



MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard
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Executive Director

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PERSONNEL & COMPENSATION COMMITTEE MEETING

to be held on

Wednesday, September 19, 2018

Chair: J. Wolowicz
Vice-Chair: K. Cotter
Committee Members:
J. Carroll
P. Flanagan
J. Foti
A. Pappastergion
H. Vitale
J. Walsh

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

Time: 10:00 a.m.

REVISED AGENDA

A. Approvals

1. PCR Amendments for September 2018
2. Appointment of Director, Procurement
3. Appointment of Manager, Occupational Health and Safety, Administration
4. Appointment of Manager, Training and Development, Human Resources
5. Appointment of Manager, Power Generation, Deer Island
6. Appointment of Senior Program Manager, Water Quality
7. Appointment of Director, Design and Construction, Tunnel Redundancy

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the

Personnel and Compensation Committee

July 18, 2018

A meeting of the Personnel and Compensation Committee was held on June 18, 2018 at the Authority headquarters in Charlestown. Committee Vice Chair Cotter presided. Present from the Board were Messrs. Carroll, Flanagan, Pappastergion, Peña, Vitale and Walsh. Ms. Wolowicz and Mr. Foti and were absent. Among those present from the Authority staff were Frederick Laskey, Steven Remsberg, David Coppes, Carolyn Fiore, Thomas Durkin, Michele Gillen, Andrea Murphy, Kathleen Murtagh and Kristin MacDougall. The meeting was called to order at 11:34 a.m.

Information

* Tunnel Redundancy Department Staffing

Staff made a verbal presentation about a proposed staffing plan for the Metropolitan Redundancy Program. There was general discussion and questions and answers.

Upon a motion duly made and seconded, it was

Voted: to convert this agenda item from an informational matter to one calling for a vote by the Board of Directors. (ref. P&C A.1.)

Approvals

* PCR Amendments – July, 2018

Staff described the need to change two positions in the Position Control Register to reflect organizational changes in the Operations Division and the Administration Division.

The Committee recommended approval (ref. P&C B.1.)

* Committee recommendation approved by the Board on July 18, 2018

* Appointment of Deputy Contracts Manager

The Committee recommended approval (ref. P&C B.2.)

* Appointment of General Counsel

The Committee recommended approval (ref. P&C B.3.)

Mr. Vitale requested a list of employees who were hired from outside MWRA and a list of MWRA employees who were promoted from within.

The meeting adjourned at 11:48 a.m.

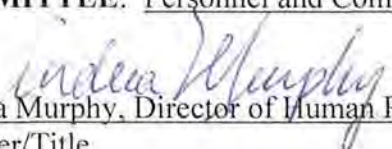
* Committee recommendation approved by the Board on July 18, 2018

STAFF SUMMARY

TO: Board of Director
FROM: Frederick A Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: September PCR Amendments



COMMITTEE: Personnel and Compensation


Andrea Murphy, Director of Human Resources
Preparer/Title

 INFORMATION

 X VOTE


Michele S. Gillen
Director, Administration

RECOMMENDATION:

To approve 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 and Compensation Committee.

September PCR Amendments

The three PCR changes include two new positions in the Tunnel Redundancy Program department. The Operations Division amendment reflects changing one position to address staffing needs.

The amendments are:

Operations Organizational Changes

1. Title change to a vacant position in the Metro Maintenance/Equipment Maintenance Department, Operations Division, Equipment Repair Foreman, Unit 2, Grade 17, to M&O Specialist, Unit 2, Grade 16 to address staffing needs.

Tunnel Redundancy Program

1. To create a new position of Staff Engineer (Tunnel Redundancy), Unit 9, Grade 19.
2. To create a new position of Senior Geotechnical Engineer, Unit 9, Grade 25.

The first amendment requires approval by the Personnel and Compensation Committee. The second two amendments require Board approval after review by the Personnel and Compensation Committee.

BUDGET/FISCAL IMPACT:

The annualized budget impact of this PCR amendment will range in cost of \$134,506 to a cost of \$185,157. The actual cost will depend on the salary rate for the new incumbents. Staff will ensure that the cost increase associated with these PCR amendments will not result in spending over the approved FY19 Wages and Salaries budget.

ATTACHMENTS:

Old Job Descriptions
New Job Descriptions

**MASSACHUSETTS WATER RESOURCES AUTHORITY
POSITION CONTROL REGISTER AMENDMENTS
FISCAL YEAR 2019**

PCR AMENDMENTS REQUIRING PERSONNEL & COMPENSATION COMMITTEE APPROVAL - September 19, 2018

Number	Current	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Current/Budget	Estimated		Estimated Annual		Reason For Amendment
	PCR #									Salary	New Salary	\$ Impact			
P5	5470058	V	T, G	Equipment Repair Foreman	2	17	M & O Specialist	2	16	\$77,915	\$52,503	\$74,263	-\$2,476	-\$3,652	To meet program needs, aligning title with position duties.
PERSONNEL & COMP COMMITTEE TOTAL=										1	SUBTOTAL:		-\$2,476	-\$3,652	

PCR AMENDMENTS REQUIRING BOARD APPROVAL- July 18, 2018

Number	Current	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Current/Budget	Estimated		Estimated Annual		Reason For Amendment
	PCR #									Salary	New Salary	\$ Impact			
B5	N/A	N/A	N/A	N/A	N/A	N/A	Staff Engineer (Tunnel Redundancy)	9	19	\$0	\$59,182	\$81,461	\$59,182	\$81,461	To create a new position to support the multi-year Tunnel Redundancy Program.
B6	N/A	N/A	N/A	N/A	N/A	N/A	Senior Geotechnical Engineer	9	25	\$0	\$77,800	\$107,348	\$77,800	\$107,348	To create a new position to support the multi-year Tunnel Redundancy Program.
BOARD TOTAL =					2	SUBTOTAL:		\$136,982	-	\$188,809					
GRAND TOTAL =					3	TOTAL ESTIMATED COSTS:		\$134,506	-	\$185,157					

**MWRA
POSITION DESCRIPTION**

OLD

POSITION: Equipment Repair Foreman
PCR#: 5470058, 5470065
DIVISION: Operations
DEPARTMENT: Field Operations Department - Equipment Maintenance Unit
LOCATION: Chelsea Maintenance Facility

BASIC PURPOSE:

Supervises daily operations and activities of assigned staff.

SUPERVISION RECEIVED:

Works under the general supervision of a Unit Supervisor.

SUPERVISION EXERCISED:

Exercises close supervision of assigned M & O Specialists, skilled and unskilled labor.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Supervises assigned crews in the performance of various maintenance functions.
- Prepares daily and weekly job status and time utilization to track execution of written work plan. Details include, but are not limited to, crew time productivity, material utilization, and equipment utilization.
- Troubleshoots problems and performs regular equipment inspections to determine repairs or corrective actions.
- Communicates operational and maintenance equipment problems or concerns to supervisor and appropriate personnel.
- Assists with the procurement of tools, parts and materials.
- Performs various preventive and corrective non-licensed maintenance, repair & installation tasks related to mechanical, electro-mechanical, hydraulic and pneumatic equipment and systems.
- Works from manufacturer's manuals and vendor specifications, blue prints and schematics when applicable, in the areas of instrumentation and control, plumbing, heating, ventilation

and air conditioning and electrical.

- Monitors and maintains maintenance records and logs. Enters information into Maximo (computerized maintenance management system) database and work order system.
- Performs condition monitoring tasks such as oil sampling, vibration readings, or takes other measurements with condition monitoring devices.
- Conducts performance reviews, performs disciplinary actions (issuing verbal warnings and initiating written warnings) when necessary, and prepares regular reports, as required, on work accomplished and crew productivity.
- Assists the Planner/Scheduler in determining appropriate preventive maintenance practices and schedules and estimated levels of effort to ensure that equipment performance is maximized.
- Operates motor vehicles, such as vans and pickup trucks to transport materials to work sites, and pick up and deliver supplies and equipment.
- Abides by and ensures assigned staff abide by all MWRA and Department safety policies and procedures. Adheres to hazardous materials handling and disposal safety procedures, and related Best Management Practices.
- 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.
- Attends technical training seminars and workshops as required. Participates in RCM analyses and other FAMP-related initiatives.
- Performs routine testing, lockout/tagout, operation (startup/shutdown) and adjustment of process equipment. Works with Operations Area Supervisors to coordinate shutdown and startup of equipment.

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.
- Operates forklift or other light equipment not requiring a special license.
- Removes snow from immediate work area in order to perform tasks.

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A high school diploma or GED; and
- (B) Completion of formal mechanic training program; and
- (C) Three (3) to five (5) years experience as a mechanic working on equipment typically found in water pumping and/or wastewater treatment facilities, including mechanical, electro-mechanical, pneumatic or hydraulic equipment; and
- (D) Two (2) to four (4) years of related supervisory experience; or
- (E) Any equivalent combination of experience or education.

Necessary Knowledge, Skills and Abilities:

- (A) Basic reading, writing, mathematical, scientific and oral communication skills.
- (B) Working knowledge of the methods, procedures and work rules relating to preventive maintenance, repair, and proper inspection of mechanical, electro-mechanical, pneumatic or hydraulic equipment
- (C) Working knowledge of the occupational hazards and safety practices common to the trade, and the satisfactory completion of MWRA safety training in the use of hoists, rigging, and material handling equipment.
- (D) Working knowledge of the methods, procedures and work rules relating to machine shop operations in a large industrial facility.
- (E) 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.
- (F) Ability to supervise staff effectively and to establish and maintain effective working relationships with subordinates superiors and associates.
- (G) Trained in confined space entry. Capable of entering, setting up, installing and disassembling confined space equipment. Ability to work in a confined space.
- (H) Trained in CPR and First Aid.

SPECIAL REQUIREMENTS:

- A Valid Massachusetts Class D Vehicle Operators License.
- Possession of a Valid Grade II Wastewater Treatment Plant Operator's License or Collections Systems II License, or Water Distribution II License or Water Treatment II License.

TOOLS AND EQUIPMENT USED:

Hand tools, mobile radio, telephone, beeper, 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 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 25 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.

June 2004

NEW

**MWRA
POSITION DESCRIPTION**

POSITION: M & O Specialist
DIVISION: Operations
DEPARTMENT: Clinton, Deer Island, Field Operations

BASIC PURPOSE:

Performs inspections, overhauls, maintenance and repairs of various mechanical, electrical-mechanical, hydraulics systems & equipment at various facilities throughout the Authority. Performs assigned functions as part of a team.

SUPERVISION RECEIVED:

Works under the general supervision of a Unit Supervisor.

SUPERVISION EXERCISED:

Exercises supervision of entry-level staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Works from manufacturer's manuals and specifications, blueprints, schematics and verbal instructions to install, repair, troubleshoot, inspect, check & maintain mechanical, electrical-mechanical & hydraulic systems including HVAC mechanical components, which may include those carrying refrigerant. Performs electrically related activities specified by work order.
- Performs preventive and corrective maintenance on mechanical, electromechanical, hydraulic and pneumatic equipment according to vendor specifications.
- Performs various non-licensed maintenance, repair & installation tasks related to plant equipment and systems in the areas of instrumentation and control, plumbing, heating, ventilation and air conditioning and electrical.
- Fabricates devices and assemblies of sheet metal using powered and manual sheet metal

forming tools.

- Welds, brazes and solders using gas and electric equipment common to trade.
- 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, level control devices, mixers, oxygen generation, chemical feed and odor control equipment.
- Follows established safety, operating, and emergency response procedures and policies established by MWRA.
- Operates motor vehicles, such as vans and pickup trucks, to pick up and deliver supplies and equipment to work sites.
- Installs retrofits/installation of new equipment related systems, modification and alignment of existing equipment to specifications.
- Supervises assigned Skilled Laborers, Building & Grounds Workers, and other maintenance personnel as needed.
- Performs, documents and reports results in the MAXIMO database of inspections and work performed.
- Performs work in compliance with the Operations Integrated Contingency Plan.
- 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.
 - 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 safety 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, 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:

- Promotes and participates in the productivity improvement plan.
- Trains peers and subordinates as requested.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A high school education or GED; and
- (B) Satisfactory completion of formal mechanic training program and a minimum of two (2) years related experience, and
- (C) Satisfactory completion of training in accordance with the Productivity Improvement Program; or
- (D) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Basic reading, writing, mathematical and oral communication skills.
- (B) Thorough knowledge of the standard practices, materials, tools, occupational hazards and safety practices common to the trade.
- (C) Skills in the operation of tools, instruments and equipment of the trades.
- (D) Computer skills necessary to access and use the Maximo & Lawson Database.
- (E) Trained in Confined Space Entry, CPR and First Aid, and must be capable of entering, setting-up, installing, disassembling confined space equipment and ability to work in a confined space.
- (F) Ability to attain knowledge and work processes required to perform maintenance tasks required by Reliability Centered Maintenance or similar Maintenance Management Program.

SPECIAL REQUIREMENTS:

- Possession of a Valid Massachusetts Class D Drivers License.
- For DI and Clinton, a valid Grade II Wastewater Treatment Plant Operator's License or the ability to obtain the correct license within one (1) year.
- For Southboro, a valid Water Distribution II or Treatment II License or the ability to obtain the correct license within one (1) year.
- For Chelsea, a valid Grade II Wastewater Operator's License, Water Distribution II License, Water Treatment II License, or Collections Systems II License or the ability to obtain the correct license within one (1) year.
- 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 frequently is required to stoop, kneel, crouch or crawl. The employee is occasionally 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 50 pounds. Specific vision abilities required by this job include close vision, distance vision, color 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 regularly 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.

The 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.

November 2004

**MWRA
POSITION DESCRIPTION**



POSITION: Staff Engineer (Tunnel Redundancy)

PCR#:

DIVISION: Tunnel Redundancy

DEPARTMENT: Tunnel Redundancy

BASIC PURPOSE:

Participates in the planning, engineering, design and construction of projects related to the Metropolitan Tunnel Redundancy Program as well as rehabilitation and capital improvement of other water and wastewater facilities and infrastructure.

SUPERVISION RECEIVED:

Works under the general supervision of the Manager, Design (Tunnel Redundancy).

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Works on tasks related to the evaluation, planning, design, or construction of tunnel facilities and wastewater treatment plants, wastewater pumping stations, CSO facilities, headworks facilities, collection system components, water treatment facilities, water pumping stations, distribution and transmission lines, and support buildings and equipment.
- Participates in the preparation of concept and preliminary design reports, designs, and cost estimates. Participates in the development, implementation and monitoring of construction and service contracts, plans and specifications for proposed construction, modifications / replacements, permit applications and permits. Participates in shop drawing reviews.
- Utilizes Authority databases to gather and summarize facility and system data and assists senior engineering staff with evaluation and presentation of data.
- Participates in the development of calculations, design documents and the gathering of information for inclusion in engineering reports, construction activities, proposed modifications / replacements, technical or planning studies, and evaluations.

- Participates in the engineering resolution and recommendations to civil engineering problems.
- Participates in overseeing the work of professional engineering consultants, including engineering consultants, as well as construction firms for quality and responsiveness of work products, budgets and schedules, and conformance to contract terms.
- Participates in the inspection of construction for conformance to plans and specifications; and plans sequence of work with contractors on jobs and submits progress reports. Acts as a Resident Engineer on minor construction projects.
- Requires participation in emergency response to any/all MWRA emergencies when assigned.
- Participates in contract administration tasks.

SECONDARY DUTIES:

- Drafts internal or external memoranda, correspondence, reports, and specifications.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A Bachelor's degree in civil or geotechnical engineering or related engineering field; and
- (B) One (1) to two (2) years of design or construction engineering experience on water and wastewater facilities and infrastructure 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, Excel, and AutoCad.
- (B) Familiarity with engineering software related to subsurface investigation or geotechnical engineering is preferred.
- (C) Demonstrated interpersonal, written and oral communication skills.

SPECIAL REQUIREMENTS:

Valid Massachusetts Class D Drivers license.

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 or underground 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.

September 2018

**MWRA
POSITION DESCRIPTION**



POSITION: Senior Geotechnical Engineer (Tunnel Redundancy)

PCR#:

DIVISION: Tunnel Redundancy

DEPARTMENT: Tunnel Redundancy

BASIC PURPOSE:

Participates in the planning, geotechnical engineering, design, and construction of projects related to the Metropolitan Tunnel Redundancy Program as well as rehabilitation and capital improvement of other water and wastewater facilities and infrastructure.

SUPERVISION RECEIVED:

Works under the general supervision of the Manager, Geotechnical and Tunneling (Tunnel Redundancy).

SUPERVISION EXERCISED:

Exercises close supervision over a small staff of drafters, junior engineers, field employees, and inspectors.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Serves as a geotechnical engineer during the planning, design and construction of the tunnel systems related to the Tunnel Redundancy Program.
- Works on tasks related to the evaluation, planning, design, or construction of tunnel facilities and wastewater treatment plants, wastewater pumping stations, CSO facilities, headworks facilities, collection system components, water treatment facilities, water pumping stations, distribution and transmission lines, and support buildings and equipment.
- Prepares and reviews concept and preliminary design reports, designs, and cost estimates. Participates in the development, implementation and monitoring of construction and service contracts, plans and specifications for proposed construction, modifications / replacements, permit applications and permits. Participates in shop drawing reviews.

- Utilizes Authority databases to gather and summarize facility and system data and assists senior engineering staff with evaluation and presentation of data.
- Assists with the management of subsurface data records, records access, and exchange of technical information.
- Performs calculations, develops design documents, and gathers information for inclusion in engineering reports, construction activities, proposed modifications / replacements, technical or planning studies, and evaluations.
- Resolves or recommends ways to solve civil engineering issues and problems including subsurface exploration and testing methods, tunnel alignment, shaft location selection, shaft design, tunnel diameter and liner system, tunnel boring machine specification, shaft and tunnel groundwater control, probing and grouting, blasting, ground monitoring, and instrumentation.
- Performs professional engineering work of substantial difficulty and importance, including the preparation of reports and contract plans and specifications requiring the exercising of independent engineering judgment.
- Reviews the work of professional engineering consultants, including engineering consultants, as well as construction firms for quality and responsiveness of work products, budgets and schedules, and conformance to contract terms.
- Conducts inspection of construction for conformance to plans and specifications. Plans sequence of work with contractors on jobs and submits progress reports. Acts as a Resident Engineer on major construction projects.
- Participates in emergency response to any/all MWRA emergencies as needed.
- Participates in contract administration tasks.

SECONDARY DUTIES:

- Assists in the resolving difficult administrative and engineering problems and supervises material quantities and project costs.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Both a Bachelor's and Master's degree in geotechnical engineering, geology, or civil engineering or related engineering field; and
- (B) Two (2) years civil/geotechnical/tunnel engineering experience including monitoring subcontractors work-related to test borings, rock coring, and monitoring wells as well as test boring and rock core logging; or
- (C) Any equivalent combination of education or experience.

PREFERRED QUALIFICATIONS:

- (A) Experience in geophysical testing, in-situ instrumentation, and ground improvement.
- (B) One year of supervisory experience.

Necessary Knowledge, Skills and Abilities:

- (A) Knowledge of principles and practices of civil engineering and geotechnical engineering.
- (B) Understanding of issues related to design, construction, and operation of large and complex water and wastewater facilities and infrastructure.
- (C) Demonstrated interpersonal, verbal and written communication skills.
- (D) Demonstrated ability to work effectively as part of a project team and also to function independently with minimal supervision.
- (E) Familiarity with engineering software such as CADD, and those related to subsurface investigations, geotechnical engineering, shaft, and tunnel design is preferred.

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle Operator's license.
Registration as a Massachusetts Professional Engineer is preferred.

TOOLS AND EQUIPMENT USED:

Office machines as normally associated with the use of telephone, personal computer including word processing and other software, copy and machines.

PHYSICAL DEMANDS:

The physical demands described 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 talk or hear and to use hands to finger, handle or operate objects, including office equipment, controls. The employee is frequently required to reach with hands and arms. The employee is occasionally required to stand; walk; sit; climb or balance; and stoop, kneel, crouch or crawl.

The employee may be required frequently to lift and/or move up to ten pounds and occasionally be required to lift and/or move up to twenty five 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 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 frequently works in outside weather conditions. The employee at times works near moving mechanical parts, and is at times exposed to wet and/or humid conditions and vibration. The employee occasionally works in high or underground precarious places and is at times 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 a field setting and moderately quiet in an office setting.

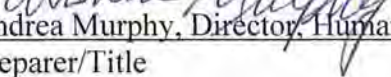
September 2018

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Appointment of Director, Procurement



COMMITTEE: Personnel & Compensation


Andrea Murphy, Director, Human Resources
Preparer/Title

 INFORMATION

 X VOTE


Michele S. Gillen
Director, Administration

RECOMMENDATION:

That the Board approve the appointment of Mr. Douglas Rice to the position of Director, Procurement (Non-Union, Grade 16) in the Administration Division, at an annual salary of \$147,556.00, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of Director of Procurement became vacant upon the promotion of the incumbent. The Procurement Department directs and manages a centralized system of procurement, surplus property disposal, consultant selection, contract administration and inventory management in accordance with all applicable state and federal laws and regulations as well as MWRA's Policies and Procedures.

The position reports directly to the Director of Administration and manages the day to day operations of the Procurement Department, providing guidance and direction on procurement-related matters to the Operations, Finance and Law Divisions. The Director of Procurement works closely with MWRA's other divisions, particularly Operations, to develop and approve appropriate design services procurement processes and to identify the statutory requirements of construction projects.

Selection Process

The position of Director of Procurement was posted internally and two candidates applied. The Director of Administration, the Chief Operating Officer and the Special Assistant for Affirmative Action interviewed both candidates and recommend the appointment of Mr. Douglas Rice to the Director of Procurement position. Mr. Rice's relevant experience, abilities, knowledge and education make him the most qualified for this position.

Mr. Rice has served as a Deputy Contracts Manager at the MWRA since 2016. In this role, he has managed all aspects of the procurement and contract administration process from initial

submission of contract documents through contract closeout. He manages Assistant Contract Managers in performance of his functions and, in the absence of the Director, senior managers have relied on Mr. Rice to provide guidance and make recommendations on a variety of procurement matters.

Prior to joining the MWRA, Mr. Rice served as General Counsel for the Massachusetts Department of Conservation and Recreation where he supervised a department of eleven attorneys and seven administrative staff, and provided strategic advice and counsel to the Commissioner and department heads on a variety of legal, legislative and transactional matters. In this role, he reviewed and approved construction contracts, handled bid protests and litigation, and oversaw the development of Requests for Qualifications and Information. Mr. Rice has previously served as the Compliance Manager/General Counsel for the Massachusetts Recovery and Reinvestment Office where he created and managed the Commonwealth's statewide compliance and monitoring program to oversee the approximately \$7 billion in American Recovery and Reinvestment Act funds received by the Commonwealth. He has also served as an Assistant Attorney General for the Massachusetts Office of the Attorney General and as an Assistant District Attorney at the Office of the Middlesex District Attorney.

