly related to sewer system studies and design. Hazen and Sawyer's overall past MWRA and non-MWRA similar project performance has been very good, including positive references from Boston Water and Sewer on the Dorchester Brook Sewer Rehabilitation project, and from the City of Baltimore for its Low Level Collection System and Sewershed Plan. Hazen and Sawyer's recent work for the MWRA includes the Spot Pond Water Storage Facility Design/Build, Nut Island Headworks Odor Control, HVAC and Energy Management Systems Evaluation Services, and Agency-Wide Technical Assistance Consulting Services; all of which have received very good evaluations.

Committee Members were in agreement that Hazen and Sawyer's technical approach for the proposal was very good and provided broad technical detail, addressing the appropriate issues.

Stantec Consulting Services Inc. (Stantec) was ranked second. Stantec proposed the second highest cost and the second highest level of effort with 1,563 more hours than the Engineer's Estimate as well as the highest administration hours. The Selection Committee was in agreement that Stantec's proposed project team has excellent qualifications and experience. Stantec's overall past MWRA and non-MWRA similar project performance was noted as very good. The Selection Committee agreed that Stantec provided an excellent technical approach. The firm's overall references for past MWRA projects and non-MWRA similar past performance were rated very good. The Committee noted, however, that there have been resource related issues with ongoing Authority projects.

Arcadis U.S., Inc (Arcadis) was ranked third. The firm proposed the highest overall cost and the highest level of effort of the three proposals received. The key engineering members of the team included highly qualified and experienced personnel. However, the Selection Committee members noted that the traffic analysis team is located in Ohio, which they felt was a disadvantage with regards to understanding local traffic patterns and attending field visits. The Committee also noted that the technical approach in this proposal was not as detailed as the other proposals. Both non-MWRA and MWRA references rated this firm as generally very good.

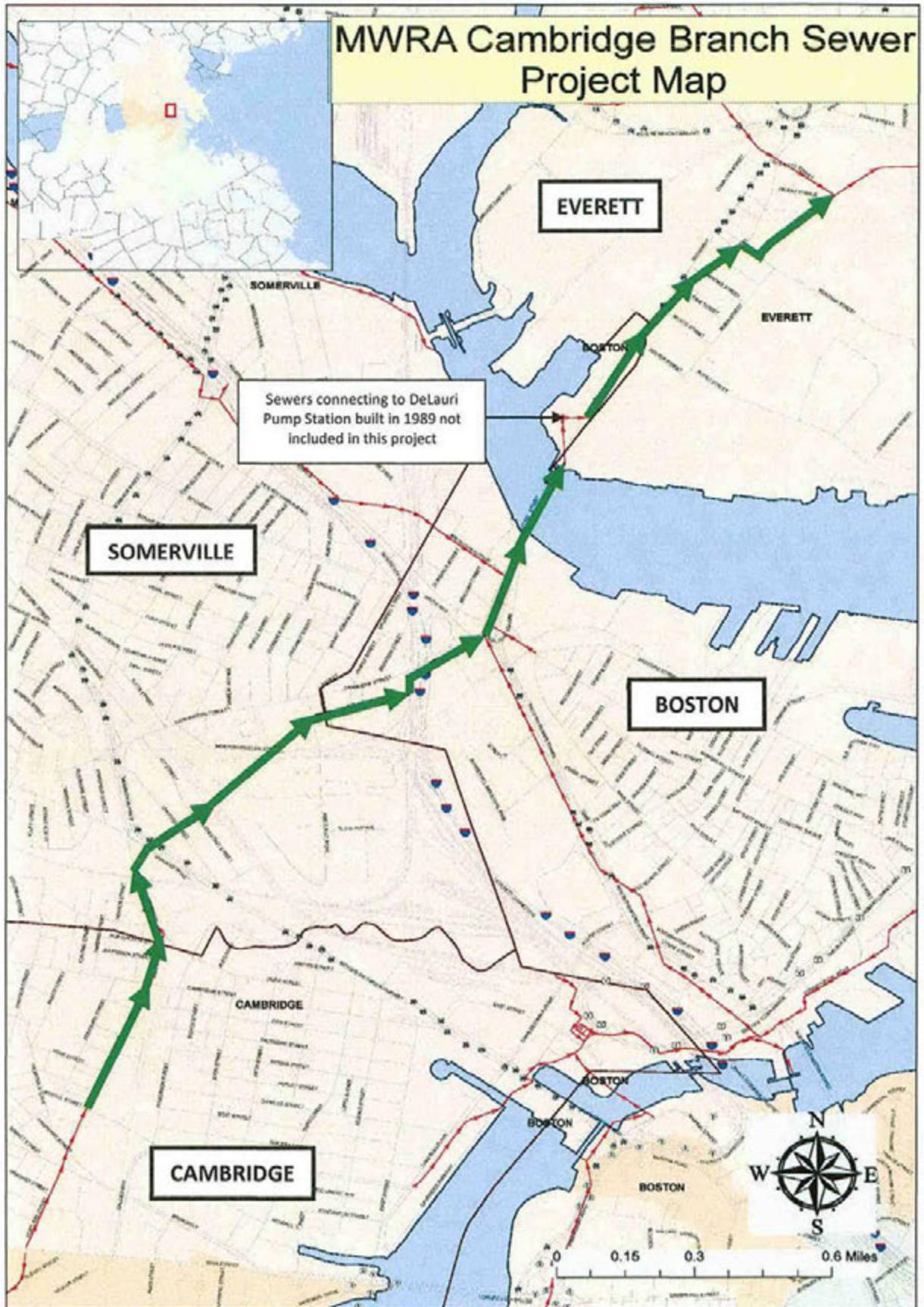
Based on final rankings, the Selection Committee recommends the award of this contract to Hazen and Sawyer, P.C. in an amount not to exceed \$686,953.85. In accordance with MWRA's procurement procedures, staff entered into discussions with Hazen and Sawyer to confirm costs, level of effort, and project management. Based on those discussions, staff are of the opinion that Hazen and Sawyer can complete the project for the proposed cost.

BUDGET/FISCAL IMPACT:

The FY17 CIP includes a budget of \$1,000,000 for Contract 7511. The contract award amount is \$686,953.85.

MBE/WBE PARTICIPATION:

Although no MBE/WBE participation was required for this contract, Hazen and Sawyer has committed to 10% WBE utilization.



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Chelsea Creek Headworks Upgrade
BHD/BEC JV 2015, A Joint Venture
Contract 7161



COMMITTEE: Wastewater Policy & Oversight

INFORMATION

VOTE



Michele S. Gillen
Director of Administration

John P. Vetere, Deputy Chief Operating Officer
A. Navanandan, P.E., Chief Engineer
Margery J. Johnson, Program Manager
Preparer/Title



Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the award of Contract 7161, Chelsea Creek Headworks Upgrade, to the lowest responsible and eligible bidder, BHD/BEC JV 2015, A Joint Venture, which is a joint venture of Barletta Heavy Division and Barletta Engineering Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of \$72,859,000 for a contract term of 1,460 calendar days from the Notice to Proceed.

DISCUSSION:

Wastewater flow from MWRA's Northern Service Area is collected at one of three remote headworks facilities before reaching the Deer Island Treatment Plant (DITP). These facilities are the Chelsea Creek Headworks (CCHW) in Chelsea, the Columbus Park Headworks in South Boston and the Ward Street Headworks in Roxbury, as shown on the following page. Flow at these headworks facilities is controlled and preliminarily treated before dropping into deep rock tunnels where it is transported to Deer Island for treatment. Control of the headworks flow using the influent gates is necessary during heavy rain events to ensure that the DITP's North Main Pump Station's (NMPS) capacity is not exceeded. Preliminary treatment at the headworks facilities includes grit and screenings removal, which prevents excessive wear and maintenance of equipment at the NMPS, and protects the cross harbor tunnels from filling with debris.

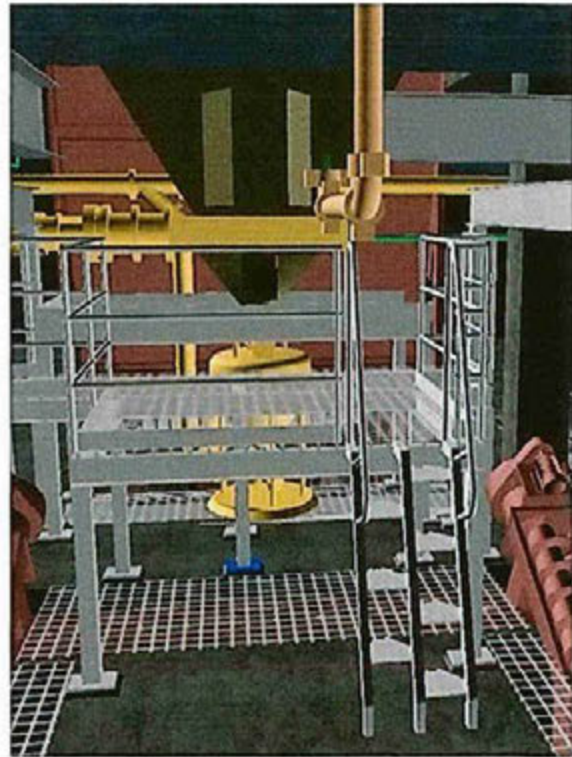
The Chelsea Creek Headworks is the first of these three remote headworks facilities to be upgraded. It was constructed in the 1960s and received its last significant upgrade in 1987.

Remote Headworks Facilities

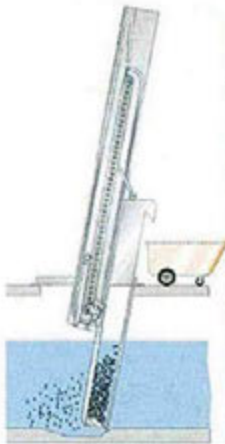


This project is a major upgrade of the entire facility and includes automation of the screenings collection and solids conveyance system, allowing the facility to be unstaffed during dry weather flow. The grit collector systems will be replaced, and existing climber screens will be replaced with catenary screens. Influent and effluent sluice gates will be replaced, and the gates' hydraulic operating system will be replaced with electric gate actuators. Wet scrubbers for odor control will be replaced with carbon adsorbers, HVAC systems will be upgraded, and redundancy will be added to both systems. Ancillary systems including the emergency generator, fuel oil tank, and transformer

will be replaced. Instrumentation and control systems will be upgraded, the communications tower will be replaced and a communications building will be added.



Automated Screenings Handling



Chelsea Creek

Climber Screens



Nut Island

Catenary Screens

Screen Replacement

Abatement of hazardous building materials including paint containing PCBs, flood protection measures to protect the facility to the 100 year flood elevation plus 2 ½ feet, and upgrades to meet current code requirements for egress and fire suppression are also included.

Uninterrupted operation of the CCHW will be required throughout construction. Critical systems including screenings and grit collection and removal, odor control, HVAC, flow monitoring, instrumentation programming and controls, and SCADA monitoring and control must remain active; and a safe working environment for MWRA staff, as well as the contractor's personnel, must be maintained during construction.

The CCHW has four parallel channels which treat an average flow of 135 million gallons per day (MGD) and a wet weather flow of 350 MGD. Two channels are normally active during dry weather flow, and three channels are required to treat wet weather flow. During construction, the full wet-weather capacity of the headworks will be maintained by always keeping three of the four channels in service. Demolition, installation, and testing and start-up of new equipment will occur one channel at a time. Coordination and sequencing will be extremely important as old, new, and temporary systems will be operating at various times, and at various locations, throughout construction.

Procurement Process

Contract 7161, designed by Arcadis U.S., Inc. was advertised and bid in accordance with Chapter 149 of Massachusetts General Laws. General bids were received and opened on August 25, 2016; three contractors bid and the results are presented below.

<u>Bidders</u>	<u>Bid Amount</u>
BHD/BEC, Joint Venture 2015	\$72,859,000
Daniel O'Connell's Sons	\$81,540,000
Walsh Construction Company	\$83,482,395
<i>Engineer's Estimate*</i>	\$69,000,000

**The Engineer's Estimate has been updated to include escalation, allowances included in the bid form, and items added by Addendum.*

The Engineer's Estimate is 5% below the low bid and 16% lower than the average of the two high bids. MWRA staff and Arcadis met with BHD/BEC staff and were able to identify several areas where their bid was higher than the Engineer's Estimate, including hazardous materials abatement, process equipment materials, and cost for the elevator.

MWRA staff and Arcadis reviewed the scope of work with BHD/BEC staff and are satisfied that the bid includes all elements of the work.

BHD/BEC JV 2015, A Joint Venture, is a joint venture of Barletta Heavy Division (BHD) and Barletta Engineering Corporation (BEC). BHD construction projects are primarily related to site work, utilities and transportation. BEC constructs water and wastewater treatment facilities, power plants and commercial buildings. The joint venture was created in order to comply with Division of Capital Asset Management prequalification requirements, and was originally formed for bidding the Authority's Wachusett Aqueduct Pumping Station, Contract 7157. The contract was awarded to the Joint Venture, and is currently under construction. BEC is currently constructing the Alewife Brook Pump Station Rehabilitation, Contract 6797.

Both BHD and BEC have successfully completed numerous projects for MWRA including the Hultman Aqueduct Interconnections project (lower Hultman Contract CP-6A and upper Hultman CP-6B), Wachusett Aqueduct Emergency Interconnection Valves, Section 156 Rehabilitation – North Metropolitan Sewer, Loring Road Hydroelectric, East Boston Branch Sewer Relief, Blue Hills Covered Storage, Rehabilitation of Water Pumping Stations, Union Park Detention/Treatment Facility, Carroll Water Treatment Plant (WTP) Ozonation Treatment Facilities and Carroll WTP Site Work and Storage Facility. References for BHD and BEC were checked for Contract 7157 and were found to be satisfactory.

Staff have determined that BHD/BEC JV 2015, A Joint Venture possesses the skill, ability, and integrity necessary to perform the work under this contract, and is qualified to do so. Staff have further determined that the bid price is reasonable, complete, and includes the payment of prevailing wages as required. Therefore, staff recommend the award of this contract to BHD/BEC JV 2015, A Joint Venture as the lowest responsible and eligible bidder.

BUDGET/FISCAL IMPACT:

The FY17 CIP includes a budget of \$62,020,952 for Contract 7161. The contract award amount is \$72,859,000 which is \$10,838,048 over that budgeted. This amount will be covered within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

The MBE/WBE participation requirements for this project were established at 3.4% and 3.8%, respectively. The Affirmative Action & Compliance Unit has reviewed the bids and has determined that BHD/BEC's bid is responsive to these requirements.

STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Remote Headworks Upgrade
Arcadis U.S., Inc.
Contract 7206, Amendment 4



COMMITTEE: Wastewater Policy & Oversight

INFORMATION
 VOTE

A. Navanandan, P.E., Chief Engineer
Margery J. Johnson, Program Manager
Preparer/Title



Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Amendment 4 to Contract 7206, Remote Headworks Upgrade, with Arcadis U.S., Inc., increasing the contract amount by \$897,200, from \$7,889,631 to \$8,786,831 and extending the contract term by 38-months, from July 30, 2018 to October 1, 2021.

BACKGROUND:

On June 30, 2010, the Board approved the award of Contract 7206 to Malcolm Pirnie, Inc. (now Arcadis, U.S., Inc.) to provide design and construction administration services for the upgrade of the Chelsea Creek, Columbus Park, and Ward Street Headworks.

The Remote Headworks Upgrade design project originally included the upgrade of the three remote headworks facilities – Chelsea Creek, Columbus Park, and Ward Street. Following completion of Preliminary Design, staff reevaluated the best design and construction sequencing for this project. Informational Staff Summaries were presented to the Board on January 18, 2012 and June 6, 2012 to discuss concerns with upgrading all three facilities at once, and to evaluate the best options to proceed. It was decided that Final Design would be for Chelsea Creek Headworks only. The complexity of the design issues encountered during Chelsea Creek design has proven this to be the prudent decision.

DISCUSSION:

The Board approved Amendment 1 to Contract 7206 on June 27, 2012, authorizing staff to proceed with Final Design and Construction Administration (CA) services for the Chelsea Creek Headworks only. This was a no cost amendment that included credits for the elimination of Columbus Park and Ward Street from the contract, and also included additional costs associated with new scope identified during Preliminary Design and the addition of CA Services originally intended to be provided by a Construction Management firm when all three headworks were to be done simultaneously. The Amendment included a 15-month time extension for the issuance of the

Notice to Proceed for Final Design Services while additional evaluations were conducted and discussed. When Amendment 1 was approved, it was estimated that there would be a Notice to Proceed for construction in February, 2014, with a construction duration of 42-months.

On June 18, 2013, the Executive Director approved Amendment 2, under delegated authority, to proceed with evaluations of available sea rise flooding protection alternatives, wastewater heat recovery feasibility, and the technical feasibility of an alternative location for odor control equipment. Amendment 2 also included funding for Phase 3 Polychlorinated Biphenyl (PCB) testing as required by the Environmental Protection Agency (EPA); and additional soil and groundwater sampling and analysis and a Phase I Report associated with Massachusetts Contingency Plan (MCP) Services, as required by Department of Environmental Protection (DEP), in response to soil and groundwater contamination detected at the site.

Amendment 3 was approved by the Board on March 12, 2014 for additional design scope of work identified in Amendment 2 evaluations to incorporate flood protection, relocation of the odor control equipment to the Congress Avenue Extension on the south side of the facility, the relocation of a portion of MWRA water main Section 37 within the Congress Avenue Extension, and associated MCP Services. Also included in Amendment 3 was additional level of effort to allow the option of utilizing natural gas for heating, design of electric actuators for the sluice gates, and new connections to the City of Chelsea's water system for fire and potable water supply. Amendment 3 included funding for an MCP Phase II Report and Risk Characterization, and preparation of a Response Action Outcome and Revised Activity and Use Limitation for the headworks site.

Resident Engineering/Resident Inspection (REI) Services are being provided under a separate contract, awarded at the June 29, 2016 Board of Director's meeting.

This Amendment

Amendment 4 will increase the contract amount by \$897,200, from \$7,889,631 to \$8,786,831 and the contract term by 38 months, from July 30, 2018 to October 1, 2021. These dates assume an award for Construction Contract 7161 Chelsea Creek Headworks Upgrade at the September 14, 2016 Board, with an October 2016 Notice to Proceed for construction. In both Amendments 2 and 3 it was identified that a time extension to the contact would be sought at a future time to adjust for any modifications to the construction duration and for the above identified extended design duration.

The cost includes an increased level of effort for construction phase engineering services associated with the increased complexity of the final design and escalation. The increase in contract term is required to account for previously extended design periods, an extended bidding duration and a 6-month addition to the construction schedule, increasing the estimated construction duration from 42 months to 48 months. The construction schedule reflects refinement of required sequencing to keep old and new facility systems active while channel work is constructed.



Upgraded Facility

Bidding Phase Services

\$155,600

Additional funds for bidding phase services are required to reach the anticipated start of Construction Administration and Management services on October 1, 2016.

The complexity of construction of the Chelsea Creek Headworks Upgrade is unusual in that all of the work must be performed while maintaining full wet weather capacity of the facility, which will continue to be staffed by Authority personnel throughout construction. Construction sequence of work constraints with respect to remediation of hazardous building materials and the requirement to keep the facility operating throughout construction led to numerous contractor questions and requests for additional site visits.

Bidding services provided by Arcadis included additional level of effort in terms of site visits, contractor questions, addenda items, and Filed Sub-bid (FSB) reviews. The original levels of effort included in the contract scope were estimated by the Authority and included 1 prebid conference, 150 addenda items, 100 questions and answers. Arcadis participated in 2 prebid conferences, addressed 387 bidder questions and issued approximately 420 addenda items over an additional 6 month period. Additional scope included addressing questions on assignment of remediation work to Painting Subcontractors, odor control equipment supplier conflicts, and warranty changes. Review of FSBs also included an additional level of effort for scheduling and conducting phone interviews with a number of the FSB contractors.

Basic Construction Administration and Management Services

\$73,800

As previously discussed, the construction duration was increased by 6 months in final design to address a series of complex issues. These services, which include project administration including monthly reports and invoices, will be required for an additional 6 months of construction.

Construction Administration Services

\$540,200

Construction Administration Services include preparation of conformed documents, responding to contractor Requests for Information (RFIs), review of submittals, preparation of change orders and

record drawings, and coordination of biweekly project meetings. The original contract included an MWRA estimated number of submittals, RFIs and change orders based on concurrent construction of the three remote headworks facilities. The original estimate included a reduced level of effort for review of each item for the second and third facilities due to the economy of scale provided by seeing similar items for each of the three facilities. This amendment reduces the number of RFIs, submittals, and change orders while retaining a level of effort for each item appropriate to the increased complexity of the design. Tasks impacted by the additional 6 month construction duration include construction advice/interpretation/clarification, and on-site meetings and inspections. In addition, the level of effort associated with preparation of conformed documents and record drawings has increased from that estimated when Amendment 1 was negotiated. At that time it was estimated that there would be approximately 130 drawings in the contract. Reflecting the increased complexity of the final design, there are now almost 250 drawings in the contract. The cost associated with the additional 6 month construction duration and increased level of effort for construction administration services is \$393,850.

Amendment 4 will also add e-Construction Software Services to this contract. This software will provide centralized access to all project information; and will simplify communications, tracking and approvals of workflows for this large, complex, multiyear construction project. This project will also serve as a pilot for the Authority to evaluate efficiencies and practical considerations with respect to moving toward a paperless process for construction documentation. Arcadis will provide software installation, configuration and support; hosting of the application and data; and training for MWRA, Contractor and Resident Engineering/Resident Inspection staff. The cost associated with these services is \$146,350.

Special Services During Construction \$60,800

These services include periodic reporting requirements related to SRF funding and regulatory requirements for PCB inspection and sampling services required by the approved EPA plan. The cost is associated with provision of these services for an additional 6 months.

SCADA Integration, Start-up and Testing Services and SCADA Documentation \$66,800

This amendment includes an additional level of effort associated with consolidation of the Control Room, provision of a new SCADA panel, and the increased complexity of the design and construction sequencing. Additional equipment was found to be necessary to transition the SCADA system during construction, requiring the old and new systems to operate at the same time with channels transitioning to the new system as they are upgraded and returned to service.

All of the above costs have been adjusted for escalation associated with the timing of the work.

Time Extension

Amendment 4 will extend the contract term by 38 months to address the following items:

- Evaluations and design services performed for odor control relocation, regulatory reporting, flood protection and energy efficiency improvements. The levels of effort to perform these services were funded in Amendments 2 and 3, but the contract term was not adjusted to account for the associated increased design duration of 26 months;

- Extended bidding duration of 6 months to address extensive contractor questions due to the unique nature of this rehabilitation; and
- Additional 6 month construction duration to account for hazardous materials remediation and sequencing required to keep the facility operational throughout construction.

CONTRACT SUMMARY:

	<u>AMOUNT</u>	<u>TIME</u>	<u>DATED</u>
Original Contract:	\$6,682,531	2,494 Days	07/01/10

AMENDMENTS

Amendment 1:	\$0.00	458 Days	10/05/12
Amendment 2*:	\$249,500	0 Days	10/22/13
Amendment 3:	\$957,600	0 Days	09/17/14
Proposed Amendment 4:	<u>\$897,200</u>	<u>1,160 Days</u>	Pending
Total Amendments:	\$2,104,300	1,618 Days	
Adjusted Contract Amount	\$8,786,831	4,112 Days	

*Approved under delegated authority

BUDGET/FISCAL IMPACT:

The FY16 CIP includes a budget of \$7,889,631 for Contract 7206. Including this amendment for \$897,200, the adjusted subphase total will be \$8,786,831 or \$897,200 over budget. This amount will be covered within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

The minimum MBE and WBE participation requirements for this contract are 17.5% and 6.57%, respectively, and will be unchanged by this amendment.

STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Caruso Pump Station Improvements
Dewberry Engineers Inc.
Contract 7037, Amendment 3



COMMITTEE: Wastewater Policy & Oversight

INFORMATION
 VOTE

John P. Vetere, Deputy Chief Operating Officer
A. Navanandan, P.E., Chief Engineer
Patrick E. Smith, P.E., Program Manager
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

That the Executive Director, on behalf of the Authority, approve Amendment 3 to Contract 7037, Caruso Pump Station Improvements, with Dewberry Engineers Inc., extending the contract term by 283 calendar days, from September 11, 2016 to June 21, 2017 with no increase in the contract amount of \$865,096.

DISCUSSION:

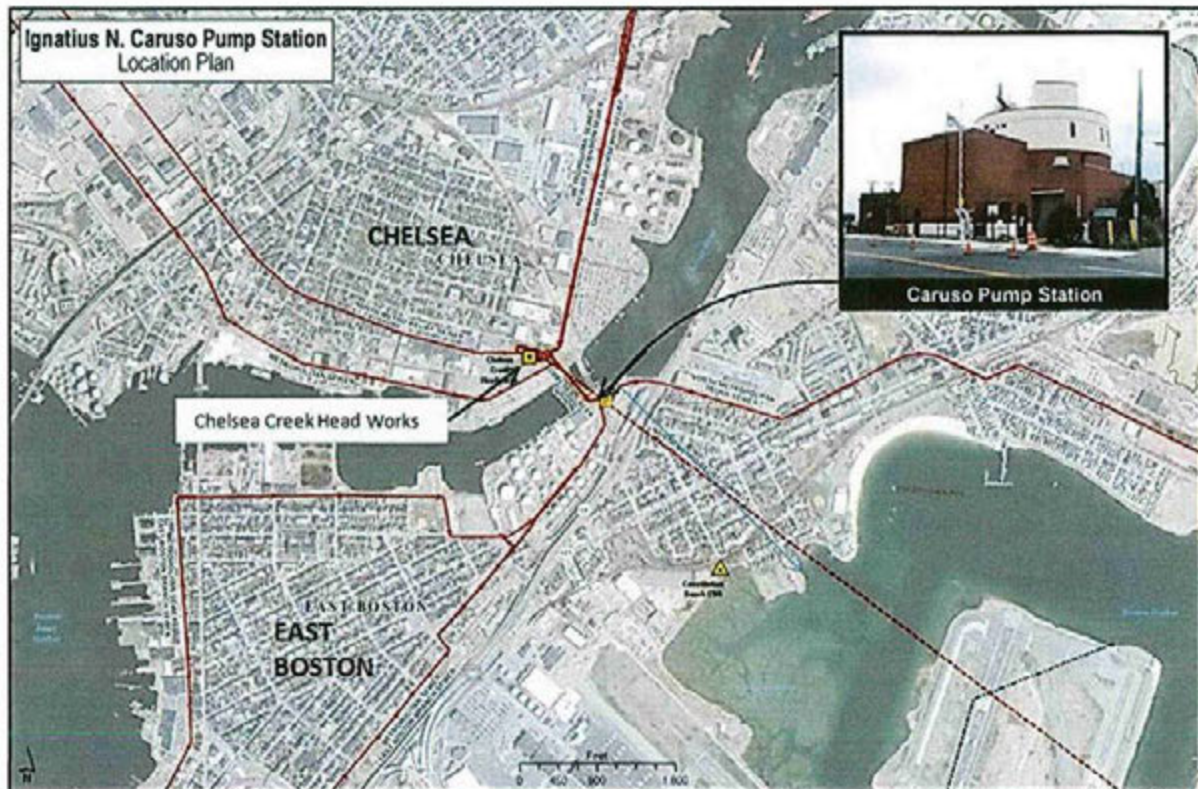
The Caruso Pump Station in East Boston was constructed in 1991 and has a designed wastewater flow capacity of 125 million gallons per day. The facility receives flow from East Boston, the Chelsea Branch Sewer, and the Revere Extension Sewer via the Chelsea Screen House, as well as wet-weather flow from the Chelsea Creek Headworks. The screened flows are pumped to the Winthrop Terminal Facility via the North Metropolitan Trunk Sewer. After 25 years, several of the pump station's operating systems have reached the end of their useful life and require replacement and/or upgrades.

On July 18, 2012, the Board approved the award of Contract 7037 to Dewberry Engineers Inc. (Dewberry) to provide design and construction administration services for the upgrade and improvements of the Caruso Pump Station. Notice to Proceed (NTP) for Final Design was issued on August 15, 2012. On June 3, 2014, the Executive Director, under delegated authority, approved Amendment 1 to Contract 7037 in the amount of \$91,700 for additional design services that were needed. On March 31, 2016, the Executive Director, under delegated authority, approved Amendment 2 to Contract 7037 for a no cost time extension of 180 calendar days.

The Caruso Station Improvements construction contract 7362 was awarded to Waterline Industries Corp. (Waterline) for \$4,097,097 with a NTP of March 24, 2016 and a substantial completion date of March 23, 2017. Work under Contract 7362 includes: replacement of the stand-by emergency generator with a 1,000-kW, diesel-driven, radiator-cooled generator designed to meet emission requirements and station design capacity of 125-mgd, louvers and fuel

system; HVAC improvements, including a new control system, air-change compliant air handling units, air conditioning units, increased capacity exhaust and roof fans, dual-fuel heating, and rehabilitation of a heat recovery unit; fire detection/suppression replacement of a compliant dry gas system, sensors and detectors, main control panel and breaker; and security system improvements of card readers, intrusion and motion detectors, fencing, and a telecommunications link.

Location Plan –Caruso Pump Station



This Amendment

The 283-day extension will allow completion of this professional engineering services contract with Dewberry to match with the construction contract completion date of March 23, 2017 and continue to provide professional engineering services during construction and resident engineering and inspections services through the final six months of the twelve-month construction contract. The proposed Dewberry contract extension will also allow Dewberry to complete record drawings, facility handbook and other end of project requirements.

To ensure uninterrupted completion of the work under this contract (Contract 7037), staff recommend extending the contract term by 283 calendar days, from September 11, 2016 to June 21, 2017. This amendment will also transfer \$102,000 within the contract, from design and resident engineering/inspection services to Engineering Services During Construction (ESDC) services with no increase in the contract amount.

CONTRACT SUMMARY:

	<u>AMOUNT</u>	<u>TIME</u>	<u>DATED</u>
Original Contract:	\$773,396	1,295 Days	08/15/12
AMENDMENTS			
Amendment 1*:	\$91,700	0 Days	10/17/14
Amendment 2*:	\$00	180 Days	3/31/16
Proposed Amendment 3:	<u>\$00</u>	<u>283 Days</u>	<u>(TBD)</u>
Adjusted Contract Amount:	\$865,096	1,758 Days	

*Approved under delegated authority

BUDGET/FISCAL IMPACT:

Amendment 3 is for a time extension of 283 calendar days, and a transfer of funds with no increase in contract amount.

MBE/WBE PARTICIPATION:

The minimum MBE and WBE participation requirements for this project were established at 3.82% MBE and 25.61% WBE participation.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Valve and Piping Replacements Various Facilities,
Deer Island Treatment Plant
Carlin Contracting Co., Inc.
Contract 7275, Change Order 5




COMMITTEE: Wastewater Policy & Oversight

Richard J. Adams, Manager, Engineering Services
David F. Duest, Director, Deer Island WWTP
Preparer/Title

 INFORMATION

 X VOTE


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 5 to Contract 7275, Valve and Piping Replacements Various Facilities, Deer Island Treatment Plant, with Carlin Contracting Co., Inc., for a lump sum amount of \$136,884.01, increasing the contract amount from \$17,202,807.91 to \$17,339,691.92, with no increase in contract term.

DISCUSSION:

Contract 7275 is replacing aging valves, piping and flow meters at various facilities at Deer Island, including the North Main Pump Station (NMPS), Winthrop Terminal Facility (WTF), South System Pump Station (SSPS), Primary Clarifiers, Secondary Clarifiers and Gravity Thickeners. The valves range in diameter from 30-inch in the WTF to 60-inch in the NMPS. The Contractor is only being allowed to work on one pump at a time throughout the contract term. The Contract also includes replacement of 14-inch glass-lined scum and sludge collection piping and plug valves in the pipe galleries of the primary and secondary batteries and the residuals area. The piping and valves have been in operation for approximately 20 years are nearing the end of their useful life.

This Change Order

Change Order 5 consists of the following item:

Replace Secondary Scum Pipe Coupling
Hardware at Secondary Batteries A & B \$136,884.01

The contract documents require the Contractor to demolish, furnish and install new 14-inch plug valves at the return sludge line (RSL) header in Secondary Batteries A, B and C. This work is required to be done in a



Broken pipe under water during normal flow conditions

three dry-day period in each battery because the work requires that each battery be taken out of service, one at a time, so as not to limit MWRA's treatment capacity.

After the award of the contract, MWRA staff noted that the scum collection system in Secondary Batteries A and B were not collecting scum effectively. A follow up investigation that included the temporary dewatering of Secondary Battery A effluent channel determined that the carbon steel bolts connecting the couplings on the submerged secondary scum piping are severely corroded, at some locations to the point of failure. Several of the couplings are leaking scum back into the secondary effluent channels. The same condition was discovered in Secondary Battery B. The corroded hardware must be replaced with stainless steel hardware as soon as possible in order to operate scum collection efficiently. Staff verified that the coupling hardware utilized in the original installation for Secondary Battery C was stainless steel. Each secondary battery must be taken out of service to replace the hardware and gaskets on the submerged secondary scum piping and each secondary effluent channel must be completely dewatered, cleaned and disinfected so that workers and equipment can be lowered into the channels to perform the work. There are a total of 57 couplings per channel that require the hardware to be replaced. Approximately 12 gaskets in each channel are to be replaced. This work will be performed at the same time as the RSL plug valve replacement in order to reduce the time that the plant may not be able to perform full secondary treatment. The logistics required to inspect the submerged secondary scum piping, coupled with secondary scum collection operational impacts resulting from the failed coupling hardware after the contract was awarded, made it infeasible to address this issue during the design phase.



Coupling leaking in channel



Leaking coupling with channel drained

The approved PCO for this item of work has been identified by MWRA staff as an unforeseen condition. MWRA staff and the Contractor have agreed to a lump sum amount of \$136,884.01 for this additional work with no increase in the contract term. The Contractor has not begun this work.

CONTRACT SUMMARY:

	<u>Amount</u>	<u>Time</u>	<u>Dated</u>
Original Contract:	\$16,960,425.00	1,095 Days	06/23/14
Change Orders:			
Change Order 1*	\$7,611.66	0 Days	05/28/15
Change Order 2*	\$18,693.56	0 Days	07/13/15
Change Order 3*	\$74,302.51	0 Days	06/07/16
Change Order 4*	\$141,775.18	0 Days	07/27/16
Change Order 5	<u>\$136,884.01</u>	<u>0 Days</u>	Pending
Total of Change Orders:	\$379,266.92	0 Days	
Adjusted Contract:	\$17,339,691.92	1,095 Days	

*Approved under delegated authority

If Change Order 5 is approved, the cumulative value of all change orders to this contract will be \$379,266.92 or 2.24% of the original contract amount. Work on this contract is approximately 49% complete.

BUDGET/FISCAL IMPACT:

The FY17 Capital Improvement Program includes \$17,211,730 for Contract 7275. Including this change order for \$136,884.01, the adjusted sub-phase total is \$17,339,691.92, or \$127,961.92 over budget. This amount will be covered within the five year CIP spending cap.

MBE/WBE PARTICIPATION:

The MBE and WBE participation requirements for this contract were established at 7.24% and 3.60%, respectively. The Contractor will be notified that these requirements are still expected to be met.



MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
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TTY: (617) 788-4971

WATER POLICY AND OVERSIGHT COMMITTEE MEETING

Chair: A. Blackmon
Vice-Chair: B. Peña
Committee Members:
J. Carroll
J. Foti
A. Pappastergion
H. Vitale
J. Walsh
J. Wolowicz

to be held on

Wednesday, September 14, 2016

Location: 100 First Avenue, 2nd Floor
Charlestown Navy Yard
Boston, MA 02129

Time: Immediately following Wastewater Comm.