Mr. Rice is highly regarded by his supervisor and peers in Procurement, as well as in the other MWRA Departments.

Mr. Rice has a Bachelor's degree in Intergovernmental Affairs from George Washington University and a Juris Doctorate from Suffolk University Law School.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the FY19 CEB for this position.

ATTACHMENTS:

- Resume of Douglas Rice
- Position Description
- Organizational Chart

DOUGLAS RICE

EXPERIENCE

Massachusetts Water Resources Authority

Deputy Contracts Manager

August 2016 - Present

Boston, MA

- Draft, negotiate and review contract terms and conditions; oversee the preparation and updating of standard forms and other contract provisions; supervise Assistant Contracts Managers and direct and assist Authority staff in performance of these functions.
- Oversee and administer advertising programs and systems to open bids and award and execute contracts in compliance with Authority standards and Commonwealth law.
- Review bids, contract processes and documents for format and substance as well as compliance with Authority standards and applicable law, especially MGL Chapters 149 and 30; direct assigned Assistant Contracts Managers in performance of these same functions.
- Assist the Director, Procurement in the defense of contract claims, bid protests and the dispute resolution process.
- Advise Law Division and Senior Authority staff on contract matters as required.
- Develop and implement Authority-wide policies and procedures for all elements of the contract function, including creation, review and/or evaluation of RFQs, RFPs, proposals, bids and contracts as well as the negotiation of contracts and terms and the review of contract amendments, change orders, contract close-out and final payment.
- Review contract amendments and change orders; participate in contract close-out and final payment stages.
- Participate with administrative staff in the establishment and maintenance of a contract database that tracks progress through the advertising, bidding and award stages as well as through the life of the contract.
- Participate in Consultant/Contractor Selection Committees as required.

MA Department of Conservation and Recreation

General Counsel

July 2011 – August 2016

Boston, MA

- Supervise a department of 11 attorneys and 7 administrative and support staff.
- Provide strategic advice and counsel to the Commissioner and department heads on a variety of legal, legislative and transactional matters.
- Review and approve construction contracts and statewide service contracts. Interact with the Attorney General's Office on contract related disputes including bid protests and litigation.
- Oversee the development of RFQ's and RFI's. Ensure that the review and selection of winning proposals is done in accordance with all applicable policies and procedures.
- Handle a caseload that includes litigation, real estate, employment, construction contracting and environmental permitting matters.

Massachusetts Recovery & Reinvestment Office

Compliance Manager / General Counsel

July 2009 – July 2011

Boston, MA

- Created and managed the statewide compliance and monitoring program to oversee the approximately \$7 billion in American Recovery & Reinvestment Act (ARRA) funds received by the Commonwealth.
- Established a state wide fraud, waste and abuse prevention training program. Developed and maintained a web-based fraud, waste and abuse reporting mechanism.
- Worked closely with the Inspector General, Attorney General, Comptroller and Governor's Offices to ensure compliance with a host of state and federal ARRA requirements.
- Provided guidance to municipalities on various state and federal funding requirements.

Office of the Attorney General

May 2005 – July 2009

Government Bureau, Trial Division (July 2008 – July 2009)

- Litigated a variety of civil actions brought against state agencies including personal injury claims, subrogation matters involving motor vehicle accidents and appeals of agency administrative decisions.
- Responded to interrogatories, drafted opposition motions, argued motions to dismiss, negotiated settlements and managed discovery.

Criminal Bureau (May 2005 – July 2008)

- Investigated, indicted, and convicted defendants on charges of public corruption, embezzlement, healthcare fraud, larceny, computer crimes and narcotics charges.
- Successfully argued trial and pre-trial motions in district and superior court. Prosecuted a three day jury trial in superior court involving violations of the Clean Air Act.
- Investigated the July 2006 ceiling collapse in the I-90 Connector Tunnel. Led the management and review of over 400,000 pages of documents. Supervised up to 20 attorneys and investigators. Secured a manslaughter indictment against a corporation after leading an extensive grand jury investigation.
- Pursued a federal grand jury investigation into false claims stemming from the ceiling collapse in the I-90 Connector Tunnel. Appointed a Special Assistant United States Attorney.

Office of the Middlesex District Attorney

August 2003 – May 2005

Assistant District Attorney

Cambridge, MA

- Successfully prosecuted fifteen district court jury trials. Tried numerous bench trials, drafted and argued motions and conducted bail hearings.

EDUCATION**Suffolk University Law School, J.D., May 2003**

- Dean's List 2001-2002

The George Washington University Elliott School of International Affairs, B.A., May 2000

- Concentration in International Politics, focusing on foreign relations, economics and international organizations

**MWRA
POSITION DESCRIPTION**

POSITION: Director, Procurement

DIVISION: Administration

DEPARTMENT: Procurement

BASIC PURPOSE:

Directs and manages a centralized system of procurement and surplus property disposal, consultant selection and contract administration and inventory management in accordance with all applicable state and federal laws and regulations.

SUPERVISION RECEIVED:

Works under the general supervision of the Director, Administration.

SUPERVISION EXERCISED:

Exercises close supervision of the Contracts Department, the Purchasing Manager, and the Materials Management Manager and oversees a staff of approximately forty-six (46) employees.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Oversees a centralized system to procure construction, maintenance, operations and engineering, MIS, financial and other MWRA contracts and services and to purchase goods and materials. Manages MWRA's inventory and manages MWRA's disposition of surplus personal property in accordance with MWRA Policies and Procedures.
- Maintains and controls MWRA consumables and spare parts inventory at three locations.
- Develops policies and procedures for all elements of purchasing and contract services.
- Assures compliance with M.G.L. Chapter 30 and 149 and other applicable federal and state statutes and regulations and MWRA Policies and Procedures.
- Coordinates procurement and contract administration policies and procedures with the Special Assistant for Affirmative Action and Compliance.
- Directs and implements the advertising, bidding and award procedures for all procurements,

including electronic bidding.

- Oversees the development and maintenance of a variety of vendor sources for purchased materials and services including MBE and WBE sources; evaluates vendor quality, delivery and pricing considerations.
- Oversees the negotiation and placement of purchase orders with vendors for required materials and services; coordinates with end users to ensure that vendor commitments are fulfilled.
- Develops and implements a centralized system to administer all MWRA contracts and directs the development and maintenance of a master contract log.
- Oversees the review and approval of contract amendments and change orders and assists in the prosecution of affirmative contract claims, the defense of contract claims and the dispute resolution process.
- Directs MWRA's response to bid protests before the Attorney General's Office.
- Reviews and approves Procurement and other staff summaries prior to submission to the Board of Directors; appears before Board of Directors on procurement matters.
- Reviews and approves, as necessary, sole source and proprietary requests.
- Directs the consultant selection process, including negotiating and drafting of all professional services contracts; reviews and approves all phases of contract preparation and implementation.
- Approves all contracts prior to execution by the Executive Director.

SECONDARY DUTIES:

- Participates in preparing for collective bargaining as needed and hears Step-One Grievances.
- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A Bachelor's degree in business, management, public administration or a related field; and

(B) A JD in law; and

(C) Understanding of procurement and contract administration as acquired through ten (10) to twelve (12) years related experience, of which at least five (5) years must be in a supervisory capacity; or

(D) Any equivalent combination of education and experience.

Preferred Qualifications:

(A) Experience in a large public sector agency.

Necessary Knowledge, Skills and Abilities:

(A) Knowledge of management procedures.

(B) Excellent written and oral communication skills.

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 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.

The employee must 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:

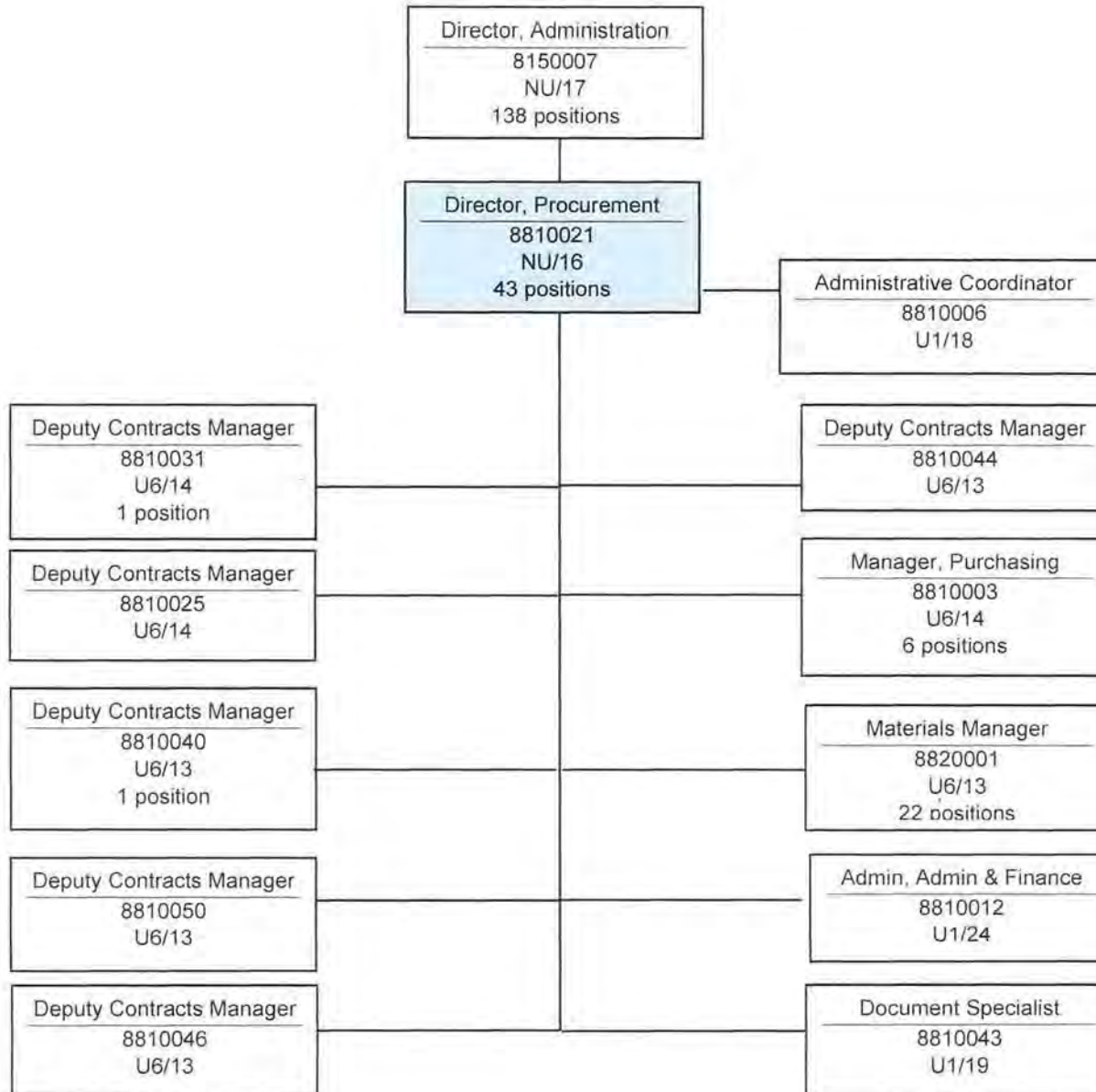
The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. While performing the duties of this job, the employee regularly works in an office environment. The employee occasionally works in outside weather conditions.

The noise level in the work environment is usually a moderately quiet office setting.

July 2018

Administration Procurement

September 2018



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Appointment of Manager, Occupational Health & Safety



COMMITTEE: Personnel & Compensation


Andrea Murphy, Director Human Resources
Preparer/Title

 INFORMATION

 X VOTE


Michele S. Gillen
Director, Administration

RECOMMENDATION:

That the Board approve the appointment of Mr. Matthew Dam to the position of Manager, Occupational Health & Safety (Non-Union, Grade 14) in the Administration Division, at an annual salary of \$133,574.00 commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Commonwealth of Massachusetts enacted legislation, with an effective date of February, 2019, requiring public entities to provide workplace health and safety standards that are at least as stringent as OSHA. In order to meet these new standards and to assure compliance with soon to be promulgated Massachusetts Department of Labor Standards regulations, the Board on June 20, 2018, approved the creation of a new position, Manager, Occupational Health & Safety, to oversee and manage MWRA's comprehensive safety program under one umbrella. Among the critical responsibilities of this important new position are site safety assessments, data analysis, safety program enhancements, incident response and compliance tracking and reporting. This position will report directly to the Director of Administration and will oversee all facets of MWRA's workplace health and safety program to assure that MWRA staff have safe and healthy working conditions that are compliant with the new Commonwealth of Massachusetts regulations.

Selection Process

The position of Manager, Occupational Health & Safety was posted internally and externally. One internal and twenty-five external candidates applied. Five qualified candidates were interviewed by the Director of Administration and the Deputy Chief Operating Officer. Mr. Dam was selected as the most qualified candidate based on his experience, abilities, knowledge and education.

Mr. Dam has over twenty years of experience in environmental health and safety in both wastewater and manufacturing. Mr. Dam currently serves as the Senior Services and Projects Manager at General Electric Aviation. He is responsible for the health and safety program at a large manufacturing plant of 300 mostly unionized employees who perform a wide variety of

industrial tasks. His responsibilities include job site and safety data analysis, post injury investigations, and OSHA compliance and reporting. At General Electric Aviation, Mr. Dam is also responsible for developing, implementing and managing all emergency plans and procedures for the site including coordinating all site safety drills and training for 2,700 employees and 30 buildings. Mr. Dam also manages compliance of their water and wastewater programs. He previously worked for the MWRA for 17 years in MWRA's Toxic Reduction and Control department (TRAC) so he has a very good understanding of MWRA's operations. He started working for the MWRA as an Intern in Laboratory Services and was later hired as a Sampling Associate. Mr. Dam was promoted to increasingly responsible positions including Senior Sampling Associate, Industrial Coordinator and, including most recently as a TRAC Regional Manager.

Mr. Dam has a M.S. in Facilities Management and a B.S. in Marine Safety and Environmental Protection from Massachusetts Maritime Academy. He is also certified as a Safety Management Specialist by the Board of Certified Safety Professionals.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the FY19 CEB for this position.

ATTACHMENTS:

Resume of Matthew Dam
Position Description
Organizational Chart

MATTHEW J. DAM

PROFESSIONAL SUMMARY

Environmental Health and Safety Manager with 17 years of experience in the wastewater industry and 4 years in a manufacturing industry. Proven ability to manage people and programs by influencing all levels of a company. Utilize skills that include organization, communication and the ability to multitask to assure that program goals are delivered.

EXPERIENCE

GENERAL ELECTRIC AVIATION Lynn, MA

Senior Services and Projects Manager, EHS

November 2014- Present

- Responsible for all aspects of safety for a large union manufacturing plant of 300 employees. Work with Senior Leadership and shop employees to build and sustain a safety culture. Review jobs and tasks within the plant to eliminate hazards, draft Job Safety Analysis reports for tasks, create strength of defense matrices and validate controls. Provide leadership on incident investigations by reviewing injuries, near misses or employee concerns. Provide guidance to employees and senior leadership on issues related to ergonomic concerns, machine guarding, electrical safety, LOTO and PPE. Work with the onsite medical center and/or workman's comp to review first aids and injuries, determine OSHA recordability, track days away from work, employee restrictions and return to work. Create reports to review leading and lagging indicators to find weaknesses in daily operating rhythms that could result in an injury or an environmental event. Other responsibilities include daily "safe start" meetings, tracking and delivering regulatory training, running safety committee teams, safety walks, internal audits, and encouraging employee involvement in all things safety.
- Responsible for all emergency plans and procedures for the site including drafting, updating, and implementing requirements Coordinate all site drills and training for 2700 employees and 30 buildings. Demonstrate site compliance through documentation of all activities. Designated Qualified Individual (QI) in the facility response plan for the site as required under 40 CFR Part 112. Designated Emergency Coordinator (EC) in the integrated contingency plan for the site as required by the EPA. Represent GE in the Mystic Region Planning Committee as required under EPCRA for facilities that submit a Tier II report to the EPA for the storage of hazardous chemicals. Coordinate annual tours for all 150 Lynn Fire Fighters to become familiar with the site layout, the hazardous processes and the location of valuable assets.
- Responsible for compliance of all Water programs. Manage federal, state and local regulatory requirements including NPDES, storm water, SPCC, Massachusetts Contingency Plan, Industrial Pretreatment, and Lynn Conservation Commission. Represent GE on communications with regulatory agencies (EPA, MassDEP, LWSC) including permit applications, permit renewals, inspections, audits and all reporting requirements. Draft RFQs, host bid walks, and procure engineering studies related to water compliance. Interact with all levels of the company to assure compliance.
- Manage the 24/7 operation of the Consolidated Drain Treatment system (CDTS), a storm drain system with storm water outfalls to the river and a ground water treatment system that collects and treats infiltrated ground water for discharge to the Saugus River. Manage a staff of 3 Wastewater Operators and a Project Manager to operate and maintain the CDTS per EPA and state requirements. Responsible for maintaining and updating the O&M manual. Oversee an operation and maintenance budget of \$450K. Use computerized management system to input and track all regulatory requirements to assure completion.
- Manage compliance of 32 industrial wastewater systems that discharge to Lynn Water and Sewer Commission (LWSC) as permitted by LWSC and Mass DEP. Interact with the Plant Leaders, operators and area employees are following permit procedures and internal agreements.
- Work with the GE Corporate Governance team as a Water Compliance expert to audit other GE businesses as needed. Perform document review, system inspections, and process reviews to make recommendations to eliminate risk and improve the strength of defenses.
- RCRA and DOT trained to manage hazardous waste storage areas and sign hazardous waste shipping manifests.

MASSACHUSETTS WATER RESOURCES AUTHORITY (MWRA) Boston, MA

Regional Manager

February 2013- October 2014

- Manage the monitoring program for the Toxic Reduction and Control (TRAC) department. Assure implementation of the EPA Pretreatment Program for Publicly Owned Treatment Works (POTW) follows all regulatory requirements and TRAC's industrial monitoring plan. Meet all program expectations to support the compliance of all MWRA held EPA NPDES permits by managing sampling teams according to written procedures. Design projects within the MWRA collection system to collect data to help assure public safety and protect MWRA employees and infrastructure.
- Manage a staff of 13 direct reports including all administrative duties, interviews, hiring and scheduling of work to meet all client needs as described above.
- Manage TRAC's lab/testing supplies and maintenance budget. Approve and document all purchases assuring all staff have the equipment necessary for the job. Track assets such as equipment and vehicles to determine maintenance or replacement schedules.
- Part of the TRAC oncall manager rotation. Providing Emergency Response to events that threaten the sewer system.
- Use computerized management systems to generate schedules, track production and generate progress reports.

Industrial Coordinator

November 2011-February 2013

- Conduct regulatory inspections of facilities that have industrial wastewater discharges. Review permit applications, historical reports, prior documented correspondence, and sampling data. Utilize information gathered during inspections and relevant background information, to draft permits, including sewer use, landfill, temporary construction dewatering sites, and group permits for issuance to sewer dischargers and others subject to MWRA regulations.
- Review plans and specifications for industrial treatment facilities, including piping and instrumentation diagrams, to ensure conformance to accepted engineering practices, and explore opportunities for pollution prevention and source reduction actions by dischargers.
- Issue enforcement actions such as Notices of Violation and follow up to ensure that responses are timely and complete. Coordinate with and refer matters requiring escalated enforcement to the enforcement staff.
- Use knowledge and understanding of industrial and municipal treatment systems, source reduction and pollution prevention principle. Use knowledge of federal, 40 CFR, state, 310 CMR and MWRA regulations to perform required tasks.
- Part of the TRAC oncall manager rotation. Providing Emergency Response to events that threaten the sewer system.
- Member of the Emergency Services Unit. Train for potential attacks or accidents within the water system that could put the safety of the public and the MWRA employees in jeopardy.

Senior Sampling Associate

August 2004 –November 2011

- Oversee the daily schedule of a regional team of sampling associates within the TRAC department.
- Assure the timely completion of the industrial monitoring plan that is submitted annually to the Environmental Protection Agency (EPA) for all Significant Industrial Users (SIUs) by creating weekly schedules for the sampling staff.
- Manage the TRAC lab by ordering proficiency tests, supplies, reagents, calibration standards, bottles, PPE, meters and instruments.
- Use software such as, Excel, Word, Oracle Discoverer, and Laboratory Information Management Systems (LIMS) to track monthly and annual sampling progress of 370 permitted industries within the MWRA community.
- Review the accuracy of all monitoring reports to assure that each sampling event is correctly documented should a sampling result be contested.

- Actively participate in TRAC's safety committee which drafts safety recommendations to management, tracks and recommends safety training for all of TRAC's staff, and maintains the "Right to know" station by updating all MSDS sheets.
- Member of the Confined Space Entry Committee which reviews the course curriculum taught to all MWRA personnel required to maintain their annual certification.
- Perform field audits of Sampling Associates to ensure all safety procedures, appropriate personal protective equipment (PPE), and sampling SOPs are being followed uniformly by all staff.

Sampling Associate

June 2000 – August 2004

- Assure compliance of industries that are regulated by the MWRA's Industrial pretreatment program through sampling and inspection. Document each monitoring event with a detailed monitoring report. Respond to chemical spills or accidental releases that threaten the MWRA's sewer system or the workers.
- Perform analysis of Wastewater samples to support process control of Clinton Wastewater Treatment Plant, the Industrial Pretreatment Program and the operation of the Combined Sewer Overflow facilities.
- Maintain Safety equipment (Photo Ionization Detector (PID), Flame Ionization Detector (FID), Scott Air Packs, biosystems multi pro 4 gas meter.

Sr. Laboratory Technician, Laboratory Technician, Contractor, Intern December 1997 – June 2000

- Tested municipal wastewater, industrial wastewater and drinking water samples submitted to the Central Laboratory on Deer Island.
- Developed and prepared SOPs for use in the laboratory.
- Followed EPA approved methods to performed analysis on samples for metals, hexavalent chromium, pH, dissolved oxygen, total solids, suspended solids, total suspended solids, chlorine residual, fecal coli form, enterococcus, fluoride, hypo %, conductivity, and volatile acids.
- Performed maintenance of pumps and samplers within the Deer Island Wastewater Treatment Facility.

ONSITE ENVIRONMENTAL Braintree, MA

1997

Field Technician

- Staffed to environmental companies to perform tank cleanings, lead removal, contaminated soil excavation, drum recovery, chemical lab pact, and chemical classifications at various contaminated sites.
- Followed OSHA procedures to complete tasks in level B and C protection.

NOTABLE ACHIEVEMENTS

NPDES permit appeal and implementation

Led the GE team through the appeal of GE Aviation's NPDES permit. Interacted with GE lawyers, EPA lawyers and engineers using knowledge of NPDES regulations, best available wastewater/storm water technologies and permit management to arrive at a NPDES permit that could be reasonably implemented. The complicated NPDES permit includes a ground water treatment system, power plant non-contact cooling water (NCCW) intake and return, 5 storm water outfalls owned and operated by GE and 3 storm water outfalls sold by GE to a new land owner but with a collection system still operated by GE under an administrative consent order with the Mass DEP.

Implementation included

- Secured \$500K in investment money for upgrades to the Consolidated Drain Treatment System required to meet compliance schedules.
- Manage \$100K engineering study to determine the feasibility of complying with the NCCW intake and return requirements listed in the NPDES permit
- Met with GE lawyers, Global Facility Managers and Finance Managers to develop a compliance timeline to cease withdrawals of the power plant from the river by constructing a new \$20M heating facility.
- Trained a staff of wastewater operators and technicians to operate under the guidance of the new permit.
- Manage staff to maintain systems and follow procedures to meet compliance and operational needs.

EDUCATION

MASSACHUSETTS MARITIME ACADEMY, Buzzards Bay, Massachusetts

Master of Science in Facilities Management, 2010

Bachelor of Science in Marine Safety and Environmental Protection, 1997

PROFESSIONAL TRAINING/CERTIFICATIONS

Safety Management Specialist (SMS)- Issued by Board of Certified Safety Professionals
Massachusetts Wastewater Treatment Plant Operator- grade 6 Combined
RCRA Hazardous Waste Management
Hazardous Material- Shipping Papers
Supervisor Training
40-Hour OSHA Hazwoper
Confined Space Entry
OPA 90 Qualified Individual (QI)
FEMA-Emergency Management Institute, Incident Commander Training, ICS-100 and ICS-200
OSHA 10 hour Construction Safety and Health
Marine Oil Spill Management Specialist
Lock Out Tag Out
Audit Skills
Storm Water Pollution Prevention

**MWRA
POSITION DESCRIPTION**

POSITION: Manager, Occupational Health and Safety

DIVISION: Administration

DEPARTMENT: Safety

BASIC PURPOSE:

Manages MWRA's compliance with Massachusetts Department of Labor Standards (DLS) (state) and federal rules and regulations and provides programs, guidance and recommendations in areas of employee safety and health. Oversees and develops a program for regulatory compliance with state standards and works closely with other authority safety and health staff to communicate, implement, monitor and track safety and health regulatory compliance. Leads agency's activities in a proactive way to minimize health issues and prevent situations that could create workers' compensation cases.

SUPERVISION RECEIVED:

Works under the general supervision of the Director of Administration.

SUPERVISION EXERCISED:

Supervises assigned project or safety staff as needed.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Develops and oversees an overall program of regulatory compliance consistent with the employer responsibilities defined by DLS designed to reduce work-related injury and illness. Such program will include the following key activities:
 - Conducting multi-facility (30+) worksite safety assessments and inspections (i.e., self-audits) to determine risks to employee safety and health and ensure that the workplace conditions conform to DLS standards;
 - Assessing potential hazards and controls;
 - Evaluating risks and hazard control measures;
 - Investigating incidents involving the safety and health of employees, visitors, vendors and contractors;
 - Maintaining and evaluating incident and loss records;
 - Assisting with the development and deployment of emergency response plans.

- Works closely with authority safety, operations and emergency preparedness staff to

create, update, and implement safety and health programs in areas such as Bloodborne Pathogens Exposure Control Plan, Emergency Action Plan, Fire extinguishers, Fire Prevention Plan, Confined Space, Model Confined Space Entry Policy and Procedure, Hazard Communication, Hearing Conservation Program, Lockout /Tagout, Respiratory Program, Personal Protective Equipment Hazard Assessment, and Trench Safety.

- Works closely with other authority safety staff to establish and/or update operating procedures including the MWRA Online Safety & Health Manual and ensure the appropriate communication to employees is delivered in order to ensure employee compliance with safety and health requirements.
- Ensures that any required DLS postings are prominently displayed at authority worksites in order to inform employees of their rights and responsibilities.
- Ensures the proper notification to the appropriate DLS office of any work-related fatalities, inpatient hospitalizations, amputations, loss of consciousness, and loss of an eye within the timeframes established by DLS.
- Administers an authority-wide system for record keeping for work-related injuries and illnesses using the OSHA Log of Work-Related Injuries and Illnesses form (OSHA Form 300). Posts the summary of the OSHA log for injuries and illnesses (OSHA 300A) according to procedures promulgated by OSHA. Provides access to employees, former employees and their representatives to OSHA Form 300 as required by applicable state regulations.
- Serves as the authority's main contact to DLS Inspectors for communications and for inspections. Attends opening and concluding conferences conducted by the DLS Inspector and provides DLS Inspectors with injury records and written programs as requested. Provides DLS Inspectors with the names of any authorized employee representatives who may be asked to accompany the Inspector during an inspection.
- Reviews reports developed by DLS Inspectors and works with MWRA staff to take any necessary corrective actions.
- As required by DLS, posts citations, abatement verification documents or tags near the cited workplace and complies with the posting period required by DLS. Works with authority staff to correct cited violations within the timeframes prescribed by DLS.
- Works with authority staff to evaluate hazard communication programs and training of employees regarding the hazards they may be exposed to during the course of employment at MWRA including communicating the need for employees to utilize proper personal protective equipment required for handling hazardous chemicals.
- Interacts with regulatory agencies, operations managers, employee representatives and

employees on a regular basis.

- Tracks changes in federal and state safety and health regulations and appraises authority management of such changes and impact to the authority. Recommends and drafts communications, policies and standard operating procedures needed to meet such changes in regulations.
- Oversees the work of professional consultants under contract to the Authority, including quality of output and budget.
- Develops meaningful management workplace safety indicators for use by senior managers (e.g., Yellow/Orange Notebook data and reports).
- Serves as technical consultant to senior management on issues relevant to occupational safety and health.
- Coaches all levels of staff to create and maintain a strong safety culture.
- Provides professional opinions to Law, Labor Relations, Workers' Compensation, and Risk Management, including testifying as an expert witness.
- Represents the executive office in the investigation of serious or potentially serious accidents or security incidents.
- Interprets technical data provided by outside technical professionals.
- Manages budget and staffing.
- Assists in maintaining harmonious labor management relations through proper applications of collective bargaining agreement provisions and established personnel policies. Prepares for, participates in and hears step one grievances and pre-disciplinary hearings. Participates in collective bargaining negotiations.
- Leads efforts to comply with applicable federal or state requirements.

SECONDARY DUTIES:

Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) Knowledge of the principles and practices of a safety professional as normally attained

through a undergraduate degree in occupational health and safety, industrial hygiene or related science and/or engineering discipline, or environmental science and

- (B) Knowledge of health and safety policies, regulations, standards, best practices in an industrial environment; an understanding of issues related to safety, emergency response, risk management, environmental health; experience in incident investigations, safety inspections as normally attained through eight (8) to ten (10) years of experience including at least three years of supervisory experience; and
- (C) Demonstrated knowledge through direct involvement/management of federal OSHA and Massachusetts DLS standards, training, implementation and auditing of policies and procedures as they related to employee safety.
- (D) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Excellent interpersonal, oral and written communication skills needed to interface with regulatory staff and write analyses, recommendations and draft recommendations for safety policies and procedures.
- (B) Expert knowledge in the area of safety and health regulatory compliance in order to recommend, organize and manage a compliance program as required by Massachusetts DLS.
- (C) Ability to identify safety and health issues and concerns and recommend actions to correct deficiencies identified through inspections and other oversight activities.
- (D) Ability to conduct, interpret and translate all safety-related training requirements mandated by federal, state and local regulatory agencies to staff.

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle Operators License.

Certification by the Board of Certified Safety Professionals as a Safety Management Specialist (SMS).

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. The employee is occasionally required to walk, climb, balance, stoop, kneel, crouch, or crawl.

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.

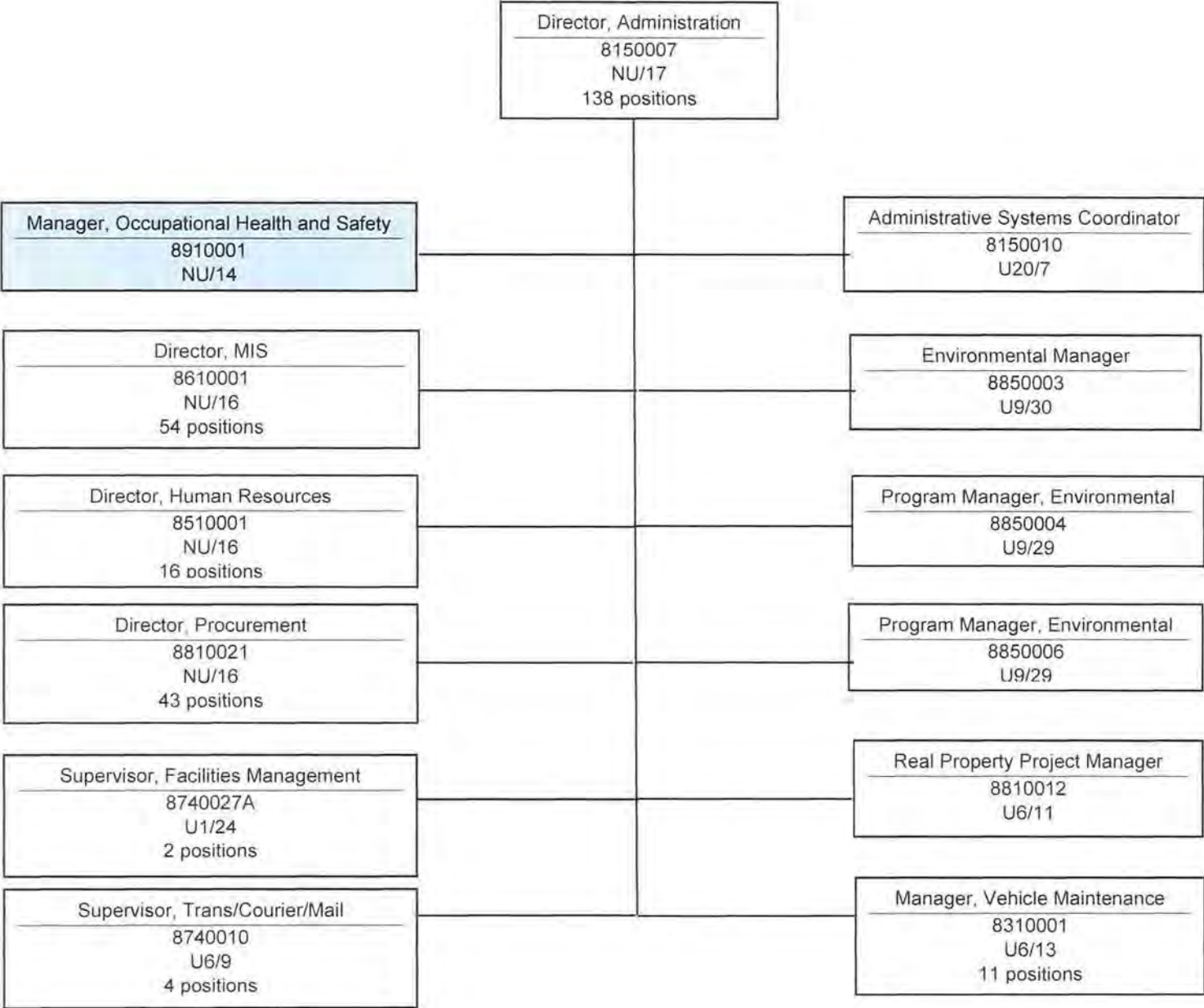
While performing the duties of this job, the employee regularly works in either an office or field environment which involves traveling to worksites. The employee often works in outside weather conditions. The employee often works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee often works in high, precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock. The employee may be exposed to strenuous, dangerous, or stressful conditions. While in the field, the employee uses gloves, helmets, respirators, and other personal protective and safety equipment to minimize the risk of illness and injury.

The noise level in the work environment is usually loud in field settings, and moderately quiet in office settings.

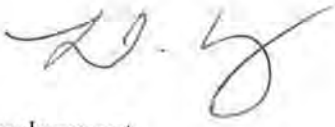
June 2018

Administration

September 2018



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 19, 2018
SUBJECT: Appointment of Manager, Training & Development

COMMITTEE: Personnel & Compensation


Andrea Murphy, Director, Human Resources
Preparer/Title

INFORMATION

VOTE


Michele S. Gillen
Director, Administration

RECOMMENDATION:

To approve the appointment of Mr. Imad Sandakly to the position of Manager, Training & Development, (Non-Union, Grade 14) in the Administration Division, at an annual salary of \$117,300.00, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Human Resources Training Unit is responsible for developing, implementing and evaluating professional and technical training programs for the MWRA workforce. The purpose of these training programs is to provide MWRA employees with the knowledge and skills needed to meet various operational, engineering and management challenges faced by the MWRA. Additionally, the Training Unit is responsible for the tuition reimbursement program and the Employee Assistance Program. The Training Unit also provides agency-wide training and communication on important MWRA policies and procedures, such as the Drug and Alcohol Free Workplace Policy and Diversity and Harassment Prevention training.

Technical training programs are also provided in response to specific requests for training or to meet common training needs (e.g., license preparatory courses). Professional development programs offer skills enhancement, promote career growth and direction, and broaden understanding of the MWRA work environment.

The Manager, Training & Development oversees these training programs. This position will become vacant upon the retirement of the incumbent in October 2018. This position reports to the Director of Human Resources.

Selection Process

The position of Manager, Training & Development was posted internally and externally. Two internal and thirty-eight external candidates applied. Three qualified candidates, including two internal candidates, were interviewed by the Director of Administration and the Director of Human

Resources. Mr. Sandakly was selected as the most qualified candidate based on his experience, abilities, knowledge and education.

Mr. Sandakly has more than twenty years of public sector experience developing and delivering a broad range of professional, technical and non-technical training including ten years as a training manager. Mr. Sandakly currently serves as the Deputy Director, Center for Staff Development at the Commonwealth of Massachusetts Executive Office of Health & Human Services where he manages the training and development functions and develops virtual training and e-learning courses for fifteen agencies. Prior to this position, he worked for over nine years as the Training Manager at the Human Resources Division (HRD) managing HRD's training and development programs. He served as a member of the Succession Planning team, Change Management team and Accessibility Oversight Committee. Prior to his work at HRD, he was the Curriculum Designer and Trainer at the Registry of Motor Vehicles for eleven years where he delivered and developed training curriculum and materials. He is certified as a trainer and investigator by the Massachusetts Commission Against Discrimination (MCAD). He has specialized skills in curriculum design, video production, business process redesign and accessibility requirements for documents and websites.

Mr. Sandakly holds a Master's degree in Management from Cambridge College and has completed a one year Senior Leadership certificate program from Suffolk University.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the FY19 CEB for this position.

ATTACHMENTS:

- Resume of Imad Sandakly
- Position Description
- Organizational Chart

Imad Andrew Sandakly

Objective

I'm applying for the position of Training and Development Manager at the Massachusetts Water Resources Authority. I look forward for the opportunity to use my experience and talent to work with the Director of Human Resources to implement and manage all development programs for the Authority.

Skills and Qualifications

- Experienced in leading, managing, and delivering training programs
- Extensive experience in working across multiple complex projects, setting priorities, and demonstrating dedication and excellent organizational skills
- Specialized in administration of Commonwealth Learning Management System (LMS)
- Excellent interpersonal, communication, and presentation skills
- Specialized in adult training and professional development with over seventeen years of experience
- Experienced in working with IT groups to manage, design, develop, test and deliver system applications
- Specialized in curriculum design, gathering and interpreting business policies and delivering content to employees and trainers
- Experienced in eLearning curriculum design, development, and delivery using multimedia applications
- Experienced in video production including scripting, storyboarding, filming, editing, and incorporating into web based training
- Experienced in Webinar design and delivery
- Experienced in working with the disability community to provide accessible content that is ADA 508 compliant
- Strong computer skills and proficiency in Microsoft Office applications such as Outlook, OneNote, Excel, PowerPoint, and Word
- Strong skills and vast experience with applications such as Lectora, Final Cut, Camtasia, Audacity, Snagit, and Media 100
- Certified MCAD trainer and investigator
- Recent graduate of the MasSP Sr. Leader Certificate Program with Suffolk University

Experience

2017-Present Executive Office of Health and Human Services Boston, MA
Deputy Director, Center for Staff Development (CSD)

- Manage the CSD professional training and development programs
- Support fifteen EOHHS agencies to ensure availability of classes
- Oversee WebEx administration (webinars and virtual training)
- Oversee the development of eLearning courses
- Oversee the design, development and implementation of Train-The-Trainer initiatives

- Tested PeopleSoft (SSTA) web pages for accessibility using JAWS
- Maintained and updated web pages on mass.gov
- Delivered professional development training for managers and senior managers in the Commonwealth
- Developed and delivered mandatory training and career development training
- Developed eLearning courses and Webinars for state employees
- Developed eLearning courses for PeopleSoft users
- Provided various support and training to different agencies throughout the Executive Branch
- Managed and produced multimedia projects

1997–2008 Registry of Motor Vehicles Worcester/Boston/Quincy, MA

Curriculum Designer and Trainer

- Developed literature, classes, and workshops to train Registry trainers and employees
- Developed and wrote registration curriculum used to train new RMV employees
- Developed and wrote training material for International Registration Plan (IRP)
- Collaborated with the legal department and wrote countless memos and updates to help and guide RMV employees through new Licensing, Registration, and Suspension policies and procedures
- Member of Automated Testing System (ATS) team. Wrote and trained new ATS curriculum to RMV trainers and employees

RMV Hearings Officer/Trainer

- Reviewed cases, interviewed traffic offenders, and implemented proper judgment based on the laws of the RMV and Commonwealth

Education

2017-2018 **Suffolk University** Boston, MA

- MsSP Senior Leader Certificate Program

2000–2004 **Cambridge College** Cambridge, MA

- Master of Management

**MWRA
POSITION DESCRIPTION**

POSITION: Manager, Training and Development

DIVISION: Administration

DEPARTMENT: Human Resources

BASIC PURPOSE:

Develops, implements and manages all professional, technical and non-technical training and development programs for the Authority.

SUPERVISION RECEIVED:

Works under the general supervision of the Director of Human Resources.

SUPERVISION EXERCISED:

Exercises close supervision over the Program Manager Training and Senior Training Specialist.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Manages the design, implementation and evaluation of all training and development programs for non-union, supervisory, technical, trades, maintenance and administrative personnel.
- Manages the training unit and ensures that all training programs are results-oriented and meet current and future employee and MWRA training needs.
- Provides guidance to MWRA Senior Manager on succession planning training initiatives.
- Designs and implements license renewal, skill development and career development programs to ensure that MWRA has the human resources to meet current and future work and skill mix requirements.
- Ensures availability of classes for employees to meet mandatory requirements for license renewals (Water, Wastewater, Electrician, Plumber, Hoisting, etc.)
- Manages the tuition reimbursement and remission program.

- Designs and conducts Training Needs Assessments and periodic surveys to determine the training requirements and priorities of the organization.

Oversees special projects and initiatives such as conducting assigned research, report preparation, writing and editing departmental policies and procedures and manages the implementation of these programs.

- Maintains training data integrity and accuracy for all training programs and keeping information up-to-date in tracking systems.
- Develops training unit procedures and assists in the development and implementation of training policies, procedures and special human resource program initiatives.
- Develops curriculum and other descriptive training materials. Conducts and supervises training programs, workshops and seminars.
- Establishes and maintains active working relationships with union leadership in implementing training programs.
- Establishes and maintains contact with other agencies, training organizations and associations for the purpose of keeping abreast of new training offerings and courses.
- Maintains liaison with educational institutions in developing environmental, wastewater and other related programs into their curriculum and in recruiting prospective participants.

SECONDARY DUTIES:

- Performs other related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A four (4) year college program in education, human resources, communication or related field; and
- (B) Thorough understanding of design, development, management, delivery and evaluation of professional, technical and non-technical training programs as acquired through seven (7) to ten (10) years experience, of which at least three (3) years are in a supervisory and/or managerial capacity. Public sector and employee relations experience preferred; or

- (C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Meeting facilitation experience as attained through formal certification or equivalent experience.
- (B) Excellent written and oral communication skills.
- (C) Demonstrated knowledge and skills in professional, technical and non-technical training areas, competency-based training, performance evaluation and career development.

SPECIAL REQUIREMENTS:

Valid Class D Massachusetts Motor Vehicle Operators License or equivalent.

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 feel, finger, handle or operate objects, including office equipment or controls and reach with hands and arms. The employee is occasionally required to stand and walk. The employee is regularly required to sit, and talk or hear.

The employee must frequently lift and/or move up to 10 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.

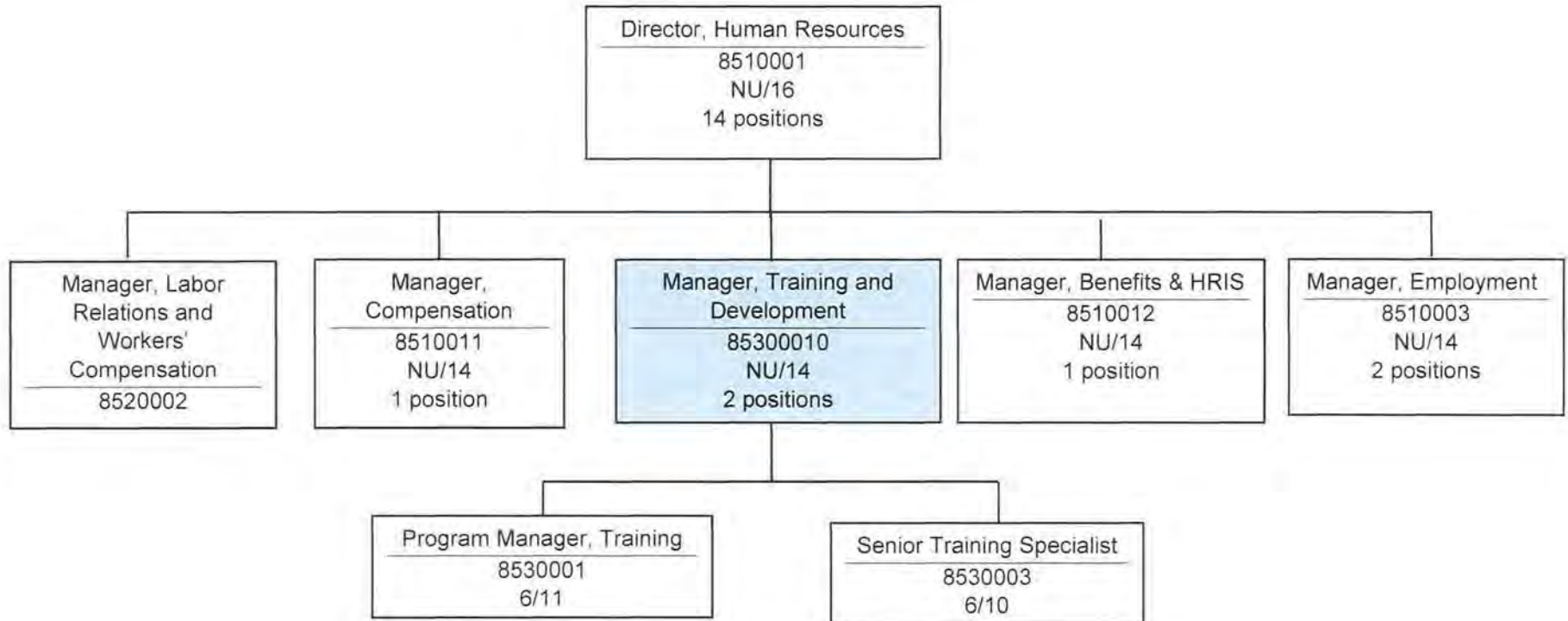
While performing the duties of this job, the employee regularly works in an office environment.