AGENDA

A. Information

1. MWRA Reservoirs Status/Drought Report
2. Update on Lead Programs
3. Chestnut Hill Emergency Pump Station – Southern High Service Area Redundancy

B. Approvals

1. Emergency Water Supply Agreement with the Town of Ashland

STAFF SUMMARY

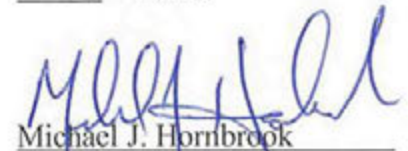
TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Reservoir and Drought Status Update



COMMITTEE: Water Policy & Oversight

X INFORMATION
 VOTE

Carolyn Fiore, Deputy Chief Operating Officer
Daniel Nvule, Senior Program Manager
David Coppes, Director of Waterworks
Stephen Estes-Smargiassi, Director, Planning
Preparer/Title


Michael J. Horribrook
Chief Operating Officer

On August 12, 2016, with most of Massachusetts continuing to experience dry conditions for the fifth straight month, Energy and Environmental Affairs Secretary Matthew Beaton issued a Drought Warning for Central and Northeast Massachusetts.

Quabbin Reservoir is currently 84.4% full which is within its normal operating range for this time of the year. Even if the drought continued for several years, adequate supply exists in Quabbin and Wachusett Reservoirs to fully meet the needs of MWRA fully and partially water communities and also, if needed, to augment the supplies of some of the adjacent stressed communities.

At present, water sales to our partially supplied communities are up by 38%, with increased demand in Bedford, Canton, Dedham/Westwood, Needham, Peabody, Wakefield, Wellesley, Wilmington, and Woburn. In addition, Cambridge, Worcester, Ashland, and Lynn have all indicated that they may need to activate emergency connections depending on conditions over the near term. MWRA has also received inquiries from additional communities anticipating a potential for emergency supply later if dry condition persist into the fall.

RECOMMENDATION:

For information only.

DISCUSSION:

The MWRA is an active participant in the Massachusetts Drought Management Task Force (DMTF) and has participated in the development of the state drought response plan. The plan outlines agency responsibilities during drought conditions and sets drought stage triggers based on hydrologic conditions across the state. The state plan acknowledges that MWRA has a separate drought response plan with specific triggers based on Quabbin storage levels (originally developed and approved by DEP during the 1989 drought). The state plan is regionally flexible; for example, small water systems may need water use restrictions during a short-term drought while only a long-term multi-year drought affecting Quabbin and Wachusett would lead to significant restrictions in MWRA's service area. The state drought plan also leaves MWRA with primary responsibility for communication with its service area communities and customers during a drought.

Figure 1 below shows the Massachusetts drought regions and their status as of August 1st corresponding to Secretary Beaton's declaration. The five state drought action levels are: Normal, Advisory, Watch, Warning and Emergency. A Drought Advisory indicates a level of dry conditions across the state that warrant closer tracking by state, federal and local agencies. A Drought Watch level indicates a more imminent threat of drought conditions, which can impact water availability. During Drought Warning, state agencies intensify monitoring and appraisal of the drought situation through information gathering and the Governor prepares to proclaim a State of Emergency in case conditions worsen. The DMTF meets monthly to review the series of indices that are the basis for determining appropriate action levels for the different regions within the state. The DMTF meeting of September 8th recommended upgrading the Southeast to Warning, downgrading the Islands to Advisory and maintaining the status quo for other regions.

Figure 2 below shows the National Drought Mitigation Center (NDMC) drought intensity map for Massachusetts, illustrating that the eastern part of the state is in extreme drought. The NDMC map in Figure 3 shows how this regional drought fits into the national drought picture, including the exceptional drought still being experienced in the Central California region.

Figure 1 – Massachusetts Drought Status Designations August 1, 2016



Figure 2 – NDMC Drought Intensity as of September 6, 2016

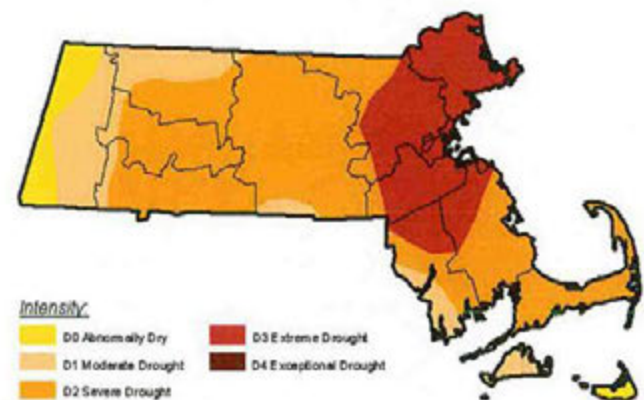


Figure 3: National Drought Status (NDMC Designation as of 9/6/2016)



MWRA Supply Outlook

Quabbin Reservoir is currently 84.4% full which is within its normal operating range for this time of the year, as shown on Figure 4. Even if the drought continues for several more years, adequate supply exists in Quabbin and Wachusett Reservoirs to fully meet the needs of MWRA water communities and also, if needed, to augment the supplies of some of the adjacent stressed communities.

Figure 4 – Quabbin Status



Modeling of the reservoir system indicates the level will stay in its Normal Operating range if precipitation returns to average conditions, and would not drop to 'Below Normal' before 6 months even if Dry conditions (drier than all but a quarter of the record) persist¹. Quabbin was last 'Below Normal' in 2002.

Table 1 – Quabbin Reservoir Modeled Drought Status
Looking Forward from September 1, 2016

	1-Month	3-Months	6-Months	12-Months
Median Yield	Normal	Normal	Normal	Normal
Dry (25th Percentile)	Normal	Normal	Below Normal ²	Normal
Driest (of Record)	Normal	Normal	Below Normal	Below Normal

Staff have been running the drought simulations each month, and will continue to do so until conditions no longer warrant.

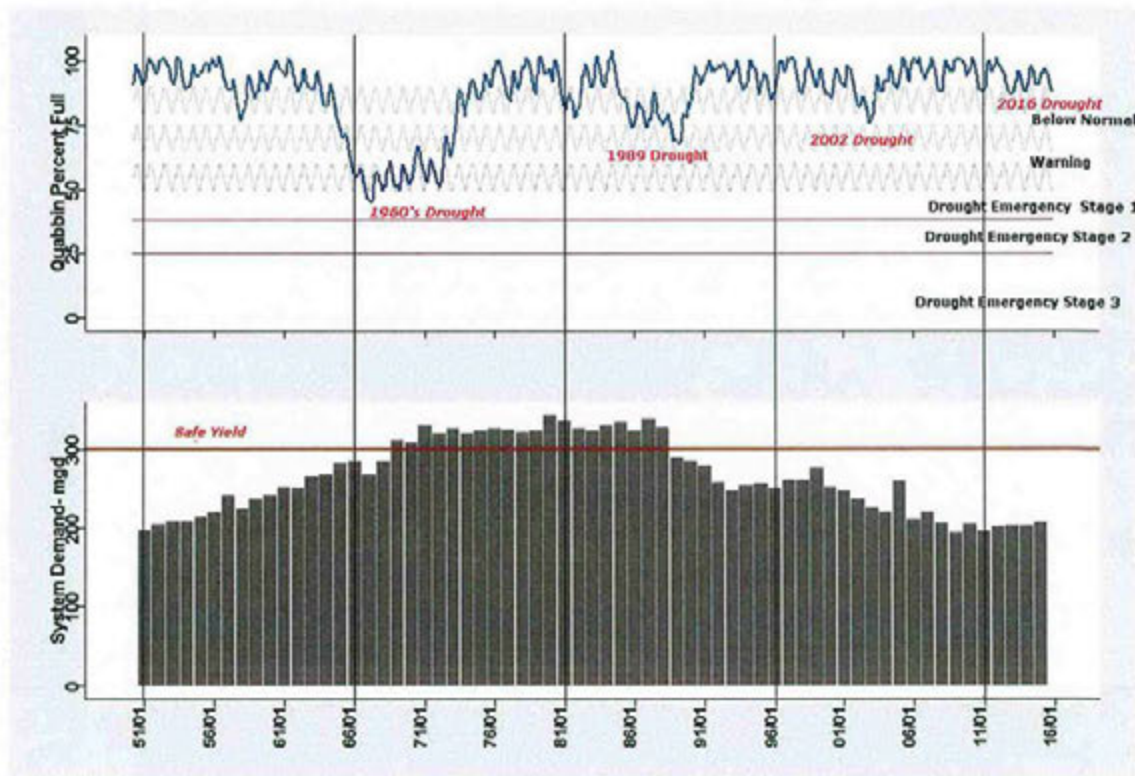
1 For drought modeling, Dry is defined as driest one quarter of all periods of record.

2 As shown on the next page, the MWRA drought plan has six status ranges: Normal, Below Normal, Drought Warning, and Drought Emergency 1, 2, and 3 based on storage volumes in Quabbin Reservoir.

MWRA Drought Management Plan

The MWRA Drought Management Plan calls for conservation of water through successively more stringent demand reduction measures as drought conditions deepen. Drought response actions are triggered by the level of water in Quabbin Reservoir – the seasonal saw tooth pattern shown in Figure 5. Table 2 presents the stages of this plan.

Figure 5: Quabbin End of Month Storage, System Demand & Safe Yield from 1950 to 2016



Based on current conditions, as discussed above, MWRA is likely to stay in Normal Operating Range under almost all conditions. It would take the very driest conditions for more than a year for the system to drop lower than Below Normal. MWRA is urging its customers to use water wisely, and is providing additional information on water conservation. However, MWRA has not called for any mandatory water use restrictions.

Table 2: MWRA Drought Management Stages

Stage	Target Water Use Reduction
Normal Operation	0
Below Normal	Previous year's use (Voluntary)
Drought Warning	5% (Primarily Voluntary)
Drought Emergency	(Mandatory Restrictions)
Stage 1	10%
Stage 2	15%
Stage 3	30%

Figure 5 shows Quabbin elevations since 1950. The saw-tooth bands correspond to the drought stages. The past major droughts are labeled and it can be seen that compared to previous

droughts, Quabbin levels are still relatively high at this point. The lower part of the figure shows system demands for visual comparison. For a given drought, the reservoir will drop further if demands are higher. The system demand in the years prior to the 1989 drought was higher than the system's 'Safe Yield', (the amount of water that can be reliably supplied during a critical drought by the watershed/reservoir system). As reported to the Board of Directors in January/February each year and shown on Figure 5, system demand has reduced significantly since 1980 and is now much lower than the system's Safe Yield. MWRA uses a Safe Yield of 300 MGD for planning and policy purposes. Given the current system demand of around 210 mgd, the MWRA system can reliably supply an additional 90 mgd through a drought as severe as the 1960's one.

The longest climate record in the region is the Amherst record that dates from 1848. However, using tree ring data, scientists have been able to discern precipitation patterns dating as far back as the 1670s. Based on these sources, the severest drought of record is the one that occurred in the 1960s. The 1960's drought was an extraordinary event; certainly the greatest drought in 140 years of local weather history and 300 years of tree ring data. It has been projected that it was probably about a one in 400-year drought. Staff therefore regard the 1960's drought as the critical drought and use this to compute the system's Safe Yield.

Drought Impact on Partially Supplied, Emergency and Adjacent Communities

MWRA's drought planning assumes that there will be additional demand from partial users and potentially from neighboring non-user communities. Staff have spoken with the MWRA partially supplied communities about the drought and how their water supplies are coping. The information gathered is summarized as Table 3 on the following page.

Use is up in most of the partial communities, with water use restrictions in place either due to local supply conditions or their Water Management Act Permit conditions. Worcester's reservoirs are at 55% capacity and they have notified us that they are inching towards taking MWRA water. If their reservoir reaches 50% capacity, they will need to start taking raw water from the MWRA at the Shaft 3 pump station along the Quabbin Tunnel. If there is no rain they believe this will be sometime this month. MWRA and Worcester will coordinate operation of Worcester's pumping station and MWRA's Oakdale hydroelectric generator to minimize any interference. Worcester has also been approached by Shrewsbury about the possibility of supplying them water on an emergency basis. Peabody has had on-going supply and treatment problems for several weeks going back to a very large fire in July. They have been taking additional water through their normal MWRA connection and have activated an emergency interconnection through the Lynnfield Water District which is now possible with completion of a new MWRA pipeline providing a more robust connection to the MWRA system.

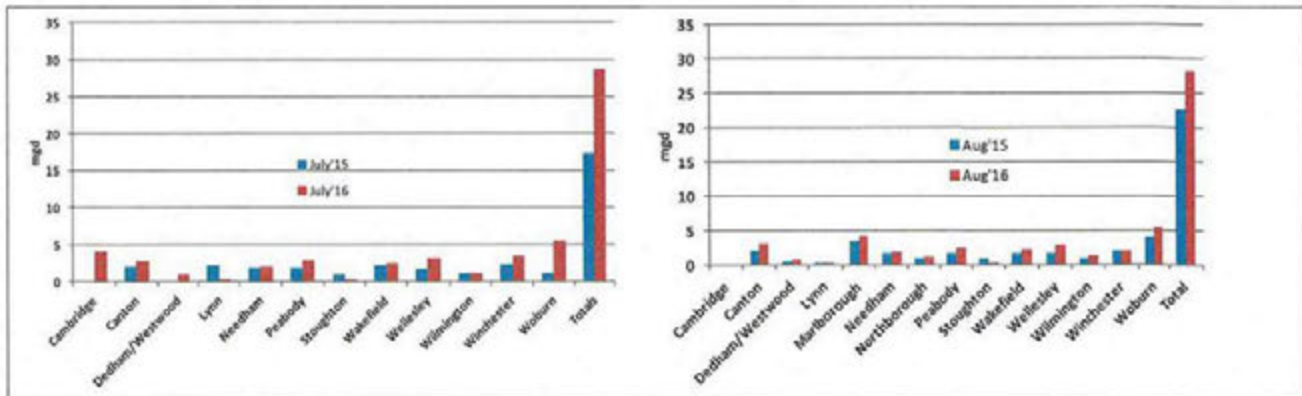
On August 19th, MWRA's Chief Operating Officer approved a 30-day emergency water request for the Town of Ashland, contingent on DEP's issuance of an emergency declaration. A related request for a 6-month emergency water request is included in this Board agenda. Ashland is working towards entering MWRA on a permanent basis. Staff have also received preliminary inquiries from other communities which may need to use emergency interconnections if dry conditions continue. Emergency connections to the MWRA system can only be approved if the community has a DEP Emergency Declaration and has imposed water use restrictions.

Table 3: Summary of Information Gathered From Communities

Community	Type	Restriction Status	MWRA Status	Reservoir Status	Amount
Ashland	Sewer only	Stage 2	30-day Emergency Approval given.		Up to 0.2 mgd
Bedford		None	Increased use		
Cambridge	Emergency	None		50%	
Canton	Partial	Outdoor ban	Increased use		
Dedham/Westwood		Mandatory	Given permission to increase use.		
Lexington	Fully	Voluntary	Pressure Problems		
Lynn	Partial	Limited Restrictions	When reservoir gets to 45% will start discussion with MWRA.	50%	
Natick	Sewer only	1 Day or less	Has approached Wellesley		
Needham	Partial	Mandatory	Increased use		
Peabody	Partial	Mandatory	Given permission to increase use. Emergency Connection with Lynnfield WD activated.	Lower than normal	
Stoughton		None	Reduced MWRA use due to upgrade of Muddy Pond wells.		
Wakefield		Voluntary	Increased use		
Wellesley	Partial	Voluntary	Increased use		
Wilmington	Partial	Mandatory	Increased use		
Winchester	Partial	Voluntary	Increased use	57%	
Woburn	Partial	Voluntary	Increased use		
Worcester	Partial	Mandatory	When reservoir gets to 50% will start pumping at Shaft 3.	55%	Up to 16 mgd

MWRA has supplied an extra 11.23 mgd to partially supplied communities in July and 5.48 mgd in August compared to 2015 as can be seen from Figure 4 below.

Figure 6: July and August Flows for Metropolitan Partially Supplied Communities



How Dry Has it Been?

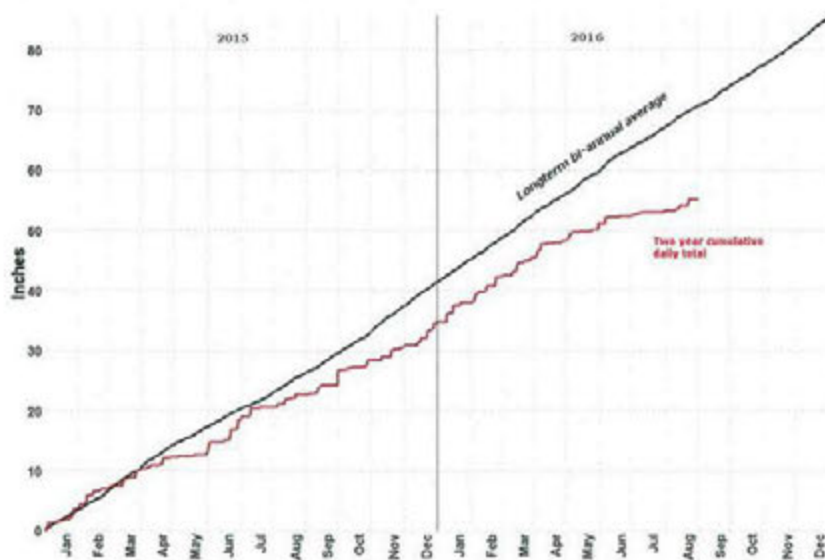
A question frequently asked is how dry this year is compared to previous droughts. In terms of reservoir yields – that is the amount of water flowing into the reservoir in a month minus evaporation from the reservoir itself – this year has had some of the lowest yields that Quabbin has experienced. Figure 7 below shows the rankings of Quabbin Reservoir 1, 3 and 6 months combined yield for 2016. These are based on 68 years of monthly yield data.

Figure 7: Ranking of Quabbin Yields for 2016

	1 Month	3 Months			6 Months		
JAN	13th driest				27th driest.		6th driest, 1965(1st).
FEB	57th driest				15th driest.		6th driest, 1965(1st), 1985(2nd), 1966(3rd).
MAR	18th driest			7th driest, 1965(1st)		3rd driest, 1965(1st)	2012(2nd), 1957(3rd), 2012(4th), 1957(5th)
APR	9th driest		3rd driest, 1999 (1st)	2012(2nd), 1985(3rd)		2012(2nd)	1985(4th), 1995(5th)
MAY	11th driest	3rd driest, 1993 (1st)	1965(2nd)	1995(4th), 2006(5th)			
JUN	2nd driest, 1948(1st)	5th driest, 1949(1st)	1964(2nd)				
JUL	3rd driest, 1953(1st), 1999(2nd)	1953(2nd), 1993(3rd)					
AUG	26th driest.	1999 (4th)					

In terms of rainfall in the service area (as opposed to the Quabbin watershed), it has been even dryer. Precipitation in the Boston area has been very low not just this summer, but also going all the way back through last fall. Figure 8 on the next page shows actual rainfall at Logan Airport as of August 31st, compared to the long term two-year average beginning in January of 2015. Rainfall was last at average levels around July 2015, and is now about 15.7 inches below expected for a two year period. Looking just at calendar year 2016, expected rainfall would be 28 inches, while the actual rainfall has only been 20.3 inches. The summer of 2016 was the driest ever recorded in Boston with a total of 3.92 inches recorded for the months of June, July and August; thus breaking the previous record of 3.97 inches set in the summer of 1957.

Figure 8: Logan Airport Precipitation



Impact on Deer Island Sewer Flows

The drought has resulted in a reduction in sewer flows. July's 217.79 MGD total plant flow average for the month broke the all-time average monthly low flow record (since startup) of 219.65 MGD that was previously set during the month of October 2013. Subsequently, August's flow of 215.4 MGD established another low flow record.

Next Steps

MWRA staff will continue to participate in the state Drought Management Task Force, and coordinate with other state agencies to periodically assess the status of the drought and the ongoing needs of the partial users and emergency connections and will report to the Board of Directors if conditions worsen.

BUDGET/FISCAL IMPACT:

Worcester will pay the prevailing wholesale rate for water taken at Shaft 3 if they find it necessary to take water. Any emergency users will also pay either the prevailing rate directly to MWRA or will be billed by the community that they are interconnected to, plus a surcharge if applicable. Additional use by all other MWRA fully or partially supplied communities will be through the normal assessment process based on their proportionate share of water usage.

STAFF SUMMARY

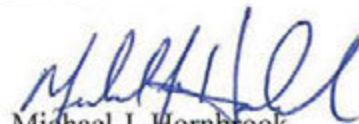
TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Update on Lead Programs



COMMITTEE: Water Policy and Oversight

INFORMATION
 VOTE

Carolyn M. Fiore, Deputy Chief Operating Officer
Steve Rhode, Laboratory Manager
Joshua Das, Project Manager, Public Health
Stephen Estes-Smargiassi, Director, Planning & Sustainability
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

Twenty-two MWRA water communities have submitted samples under MWRA voluntary school sampling program. They submitted samples from 164 schools, and MWRA's laboratory conducted a total of 8,191 laboratory analyses: 5,119 for lead and an additional 3,072 for copper. Any results that were above the lead action level were confirmed and promptly communicated to the community. Overall about 5.8 percent of the samples were above the lead action level, roughly comparable to typical recent results in the MWRA Lead and Copper Rule (LCR) testing of home samples.

The annual LCR regulatory tap sampling effort is currently underway and system-wide results should be available in late October. Staff continue outreach and technical assistance under the new Lead Service Line Replacement Program, and anticipate that the first \$4 million loan will be disbursed in November. The MWRA/MDPH cooperative effort to do additional outreach and testing in homes where children have had elevated blood lead level results with community health worker staff training is scheduled for later in September.

RECOMMENDATION:

For information only.

DISCUSSION:

As part of MWRA's ongoing efforts to understand and manage the risk of lead leaching into drinking water from service lines and home plumbing, there are a number of active program activities occurring. The staff summary provides a brief overview of current activities in the school testing program, regular Lead and Copper Rule tap sampling, Lead Service Line Replacement Loan Program, and MWRA/MDPH joint outreach and testing program.

School Testing Program:

In May 2016, MWRA notified all MWRA water communities that it would provide lead testing for schools in parallel and close coordination with the voluntary DEP statewide school testing effort. To meet the anticipated increase in sampling volume, while still providing reasonable turnaround time, MWRA purchased two additional Atomic Absorption metals testing instruments for the Central Laboratory at Deer Island and hired three contract employees. The goal was to be able to process at least 500 lead or copper tests per week in addition to the regular work load of the laboratory. The new instruments were in place by May 5th, and contract employees were brought on between May 16th and June 20th, and by July 1st the lab was able to meet the processing target. Lab staff also modified the programs that report data electronically to DEP, in order to accommodate DEP's request that the data be keyed by their Department of Elementary and Secondary Education identifiers in lieu of community Public Water Supply (PWS) identifier numbers.

Following the DEP sampling protocol, a school would generally collect two samples from each location in the building where tap water is used for drinking or in food preparation: a first draw sample after the water has sat stagnant for at least 6 hours, followed by a second sample after a 30 second flush. All of the sampled locations, such as drinking water fountains, kitchen faucets, faucets in teacher's lounges or nurse's offices etc, are inventoried by the school and assigned an identification number¹. MWRA analyzed every sample for lead. As MWRA water is not very corrosive to copper, two samples from each school in MWRA fully supplied communities were also analyzed for copper, as were any samples which had elevated lead levels². All samples from schools in partially supplied communities were analyzed for both lead and copper as their copper corrosivity varies. Confirmatory analyzes using a different laboratory instrument were also conducted on any sample near or above the lead action level to reduce the possibility of inadvertently providing incorrect results.

Between April 1 and the end of August, 22 MWRA water communities submitted samples under this program (See Attachment A). The 22 communities submitted samples from 164 schools, and MWRA's laboratory conducted a total of 8,191 laboratory analyses: 5,119 for lead and an additional 3,072 for copper. Any results that were near or above the lead action level were confirmed on a second instrument, and then promptly communicated to the community.

Forty-four of the 164 schools had at least one of the first draw or 30-second flush samples above the action level. In some cases it was a single fountain or faucet out of several dozen fixtures tested in that school, but in others multiple locations were above. Overall approximately 5.8 percent of all samples were above the lead action level³. Local water and school department staff have been effective at communicating the results to their local officials and citizens, using a variety of outreach methods. In all cases schools have turned off either just the affected fixture or all fixtures in the school depending on the results, and provided bottled water while investigating

¹ Some communities did initial investigatory sampling of only a few locations in each school during the Spring, with the expectation that additional sampling would be done after schools began again in the Fall.

² MWRA also analyzed all samples in a school for copper if either of the two initial samples were over the copper action level.

³ This is similar to the system-wide percentage of samples above the lead action level in regular Lead and Copper Rule tap sampling, which has ranged from five to eight percent over the past five years.

the likely source of the elevated results and determining the best way to resolve it. A number of school departments have performed plumbing improvements to eliminate the source of the lead and have then asked for retesting to determine if their efforts were successful.

MWRA staff continue to coordinate with DEP, as DEP provides training and testing for school and water department staff statewide and within the MWRA region. MWRA continues to provide assistance to communities with laboratory services and technical assistance on other aspects of lead corrosion, including testing of other facilities where children are likely to consume water, such as playground fountains or local recreational centers.

Now that schools are back in session, MWRA staff will again reach out to any water community which had not yet participated, or which did initial investigatory sampling rather than the full DEP protocol, and invite them to submit school samples for analysis.

The Boston School Department has had its own testing and analysis program, with assistance from BWSC and MWRA, although they are primarily using a commercial laboratory. BWSC is also in the process of conducting research and outreach to all licensed day care facilities, determining if the building may have a lead service, and offering lead sampling using MWRA's laboratory services.

Lead and Copper Rule Sampling:

The regular joint MWRA and community Lead and Copper Rule tap sampling began the week after Labor Day. All the fully supplied communities that receive water from the John J. Carroll Water Treatment Plant are part of this effort⁴. Samples will be collected by volunteer residents from approximately 450 homes considered to be a high risk for lead - those with lead service lines or lead solder - after water has sat stagnant for at least 6 hours. In addition, each community is required to collect two samples from two schools or day care facilities. These samples are in addition to any samples collected under the voluntary school sampling program described above.

MWRA has updated the sampling instructions and chain-of-custody forms that are used by homeowners and community staff to meet EPA's current guidance issued in February 2016.

DEP has also issued updated instructions to communities on sampling plans following EPA's guidance letter issued in February. These focus on ensuring that samples are collected from the higher risk homes, and that samples are only collected from approved locations. MWRA staff provided additional notification of DEP's changes and have been assisting community staff in reviewing and updating their local sampling plans for DEP approval.

Typically it takes several weeks for community staff to drop off and collect sample bottles from all the homes and schools, and then several weeks for the MWRA laboratory to process the samples. Results from any samples which are above the lead action level are promptly reported to the community for prompt transmittal to the resident. Complete results are typically provided

⁴ Each of the partially supplied communities and the three Chicopee Valley Aqueduct communities, have their own individual LCR sampling programs on separate schedules.

on all samples to the community in late October, and will be reported to DEP no later than the 10th of November as required by the LCR.

Update on Lead Service Line Replacement Loan Program:

On March 2016, the Board approved an enhancement to the Local Water System Assistance Program to provide up to \$100 million in 10-year zero-interest loans to communities solely for efforts to fully replace lead service lines, and approved the Program Guidelines for the Lead Loan Program (LLP) in May. Each community can develop its own program, tailored to their local circumstances.

As of the end of August, MWRA has received one formal application from Newton with a request for \$4.0 million for the November 2016 distribution cycle. Four additional applications are anticipated during the first year (FY17) of the program: Peabody, Quincy, Winchester, and Woburn. First year loan distributions may be in the \$8 to \$12 million range. Applications under the Lead Loan Program are likely to begin with smaller projects and ramp up as communities develop their individual programs, enhance existing inventories/records, and engage individual customers via outreach and education. Future EPA requirements may stimulate lead service line removal work over the next few years.

A number of communities have expressed interest in moving ahead with lead service line replacements, but have some common short-term issues, which MWRA staff are assisting with as appropriate:

- A need for internal community budget discussion and loan repayment authorization (Town meeting or city council vote);
- A need for additional inventory work to help determine an appropriate loan application amount;
- Uncertainty regarding the appropriate level (if any) of financial incentive for private portion lead service line replacements;
- An interest in seeing how other communities implement their lead removal programs first; and,
- Competing ongoing water and sewer projects that are in or coming into construction.

Staff anticipate that there will be slightly different outreach and technical assistance needs among the communities based on the initial quality of the inventories, the total number of lead services or goosenecks, how a replacement program can be integrated into their existing street and pipeline rehabilitation programs, and what type if any customer incentive program they develop.

MWRA's goal in providing financial assistance to member communities is to improve local water systems so that the high quality water MWRA delivers can make it all the way to the consumer's tap. The presence of a lead service line connecting a home to the main in the street can lead to elevated lead levels in tap water, especially if that water sits stagnant for an extended period. MWRA's stable water quality and effective corrosion control treatment reduce the risk that a lead service line will cause elevated lead levels, and measured lead levels in high risk

homes have decreased by 90 percent since corrosion control was brought on-line in 1996. However, the risk of elevated levels remains as long as lead service lines are in use.

Staff expanded the Community Support Program web page on www.mwra.com to provide detailed information for communities looking to develop their own lead service line replacement program. In May and again in July 2016, staff distributed letters to all member water communities announcing MWRA's Lead Loan Program with a link to the web page for information. A copy of the new *Lead In Tap Water* educational brochure was included (see below). This brochure is available in bulk quantities for member communities for distribution.

MWRA Lead in Tap Water Informational Brochure



Free Bill Insert Size brochure (Free download, PDF):

To assist member communities and other stakeholders, MWRA is providing an updated free Lead in Tap Water informational brochures (bill stuffer sized) for local distribution. This colorful brochure emphasizes potential risks of lead in tap water, how customers can reduce lead exposure and the benefits of full lead service line replacements.

MWRA/MDPH Joint Outreach and Testing Program:

MWRA and Massachusetts Department of Public Health Department (MDPH) staff continue to work together to implement a program to add additional elements focused on lead service lines and water testing to MDPH's ongoing program of outreach to households where children have been identified as having blood lead levels above Centers for Disease Control and Prevention (CDC) concern thresholds.

MDPH reported a total of 1,482 children ages 9 months to 47 months with elevated levels of lead in MWRA water communities in 2014⁵. That represents 2.4% of the 61,245 children tested that year. A total of about 1,264 children out of 60,818 tested in 2015 had elevated levels –about 2.1 percent. The following is a breakdown by severity:

- 1,256 in 2014, and 1092 in 2015 with blood lead levels over 5 ug/dl, which is the CDC reference level triggering actions by the child's physician;
- 212 and 153 with blood lead levels over 10 ug/dl, which trigger additional action by the child's physician and the state or local health department; and
- 17 and 19 with blood lead levels over 25 ug/dl, which is considered severe, and triggers additional attention and action.

⁵ Included are all fully and partially supplied communities served by the JJCWTP and the three CVA communities. The totals here in Attachment B do not include Cambridge, Lynn, Clinton, Worcester or Leominster.

A table of testing results by community is in Attachment B, with results from 2014 (previously provided to the Board), and from 2015. Data from 2016 will not be available until early 2017. The CDC has changed its approach to “small number” privacy under HIPAA⁶ and some communities no longer have reportable values for some categories, so there are a number of locations with NS meaning “not shown” rather than a number. Nonetheless, the actual number and individual addresses are available to the MDPH for use in outreach; they just are not displayed in these types of public reports.

Under the program being developed, community health workers will contact each family with a child identified as over one of the concern levels and offer a home visit. Currently that visit focuses on risks of lead paint and dust, lead in soil and childhood nutrition⁷. MDPH and MWRA are working on adding to those visits a determination if the home has a lead service line and testing for lead in water. If the home has a lead service line, the residents will be encouraged to arrange to have it replaced.

The program being developed is statewide, with MWRA providing expertise on lead in water issues, and laboratory services for households in MWRA communities. MWRA and MDPH have developed a sampling protocol and instructions, information resources, and a sampling kit. Training for all the community health worker coordinators will occur on September 22nd and MDPH expects to roll the program out this Fall.

In the meantime before the full program is rolled out, MDPH has sent letters to the households in one community (Norwood) which had children with elevated lead levels in 2015 (in May 2016) and for those in the first 6 months of 2016 (in August) providing information about lead in water and suggesting that the resident contact the town to determine if there is a lead service.

ATTACHMENTS:

Attachment A: List of Communities Which Have Participated in MWRA School Sampling Program

Attachment B: MDPH Data on Children’s Blood Lead Levels, by Community, 2014 and 2015

⁶ The Health Insurance Portability and Accountability Act of 1996 establishes national standards to protect individuals’ medical records and other personal health information. The rule requires appropriate safeguards to protect the privacy of personal health information, and sets limits and conditions on the uses and disclosures that may be made of such information without patient authorization. For the blood lead sampling program, this means that MDPH cannot report specific numbers for any category in a community where less than 1200 children were screened and between 1 and 5 had elevated levels. In the totals in Attachment B, MWRA staff have assumed the middle of that range.

⁷ Low iron levels can contribute to the body’s likelihood of adsorbing lead; conversely adequate iron levels can help that risk. Thus one simple intervention is to ensure that the child is receiving adequate iron in their diet or through supplements.

Attachment A – Communities Participating in School Sampling to Date

Community	# of Schools
Arlington	8
Boston	1
Brookline	19
Chelsea	10
Hanscom AFB	1
Lexington	10
Malden	2
Marblehead	9
Medford	3
Melrose	10
Milton	6
Needham	11
Newton	22
Northborough	6
Peabody	1
Reading	4
Revere	9
Stoneham	1
Wakefield	2
Waltham	12
Wilmington	9
Winchester	8
22 Communities	164 Schools

Most communities collected samples from all drinking and cooking tap locations. Some conducted initial investigatory sampling at representative locations in the Spring, with the expectation that they would follow up with additional more comprehensive sampling after school was back in session in the Fall.

Boston had a separate local program testing all schools using a commercial laboratory.