The noise level in the normal work environment is quiet.

June 2018

**Administration
Human Resources**

September 2018



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Appointment of Manager, Power Generation, Deer Island



COMMITTEE: Personnel & Compensation

 INFORMATION
 X VOTE

Andrea Murphy, Director, Human Resources
Ethan Wenger, P.E., Deputy Director, DIWWTP
David F. Duest, Director, DIWWTP
Preparer/Title



David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Mr. Vinh Nguyen to the position of Manager, Power Generation (Unit 6, Grade 12), at an annual salary of \$107,875.60, commencing on a date to be determined by the Executive Director.

DISCUSSION:

The Manager, Power Generation position reports to the Senior Program Manager, Energy, Deer Island. The position became vacant upon the recent promotion of the incumbent to Senior Program Manager, Energy. This position is responsible for the operation of the Thermal/Power Plant on Deer Island, and the management of five Third-Class Engineers and five Second-Class Engineers. The position also manages the operation of Deer Island's hydroelectric turbines and wind turbines.

SELECTION PROCESS:

The position of Manager, Power Generation was posted both internally and externally, and one qualified internal candidate applied for this position. The Deputy Director, Deer Island and the Senior Program Manager, Energy, Deer Island interviewed Mr. Nguyen. Upon completion of this interview, it was determined that Mr. Nguyen is well-qualified for the position based on his experience and education. Mr. Nguyen is recommended for promotion into this position based upon his extensive experience with MWRA's Thermal/Power Plant.

Mr. Nguyen currently holds the position of Second-Class Engineer in the Thermal/Power Plant at Deer Island. He has worked in the Thermal Power/Plant for over twenty-two years. Mr. Nguyen has extensive knowledge of the operation of thermal and electrical plant equipment including the steam topping turbines, combustion turbine generators, fuel oil and waste gas supply systems, diesel generators, pumps, blowers, compressors, water treatment, cooling and heating systems, electrical distribution, and instrumentation systems. He also has the ability to resolve technical

problems connected with gas turbines, steam generating equipment and diesel driven generators.

Mr. Nguyen has distinguished himself in his role as Second-Class Engineer at the Thermal/Power Plant. He is one of the most capable engineers in the plant, and has often been called upon to assist other engineers with difficult technical challenges. Over the years, he has demonstrated consistent willingness to support the plant by working overtime whenever needed, and because of his competence during difficult plant situations, he has been an invaluable employee. This capability in operating the facility will serve Mr. Nguyen well in his new role as he can pass along his knowledge and experience to newer, less experienced engineers.

Mr. Nguyen has a Bachelor of Science Degree in Marine Engineering from Massachusetts Maritime Academy. He holds a Class 1 Massachusetts Steam Engineer's License and a Grade 6 Wastewater License.

BUDGET/FISCAL IMPACT:

There are sufficient funds for this position in the FY19 Current Expense Budget.

ATTACHMENTS:

Resume of Vinh Nguyen
Position Description
Organization Chart

Vinh Nguyen

Career Profile: I have over 25 years of working in various positions at the Thermal Power Plant at Deer Island. The position of Manager, Power Plant Generation will allow me to expand my career and utilize my professional experience, education and other skills.

Work History:	
1989 – Present	<u>Deer Island Thermal Power Plant, Winthrop, MA</u> <ul style="list-style-type: none">- Power Plant Operator, 1989 to 1993- Power and Pumping Engineer, 1993 to 1996- Second Class Engineer, 1996 to Present
Experience:	<ul style="list-style-type: none">• Operated and in charge of high pressure boilers and steam turbines to support wastewater treatment plant including auxiliary equipment.• Operated the Turbo Power Marine Engines to ensure generation of power to the Plant in case of black out, rain, peak load, snow storm and windy conditions.• Knowledgeable about power distribution systems from Substation 132 to MSB building through to Thermal Power Plant, North Main Pumping Station and Winthrop Terminal Facility.
Education: 1984 - 1988	B.S. in Marine Engineering - Massachusetts Maritime Academy, Buzzards Bay, MA
Licenses:	<ul style="list-style-type: none">- United States Coast Guard License – “Third Class Engineering”- Wastewater Treatment Plant Operators License, Grades 4 & 6- First Class Steam Engineering License
Other Training:	Trained in Turbo Power Marine Engine and Electrical Distribution System at the Deer Island Treatment Facility

**MWRA
POSITION DESCRIPTION**

POSITION: Manager, Power Generation
PCR#: 2931020
DIVISION: Operations
DEPARTMENT: Deer Island

BASIC PURPOSE:

Responsible for the supervision, operation, maintenance and safety of Thermal/Power Plant operation. Operates the Thermal Plant economically on a 24 hour, 7-day a week schedule. Schedules and supervises operating staff on a rotating shift schedule. Plans and implements proper maintenance on Thermal Power Plant systems. Budgets and maintains economic usage of fuel and operational supplies, and coordinates with Eversource on efficient power generation procedures and paybacks. Also, coordinates with Process Control and Operations on any opportunities to improve operational efficiency and shutdowns for service or repair.

SUPERVISION RECEIVED:

Works under the general supervision of the Senior Program Manager, Energy, Deer Island

SUPERVISION EXERCISED:

Exercises close supervision of the Second and Third Class Engineers and the Technical Assistant

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Manages the Thermal/Power Plant staff in the proper operation of all Thermal/Power Plant equipment, steam topping turbine, combustion turbine generators, fuel oil and waste gas supply systems, diesel generators, pumps, blowers, compressors, water treatment, cooling and heating systems, electrical distribution and instrumentation systems.
- Performs administrative duties for personnel assigned to the Thermal Plant and is responsible for plant knowledge of operating staff.
- Responsible for review of the O&M Manuals and the development and implementation of the standard operating procedures (SOPs) for the Thermal/Power Plant as well as keeping these manuals updated with improvements and modifications to the facilities.

- Participates in the MWRA performance evaluation system.
- Assumes responsibility for the Thermal Plant operation as a licensed engineer in charge per Chapter 146 of the general laws of the Commonwealth of Massachusetts in the absence of the Senior Program Manager, Energy, Deer Island.
- Monitors and maximizes, through information data collection, the Thermal/Power Plant operating efficiencies and takes necessary corrective measures where results are below standard.
- Manages and/or coordinates the assignments of operating staff and others working in and around the facility. Such assignments include, but are not limited to, inventory and control of essential materials and supplies, distribution of Thermal and Electrical Power Generation outputs, forecasts of major repairs and control of waste, energy and fuel.
- Directs and prioritizes the preventive maintenance of all Thermal/Power Plant equipment, ensuring that it is completed properly and timely to ensure the avoidance of costly equipment breakdown and loss of operating capacity.
- Assists in the formulation of and participates in the implementation of a training program to keep all personnel and operations in compliance with regulatory requirements. Assures that all regulatory training is documented.
- Initiates programs for the improvement of methods and develop plans for the reduction of costs for the Thermal Plant operation in conjunction with treatment plant managers.
- Prepares budgets for yearly operations and capital spending programs and manages spending within approved budgets.
- Is responsible for application of Thermal Plant safety programs as well as Health and Safety of staff.
- Anticipates and institutes emergency corrective procedures to maintain or restore effective operational conditions in conjunction with other managers in Process Control, Operations, Maintenance and to determine operating costs for each facet of the operation.
- Is responsible for enforcing the safety procedures in the use of equipment and tools, and the instruction of operating staff in safety procedures and the use of safety equipment.
- Is responsible for the upkeep and appearance of all equipment, appurtenances and general surrounding of the Thermal/Power Plant.
- Coordinates with Deer Island Engineering to closely monitor maintenance and construction contractor work in the Thermal Power Plant, to ensure uninterrupted

operation and a safe work environment

- Assists in settlement of grievances.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A four (4) year college degree in mechanical, electrical engineering or a related field; and
- (B) Eight (8) to ten (10) years in the Operations Start-up and Maintenance of various types of Thermal Power Equipment, Turbines, Boilers and related systems of which five (5) to seven (7) years must be in a supervisory capacity; or
- (C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

- (A) Knowledge of maintenance and operation of generating equipment, plant heating, large combustion engines and electrical distribution systems, including casualty control of operating systems.
- (B) Ability to resolve technical problems connected with gas turbines, steam generating equipment and diesel driven generators.
- (C) Proficiency in the use of personal computers and software application packages for financial analysis and management.

SPECIAL REQUIREMENTS:

A valid Massachusetts First Class Engineer's license.

TOOLS AND EQUIPMENT USED:

Office equipment as normally associated with the use of telephone, mobile radio, beeper, 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 stand and talk or hear. The employee is occasionally required to walk; sit; 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 more than 50 pounds. Specific vision abilities required by this job include close vision, distance vision, color vision, depth perception, peripheral vision and the ability to adjust focus.

WORK ENVIRONMENT:

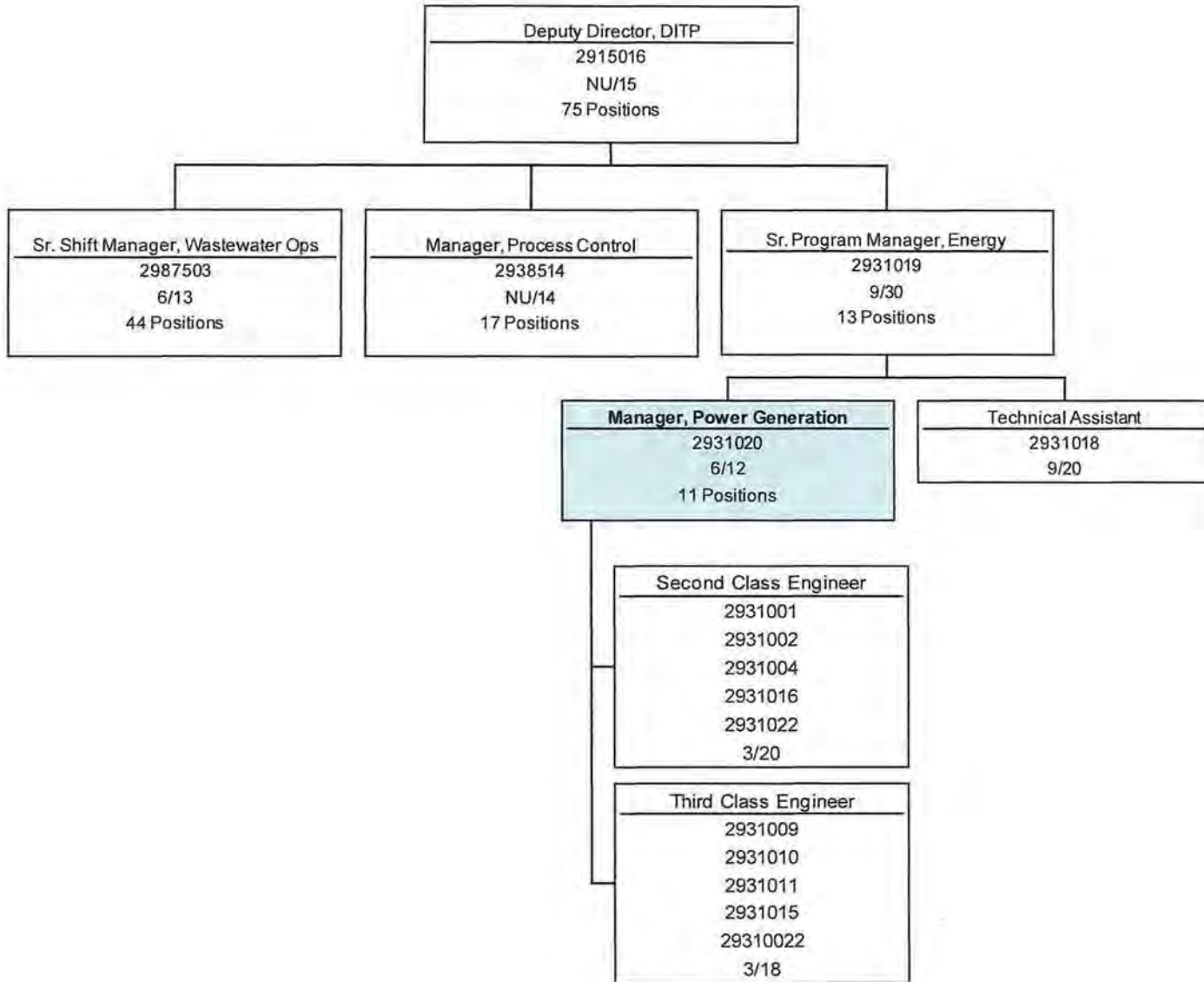
The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

While performing the duties of this job, the employee regularly works in outside weather conditions. The employee occasionally works near moving mechanic 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.

The noise level in the work environment is usually loud in field settings, and moderately quiet in an office setting.

February, 2018

Operations-Wastewater Treatment
Deer Island - Operations, Process Control and Power Generation
September 2018



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Appointment of Senior Program Manager, Water Quality



COMMITTEE: Personnel & Compensation

 INFORMATION
 X VOTE

Andrea Murphy, Director, Human Resources
Betsy Reilley, Ph.D., Director, ENQUAL
Carolyn Fiore, Deputy Chief Operating Officer
Preparer/Title


David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Ms. Kimberly LeBeau to the position of Senior Program Manager, Water Quality (Unit 9, Grade 30), at an annual salary of \$130,406.12, commencing on a date to be determined by the Executive Director.

DISCUSSION:

MWRA's Water Quality Assurance group is part of the Environmental Quality Department in Southborough. This unit is responsible for developing and directing the extensive drinking source water and finished water sampling program, guiding reservoir operations as relates to water quality and algae concerns, providing water quality reports, operating the water contamination monitoring system, assuring compliance with DEP drinking water requirements, and providing technical assistance to service area communities.

The position of Senior Program Manager, Water Quality became vacant in August 2018 upon the lateral transfer of the incumbent. This position oversees three Program Managers and a total of nineteen staff positions. Responsibilities of the Senior Program Manager, Water Quality, include overseeing the water quality monitoring program, analyzing water quality data, troubleshooting water quality problems, and identifying research needs. This position is responsible for developing water quality trigger levels and emergency response plans, and participates in training programs for MWRA and community water department staff. The Senior Program Manager is also responsible for monitoring compliance with drinking water regulations, and serves as a liaison with community, regulatory and other officials. The Senior Program Manager assists in the start-up of new facilities, including development of facility handbooks and standard operating procedures, and oversight of water quality issues.

Selection Process

The position of Senior Program Manager, Water Quality was posted internally. Two candidates submitted applications. Both were determined to have met the minimum qualifications and were referred for an interview. The Director of Environmental Quality, the Deputy Chief Operating Officer, and a representative from Human Resources interviewed the two candidates. Upon completion of the interviews, it was determined that Ms. LeBeau is the best candidate to fill the position based on her experience and education. Ms. LeBeau is recommended for the position of Senior Program Manager, Water Quality based upon her extensive drinking water quality experience, ability to manage water quality incidents, and knowledge of drinking water regulations.

Ms. LeBeau has more than 20 years of experience at MWRA. She started as an intern with the Program Management Division in 1995, and then worked as a contract employee from 1998 to 1999. Ms. LeBeau accepted a full time position with the Massachusetts Department of Environmental Protection in 1999, but soon after returned to MWRA as the Project Manager, Water Quality Assurance. She was promoted to Program Manager, Water Quality in 2014. Ms. LeBeau took on increasing levels of responsibility in each of these positions.

In her current role, Ms. LeBeau is responsible for management and oversight of a wide range of projects, most notably the drinking water quality compliance monitoring program. Ms. LeBeau has been responsible for programs that comply with EPA and DEP regulations including the Unregulated Contaminant Monitoring Rule (UCMR), Disinfection Byproducts Rule, Optimum Water Quality Parameters program, and the revised Total Coliform Rule. Ms. LeBeau participates in the on-call rotation responding to water quality alarms and other issues as required. Recently, Ms. LeBeau developed an in-house capacity for testing of algal toxins. In conjunction with MWRA staff, Ms. LeBeau has participated in meetings with member communities to review regulatory compliance, update sampling plans, and review system information. Ms. LeBeau is responsible in her current role for supervising a group of five staff.

Ms. LeBeau holds a Bachelor of Science in Multidisciplinary Studies from the University of Massachusetts, Dartmouth, and a Master of Arts in Urban and Environmental Policy from Tufts University. She has a 2T Water Operator's License and certifications from OSHA and DEP for chemical spill and oil spill response.

BUDGET/FISCAL IMPACT:

There are sufficient funds in the FY19 Current Expense Budget to fund this position.

ATTACHMENTS:

Resume of Kimberly LeBeau
Position Description
Organization Chart

KIMBERLY B. LEBEAU

EXPERIENCE

MASSACHUSETTS WATER RESOURCES AUTHORITY

Program Manager - Water Quality

2014 - Present

Coordinate response to microbiological incidents and water quality complaints.

- Track MWRA and community microbiological sampling compliance.
- Analyze water quality data and troubleshoot water quality problems.
- Oversee and implement training for MWRA and community staff regarding sample collection, water quality complaint response, and testing.
- Communicate with Senior Management and Water Superintendents to discuss water quality complaints, RTCR Level Assessments, water storage tank or distribution system sampling, chlorine residual decay investigations, and boil water order preparations.

Manage MWRA's drinking water regulatory and non-regulatory sampling program.

- Exercise supervision of a Lab Supervisor and up to four full-time and temporary employees.
- Ensure MWRA's compliance with DEP sampling schedule.
- Coordinate with certified laboratories to ensure proper collections for RTCR, OWQP, DBP, Fluoridation, SWTR, and UCMR sampling programs. Recommend modifications to sampling programs when warranted. Coordinate algae and algal toxin monitoring within source and standby reservoirs.
- Participate in the startup of new water storage tanks.

Review and participate in the preparation of water quality regulatory reporting and response plans. Respond to water quality emergencies or alarms through On-Call Manager rotation.

- Review internal and external water quality reports and participate in generation of monthly DEP and DPH compliance reports. Act as primary signatory for DEP SWTR-A and SWTR-E forms.
- Participate in on-call rotation for water quality issues including elevated source water turbidity or fecal coliform, chemical dose excursions, microbiological detection events, or analyzer alarms.
- Evaluate and revise response plans for water quality complaints, coliform response, on-call response, and *Giardia & Cryptosporidium* detection.
- Participate in drinking water contamination emergency response planning.

Project Manager - Water Quality Assurance

1999 - 2014

Managed the bulk chemical delivery program, contracts, and reporting for water and wastewater facilities.

- Oversaw procurement and vendor selection for contracts with a total contract value over \$15 million.
- Analyzed chemical use, developed schedules, and tracked chemical supplies throughout contract term.
- Facilitated emergency chemical procurement during inventory shortages and wet weather events.
- Created chemical inventory reports to assess adequacy of current and future bulk chemical inventories.
- Developed chemical delivery SOPs and delivered on-shift Operator training.

Facilitated environmental compliance actions and developed training for operators, trades, and management.

- Successfully managed four DEP unannounced hazardous waste and UST audits.
- Developed procedures and work orders for Western Operations compliance and permitting.
- Managed contractors tasked with performing all environmental inspections and maintenance.
- Trained staff in the areas of chemical safety awareness and delivery, UST and vapor recovery, hazardous and universal waste, and spill prevention and response.

Quality Assurance construction start-up representative for new drinking water facilities.

- Reviewed technical documents including facility handbooks, SOPs, and training curriculums.

DEPARTMENT OF ENVIRONMENTAL PROTECTION, SERO

Regional Planner III, Bureau of Waste Site Cleanup

1999

- Oversaw Public Involvement Plan (PIP) activities to ensure compliance with the Massachusetts Contingency Plan. Served as the DEP representative for public involvement activities at hazardous waste sites.
- Participated in public meetings and educated citizen groups about the PIP process.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Waterworks Operations Contract Employee

1998 - 1999

Waterworks Operations and Program Management Division Intern

1995 - 1998

- Coordinated compliance actions for EPA's 112r Accidental Release Prevention Requirements of the Clean Air Act.
- Using an EPA/NOAA air dispersion model, developed a chlorine gas Risk Management and Emergency Response Plan for MWRA's Norumbega Facility.
- Analyzed industry-wide practices for delivery, testing, and quality assurance of drinking water chemicals.
- Assessed chemical storage compliance in accordance with federal regulations, and assisted with emergency response plan development for water supply aqueducts.
- Performed construction change order audits of Boston Harbor contracts. Identified and resolved discrepancies.

EDUCATION

TUFTS UNIVERSITY

M.A., Urban and Environmental Policy

Graduated 1998

- Thesis: *The Importation of Liquefied Natural Gas into Boston Harbor: Challenges for Risk Management*
- Coursework: *Emergency Response Planning, Environmental Compliance & Management*

UNIVERSITY OF MASSACHUSETTS DARTMOUTH

B.S., Cum Laude, Multidisciplinary Studies

Graduated 1995

- Coursework: *Regulatory Policy and Oversight, Ecology, Oceanography*
- Board of Governors Chairperson, Vice-President for the Class of 1995, Honorary Degree Committee

CERTIFICATIONS AND MEMBERSHIPS

- Water Treatment 2 Full Operator License
- Massachusetts DEP Underground Storage Tank (UST) Class A/B Operator Certificate
- NEWWA Bulk Chemical Delivery Committee and Trainer, 1998-2002
- MWRA Emergency Services Unit – Site Characterization Team, 2004-2014
- MWRA Western Operations Local Safety Committee, 1998-2014
- NEWWA Laboratory Operations Committee, 2017-Present
- NEWWA & AWWA Member, 2014-Present

TRAINING

OSHA/EPA HAZWOPPER 40-Hour Hazardous Waste Site Worker, OSHA/EPA 24-Hour Hazardous Material Worker Protection & Incident Commander, OSHA 10-Hour Construction Safety, OPA-90 QI, ICS-300 & NIMS

PRESENTATIONS

2014 NEWWA Spring Joint Regional Conference Presenter, "Implementing a Treatment Chemical Acceptance Program: Only the Right Chemical in the Right Tank"

**MWRA
POSITION DESCRIPTION**

POSITION: Senior Program Manager, Water Quality

PCR#: 3370001

DIVISION: Operations

DEPARTMENT: Environmental Quality, Water

BASIC PURPOSE:

Directs and oversees the water quality monitoring program, reviews and monitors results and reports, evaluates water quality conditions, and directs response to water quality events as needed. Oversees the assessment of drinking water quality including corrosion control, contaminant monitoring and online water quality systems, and water treatment technologies and research. Oversees the management of data and reporting for internal and external reports and the monthly DEP Compliance Report.

SUPERVISION RECEIVED:

Works under the general supervision of the Director of Environmental Quality.

SUPERVISION EXERCISED:

Exercises general supervision of four professional staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Oversees the timely monitoring of drinking water quality, including sampling, testing, data analysis and interpretation of results.
- Reviews treatment processes and targets. Monitors compliance with drinking water regulations. Makes recommendations for treatment changes and adjustments.
- Oversees resolution of community or public water quality complaints. Oversees timely notification and participates in emergency response for water quality incidents.
- Oversees and participates in the preparation of routine water quality reports.
- Oversees water quality monitoring program for compliance with SDWA and other regulatory programs. Ensures data are properly managed and reported following appropriate QA/QC and

compliant with drinking water regulations.

- Oversees Water Quality Contaminant Monitoring System program, participates in the development of response plans, and participates in planning for future system upgrades and expansion.
- Keeps up-to-date with AWWA Water Research Foundation and SDWA drinking water quality research and advises management of key findings that could affect capital or operating programs.
- Participates in the start-up of new water facilities, including development of facility handbooks, SOPs, O&M manuals and training programs.
- Oversee and refine/develop standard operating procedures for response to water quality events, chemical delivery program and other programs.
- Review and verify that current standard operating procedures and training materials are updated for improved efficiency, readiness, relevance, and applicability, and that staff are fully trained to perform required duties.
- Provide management over staff activities, conduct performance assessments, develop annual budget needs, support procurement processes for necessary supplies and equipment, and manage outside contracts including development of scope, specifications, and awards.
- Acts as On-Call Manager for Environmental Quality in rotation with other staff.
- Identify Operations water training needs. Works to improve Operations staff productivity and performance through SOP improvements and implementation of technology advances.

SECONDARY DUTIES:

- Performs other related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Four- (4) year college program in sanitary engineering, microbiology, chemistry or related field. A Masters degree, Ph.D. degree or PE preferred; and
- (B) Eight (8) to ten (10) years experience in water quality related work, of which at least four (4) years is in a supervisory position; or

(C) Any equivalent combination of education or experience.

Necessary Knowledge, Skills and Abilities:

- (A) Strong leadership skills and demonstrated ability to lead a project team and develop and maintain productive working relationships with external parties. Ability to efficiently and productively utilize resources authority wide.
- (B) Thorough knowledge of the principles and practices of sanitary engineering/water quality analysis.
- (C) Comprehensive understanding of drinking water quality issues.
- (D) Proficiency in computer software, including the use of databases, data analysis and presentation, statistical analysis and Microsoft Office products.
- (E) Outstanding organizational, written and verbal communication skills. Excellent demonstrated ability to gather, analyze and present technical information in a clear, concise, and understandable manner.
- (F) Must be available for on call rotation.

SPECIAL REQUIREMENTS:

Possession of a valid Treatment Grade II Operator License or ability to obtain within six months of appointment.

TOOLS AND EQUIPMENT USED:

Laboratory equipment and instruments, 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 stand and talk or hear. The employee is occasionally required to walk; sit; climb or balance; stop, kneel, crouch, or crawl.

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, distance, color vision, peripheral vision, depth perception, and the ability to adjust focus.

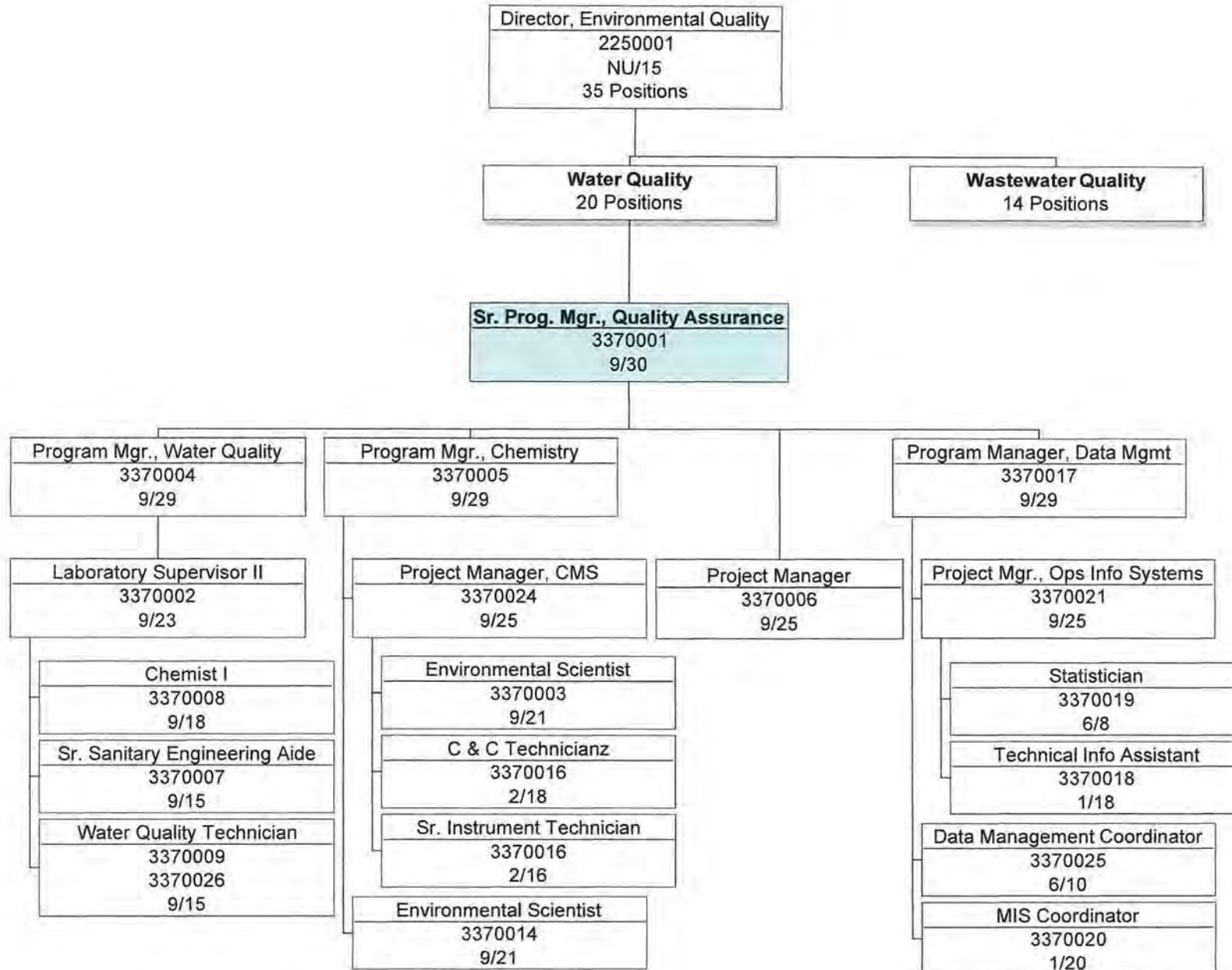
WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job.

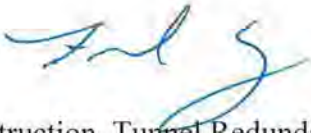
While performing the duties of this job, the employee occasionally works in outside weather conditions. The employee is occasionally exposed to wet and/or humid conditions. The employee is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals. The noise level in the work environment is usually loud in field settings, and moderately quiet in a laboratory environment.

August 2018

Programs, Policy & Planning
Environmental Quality
 September 2018



STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 19, 2018
SUBJECT: Appointment of Director, Design and Construction, Tunnel Redundancy Department

COMMITTEE: Personnel & Compensation


Andrea Murphy, Director, Human Resources
Preparer/Title

 INFORMATION

 X VOTE


Kathleen Murtagh
Director of Tunnel Redundancy

RECOMMENDATION:

To approve the appointment of Mr. Frederick Brandon to the position of Director, Design and Construction, Tunnel Redundancy Department (Non-Union, Grade 16) at an annual salary of \$148,000.00 commencing on a date to be determined by the Executive Director.

DISCUSSION:

On July 18, 2018, the Board of Directors approved the Proposed Tunnel Redundancy Program Organization creating three new positions to support the Program. Frederick Brandon is being recommended to fill one of the new positions; the Director, Design and Construction.

The Tunnel Program Department will oversee the planning, design, construction, procurement, budget, schedule, and quality management aspects of the Program and will report directly to the Director of Tunnel Redundancy. The Director, Design and Construction will serve as the chief engineer for the Metropolitan Tunnel Redundancy Program and will perform a critical leadership role in the newly formed Department.

Selection Process

The position was posted internally and externally. One internal and seven external candidates applied. One internal candidate was interviewed by the Director of Tunnel Redundancy and Director, Waterworks who recommend Mr. Brandon's appointment as the Director, Design and Construction based on his extensive qualifications, years of experience, abilities, knowledge and education.

Mr. Brandon has been with the MWRA for over 30 years, and has served as the Assistant Director of Engineering since 2012. In his current role, he directs a staff of 25 engineers, CADD operators, and a support specialist. He provides oversight and direction to project and program managers to ensure capital improvement projects are completed in accordance with approved schedules and budgets. He develops, directs, and reports on the Water Engineering

Capital Improvement Program and ensures that engineering projects meet MWRA requirements and comply with applicable codes and standards. Previously he served as a Project Manager, Design Manager, and Senior Program Manager.

Mr. Brandon has a Bachelor of Science in Civil Engineering from Northeastern University and is a licensed professional engineer in the Commonwealth of Massachusetts.

Mr. Brandon is highly regarded by staff, including Division Directors, who believe his engineering skills, past experience on large MWRA projects, understanding of the MWRA organization and water system, and steady leadership skills make him an excellent choice as the Director, Design and Construction for the Metropolitan Tunnel Redundancy Program.

BUDGET/FISCAL IMPACTS:

There are sufficient funds in the FY19 CEB for this position.

ATTACHMENT:

Frederick Brandon Resume
Position Description
Organizational Chart

Frederick O. Brandon, P.E.

QUALIFICATIONS/EXPERIENCE

- 36 years of engineering experience in the field of water supply and distribution
- Experienced in providing technical, cost and schedule oversight of large engineering projects including managing Owner's Representative Services for Design Build projects up to \$95 million
- Supervision of professional staff and consultants, and monitoring projects for compliance with approved schedules and budgets
- Coordination with federal, state and local agencies and the general public

WORK HISTORY

Massachusetts Water Resources Authority

2012-Present: Assistant Director, Engineering Department

Directs a staff of 25 engineers, CADD operators and support specialists. Provides oversight and direction to project and program managers to ensure capital improvement projects are completed in accordance with approved schedules and budgets. Develops, directs and reports on the Water Engineering Capital Improvement Program. Ensures that engineering projects meet MWRA requirements and comply with codes and standards.

2008-2012: Senior Program Manager, Water Engineering Department

Manager of the Distribution and Storage Section of the Water Engineering Department. Directed engineering projects for water system improvements and supervised a staff of eight engineers. Developed, tracked and reported on capital improvement program schedule and budget objectives. Developed the concept design for the Spot Pond Storage Facility and Pump Station. Managed the Blue Hills Covered Storage Project including developing the conceptual design and overseeing permitting and preparing design build contract documents.

1995-2008: Design Manager, Water Engineering Department

Design Manager for covered distribution storage projects ranging in value from \$10 million up to a value of \$95 million from initial concept and planning through public review, permitting, design, construction, commissioning and start up. Coordinated the design of connections between the Norumbega Covered Storage project and the MetroWest Water Supply Tunnel for the Integrated Water Supply Program. Managed the Owner's Representative services for the Norumbega and Blue Hills design build projects. Prepared design contract scopes of services and negotiated contract terms with consultants. Provided technical oversight of consultants, tracked progress, prepared schedule and budget status reports and developed capital expenditure forecasts.

1988-1995: Project Manager, Capital Engineering and Construction Department

Managed engineering designs for water supply improvements and studies for development and protection of local water supplies within the MWRA water service area.

Southern New Hampshire Water Company

1988-1988: Engineering Manager

Prepared water supply studies and pipeline designs. Conducted neighborhood meetings to present water company projects. Administered pipeline construction contracts.

Metcalf & Eddy, Inc.

1982-1988: Engineer/Project Engineer

Prepared water system master plans. Performed hydraulic modeling of water distribution systems and pump stations including transient analysis of hydraulic surges. Designed pipelines, water storage tanks and pumping stations. Coordinated architectural, structural, mechanical, electrical, and instrumentation disciplines.

EDUCATION

1982 Bachelor of Science, Civil Engineering with Environmental Option, Northeastern University

Graduate courses in environmental engineering, University of Lowell (Environmental Chemistry, Physical Chemical Treatment, and Groundwater Hydrology), 1987-1989.

LICENSES & CERTIFICATES

Registered Professional Engineer – Massachusetts

PROFESSIONAL MEMBERSHIPS

American Waterworks Association
New England Waterworks Association
Tau Beta Pi - National Engineering Honor Society
Chi Epsilon - National Civil Engineering Honor Society

**MWRA
POSITION DESCRIPTION**

POSITION: Director, Design and Construction

DIVISION: Tunnel Redundancy

DEPARTMENT: Tunnel Redundancy

BASIC PURPOSE:

Directs and manages professional multi-disciplinary engineering and design for large and complex projects such as the Tunnel Redundancy Program as and rehabilitation and capital improvement of other water and wastewater facilities and infrastructure Applies professional engineering principles and exercises independent engineering judgment. Manages professional staff in the Tunnel Redundancy Program. Under the direction of the Director of Tunnel Redundancy, develops, implements, manages, coordinates, controls, and performs quality assurance/quality control (QA/QC) on policies and procedures for shaft and tunnel projects from planning through construction to ensure projects comply with approved schedules and budgets.

SUPERVISION RECEIVED:

Works under the general supervision of the Director of Tunnel Redundancy.

SUPERVISION EXERCISED:

Directly manages Tunnel Redundancy Program Unit professional staff and consultants.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Serves as the chief engineer during the planning, design and construction of the tunnel systems related to the Tunnel Redundancy Program. Develops concept designs and/or reviews designs received from consultant engineering firms which involves overseeing and managing schedules and budgets. Develops and implements program design standards including CADD.
- Determines all design delivery methods, specification types and schedules for all projects that support the Tunnel Redundancy Program. Provides and controls construction input into bid documents and process. Participates in consultant selection procedures and contract negotiations for projects. Additionally, oversees applicable phases of consultant selection for assigned projects including development of scope of services, specifications, cost estimates, work schedules, negotiations, and preparations of contract award recommendations.

- Directs review of construction cost estimates and schedules.
- Oversees the professional engineering consultants' efforts to identify and mitigate potential sources of project delays during the construction phase.
- Performs engineering analysis, prepares engineering documents and writes project reports.
- Directs, develops, and administers the program management plan and program to ensure timely and cost-effective delivery of the Tunnel Redundancy Program. Develops and implements control and tracking methods and procedures to ensure project compliance with approved budgets and schedules. Provides timely reporting to senior management of the status of all projects, associated issues that impact schedules and budgets. Drafts proposals to address budget/schedule non-compliance issues.
- Ensures all projects are implemented using comprehensive work plans and resources by selecting consultant services groups that deliver a technically sound, controlled project on budget and on time. Ensures compliance with contract budgets, schedules and terms.
- Manages the efficient and cost effective execution of capital investment programs and projects.
- Establishes design schedules and budgets to ensure fundamental management controls, techniques, and accountability for projects related to the Tunnel Redundancy Program.
- Oversees the monitoring, control, schedule and budget for all projects using scope controls, performance reports, change requests and cost management and controls using integrated time/cost management controls.
- Reviews project change orders and cost estimates. Identifies new project funding requirements.
- Develops annual and supplementary budget requests for the Tunnel Redundancy Program in the Capital Improvement Program. Oversees and reviews projects' budgets and schedules for compliance with established goals.
- Develops safety procedures working closely with MWRA Safety staff.
- Ensures compliance with MWRA procedures and policies, local, state, and federal environmental regulatory requirements, and applicable engineering and construction standards.
- Develops and implements a Quality Assurance/Quality Control (QA/QC) plan for the program ensure a project's fast tracking and the effect on contract document preparation that will result in technical, effective and constructible projects.
- Directs quality management during design and construction process. Ensures that

fundamentals and recommended practices and procedures for QA/QC are followed and managed by staff.

- Directs development and implementation of risk management plans for tunneling projects.
- Provides project development and overall oversight of professional engineering consultants related to the Tunnel Redundancy Program.
- Manages professional staff including assigning projects, evaluating performance, and planning staff development. Oversees professional engineering consultants working on the Tunnel Redundancy Program.
- Provides technical and administrative assistance to staff in the development and management of projects which include design and engineering services during construction.
- Works effectively with and ensures coordinates with other departments such as Procurement, Law, Operations and Administration divisions. Oversees and facilitates cooperative project development with other departments to ensure complete and coordinated projects.
- Provides overall oversight and facilitates cooperative project development of work breakdown and construction packaging.
- Coordinates projects with communities and government agencies by providing technical information and assistance and addressing professional and community groups. Initiates community outreach projects as required.
- Implements MWRA goals and commitments outlined in the MWRA business plan such as customer service, diversity, affirmative action, economy, efficiency, health, safety, emergency response, security, integrity, and public trust.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) A bachelor's degree in civil or geotechnical engineering or associated engineering field;
and
- (B) At least twelve (12) years demonstrated success in progressively responsible management positions in engineering design, engineering project management, and/or construction functions relating to deep shaft and rock tunnel systems or major water/wastewater

facilities; and

- (C) At least five (5) years of experience must be in a managerial capacity; or
- (D) Any equivalent combination of education or experience.
- (E) Preferred qualifications: An advanced degree or other post-graduate study in civil engineering or construction management. Experience with water systems. Experience using alternative delivery methods on large complex underground projects. Design or construction experience on a megaproject(s) (i.e., projects over \$1B)

Necessary Knowledge, Skills and Abilities:

- (A) Knowledge of principles and practices of civil engineering, geotechnical, and tunneling engineering.
- (B) Advanced understanding of issues related to design, construction and operation of large and complex water and wastewater facilities and infrastructure.
- (C) Demonstrated ability to work effectively in a senior leadership position of a collaborative project team and to function independently with minimal supervision.
- (D) Demonstrated understanding of Massachusetts bidding laws, including M.G.L Chapter 30 and Chapter 149 construction bidding regulations.
- (E) Knowledge of environmental regulations and permitting requirements.
- (F) Demonstrated experience in construction project dispute resolution procedures such as partnering, dispute resolution boards and other equivalent dispute resolution procedures.
- (G) Proficiency with Microsoft Office Suite and CADD.
- (H) Exceptional leadership and project management skills.
- (I) Excellent interpersonal, written, and oral and communications skills.

SPECIAL REQUIREMENTS:

A valid Massachusetts Class D Motor Vehicle Operators License.
Massachusetts license as a Registered Professional Engineer. (P.E.)
Preferred qualifications: Project Management Institute certification as a Project Management Professional (PMP)

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, 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 stand, walk, climb or balance, stoop, kneel, crouch, or crawl, taste or smell.

The employee must frequently lift and/or move up to 10 pounds. Specific vision abilities required by this job include close vision, distance vision, color 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.