Attachment B –
Results of Childhood Blood Lead Level Screening – 2014-2015

Fully Supplied Communities (Metro Boston/MetroWest)									
			Blood Lead Levels (µg/dL)						
			5-9 µg/dL		10-24 µg/dL		≥25 µg/dL		
Community		Population 9-47 mo.	Total Screened	N	%	N	%	N	%
Arlington	2014	1891	1505	17	1	3	<1	0	0
	2015	1909	1546	19	1	1	<1	0	0
Belmont	2014	1065	666	7	1	1	<1	0	0
	2015	1076	659	7	1	NS	NS	0	0
Boston	2014	21270	17852	446	2	91	1	9	<1
	2015	21324	17381	406	2	63	<1	6	<1
Brookline	2014	2234	1637	23	1	1	<1	0	0
	2015	2270	1497	7	<1	0	0	0	0
Chelsea	2014	2150	1932	62	3	4	<1	1	<1
	2015	2172	1971	58	3	7	<1	1	<1
Everett	2014	2048	1732	62	4	7	<1	0	0
	2015	2090	1692	36	2	4	<1	2	<1
Framingham	2014	3113	1958	33	2	7	<1	0	0
	2015	3137	2174	43	2	3	<1	0	0
Lexington	2014	830	641	0	0	0	0	0	0
	2015	809	591	NS	NS	0	0	0	0
Lynnfield	2014	277	321	3	1	0	0	0	0
	2015	262	349	NS	NS	0	0	0	0
Malden	2014	2614	1952	60	3	8	<1	1	<1
	2015	2647	1960	49	2	14	1	0	0
Marblehead	2014	559	468	7	1	3	1	0	0
	2015	534	475	11	2	0	0	0	0
Medford	2014	1986	1457	29	2	5	<1	1	<1
	2015	2000	1453	22	2	3	<1	0	0
Melrose	2014	1006	866	20	2	2	<1	0	0
	2015	992	920	12	1	NS	NS	0	0
Milton	2014	945	784	12	2	3	<1	0	0
	2015	937	838	10	1	NS	NS	NS	NS
Nahant	2014	59	48	4	8	0	0	0	0
	2015	56	57	NS	NS	0	0	0	0
Newton	2014	3007	2108	31	1	4	<1	0	0
	2015	3017	2176	20	1	2	<1	0	0

			Blood Lead Levels (µg/dL)						
			5-9 µg/dL		10-24 µg/dL		≥25 µg/dL		
Community	Population 9-47 mo.	Total Screened	N	%	N	%	N	%	
Norwood	2014	1182	868	8	1	3	<1	0	0
	2015	1189	867	16	2	NS	NS	0	0
Quincy	2014	3331	2845	47	2	6	<1	2	<1
	2015	3359	2742	44	2	11	<1	1	<1
Reading	2014	927	646	9	1	1	<1	1	<1
	2015	916	675	7	1	0	0	0	0
Revere	2014	2244	1984	40	2	6	<1	0	0
	2015	2279	1959	39	2	2	<1	0	0
Saugus	2014	760	657	9	1	1	<1	0	0
	2015	753	629	7	1	NS	NS	0	0
Somerville	2014	2258	1959	34	2	9	<1	0	0
	2015	2258	1939	15	1	4	<1	0	0
Southborough	2014	234	232	2	1	0	0	0	0
	2015	210	245	NS	NS	0	0	0	0
Stoneham	2014	620	556	9	2	2	<1	0	0
	2015	605	603	15	2	0	0	0	0
Swampscott	2014	452	376	7	2	3	1	0	0
	2015	441	407	7	2	0	0	0	0
Waltham	2014	2210	1655	47	3	7	<1	0	0
	2015	2241	1580	52	3	7	<1	0	0
Watertown	2014	1300	789	15	2	5	1	0	0
	2015	1321	872	19	2	NS	NS	NS	NS
Weston	2014	249	201	6	3	0	0	0	0
	2015	231	189	0	0	0	0	0	0
Winthrop	2014	567	453	10	2	6	1	0	0
	2015	566	475	21	4	NS	NS	0	0
Partially Supplied Communities (Metro)									
Bedford	2014	446	527	2	<1	1	<1	0	0
	2015	439	465	NS	NS	NS	NS	0	0
Canton	2014	773	550	5	1	1	<1	0	0
	2015	769	602	NS	NS	0	0	0	0
Dedham	2014	873	623	6	1	2	<1	0	0
	2015	868	635	6	1	NS	NS	0	0
Marlborough	2014	1720	1148	24	2	6	1	0	0
	2015	1727	1189	22	2	NS	NS	0	0
Needham	2014	1122	923	5	1	1	<1	0	0
	2015	1103	933	NS	NS	NS	NS	0	0
Northborough	2014	340	385	3	1	0	0	0	0
	2015	315	376	NS	NS	0	0	0	0

Community			Blood Lead Levels (µg/dL)									
			Population 9-47 mo.		Total Screened		5-9 µg/dL		10-24 µg/dL		≥25 µg/dL	
							N	%	N	%	N	%
Peabody	2014	1525	1344	21	2	0	0	0	0	0		
	2015	1506	1327	17	1	2	<1	1	<1			
Stoughton	2014	966	788	14	2	0	0	0	0	0		
	2015	964	781	11	1	NS	NS	0	0	0		
Wakefield	2014	869	679	12	2	0	0	0	0	0		
	2015	858	658	15	2	NS	NS	0	0	0		
Wellesley	2014	912	674	7	1	1	<1	0	0	0		
	2015	884	669	NS	NS	0	0	0	0	0		
Westwood	2014	402	310	0	0	0	0	0	0	0		
	2015	380	375	NS	NS	0	0	0	0	0		
Wilmington	2014	766	568	7	1	2	<1	0	0	0		
	2015	740	549	10	2	0	0	0	0	0		
Winchester	2014	833	673	8	1	1	<1	0	0	0		
	2015	821	613	NS	NS	0	0	0	0	0		
Woburn	2014	1566	1177	52	4	3	<1	1	<1			
	2015	1579	1161	41	4	7	1	NS	NS			
Subtotal Metro¹	2014	73934	59064	1215	2	200	<1	16	<1			
	2015	73988	58779	1061	2	150	<1	19	<1			
Fully Supplied CVA System												
Chicopee	2014	2089	1509	29	2	10	1	1	<1			
	2015	2100	1407	25	2	3	<1	0	0			
South Hadley	2014	407	367	6	2	2	1	0	0			
	2015	400	350	6	2	NS	NS	0	0			
Wilbraham	2014	325	305	6	2	0	0	0	0			
	2015	314	282	NS	NS	0	0	0	0			
Subtotal CVA¹	2014	2821	2181	41	2	12	<1	1	<1			
	2015	2814	2039	31	2	3	<1	0	0			
Grand Total¹	2014	76755	61245	1256	2	212	<1	17	<1			
	2015	76802	60818	1092	2	153	<1	19	<1			

Data source: Massachusetts Department of Public Health Childhood Lead Poisoning Prevention Program
<http://www.mass.gov/eohhs/docs/dph/environmental/lead/stats/screening-and-prevalence-statistics-by-community-cy-2015.pdf>

N = number (counts of children)

NS = number or prevalence is not shown when N is between 1-5 and total screened is less than 1,200. These small numbers are suppressed to protect privacy.

Footnotes:

¹For the purpose of creating the above chart, a value between 1 and 5 was used to calculate estimated totals for 2015 where a result was indicated by MDPH as NS. Due to privacy laws associated with smaller screening sizes (less than 1,200 children screened in a given community), it is not possible to provide exact totals.

STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Chestnut Hill Emergency Pump Station
Southern High Service Area Redundancy



COMMITTEE: Water Policy & Oversight

INFORMATION
 VOTE

Stephen Estes-Smargiassi, Director, Planning & Sustainability
David Coppes, P.E., Director, Waterworks
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

As part of a series of briefings on Metropolitan Tunnel system redundancy evaluation, this staff summary addresses use of the underground Chestnut Hill Emergency Pump Station for emergency supply to the Southern High and Southern Extra High service areas. Construction of the station was completed in 2001 to provide supply from the Sudbury Aqueduct and the open Chestnut Hill Reservoir in the event of a Hultman Aqueduct or City Tunnel failure. The station was utilized in 2010 to assist with water delivery during peak demand after the Shaft 5A pipeline failure forced closure of an important large capacity water pipe in Weston. The station works well at meeting the system needs of the Southern High and Southern Extra High service areas provided that the Dorchester Tunnel remains in service. However, recent Metropolitan Tunnel redundancy analysis identified capacity and pressure concerns in the surface piping that could affect operation in the event that the Dorchester Tunnel is not in service.

RECOMMENDATION:

For information only.

DISCUSSION:

Background

In the 1880's and 1890's two pump stations were constructed at Chestnut Hill to serve the low service system via the Spot Pond Supply lines and the High Service system to the south via Fisher Hill reservoir (elevation 251 BCB) in Brookline and the Forbes Hill Reservoir in Quincy. These coal-fired steam driven pump stations supplied water for decades and were ultimately retired in the 1970's as metropolitan pipe networks expanded. The High Service station now

serves as site of the Metropolitan Waterworks Museum.

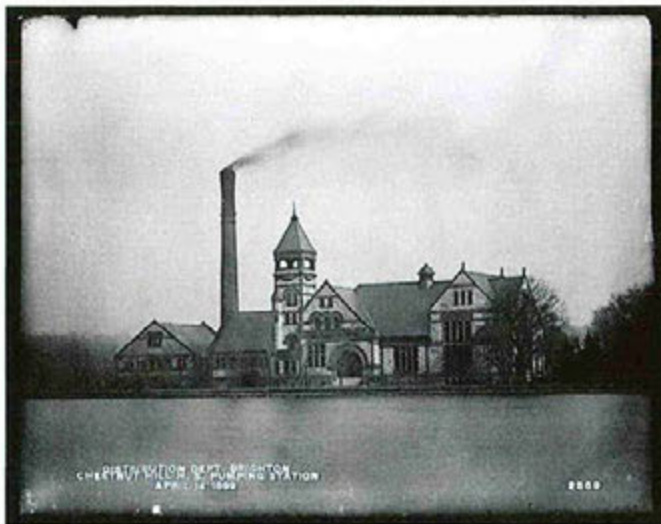


Figure 1: A plume of smoke from the coal-fired High Service Pump Station in 1898.

Construction of the City Tunnel in 1950 provided high service water directly to the southern surface mains via Shaft 7B, reducing pumping from Chestnut Hill. The Blue Hills open reservoir was later constructed (1954) at the far end of the Southern High Service distribution system at an elevation of 260 BCB but increasing demands and pipeline friction losses made it increasingly difficult to maintain adequate water in the reservoir. A section of the High Service system was supplied via the Waban Hill Reservoir in Newton, elevation 264 BCB, from either the tunnel or the pump station through a manually throttled valve in front of the original Chestnut Hill Pump Station.

In the early 1970's, the connection to the south from Shaft 7B of the City Tunnel, located adjacent to Chestnut Hill Reservoir and the Low Service Pump Station, had to be shut down to allow for construction of the Dorchester Tunnel. The pumps at Chestnut Hill once again provided supply from Sudbury Aqueduct to the Southern High Service area.

Upon completion of the Dorchester Tunnel in 1974, the level of water in Blue Hills open reservoir was finally able to be adequately maintained, but shortly after the tunnel went on line it was determined that the section between Shafts 7C and 7D was leaking. Gas turbine pumps were installed in the basement of the pump stations, since the historic steam turbine pumps had begun to be dismantled. In 1980, after repairs to the Dorchester Tunnel were completed, the gas-fired pumps were shut down and maintained for emergency back-up. Blue Hills open reservoir was taken out of service in 1981 due to concerns about deteriorating water quality.



Figure 2: Chestnut Hill Emergency Pump Station provides back-up supply to Southern High and Extra High Service areas

Chestnut Hill Emergency Pump Station

The Chestnut Hill Emergency Pump Station was constructed as part of a larger effort by MWRA to divest itself from the crumbling maintenance-intensive pump station buildings. The design intent was to quickly construct a station to replace the function of the old back-up gas fired turbine

pumps. Design was awarded in May of 1998 and construction bid documents were advertised in September of the same year. The construction contract was awarded the following February and construction was completed in 2001.



Figure 3: Four 1,000 HP electric pumps in an underground chamber.

The underground pump station sits adjacent to Shaft 7B, surrounded by condominiums. It has 4 constant speed pumps sized to pump raw untreated water out of Chestnut Hill Reservoir. The pumps are manually stopped and started. There are two alternate feeds for electricity to the station but no emergency back-up power. It was built to pump to the Waban Hill Reservoir grade line with a nominal capacity of 90 million gallons per day (MGD) and slightly less capacity (and higher head required) to pump to Blue Hills. The station also has the capability to draw approximately 35 MGD of treated water from the Boston Low service area in lieu of pumping out of Chestnut Hill reservoir. Discharge from the station connects to the surface piping on either side of Shaft 7B so that water can be pumped into the Dorchester Tunnel and/or to the Fisher Hill lines and Section 106 to the Southern High Service area.

To operate the station, vent hatches need to be manually opened in gardens located above the station. There is a driveway adjacent to the station to park a trailer of sodium hypochlorite and adequate piping connections for injection for emergency disinfection of the Chestnut Hill open reservoir supply. Use of the open reservoir would not be in compliance with current water supply regulations and would require a boil order. The equipment is tightly placed within the footprint of the below grade concrete enclosure with little room for modification or expansion.



Figure 4: The top of the Emergency Pump Station with the low service condominiums in the background



Figure 5: Last used to supplement peak hour demand during Shaft 5A emergency in 2010

To comply with current federal and state drinking water requirements, MWRA discontinued use of all open distribution reservoirs from the water system, except for several reservoirs that have been kept for emergency use only when boil orders would be required. Blue Hills Covered Storage tanks replaced the off-line Blue Hills open reservoir and Waban Hill Reservoir was declared surplus in 2013. To utilize the station now requires pumping directly to Blue Hills at the far end of the distribution system. The station was used in 2010 to pump water from Sudbury Aqueduct to the Dorchester Tunnel and southern surface mains as part of the Shaft 5A transmission line failure. The station supplemented supply during peak hours of water use. It was the use of the Sudbury Aqueduct and the open

Chestnut Hill Reservoir that prompted the need for a boil order during that emergency. The water was chlorinated by addition of sodium hypochlorite.

Operational Challenges and the Role of the Pump Station in Future Redundancy Initiatives

During the Metropolitan Tunnel redundancy evaluation, staff identified limitations in operation of the Chestnut Hill Emergency Pump Station *with the Dorchester Tunnel out of service*. In order to maintain water level in the Blue Hills tanks, the grade line at the discharge of the station would need to be raised significantly above the existing grade line because of the smaller surface transmission pipelines and higher pressure loss. This higher grade line would increase the chance of lines breaking in the MWRA or local community distribution systems. The concern level is higher for pipelines closer to the station. The higher grade line is required to overcome the poor carrying capacity of the Southern High surface mains compared to the Dorchester Tunnel and to maintain the level of service that communities close to Blue Hills have come to depend on in the decades since the Dorchester Tunnel went in to service. If the Chestnut Hill emergency pumps are shut down due to power failure or as a result of the Blue Hills tanks being full, the head loss from water flowing back from Blue Hills is so high that pressure would be inadequate in the Fisher Hill/Chestnut Hill area.

Controlling the current Chestnut Hill emergency pumps without the Dorchester Tunnel is problematic and may not be reliable. Starting and stopping the constant speed pumps, (i.e. going from two pumps to three), greatly changes the discharge head by producing more or less water than the system requires. There is no means of controlling flow between discrete steps of the constant speed pumps. In addition, starting and stopping MWRA's downstream pump stations to the Southern Extra High service area (Newton Street and Hyde Park stations) would change the flow pattern in the system causing dramatic increase or decrease in discharge pressure at the Chestnut Hill Pump Station. These changes result in the need to quickly add or drop pumps at Chestnut Hill Pump Station as a result of inadequate or excessive pressures. Proposed long term redundancy improvements include emergency diesel generators to power the station. Other improvements could include replacement of pumps, installation of variable frequency drives, automatic pressure regulating or re-circulating valves. These changes (if space could be identified) would improve operation of the station but could not overcome the deficiencies in the carrying capacity of the southern surface mains.

With the Dorchester Tunnel in service the pump station can maintain the level in the Blue Hills tanks without excessive discharge pressure as was demonstrated in 2010 when the station was used effectively to alleviate supply concerns. This still required a boil order.

In addition to the operating concerns, the location of the station makes it potentially inaccessible and possibly flooded in the event of a large rupture of piping at Shaft 7.

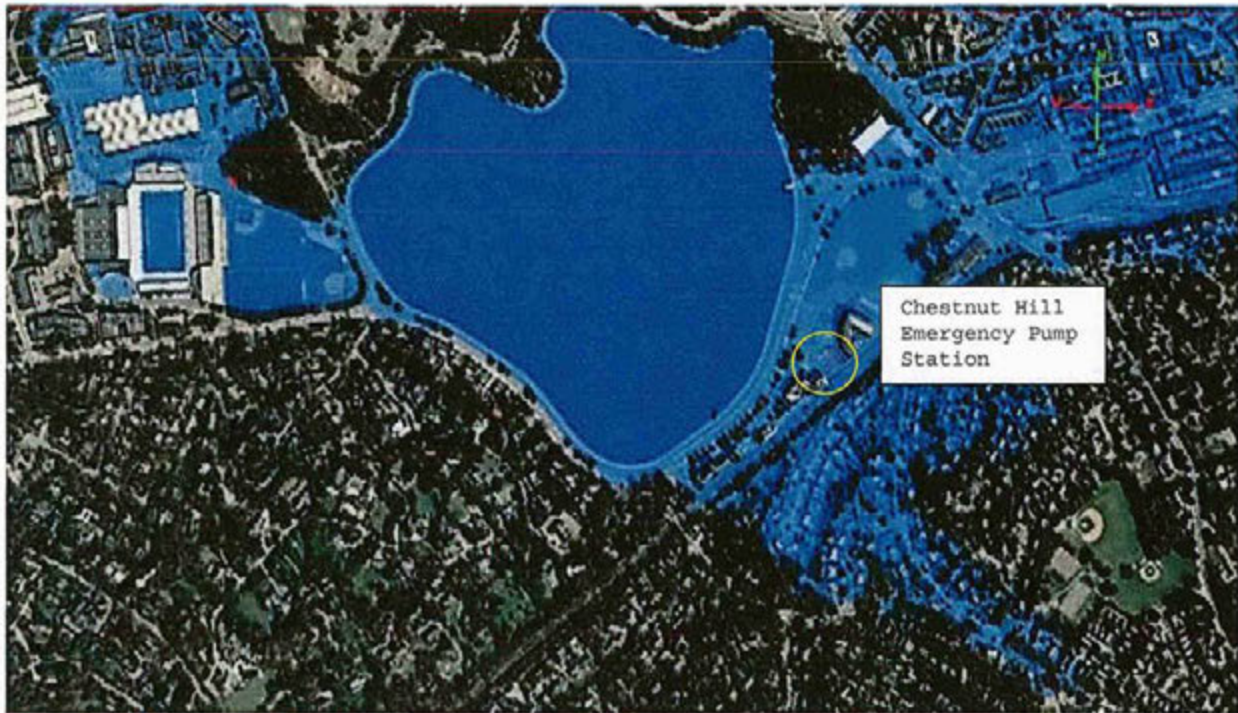


Figure 6 - A failure at Shaft 7 could render the Chestnut Hill Pump Station inaccessible.

Summary

Modeling of the water system with the Dorchester Tunnel out of service pushes the accuracy of our model beyond the limits of its calibration¹. It is difficult to predict exactly how the system will operate in this emergency case, but looking at the way the system operated in the past when the Blue Hills open reservoir had to be taken off line, it is clear that the southern surface mains have limited capacity and a high amount of head loss. To overcome this head loss with the Pump Station requires forcing water into the system at higher pressures and/or results in lower pressures at the opposite end. The operational challenges to keep pace with the existing pumps, maintain adequate pressures without breaking mains with no speed control, no means of pressure relief, and without back-up power strongly influences the strategic decisions about how to provide redundant supply to the Southern High and Southern Extra High service areas. Modifying the station with variable frequency drives and other improvements (if space could be identified) could reduce some these problems, but would not completely overcome the lack of capacity in the surface pipelines with the Dorchester Tunnel out of service.

¹ Models are calibrated using flow and pressure data collected during operation of the pipe network. If flows and pressures in a simulation are substantially different than could be observed during calibration, the model may not be able to accurately simulate friction losses and pressure changes. The Dorchester tunnel represents 70% of the carrying capacity of the Southern High piping network. Removing the tunnel represents a major change to the model.

Water Supply Agreement with Ashland.

Emergency Water Supply Approval Criteria and Requirements

#OP.05 sets forth emergency withdrawal criteria and requirements. Compliance with key criteria/requirements associated with Ashland's request is addressed below:

- *There must be no negative impact on MWRA's system and member communities.* Ashland's withdrawal would have no negative impact on the MWRA system. Water would be supplied via Southborough, and Southborough's connection to MWRA is not constrained. Ashland and Southborough have conducted pump tests to ensure that Southborough may comfortably wheel MWRA water to Ashland via Southborough's distribution system.
- *DEP must declare that an emergency exists.* DEP issued a six-month Emergency Declaration on August 22, 2016.
- *A long-term plan to remedy supply deficiencies must be developed.* Ashland's long term plan to remedy supply deficiencies is to become an MWRA partially supplied community. In May, 2015 Ashland Town meeting voted affirmatively to join the MWRA. Ashland then worked with MWRA and state agencies to file a Draft Environmental Impact Report (DEIR) in September, 2015. The DEIR set forth Ashland's proposal to purchase up to 120 million gallons a year and up to 1.6 million gallons per day from MWRA, with use of MWRA water on a year-round basis as needed during periods of low groundwater levels. The DEIR Certificate issued by MEPA on November 13, 2015 determined that the DEIR adequately and properly complied with MEPA. The Town has also entered into contracts with consultants regarding the design of the connection and improvements in the Southborough distribution system that are integral to a more permanent connection for Southborough to wheel MWRA water to Ashland. At Town Meeting in November 2016, a warrant article will request approval of funds for construction of the connection. The Town is also working on the Final EIR.
- *The applicant community does not use MWRA water supply as a chronic emergency back-up supply without equitable contribution for the fair asset value of the MWRA waterworks system.* Terms of this fourth emergency water supply agreement include a provision that MWRA will bill Ashland for a net asset value payment equal to 110% of the annual payment associated with the asset value contribution amortized with interest over 15 years.
- *The Community must submit a detailed description of water conservation and water accountability programs undertaken.* The Town is working on a number of conservation programs that include:
 - Leak detection.
 - Ongoing implementation of a 15-year meter replacement program identifying older meters and developing a system for monitoring meter age;
 - Declaration of Water Supply Stage 2 (August) per Ashland Bylaw. The declarations

impose additional restrictions on top of permanent outdoor water use restrictions that are already in place

- Conservation Pricing;
- Public education; and
- The availability of conservation kits for all residents

Contents of Emergency Water Supply Agreement

Staff propose that MWRA and the Town of Ashland enter into an Emergency Water Supply Agreement. The proposed emergency water supply agreement will be for the period from August 22, 2016 to February 22, 2017, the same six month emergency supply withdrawal period as the DEP's Declaration. Pursuant to the Agreement, all withdrawals must be metered. The Agreement also requires Ashland to adhere to all conditions and requirements contained in the DEP Declaration of Water Supply Emergency. Ashland is also required to submit to MWRA copies of any reports required to be submitted to DEP in compliance with the Declaration of Water Supply Emergency. The Agreement reflects MWRA's charges for emergency withdrawals, including a premium charge added to the prevailing rate, as well as an asset value contribution based on 110% of the annual payment associated with the asset value contribution payment amortized with interest over 15 years. The Agreement also incorporates by reference an inter-municipal agreement between the Towns that governs the terms for the sale and operational details and arrangements.

BUDGET/FISCAL IMPACT:

Pursuant to OP.#05, water taken for the fourth emergency withdrawals is charged at the prevailing rate plus a 10% premium charge on that rate plus 110% of the annual payment associated with the asset value contribution payment amortized with interest over 15 years. MWRA will review monthly use information to determine and assess the surcharge amounts. At this time, it cannot be projected if and how long low groundwater levels will compromise Ashland's ability to use all of its wells. Therefore, the amount of revenue MWRA will receive cannot be projected at this time.

ATTACHMENTS:

Draft Ashland Emergency Water Supply Agreement
DEP Emergency Declaration

EMERGENCY WATER SUPPLY AGREEMENT
BETWEEN
THE MASSACHUSETTS WATER RESOURCES AUTHORITY
AND
THE TOWN OF ASHLAND

Parties.

This Emergency Water Supply Agreement ("Agreement") is entered into by and between the Massachusetts Water Resources Authority ("MWRA"), and the Town of Ashland ("Ashland") hereinafter jointly referred to as the "Parties." This Agreement documents the agreement and understanding of the Parties regarding the arrangement whereby MWRA will supply water to Ashland through an interconnection that Ashland has with Southborough, an MWRA served water community and whereby Ashland will purchase a portion of its water supply from the MWRA through Southborough on an as-needed, emergency basis for a period not exceeding six months, as indicated in paragraph 11 hereof.

Recitals.

- R.1. The MWRA was created by the Massachusetts legislature in December, 1984 to operate, regulate, finance, and modernize the waterworks and sewerage systems servicing the greater metropolitan Boston area. Operating pursuant to the terms of Section 8(d) of its Enabling Act, chapter 372 of the Acts of 1984 (the "Act"), and pursuant to the Policies and Procedures for Emergency Water Supply Connections of its Board of Directors, the MWRA may enter into arrangements to provide emergency supplies of water to any local body of the Commonwealth, provided certain conditions are met.
- R.2. Ashland is a duly constituted municipal corporation of the Commonwealth of Massachusetts ("Commonwealth").
- R.3. Southborough is supplied by the MWRA and Ashland has an emergency interconnection through Southborough to the MWRA water supply system.
- R.4. Ashland relies on five wells in a well field (the Howe Street well field) adjacent to the Hopkinton State Reservoir. The reservoir elevation impacts the elevation of the groundwater in the well field. The elevation of Hopkinton Reservoir has dropped significantly below normal and has adversely affected Ashland's wells and ability to meet water demands.
- R.5. On September 2, 2016, the Town of Ashland Department of Public Works, in a letter to MWRA, notified MWRA that due to lower than normal precipitation and low groundwater levels at the Town's wells, it had concerns about water levels and an emergency connection for a six-month period coincident with DEP's Declaration of Water Supply Emergency would give the Town the tools it needed to ensure a safe and adequate supply.

- R.6 On August 22, 2016 the MA Department of Environmental Protection (MassDEP) issued a Declaration of Water Supply Emergency to Ashland, to remain in effect until February 22, 2017 unless extended by DEP. The Declaration of Water Supply Emergency is included as Attachment A to this Agreement.
- R.7 From December 12, 2007 to June 5, 2008, an Emergency Water Supply Agreement between MWRA and the Town of Ashland was in effect. This was the first six-month emergency withdrawal period for Ashland. From December 18, 2013 to June 17, 2014, a second six-month Emergency Water Supply Agreement between MWRA and the Town of Ashland was in effect. From December 16, 2015 to May 31, 2016, a third six-month Emergency Water Supply Agreement between MWRA and the Town of Ashland was in effect.
- R.8. On October 11, 2006, the MWRA's Board of Directors adopted a revised Policy for Emergency Water Supply Withdrawals, OP# 05 (the "Policy") which includes criteria and a process for approving requests for emergency withdrawals.
- R.9. Ashland has applied to the MWRA to use emergency interconnections to the MWRA system through Southborough to supplement Ashland's local water supply sources on an as-needed basis.
- R.10. The MWRA has determined that it can supply Ashland with an emergency water supply for a period not exceeding six months under this Agreement without jeopardizing its ability to supply its member communities and without exceeding the safe yield of its water supply system.
- R.11. Ashland must comply with all applicable legal and regulatory requirements.
- R.12. Pursuant to the MWRA Policy, this Agreement is considered an Emergency Water Supply Agreement Period Four, since three previous Emergency Water Supply Agreement have been in effect.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual promises contained herein and for other good and valuable consideration, the MWRA and Ashland agree as follows:

1. Ashland may activate its emergency interconnection with Southborough for a period up to six months coincident with the DEP's Declaration of Water Supply Emergency on August 22, 2016. The proposed emergency water supply agreement will extend to February 22, 2017, subject to termination in accordance with numbered paragraph 11 below.
2. Ashland may take water from the emergency interconnection at a maximum rate of 200,000 gallons per day over the six month period. Any increase beyond the

stated limit on water use will require a revision to the Emergency Water Supply Agreement.

3. The transfer of water from the MWRA through Southborough to Ashland shall not extend beyond a period of six months, unless Ashland submits an application for an additional emergency water supply withdrawal and the MWRA's Board of Directors and Advisory Board approve the additional emergency water supply withdrawal. Any withdrawals beyond the DEP Emergency Declaration six-month period will also require an extension of DEP's Water Supply Emergency Declaration. In considering withdrawals beyond six months, the MWRA will consider Ashland's efforts to reduce consumption, to implement its long range plans and comply with DEP orders, and to implement a water conservation program and water supply protection measures.
4. During the six month term of this Agreement, Ashland shall institute and continue all practicable conservation measures including, but not limited to, a water conservation public education program; 100% metering; leak detection surveys and rehabilitation programs; conservation pricing for water services; and a local by-law governing outdoor water use with appropriate enforcement measures such as fines and water shut-off for non-compliance. Ashland shall actively administer and enforce such local by-law.
5. Ashland shall submit to MWRA a monthly report on water use, and the status of the emergency.
6. Ashland shall comply with all the conditions of any DEP Declaration of Water Supply Emergency. In addition, Ashland shall submit copies to MWRA of any reports required to be submitted to DEP in compliance with the Declaration of Water Supply Emergency.
7. During the term of this Agreement, the MWRA shall bill Southborough for both the total volume of water used by Ashland, as metered by Southborough, and will bill Ashland directly for the 10% surcharge on prevailing rate mandated by the Policy. Southborough shall bill Ashland for water used in accordance with the terms of the inter-municipal agreement between the parties. Ashland shall remit its payments to Southborough for the total volume of water used in accordance with the terms of the inter-municipal agreement between the parties, which is incorporated by reference. Ashland will remit its payments for the 10% surcharge to MWRA directly.
8. MWRA shall bill Ashland directly for the net asset value payment as required by the Policy for this Emergency Water Supply Agreement Period 4 (August 2016 –February 2017). The charge will be 110% of the annual payment associated with the asset value contribution payment (entrance fee equivalent) amortized with interest over 15 years.
9. The parties agree that the emergency withdrawal authorized under this Agreement is not appropriate for or intended to provide a permanent water supply to Ashland. Any request by Ashland for a permanent partial water supply from MWRA shall require full consideration of all alternatives, including effective water conservation and leak

detection, and shall be subject to all approvals required under Section 8 (d) of Chapter 372 of the Acts of 1984, MWRA policies, and under applicable state law and regulations.

10. Any dispute arising between the MWRA and Ashland under the terms of this Agreement shall be resolved in accordance with the dispute resolution process set forth at 360 C.M.R. 1.00.
11. The term of this Agreement shall extend from August 22, 2016, the day in which Ashland could begin to take water ("start date") through and including the six-month anniversary of the Start Date. During the term, MWRA reserves the right to terminate this Agreement at any time due to unforeseen circumstances such as inadequate supply, insufficient hydraulic capacity and other conditions related to the safe supply of existing users and operational requirements of the MWRA's waterworks system.
12. Ashland shall comply with any conditions of the MWRA Advisory Board' approval, which are incorporated by reference into this Agreement.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed on this _____ day of _____, 2016 by their duly authorized representatives.

MASSACHUSETTS WATER
RESOURCES AUTHORITY

By:

Frederick A. Laskey
Executive Director

TOWN OF ASHLAND

By:

Michael D. Herbert
Town Manager



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

VIA Certified Mail No. 7015 1520 0002 1414 7567

August 22, 2016

Michael D. Herbert, Town Manager
Town of Ashland
101 Main Street
Ashland, Massachusetts 01721

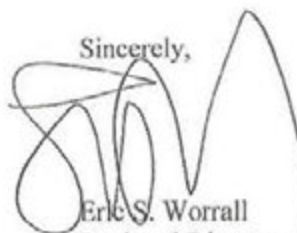
RE: Town of Ashland
Water & Sewer Division
WMA Permit # 9P231401402
PWS ID # 3014000
Emergency Declaration
UAO-NE-16-F003

Dear Mr. Herbert:

On August 9, 2016, the Town of Ashland (the "Town") submitted a petition requesting an Emergency Declaration from the Massachusetts Department of Environmental Protection ("MassDEP") under the provisions of the Water Management Act, specifically M.G.L. c. 21G, §15. According to the petition, low groundwater levels in the Town's groundwater wells require activation of emergency connections with the Massachusetts Water Resources Authority via a connection through the Town of Southborough, MA on a temporary basis until the groundwater has recharged to a safe level. Attached is the MassDEP's Declaration of State of Water Supply Emergency, No. UAO-NE-16-F003, to the Town.

If you have any questions regarding this letter, please contact Tom Mahin at (978) 694-3226.

Sincerely,



Eric S. Worrall
Regional Director

cc: Rajitha Purimetla, Jr. Engineer, Ashland Water & Sewer Div., 20 Ponderosa Rd., Ashland, MA 01721

Ashland Board of Health, 101 Main St. Ashland, MA 01721

e-cc: Duane LeVangie, MassDEP-BWR-Boston Office
Heidi M. Zisch, MassDEP OGC-NERO

Y:\DWP Archive\NERO\Ashland-3014000-Emergency-2015-12-08

**COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

In the Matter of)
Town of Ashland)
)

**Declaration of State of
Water Supply Emergency
UAO-NE-16-F002**

EMERGENCY DECLARATION

The Parties

1. The Massachusetts Department of Environmental Protection ("MassDEP") is a duly constituted agency of the Commonwealth of Massachusetts established pursuant to M.G.L. c. 21, § 7. MassDEP has its principal office located at One Winter Street, Boston, Massachusetts 02108, and a Northeast Regional Office located at 205B Lowell Street, Wilmington, Massachusetts 01887.
2. The Town of Ashland (the "Town") is a municipality within the Commonwealth of Massachusetts having a principal place of business at and a mailing address of 101 Main Street, Ashland, Massachusetts 01721.

Statement of Facts and Law

3. The Town operates a public water system, with MassDEP identification number PWS ID No. 3014000. The Town operates a water treatment plant at the Howe Street wellfield, which is adjacent to the Hopkinton State Reservoir. In addition to providing water to the Town, it also supplies water to the neighboring Town of Hopkinton. The Town also has an emergency connection to the Massachusetts Water Resources Authority ("MWRA") system with the Town of Southborough.
4. On December 11, 2007, following receipt of an emailed petition from the Town seeking an Emergency Declaration, MassDEP issued a Declaration of a State of Water Supply Emergency (the "2007 Emergency Declaration") to the Town as a result of low groundwater levels in the Town's Howe Street wells. Pursuant to the 2007 Emergency Declaration, the Town activated its emergency interconnection to the MWRA system via the connection through the Town of Southborough. The 2007 Emergency Declaration remained in effect until June 7, 2008.
5. On November 27, 2013, following receipt of another petition from the Town seeking an Emergency Declaration, MassDEP issued a Declaration of a State of Water Supply Emergency to the Town of Ashland, No. UAO-NE-13-F001 (the "2013 Emergency Declaration"). However, activating the interconnection was not needed, and the 2013 Emergency Declaration was terminated on May 1, 2014.

6. On December 10, 2015, following receipt of another petition from the Town seeking an Emergency Declaration, MassDEP issued a Declaration of a State of Water Supply Emergency to the Town of Ashland, No. UAO-NE-15-F002 (the "2015 Emergency Declaration"). The Town never activated the interconnection pursuant to the 2015 Emergency Declaration.
7. The Town has three active wells at Howe Street which draw from groundwater below Hopkinton Reservoir. Two additional groundwater wells have been previously locked due to a pre-existing low groundwater elevation.
8. On August 9, 2016, MassDEP received a petition from the Town through a letter also dated August 9, 2016 (the "Petition"), requesting a Declaration of a State of Water Supply Emergency. The petition states...

Currently the reservoir levels are dropping at a rate of 0.06 ft. per day. At this rate, assuming similar precipitation patterns, our wells will not be able to provide the Town's water demand in 44 days. Ashland does not have an alternative water source besides this reservoir, and we will need to connect to MWRA water on an Emergency basis through the Town of Southborough-pending approvals.

9. According to the Petition, the recent lack of rain has resulted in a low water level in Hopkinton Reservoir. As of August 2, 2016, the Town reported that the reservoir elevation was 295.35 feet above sea level, approximately 3 feet below the reservoir spillway elevation.
10. Additionally, the Town instituted Stage 1 water conservation measures on July 25, 2016, increasing that to a complete ban on all outdoor water use starting on August 2, 2016 in an effort to limit its water demand; the ban remains in place.
11. The Water Management Act, M.G.L. c.21G, § 15 and the Water Management Regulations, specifically the section set out at 310 CMR 36.40(1), authorizes any water system to petition MassDEP for a Declaration of a State of Water Supply Emergency if it finds that there exists or impends a water supply shortage of a dimension which endangers the public health, safety or welfare.
12. Pursuant to the Water Management Act, M.G.L. c.21G, § 15 and the Water Management Regulations set out at 310 CMR 36.40(2), MassDEP may declare a state of water emergency if it finds that there exists or impends a water supply shortage of a dimension that endangers the public health, safety or welfare. Further, in response to a petition for Declaration of a State of Water Supply Emergency and pursuant to this statutory section, MassDEP may require the water supplier to submit for its review and approval a plan for restraining the use of water by whatever means it deems appropriate and feasible. The statute limits any Declaration of a State of Water Supply Emergency to no more than six months in the aggregate in any twelve month period, unless MassDEP determines that a longer state of emergency is required to protect the public health, safety or welfare.