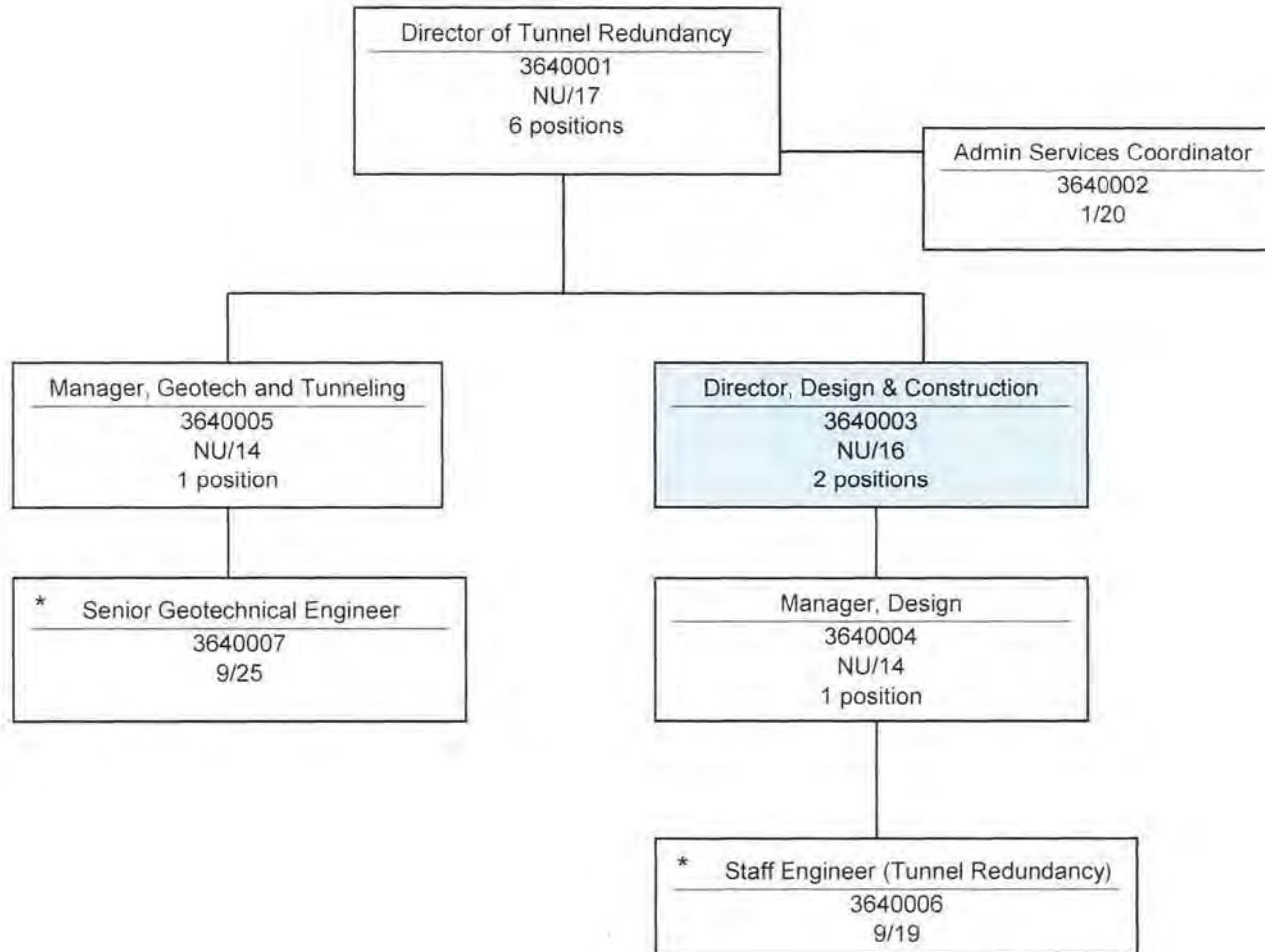
While performing the duties of this job, the employee regularly works in an office environment. The employee occasionally works in outside weather conditions. The employee occasionally works near moving mechanical parts, and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high or underground 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 2018

Tunnel Redundancy

September 2018



* To be approved with the PCR Amendment Staff Summary dated September 19, 2018



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

ADMINISTRATION, FINANCE & AUDIT COMMITTEE MEETING

to be held on

Wednesday, September 19, 2018

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

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

Time: Immediately following P&C Committee

AGENDA

A. Information

1. Review and Update of MWRA's Policies and Procedures
2. FY2018 Fourth Quarter Orange Notebook
3. Delegated Authority Report for July and August 2018
4. Fiscal 2018 Capital Improvement Program Spending Report
5. Fiscal Year 2018 Year-end Financial Results

B. Approvals

1. Bond Defeasance of Future Debt Service

C. Contract Amendments/Change Orders

1. Dental Insurance: Delta Dental of Massachusetts, to Contract A613 Amendment 1

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the

Administration, Finance and Audit Committee

July 18, 2018

A meeting of the Administration, Finance and Audit Committee was held on July 18, 2018 at the Authority headquarters in Charlestown. Committee Chair Vitale presided. Present from the Board were Messrs. Carroll, Cotter, Flanagan, Pappastergion, Peña and Walsh. Ms. Wolowicz and Mr. Foti were absent. Among those present from the Authority staff were Frederick Laskey, Steven Remsberg, David Coppes, Carolyn Fiore, Thomas Durkin, Michele Gillen, Carolyn Francisco-Murphy, and Kristin MacDougall. The meeting was called to order at 11:49 a.m.

Information

Delegated Authority Report – June 2018

Staff presented the Delegated Authority Report for June 2018. There was general discussion and brief questions and answers. (Mr. Pappastergion temporarily left the meeting during discussion.)

The meeting adjourned at 11:51 a.m.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Review and Update of MWRA's Policies and Procedures



COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE

Godfrey O. Ezeigwe, Financial & Administrative Manager
Andrea Murphy, Director, Human Resources
Preparer/Title



Michele S. Gillen
Director, Administration

RECOMMENDATION:

For information only.

DISCUSSION:

When the MWRA was created, the Board of Directors adopted a set of Management Policies designed to provide the principles and goals which govern and guide the staff's daily decisions and the development of internal operating Policies and Procedures. In accordance with the Management Policies, the Executive Director is authorized to develop operating policies and procedures to assist in the day-to-day management of the Authority's business and operations.

The Policies and Procedures are divided into four sections – Administrative, Finance, Human Resources and Operations. Staff routinely manage and update the policies and procedures in accordance with changes in the work environment, as well as with laws and regulations.

Due to a number of personnel and regulatory changes over the past few years, staff are currently undertaking a comprehensive review of all of the Policies and Procedures. Most of the updates are minor in nature and merely require updated job titles, department names and other housekeeping issues. There are a few, however, that require a more in-depth review, in particular the non-union salary continuation policy, which will require some discussion with the Board.

A list of the Policies and Procedures is attached, denoting the current status of each in the review process.

Index of MWRA Policies and Procedures		As of:	09/13/18	
	Black = Updated			
	Green = To be updated			
Current		Effective	Approved	Old/Pending
Policy No.	Title	Date	OED	Policy No.
ADM.01	Management Policies of the Board of Directors	07/01/85	07/15/15	I.A.
ADM.03	Change Order Process	10/06/89	10/17/97	II.A.1
ADM.04	Affirmative Action	10/29/86	03/28/13	II.B.1
ADM.05	Contacts with Outside Parties	07/01/87	05/21/13	II.D.2
ADM.07	Signature Authority	10/17/90	09/14/95	II.D.5
ADM.08	Travel and Expense	07/23/86	01/18/08	II.G.1 & II.G.2
ADM.10	Reimbursement for Licensing, Certification and Affiliation Fees	07/23/86	08/24/18	II.G.3
ADM.11	Vehicle Management and Maintenance	06/29/89	02/02/98	II.G.4 & II.G.10
ADM.12	Staff Summary	03/12/87	03/07/17	II.G.5
ADM.13	Construction & Non-Professional Services Contracts	04/17/97	04/17/97	
ADM.14	Records Management	01/11/88	10/20/17	II.G.7 & II.G.12
ADM.16	Radio Communications Equipment Usage	06/29/89	01/04/96	II.G.9
ADM.18	Library and Research Information Services	01/25/90	09/27/95	II.G.11
ADM.19	Responding to Public Records Requests	06/22/88	12/20/16	II.H.1
ADM.20	Purchasing	07/01/87	11/17/97	II.I.5
ADM.21	Professional Services Contracts	05/24/89	03/16/96	II.I.8
ADM.22	Acquisition of Real Estate	03/10/89		II.I.9
ADM.23	Disposal of Surplus Personal Property	09/27/91	05/19/05	II.I.11
ADM.24	Disposition of Real Property and the Issuance of Licenses and 8(m) Permits	01/31/92	03/27/17	II.I.12
ADM.25	Professional Services Contract Amendments	11/29/95	11/29/95	
ADM.26	Microcomputer Purchasing	01/01/88	12/05/95	II.G.6
ADM.27	Microcomputer Management & Support	01/01/88	12/05/95	II.G.6
ADM.28	MIS Application Services Request	01/08/97	01/08/97	
ADM.30	MWRA IT User Responsibilities	07/21/00	10/20/17	
ADM.31	MWRA Information Security Policy	05/22/12	05/18/17	
FIN.01	Rates and Budget (Budget and Assessment)	01/04/89	11/12/97	II.I.2
FIN.02	Investment	03/25/87	03/01/17	II.I.4
FIN.03	Invoice Processing	11/10/88	03/01/17	II.I.7
FIN.04	Capital Finance Management	10/13/10	03/27/18	
FIN.05	Position Control Register	07/01/86	03/16/96	II.I.1
HR.01	Work Hours: Full Time, Part Time, Flexible Schedule	05/05/86	11/18/97	II.F.1
HR.02	Ethics Commission Filing Status	07/23/86	01/04/96	II.F.2
HR.03	Conference and Training	07/23/86	08/24/18	II.F.3
HR.04	Tuition Aid	11/01/88	10/20/15	II.F.3
HR.05	Overtime/Compensatory Time For Non-Union Employees	12/01/87	08/24/18	II.F.5
HR.07	Family and Medical Leave Policies and Procedures	08/05/93	09/28/95	II.F.7
HR.08	Probationary Evaluation for Non-Union Employees	04/01/89	03/16/96	II.F.8
HR.09	Non-Union Employee and Consultant Status	04/01/89	09/28/95	II.F.9
HR.10	Hiring	07/01/90	08/24/18	II.F.10 & II.F.18
HR.11	Maintaining a Drug/Alcohol Free Workplace	02/19/91	01/08/97	II.F.11
HR.12	Workers Compensation Claim Administration	03/19/91	02/06/08	II.F.12
HR.13	Holiday, Vacation and Leave	02/17/92		II.F.13
HR.14	OSHU	07/15/91		II.F.14
HR.15	Personnel File and Medical Records	07/29/91		II.F.15
HR.19	Drivers	01/01/95	02/17/95	NA
HR.21	Harrassment Prevention Policy (Previously Sexual Harrassment)	11/06/96	12/19/16	NA
HR.23	Workplace Violence	06/30/98	12/19/16	NA
HR.24	Non-Discrimination Policy	01/01/14	12/22/16	NA

Index of MWRA Policies and Procedures		As of: 09/13/18		
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	Green = To be updated			
Current		Effective	Approved	Old/Pending
<u>Policy No.</u>	<u>Title</u>	<u>Date</u>	<u>OED</u>	<u>Policy No.</u>
HR.26	Domestic Abuse Leave & Violence	05/12/16	03/29/18	
OP.01	Cooperative Research Agreement	02/15/89	09/15/97	II.C.1
OP.02	Materials	07/15/88	01/14/97	II.G.8
OP.03	Private Direct Sewer Connection	08/27/86		II.K.1
OP.04	Sewer Connections Serving Property Partially Located in a Non-MWRA Community	10/29/86	04/17/07	II.K.2
OP.05	Emergency Water Supply Withdrawals	08/27/86	04/17/07	II.L.1
OP.07	Chlorination/Disinfection of Pipelines	03/27/90	09/23/95	II.L.4
OP.08	New Metered Water Service Connections	01/31/92		II.L.5
OP.09	Water Connection Serving Property Partially Located in a Non-MWRA Community	03/11/92	04/17/07	II.L.6
OP.10	Admission of a New Community to MWRA Water System	06/25/97	11/12/14	NA
OP.11	Admission of a New Community to MWRA Sewer System and Other Requests for Sewer Service to Locations Outside MWRA Sewer Service Area	03/05/97	04/17/07	NA
	<u>Old Active Policies</u>			
II.F.13	Paid and Unpaid Leave	02/17/92		HR.13
II.F.14	OSHU	07/15/91		HR.14
II.F.15	Personnel File and Medical Records	07/29/91		HR.15
II.I.9	Acquisition of Real Estate	03/10/89		ADM.22
II.K.1	Private Direct Sewer Connection	08/27/86		OP.03
II.L.5	New Metered Water Service Connections	01/31/92		OP.08

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: FY18 Fourth Quarter Orange Notebook

COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE

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


David W. Coppes, P.E.
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 full fiscal year are highlighted below.

Water Use and Reservoir Storage

Total water used during the first half of the calendar year is around 3.8 percent above the same period in 2017, with 179.9 million gallons per day (mgd) supplied to customer communities; but was around 3.8 percent lower the same period in 2016, which was the tail end of the drought with more demand by partially supplied communities and emergency users. Also, 2017 had more rainfall. Calendar year 2018 flow data will be used to establish community shares of the fiscal year 2020 rate revenue requirement (See page 31). Total water withdrawals from the reservoir system are still tracking approximately 100 mgd below the system safe yield of 300 mgd.

With system yield (essentially the amount of water entering the reservoirs from the watershed) running around the long-term average, Quabbin storage volumes increased over the quarter to 94.5 percent full (389,480 million gallons) and remain well within the reservoir's Normal Operating range. (See page 28)

Deer Island WWTP Maintenance Metrics

At the close of each fiscal year, staff present long-term annual maintenance metric statistics to show long-term trends and continued compliance with industry benchmarks and best practices (See pages 5 to 7). Over time, Deer Island staff have continued to incrementally increase targets

for areas such as preventive maintenance kitting and predictive maintenance improving reliability and efficiency (See page 5).

The key bottom line metric for reliable operation and continued permit compliance is equipment availability, with an industry benchmark of at least 97 percent. In FY18, equipment availability averaged 99.7 percent (See page 6).

Staffing

At the close of the fiscal year, staff levels were at 1142.5 full time equivalents (FTEs) compared to the target of 1150 FTEs. During the fiscal year, MWRA filled 192 positions, about 10 percent more than the prior five-year average; with 118 positions (61 percent) being filled by promotions or internal transfers, and 74 positions (39 percent filled with external hires (See page 44).

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

for

Fourth Quarter FY2018

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
September 19, 2018

Board of Directors Report on Key Indicators of MWRA Performance

Fourth Quarter FY18

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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.

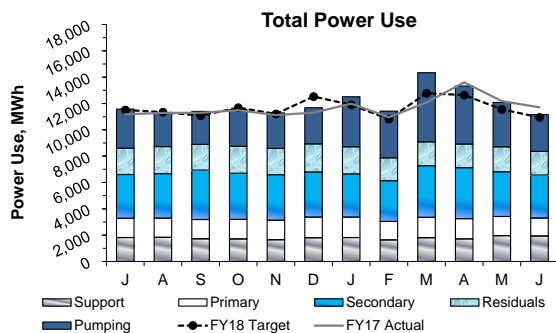
Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
September 19, 2018

OPERATIONS AND MAINTENANCE

Deer Island Operations

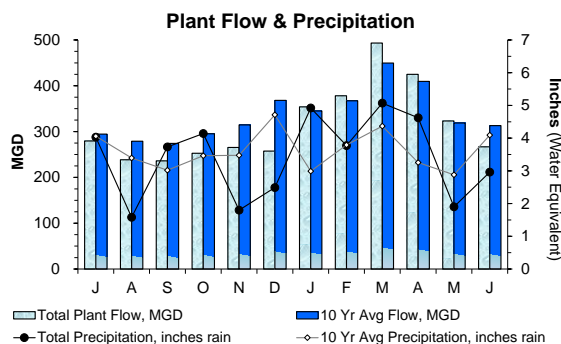
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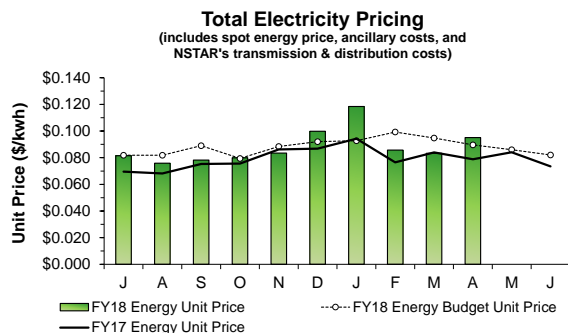
Total power usage in the 4th Quarter was 4.1% above target as Total Plant Flow was 3.5% above target with the 3 year average plant flow. While power used in most areas of the plant were similar to target, power used for wastewater pumping was 3.9% higher than target due to higher plant flow, and usage in the secondary activated sludge treatment process, including for cryogenic oxygen production, was 11.8% above target due to an increased dissolved oxygen demand as a result of higher plant flow and warmer wastewater temperatures. **Overall, total power usage in FY18 was 2.6% above target as total plant flow was 3.5% above the 3 year average plant flow target.**

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



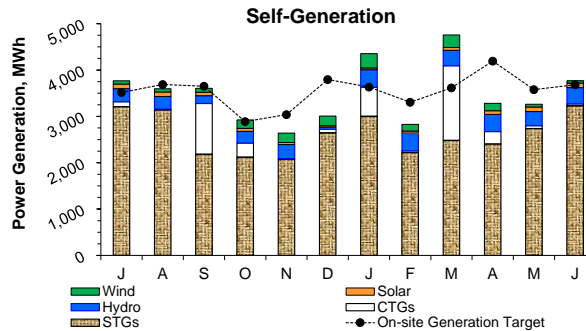
Total Plant Flow for the 4th Quarter was 2.5% below target with the 10 year average plant flow (338.3 MGD actual vs. 347.1 MGD expected) as precipitation for the quarter was 7.3% below target (9.48 inches actual vs. 10.22 inches expected). **Total Plant Flow in FY18 was 6.4% below target as precipitation was 5.7% below target.**

Note: Plant Flow projections are based on 10 year averages.

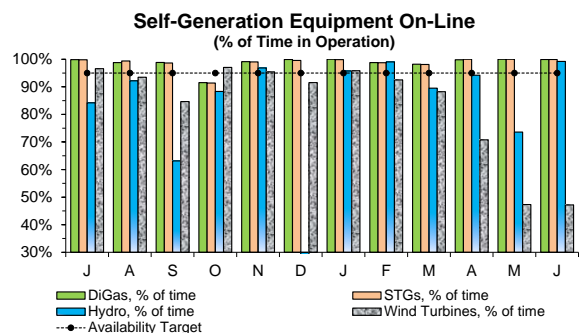


Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual total energy unit prices in May and June (Quarter 4) are not yet available as the complete invoices have not been received. The actual Total Energy Unit Price for FY18 through April (the most current invoice available) was on target (-0.9%) with budgetary estimates. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

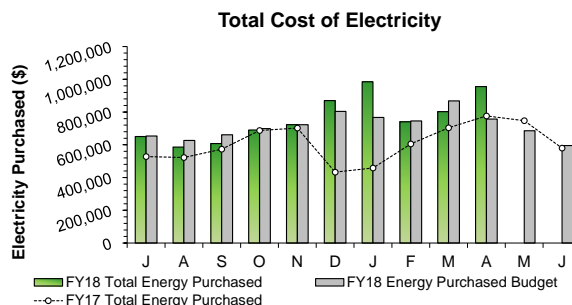
Note: Only the actual energy prices are reported. Therefore, the dataset lags by two (2) months due to the timing of invoice receipt and



Power generated on-site during the 4th Quarter was 10.0% below target. Power generated by the STGs exceeded target by 4.3%. However, generation by the CTGs, Hydro Turbines, Solar Panels, and Wind Turbines were below target. The CTGs were operated once as a precaution during a rain event, for an ISO-NE demand response audit event, and for routine maintenance/checkout purposes. The target includes CTG operation during a number of storm events. Generation by the Hydro Turbines was 38.8% below target as Hydro Turbine #1 was out of service pending repair of the rotating assembly. Wind Turbine generation were 40.2% below target due to failed electrical and hydraulic components which left Turbine #2 out of service since April 17. **Overall, power generation was 1.9% below target for FY18.**



The DiGas system and STGs exceeded the 95% availability target for the 4th Quarter. Hydro Turbine availability in April and May fell below target due in part to high plant flow events causing the turbine to trip offline and Turbine #2 being out of service for seven (7) days pending a motor replacement. Additionally, Turbine #1 remains out of service pending repair of the rotating assembly. Wind Turbine availability fell below target due to an issue with failed electrical and hydraulic components which has left Turbine #2 out of service since April 17. **Overall in FY18, the DiGas and STGs exceeded the 95% availability target, while Hydro Turbine availability was 12.5% below target and Wind Turbine availability was 11.6% below target.**



The invoices for the total cost of Electricity Purchased for May and June (Quarter 4) have not been received as of reporting time. Year-to-date Total Cost of Electricity is \$305,186 (4.2%) higher than budgeted through April as the Total Electricity Purchased is 4.8% higher than target through April.

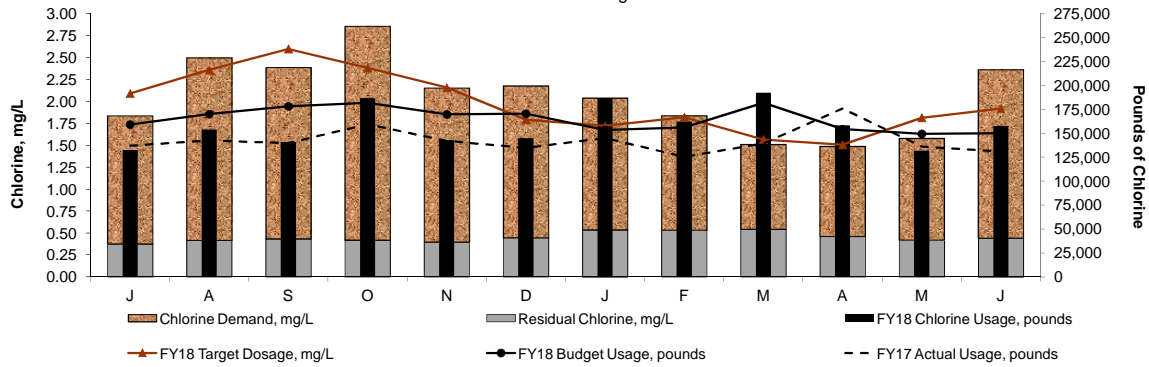
Note: Only the actual energy prices are reported. Therefore, the dataset lags by two (2) months due to the timing of invoice receipt and review.

Deer Island Operations

4th Quarter - FY18

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Deer Island Sodium Hypochlorite Use Disinfection Dosage and



The disinfection dosing rate in the 4th Quarter was 3.6% above target. DITP maintained an average disinfection chlorine residual of 0.44 mg/L this quarter with an average dosing rate of 1.81 mg/L (as chlorine demand was 1.37 mg/L). Actual sodium hypochlorite usage in pounds of chlorine was 1.4% below target this quarter as the overall plant flow was 2.5% lower than target. **Overall in FY18, disinfection dosing was 4.2% above target while sodium hypochlorite usage in pounds of chlorine was 4.3% below target.**

The overall disinfection dosing rate (target and actual) is dependent on plant flow, target effluent total chlorine residual levels, effluent quality and NPDES permit levels for fecal coliform.

Secondary Blending Events

Month	Count of Blending Events	Count of Blending Events Due to Rain	Count of Blending Events Due to Non-Rain-Related Events	Secondary, as a Percent of Total Plant Flow	Total Hours Blended During Month
J	2	2	0	99.5%	7.51
A	0	0	0	100.0%	0.00
S	1	1	0	99.98%	1.36
O	1	1	0	98.4%	12.30
N	0	0	0	100.0%	0.00
D	0	0	0	100.0%	0.00
J	2	2	0	97.8%	27.94
F	0	0	0	100.0%	0.00
M	3	2	1	97.8%	38.98
A	3	3	0	98.9%	16.40
M	1	1	0	99.7%	4.06
J	1	1	0	99.8%	3.30
Total	14	13	1	99.2%	111.87

99.4% of all flows were treated at full secondary during the 4th Quarter. There were five (5) secondary blending events due to high plant flow resulting from heavy rain. These blending events resulted in a total of 23.76 hours of blending and 185.79 MGal of primary-only treated effluent with secondary effluent. The Maximum Secondary Capacity for the entire quarter was 700 MGD.

Overall in FY18, 99.2% of all flows were treated at full secondary. There were a total of 14 separate secondary blending events in FY18; 13 due to high plant flows resulting from heavy rain, with or without significant snow melt. There was a single blending event that followed an unanticipated plant-wide power outage and subsequent communications failure on the centralized process information and control system ("PICS"). These 14 secondary blending events combined produced a total of 111.87 hours of blending and 930.84 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 FY18.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The plant achieved an instantaneous peak flow rate of 1,172.4 MGD during the evening of April 16. This peak flow occurred during a rain event that produced a single day total precipitation of 1.57 inches and a daily average plant flow of 808.4 MGD. Overall, Total Plant Flow in the 4th Quarter was 2.5% lower than the 10 year average plant flow target for the quarter.