13. Pursuant to the Water Management Act, M.G.L. c.21G, § 17, MassDEP may issue orders during a state of water emergency declared under M.G.L. c.21G, § 15 to, among other things, establish priorities for the distribution of any water or quantity of water use, to permit any person engaged in the operation of a water supply system to cease the distribution of water, to distribute water to certain users as specified by MassDEP, and to require the implementation of specific water conservation measures.

Determination and Order

14. For the reasons set forth above and pursuant to the Water Management Act, M.G.L. c.21G, § 15, MassDEP hereby determines that a water supply emergency exists or impends a water supply shortage of a dimension which endangers the public health, safety or welfare of the citizens of the Town. Unless extended by MassDEP, this Emergency Declaration shall remain in effect until February 22, 2017.
15. By issuing this Emergency Declaration, MassDEP hereby grants the Town authority to obtain water from its emergency connection with MWRA via the Town of Southborough. The Town shall comply with the requirements of the MWRA governing emergency use of connections with an MWRA community.
16. The Town shall comply with all the remaining terms and conditions of its Water Withdrawal Permit No. 9P2-3-14014.02 that remain unchanged by this Emergency Declaration. On or before December 9, 2016, the Town shall submit a report documenting all actions taken by the Town to comply with its Water Withdrawal Permit.
17. The Town shall ensure that it complies with any and all monitoring required by M.G.L. c. 111, §§ 5G and 160 and 310 CMR 22.00 ("the Massachusetts Drinking Water Regulations") in accordance with its MassDEP approved sampling schedule.
18. The Town shall continue its restrictions on nonessential outside water use for the duration of this emergency declaration. At a minimum, these restrictions shall include restrictions requiring the use of hand held hoses only and limiting the hours for outdoor watering to exclude the hours between 9 a.m. through 5 p.m., when evapotranspiration is typically highest. Notwithstanding the foregoing, irrigation of public parks and recreational fields by means of automatic sprinklers equipped with moisture sensors or similar technology may be permitted outside the hours of 9 a.m. through 5 p.m. For purposes of this Emergency Declaration, the term nonessential outside water use is defined to include those uses that do not have health or safety impacts, are not required by regulation, and are not needed to meet the core functions of a business or other organization. The Town shall have the authority to enforce these regulations through the assessment of penalties or the imposition of fines. Provided this Emergency Declaration is still in effect on December 9, 2016, the Town shall reissue that day the public notice required by Paragraph 19 of this Emergency Declaration informing its consumers of the restrictions on nonessential outside water use and submit a copy to MassDEP within ten (10) days of publication of said notice.

19. Within seven (7) days of the date of issuance of this Emergency Declaration, the Town shall publish a notice in the local newspaper and on the Town's website informing the public of a ban on nonessential water use and submit a copy of the public notice to MassDEP within ten (10) days of publication of the notice.
20. On or before January 2, 2017, the Town shall submit to MassDEP a written report documenting all efforts taken by the Town to implement and enforce the restrictions on nonessential outside water use required herein including all actions taken by the Town to inform the public of the restrictions and to enforce the restrictions including the assessment of penalties or imposition of fines. The report shall describe water use trends over the period of the emergency and describe progress and the status of all other conservation programs being implemented by the Town. The Town shall submit copies of all materials and notices prepared to inform the public of the need to conserve water and comply with the restrictions on nonessential outside water use.
21. By October 1, 2016, and the first day of each month thereafter while this Emergency Declaration is in effect, the Town shall submit a written report to MassDEP documenting the continued need for an Emergency Declaration. The Report shall include, but not be limited to, the following:
 - i. Water reservoir levels in the Hopkinton Reservoir, including the change from the preceding thirty (30) days;
 - ii. Water usage for the preceding thirty (30) days, including total volumes and average daily water use;
 - iii. Total and average daily volumes of water purchased from MWRA for the preceding thirty (30) days; and,
 - iv. Total precipitation volumes for the preceding thirty (30) days.

Based on a review of the forgoing information, MassDEP, in its sole discretion, shall determine whether to terminate this Emergency Declaration.

22. Except as otherwise provided, all notices, submittals and other communications required by this Emergency Declaration shall be directed to:

Thomas Mahin
Department of Environmental Protection
205B Lowell Street
Wilmington, MA 01887

23. If the Town fails to comply with the provisions of this Emergency Declaration, MassDEP may assess a civil administrative penalty as provided in M.G.L. c.21A, § 16 and M.G.L. c.21G, § 14. MassDEP may also seek civil judicial penalties as provided in M.G.L. c.21G, § 14. Each day of continued violation shall constitute a separate offense. In addition, MassDEP may ask the Attorney General to bring an action in the superior court to compel compliance with this Declaration.

Appeal Rights

21. Respondent is hereby notified that it has a right to an adjudicatory hearing on this Order. Pursuant to M.G.L. c. 21G, § 12 and 310 CMR 36.40(1) and effective twenty-two days after the Order is received by the Respondent, Respondent shall be deemed to have waived its right to an adjudicatory hearing on this order unless Respondent files with MassDEP (i.e. MassDEP receives), a written notice of claim for an adjudicatory appeal that clearly and concisely states every point of fact and law Respondent intends to raise as grounds for the appeal, the relief sought, and any additional information required by applicable law. The request must be mailed to:

Commonwealth of Massachusetts
MassDEP-Office of Appeals and Dispute Resolution
One Winter Street
Boston, MA 02211

And a copy sent to:

Heidi M. Zisch, Counsel
MassDEP-Office of General Counsel
Northeast Regional Office
205B Lowell Street
Wilmington, MA 01887

The appeal must be accompanied by a valid check made payable to Commonwealth of Massachusetts in the amount of \$100.00 for the required filing fee. The filing fee must be mailed to:

Commonwealth of Massachusetts
MassDEP-Office of Appeals and Dispute Resolution
P.O. Box 4062
Boston, MA 02211

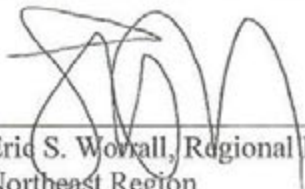
The filing fee is not required if the appellant is a city, town, county, or district of the Commonwealth of Massachusetts or a municipal housing authority.

Failure to pay the filing fee as required is grounds for dismissal of the request for hearing.

Waiver of filing fee: Upon a showing of undue financial hardship, MassDEP may waive the adjudicatory hearing filing fee. A person who believes that payment of the \$100.00 filing fee would be an undue financial hardship must file, together with the request for adjudicatory hearing as provided above, an affidavit setting forth the facts the appellant believes constitute the undue financial hardship.

Issued by the Department of Environmental Protection this twenty-second day of August 2016.

By



Eric S. Worrall, Regional Director
Northeast Region



MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

PERSONNEL & COMPENSATION COMMITTEE MEETING

Chair: J. Wolowicz
Vice-Chair: K. Cotter
Committee Members:
J. Carroll
P. Flanagan
J. Foti
A. Pappastergion
H. Vitale
J. Walsh

to be held on

Wednesday, September 14, 2016

Location: 100 First Avenue, 2nd Floor
Charlestown Navy Yard
Boston, MA 02129

Time: Immediately following Water Comm.

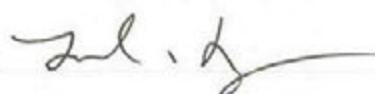
AGENDA

A. Approvals

1. PCR Amendments – September 2016
2. Appointment of Assistant Manager, Employment
3. Appointment of MBE/WBE Program Manager
4. Appointment of Warehouse Manager
5. Appointment of Systems Administrator III, MIS
6. Appointment of Project Manager, SCADA Technicians
7. Appointment of Project Manager, SCADA Technicians
8. Appointment of Construction Coordinator, Engineering & Construction
9. Appointment of Regional Manager – TRAC

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: September PCR Amendments



COMMITTEE: Personnel and Compensation

 INFORMATION

Karen Gay Valente
Karen Gay-Valente, Director of Human Resources
Joan C. Carroll, Manager Compensation
Preparer/Title

 X VOTE

Michelle S. Gilman
Michelle S. Gilman, Director Administration
Division Director Approval

As has been discussed with the Board on a number of occasions, the ongoing wave of retirements has made it difficult for us to maintain our head count of 1150. We are currently at 1129. In an effort to remedy this situation we are seeking Board approval in this staff summary for the creation of 15 entry level positions. MWRA has a long standing practice of providing our current employees a career ladder by investing heavily in training, so our employees stand ready to advance when a vacancy arises. Over 60% of our vacant positions are filled by current employees. Most of our retirees, because of the length of service, are in positions higher up on the organizational chart. The result is that it often takes two or three postings and months before the overall head count recovers from a retirement. Our experience is that many entry level employees gain the experience and training quickly to qualify for promotion when a position finally becomes open. The plan, if approved by the Board, is to create the flexibility to post and hire entry level employees, as we anticipate retirements in positions higher up on the org chart.

There is no shortage of work for these employees. As the Board knows, the overall headcount for MWRA has decreased by over 700 employees.

It is important to note that the creation of these positions will not impact the current total headcount of 1150, nor will it impact the approved budget for FY 2017.

RECOMMENDATION:

To approve the amendments to the Position Control Register (PCR) included in the attached chart.

DISCUSSION:

The Position Control Register lists all positions of the Authority, filled and vacant. It is updated as changes occur and it is published at the end of each month. Any changes to positions during the year are proposed as amendments to the PCR. All amendments to the PCR must be approved by the Personnel Committee of the Board of Directors. All amendments resulting in an upgrade of a position by more than one grade level, and/or an amendment which creates a position increasing annual cost by \$10,000 or more, must be approved by the Board of Directors after review by the Personnel Committee.

September PCR Amendments to Existing Positions

There are eight PCR amendments related to a change in staffing needs in the Operations Division.

The amendments are:

- P1. A change in title and location to a vacant position in the Process Control Department, Monitoring Coordinator, Unit 3, Grade 19 to a Medium Voltage Electrical Specialist, Unit 3, Grade 19 in the Labor Maintenance Department at Deer Island.
- P2. A change in title and grade to a vacant position in the Deer Island Trade Labor Maintenance Department, HVAC Specialist, Unit 2, Grade 16 to HVAC Technician, Unit 2, Grade 15.
- P3. A change in title and grade to a vacant position in the Chelsea Facility EQ – General Department, HVAC Specialist, Unit 2, Grade 16 to HVAC Technician, Unit 2, Grade 15.
- B1. A change in title and grade to a vacant position in the Operations Administration Department, Financial Planner, Unit 6, Grade 8 to Senior Financial Analyst, Unit 6, Grade 10.
- B2. A change in title and grade to a vacant position in the Western Grounds Maintenance Department, Heavy Equipment Operator, Unit 3, Grade 15 to Heavy Equipment Operator I, Unit 3, Grade 17.
- B3. A change in title and grade to a vacant position in the Deer Island Coordination Maintenance Department, Head Clerk, Unit 1, Grade 14 to Work Order Coordinator, Unit 1, Grade 17.
- B4. A change in title and grade to a vacant position in the Chelsea Operations Pipe Maintenance Department, Sewer Maintenance Foreman, Unit 2, Grade 17 to Sewer Maintenance Supervisor, Unit 2, Grade 19.
- B5. A change in title and grade to a vacant position in the Chelsea Operations Pipe Maintenance Department, Sewer Maintenance Foreman, Unit 2, Grade 17 to Sewer Maintenance Supervisor, Unit 2, Grade 19.

Creation of New Positions

Additionally there are fifteen new entry level positions being proposed to ensure adequate staffing levels are maintained in the Operations Division to support core functions. Although, staffing for the new fiscal year began at the level of budgeted FTEs, staffing remains below the target during the first two months, as a result of continued attrition mostly due to retirements. Backfills are regularly filled through promotions resulting in a series of promotional processes before a position is filled with an external candidate. Additional entry level staff will offer a greater pool of people readily available to be trained and promoted into critical operations vacancies as they occur including operator, maintenance and operations, and higher level engineering positions.

They are:

- B6. to B10. Five new positions in the Trade Labor Maintenance Department, B&G Worker, Unit 2, Grade 13.
- B11. to B15. Five new positions, OMC Laborer, Unit 2, Grade 13, to be assigned to Departments within the Operation Division based on need.
- B16. to B20. Five new positions, Staff Engineer, Unit 9, Grade 19, to be assigned to Departments within the Operation Division based on need.

The first three amendments (P1 through P3) require approval by the Personnel and Compensation Committee. The last 20 amendments (B1 through B20) require Board approval after review by the Personnel and Compensation Committee.

BUDGET/FISCAL IMPACT:

The annualized budget impact of the PCR amendments to the existing eight positions will result in a savings of \$37,568 to a cost of \$106,941 depending on the individuals selected for the vacant positions upon the completion of the hiring processes.

The projected cost of the fifteen newly created positions is expected to be \$719,790. However, as actual staffing levels are below the budgeted FTEs for the first two months of the year, coupled with the time required to fill vacant positions and the salary differential between retiring staff and new hires will assure that the wages and salaries spending will not exceed the budget.

ATTACHMENTS:

New/Old Job Descriptions

**MASSACHUSETTS WATER RESOURCES AUTHORITY
POSITION CONTROL REGISTER AMENDMENTS
FISCAL YEAR 2016**

PCR AMENDMENTS REQUIRING PERSONNEL & COMPENSATION COMMITTEE APPROVAL - September 14, 2016

Number	Current PCR #	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Current/Budget Salary	Estimated New Salary	Estimated Annual \$ Impact	Reason For Amendment
P1	Operations Process Control 2938504	V	T,L	Monitoring Coordinator	3	19	Medium Voltage Electrical Specialist	3	19	N/A	N/A - N/A	\$0 - \$0	To address staffing needs in Trade Labor Maintenance Department, Operations Division
P2	Operations Trade Labor Maintenance 2988008	V	T,G	HVAC Specialist	2	16	HVAC Technician	2	15	\$59,705	\$47,435 - \$65,452	-\$12,270 - \$5,747	To address staffing needs in Trade Labor Maintenance Department, Operations Division
P3	Operations EQ- General 5470036	V	T,G	HVAC Specialist	2	16	HVAC Technician	2	15	\$59,402	\$47,435 - \$65,452	-\$11,967 - \$6,050	To address staffing needs in EQ- General Department, Operations Division
PERSONNEL & COMP COMMITTEE TOTAL = 3											-\$24,237	\$11,798	

PCR AMENDMENTS REQUIRING BOARD APPROVAL- September 2016

Number	Current PCR #	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Current/Budget Salary	Estimated New Salary	Estimated Annual \$ Impact	Reason For Amendment
B1	Operations Operations Administration 5210074	V	T,G	Financial Planner	6	8	Senior Financial Analyst	6	10	\$52,260	\$59,080 - \$87,791	\$6,820 - \$35,531	To address staffing needs in the Operations Administration Department, Operations Division
B2	Operations Grounds Maintenance West 3394084	V	T,G	HEO	3	15	HEOI	3	17	\$56,259	\$52,320 - \$72,164	-\$3,939 - \$15,905	To address staffing needs in the Grounds Maintenance West Department, Operations Division
B3	Operations Work Coordination Maint 2985502	V	T,G	Head Clerk	1	14	Work Order Coordinator	1	17	\$53,742	\$48,272 - \$62,919	-\$5,470 - \$9,177	To address staffing needs in the Work Coordination Maintenance Department, Operations Division
B4	Operations Pipe Maintenance - WW 5434019	V	T,G	Sewer Maintenance Foreman	2	17	Sewer Maintenance Supervisor	2	19	\$62,427	\$57,056 - \$79,692	-\$5,371 - \$17,265	To address staffing needs in the Pipe Maintenance - WW Department, Operations Division
B5	Operations Pipe Maintenance - WW 5434024	V	T,G	Sewer Maintenance Foreman	2	17	Sewer Maintenance Supervisor	2	19	\$62,427	\$57,056 - \$79,692	-\$5,371 - \$17,265	To address staffing needs in the Pipe Maintenance - WW Department, Operations Division
FIRST 8 AMENDMENTS SUB TOTAL :											-\$37,568	\$106,941	

B6	Position to be Added	N/A	N/A	N/A	N/A	N/A	B&G Worker	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Trade Labor Maintenance, Department, Operations Division
B7	Position to be Added	N/A	N/A	N/A	N/A	N/A	B&G Worker	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Trade Labor Maintenance, Department, Operations Division
B8	Position to be Added	N/A	N/A	N/A	N/A	N/A	B&G Worker	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Trade Labor Maintenance, Department, Operations Division

MASSACHUSETTS WATER RESOURCES AUTHORITY
POSITION CONTROL REGISTER AMENDMENTS
FISCAL YEAR 2016

B9	Position to be Added	N/A	N/A	N/A	N/A	N/A	B&G Worker	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Trade Labor Maintenance, Department, Operations Division
B10	Position to be Added	N/A	N/A	N/A	N/A	N/A	B&G Worker	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Trade Labor Maintenance, Department, Operations Division
B11	Position to be Added	N/A	N/A	N/A	N/A	N/A	OMC Laborer	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Operations Division
B12	Position to be Added	N/A	N/A	N/A	N/A	N/A	OMC Laborer	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Operations Division
B13	Position to be Added	N/A	N/A	N/A	N/A	N/A	OMC Laborer	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Operations Division
B14	Position to be Added	N/A	N/A	N/A	N/A	N/A	OMC Laborer	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Operations Division
B15	Position to be Added	N/A	N/A	N/A	N/A	N/A	OMC Laborer	2	13	N/A	\$43,819 - \$43,819	\$43,819 - \$43,819	To ensure adequate staffing levels in the Operations Division
B16	Position to be Added	N/A	N/A	N/A	N/A	N/A	Staff Engineer	9	19	N/A	\$56,320 - \$56,320	\$56,320 - \$56,320	To ensure adequate staffing levels in the Operations Division
B17	Position to be Added	N/A	N/A	N/A	N/A	N/A	Staff Engineer	9	19	N/A	\$56,320 - \$56,320	\$56,320 - \$56,320	To ensure adequate staffing levels in the Operations Division
B18	Position to be Added	N/A	N/A	N/A	N/A	N/A	Staff Engineer	9	19	N/A	\$56,320 - \$56,320	\$56,320 - \$56,320	To ensure adequate staffing levels in the Operations Division
B19	Position to be Added	N/A	N/A	N/A	N/A	N/A	Staff Engineer	9	19	N/A	\$56,320 - \$56,320	\$56,320 - \$56,320	To ensure adequate staffing levels in the Operations Division
B20	Position to be Added	N/A	N/A	N/A	N/A	N/A	Staff Engineer	9	19	N/A	\$56,320 - \$56,320	\$56,320 - \$56,320	To ensure adequate staffing levels in the Operations Division
				BOARD TOTAL =	20					SUBTOTAL:	\$706,459 - \$814,933		
				GRAND TOTAL =	23					TOTAL ESTIMATED COSTS:	\$682,222 - \$826,731		

Legend:
V = Vacant position, F = Filled position
T = Title change, L = Location change, transfer to another Cost Center, G = Grade Change, SA = Salary Adjustment, E = Elimination



MWRA
POSITION DESCRIPTION

POSITION: Monitoring Coordinator

PCR#:

DIVISION: Operations

DEPARTMENT: Process Control

BASIC PURPOSE:

Generates and distributes timely, high quality treatment plant performance based laboratory data in support of plant operations.

SUPERVISION RECEIVED:

Works under the general supervision of the Program Manager of Process Monitoring.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Performs process laboratory testing for individual process areas using prescribed procedures in the performance of routine physical, chemical and biological tests, analyses and/or procedures and routine laboratory support duties.
- Supervises the efficient receipt, logging, tracking, testing, storage and disposal of samples.
- Performs laboratory testing in direct support of plant operations.
- Assures that all laboratory operations adhere to applicable standard operating procedures (SOPs) and support established quality control programs.
- Recommends new SOPs to reflect changes in work procedures and recommends Quality Assurance/Quality Control (QA/QC) standards.
- Plans and schedules tests and procedures and special requests to meet performance commitments. Reports scheduling problems to supervisor.

- Maintains equipment maintenance and calibration programs including records to assure proper operation of laboratory equipment and minimize equipment downtime.
- Assures the documentation, entry and validation of test data in accordance with QA/QC procedures.
- Assures the efficient maintenance of laboratory records for the unit in accordance with SOPs.
- Utilizes appropriate computer applications to report data to operations/process control staff.
- Assures that adequate laboratory equipment and supplies are available and recommends the purchase of equipment and supplies.
- Assures the training of employees in laboratory, quality control, administrative and laboratory safety procedures and provides instructions as appropriate.
- Assures a clean and safe work environment in conjunction with the Safety Officer and implements laboratory safety programs.

SECONDARY DUTIES:

- Assists in maintaining harmonious labor management relations through application of collective bargaining agreement provisions and established personnel policies.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A bachelor's degree in chemistry, biology or related scientific program; and
- (B) Four (4) years of related environmental laboratory experience; and
- (C) Two (2) years of related treatment plant operational experience; or
- (D) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Proficiency in all standard laboratory test procedures used to directly support wastewater treatment plant operations. Procedures to include the operation, calibration and maintenance of a wide variety of standard equipment and instrumentation and use of special application software and related techniques for the accurate handling of data.
- (B) Knowledge of mathematics including algebra.

- (C) Demonstrated skills in supervisory/training personnel from diverse backgrounds.
- (D) Excellent interpersonal, oral and written communication skills are required.

SPECIAL REQUIREMENTS:

A valid Wastewater Treatment Plant Operators License Grade VI, or the ability to obtain within one (1) year.

TOOLS AND EQUIPMENT USED:

Laboratory instruments and equipment, telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential duties.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms, stand and walk, talk or hear. The employee is occasionally required to sit, climb or balance, stoop, kneel, crouch or crawl.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision, distance and peripheral vision, color vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in a laboratory environment. The employee occasionally works near moving mechanical parts and is occasionally exposed to outdoor weather conditions. The employee occasionally works in high precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is moderately quiet in the operations facility and moderately loud at other work locations.

January, 2000

MWRA
POSITION DESCRIPTION

NEW

POSITION: Medium Voltage Electrical Specialist

PCR#:

DIVISION: Operations

DEPARTMENT: Deer Island Maintenance / FOD

BASIC PURPOSE:

Performs highly complex electrical maintenance and installation tasks. Provides a range of possible duties, but will not necessarily perform all of the duties listed below. Incumbent employees will be part of a rotating, 24 hour stand by team.

SUPERVISION RECEIVED:

Employees will be expected to work under both general and direct supervision and employees will be expected to work independently.

SUPERVISION EXERCISED:

Will direct the work of others.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Installs, modifies, troubleshoots, repairs, and tests new and existing electrical substations transformers, bus ducts, cable bus, relays, circuits, VFDs, power meters, UPS, systems, fixtures, associated equipment and controls for utility and industrial use, and other equipment/systems as required and/or assigned.
- Assess and initiate corrective action of a complex electrical medium and low voltage distribution systems with multiple sources of power.
- Perform medium voltage substation switching while synchronize multiple sources of power.
- Assist vendors in the maintenance and repair of MWRA electrical equipment.

- Conduct medium voltage phase testing in accordance with NETA, OSHA and NEC guidelines
- Assess and initiate corrective action for abnormal switching problems.
- Pulls all necessary permits as required in accordance with Mass Electrical Code.
- Performs electrically related activities specified by work order.
- Inspects and troubleshoots electrical systems, equipment and fixtures using testing equipment including Hi-pot, power factor test sets, relay test sets and meggers.
- Performs preventive, predictive and corrective maintenance on electrical systems, equipment and fixtures according to vendor specifications.
- Installs new or replacement electrical systems, equipment and fixtures.
- Select and obtains appropriate stock or materials per established procedures, and tools or machines for the job.
- Performs work in conformance with relevant building and electrical codes and in a safe and professional manner.
- Follows established safety, operating, and emergency response procedures and policies established by MWRA.
- Operates motor vehicles and light equipment that does not require a special license, such as vans and pickup trucks, to transport materials to work sites, and pick up and deliver supplies and equipment.
- Prepares documents and reports results in the Maximo, Lawson or other appropriate Database of inspections and work performed.
- Assists other trades in the performance of their work, as required or assigned.
- Performs maintenance independently or as part of a team. Light maintenance shall include but not be limited to:
 - Performs routine testing, lockout/tagout, operation (startup/shutdown) and adjustment of process equipment.
 - Installs and retrofits new equipment related to plant systems.
 - With proper training sets up ladders, staging and rigging and utilizes hoists, jacks,

dollies, lifts, etc. for proper access to job and to remove and install equipment.

- Operates portable pumping, ventilation and other equipment to prepare work area for access.
- Opens hatches.
- Installs safety rails.
- Removes snow from immediate work area in order to perform tasks.

SECONDARY DUTIES:

- Promotes and participates in the cross-functional work practices.
- Trains peers and subordinates as requested.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A high school education or the equivalent; and
- (B) Satisfactory completion of a certified journey level electrician apprenticeship training program, or a similar formal training program; or
- (C) Any equivalent combination of education and/or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Basic reading, writing, mathematical, scientific and oral communication skills.
- (B) Knowledge of Massachusetts electrical and other applicable codes.
- (C) Thorough knowledge of pumps, compressors, generators, switchgear, relaying systems Variable Frequency Drives and other related electrical equipment, including polyphase circuits and motors and associated controls.
- (D) Thorough knowledge of the standard practices, materials, tools, occupational hazards and safety practices common to the trade as well as the completion of MWRA safety training including all requirements in NFPA 70E.

- (E) Ability to diagnose problems and recommend repair or replacement.
- (F) Ability to work with tools and equipment of the electric trade. Ability to work safely with hazardous chemicals and in adverse weather conditions.
- (G) Ability to read and interpret wiring diagrams, sketches, blue prints, and vendor instructions to plan and set up work for the complete installation, modification, maintenance and repair of a wide variety of industrial electrical systems.
- (H) Ability to attain knowledge and work processes required to perform maintenance tasks required by Reliability Centered Maintenance or similar Maintenance Management Program.
- (I) Computer skills necessary to access and use the Maximo & Lawson Database.
- (J) Utilizes personal computer, data terminals and specialized MAXIMO/Lawson software application packages to perform related duties, included but not limited to: work planning and scheduling, inventory maintenance, purchase order placement/tracking, work order reporting; time, utilization, and written work plan completion
- (K) Trained in Confined Space Entry, CPR and First Aid, and be capable of entering, setting-up, installing, disassembling confined space equipment and ability to work in a confined space.
- (L) Excellent interpersonal, oral and written communication skills.

SPECIAL REQUIREMENTS:

- A valid Massachusetts Journeyman Electrician's license.
- Site specific F1 Certification with demonstrated knowledge of facility specific Fire Alarm Systems within 6 months.
- A valid Massachusetts Class D Motor Vehicle Operators License or equivalent.
- A valid Massachusetts Master Electrician's license preferred.
- Certification in the installation, testing, and troubleshooting of Medium Voltage electrical equipment within one year.
- Demonstrated knowledge and prior experience with handling of medium and high voltage systems is required.
- **TOOLS AND EQUIPMENT USED:**

Motor vehicle, power and hand tools, mobile radio, telephone, beeper, power meters.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee frequently is required to stoop, kneel, crouch or crawl. The employee occasionally is required to stand, walk, talk or hear, sit, climb, or balance.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move more than 100 pounds. Specific vision abilities required by this job include close vision, distance and peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in outside weather conditions. The employee regularly works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is very loud in field settings, and moderately loud at other work locations.

February 2008

MWRA
POSITION DESCRIPTION

OLD

POSITION: HVAC Specialist

PCR#:

DIVISION: Operations

DEPARTMENT: Deer Island Maintenance, Metropolitan Maintenance

BASIC PURPOSE:

Inspects, maintains, repairs and installs heating, ventilation, air conditioning and odor control equipment and other light maintenance tasks.

SUPERVISION RECEIVED:

Works under the general supervision of a Unit Supervisor.

SUPERVISION EXERCISED:

Exercises supervision of entry level staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Installs, modifies, troubleshoots, repairs and tests new and existing heating, ventilation, air conditioning and odor control systems, equipment, and fixtures.
- Performs HVAC related activities specified by work order.
- Inspects and troubleshoots heating, ventilating, air conditioning and odor control equipment using tools and instrumentation and techniques of the trade.
- Performs preventative, predictive and corrective maintenance on heating, ventilation, air conditioning and odor control equipment according to vendor specifications.
- Installs duct work, hoods, ventilation devices and assemblies using manual and powered tools.
- Obtains necessary parts through established procedures.
- Follows established safety, operating, and emergency response procedures and policies established by MWRA.

- Installs safety rails.
- Removes snow from immediate work area in order to perform tasks.
- Routine testing, lockout/tagout, operation (startup/shutdown) and adjustment of process equipment.
- Performs necessary cleanup and housekeeping for work areas and other light maintenance tasks.
- Performs related duties as required.

SECONDARY DUTIES:

- Promotes and participates in productivity improvement plan.
- Trains peers and subordinates as requested.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Basic reading, writing, mathematical and oral communication skills as normally attained through a high school education or equivalent; and
- (B) Three (3) to five (5) years experience in the operation, repair and maintenance of industrial HVAC & related equipment; or
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Thorough knowledge of the standard practices, materials, tools, occupational hazards and safety practices common to the trade.
- (B) Skills in the operation of tools, instruments and equipment of the trades.
- (C) Thorough knowledge of the standard practices, material, tools, occupational hazards and safety practices common in the trade.
- (D) Trained in Confined Space Entry, CPR and First Aid, and be capable of entering, setting-up, installing, disassembling confined space equipment and ability to work in a confined space.

- (E) Ability to attain knowledge & work processes required to perform maintenance task required by Reliability Centered Maintenance or similar Maintenance Management Program.

SPECIAL REQUIREMENTS:

- Possession of a Valid Massachusetts Class D Operator's License.
- Possession of a Mass. Refrigeration License
- Complete competency based training program related to **ESSENTIAL DUTIES AND RESPONSIBILITIES** as outlined above and successfully demonstrates required competencies.

TOOLS AND EQUIPMENT USED:

Motor vehicle, power and hand tools, hoist, mobile truck radio, beeper.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the essential functions the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee is frequently required to stoop, kneel, crouch or crawl. The employee is occasionally required to stand, walk, talk, hear, sit, climb or balance.

WORK ENVIRONMENT:

The work environment described here are representative of those an employee encounters while performing the essential functions of this job. While performing the duties of this job, the employee regularly works in outside weather conditions. The employee regularly works near moving mechanical parts, and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock. This job is hearing protection required and the noise level in the work environment is very loud in field settings and moderately loud at pumping stations.

August 2001

MWRA
POSITION DESCRIPTION

NEW

POSITION: HVAC Technician
DIVISION: Operations
DEPARTMENT: Deer Island Maintenance, Metropolitan Maintenance

BASIC PURPOSE:

Inspects, maintains, repairs and installs heating, ventilation, air conditioning and odor control equipment and other light maintenance tasks.

SUPERVISION RECEIVED:

Works under the general supervision of a HVAC Specialist or Unit Supervisor.

SUPERVISION EXERCISED:

Exercises supervision of entry level staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Installs, modifies, troubleshoots, repairs and tests new and existing heating, ventilation, air conditioning and odor control systems, equipment, and fixtures.
- Performs HVAC related activities specified by work order.
- Inspects and troubleshoots heating, ventilating, air conditioning and odor control equipment using tools and instrumentation and techniques of the trade.
- Performs preventative, predictive and corrective maintenance on heating, ventilation, air conditioning and odor control equipment according to vendor specifications.
- Installs duct work, hoods, ventilation devices and assemblies using manual and powered tools.
- Obtains necessary parts through established procedures.
- Follows established safety, operating, and emergency response procedures and policies established by MWRA.

- Operates motor vehicles, such as vans and pick-up trucks to pick-up and deliver supplies and equipment to work sites.
- Performs work in a safe and professional manner.
- Performs, documents and reports results of inspections and work performed.
- Perform work in compliance with Authority Integrated Contingency Plan.
- Operates equipment manually and through instrument panels and programmable logic control units as required in performance of maintenance tasks. Equipment may include, but will not be limited to pumps, valves, gates, meters, gauges, controllers, motor control centers and level control devices.
- Troubleshoots & corrects equipment/systems through the use of condition monitoring methods & equipment.
- Works from manufacturer's manuals and specifications, blueprints, schematics and verbal instructions to install, repair, troubleshoot, inspect, check & maintain mechanical, electrical-mechanical & hydraulic systems.
- Assists other trades in the performance of their work, as required, or as assigned.
- Performs light maintenance independently or as part of a team. Light maintenance shall include but not limited to:
 - Operates forklift or other light equipment not requiring a special license.
 - Inspects and troubleshoots various systems and equipment.
 - Installs and retrofits/new equipment related to plant systems.
 - Modifies and/or aligns existing equipment to specifications.
 - With proper training sets up ladders, staging and rigging and utilizes hoists, jacks, dollies, lifts, etc. for proper access to job and to remove and install equipment.
 - Operates portable pumping, ventilation & other equipment necessary to support assigned task.
 - Greases and lubricates, replaces oil reserves, minor packing adjustments and opens hatches.
 - Installs safety rails.

- Removes snow from immediate work area in order to perform tasks.
- Routine testing, lockout/tagout, operation (startup/shutdown) and adjustment of process equipment.
- Performs necessary cleanup and housekeeping for work areas and other light maintenance tasks.
- Performs related duties as required.

SECONDARY DUTIES:

- Promotes and participates in productivity improvement plan.
- Trains peers and subordinates as requested.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Basic reading, writing, mathematical and oral communication skills as normally attained through a high school education or equivalent; and
- (B) Certification in HVAC from a recognized vocational or technical training school; and
- (C) Three (3) to five (5) years experience in the operation, repair and maintenance of industrial HVAC & related equipment; or
- (D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Thorough knowledge of the standard practices, materials, tools, occupational hazards and safety practices common to the trade.
- (B) Skills in the operation of tools, instruments and equipment of the trades.
- (C) Thorough knowledge of the standard practices, material, tools, occupational hazards and safety practices common in the trade.
- (D) Trained in Confined Space Entry, CPR and First Aid, and be capable of entering, setting-up, installing, disassembling confined space equipment and ability to work in a confined space.

- (E) Ability to attain knowledge & work processes required to perform maintenance task required by Reliability Centered Maintenance or similar Maintenance Management Program.

SPECIAL REQUIREMENTS:

- Possession of a Valid Massachusetts Class D Operator's License.
- Chlorofluorocarbon (CFC) certificate (Type 1) or the ability to obtain within 6 months.

TOOLS AND EQUIPMENT USED:

Motor vehicle, power and hand tools, hoist, mobile truck radio.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the essential functions the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee is frequently required to stoop, kneel, crouch or crawl. The employee is occasionally required to stand, walk, talk, hear, sit, climb or balance.

WORK ENVIRONMENT:

The work environment described here are representative of those an employee encounters while performing the essential functions of this job. While performing the duties of this job, the employee regularly works in outside weather conditions. The employee regularly works near moving mechanical parts, and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock. This job is hearing protection required and the noise level in the work environment is very loud in field settings and moderately loud at pumping stations.

August 2016



MWRA
POSITION DESCRIPTION

POSITION: Financial Planner

PCR#:

DIVISION: Administration, Finance, Operations

DEPARTMENT: All

BASIC PURPOSE:

Assists with financial and contract administration functions related to the daily management of financial activities. Assist with special financial projects as assigned.

SUPERVISION RECEIVED:

Works under the general supervision of a Finance Manager.

SUPERVISION EXERCISED:

None

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Coordinates all day-to-day operations of assigned project work.
- Monitors activities of assigned projects to ensure project completion, compliance with applicable terms and conditions, to include accurate payment of applicable fees and invoices.
- Assists with the administration of finance projects from project initiation through design, construction and project completion; procures engineering design and construction services.
- Receives, reviews and recommends approval of all project invoices.
- Assists with the development of grant applications.
- Assists with activities with federal, state and local entities to ensure compliance with applicable laws and regulations, mitigate project impact, and addresses concerns.
- Prepares agenda and all supporting material for internal and external formal meetings.