Work on the Winthrop Terminal Facility (WTF) VFD (Variable Frequency Drive) and Synchronous Motor Replacement project was started by the contractor in January and will entail demolition of existing older obsolete equipment (electrical systems, motors and VFDs on each of the six (6) raw wastewater pumps). Demolition and installation of new equipment is expected to take approximately two (2) months followed by two (2) months of performance testing. The pumps are currently powered by 600 volts service and will be changed to 4,160 volts, consistent with other major pumps in both the South System Pump Station (SSPS) and the North Main Pump Station (NMPS). Work has been completed on WTF Pump #6 and all electrical systems have been tested. Staff began the two (2) month performance testing of Pump #6 on June 29 and the pump will remain in service as the primary pump for 60 days.

Deer Island Operations

4th Quarter - FY18

Page 3 of 4

Deer Island Operations & Maintenance Report (continued)

Environmental/Pumping (continued):

Cleaning of the North Main Pump Station (NMPS) riser took place this quarter. The ten-foot diameter North Metropolitan Relief Tunnel riser shaft and the eleven-foot diameter Boston Main Drainage Tunnel riser shaft were cleaned out. A total of 17.12 tons of material was removed and disposed of under 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 NMPS. This cleaning occurs twice a year.

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. The same turnaround maintenance will be performed on Train #1 in the fall.

Residuals:

Gravity Thickeners (GTs) 5 and 6 were both returned to service in the 4th Quarter after both units became inoperable in December 2017 (GT 5) and in mid-January (GT 6). GT 5 was returned to service in mid-May and GT 6 was returned to service in early June. The harsh environment in this process causes corrosion and weakening of the metal, requiring occasional replacement and rebuilding of mechanical components.

Odor Control:

There were 11 separate odor control facility shutdowns during the 4th Quarter ranging from approximately one (1) hour to 14 hours. All but one (1) of these were scheduled shutdowns to allow for maintenance activities including visual inspections of the airflow ductwork in each of the five (5) odor control, a complex heat exchanger replacement in the secondary odor control treatment system, in addition to other maintenance activities. The single unanticipated odor control system shutdown occurred during off hours in the North Pumping Odor Control (NPOC) Facility due to a failed remote input/output (I/O) module that controls all the other I/O modules in this facility. The duration of this shutdown was slightly over two (2) hours. Process air was contained within the buildings during these shutdowns and there were no odor complaints associated with this work.

Activated carbon in carbon adsorber (CAD) units #1 and 3 in the East Odor Control (EOC) Facility, units #4 and 7 in the West Odor Control (WOC) Facility, and units #3 and 4 in the Secondary Odor Control (SOC) Facility was changed out in June as part of routine practice to replace spent carbon.

Energy and Thermal Power Plant:

Overall, total power generated on-site accounted for 28.2% of Deer Island's total power use for the quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 27.2% of Deer Island's total electrical power use for the quarter.

The scheduled annual overhaul maintenance of CTG-1A and CTG-2B began on May 7 along with an audit inspection of each unit. These two (2) tasks were completed simultaneously on each CTG to lessen the down time of each unit and only one (1) CTG was taken out of service at a time. This work required the engine of each CTG to be separated from the generator in order to complete the maintenance and inspection, and was performed over the course of several days. Thermal Power Plant staff successfully tested each CTG following the completion of work on each unit.

CTG-1A was operated for approximately two (2) hours on June 19 for an ISO-NE declared Demand Response audit event.

Both CTG units are due for replacement of their respective fire protection systems and vibration monitoring systems and a 48 hour (weather dependent) outage will be required for each CTG in order for the contractor to complete this work. These system upgrades were completed on CTG 2B during the week of June 25. This same work is currently scheduled to take place during the week of July 23 for CTG 1A.

Work proceeded in June to repair and replace the failed electrical and hydraulic components on Wind Turbine #2 which has been out of service since April 17. Cleaning of residual hydraulic oil both inside the nacelle and on the outside of the turbine was completed by the end of May. All failed components, including a new pitch ram and hydraulic fluid tank, were replaced in the turbine by July 3. Returning the turbine to operation is pending the consultant's final report from the turbine inspection that took place on July 11.

DITP took delivery of 420,000 gallons of #2 fuel oil without incident from May 7 through May 16. 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.

Regulatory:

On April 24, the US EPA visited Deer Island to perform a required inspection which occurs on a five year cycle. The inspector reviewed the Integrated Contingency Plan (ICP) and found it to be compliant with the requirements to maintain a Spill Prevention, Control and Countermeasure (SPCC) Plan, as well as a Facility Response Plan (FRP). The inspection also involved a physical tour of the facility and found all necessary measures to be in place so as to be deemed responsive and compliant with all relevant regulations. The plant has received approval for the plans for this cycle. Additionally, the ICP was certified by a Licensed Professional Engineer (PE) contracted by the MWRA who also reviewed and toured Deer Island in advance of the US EPA inspection.

Clinton AWWTP:

Replaced #2 Sodium Hypochlorite tank. Removed and destroyed the old tank.
Contractor made repairs to skimmer arm, #1 Gravity Thickener.
Drained, cleaned, and inspected #2 Aeration Tank. Tank placed back in service.

Phosphorus Reduction Facility: *Work completed or in progress during the Fourth Quarter:*

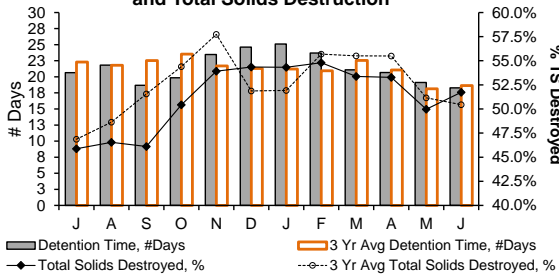
Contractor has completed performance testing of the phosphorus removal disc filters. The contractor has also completed additional testing for polymer selection.

Deer Island Operations and Residuals

4th Quarter - FY18

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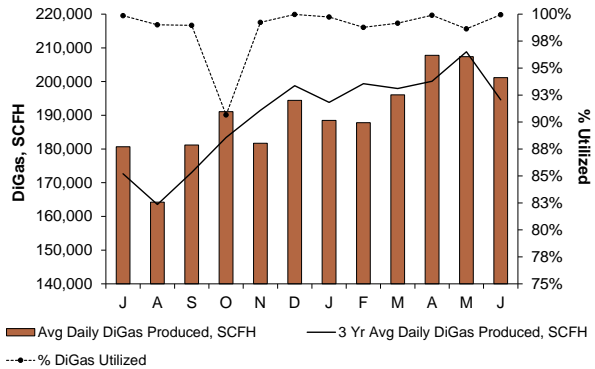
Sludge Detention Time in Digesters and Total Solids Destruction



Total solids (TS) destruction following anaerobic sludge digestion averaged 51.7% during the 4th Quarter, 1.4% below the 3 year average of 52.4% as the sludge detention time in the digesters was 19.4 days. DI operated with an average of 7.9 digesters slightly lower than the 3 year average of 8.0 digesters. **Overall in FY18, TS destruction averaged 51.2%, slightly lower than the 3 year average of 52.6%. Sludge detention time was 21.4 days, similar to the 3 year average of 21.3 days.**

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

Digester Gas Production and % Utilized

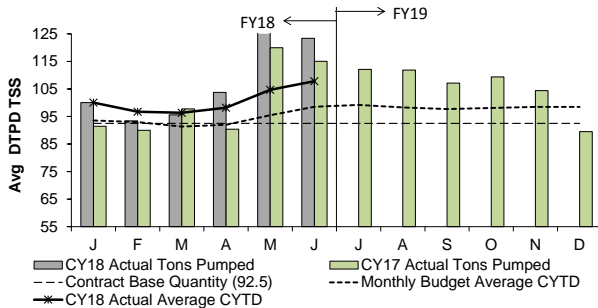


The Avg Daily DiGas Production in the 4th Quarter was 2.1% above target with the 3 Year Avg Daily DiGas Production. On average, 99.5% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant. **Overall in FY18, the Avg Daily DiGas Production was on target (+0.2%), with an average of 98.7% utilization of DiGas in the Thermal Power Plant.**

Residuals Pellet Plant

MWRA pays a fixed monthly amount for the calendar year to process up to 92.5 DTPD/TSS as an annual average. The monthly invoice is based on 92.5 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 90.0 DTPD/TSS was changed to 92.5 DTPD/TSS starting on January 1, 2016 with the terms of the new contract. On average, MWRA processes more than 92.5 DTPD/TSS each year (FY18's budget is 99.5 DTPD/TSS and FY19's budget is 98.9 DTPD/TSS).

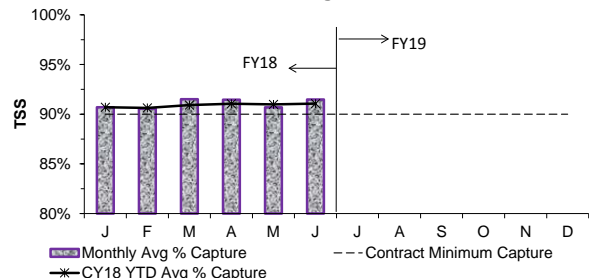
Sludge Pumped From Deer Island



The average quantity of sludge pumped to the FRSA Pellet Plant in the 4th Quarter was 119.3 DTPD - above target with the FY18 budget of 105.7 DTPD for the same period. Sludge delivered to FRSA was higher than expected mainly due to higher than expected primary and secondary sludge production.

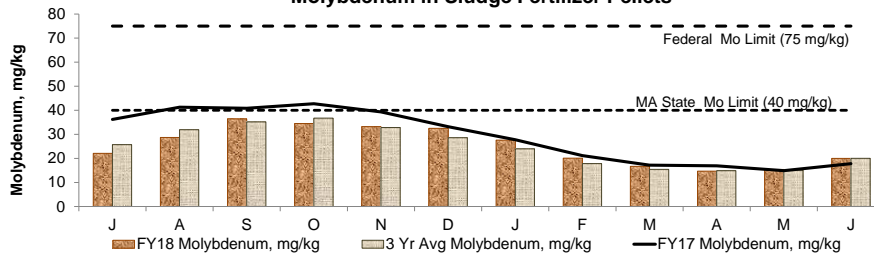
The CY18 average quantity of sludge pumped through June is 107.8 DTPD - 9.4% above target, compared with the CY18 average budget of 98.5 DTPD for the same time period.

Monthly Average % Capture of Processed Sludge



The contract requires NEFCo to capture at least 90.0% of the solids delivered to the Biosolids Processing Facility in Quincy. The average capture for the 4th Quarter was 91.2% and the CY18 to date average capture is 91.1%.

Molybdenum in Sludge Fertilizer Pellets



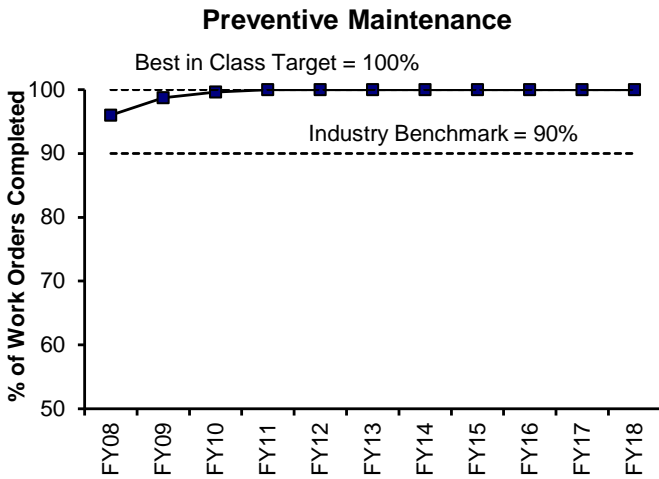
Copper, lead, and molybdenum (Mo) are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer. Molybdenum-based cooling tower water is a significant source of Mo in the sludge fertilizer pellets. The Federal standard for Mo is 75 mg/kg. In 2016, Massachusetts Type I biosolids standard for molybdenum was changed to 40 mg/kg from the previous standard of 25 mg/kg. This has allowed MWRA to sell its pellets in-state for land application whereas the previous limits forced several months' worth of pellets to be shipped out of state. This made it an impractical source of fertilizer for local Massachusetts farms since NEFCo does not distribute product that does not meet the suitability standards.

The levels have been below the DEP Type 1 limit for all three metals (Also see Page 14). For Mo, levels in the Fore River sludge fertilizer pellets during the 4th Quarter of FY18 averaged 16.7 mg/kg, similar to the 3 year average, and 58% below the MA State Limit, and 78% below the Federal Limit.

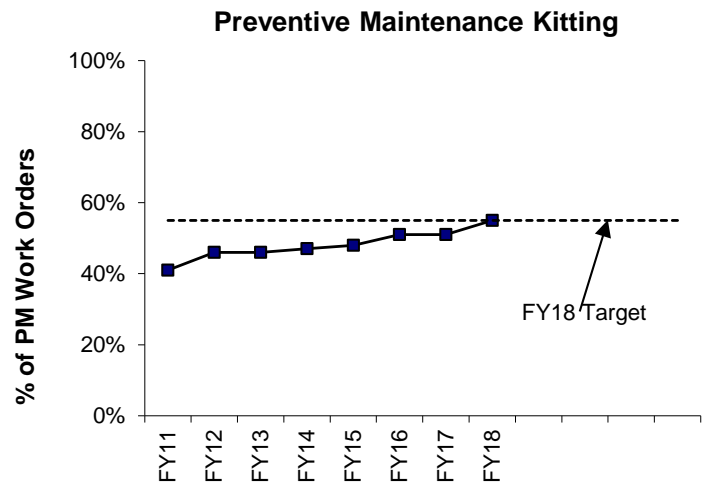
Deer Island Yearly Maintenance Metrics

4th Quarter - FY18

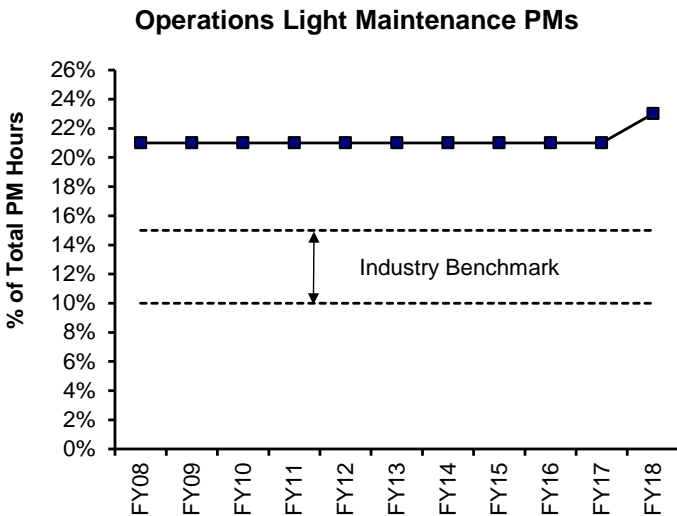
Proactive and Productivity Measures



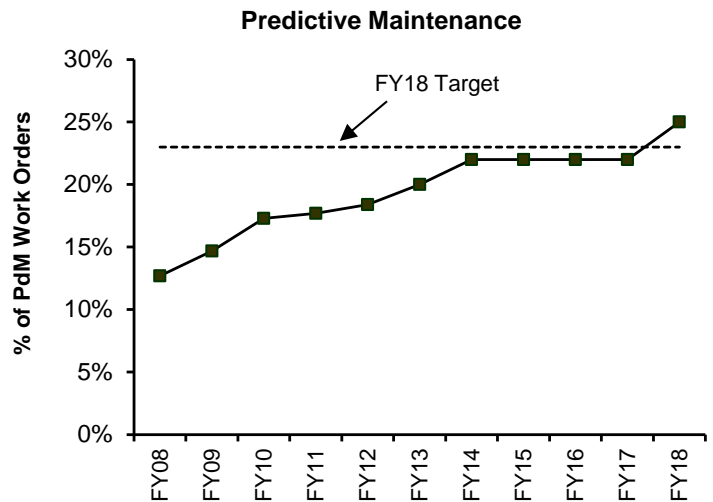
The industry benchmark is 90% for Preventive Maintenance (PM) completion. Upon reaching the 90% goal in FY05, the target goal was increased to the "Best in Class" Target of 100% PM completion. Since then, the percentage of PM work order completion has been at 99% or higher. Reliability-Centered Maintenance (RCM) and PM optimization efforts have continued since FY01. PM completion rate was 99.9% in FY18.



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 FY18 was 55%, equalling DITP's new

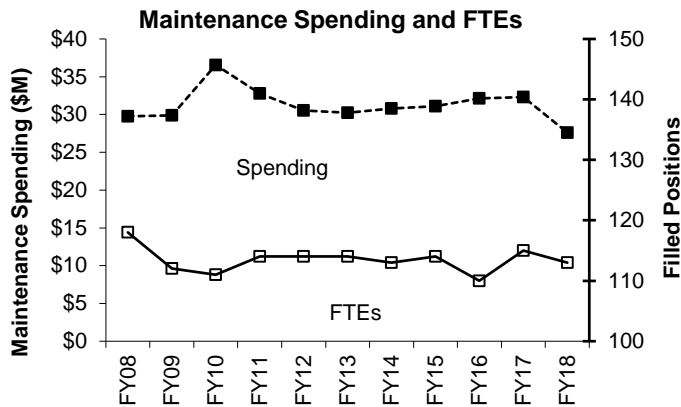


The percentage of preventive maintenance work order hours completed by Operations staff (not maintenance staff) increased from less than 1% in January 2002 to the current level of 23% in FY18. DITP reached the industry benchmark range of 10-15% in April 2003 and has exceeded the goal through FY18. Operations completes approximately 650 PM work orders per month.

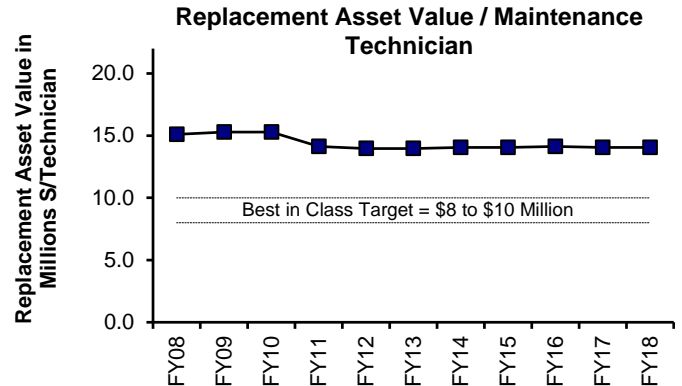


Predictive maintenance has steadily increased from 2% in FY03 to 25% in FY18, DITP's FY18 new goal of 23% was exceeded. The increase in predictive maintenance was achieved through the expanded use of lubrication, vibration, thermography, and acoustic ultrasonic testing techniques. The Condition Monitoring Group continually reviews and investigates new opportunities and initiatives to expand condition monitoring testing and analysis.

Deer Island Yearly Maintenance Metrics 4th Quarter - FY18 Overall Maintenance Program Measures

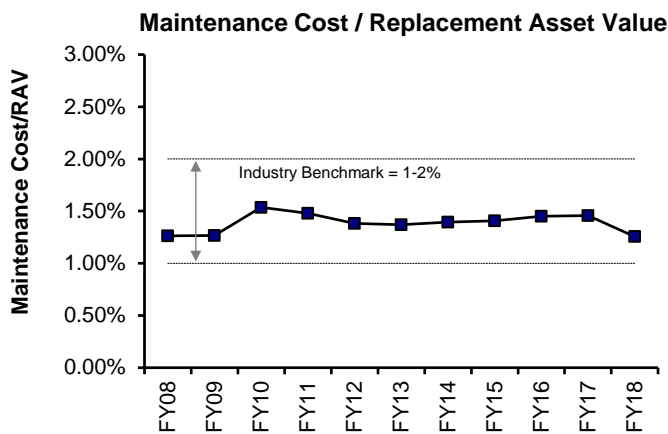


DITP's Maintenance staff is currently at 113 FTE's. Maintenance has been successful in meeting its goals through implementation of numerous maintenance efficiencies including: Operations staff performing light maintenance, cross-functional training and flexibility, and Reliability-Centered Maintenance.

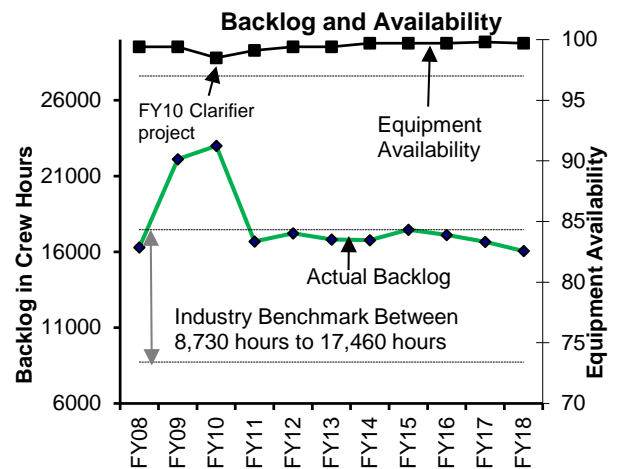


DITP adopted a "best in class" target of \$8-\$10 Million/Technician for maintenance staffing. Even after a period of downward trending, DITP remains above this Best in Class target range. However, as the plant ages and additional equipment replacements are expected, DITP management will reassess staffing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

The Maintenance Spending graph shows actual annual maintenance spending and large CIP 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 FY18, overall spending decreased from FY17 due to some Maintenance Projects being delayed; Exterior Door Contract, Coatings Contract, PICS Upgrade and Lighting Demand. Scheduled and completed projects during FY18 included: Secondary Battery A & B Valve Replacements, Residuals Rotary Screen Rebuild, Rebuilding of Scum Hoppers, Winthrop Terminal Facility Valve Replacement and Rehabilitation of Gravity Thickeners #5 and #6. The large spike in FY10 and FY11 is attributed to the Clarifier Rehabilitation Project (\$58M), which was an on-going during that period.



The industry benchmark for annual maintenance spending is between 1% to 2% of replacement asset value, currently DITP is at 1.26%. 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 \$12.1 million coupled with CIP spending which funded Secondary Battery A & B Valve Replacements, Rebuilding of Scum Hoppers, Winthrop Terminal Facility Valve Replacement and Gravity Thickeners #5 and #6 Rehabilitation.