- Assists in the development of schedules, applications, forms, spreadsheets, notices.
- Assists with the collection and collation needed for Finance Division transactions.
- Works on special analytical projects.
- Assist with the development of the annual budget.
- Assist with the development of procurement documents.
- Assist with maintaining financial applications and databases.

SECONDARY DUTIES:

Performs related duties as required.

DESIRED MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Completion of a four (4) year college program in business administration, engineering or a related field; and
- (B) One (1) to three (3) years experience in contract administration and financial analysis; or
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Excellent spreadsheet and database skills
- (B) Excellent written, organization, interpersonal, planning and communications skills and demonstrated ability to work effectively with managers at all levels of the organization

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle Operator's License

TOOLS AND EQUIPMENT USED:

Office machines as normally associated with the use of multiple-line telephone, personal computer, including word processing and other software, copy, and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable

accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to sit and talk or hear, to use hands to feel, finger, handle or operate objects, including office equipment or controls and reach with hands and arms. The employee is frequently required to stand and walk; and occasionally climb or balance; stoop, kneel, crouch, crawl, or smell.

The employee must frequently lift and/or move up to 10 pounds, occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision, peripheral vision, distance vision, depth perception and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this Job.

While performing the duties of this job, the employee regularly works in an office environment. The employee routinely makes visits to operating facilities and construction sites. In these situations the employee is occasionally exposed to outdoor weather conditions, extreme heat or cold and wet, humid conditions (non-weather) and vibration. The employee occasionally works near moving mechanical parts, and in high precarious places. The employee is occasionally exposed to fumes, toxic or caustic chemicals and airborne particles. The employee occasionally exposed to risk of electrical shock and radiation.

The noise level in the normal work environment is a moderately quiet office setting. Visits made to facilities and construction sites include noise levels at the site that could range from loud to very loud.

May 2008

MWRA
POSITION DESCRIPTION

NEW

POSITION: Senior Financial Analyst
PCR#:
DIVISION: Operations
DEPARTMENT: Operations Administration, Policy and Administration

BASIC PURPOSE:

Coordinates the budget process and prepares current expense budget (CEB) work products for assigned projects and units within the Operations Division. Reviews and analyzes budget requests, variances, and financial analyses for assigned projects. Responsible for division /department-level consolidation, analysis, review, and reporting of the Operations Division's CEB.

SUPERVISION RECEIVED:

Works under the general supervision of the assigned Manager.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Coordinates CEB development and monitoring processes for assigned departments. Prepares work products including budget submissions with backup documentation, variance explanations, expense tracking systems, projected spending estimates, and narratives. Reviews information with department management.
- Assists with the coordination of processes for developing, monitoring, and analyzing the Current Expense budgets for the Operations Division. Establishes approaches and methods to support assigned stages of the budget process.
- Assists with review of budget requests and performance measurements (budget estimates, justifications, schedules, and expenditure flow projections) for the Operations Division at the division and departmental level. Develops recommendations for managers regarding budget issues.

- Prepares monthly department-level CEB variance report summary for management.
- Writes reports and reviews documents related to the CEB.
- Ensures the integrity of CEB accruals for assigned departments and resolves other accounting issues as required.
- Prepares and/or reviews Life Cycle Cost Analyses and other financial analyses for assigned projects.
- Performs special projects on as-needed basis.
- Assists with review and analysis of Yellow Notebook and other performance reports.
- Performs other related duties as required.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Analytical and writing skills as normally attained through a four (4) year college program in business administration, engineering or a related field, or knowledge acquired through professional experience. Advanced degree in business or public administration preferred; and
- (B) Understanding of budgeting, financial analysis, accounting, and forecasting concepts and practices as acquired by two (2) to five (5) years of experience; or
- (C) Any equivalent of combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Excellent spreadsheet and database skills. Working knowledge of standard MWRA office automation products (Microsoft Word and Excel), Hyperion, and Lawson software is preferred.
- (B) Excellent written, organizational, interpersonal, planning, communication, and negotiation skills and demonstrated ability to work effectively with managers at all levels

of the organization.

SPECIAL REQUIREMENTS:

None.

TOOLS AND EQUIPMENT USED:

Office machines including: multiple-line telephone, personal computer, including word processing and other software, photocopier, and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, office equipment, or controls and to reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to stand and walk.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 25 pounds. Specific vision abilities required by this job include close vision, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. The employee regularly works in an office environment. The noise level in the work environment is moderately quiet.

July 2016

MWRA
POSITION DESCRIPTION

OLD

POSITION: Heavy Equipment Operator

PCR#:

DIVISION: Operations

DEPARTMENT: Field Operations

BASIC PURPOSE:

Operates heavy equipment and vehicles.

SUPERVISION RECEIVED:

Works under the general supervision of the departmental Manager or Supervisor.

SUPERVISION EXERCISED:

Exercises close supervision of skilled laborers and laborers as assigned.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Operates a variety of heavy equipment such as, but not limited to, backhoe, front-end loader, pumps, generators, and pneumatic tools.
- Assists mechanics in the maintenance and repair of heavy vehicles and equipment as needed.
- Performs light maintenance independently or as part of a team. Light maintenance shall include but not limited to:
 - Inspects and troubleshoots various systems and equipment
 - Installs and retrofits/new equipment related to plant systems.
 - Modifies and/or aligns existing equipment to specifications.
 - With proper training sets up ladders, staging and rigging and utilizes hoists, jacks, dollies,

lifts, etc. for proper access to job and to remove and install equipment.

- Operates portable pumping and/or ventilation equipment to prepare a work area for access.
- Opens hatches.
- Installs safety rails.
- Conducts routine testing, lockout/tagout, operation (startup/shutdown) and adjustment of process equipment.
- Removes snow from immediate work area.

SECONDARY DUTIES:

- Promotes and participates in the cross-functional work practices.
- Trains peers and subordinates as requested.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Basic reading, writing, mathematical, scientific and oral communication skills normally attained through a high school education or the equivalent; and
- (B) Considerable knowledge of the methods and techniques used in the maintenance and safe operation of a wide variety of heavy and/or specialized maintenance and construction equipment and vehicles as acquired through two (2) years experience; or
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Ability to follow oral and written instructions.
- (B) Skill in the operation of listed tools and equipment.
- (C) Ability to operate heavy equipment for extended periods in a variety of climatic conditions.

SPECIAL REQUIREMENTS:

Valid Massachusetts Class A Commercial Driver's License.

Department of Public Safety Hoisting Engineer's License, 1B and 2A and the ability to obtain a 4A within six months.

Complete productivity improvement competency-based training program related to **ESSENTIAL DUTIES AND RESPONSIBILITIES** as outlined above and successfully demonstrates required competencies.

TOOLS AND EQUIPMENT USED:

Motor vehicle, specialized maintenance and construction equipment, hand tools, hoist, mobile radio.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of the job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate object, tools or controls and reach with hands and arms. The employee is frequently required to stoop, kneel, crouch or crawl. The employee is frequently required to stand, walk, talk, hear, sit, climb or balance.

The employee must regularly lift and/or move up to 60 pounds, frequently lift and/or move up to 100 pounds. Specific vision abilities required by this job include close, distance and peripheral vision, depth perception and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works near moving mechanical parts, is frequently exposed to wet and/or humid conditions and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock, and vibration.

The noise level in the work environment is usually very loud in field settings, and loud at other

work locations.

March 2012

MWRA
POSITION DESCRIPTION

NEW

POSITION: Heavy Equipment Operator I

PCR#:

DIVISION: Operations

DEPARTMENT: Field Operations

BASIC PURPOSE:

Operates heavy equipment and vehicles.

SUPERVISION RECEIVED:

Works under the general supervision of the departmental Manager or Supervisor.

SUPERVISION EXERCISED:

Exercises close supervision of skilled laborers and laborers as assigned.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Operates a variety of heavy equipment such as, but not limited to, backhoe, front-end loader, cranes, tractor cab and trailers, excavators, pumps, generators, and pneumatic tools.
- Operates equipment for excavations for valve replacement, pipeline installation, leak repair, and other miscellaneous excavations.
- Installs trench boxes, mechanical shoring systems, and other support systems for the safety of excavations.
- Assists mechanics in the maintenance and repair of heavy vehicles and equipment as needed.

SECONDARY DUTIES:

- Promotes and participates in the cross-functional work practices.

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Heavy Equipment Operator I - New

- Trains peers and subordinates as requested.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Basic reading, writing, mathematical, scientific and oral communication skills normally attained through a high school education or the equivalent; and
- (B) Considerable knowledge of the methods and techniques used in the maintenance and safe operation of a wide variety of heavy and/or specialized maintenance and construction equipment and vehicles as acquired through five (5) years experience; or
- (C) Experience in urban utility excavation, construction, and installation.
- (D) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Ability to follow oral and written instructions.
- (B) Skill in the operation of listed tools and equipment.
- (C) Ability to operate heavy equipment for extended periods in a variety of climatic conditions.

SPECIAL REQUIREMENTS:

Valid Massachusetts Class A Commercial Driver's License.

Department of Public Safety Hoisting Engineer's License, 1A, 2A, 3A and 4A.

Must demonstrate proficiency for operating heavy equipment including but not limited to:

- 50 ton Linkbelt crane
- Volvo tracked excavator
- Tractor cab and lowboy trailer
- 10 wheel dumps with tagalong trailer
- Various types of backhoes (JCB, Caterpillar, John Deer)
- Front End Loader

- Truck Mounted crane

Complete productivity improvement competency-based training program related to **ESSENTIAL DUTIES AND RESPONSIBILITIES** as outlined above and successfully demonstrates required competencies.

TOOLS AND EQUIPMENT USED:

Motor vehicle, specialized maintenance and construction equipment, hand tools, hoist, mobile radio.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of the job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate object, tools or controls and reach with hands and arms. The employee is frequently required to stoop, kneel, crouch or crawl. The employee is frequently required to stand, walk, talk, hear, sit, climb or balance.

The employee must regularly lift and/or move up to 60 pounds, frequently lift and/or move up to 100 pounds. Specific vision abilities required by this job include close, distance and peripheral vision, depth perception and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works near moving mechanical parts, is frequently exposed to wet and/or humid conditions and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock, and vibration.

The noise level in the work environment is usually very loud in field settings and loud at other work locations.

March 2012

MWRA
POSITION DESCRIPTION



POSITION: Head Clerk
PCR#:
DIVISION: Operations
DEPARTMENT: Deer Island, Operations Administration, FOD Administration

BASIC PURPOSE:

Provides clerical and administrative support to multiple sections within the Authority. Provides a range of duties, but will not perform all duties listed below.

SUPERVISION RECEIVED:

Works under the general supervision of the departmental Manager or Administrative Assistant.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Prepares and processes personnel forms, prepares payroll and any necessary changes and answers employee payroll and benefit questions.
- Assists in the provision of ongoing training to numerous groups on the proper completion of weekly time sheets and varies union implications.
- Types letters, memos, reports, correspondence and other performs other clerical duties including basic bookkeeping and maintaining files.
- Responsible for Accounts Payable tasks such as invoicing, auditing and other related activities.

- Assists with the preparation, compilation, collation and disbursement of various reports, projects, etc.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A high school education or equivalent; and
- (B) Three (3) years experience in personnel/payroll and thorough knowledge of office practices and procedures work; or
- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Demonstrated skills in Microsoft Word, Excel, and Outlook are required.
- (B) Excellent organization, verbal and written communication skills including ability to handle confidential information.

SPECIAL REQUIREMENTS:

Must have successfully completed the MIS and professional development-related ACP requirements for this position. . If no qualified ACP certified applicant applies for the position, the selected candidate will have 6 months to complete the ACP program.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of the job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential

functions.

While performing the essential functions the employee is regularly required to use hands to finger, handle, feel or operate objects, including office equipment or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is frequently required to stand, and walk.

There are no requirements that weight be lifted or force be exerted in performing the duties of this job. Specific vision abilities required by this job include close vision, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in an office environment. The employee occasionally works near moving mechanical parts and is occasionally exposed to outdoor weather conditions.

The noise level in the work environment is usually a moderately quiet office setting.

July 2002

NEW

MWRA
POSITION DESCRIPTION

POSITION: Work Order Coordinator

PCR#:

DIVISION: Operations

DEPARTMENT: FOD / DI

BASIC PURPOSE:

Provides logistical support and coordinates equipment and materials acquisition for a multitude of maintenance projects.

SUPERVISION RECEIVED:

Works under the general supervision of the Materials Coordination Center Manager or Materials Coordination Manager. May take direction from the Logistics Supervisor

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Coordinates dispatch records to ensure accountability for all FOD Maintenance crews.
- Attends daily and weekly meetings with Work Coordination Center Manager, Supervisor Logistics Unit and Materials Acquisition Manager. Coordinates logistical issues based upon priorities.
- Coordinates with Procurement and vendors (as directed by Procurement) to ensure that FOD maintenance crews obtain the necessary equipment.
- Utilizes Lawson to put requisitions into system.
- Assists the Planning and Scheduling coordinators in researching parts and equipment during the planning process.
- Coordinates police details for FOD Maintenance crews in conjunction with the

Supervisor, Logistics Unit.

- Coordinates Digsafe markouts for FOD pipeline crews, in conjunction with the Supervisor, Logistics Unit.
- Maintains telephone coverage in dispatch office.
- Manages vehicle resources in conjunction with the Supervisor, Logistics Unit to ensure vehicles and equipment are available on a timely basis.
- Supervises radio communication with maintenance crews (routine and emergency) in conjunction with the Supervisor, Logistics Unit.
- Supervises confined space entry permitting process in conjunction with the Supervisor, Logistics Unit.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Reading, writing, mathematical and oral communication skills normally attained through a two (2) year business education degree program; and
- (B) Minimum of two (2) years of related experience in scheduling maintenance functions; and
- (C) General understanding of office practices and procedures as normally acquired through one (1) year of related experience; or
- (D) Any equivalent combination of experience or education.

Necessary Knowledge, Skills and Abilities:

- (A) Demonstrated proficiency in Microsoft Office products including Outlook and Word.
- (B) Working knowledge of the methods and materials used by the various trades and shops at a level sufficient to provide logistical support for the maintenance crews within FOD.
- (C) Working knowledge of maintenance management and inventory control systems.

(D) Familiarity with personal computers and associated software programs desirable.

SPECIAL REQUIREMENTS:

Must have successfully completed the MIS and professional development-related ACP requirements for this position. . If no qualified ACP certified applicant applies for the position, the selected candidate will have 6 months to complete the ACP program.

A valid Massachusetts Class D Vehicle Operators License.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, including office equipment or controls and reach with hands and arms. The employee frequently is required to stoop, kneel, crouch or crawl. The employee is occasionally required to stand, walk, talk, hear, sit, climb and balance.

There are no requirements that weight is lifted or force is exerted in the performance of this job. Specific vision abilities required by this job include close vision and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in outside weather conditions. The employee regularly works near moving mechanical parts, and is occasionally exposed to fumes, airborne particles, toxic or caustic chemicals and risk of electrical shock. Hearing protection may be required, as the noise level in some field settings is very loud and moderately loud at pumping stations.

November 2002

Page 3 of 3

Work Order Coordinator - New

MWRA
POSITION DESCRIPTION

OLD

POSITION: Sewer Maintenance Foreman
PCR#:
DIVISION: Operations
DEPARTMENT: Pipe Maintenance-Wastewater

BASIC PURPOSE:

Assists in the supervision of crew's work in the inspection, operation, and maintenance of the Authority's sewer lines and associated MWRA sewer system facilities, performs related work as required and documents a variety of maintenance activities.

SUPERVISION RECEIVED:

Works under the general supervision of Assistant District Supervisor and the District Supervisor.

SUPERVISION EXERCISED:

Exercises close supervision over personnel who comprise the Pipeline Maintenance Crews.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Assists in the preparation of routine and emergency pipeline maintenance plans including work sequencing, scheduling, cost estimating, and assembling work order packages.
- Supervises and participates with work crews on related construction projects.
- Assists in the preparation of daily and weekly job status and time utilization reports to track execution of written work plan. Details include, but are not limited to, crew time productivity, material utilization and costs, equipment utilization and costs, and pipeline data collection and identification information.
- Utilizes computer technology, computerized maintenance management software, and other software to perform work order reporting, time utilization and written work plan completion.
- Supervises and participates with work crews supporting Department and Division projects that involve performing community assistance.

- Inspects applicable equipment and vehicles before and after each assignment.
- Operates applicable equipment such as vector jets, bucket machines, cranes, snow plows, etc as needed.
- Conducts "Tool Box Talks" on applicable safety practices and maintenance procedures.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Basic reading, writing, mathematical and oral communication skills as normally attained through a high school education; or
- (B) Three (3) to five (5) years of related experience within a large sewer collection system including supervisory experience; or
- (C) Any equivalent combination of education and, experience and MWRA supervisory training.

Necessary Knowledge, Skills and Abilities:

- (A) Working knowledge of methods, practices and techniques used in the maintenance, cleaning and repair of sewers.
- (B) Working knowledge of the mechanical and masonry trades.
- (C) Ability to maintain and repair sewer lines, locate sewer stoppages and leaks, and operate sewer-cleaning equipment.
- (D) Ability to read and understand blueprints.
- (E) Ability to keep accurate records.
- (F) Knowledge of applicable safety equipment and practices.

SPECIAL REQUIREMENTS:

A valid Massachusetts Hoisting License 1B, 2A and 4A.

Grade II Wastewater Collection Systems Operator Certification or the ability to obtain within a year.

A current and valid Massachusetts Class B Commercial Drivers License (CDL). Will be subject to be controlled substances and alcohol testing policy and the random drug-testing program.

TOOLS AND EQUIPMENT USED:

Motor vehicles, sewer maintenance equipment, power and hand tools, mobile radio, portable gas monitors, confined space entry equipment, telephone, beeper.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential duties.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and to reach with hands and arms. The employee frequently is required to stoop, kneel, crouch or crawl. The employee is occasionally required to stand, walk, talk, hear, sit, climb or balance.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move up to 100 pounds. Specific vision abilities required by this job include close, distance and peripheral vision, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works near moving mechanical parts and is frequently exposed to wet and/or humid conditions and vibration. The employee occasionally works in precarious places and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock.

The noise level in the work environment is very loud in field settings, and moderately loud at other work locations.

April 2006

MWRA
POSITION DESCRIPTION

NEW

POSITION: Sewer Maintenance Supervisor

PCR#:

DIVISION: Operations

DEPARTMENT: Field Operations

BASIC PURPOSE:

Supervises a crew and participates in the inspection, operation, and maintenance of the Authority's sewer lines and associated MWRA sewer system facilities, documents a variety of maintenance activities and performs related work as required.

SUPERVISION RECEIVED:

Works under the general supervision of the District Supervisor.

SUPERVISION EXERCISED:

Exercises close supervision over personnel who comprise the pipeline maintenance crews.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Supervises assigned staff in the performance of a variety of inspection, operations and maintenance functions.
- Supervises assigned crews including taking disciplinary actions (issuing verbal warnings and initiating written warnings) when necessary, conducting performance reviews, and preparing regular reports, as required, on work accomplished and crew productivity
- Determines the daily assignments for assigned staff and distributes work accordingly. Establishes deadlines and priorities on the basis of the maintenance schedule or emergencies.
- Inspects applicable equipment and vehicles before and after each assignment...

- Operates applicable equipment such as vactor jets, bucket machines, cranes, snow plows, etc as needed.
- Assists in the preparation of pipeline maintenance plans including work sequencing, scheduling, cost estimating, and assembling work order packages.
- Assists in the preparation of daily and weekly job status and time utilization reports to track execution of written work plan. Details include, but are not limited to, crew time productivity, material utilization and costs, equipment utilization and costs, and pipeline data collection and identification information.
- Reviews and distributes computer generated work orders on a daily basis.
- Utilizes computer technology, computerized maintenance management software, and other software to perform work order reporting, time utilization and written work plan completion.
- Conducts applicable training sessions such as "Tool Box Talks" and develops training programs as needed.
- Maintains effective working relationships with municipal officials.
- Works in a supervisory capacity on a pipeline maintenance crew performing required work as needed.
- Responds to and rectifies complaints related to sewer/drain lines within the Authority's Sewer District.
- Assists with the supervision of pipeline maintenance support activities such as community assistance, metering and technical inspection projects.
- Performs related administrative activities as required such as completing personnel actions and generating budgeting reports.
- Performs light maintenance independently or as part of a team. Light maintenance shall include but not limited to:
 - Operates forklift or other light equipment not requiring a special license.
 - Generates inspection lists and maintenance reporting through the Computerized Maintenance Management System.
 - Inspects and troubleshoots various systems and equipment
 - Installs and retrofits/new equipment related to plant systems.

- Modifies and/or aligns existing equipment to specifications.
- With proper training sets up ladders, staging and rigging and utilizes hoists, jacks, dollies, lifts, etc. for proper access to job and to remove and install equipment.
- Operates portable pumping, ventilation and other equipment necessary to support and accomplish assigned tasks.
- Greases and lubricates, replaces oil reserves, makes minor packing adjustments and opens hatches.
- Installs safety rails, changes light bulbs and replaces HVAC filters.
- Removes snow from immediate work area in order to perform tasks.
- Conducts routine testing, lockout/tagout, operation (startup/shutdown) and adjustment of process equipment.
- Performs necessary cleanup and housekeeping for work area and other light maintenance tasks.

SECONDARY DUTIES:

- Assists employees with preparation of injury/illness reports, safety and maintenance work orders, and assures that they keep high quality, accurate related documents and records.
- Assists in maintaining harmonious labor management relations through proper application of collective bargaining agreement provisions and established personnel policies.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) High school education or equivalent. Associates degree in a related engineering field preferred; and
- (B) Three (3) to five (5) years of related experience within a large municipal sewer collection system with a minimum of three (3) years in a supervisory capacity, or

(C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Thorough knowledge of methods, practices, techniques and equipment used in sewer line maintenance.
- (B) Ability to read and understand blueprints.
- (C) Knowledge of construction methods and applicable hydraulics.
- (D) Knowledge of applicable safety practices and equipment.
- (E) Basic computer skills.

SPECIAL REQUIREMENTS:

A valid Massachusetts Hoisting License 1B, 2A and 4A.

Grade II Wastewater Collection Systems Operator License or ability to obtain within one year.

A current and valid Massachusetts Class B Commercial Drivers License (CDL). Will be subject to be controlled substances and alcohol testing policy and the random drug-testing program.

TOOLS AND EQUIPMENT USED:

Motor vehicles, sewer maintenance equipment, power and hand tools, mobile radio, portable gas monitors, confined space entry equipment, telephone, beeper.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential duties.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and to reach with hands and arms. The employee frequently is required to stoop, kneel, crouch or crawl. The employee is occasionally required to stand, walk, talk, hear, sit, climb or balance.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move up to 100 pounds. Specific vision abilities required by this job include close, distance and peripheral vision, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works near moving mechanical parts and is frequently exposed to wet and/or humid conditions and vibration. The employee occasionally works in precarious places and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and risk of electric shock.

The noise level in the work environment is very loud in field settings, and moderately loud at other work locations.

August 2016

MWRA
POSITION DESCRIPTION

NEW

POSITION: Building and Grounds Worker
PCR#:
DIVISION: Operations
DEPARTMENT: Maintenance/Deer Island

BASIC PURPOSE:

Performs a variety of maintenance and repair tasks to roads, grounds, buildings, structures and associated appurtenances together with other light maintenance tasks as assigned.

SUPERVISION RECEIVED:

Works under the general supervision of the Building & Grounds Supervisor.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Cleans process tanks (including unbolting and securing of access covers), galleries, drains, culverts, and structures as required.
- Cleans process spills and upsets as required.
- Maintains roadways, walkways, fencing and gates as necessary.
- Performs clean-up and housekeeping tasks for work area to maintain a clean environment within designated area.
- Removes snow and ice from roadways, walkways, buildings and structures as necessary.
- Maintains the appearance of the plant grounds by cutting, trimming or weeding grass, shrubs, trees or ornamental beds.
- Digs and/or refills ditches and holes. Breaks, removes and repairs concrete as required.
- Collects and disposes of trash and other waste materials.

- Operates machinery, vehicles, material handling equipment, snow removal equipment, and tools as necessary to perform assigned work such as (but not limited to) tractors, mowers, cement mixers, cleaning machinery, etc.
- Operates motor vehicles such as vans and pick up trucks to transport materials and equipment to work sites, pick up and deliver materials, etc.
- Washes and cleans vehicles, tools and equipment.
- Moves material and supplies.
- Loads and unloads vehicles, carts, trailers, etc., as required.
- Performs work in a safe and professional manner.
- Reports and documents work being performed.
- Follows established safety, operating and emergency response procedures and policies as established by the MWRA.
- Trained in Confined Space Entry, CPR and First Aid, and be capable of entering, setting up, installing, disassembling confined space equipment and ability to work in a confined space.
- Perform work in compliance with Authority Integrated Contingency Plan.
- Ability to attain knowledge and work processes required to perform maintenance tasks required by Reliability Centered Maintenance or similar Maintenance Management Program.
- Performs light maintenance independently or as part of a team. Light maintenance shall include but not limited to:
 - Operates forklift or other light equipment not requiring a specific license.
 - Inspects and troubleshoots various systems and equipment.
 - With proper training sets up ladders, staging and rigging and utilizes hoists, jacks, dollies, lifts, etc. for proper access to job and to remove and install equipment.
 - Performs, documents and reports inspections and work performed.
 - Operates portable pumping, ventilation and other equipment necessary to support and accomplish assigned tasks.
 - Assists other trades in the performance of their work, as required, or as assigned.

- Lockout/Tagout of equipment to facilitate maintenance.
- Installs safety rails, changes light bulbs and replaces HVAC filters.

SECONDARY DUTIES:

- Performs related duties as required.
- Promotes and participates in the cross-functional work practices.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Basic reading, writing, mathematical, scientific and oral communication skills as normally attained through a high school education or the equivalent; and
- (B) Requires from six (6) to twelve (12) months of related buildings and grounds experience.
- (C) Satisfactory completion of training in accordance with cross-functional training program established at the MWRA.
- (D) Any equivalent combination of education/training and experience.

Necessary Knowledge, Skills and Abilities:

- (A) A working knowledge of the methods and tools required to perform building and grounds maintenance functions, to include the operation of a wide variety of machinery, vehicles, material handling equipment, hand and power tools and specialized machinery for roads, grounds, galleries, structures and facilities care.
- (B) Ability to follow written and oral instructions.
- (C) Skill in the operation of the listed tools and equipment.

SPECIAL REQUIREMENTS:

- A valid Massachusetts Class D Motor Vehicle Operators License.
- Complete competency based training program related to **ESSENTIAL DUTIES AND RESPONSIBILITIES** as outlined above and successfully demonstrates required competencies.

TOOLS AND EQUIPMENT USED:

Motor vehicle, power and hand tools, mobile radio, telephone, beeper.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to handle, finger, feel or operate objects, tools, or controls and reach with hands and arms. The employee frequently is required to stoop, kneel, crouch or crawl. The employee occasionally is required to stand, walk, talk or hear, sit, climb, or balance.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move more than 100 pounds. Specific vision abilities required by this job include close vision, distance and peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in outside weather conditions. The employee regularly works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is very loud in field settings and moderately loud at other work locations.

December, 2001

MWRA
POSITION DESCRIPTION

NEW

POSITION: OMC Laborer

PCR#:

DIVISION: Operations

DEPARTMENT: Wastewater Operations, Western Operations, Equipment Maintenance, Metro Pipe Maintenance

BASIC PURPOSE:

Performs routine and skilled manual tasks as assigned. Assists operations, maintenance and skilled trades staff as required. May be required for overtime in extended workday and emergency situations. May be required for regular, on-call rotations.

SUPERVISION RECEIVED:

Works under the general supervision of a foreman or supervisor.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Performs tasks requiring some specialized skill in the maintenance and operation of equipment such as pickup trucks, pump trucks, tractors, mowers, pumps, generators and pneumatic tools, cement mixers, air compressors, snow removal equipment, sewer maintenance equipment, etc.
- Performs manual tasks requiring some specialized skill or knowledge in assisting skilled tradesmen engaged in construction, maintenance and repair work, including minor adjustments and repair of equipment.
- Performs a variety of manual tasks in connection with valve operations, pipeline construction and maintenance such as cleaning culverts and drains, digging ditches, spreading asphalt, caulking lead joints, and assisting in valve installations, repair of valves and pipeline under pressure 6" to 72" in diameter and the chlorination of water mains.
- Gases, oils and greases trucks, automobiles and miscellaneous grounds maintenance equipment.
- Performs a variety of manual tasks in connection with building and grounds maintenance

work such as grass cutting, shoveling snow, repair of fences, disposing of trash and maintaining general building cleanliness.

- Assists personnel of a higher grade in all aspects of plant maintenance and repairs, including but not limited to diesel engine overhaul, positive displacement pump overhaul and repair, centrifugal pump overhaul and repair, re-chaining of grit channels and sedimentation tanks and building concrete structures.
- Assists in the repair of electrical and mechanical equipment.
- Assists in upkeep and cleaning of MWRA equipment, structures and facilities such as screen chambers, tidegates and regular chambers.
- Assists in the handling and storage of stock, loads, unloads, moves and transports material, equipment, freight and supplies.
- Works as a member of a multi-crew, as needed.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A high school diploma or GED; or

(B) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

(A) Working knowledge of the use of common tools, construction and sewer maintenance equipment, and of one or more of the mechanical or building trades.

(B) Ability to operate various types of vehicles and equipment including light automotive trucks and equipment, ten-wheel dump trucks, snow plows, pickup trucks, tractors and power-driven grounds maintenance equipment.

(C) Ability to perform manual labor of semi-skilled nature, use/make minor repairs to small tools and simple mechanical equipment.

(D) Basic knowledge of the operation and maintenance of facilities.

(E) Ability to perform heavy manual labor for extended periods of time, under varying climatic conditions.

(F) Ability to follow oral and written instructions.

SPECIAL REQUIREMENTS:

Must possess a current valid Class B Massachusetts Commercial Drivers License.

Will be subject to the MWRA Controlled Substance and Alcohol Testing Policy and the random drug-testing program.

TOOLS AND EQUIPMENT USED:

Motor vehicle, power and hand tools, mobile radio, telephone, beeper.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee is occasionally required to stand, walk, talk or hear, sit, climb or balance. The employee is frequently required to stoop, kneel, crouch or crawl.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move more than 100 pounds. Specific vision abilities required by this job include close vision, distance and peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in outside weather conditions. The employee regularly works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is very loud in field settings, and moderately loud at other work locations.

May, 2001

MWRA
POSITION DESCRIPTION

NEW

POSITION: Staff Engineer

PCR#:

DIVISION: Operations

DEPARTMENT:

BASIC PURPOSE:

Assists engineering staff with the development, execution, and management of various engineering projects. Provides engineering expertise for the planning and design of projects for wastewater and waterworks facilities.

SUPERVISION RECEIVED:

Works under the general supervision of the senior staff in the Engineering & Construction Department.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Assists department personnel with tasks related to the evaluation, planning, or design of facilities or equipment for wastewater treatment plants, pumping stations, CSO facilities, collection system components, waterworks pump stations, distribution and transmission lines, and support buildings.
- Assists in the preparation of concept and preliminary design reports, design facilities, cost estimates, construction and maintenance contracts, shop drawing reviews and permit applications.
- Assists in overseeing the work of professional engineering consultants for quality and responsiveness of work products, budgets and schedules, and conformance to contract terms.

- Assists with preparation and reporting of project budgets and schedules.
- Assists with contract administration tasks.
- Drafts internal or external memoranda, correspondence, reports, and specifications

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A bachelors degree in civil or environmental engineering or related engineering field required; and
- (B) One (1) to two (2) years of wastewater or waterworks facilities planning and design experience preferred; or
- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Familiarity with computer software packages such as MS Word and Excel.
- (B) Demonstrated written and oral communication skills.

SPECIAL REQUIREMENTS:

A valid Class D Massachusetts motor vehicle operators license or equivalent.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to walk; stand; climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision, distance vision, depth perception, peripheral vision and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.


While performing the duties of this job, the employee occasionally works in outside weather conditions. The employee occasionally works near moving mechanical parts, and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals and risk of electrical shock.

The noise level in the work environment is usually loud in field settings and moderately quiet in an office setting.

June 2014

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Appointment of Assistant Manager, Employment
Human Resources Department



COMMITTEE: Personnel & Compensation

 INFORMATION
 X VOTE


Karen Gay-Valente, Director of Human Resources
Preparer/Title


Michele S. Gillen
Director of Administration

RECOMMENDATION:

That the Board approve the appointment of Susan Carter to the position of Assistant Manager, Employment, Human Resources (Grade 11 – Unit 6 Confidential) at an annual salary of \$89,263.84 commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of Assistant Manager, Employment is a new position approved by the Board in June 2016. Ongoing attrition, primarily due to retirements has placed a significant demand on the Employment function to quickly recruit and select replacements and successors for MWRA positions. The Assistant Manager, Employment will be responsible for assisting in employment processes, identifying recruitment sources, participating in recruitment events, screening and referring qualified candidates to hiring managers and participating in interview panels. This position will work closely with the Affirmative Action Unit to ensure the recruitment and referral of qualified minorities, women and veterans. Additionally, the Assistant Manager, Employment participates on management's negotiating team for collective bargaining negotiations and will work closely with Labor Relations and Affirmative Action staff on issues concerning employment actions and processes. The position reports directly to the Employment Manager, Human Resources.

Selection Process

The position was posted internally. Three qualified internal candidates applied and were referred for an interview. Each candidate was interviewed the Director of Human Resources, the Special Assistant for AACU and the Employment Manager. At the conclusion of the interviews, Ms. Carter was recommended for selection as the best candidate for the position.

Ms. Carter began working at the MWRA in 2006 and has more than ten years experience as a Human Resources Specialist in the Employment Unit. In this position Ms. Carter has been responsible for countless hiring processes where she has developed recruitment strategies, screened and referred qualified candidates and participated in interviewing panels. Ms. Carter also manages the new hire orientation program, the summer intern program and has been a team member responsible for selecting and designing the new employment online applicant system. Prior to working at the MWRA, Ms. Carter worked as the Deputy Director of Administration at the Commonwealth of Massachusetts, Office of the Governor where she was responsible for new employee orientation and benefit administration. Prior to that she was an Office Manager at P.F. O'Connor where she supervised employees in accounts payable and receivable and as a Billing Supervisor for Towle Manufacturing where she was responsible for supervising employees performing billing functions.

Ms. Carter is an effective problem-solver and interacts well with supervisors and managers at all levels of the authority to expedite hiring processes. She is highly regarded by her peers and managers and sought after to resolve issues with challenging employment processes.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the FY2017 CEB for this position.

ATTACHMENTS:

Resume of Ms. Susan Carter
Position Description
Human Resources Organization Chart

SUSAN A. CARTER

EXPERIENCE:

- 2006 – Present **Human Resources Specialist**
Massachusetts Water Resources Authority, Charlestown, Massachusetts
Duties include the management of recruitment, interview and selection processes, working closely with hiring managers and executive management to ensure compliance with MWRA policies and procedures and hiring goals. Develop new recruitment sources, participate in recruiting events, conduct pre-screening activities, participate in interview panels and selection processes and perform reference and background checks. Manage orientation program for new hires and interns. Participate as a team member in the development and implementation of a paperless and web-based employment application system.
- 1991 – 2006 **Deputy Director of Administration**
Office of the Governor, Boston Massachusetts
Responsibilities included orientation of new employees including processing employment paperwork and benefits administration. Also responsible for accounts payable activities, management of office supply levels and physical property inventory. Supervised three interns each summer.
- 1987 – 1990 **Office Manager**
P.F. O'Connor, Inc., Revere, Massachusetts
Responsibilities included the overall administration of the building supply company's main office, including accounts payable and receivable, banking activities and preparation of weekly payroll. Supervised 39 employees and managed the distribution of work.
- 1981 – 1986 **Billing Supervisor**
Towle Manufacturing, East Boston, Massachusetts
Duties included the prompt and accurate billing for all shipments and processing credits, refunds and adjustments when appropriate. Trained and supervised a staff of twelve.

EDUCATION:

- 1979 Chelsea High School, Chelsea, Massachusetts

**MWRA
POSITION DESCRIPTION**

POSITION: Assistant Manager, Employment

DIVISION: Administration

DEPARTMENT: Human Resources

BASIC PURPOSE:

Assists in the management of employment processes and procedures, including overseeing hiring processes to fill critical vacancies. Identifies recruitment sources, participates in recruitment events, conducts pre-screening interviews, refers candidates for consideration. Conducts all pre-employment activities including reference checks. Conducts employee orientation.

SUPERVISION RECEIVED:

Works under the general supervision of the Employment Manager.

SUPERVISION EXERCISED:

Exercises close supervision of assigned administrative staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Assists with managing the Authority's Employment program and procedures for recruitment and hiring and ensures compliance with Affirmative Action goals.
- Provides support to Managers and Supervisors on all employment related activities, including hiring processes, recruitment strategies, applicant screening and referral, interview guidelines and recommendation process.
- Conducts applicant screening to determine qualifications for MWRA positions. Refers qualified applicants to hiring managers.
- Participates on interview panels and recommends qualified candidates for selection.
- Assists in implementation of upgraded employment automated systems including applicant tracking systems. Works closely with other Human Resources Managers to improve human resource programs and processes.
- Assists with development and implementation of new recruitment sources including social media sites and specialized professional and trade sites.
- Establishes active relationship with employment sources such as schools and colleges and

professional organizations.

- Assists with all required pre-employment background check procedures to include obtaining applicant consent/authorization forms and pre-employment physicals; ensuring the confidentiality of information and reports.
- Ensures accuracy of Authority job postings.
- Develops and maintains relationships with community, school and professional organizations and other referral sources.
- Responds to requests and inquiries relative to employment from internal candidates, managers and applicants.
- Assists in management of summer intern program.
- Schedules and conducts employee orientations.
- Serves as a member of management's negotiating team for collective bargaining negotiations.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A four (4) year college program in human resources, industrial relations, public administration or a related field; and
- (B) General understanding of human resources and hiring practices and state and federal laws and regulations governing employment as acquired through four (4) to six (6) years experience in employment and human resource administration preferably in the public sector; or
- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Excellent interpersonal oral and written communication skills are required.
- (B) Understanding and knowledge of federal and state employment laws, practices and policies.

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle Operators License.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated, with the use of telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to sit, talk or hear. The employee is regularly required to use hands to finger, handle, feel or operate objects, including office equipment, or controls and reach with hands and arms. The employee frequently is required to stand and walk.

There are no requirements that weight be lifted or force be exerted in the performance of this job. Specific vision abilities required by this job include close vision, and the ability to adjust focus.

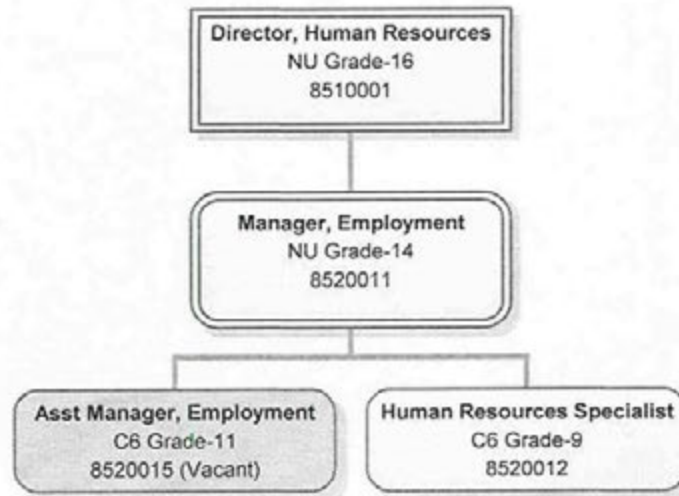
WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. While performing the duties of this job, the employee regularly works in an office environment.


The noise level in the work environment is usually a moderately quiet office setting.

Human Resources Department

September 2016

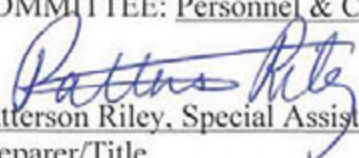


STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Appointment of MBE/WBE Program Manager
Affirmative Action & Compliance Unit

COMMITTEE: Personnel & Compensation

 INFORMATION
 X VOTE


Patterson Riley, Special Assistant
Preparer/Title

RECOMMENDATION:

That the Board approve the appointment of Sharon Ward to the position of MBE/WBE Program Manager (Grade 12 – Unit 6) at an annual salary of \$88,909.75 commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of MBE/WBE Program Manager became vacant upon the retirement of the incumbent. This position reports directly to the Special Assistant and manages the Authority's Minority and Business Enterprises Program.

The Affirmative Action and Compliance Unit develops, administers, and monitors compliance of Affirmative Action Programs and Policies by ensuring equal opportunity and non-discrimination in employment and equitable access of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Disadvantaged Business Enterprises (DBE) in Authority procurement activities.

The MBE/WBE Program Manager provides management and oversight of the equitable participation of minority, women, and disadvantaged-owned businesses in Authority procurement opportunities, ensuring that minorities and women are represented in the labor force on construction contracts, and meeting regularly with other public entities regarding state and federal program requirements. The MBE/WBE Program Manager assists divisions and department in the implementation of MBE/WBE/DBE Program Policies and Practices and monitors and reports on contractor compliance and expenditures.

Selection Process:

The position was posted internally. Three qualified internal candidates applied for the vacant position and each received an interview. The Special Assistant for Affirmative Action and Compliance, the Director of Procurement, and the Director of Human Resources conducted the interviews.

Upon completion of the interviews, Ms. Sharon Ward was selected as the most qualified candidate for the position based on her experience, education, and understanding of the MBE/WBE Program Manager role and responsibilities as demonstrated during the interview.

Ms. Ward began her career at MWRA in 1988, working in Human Resources as the Employment Coordinator where she recruited and screened resumes, conducted interviews, and monitored recruitment contracts, grant expenditures, and advertising budgets. Since that time, she has been promoted to several other positions of increasing levels of responsibility. Ms. Ward was promoted to the Workforce Development Coordinator in the Affirmative Action and Compliance Unit in 2002, where she developed programs designed to attract qualified women and minorities to MWRA whenever vacant positions became available. Ms. Ward was promoted to Senior Compliance Monitor in 2013, where she oversees the compliance monitoring of the Authority's construction projects and ensures the enforcement of equal opportunity and compliance regulations.

Ms. Ward holds a Masters of Management Degree from Cambridge College and a Bachelors of Science Degree in Business from Newbury College.

BUDGET/FISCAL IMPACT:

There are sufficient funds for this position in the FY2017 CEB.

ATTACHMENTS:

Resume of Sharon Ward
Position Description
Organizational Chart

Professional Summary

A professional who achieves objectives of compliance in the Affirmative Action and Compliance Unit through monitoring, reviewing, assigning, communicating, maintaining records, scheduling and attending meetings for MWRA construction and professional services contracts. Champions operation objectives by contributing information and recommending operational plans and review results; monitors MBE/WBE/DBE and workforce participation requirements, resolving problems. Enhances department and organization reputation by accepting ownership for accomplishing goals set for MBE/WBE/DBE and Workforce requirements to ensure equitable participation. Developed Project Management, Management Proficiency, Process Improvement, Self Development, Supervision and Planning.

Employment History

1988-Present

Massachusetts Water Resources Authority, Boston, MA***Sr. Compliance Monitor***

Assists in supervising the implementation, oversight and assessment of the Construction Compliance Monitoring System for all construction and professional services projects.
Monitors MBE/WBE business participation and construction workforce compliance to ensure compliance of all prime contractors, sub-contractors and sub-consultants.
Oversees the compliance monitoring of the MWRA's construction projects and ensures equal opportunity and compliance requirements are being enforced.
Prepares Yellow and Orange Notebook Reports for MBE/WBE

Workforce Development Coordinator

Recruited and refer qualified minority and/or female candidates each quarter to Human Resources.
Established, developed and maintained collaborative linkages and relationships with community groups and organizations, professional associations, government agencies, college and technical schools to obtain qualified candidates.
Assisted in the development of programs designed to enhance the image of MWRA as an equal opportunity and affirmative action employer.
Developed workshop entitled "Empowering Your Career" for employees.
Made recommendations regarding the candidate to be hired
Conducted informal meeting for discrimination case
Prepared Yellow and Orange Notebook Reports

Acting Training Specialist

Managed CPR classes, processed tuition reimbursements, coordinated and attended EAP/Brown Bag Program, initiated Smoking Cessation Program, wrote Scope of Services and Staff Summaries.
Printed certificates for attendees completing training classes; registered training attendees and printed transcripts in Pathlore.
Set-up training session, making booklets and assisting with PowerPoint Presentations
Registered employees and introduced instructors

Employment Coordinator

Recruited and screen resumes for full-time and temporary positions, and conduct interviews.
Posted jobs and retrieve resumes for Internet recruitment. Monitor Internet maintenance.
Conducted reference checks for new hires.
Coordinated hiring for the MWRA's temporary On-Call Program.
Supervised small project teams to complete special projects.
Prepared monthly and quarterly position budgetary reports.
Monitored recruitment contracts, grant expenditures and advertising budgets.
Liaison between human resources department and other professional staff throughout the MWRA
Trained support staff; Plan and attended job fairs.
Placed advertisements with Haughey Advertising Grp/TMP Worldwide and Buyer Advertising Agencies.
Scheduled meetings with hiring managers to recommend candidates to fill open requisitions
Project Manager for procurement of advertising services
Assisted in the redesign of human resources policies and procedures manual

Skills

Computer Software

Microsoft Office (Word, Excel, Access, PowerPoint, Outlook)-Lawson/Lawsby System-Pathlore

Education

2011-2012

Cambridge College, Cambridge, MA

Masters of Management

1994-1998

Newbury College, Brookline, MA

BS Business Management

**MWRA
POSITION DESCRIPTION**

POSITION: MBE/WBE Program Manager

DIVISION: Affirmative Action

DEPARTMENT: Affirmative Action

BASIC PURPOSE:

Develops, implements and manages all aspects of the Authority's Minority and Women Business Enterprises Program to ensure equal access and opportunity for participation in all MWRA contract procurement activities.

SUPERVISION RECEIVED:

Works under the general supervision of the Special Assistant.

SUPERVISION EXERCISED:

Exercises close supervision of a Senior Compliance Monitor, two (2) Compliance Monitors, one (1) Junior Compliance Monitor, and one (1) Secretary I.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Oversees the development and implementation of the Authority's M/WBE Program policies and procedures; monitors Authority-wide compliance to ensure equal access and opportunities for participation by M/WBEs in the Authority's procurement activities.
- Coordinates the implementation of the Authority's Affirmative Purchasing Plan; assists divisions to establish projected annual M/WBE spending goals, monitors divisions progress in meeting established goals.
- Supervises the on-site monitoring activities for all Authority projects involving M/WBEs to ensure compliance with MWRA contract and Supplemental Provision requirements including minority and female workforce utilization goals.
- Assists the Associate Special Assistant in the development of the department's budget as it pertains to the implementation of the M/WBE program, including APPO variance reports.
- Maintains working relationships and affiliations with external state and federal agencies,

professional organizations, M/WBE associations and community groups as appropriate.

- Directs the development and implementation of workshops to inform and assist Authority divisions/departments staff to better understand their role and function in facilitating compliance with the Authority's M/WBE Program.
- Represents the Special Assistant on all M/WBE Program-related matters.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A four (4) year college program in public administration, management or business-related field; and
- (B) Seven (7) to nine (9) years experience administering a MBE/WBE program, preferably in the public sector, of which three (3) years should be in a supervisory capacity; or
- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) General knowledge of construction and professional contract administrations principles and practices and applicable state, federal and local laws and regulations relative to affirmative action and equal opportunity.
- (B) Excellent oral and written communication skills.
- (C) Excellent analytical writing skills.

SPECIAL REQUIREMENTS:

A valid Class D Massachusetts Motor Vehicle Operators License or equivalent.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job.

Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions. While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, including office equipment or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to stand and walk; climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds, occasionally lift/or move up to 25 pounds. Specific vision abilities required by this job include close vision, distance vision, depth perception and the ability to adjust focus.

WORK ENVIRONMENT:

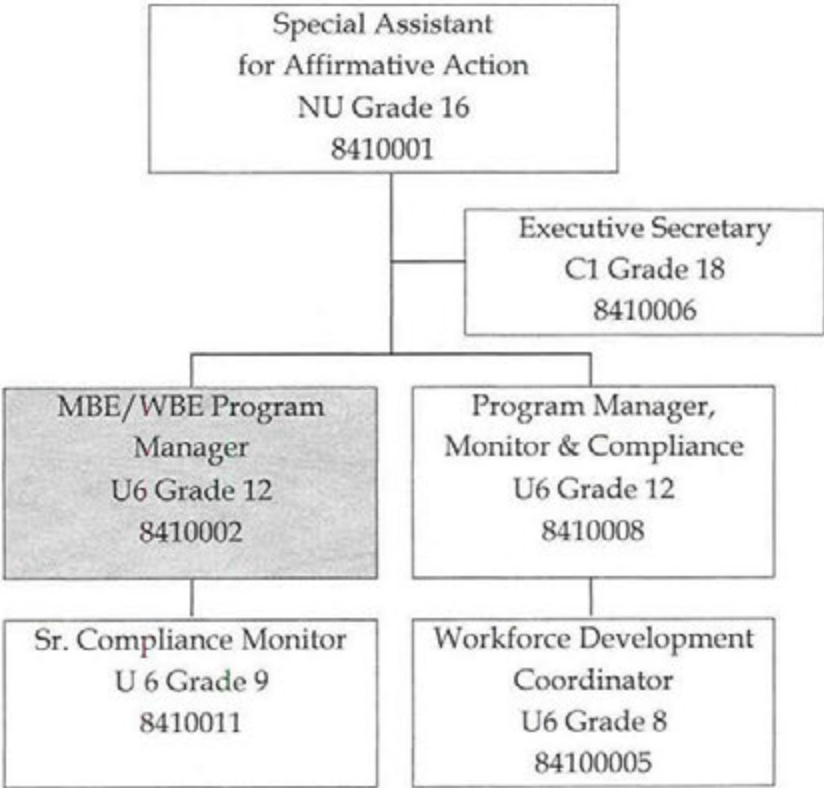
The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly work in an office environment. The employee occasionally exposed to outdoor weather conditions. The employee is occasionally exposed to fumes and airborne particles.


The noise level in the work environment is a moderately quiet in office setting.

AACU Department

September 2016



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Appointment of Warehouse Manager, Chelsea

COMMITTEE: Personnel & Compensation


Karen Gay-Valente, Director, Human Resources
Janice Brady, Materials Manager
Preparer/Title

INFORMATION

X VOTE

Michele S. Gillen
Director of Administration

RECOMMENDATION:

That the Board approve the appointment of Mr. Richard Martino to the position of Warehouse Manager (Unit 6, Grade 12) at the recommended salary of \$89,367.63 commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Warehouse Manager position became vacant upon the retirement of the incumbent.

The Warehouse Manager reports to the Materials Manager and oversees the Chelsea inventory control functions for materials and supplies in accordance with the Authority's materials management and purchasing policies and procedures. Position responsibilities include managing Chelsea staff; managing all warehousing and inventory control activities including stock replenishment, inventory control, shipping, receiving and issuance functions. The Warehouse Manager also ensures the availability of supplies and materials for Chelsea Field Operations.

Selection Process

The position of Warehouse Manager, Chelsea was posted internally. Seven qualified candidates were referred for interviews and all candidates were interviewed by the Materials Manager and Human Resources Specialist. Upon completion of the interviews, Mr. Richard Martino was selected as the most qualified candidate for this position.

Mr. Martino has seventeen years experience working in inventory control and materials management. He was originally hired in MWRA's Materials Management Department as a Materials Handler and has since been promoted twice, first to an Inventory Control Specialist and then to his current position as the Asset Controls Supervisor. This experience has given him a thorough understanding

of the materials management/inventory control programs, policies and procedures and of the day-to-day operations of the warehouse. He is familiar with both Lawson software and MWRA's inventory databases.

In his capacity as Asset Control Supervisor, Mr. Martino has overseen the implementation and successful management of a number of initiatives that have both improved MWRA's efficiency and have generated additional revenues. These programs include the on-line disposition of surplus and obsolete materials as well as the scrap metal and recycling programs.

In addition to his experience at MWRA, Mr. Martino previously served as the Warehouse Manager at Century Robinson Paper Company.

Mr. Martino has a strong work ethic and a demonstrated ability to handle both the personnel and technical aspects required in this position. He is widely respected by his colleagues and will excel in this position.

BUDGET/FISCAL IMPACT:

There are sufficient funds for this position within the Procurement Department's FY16 CEB. The recommended salary is in accordance with the Authority's policy for Unit 6 employees.

ATTACHMENTS:

- Resume of Mr. Richard Martino
- Position Description
- Materials Management Department Organizational Chart

RICHARD MARTINO

EXPERIENCE

2002- Present Massachusetts Water Resources Authority, Boston, MA

Asset Control Supervisor (2014-present)

- Supervises assigned employees involved in the function of asset and inventory control, asset issuance and returns as well as the operation, maintenance and audit of various MWRA Assets Control systems.
- Performs activities to monitor the Property Pass Records, to assure the efficient recording, revision, and utilization of reorder points, unit costs, and lead times.
- Documents and maintains reports and records for all asset functions including movement of materials, tools, and equipment.
- Participate in the contract process concerning scrap metal, recycling and surplus materials.
- Identifies and coordinates the disposition of surplus or obsolete material. Including the Gov deals auction site, scrap metal, recycling and MIS equipment.
- Performs and/or supervise periodic audits to identify where recorded information does not reflect actual asset levels, and recommends and implements corrective action.
- Performs data entry and supervises the efficient utilization of computer based inventory control systems to accurately reflect the issuance, receipt, transfer, maintenance and audit of assets, in accordance with MWRA policies and procedures.
- Coordinates with the Operations staff and MWRA Procurement Department for the replenishment of tools and materials to assure adequate on site inventory.
- Supervises the physical inventory process in accordance with MWRA, state regulatory and auditing requirements and prepares reports on asset value.

Inventory Control Specialist (2007- 2014)

- Performs a variety of tasks involving inventory control, purchase requisitioning, and the receipt, storage, insurance, and handling of supplies and materials. Assists with other related warehouse duties.
- Reviews requests for materials to determine whether the need can be filled from inventory, and prepares purchase requests for standard items when an established reorder point is reached in accordance with established MWRA policies and procedures.
- Performs computerized or manual clerical transactions to record the receipt, issuance or movement of materials and storage locations. Operates computer terminals or personal computer.
- Performs inventory control cycle count activities and makes corrective adjustments. Reports major inventory discrepancies or recurring problems to supervisor.
- Compiles, records, updates and tracks inventory and procurement data. Monitors and records transactions performed by others.
- Assures that all inventory control information is affixed to new stock using MWRA bar code identification labeling system or other labeling methods, and expedites the issuance of new NIGP index numbers, as required.
- Recommends changes in inventory levels, re-order points, bills of material, or lead times based on usage and histories.
- Reviews unused or surplus items to assure their obsolescence and recommends or coordinates their disposition.

- Reviews Bills of Material (BOMs) and enters appropriate equipment parts data into inventory control system.
- Locates and provides information and documentation to the MWRA Procurement and Accounts Payable Departments to help resolve questions from vendors and contractors regarding materials needs, items received and payments. Maintains back order log and follows up on late items with Procurement or vendors.
- Reviews, audits and corrects a variety of computer-based stock reports to assure accurate information relative to the current status of inventory.
- Performs a variety of related warehouse and material handling duties to include the receipt and inspection of items and the handling, arranging, movement, storage, packing and shipment of materials using manual or powered material handling equipment, forklifts, etc.
- Operates vehicles such as vans and pickup trucks to pick up and deliver supplies and equipment, etc.

Warehouse Materials Handler (2002-2007)

- Performed variety of tasks involving the handling, kitting, issuing, or counting of materials and the maintenance and accuracy of inventory records, using the computerized Materials Management inventory system. Assisted in documenting, recording, adjusting and reporting on all inventory activities.
- Located and/or issued requisitioned supplies and materials based on approved work orders, stock issue requests or supply requests.
- Prepared and issued kits of materials for maintenance, as needed. Worked with the Shipping/Receiving group to coordinate the delivery of kitted supply requests. Tagged or marked orders appropriately and may be required to carry and transport orders to the shipping platform.
- Performed inventory cycle count audits or physical inventories as required. Verified counts against inventory control system data or other documentation. Assisted in tracking flow of transactions and actual changes in stock status to rectify count errors.
- Completed all necessary records and reports in a timely and accurate manner. Compiled and distributes reports.

1999- 2002 Ruggiero Memorial Funeral Home, Boston, MA Manager

- Oversaw the day to day operations of the funeral directors and staff.
- Consulted with the needs and concerns of families.
- Completed death certifications and insurance forms.
- Consulted with clergy and administrative services while conducting funerals.
- Maintained the funeral home and its property.

1996-1999 Century Robinson Paper Company, Billerica, MA Warehouse Manager

- Provided customer service.
- Received and distributed supplies.

COMPUTER SKILLS

- Proficient in Word, Excel, Lawson, Property Pass and Surplus Systems access databases.

References Available Upon Request.

**MWRA
POSITION DESCRIPTION**

POSITION: Warehouse Manager
DIVISION: Administration
DEPARTMENT: Materials Management

BASIC PURPOSE:

Manages all warehouse activities at assigned location including stock replenishment, inventory control, shipping, receiving and issuance functions. Ensures comprehensive and efficient support or availability of supplies and materials for several of the Authority's operating units and any other divisional units in the assigned district.

SUPERVISION RECEIVED:

Reports directly to the Materials Manager.

SUPERVISION EXERCISED:

Exercises close supervision over the Warehouse Supervisors, Materials Handlers and /or Principal Storekeepers as assigned.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Manages the activities of the shipping, receiving, and storing of inventory items at assigned site.
- Manages the replenishment of all supplies, materials, and relevant contract services; ensures adequate on-site inventory to support the Authority's needs.
- Manages the efficient utilization of the computer-based inventory control system, providing the information required for the timely availability of all materials for the Authority's southern operating units.
- Manages the establishment and maintenance of the Inventory Master Record, to reflect and effectively utilize data on reorder points, unit costs, and lead times.
- Provides all safety-related material for the entire Authority.
- Ensures cooperative efforts among related functions, such as MIS, Procurement, Maintenance, Operations, Finance, etc., to assure the accuracy and efficiency of the purchasing and inventory control system.

- Manages the development and maintenance of computer-based inventory control reports and related systems and procedures.
- Ensures the organized receiving and completion of associated procurement documentation for all supplies and materials.
- Manages the SARA (Superfund Amendments and Reauthorization Act of 1986) program for all materials received and disbursed by the warehouse.
- Coordinates with other plant managers the short and long-term needs for supplies and materials.
- Monitors vendor performance and service delivery and manages sales representatives in cooperation with Procurement.
- Initiates, coordinates and evaluates training for all warehouse personnel.
- Evaluates assigned employees performance according to MWRA procedures.
- Promotes the MWRA safety programs by supporting the supervisor's weekly safety meetings, holding monthly safety meetings and keeping informed on the staff's safety record.
- Administers the application of collective bargaining provisions and personnel policies in the workplace. Serves as Step 1 grievance hearing officer.
- Designs and develops long-range plans for staffing and efficient space utilization.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A four (4) year college program in Business Administration program or related field; and
- (B) Seven (7) to nine (9) years of experience in materials management of which at least two (2) must be in a supervisory capacity; or
- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Knowledge of inventory management and standard business procedures.
- (B) Excellent interpersonal, written and oral communications skills.
- (C) Experience and knowledge in automated inventory systems or other data management systems.
- (D) Experience with spreadsheets and data bases is desirable.
- (E) Familiarity with types or parts normally used in a maintenance organization.

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle License.

TOOLS AND EQUIPMENT USED:

Office machines such as the telephone, personal computer including word processing and other software, copy and fax machines.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential duties.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms and to talk and hear. The employee is occasionally required to walk, sit, climb, balance, stoop, kneel, crouch or crawl.

The employee must frequently lift and/or move up to 50. Specific vision abilities, required by this job include close vision, distance vision, color vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

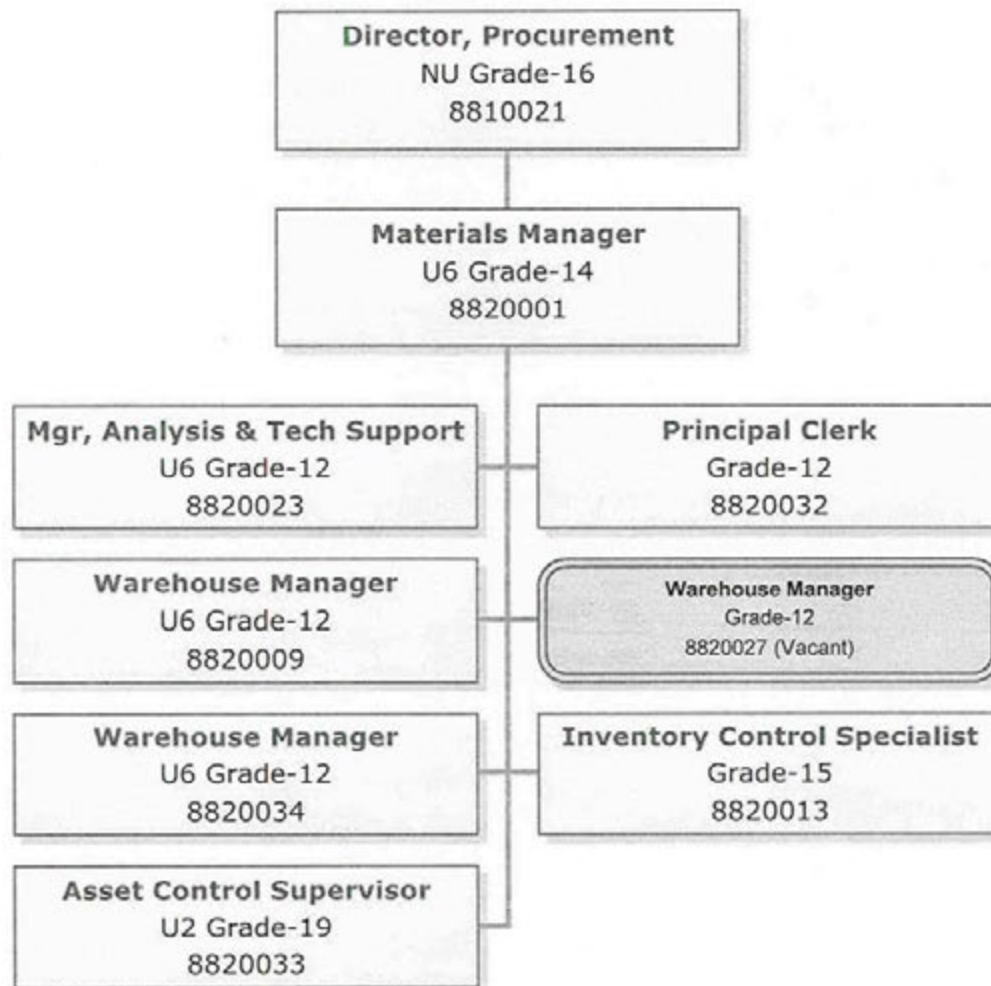
While performing the duties of this job, the employee regularly works in a field/office environment. The employee regularly works near moving mechanical parts, is frequently

exposed to wet and/or humid conditions, and is occasionally exposed to fumes and airborne particles, toxic or caustic chemicals and the risk of electric shock.


The job is hearing protection required and the noise level in the work environment is very loud in field settings and moderately loud at treatment facilities.

Procurement Department

September 2016



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Appointment of Systems Administrator III, MIS Department, Administration Division

COMMITTEE: Personnel and Compensation

INFORMATION
 VOTE

Karen Gay-Valente, Director, Human Resources
Russell J. Murray, Director, MIS
Preparer/Title



Michele S. Gillen
Director, Administration

RECOMMENDATION:

That the Board approve the appointment of Mr. Andrew Richelieu to the position of Systems Administrator III (Unit 6, Grade 12), in the MIS Department, at a recommended salary of \$106,257.51 commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Systems Administrator III position became vacant upon the retirement of the incumbent.

The Systems Administrator III reports to the Program Manager, MIS Technical Operations Group. The position is responsible for administering and supporting the Authority's computer systems, storage devices and data bases associated with applications throughout the Authority. Those applications include LAWSON, Maximo, LIMS, PIMS, PI, Citrix, and the Deer Island Treatment Plant's maintenance and calibration applications.

Selection Process

This position was posted both internally and externally. Seven qualified candidates were referred for interviews, one (1) internal and six (6) external. Three (3) external candidates withdrew from the process prior to the interviews. Candidate interviews were conducted by the Manager of Technical Operations, MIS Program Manager, IT Architect and Manager of Operations Support.

Upon completion of the interviews, Mr. Andrew Richelieu was selected as the most qualified candidate for this position. Mr. Richelieu joined the MIS department in 1990 as an Information

Specialist and has since been promoted to positions of progressive responsibility including Technical Support Analyst and Sr. Systems Analyst. Currently, he holds the title of Database Analyst Programmer (Acting). As an Information Specialist, he created, cataloged and tracked technical plans, business files and project files both manually and through computer based information systems. As a Technical Support Analyst, he provided support to users to diagnose and resolve software and hardware problems, evaluated and tested software products, and installed and configured PCs and peripherals. As a Sr. Systems Analyst, he assisted in the configuration and installation of the Lawson System, assisted with the Maximo Lawson interface and supported and assisted with the day to day administration of applications and data bases. As an Acting Database Analyst Programmer, he has been maintaining, supporting, and managing database applications and operating systems, optimizing databases and operating systems to deliver optimal performance and has performed multiple database upgrades.

Mr. Richelieu has a Bachelor's degree in Computer Science from University of Massachusetts, Boston, and possesses an A+ certification and course training in Structured Query Language (SQL), and Oracle Database Management both of which are key skills needed for this position. Although not required for the position, Mr. Richelieu maintains a Grade 4 Wastewater Operator License.

Mr. Richelieu is respected by his colleagues for his systems knowledge and technical expertise.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the MIS Department FY17 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Andrew Richelieu
Position Description
Organizational Chart

Resume of Andrew J. Richelieu

S U M M A R Y

- In-depth knowledge of Linux, UNIX, Windows operating system
- Years of working experience with Microsoft Windows, HP-UX and UNIX, Linux, Operating Systems, Server Hardware and Peripherals, Local Area Network
- Over 7 years experience with Oracle Database Administration/Implementation, applications testing and maintenance of various business applications such as Maximo Maintenance System
- Proficient in Oracle DBMS, SQL Server RDBMS, Java and integrated multiple information systems
- In-depth knowledge of design and development in relational database applications
- Strong interpersonal and communication skills in support of the user's community

T E C H N I C A L S K I L L S

Operating Systems:	Windows XP, 7, 8, 2008, 2010, 2012, UNIX/Linux, HP-UX, ODA
Network Topologies:	TCP/IP LAN, WAN, FDDI, Ethernet
Database:	Oracle9i, 10g, 11g and 12g, Microsoft SQL Server 2005,2008, 2012, and 2014
IDE/Tools:	Oracle J Developer 10g, Microsoft Visual Studio 6.x, 7, Oracle Enterprise Manager 9i, 10g, 11g, 12c SQL Plus, SQL Developer
Hardware/Storage:	SAN, SCSI, RAID Technology
Web Technologies:	HTML JSP, JDBC, ASP
Web Server:	Oracle 10g, 11g, 12c Application Server, IIS server
Languages:	SQL, PL/SQL, Java, Visual Basic 6.0, C Programming Language, UNIX scripting (KSH, BASH)

P R O F E S S I O N A L E X P E R I E N C E

MASSACHUSETTS WATER RESOURCES AUTHORITY

12/1998 - PRESENT

SR. SYSTEMS ANALYST/DATABASE ANALYST/PROGRAMMER

4/2000 - PRESENT

- Maintain, support, and manage database applications and operating systems daily.
- Optimize database and OS to deliver optimal performance to the user community.
- Perform multiple database upgrades and system integration.
- Evaluate and test new software products
- Configure Oracle Enterprise Manager Repository to manage all Oracle Databases
- Implement Oracle Names Server and Oracle Client software packages that automate oracle client software installation on distribution to PC desktop
- Create/modify database views, tables, and database triggers with SQL scripts for Deer Island MAXIMO
- Perform MAXIMO Application and Database Upgrades for Deer Island MAXIMO Maintenance System
- Assist with Maximo Lawson Integration
- Assist consultants in implementing Storage Area Network (SAN) for Deer Island Chelsea site
- Assist and recommend HP-UX hardware configuration architecture
- Assist in configuring LUN in SAN and presented to HP-UX nodes
- Assist and recommend in disaster recovery HP-UX an
- Assist consultant in configuring and installing Oracle on HP-UX Service Guard Cluster
- Configure Oracle Application Server to for J2EE HOML Application
- Customize OAS J2EE environment to meet HOML Application security requirements
- Monitor and maintain OAS

MIS TECHNICAL SUPPORT ANALYST

12/1998 - 4/2000

- Implemented and maintained Novell GroupWise Email infrastructure for Deer Island Treatment Plant
- Worked with other MIS staff in integrating GroupWise Email with MS Mail

Resume of Andrew J. Richelieu

- Provided computing software support to Deer Island users, diagnosed and resolved software problems
- Established software maintenance standards and procedures
- Monitored and managed software license agreements
- Evaluated and tested new software products
- Installed PC/LAN, installed and configured PC's equipment and peripherals
- Troubleshooter and supported PC/LANs
- Trained users in PC Hardware/Software
- Installed and configured telephone equipment
- Supervised MIS interns

INFORMATION CLERK / WORK COORDINATOR /ENGINEER ASSISTANT

9/1989 – 12/1998

- Created, cataloged, updated, and tracked technical plans, business files, and projects file both with the use of manual and computer based information systems.
- Worked with Authority personnel on all levels to develop and set up procedures for easy retrieval/storage of records.
- Attended state ARMA meetings to stay abreast of current record retrieval /storage regulations.
- Assisted in the orientation and training of new employees, interns, and co-op students.

COMMUNITY SERVICE WORK

BOSTON PUBLIC HEALTH COMMISSION

Boston Homeless Shelter Services – Counselor

11/2010 – 12/2013

- Assisted permanent staff ensured overall safety of clients and environment.
- Responded to emergencies and crisis situations according to appropriate policy.
- Assisted in monitoring the daily operation of program / shelter.
- Transported clients and staff during scheduled shuttle trips following the authorized driver guidelines.
- Developed positive professional relationships with clients to facilitate care.
- Attended required meetings and trainings.

E D U C A T I O N

University of Massachusetts, Boston, MA	B.S Science / Management Information System, 5/2002
Associated Technical Institute, Woburn, MA	Certificate in Electronic/Computer Technician, 6/1993
Roxbury Community College, Boston, MA	A.S. Science / Computer Science, 5/1991

C E R T I F I C A T I O N

A+ Certified Computer Service Technician	ID: D1DDTT3859
Accredited HP Technician	ID: 0001255788
Wastewater Operator License – Grade-4	MA ID: 7102

T R A I N I N G

- Linux System Administrator / Linux Networking and Security Administrator
- Lawson Administrator / Security
- Oracle Database 10g and 11g: Administration New Features / Oracle Application Server 10g: Administration
- Oracle 9i Database Administrator Fundamentals / Oracle 9i: PL/SQL Fundamentals: Oracle Education
- Microsoft Windows 2003, 2008, 2012 System Administrator

References available upon request

**MWRA
POSITION DESCRIPTION**

POSITION: Systems Administrator III

DEPARTMENT: MIS

DIVISION: Administration

BASIC PURPOSE:

Manages and integrates the organization's networks, servers and storage in a multiple platform and operating systems environment. Incorporates long-term system, operations and administration requirements in information systems planning documents. Researches vendor products and recommends purchases, development or enhancements of hardware/software that will improve the reliability and performance of system.

SUPERVISION RECEIVED:

Works under the general supervision of the Network and Systems Manager. On specific IT projects may be supervised by a team lead or project manager.

SUPERVISION EXERCISED:

Exercises supervision of assigned vendor resources and IT Project Team.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- System Administration:
 - Servers
 - Supports and performs all System Management functions for current operating systems supporting MWRA data processing environments.
 - Development of scripts to perform administrative tasks.
 - Storage
 - Responsible for support of current storage and backup systems
 - Develops and implements backup scripts and jobs for all MWRA systems
 - Conducts backups for current operating environments. Maintains onsite backup records and logs. Restores files and file systems as needed.
 - Networks
 - Provides technical support for MWRA authentication services in a heterogenous enterprise-wide network environment.
 - Provides proactive management of variety of local area network (LAN), wide area network (WAN) and wireless network devices.
 - Provides technical support for MWRA voice, video and data traffic

- Applications:
 - Provides application administration and technical support for MWRA's email and mobile device systems.
 - Participates and prepares for Disaster Recovery planning and test activities.
- Incident and Problem Management
 - Respond to events, and reported outages to correct and resolve issues
 - Investigate root cause and determine systemic solutions for identified environment problems
- System Documentation:
 - Documents operating procedures to conform to MWRA standards
 - Develops capacity management reports for capacity planning efforts
 - Documents system configurations for networks, servers and storage environments
- System Performance Monitoring, Management and Design
 - Keeps abreast of the latest technologies and solutions, and provides expertise to the MIS Management Team in evaluating and selecting appropriate solutions.
 - Monitors networks, servers and storage for event management and coloration

OTHER DUTIES:

- Shares in on-call rotation and emergency response tasks as needed.
- Participates in occasional off-site travel, extended hours and weekend work.
- Perform related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience

- (A) A four (4) year college program in management science, engineering management, computer science or related fields; and
- (B) Five (5) to seven (7) years experience, in network and systems management, or;
- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Proficiency with Backup technology, and entire range of functionality and configuration. Experience with one or more of Backup products, such as Data Protector, Backupexec, Netbackup and or Networker, as well as SDLT and LTO tape libraries.
- (B) Experience with Network Storage, SAN environment, HP Command View interface, virtualized environment and vSphere ESX/ESXi.

- (C) Ability to troubleshoot problems utilizing the OSI seven-layer model. Technical knowledge and experience with large networks, network switching and routing protocols, LANs, WANs, VoIP ,TCP/IP Protocol, and Cisco Networking products.
- (D) In-depth knowledge of MS Windows OS, Active Directory including Group Policy, Kerberos, and LDAP. Extensive experience with Exchange 2010, troubleshooting, management, and automation. Experience integrating BlackBerry Enterprise Server and ActiveSync with Exchange 2010 and scripting knowledge of PowerShell is desired.
- (E) Knowledge of Unix operating systems, VI editor, and shell scripts. HP-UX Itanium experience is preferred.
- (F) Understanding of Building Automation and Control systems and associated set point control, HVAC, Fire Alarm, and UPS systems as applied to the Environmental Alarm System.
- (G) Excellent technical project management, interpersonal, written and oral communication skills are required.

PREFERRED CREDENTIALS

Information Technology Infrastructure Library (ITIL) Foundation Certification, Microsoft Certified Solutions Engineer (MCSE), Cisco Certified Network Engineer (CCNE), VMware Data Center Virtualization Certifications: VCAP – Data Center Administration and VCAP – Data Center Design, and one of the current storage infrastructure certification (e.g. HP, NetApp or EMC).

TOOLS AND EQUIPMENT USED:

Mini-computer consoles, tape and disk storage systems, various network and peripheral devices and office equipment as normally associated with the use of telephone, personal computers including word processing and other software, copy and fax machines.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform essential functions.

While performing the duties of this job, the employee works is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and reach with hands and arms. The employee frequently is required to sit and talk or hear. The employee is occasionally required to walk; stand; climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision and color vision, and the ability to adjust focus.

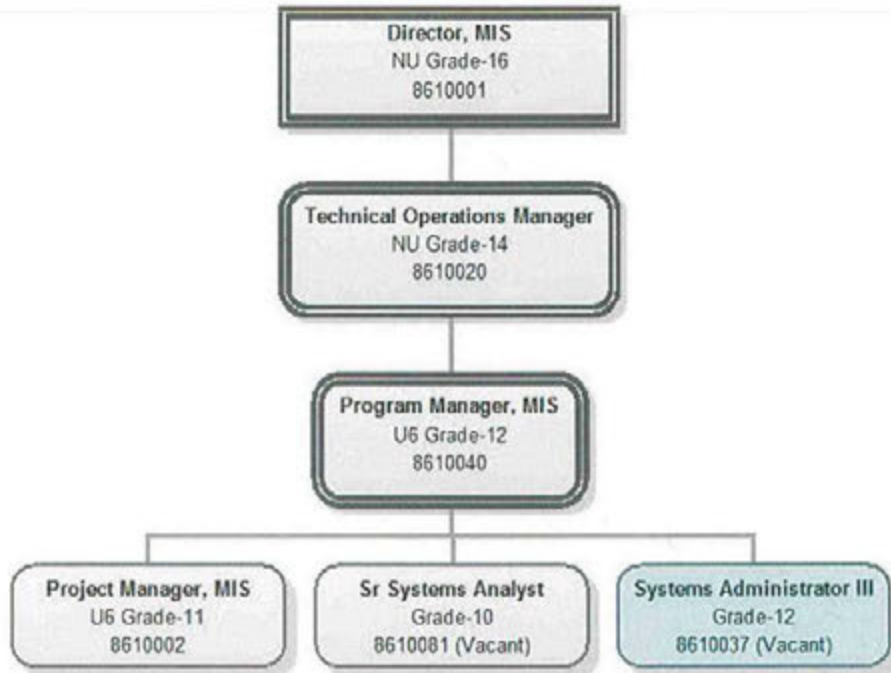
WORK ENVIRONMENT:

The work characteristics described here are representative of those an employee encounters while performing the essential functions of this job.


While performing the duties of this job, the employee works in a computer center, network closets and occasionally works in various field settings. The employee regularly works near moving mechanical parts, and is occasionally exposed to risk of vibration and electromagnetic radiation. The employee is occasionally exposed to risk of electrical shock. The Computer Center also uses automatically discharging chemicals to suppress fire.

The noise level in the work environment is a moderately loud office setting.

MIS Department



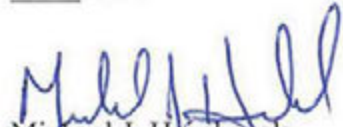
STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Appointment of Project Manager, SCADA Technicians,
SCADA Maintenance, Operations Division

COMMITTEE: Personnel & Compensation

 INFORMATION
 X VOTE

Karen Gay-Valente, Director, Human Resources
John Vetere, Deputy Chief Operating Officer
Gus Serino, Sr. Program Manager, SCADA
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Ernest Navarro, to the position of Project Manager, Supervisory Control and Data Acquisition (SCADA) Technicians (Unit 9, Grade 25), at an annual salary of \$91,629.49, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of Project Manager SCADA Technicians is one of two new positions that were created in June 2016 to address increasing needs and improve the efficiency of the SCADA group and add staff to address increasing needs. This position will supervise the day to day work assignments of Senior SCADA technicians and Communications & Control Technicians, and provide high level technical support for crews performing maintenance activities on SCADA hardware and instrumentation at MWRA's water and wastewater locations in the Boston Metropolitan area.

The Project Manager SCADA Technicians was posted internally and nine candidates met the minimum qualifications for the two vacant positions. Interviews were conducted by SCADA management staff and a representative from Human Resources. Mr. Ernest Navarro was selected as the most qualified candidate for the position based upon his knowledge, experience and job performance.

Mr. Navarro is recommended due to his excellent experience and depth of knowledge of instrumentation and control systems installation, maintenance, and troubleshooting. He has 30-years of experience at MWRA working in Metering and SCADA. In his time as a Senior SCADA Technician, Mr. Navarro has proven to be competent and reliable and is often tasked with the most difficult technical problems on water system instrumentation and radio systems. Mr. Navarro was instrumental on projects such as the integration of the contaminant monitoring system; the automation of the pressure reducing valve controls; and the expansion of the eastern radio network. Mr. Navarro has gained supervisory experience by supervising and training

Communications & Control Technicians. He has a Federal Communications Commission General Radiotelephone Operator License and an International Society of Automation Certified Control Systems certification.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the Operations Division's FY17 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Mr. Ernest Navarro
Position Description
Organization Chart

ERNEST NAVARRO

OBJECTIVE: To obtain a Program Manager, SCADA Tech position within the Waterworks, Metering and Monitoring Section, SCADA Maintenance group and to continue increasing my knowledge of the SCADA system overall.

PROFESSIONAL EXPERIENCE:

2001-PRESENT

Sr. SCADA Tech – Water

Massachusetts Water Resources Authority

- Worked on all AUTO-Cad drawings for Pump Stations and tanks. Created new drawings.
- Maintained all processing and control equipment.
- Did troubleshooting shooting for all equipment in the field.
- Built and wired PLC cabinets.
- Water Quality: Installing and wiring S::CAN to SCADA PLCs. Troubleshooting their system. Trained their techs.
- Security Department: Helping them with their communications. Connecting them to our radio system.
- Have a working knowledge with Ethernet and other communications.
- Maintaining, troubleshoot and installing Microwave equipment.
- Maintain all radio equipment MDS, Exalt, and Intgra radios.
- Tower Climbing: working on and installing Omni, Yagi, and Microwave dishes on radio towers and tanks.
- Configured and installed SEL encryptors.
- Maximo: Keeping records on time spent on jobs. Making up work orders.
- Fiber Optics: Installing and making up connections. Testing and troubleshooting.

1999- 2001

Communications and Control Technician,

Massachusetts Water Resources Authority, Metering & Monitoring

- Installing of Telog and SCADA equipment
- Troubleshooting various equipment including but not limited to Telog units and DDS lines both in the field and within the Pumping Stations
- Working with various CXR CSU/DSU's
- Reading diagrams and install wiring
- Planning materials for upcoming projects
- Utilizing a computer to maintain records, provide weekly reports and create calibration sheets

- Familiar with RS Logix 500
- Worked on all AUTO-Cad drawings for Pump Stations and tanks.
- Maintained all processing and control equipment.
- Did troubleshooting for all equipment in the field.
- Built and wired PLC cabinets.
- Worked on projects for Water Quality Monitoring Systems to PLCs.

1997-1999

Senior Instrument Technician,

Massachusetts Water Resources Authority, Water Quality

- Calibrated and troubleshot residual meters
- Acquired knowledge of the chemical aspect of the Treatment Plants
- Wired instrumentation equipment to SCADA
- Utilized SCADA screens for modifications at Treatment Stations and primary locations
- Worked Fells project for a new monitoring system.
- Worked on Norembega Control System.
- Worked on the Weston Water Quality building for a new Control System.

1990-1997

Instrument Technician,

Massachusetts Water Resources Authority, Metering & Monitoring

- Installed and maintained equipment in the Pumping Stations, tanks and reservoirs to register and control flows, pressures and levels
- Installed communication systems from tanks to stations and provide station to station monitoring and control, components included AGM, DGH, Iniven and Quindar
- Worked with telecommunications staff
- Assisted SCADA staff with building and wiring PLC's at certain locations

PROFESSIONAL EXPERIENCE (continued):

1989-1990

Distribution Meter Repairman,

Massachusetts Water Resources Authority, Electronic Maintenance

- Calibrated and maintained all flow and pressure transmitters
- Installed instruments and plumbing
- Building PLC enclosures. Doing all wiring and installation.
- Projects for Water Quality monitoring system
- Did troubleshooting for all equipment in the field.
- Built and wired PLC cabinets.
- Worked on projects for Water Quality Monitoring Systems to PLCs.

PROJECTS

- Water Quality S::CAN: Wiring and installing the system.
- Arlington CS: Working with trades to install and wire new S::CAN system.
- Bellevue Tank Pump System: Working with trades to install and wire new S::CAN system. Synco pump, tank equipment.
- Nonantum Rd. PRV wiring and testing solenoids to the PLC.
- Spot Pond Communication to Nonantum Rd. PLC and communication system
- Spot Pond to Gillis: Built and installed the fiber optics equipment at Gillis PS to Spot Pond.
- Shaft 9A: PRV wiring solenoids to the PLC.
- Building a PLC panel for Shaft 9 PRV. Wiring solenoids and testing the system.
-

EDUCATION:

1980

High School Diploma

Everett High School, Everett, Massachusetts

OTHER SKILLS

Computer

- Windows 7 Professional
- Microsoft Office 97 including Word and Excel
- Using AutoCAD 2013

Safety

- Confined Space Trainer

LICENSES AND CERTIFICATES:

2000

FCC General Radiotelephone Operators License

2000

MDR-6000

2000

RSLOGIX 500

1999

ISA Certified Control Systems Technician, Level 1

1999

3051C Smart Pressure Transmitter Course, Fisher Rosemount

1997

Measurement and Control, ISA

1996

MWRA Roadway Work Area Safety Training Program, NEWWA

1996

Safe Driver Awareness, MWRA, VMM

1994

Confined Space Entry Training

1994

Stepping Up to Supervisor, MWRA, Human Resources

1991
1990

Telemetry Instruments/Communications, Bristol Babcock
Basic Electrical Circuits and Calculations, Wentworth Institute
Working on Water license

MWRA
POSITION DESCRIPTION

POSITION: Project Manager, SCADA Technicians

DIVISION: Operations

DEPARTMENT: Field Operations/Operations Support

BASIC PURPOSE:

Provides supervision and technical support for the Authority's Supervisory Control and Data Acquisition (SCADA), telecom communications, instrumentation, wiring, radio communications and all hardware control and monitoring aspects of the SCADA system. Is required to be on-call for emergencies twenty-four (24) hours a day, seven (7) days a week.

SUPERVISION RECEIVED:

Works under the general supervision of the Program Manager, SCADA

SUPERVISION EXERCISED:

Exercises general supervision of SCADA Maintenance Technicians and C&C Technicians.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Supervises SCADA technicians and supports development, implementation and maintenance of the Operations Division's SCADA and telemetry systems.
- Provides advanced level technical support for maintenance, enhancements and troubleshooting on SCADA and related systems
- Identifies areas of need for SCADA system repair or improvement
- Responsible for project management on SCADA projects involving internal staff or external resources
- Prepares technical specifications and budget estimates for SCADA and telemetry systems, computer systems, local area networks and programmable logic controller equipment.
- Motivates, assists and trains SCADA technicians in the theory and repair of SCADA system components including telemetry equipment, computer systems, programmable logic controllers, instrumentation and associated components.

- Serves as liaison between MWRA and SCADA system consultants and vendors.
- Prepares written and computer generated reports.
- Oversees daily work schedules, preventative maintenance schedules and calibration procedures.
- Monitors and reports on staff productivity and utilization. Recommends and institutes improvements on same using Maximo reporting software.
- Responsible for daily coordination with Technicians & Scheduler Planner to maintain draft dispatch, final and modified dispatch reports
- Creates, Modifies and reviews job plans & safety plans for SCADA technician work orders
- Performs QA/QC review of SCADA Technicians' work
- Responsible for conducting field audits of SCADA technicians
- Responsible for planning, coordination, logistic, parts requisition and technical support in order to facilitate efficiency with SCADA technicians.
- Insures that the microwave and other data radio equipment, antenna and transmission line systems are properly installed, tested and maintained.
- Maintains hardware & Software for Programmable Logic Controllers (PLC), Remote Terminal Units (RTU), control panels, and instrumentation
- Updates SCADA system documentation including CAD drawings and documents
- Coordinates with vehicle maintenance to ensure assigned vehicles are maintained
- Liaison between the water & wastewater OCC and SCADA technicians
- Coordination with SCADA engineering group

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Four (4) year college program in an engineering discipline (electronic, electrical), control systems, telecommunications engineering or a related field; and/or
- (B) Five (5) to seven (7) years experience in the design, configuration and implementation of PLC control systems as well as the development of Graphic User Interfaces (GUI), and digital communication technology, Pump Station instrumentation and microprocessor control and digital/analog circuit design lines, of which two (2) to four (4) years should be in a supervisory capacity; or
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Working knowledge of instrumentation configuration software, radio configuration software, ladder logic programming, and AutoCAD or equivalent CAD design program.
- (B) Working knowledge of EIA RS-232, RS-422, RS-485, V.35, X.25, Ethernet and other communications signaling standards and protocols.
- (C) Ability to test and troubleshoot to the component level using a microwave signal generators, spectrum analyzers, oscilloscopes, transmission line network analyzers, service monitors, power meters, frequency counters, BER test sets and logic analyzers.
- (D) Ability to perform installation, alignment and maintenance of microwave parabolic, omni directional and Yagi antennas on radio towers in excess of 100 feet above ground level.
- (E) Working knowledge of industry standards and best practices for instrument calibration procedures.
- (F) Familiar with cyber security concepts and practices.

SPECIAL REQUIREMENTS:

A valid Massachusetts Drivers License required.

Ability to obtain a FCC General Radiotelephone Operators License within six (6) months.

A valid Massachusetts Grade II Water Distribution or Treatment Licenses; or a Grade II Wastewater Collection System Certification; or a Grade III Wastewater Treatment Plant certification; or the ability to obtain same within six (6) months.

Certification in Confined Space Entry or ability to pass MWRA Confined Space Training within six (6) months

TOOLS AND EQUIPMENT USED:

Electronic test equipment, computers, PLCs, hand tools, climbing and fall retrieval equipment, mobile radio, etc.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee occasionally is required to sit, stand and walk. The employee is frequently required to climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision, distance, color vision, peripheral vision, depth perception, and the ability to adjust focus.

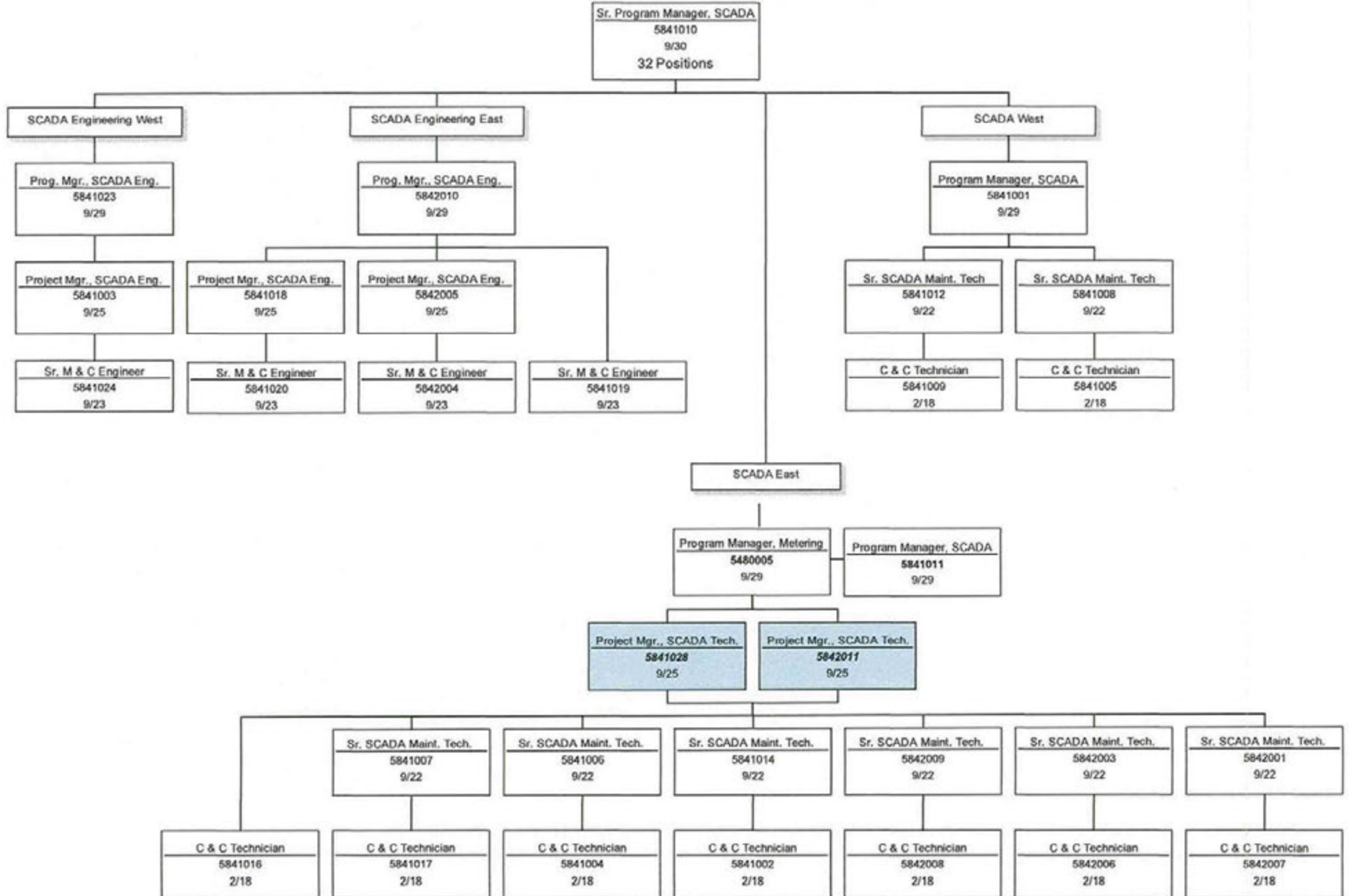
WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in an office environment. The employee occasionally works in outside weather conditions. The employee occasionally works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high, precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is usually loud in field settings, and moderately quiet in office settings.

SCADA Maintenance
September 2016



STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Appointment of Project Manager, SCADA Technicians
SCADA Maintenance



COMMITTEE: Personnel & Compensation

Karen Gay-Valente, Director, Human Resources
John Vetere, Deputy Chief Operating Officer
Gus Serino, Sr. Program Manager SCADA
Preparer/Title

 INFORMATION
 X VOTE



Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of David Smith, to the position of Project Manager, Supervisory Control and Data Acquisition (SCADA) Technicians (Unit 9, Grade 25), at an annual salary of \$91,629.49, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of Project Manager, SCADA Technician is one of two new positions that were created in June 2016 to address increasing needs and improve the efficiency of the SCADA group and add staff to address increasing needs. This position will supervise the day to day work assignments of Senior SCADA Technicians and Communications & Control Technicians, and provide high level technical support for crews performing maintenance activities on SCADA hardware and instrumentation at MWRA's water and wastewater locations in the Boston Metropolitan area.

The Project Manager SCADA Technicians were posted internally and nine candidates met the minimum qualifications for the two vacant positions. Interviews were conducted by SCADA management staff and a representative from Human Resources. Mr. David Smith was selected as the most qualified candidate for the position based upon their knowledge, experience and job performance.

Mr. Smith has excellent experience and a depth of knowledge of instrumentation and control system design, maintenance, and troubleshooting obtained from 36 years of field experience working on systems in the water & wastewater industry, of which 26 years has been spent working on MWRA systems. As a Senior SCADA Technician at MWRA over the last 8 years, Mr. Smith has proven competent and reliable and is often tasked with the most difficult technical problems on the wastewater instrumentation system based on his advanced troubleshooting skills. Mr. Smith was instrumental in restoring instrumentation systems in the post-fire recovery for the Nut Island odor control system; has lead troubleshooting efforts on complex control system wiring problems; and in the development of calibration procedures. Prior to coming to

MWRA, Mr. Smith spent 18 years working on MWRA instrumentation as a service contractor for ABB, Inc., where he developed an extensive knowledge of the MWRA equipment, procedures, and system. Mr. Smith has gained supervisory experience at the MWRA and in prior employment as a Service Manager. He has a Federal Communications Commission General Radiotelephone Operator License, an International Society of Automation Certified Control Systems certificate, and has successfully completed the MWRA's Supervisory Development Program.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the Operations Division's FY17 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Mr. David Smith
Position Description
Organization Chart

RESUME

David H. Smith

EMPLOYMENT

January 2008 – Present **Massachusetts Water Resources Authority**
Chelsea, MA

Job Title:

Senior SCADA Technician

Responsibilities:

Maintain and calibrate all equipment related to MWRA SCADA PLC's and any SCADA related equipment.

Work with management and engineering to improve the reliability and accuracy of the current MWRA SCADA systems.

Work with management to write and establish calibration and maintenance procedures for use in the Maximo system.

Assist MWRA Operational Control Center with any problems related to the SCADA Systems or Telog monitoring systems.

Assist co-workers when needed.

March 1990 – January 2008 **ABB Automation Inc.**
Warminster, PA

Job Title:

Senior Field Service Product Specialist

Responsibilities:

Oversee and perform calibration and maintenance of various forms of instrumentation and control systems.

RESUME
(continued)

Systems included analog and digital technology in the monitoring and control of water and wastewater plant equipment. Instrumentation included, but was not limited to, programmable logic controllers, magnetic flow meters, ultrasonic level and flow meters, differential pressure and pressure transmitters, telemetering devices, PID controllers, gas detection systems, and various microprocessor based controllers.

Engineering and design of new control systems to customer / engineer specifications.

Engineering and design of field modifications as required by customer needs.

Providing technical assistance to customers in the field and by telephone.

June 1987 – March 1990

Sheridan Engineering
Salem, MA

Job Title:

Service Manager

Responsibilities:

Start-up and repair of complex instrumentation and control systems for the water and wastewater industry throughout the United States. Systems included all types of flow, pressure and level monitoring systems, control systems, chemical pacing systems, telemetering systems, and programmable logic control systems.

Engineering and design of analog and digital control systems.

Scheduling of customer service and solving of customer related problems by telephone or in the field.

Final testing and modifications of outgoing equipment.

RESUME
(continued)

November 1979 – June 1987 Wincom Corporation
Salem, MA

Job Title:

Service Manager

Responsibilities:

Start-up and repair of variable speed motor controllers, constant speed motor controllers, variable frequency motor controllers, liquid level controllers, and general instrumentation throughout the United States.

Scheduling of customer service and solving of customer problems.

Engineering and design of relay logic control systems.

Construction and wiring of control systems.

Construction and testing of printed circuit boards from sketch or schematic for research and development.

Mechanical and electronic assembly of research and development projects for use by the U.S. government.

Final testing and modifications of outgoing equipment.

Supervision of production when needed.

EDUCATION

Pentucket Regional High School, West Newbury, Ma.

ABB / Fisher & Porter Instrumentation School, Warminster, Pa.

Allen Bradley PLC Courses

Various courses provided by the MWRA

**MWRA
POSITION DESCRIPTION**

POSITION: Project Manager, SCADA Technicians

DIVISION: Operations

DEPARTMENT: Field Operations/Operations Support

BASIC PURPOSE:

Provides supervision and technical support for the Authority's Supervisory Control and Data Acquisition (SCADA), telecom communications, instrumentation, wiring, radio communications and all hardware control and monitoring aspects of the SCADA system. Is required to be on-call for emergencies twenty-four (24) hours a day, seven (7) days a week.

SUPERVISION RECEIVED:

Works under the general supervision of the Program Manager, SCADA

SUPERVISION EXERCISED:

Exercises general supervision of SCADA Maintenance Technicians and C&C Technicians.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Supervises SCADA technicians and supports development, implementation and maintenance of the Operations Division's SCADA and telemetry systems.
- Provides advanced level technical support for maintenance, enhancements and troubleshooting on SCADA and related systems
- Identifies areas of need for SCADA system repair or improvement
- Responsible for project management on SCADA projects involving internal staff or external resources
- Prepares technical specifications and budget estimates for SCADA and telemetry systems, computer systems, local area networks and programmable logic controller equipment.
- Motivates, assists and trains SCADA technicians in the theory and repair of SCADA system components including telemetry equipment, computer systems, programmable logic controllers, instrumentation and associated components.

- Serves as liaison between MWRA and SCADA system consultants and vendors.
- Prepares written and computer generated reports.
- Oversees daily work schedules, preventative maintenance schedules and calibration procedures.
- Monitors and reports on staff productivity and utilization. Recommends and institutes improvements on same using Maximo reporting software.
- Responsible for daily coordination with Technicians & Scheduler Planner to maintain draft dispatch, final and modified dispatch reports
- Creates, Modifies and reviews job plans & safety plans for SCADA technician work orders
- Performs QA/QC review of SCADA Technicians' work
- Responsible for conducting field audits of SCADA technicians
- Responsible for planning, coordination, logistic, parts requisition and technical support in order to facilitate efficiency with SCADA technicians.
- Insures that the microwave and other data radio equipment, antenna and transmission line systems are properly installed, tested and maintained.
- Maintains hardware & Software for Programmable Logic Controllers (PLC), Remote Terminal Units (RTU), control panels, and instrumentation
- Updates SCADA system documentation including CAD drawings and documents
- Coordinates with vehicle maintenance to ensure assigned vehicles are maintained
- Liaison between the water & wastewater OCC and SCADA technicians
- Coordination with SCADA engineering group

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Four (4) year college program in an engineering discipline (electronic, electrical), control systems, telecommunications engineering or a related field; and/or
- (B) Five (5) to seven (7) years experience in the design, configuration and implementation of PLC control systems as well as the development of Graphic User Interfaces (GUI), and digital communication technology, Pump Station instrumentation and microprocessor control and digital/analog circuit design lines, of which two (2) to four (4) years should be in a supervisory capacity; or
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Working knowledge of instrumentation configuration software, radio configuration software, ladder logic programming, and AutoCAD or equivalent CAD design program.
- (B) Working knowledge of EIA RS-232, RS-422, RS-485, V.35, X.25, Ethernet and other communications signaling standards and protocols.
- (C) Ability to test and troubleshoot to the component level using a microwave signal generators, spectrum analyzers, oscilloscopes, transmission line network analyzers, service monitors, power meters, frequency counters, BER test sets and logic analyzers.
- (D) Ability to perform installation, alignment and maintenance of microwave parabolic, omni directional and Yagi antennas on radio towers in excess of 100 feet above ground level.
- (E) Working knowledge of industry standards and best practices for instrument calibration procedures.
- (F) Familiar with cyber security concepts and practices.

SPECIAL REQUIREMENTS:

A valid Massachusetts Drivers License required.

Ability to obtain a FCC General Radiotelephone Operators License within six (6) months.

A valid Massachusetts Grade II Water Distribution or Treatment Licenses; or a Grade II Wastewater Collection System Certification; or a Grade III Wastewater Treatment Plant certification; or the ability to obtain same within six (6) months.

Certification in Confined Space Entry or ability to pass MWRA Confined Space Training within six (6) months

TOOLS AND EQUIPMENT USED:

Electronic test equipment, computers, PLCs, hand tools, climbing and fall retrieval equipment, mobile radio, etc.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee occasionally is required to sit, stand and walk. The employee is frequently required to climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision, distance, color vision, peripheral vision, depth perception, and the ability to adjust focus.

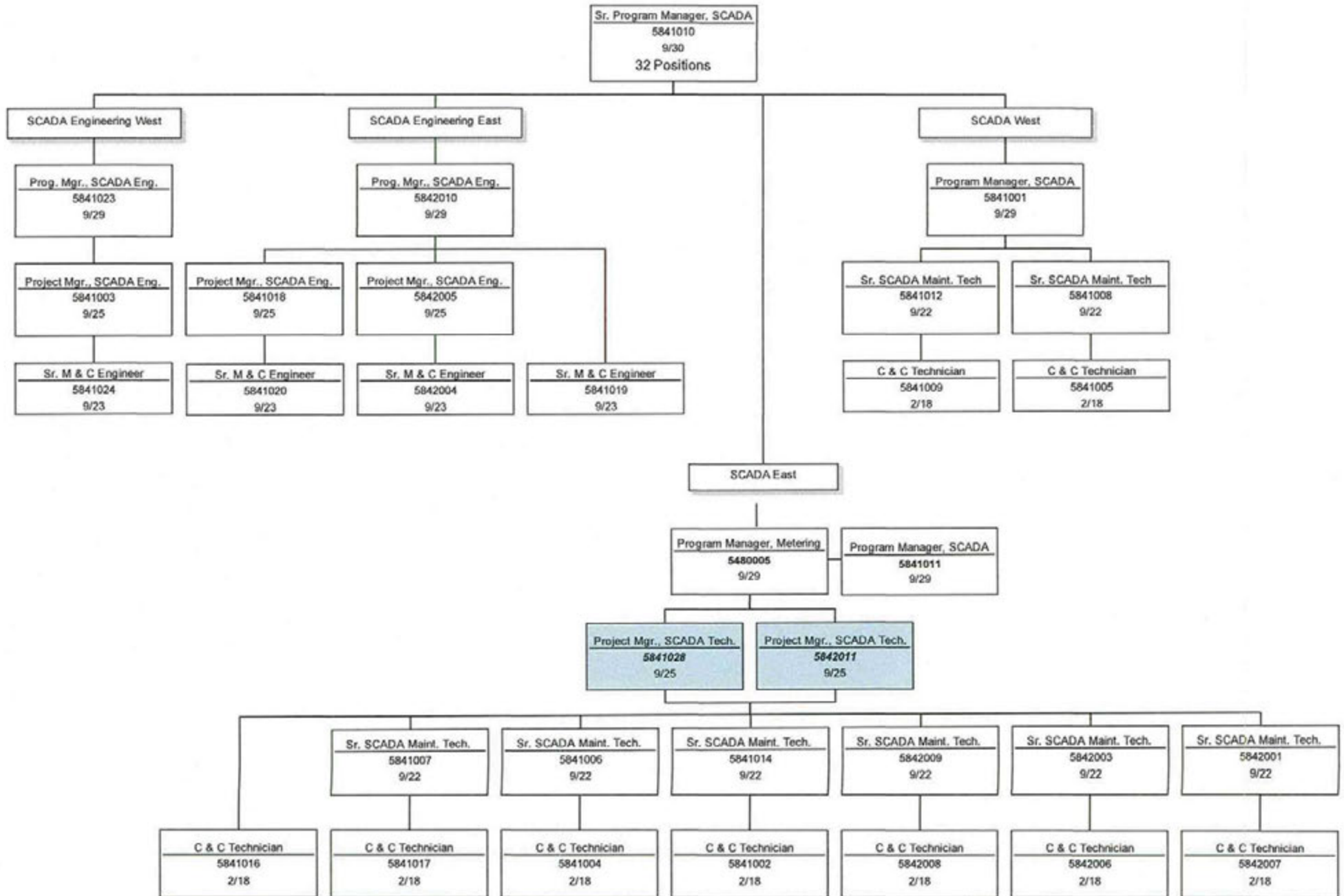
WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in an office environment. The employee occasionally works in outside weather conditions. The employee occasionally works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high, precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is usually loud in field settings, and moderately quiet in office settings.

SCADA Maintenance
September 2016




STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 14, 2016
SUBJECT: Appointment of Construction Coordinator, Engineering & Construction Department

COMMITTEE: Personnel

 INFORMATION
 X VOTE

Karen Gay-Valente, Director, Human Resources
John P. Vetere, Deputy Chief Operating Officer
Corinne M. Barrett, Director of Construction
Preparer/Title


Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Jeffrey Bina to the position of Construction Coordinator in the Engineering & Construction Department (Unit 9, Grade 30) at the recommended salary of \$111,492.99 commencing on a date to be determined by the Executive Director.

DISCUSSION:

Due to a recent retirement from one of seven Construction Coordinator positions, there is currently one position vacant. The position manages all aspects of construction projects, including the rehabilitation and improvement of MWRA's water and wastewater facilities and pipelines. Construction Coordinators take the lead role in all communication with contractors and design engineers, in negotiating change order costs and determining the reasons and necessity for the changes, and in general, ensure that MWRA's best interests are served during the construction of any project. Construction Coordinators also perform constructability reviews of construction plans and specifications prior to bid. Additional responsibilities include, but are not limited to, supervision of field engineers and assignment of projects, evaluation of performance and staff development, and provision of technical and administrative assistance as required to staff assigned to the construction projects.

Organizationally, the Construction Coordinator reports to the Assistant Director, Construction, in the Construction Unit (see attached Organization Chart).

Selection Process

This position was posted both internally and externally and it was determined that seven of the candidates met the minimum qualifications for the available opening. Senior staff from Engineering & Construction and Affirmative Action interviewed the seven candidates and determined that Jeffrey

Bina was the most qualified candidate based on his combination of education, experience, ability and knowledge.

Mr. Bina has over 15 years of management experience in engineering, construction and operations of various public work systems. He previously served as the Director of Public Works and the Assistant Town Engineer for the Town of Weymouth. Mr. Bina has had extensive knowledge in managing and coordinating both construction and town maintenance contracts, as well as providing administration and management of multiple town departments. He was charged with working closely with contractors in all phases of engineering maintenance services and repair contracts from inception to award.

Mr. Bina's current position encompasses three titles: the Deputy Director of Public Works, Town Engineer, and Sewer Superintendent for the Town of Westwood. He is responsible for development of an infrastructure improvement plan including sewer system, drainage and roadways. Mr. Bina is responsible for the management of the Town's Sewer Division, which includes a collection system and 10 pumping stations, in addition to administration of the capital improvement plan for facilities, equipment and infrastructure. Mr. Bina works directly with all town departments including the Board of Selectmen, Town Administrator, Planning Board and Conservation Commission, as well as residents and other agencies regarding municipal infrastructure.

Mr. Bina's responsibilities have included many of the duties of a Construction Coordinator at MWRA, such as overseeing the work of contractors and consultants, attendance at contractor progress meetings, supervision of field inspectors, and ensuring work performed meets contract specifications. His combination of 15 years work and supervisory experience, along with his extensive knowledge of supporting construction and engineering contracts makes him an excellent candidate for this position.

Mr. Bina holds a Bachelor of Science Degree in Civil Engineering from Northeastern University and is a Registered Professional Civil Engineer in Massachusetts. Mr. Bina is active in professional associations and holds a Massachusetts Water Distribution System Grade 4 license.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the Operations Divisions FY17 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Jeffrey Bina
Position Description
Organizational Chart

Jeffrey J. Bina, P.E.

Current Position	Deputy Director of Public Works, Town Engineer, Sewer Superintendent, Town of Westwood, Massachusetts
Profile	Over 15 years of public works experience – engineering, construction and operations. Management of Engineering projects from design concept through construction & operation Administration of an essential town department that has direct interaction with residents.
Education	Northeastern University, Bachelor of Science, Civil Engineering, 1995
Licenses and Memberships	Registered Professional Engineer, Civil, Massachusetts #41622 Massachusetts Water Distribution System Grade 4D license #24162 (OIT) New England Water Works Association (NEWWA) American Water Works Association (AWWA)
Professional Experience	
8/2013 to present	Deputy Director of Public Works, Town Engineer, Sewer Superintendent, Town of Westwood, DPW Responsible for developing plan for infrastructure improvements (sewer, drain, roads) Administer \$500,000 annual Chapter 90 paving program Management of sewer division that consists of collection system and 10 pump stations Administer sewer division I/I program from scoping projects, application, design and construction. Administer sewer division capital improvement plan for facilities, equipment, and infrastructure. Review and comment for Planning Board and Conservation Commission plan applications Review and recommend on various issues to the Town Administrator and Board of Selectmen Direct communication and interaction with all Town departments, residents, and agencies with respect to roads, sewer, drainage and other town infrastructure.
3/2011 to 7/2013	Director of Public Works, Town of Weymouth, DPW Administer and manage 5 divisions, responsible for construction, maintenance and repair of streets, sidewalks, sewer, water and storm drainage systems, engineering/surveying and mapping, maintenance and repair of vehicles and equipment, maintenance of parks, cemeteries, athletic fields, beaches, public buildings and off-street parking facilities, public refuse collection and disposal, snow plowing and ice control Responsible for in house operation of 2 drinking water treatment facilities, 3 pressure zones, 4 water storage tanks, approximately 170 miles of distribution pipe and 15,000 services. Develop and update the department's capital improvement plan for water/sewer, roads, seawall, vehicles, buildings, grounds and equipment Plan and administer a \$1.4M annual Chapter 90 paving program Present to Weymouth Town Council for projects, inquiries and funding requests Primary contact with residents, councilors, utilities and state agencies
8/2010 to 3/2011	Town Engineer, Town of Westwood, DPW Review and management of design and construction contracts for Infrastructure improvements and special projects Technical assistance and review of project plans and reports for the Planning Board and Conservation Commission Handling residents questions and requests with regards to Town infrastructure Management of the Town's NPDES Phase II storm water permit to ensure compliance

11/2002 to 7/2010

Assistant Town Engineer, Town of Weymouth, DPW

Design, estimating, procuring, management and construction inspection of water, sewer, drainage, and park infrastructure improvements

Review of building permit plot plans, zoning board special permit/variance application reviews, Conducted site plan reviews for boards and commissions for adherence to Town and DPW standards.

Acted as DPW Representative at construction progress meetings with the MBTA, MHD, MWRA and coordinated with other regional construction and planning groups.

10/1998 to 10/2002

Junior Civil Engineer, Town of Brookline, DPW/Engineering Division

Developed projects from conceptual plans to design and construction for infrastructure improvements and repair, upgrade of playgrounds and equipment, irrigation systems, and street improvements.

Worked with the Town Engineer and Traffic Engineer to create plans and develop construction cost estimates.

Construction inspection, survey layout and grade control, and the contract administration for the jobs once construction commences. Also assisted the survey crew chief on property line surveys and topographic surveys.

8/1995 to 10/1998

Project Engineer, Transportation Division, Coler & Colantonio, Inc.

Created roadway improvement plans to MHD standards using AutoCAD

Served as engineering inspector on roadway and construction projects

Worked full time for central artery utility relocation contractor as field engineer

**MWRA
POSITION DESCRIPTION**

POSITION: Construction Coordinator

PCR#:

DIVISION: Operations

DEPARTMENT: Engineering and Construction

BASIC PURPOSE:

Supervises office and field engineers to oversee and manage construction contracts and professional engineering contracts in the construction, rehabilitation, improvements, and start-up of Waterworks and Wastewater facilities and infrastructure.

SUPERVISION RECEIVED:

Works under the general supervision of the Assistant Director, Construction.

SUPERVISION EXERCISED:

Exercises close supervision of office and field employees including professional and technical staff, resident engineers, and inspectors.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Oversees and manages a program of construction projects, including the rehabilitation and improvement of waterworks and wastewater facilities and pipelines.
- Supervises and manages office and field engineers, including assignment of projects, evaluation of performance, and staff development planning. Provides technical and administrative assistance to staff during the construction, startup, and warranty of projects.
- Oversees and directs consultant engineering services and contracts during construction, including all work for quality of work, budget, schedule, and compliance with contractual terms and MWRA objectives and policies. Negotiates and reviews construction services in consultant contracts.
- Acts as liaison with engineering, operations, and maintenance staff to ensure the smooth construction and start-up of new or rehabilitated facilities.

- Ensures contractor compliance with construction documents, MWRA procedures and policies, regulatory requirements, and applicable engineering standards.
- Supervises the development and maintenance of construction tracking and reporting procedures. Prepares and updates construction budget and schedule projections.
- Performs constructability reviews of construction plans and specifications.
- Reviews, negotiates and processes change orders and claims in accordance with MWRA policies and procedures.
- Reviews and processes pay estimates and final payment and construction closeout documents in a timely manner. Oversees preparation and submittal of accurate record drawings upon construction completion.
- Oversees office and field project files, ensuring that all project documentation is complete, up-to-date, and in accordance with MWRA policies and procedures.
- Prepares staff summaries for the Executive Director and Board for construction contract and engineering agreement changes, and project status.

SECONDARY DUTIES:

- Participates in preparing for collective bargaining and hears Step-One grievances.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Completion of a four (4) year college program in civil engineering or a related field; and
- (B) Eight (8) to (10) ten years experience in the construction of water and wastewater facilities and infrastructure, of which four (4) years should be in a supervisory capacity and four (4) years should include a project management experience; or
- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Demonstrated ability to work effectively as part of a project team and also to function

independently with minimal supervision.

- (B) Knowledge of Massachusetts laws, including MGL Chapter 30 and Chapter 149 construction regulations.
- (C) Familiarity with computer software, such as Word and Excel.
- (D) Excellent interpersonal, managerial, oral and written communication skills are required.

SPECIAL REQUIREMENTS:

Registration as a Professional Engineer in Massachusetts is preferred.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools or controls and frequently required to reach with hands and arms. The employee regularly is required to talk or hear. The employee is occasionally required to walk; stand; climb or balance; stoop, kneel, crouch, or crawl; or sit.

The employee must frequently lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision, distance vision, color vision, peripheral vision, depth perception and the ability to adjust focus.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

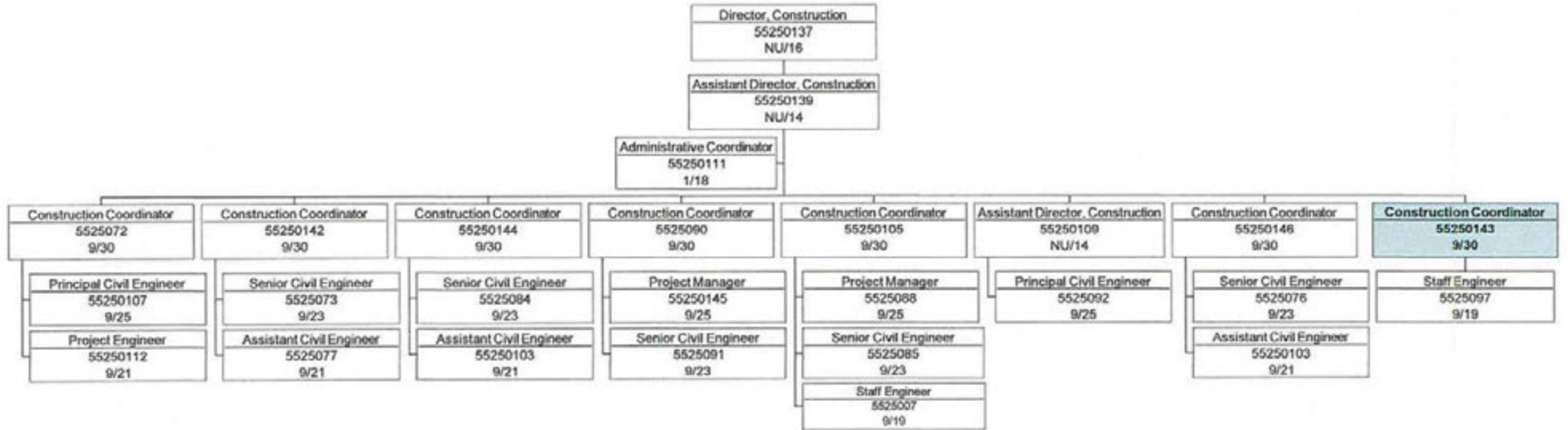
While performing the duties of this job, the employees frequently works in outside weather conditions. The employee occasionally works near moving mechanical parts, and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high

precarious places and is occasionally exposed to fumes or airborne particles, extreme heat or extreme cold, and the risk of electrical shock.

The noise level in the work environment is usually loud in field settings, and moderately quiet in office settings.


June 1, 2011

**Engineering & Construction
Construction
September 2016**



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2016
SUBJECT: Appointment of Regional Manager, Toxic Reduction and Control



COMMITTEE: Personnel and Compensation

Carolyn M. Fiore, Deputy Chief Operating Officer
John Riccio, Director, Toxic Reduction and Control
Preparer/Title

 INFORMATION
 X VOTE



Michael J. Hornbrook
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Thomas Coffey to the position of Regional Manager, Toxic Reduction and Control (Unit 9, Grade 29) at the recommended salary of \$106,994.68 to be effective on a date to be determined by the Executive Director.

DISCUSSION:

The position of Regional Manager, Toxic Reduction and Control (TRAC) became vacant in July, 2016, when the previous incumbent transferred to another position within the MWRA.

This position is responsible for the day-today management of TRAC's sampling staff who carries out the sampling requirements of MWRA's EPA-approved pretreatment program and performs other sampling in support of various MWRA programs.

The Regional Manager's duties include: supervising staff and managing all aspects of TRAC's monitoring program; ensuring consistency of sampling practices and procedures; developing and maintaining Standard Operating Procedures for sampling; managing all aspects of TRAC's sampling operations, including budget management for sampling field equipment and supplies; reviewing and evaluating monitoring documentation for accuracy in support of TRAC enforcement and/or legal actions; and participating in TRAC's On-Call Manager rotation for response to spill events after hours.

Organizationally, the Regional Manager reports to the Sr. Program Manager, Field Operations and Permitting in TRAC (see attached Organization Chart).

Selection Process

This position was posted internally and MWRA received eight applications. The Director of TRAC, the Sr. Program Manager, Field Operations and Permitting, and the Program

Manager, Monitoring and Compliance, from the Affirmative Action group interviewed all eight candidates.

It was determined that Mr. Thomas Coffey possessed the knowledge, skills and experience required for appointment to this position. Mr. Coffey has 26 years of experience at MWRA, in progressively responsible positions in TRAC directly related to the Regional Manager position. Currently, Mr. Coffey holds the position of Senior Sampling Associate, responsible for exercising direct supervision of approximately half of the sampling staff, setting weekly schedules, drafting and reviewing sampling protocols and making recommendations, changes and corrections to them as necessary. In addition, he is responsible for ensuring that TRAC sampling activities adhere to established federal, state, and MWRA's pretreatment program regulations, policies and procedures, and ensuring consistency and coordination among sampling staff. Mr. Coffey also held the positions of Sampling Associate, Industrial Coordinator, and Source Coordinator in TRAC.

Mr. Coffey has performed all of his previous TRAC responsibilities at a high level and he has demonstrated excellent communication skills, initiative, and leadership. Mr. Coffey had also been integral to the successful deployment of TRAC's Pretreatment Information Management System for scheduling and tracking monitoring group activities.

Mr. Coffey earned his Bachelor of Science Degree in Biology from the University of New Hampshire and a Master of Science Degree in Environmental Studies from the University of Massachusetts, Lowell.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the Operations Division's FY15 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Thomas Coffey
Position Description
Organization Chart

THOMAS J. COFFEY, JR.

PROFESSIONAL EXPERIENCE:

Massachusetts Water Resources Authority
Chelsea, Massachusetts

2014-Present Senior Sampling Associate

Responsibilities include:

- Managing Sampling Associates in day to day sampling activities including scheduling monitoring events using PIMS, database management and goal tracking using Excel
- Provide direction to staff in the field
- Field liaison to the Regional Manager
- Standard Operating Procedure review and development
- New employee interviews
- Monitoring equipment and supply purchasing
- Monitoring report review for accuracy and completeness
- On-Call Manager for TRAC for off- hour emergency response
- MWRA Emergency Services Unit (ESU) team member
- Lead Instructor for the MWRA Confined Space Training Program
- MWRA Emergency Services Unit (ESU) team member

2010-2014 Source Coordinator

Responsibilities included:

- Oversight for the Traps Program including database management, Regional Inspector inspection scheduling, inspection paperwork review and issuing violation letters
- New trap application processing, trap site plan review, inspection and approval letter generation
- Oversight for the Septage Program including inspections, permitting, hauler manifest review and monitoring of Septage haulers using municipal discharge locations in the MWRA district
- TRAC responder for fuel/oil spills in the district during normal work hours
- TRAC liaison for municipal and state plumbing inspectors and the Massachusetts State Plumbing Board
- On-Call Manager for TRAC for off- hour emergency response
- MWRA Emergency Services Unit (ESU) team member
- Lead Instructor for the MWRA Confined Space Training Program

1998-2010 Industrial Coordinator

Responsibilities included:

- Industrial inspections and permit development in numerous towns throughout the MWRA district including Cambridge, Ashland, Natick and Waltham
- Building/treatment system plan review
- Enforcement for industries violating MWRA regulations
- MWRA industrial and municipal official contact for these communities
- On-Call Manager for TRAC; responded to numerous spills of varying nature
- TRAC Safety Committee member
- Lead Instructor for the MWRA Confined Space Training Program

1990-1998 Sampling Associate

Responsibilities included:

- Scheduling of monitoring activity in the MWRA Southern District
- Industrial discharge monitoring to ensure compliance with MWRA permit limits
- NPDES monitoring for federal regulatory compliance
- TRAC representative for MWRA Confined Space Committee
- Industrial Surveillance of suspected permit violators
- Vendor selection for sampling equipment
- Maintenance and repair of all sampling, gas monitoring and pH monitoring equipment used by TRAC; instituted computer downloading of monitoring equipment as technology became available

**Edgerton Research Laboratory
New England Aquarium, Boston, Massachusetts**

1988-1990 *Supervisor of Laboratory Facilities/Assistant Scientist*

1984-1988 *Assistant Scientist*

1982-1984 *Research Assistant*

1980-1992 *Research Technician*

Responsibilities Included:

- Edgerton Laboratory facility and equipment maintenance
- Boston Harbor Monitoring Project Manager
- Laboratory Intern Supervisor
- New England Aquarium hazardous waste manager
- Lab representative to the New England Aquarium Safety Committee
- Analytical chemistry and fieldwork supporting research in the laboratory
- Marine animal culture and assay development

RELATED EXPERIENCE:

**Town of Topsfield
Topsfield, Massachusetts**

1990-1992 Conservation Commission Board Member

Responsibilities Included:

- Review of proposed construction projects in close proximity to wetland resource areas and implementation of state and federal wetland protection laws
- Management of several ongoing projects in the community

EDUCATION:

1996 M.S. Environmental Studies, Civil Engineering Department, University of
Massachusetts at Lowell

1980 B.S. Biology, *Cum Laude*, University of New Hampshire, Durham, New Hampshire

CERTIFICATIONS:

- OSHA 40 Hour Trained for Hazardous Waste Response
- Massachusetts TURP certification, April 1999
- Grade 6 Combined Massachusetts Wastewater Treatment License, June 1997
- Grade 4 Collections Systems Certification, June 1997
- EPA Air Monitoring for Hazardous Materials (165.4), February 1993
- SCBA Training, Massachusetts Firefighting Academy, December 1992

**MWRA
POSITION DESCRIPTION**

POSITION: Regional Manager

DIVISION: Operations

DEPARTMENT: TRAC

BASIC PURPOSE:

Manages the Toxic Reduction and Control (TRAC) Department's Inspection and Permitting Program or Monitoring Program. Directs all inspection and permitting or monitoring activities for the department and provides assistance to other sections within the department.

SUPERVISION RECEIVED:

Reports to the Sr. Program Manager, Field Operations and Permitting

SUPERVISION EXERCISED:

Supervises assigned inspection, permitting or monitoring staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Recommends agency, program or department policy by analyzing all pertinent issues and information regarding the impact of proposed policy and by determining the resources necessary to implement the policy. Reviews, recommends, and manages the implementation of policies and standard operating procedures within TRAC to maintain efficient, high quality programs that are in compliance with EPA and other regulatory requirements.
- Performs administrative duties such as interviewing and recommending staff for hiring and promotion, reviewing and evaluating staff, scheduling work, developing budgets, managing vehicles, equipment, and supply acquisitions and maintenance, approving time sheets, helping to develop and implement training for staff members, and maintaining discipline.
- Ensures that staff coordinate with other TRAC groups and sections and with other MWRA departments and divisions as needed.
- Performs administrative duties including, but not necessarily limited to, interviewing and recommending personnel for hiring or promotion, approving time sheets, scheduling work, developing budgets, performance evaluations, and maintaining discipline.
- Uses computer systems to schedule and coordinate work, to ensure that staff time and functions are appropriately tracked and reported, and to carry out other job responsibilities.

- Coordinates (as required) TRAC staff preparation and response to emergency spills/releases into sewer system and participates in development and implementation of emergency response policy.
- Participates in development and implementation of TRAC policies and procedures.
- Participates in the selection and hiring of project consultants and oversees the consultant's planning process.
- Participates in liaison, coordination, and educational activities within the MWRA and with other governmental agencies and the public.

Inspection Program

- Provides overall direction to inspection staff concerning the implementation of local limits, planning, and database preparation to meet regulatory requirements.
- Reviews and evaluates monitoring reports, engineering reports, pretreatment proposals and associated technical information, inspection reports, permit applications, and permits and recommends appropriate standards and follow-up actions.
- Develops and implements training programs for staff personnel in inspections and permitting procedures, state-of-the-art waste treatment applications and Federal, State and local regulations.
- Coordinates, as required, inspection staff preparation and response to emergency spills and releases into the sewer system.
- Reviews and evaluates inspection and permitting documents generated by the inspection staff and ensures that they will support enforcement and legal actions and stand up to scrutiny in actions brought by MWRA or others.

Monitoring Program

- Provides overall direction to sampling staff concerning technical requirements for sampling to ensure that there is consistency and coordination among and within the staff on sampling practice, procedure, and implementation.
- Oversees the maintenance of the Monitoring Manual and its SOPs and keeps the manual up-to-date.
- Serves as the primary liaison with the MWRA Central Laboratory on sampling and analysis issues.

- Manages TRAC's sampling operations at the Chelsea facility; ensures that sampling equipment and supplies are available and maintained; develops the TRAC sampling field equipment budget.
- Coordinates, as required, monitoring staff preparation and response to emergency spills and releases into the sewer system.
- Reviews and evaluates monitoring documents generated by the sampling staff and ensures that they will support enforcement and legal actions and stand up to scrutiny in actions brought by MWRA or others.

SECONDARY DUTIES:

- Acts as On-Call Manager for TRAC in rotation with other TRAC staff.
- Participates actively in TRAC multi-disciplinary work groups.
- Drafts reports, memoranda, and other documents.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Four year undergraduate degree in the chemistry, biology, environmental sciences, a related engineering or science discipline, computer science or information systems science, legal studies or other related field. Advanced degree preferred.
- (B) Knowledge and understanding of environmental regulatory issues, policies, and practices related to industrial wastewater treatment and discharge, as acquired through a minimum of 7 to 9 years of experience, of which at least 3 years should be in a supervisory capacity. This should include an understanding of industrial permits, and enforcing environmental requirements.
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Knowledge of the use, development, maintenance and management of complex computer-based information systems as a tool for supporting pretreatment program.
- (B) Ability to negotiate and reach agreement in an enforcement setting and to work with attorneys.
- (C) Ability to plan and implement programs.

- (D) Demonstrated effectiveness working across organizational boundaries and with persons at all levels in an organization.
- (E) Strong written and oral communication skills.
- (F) Ability to manage staff, including to organize, direct, train, assign duties to, supervise, motivate, and evaluate staff.

SPECIAL REQUIREMENTS:

Massachusetts Class D Motor Vehicle Operators License.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated, with the use of telephone, personal computer including word processing and other software, copy or fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of the job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the essential functions the employee is regularly required to use hands to finger, handle, feel or operate objects, including office equipment, or controls and reach with hands and arms. The employee frequently is required to sit, and talk or hear. The employee is occasionally required to stand, and walk.

The employee must regularly lift and/or move up to 10 pounds, occasionally lift and/or move up to 50 pounds. Specific vision abilities required by this job include close vision, distance vision and the ability to adjust focus.

WORK ENVIRONMENT:

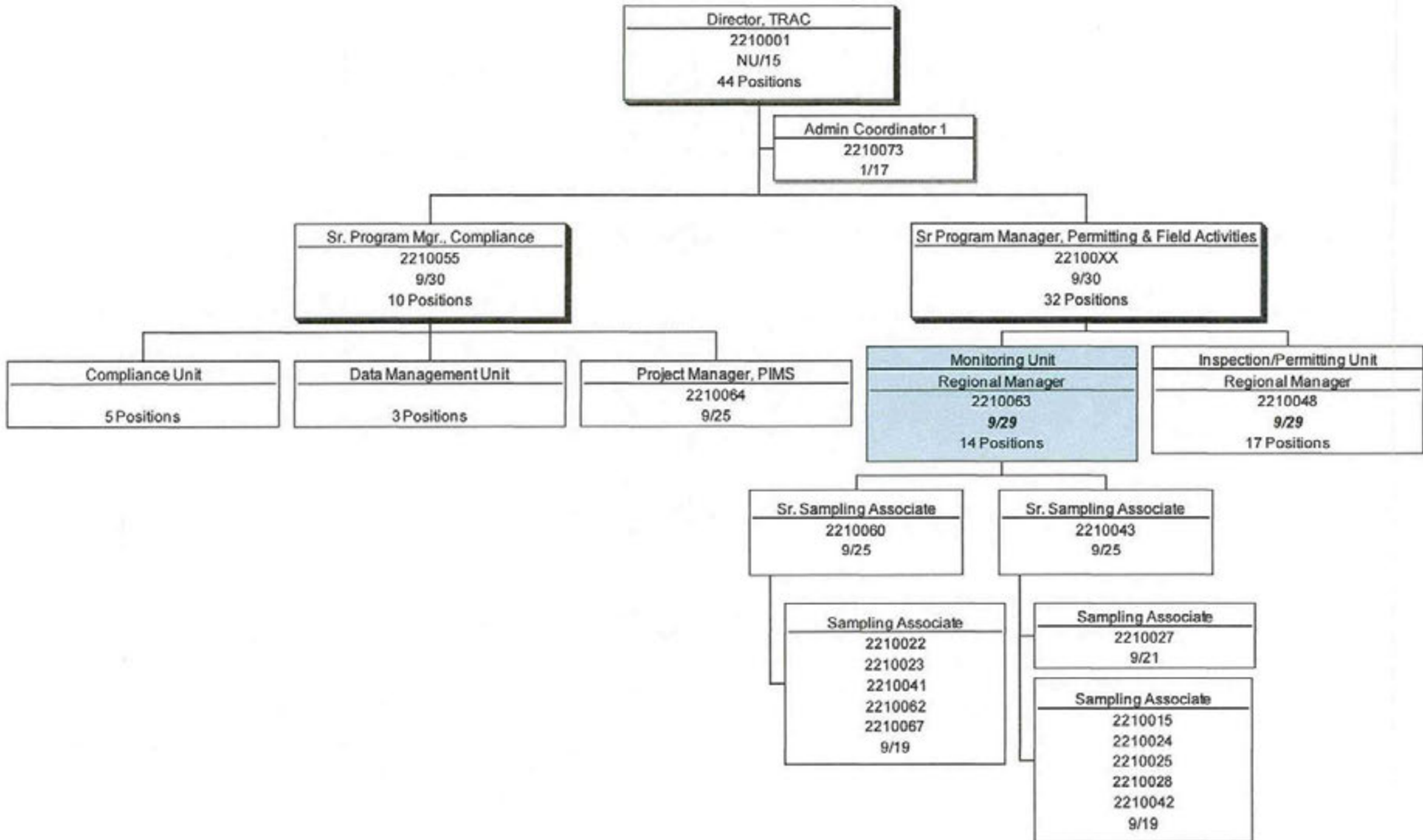
The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. While performing the duties of this job, the employee regularly works in an office environment.

The noise level in the work environment is a moderately quiet in office setting.

Programs, Policy & Planning

TRAC

September 2016





MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

REVISED

BOARD OF DIRECTORS' MEETING

to be held on

Wednesday, September 14, 2016

Location: 100 First Avenue, 2nd Floor
Charlestown Navy Yard
Boston, MA 02129

Time: 1:00 p.m.

Chair: M. Beaton
Vice-Chair: J. Carroll
Secretary: J. Foti
Board Members:
A. Blackmon
K. Cotter
P. Flanagan
A. Pappastergion
B. Peña
H. Vitale
J. Walsh
J. Wolowicz

AGENDA

- I. APPROVAL OF MINUTES
- II. REPORT OF THE CHAIR
- III. REPORT OF THE EXECUTIVE DIRECTOR
- IV. BOARD ACTIONS
 - A. Approvals
 1. Memorandum of Understanding and Financial Assistance Agreement with the City of Somerville (ref. AF&A B.1)
 2. Bond Defeasance of Future Debt Service (ref. AF&A B.2)
 3. Approval of New Wastewater Advisory Committee Member (ref. WW A.1)
 4. Emergency Water Supply Agreement with the Town of Ashland (ref. W. B.1)
 5. PCR Amendments – September 2016 (ref. P&C A.1)
 6. Appointment of Assistant Manager, Employment (ref. P&C A.2)
 7. Appointment of MBE/WBE Program Manager (ref. P&C A.3)

8. Appointment of Warehouse Manager (ref. P&C A.4)
9. Appointment of Systems Administrator III, MIS (ref. P&C A.5)
10. Appointment of Project Manager, SCADA Technicians (ref. P&C A.6)
11. Appointment of Project Manager, SCADA Technicians (ref. P&C A.7)
12. Appointment of Construction Coordinator, Engineering & Construction (ref. P&C A.8)
13. Appointment of Regional Manager – TRAC (ref. P&C A.9)

B. Contract Awards

1. Struvite, Scum, Sludge, and Grit Removal Services at the Deer Island Treatment Plant: Clean Harbors Environmental Services, WRA-4257 (ref. WW B.1)
2. Cambridge Branch Sewer: Hazen and Sawyer, Contract 7511 (ref. WW B.2)
3. Chelsea Creek Headworks Upgrade: BHD/BEC JV, A Joint Venture, Contract 7161 (ref. WW B.3)

C. Contract Amendments/Change Orders

1. Security Equipment Maintenance and Repair Services: Viscom Systems, Inc., Contract EXE-034, Change Order 2 (ref. AF&A C.1)
2. Remote Headworks Upgrades: Arcadis US, Inc., Contract 7206, Amendment 4 (ref. WW C.1)
3. Caruso Pump Station Improvements: Dewberry Engineers Inc., Contract 7037, Amendment 3 (ref. WW C.2)
4. Valve and Piping Replacement: Carlin Contracting Co., Contract 7275, Change Order 5 (ref. WW C.3)

V. CORRESPONDENCE TO THE BOARD

VI. OTHER BUSINESS

VII. EXECUTIVE SESSION

A. Litigation:

1. Summary of Litigation and Construction Claims and Negotiations
2. Cross-Harbor Cable Update

B. Collective Bargaining:

C. Security

- A. MWRA System Security Update Report

D. Real Estate

VIII. ADJOURNMENT

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the Board of Directors

July 13, 2016

A meeting of the Board of Directors of the Massachusetts Water Resources Authority was held on July 13, 2016 at the Authority headquarters in Charlestown. Vice-Chair Carroll presided. Present from the Board were Messrs. Blackmon, Cotter, Flanagan, Foti, Pappastergion, Peña, Vitale and Walsh. Ms. Wolowicz and Mr. Beaton were absent. Among those present from the Authority staff were Frederick Laskey, Executive Director, Steven Remsberg, General Counsel, Michael Hornbrook, Chief Operating Officer, Thomas Durkin, Director of Finance, Michele Gillen, Director of Administration, Ria Convery, Special Assistant to Executive Director, Marianne Connolly, Senior Program Manager, John Vetere, Deputy Chief Operating Officer, Karen Gay-Valente, Director of Human Resources, Carolyn Francisco Murphy, Director of Procurement, Andrea Adams, Senior Staff Engineer, John Gregoire, Program Manager, Reservoir Operations, Frederick Brandon, Assistant Director, Engineering, Mark Johnson, Director, Metropolitan Operations, Anandan Navanandan, Chief Engineer, Ester Lwebuga, Program Manager, and Bonnie Hale, Assistant Secretary. The meeting was called to order at 1:00 p.m.

APPROVAL OF MINUTES

Upon a motion duly made and seconded, it was

Voted to approve the minutes of the Board of Directors' meeting of June 29, 2016, as presented and filed with the records of the meeting.

REPORT OF THE EXECUTIVE DIRECTOR

Mr. Laskey, along with staff, reported on various matters, particularly a recently renewed volunteer-driven and independently-funded effort to erect an Irish memorial on Deer Island. Mr. Carroll expressed reservations about the project proceeding without the Board first meeting with the group implementing the memorial. There was general discussion and question and answer. No action was taken, with the general sense of the Board being to let the project continue as originally approved, and with Mr. Carroll stating his opposition for the record. Also discussed were drought conditions and water levels at the Quabbin Reservoir, the cancellation of the August 10th Board meeting, the August 18th Advisory Board wastewater facility tour and dedication of a bench at Nut Island in memory of MaryAnn McClellan, and upcoming polling of Board members to get a date set for the planned off-site Metropolitan Tunnel Redundancy meeting.

ADMINISTRATION, FINANCE & AUDIT COMMITTEE

INFORMATION

Delegated Authority Report – June 2016

There was a brief discussion and question and answer.

WASTEWATER POLICY & OVERSIGHT COMMITTEE

CONTRACT AWARD

Prison Point CSO Facility Improvements – Design, Construction Administration and Resident Engineering Services: Arcadis U.S., Inc., Contract 7359

Staff gave a presentation on the project. (Mr. Blackmon left the meeting.)

Upon a motion duly made and seconded, it was

Voted to approve the recommendation of the Consultant Selection Committee to select Arcadis U.S., Inc. to provide Design, Construction Administration and Resident Engineering Services, for the Prison Point CSO Facility Improvements project, and to authorize the Executive Director, on behalf

of the Authority, to execute said contract in an amount not to exceed \$2,838,370 for a term of 60-months from the Notice to Proceed.

(Mr. Blackmon returned to the meeting.)

WATER POLICY & OVERSIGHT COMMITTEE

INFORMATION

Overview of DCR/MWRA Source Water Protection Program

MWRA and DCR staff gave a joint presentation on the Program.

Weston Aqueduct Supply Main 3 Project Update

Staff noted that this project was part of the larger, long-term Metropolitan Tunnel Redundancy program, and gave a presentation.

CONTRACT AWARD

Rehabilitation of Sections 23, 24 and 47 Water Mains - Design, Engineering Services During Construction and Resident Engineering/Inspection Services: Green International Affiliates, Inc., Contract 6385

Staff gave a presentation on this project, and there was general discussion and question and answer, particularly on the possible causes for seeing decreasing numbers of engineering firms bidding on MWRA projects. Staff indicated that they would look into this issue and report back to the Board.

Upon a motion duly made and seconded, it was

Voted to approve the recommendation of the Consultant Selection Committee to select Green International Affiliates, Inc. to provide Design, Engineering Services during Construction and Resident Engineering/ Inspection Services for the Rehabilitation of Sections 23, 24 and 47, and to authorize the Executive Director, on behalf of the Authority, to execute said contract in an amount not to exceed \$3,506,868, for a term of 72-months from the Notice To Proceed.

PERSONNEL & COMPENSATION COMMITTEE

APPROVALS

PCR Amendments – July 2016

Upon a motion duly made and seconded, it was

Voted to approve amendments to the Position Control Register, as presented and filed with the records of the meeting.

Appointment of Purchasing Manager, Administration Division

Upon a motion duly made and seconded, it was

Voted to approve the Executive Director's recommendation to appoint Mr. Theodore N. Otis to the position of Purchasing Manager, Administration Division (Non-Union, Grade 14) at an annual salary of \$102,500, to be effective on the date designated by the Executive Director.

Appointment of Deputy Contracts Manager, Administration Division

Upon a motion duly made and seconded, it was

Voted to approve the Executive Director's recommendation to appoint Mr. Douglas Rice to the position of Deputy Contracts Manager, Administration Division (Unit 6, Grade 13) at an annual salary of \$116,606.39, to be effective on the date designated by the Executive Director.

Appointment of Senior Manager, Coordination and Control, Operations Division

Upon a motion duly made and seconded, it was

Voted to approve the Executive Director's recommendation to appoint Ms. Laurie Allen to the position of Senior Manager, Coordination and Control, Operations Division, (Unit 6, Grade 13), at an annual salary of \$95,658, to be effective on the date designated by the Executive Director.

The meeting adjourned at 2:45 p.m.