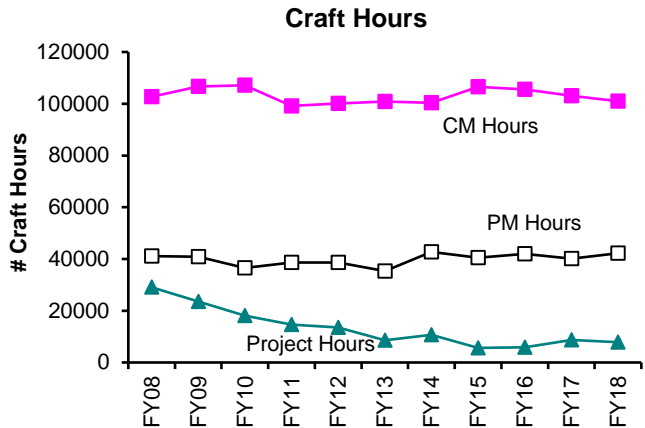
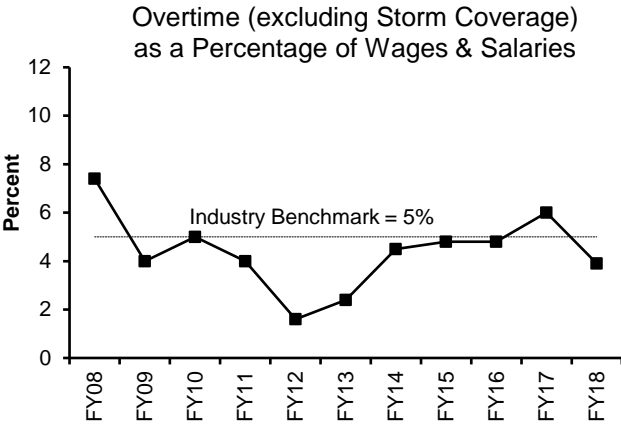
Industry benchmark for Equipment Availability is 97% and over the last ten years, equipment availability has consistently exceeded the benchmark. In FY18 the availability was 99.7%. The slight decrease in Equipment Availability during FY18 was due to the Internal Rehabilitation of Gravity Thickeners #5 and #6. FY10's decrease was due to the Clarifier Rehabilitation Project.

Industry Benchmark for Backlog is between 8,730 to 17,460 hours for maintenance based on current staffing, the total average backlog for FY18 was 16,052 hours, which is below the industry benchmark. The slight decrease in backlog is from utilizing staff during Cable Outages and Wet Weather to perform light maintenance tasks.

Deer Island Yearly Maintenance Metrics

4th Quarter - FY18

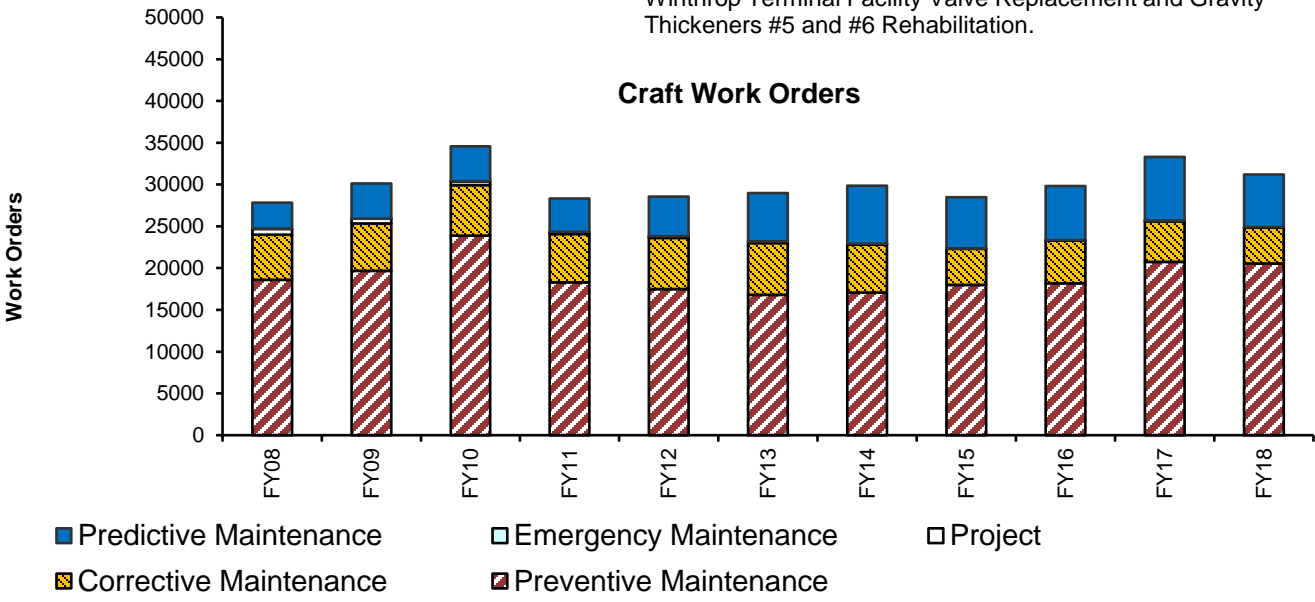
Overall Maintenance Program Measures (cont.)



Management continues its effort to keep overtime below the industry benchmark. DITP maintenance overtime was 3.9% for FY18. Management has taken steps to reduce overtime spending by limiting overtime to repair critical equipment and systems only. DITP has been on or under Industry Benchmark from FY08 through FY16. The increase in overtime in FY17 was due to the Eversource Cable Outage Project.

Continued optimization of the Preventive Maintenance (PM) program through the transfer of some light maintenance tasks from Maintenance to Operations staff (23% of PM hours at the end of FY18), elimination of duplicate work orders, increasing PM frequency due to equipment history and performance. Installation of new equipment and combining some PM's resulted in a slight increase in PM hours in FY18.

Corrective Maintenance (CM) hours slightly decreased from last year. Project Maintenance hours slightly decreased due to a number of CIP projects being completed: Secondary Battery A & B Valve Replacements, Residuals Rotary Screen Rebuild, Winthrop Terminal Facility Valve Replacement and Gravity Thickeners #5 and #6 Rehabilitation.



During FY18, the number of work orders decreased by 2,180 from the previous year. The decrease in work orders was due to Planning combining some PM work orders. The number of Corrective Maintenance (CM) work orders decreased slightly in FY18. Project (PROJ) work orders decreased for FY18 due to CIP projects being completed.

The Planning department is continuously modifying PM, PdM, and CM Job Plans to ensure maintenance is being performed efficiently and effectively, while ensuring reliability and availability of DITP's Assets.

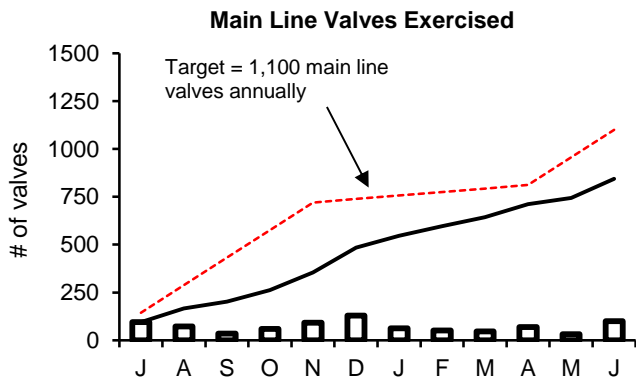
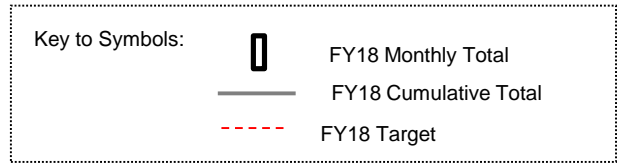
Water Distribution System Valves

4th Quarter - FY18

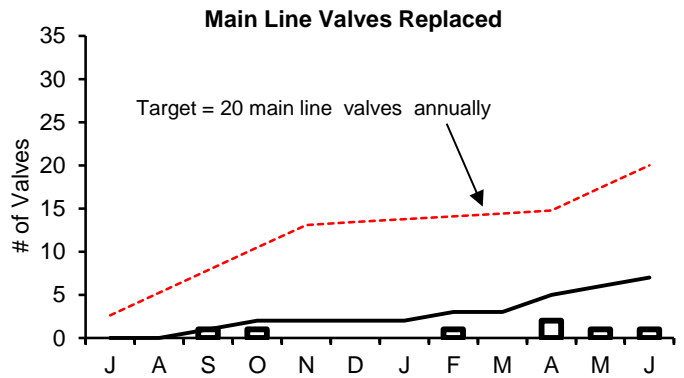
Background

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.

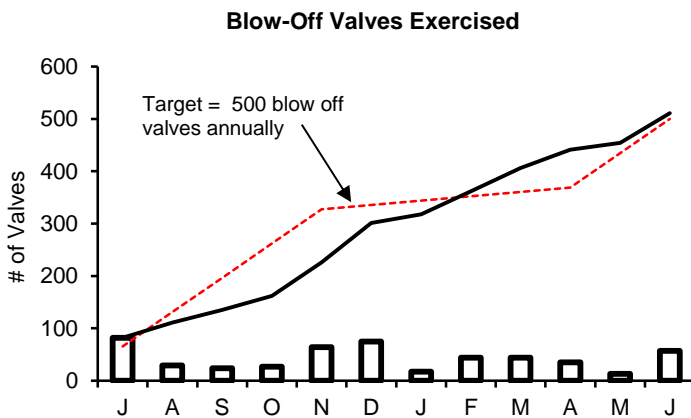
Type of Valve	Inventory #	Operable Percentage	
		FY18 to Date	FY18 Targets
Main Line Valves	2,159	96.5%	95%
Blow-Off Valves	1,317	98.0%	95%
Air Release Valves	1,380	94.9%	95%
Control Valves	49	100.0%	95%



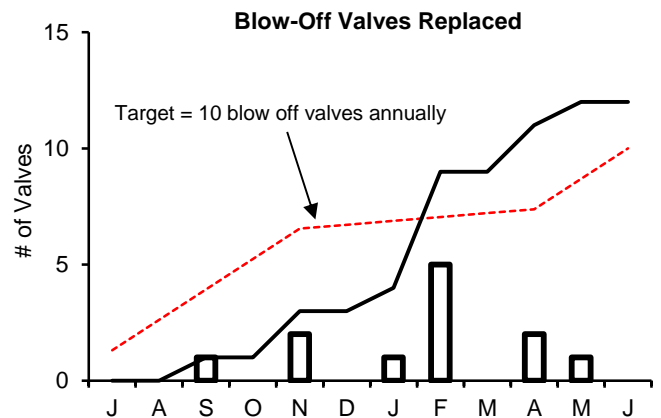
During the 4th Quarter of FY18, 201 main line valves were exercised. The total number exercised for the fiscal year was 844. Below target due to extensive valve operations support provided to the CIP construction contracts, primarily on the Northern Intermediate High projects.



During the 4th Quarter of FY18, four main line valves were replaced. The total replaced for the fiscal year was seven. Below target due to other projects such as Watertown Pipeline coupling and leak repairs taking priority.



During the 4th Quarter of FY18, 105 blow off valves were exercised. The total exercised for the fiscal year was 511.



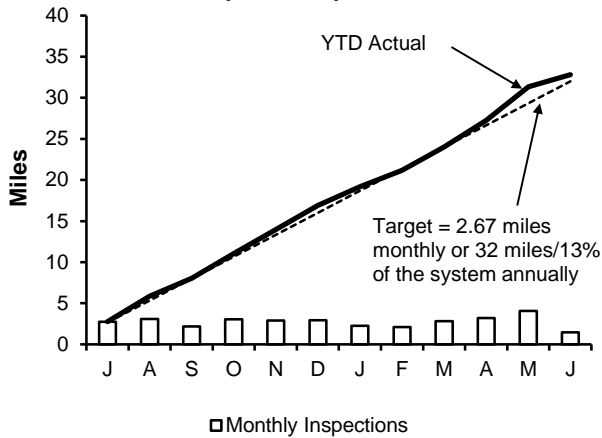
During the 4th Quarter of FY18, there were three blow off valves replaced. The total replaced for the fiscal year was twelve.

Wastewater Pipeline and Structure Inspections and Maintenance

ONB 4th Quarter - FY18

Inspections

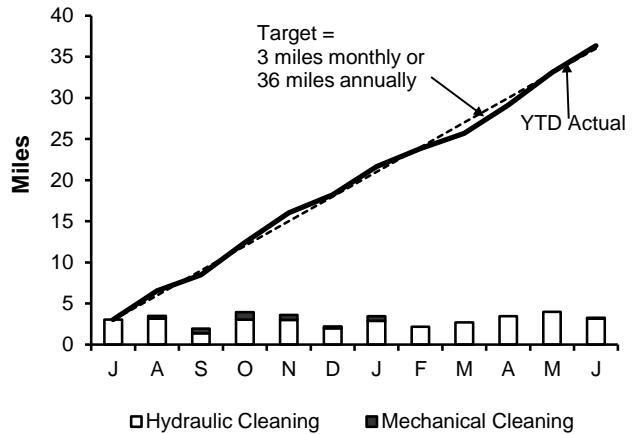
Pipeline Inspections



Staff internally inspected 8.77 miles of MWRA sewer pipeline during this quarter. The year to date total is 32.81 miles. No Community Assistance was provided this quarter.

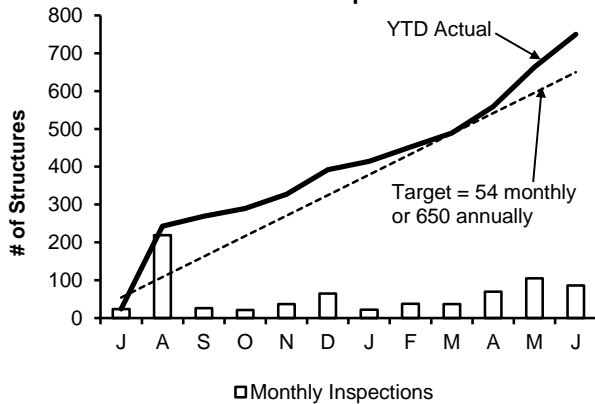
Maintenance

Pipeline Cleaning



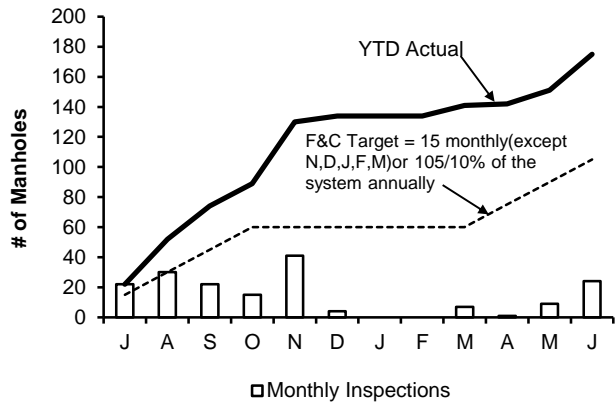
Staff cleaned 10.67 miles of MWRA's sewer system and removed 49 yards of grit and debris during this quarter. The year to date total is 36.25 miles. No Community Assistance was provided this quarter.

Structure Inspections



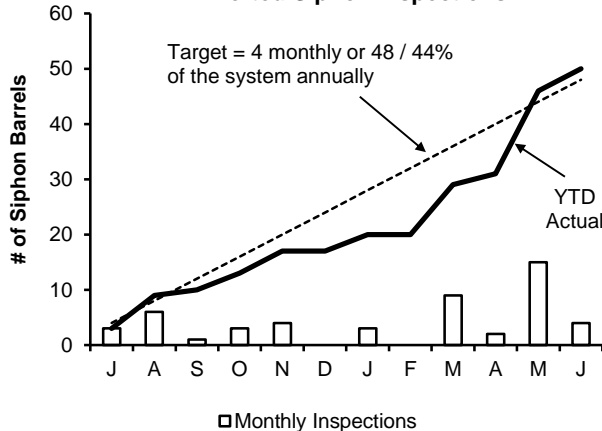
Staff inspected the 36 CSO structures and performed 255 additional manhole/structure inspections during this quarter. The year to date total is 750 inspections.

Manhole Rehabilitation



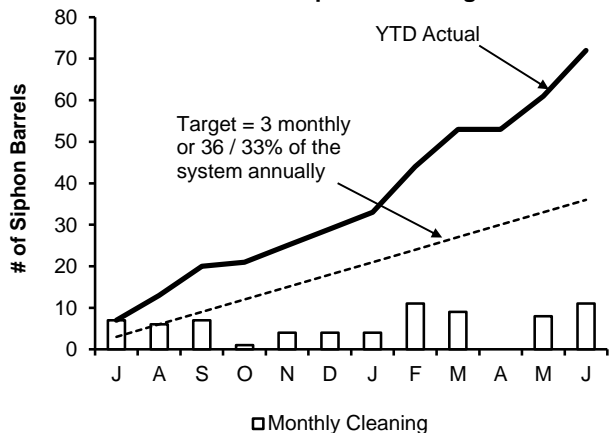
Staff replaced 34 frame & cover during this quarter. The year to date total is 175.

Inverted Siphon Inspections



Staff inspected 21 siphon barrels this quarter. Year to date total is 50 inspections.

Inverted Siphon Cleaning

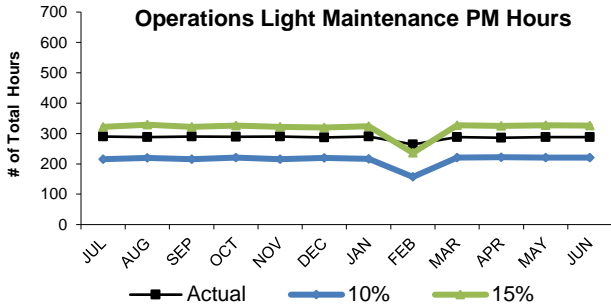


Staff cleaned 19 siphon barrels during this quarter. Year to date total is 72.

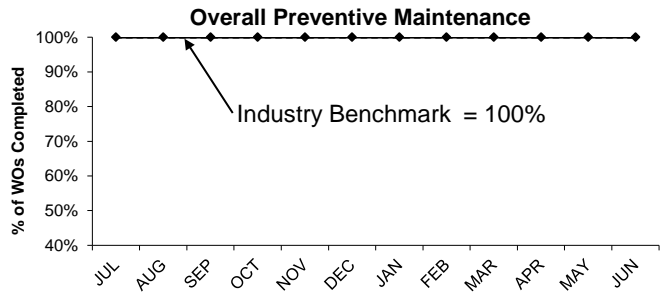
Field Operations' Metropolitan Equipment & Facility Maintenance

4th Quarter - FY18

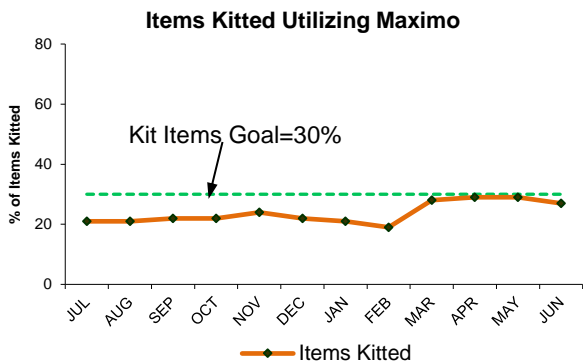
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion was raised to 100% for Fiscal Year 2010. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus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



Operations staff averaged 287 hours of preventive maintenance during the 4th Quarter, an average of 15% of the total PM hours for the 4th Quarter, which is within the industry benchmark of 10% to 15%.

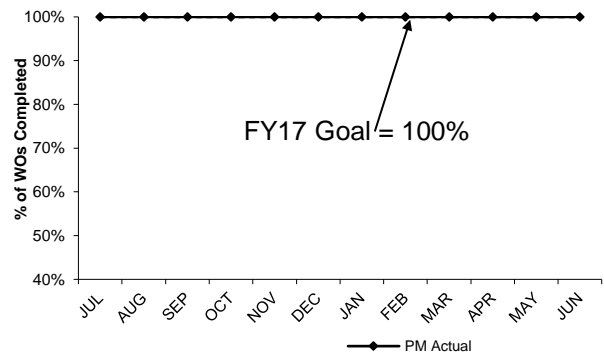


The Field Operations Department (FOD) preventive maintenance goal for FY18 is 100% of all PM work orders. Staff completed an average of 100% of all PM work orders in the 4th Quarter.

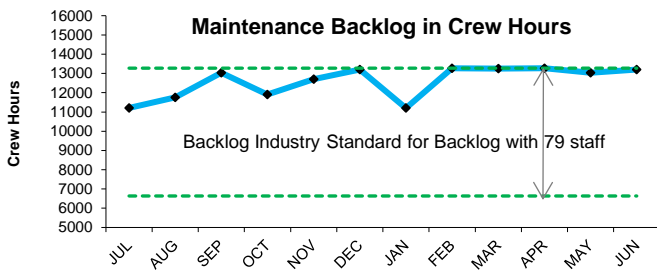


Operation's FY18 maintenance kitting goal has been set at 30% of all work orders to be kitted. Kitting is the staging of parts or material necessary to complete maintenance work. In the 4th Quarter, 28% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.

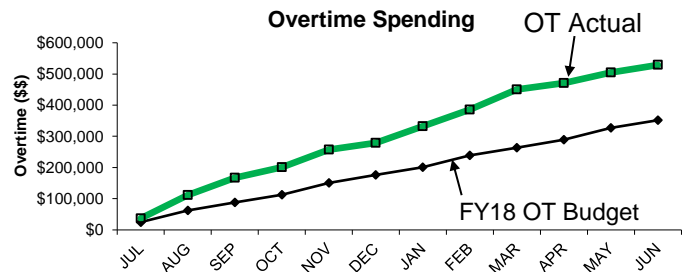
Operations Light Maintenance % PM Completion



Wastewater Operators complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY18 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



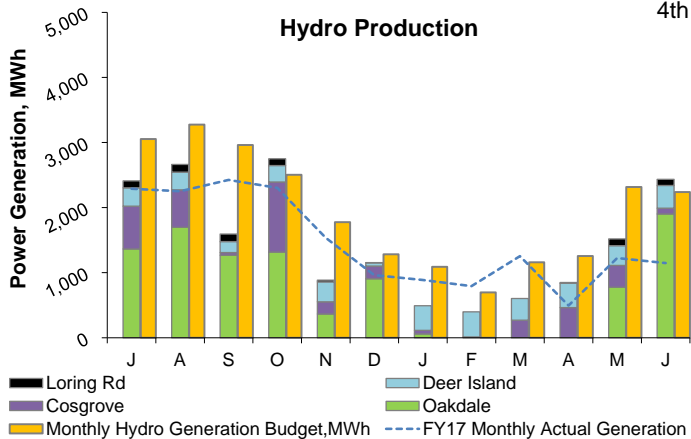
The 4th Quarter backlog average is 13168 hours. Management's goal is to continue to control overtime and still stay within the industry benchmark of 6636 to 13275 hours.



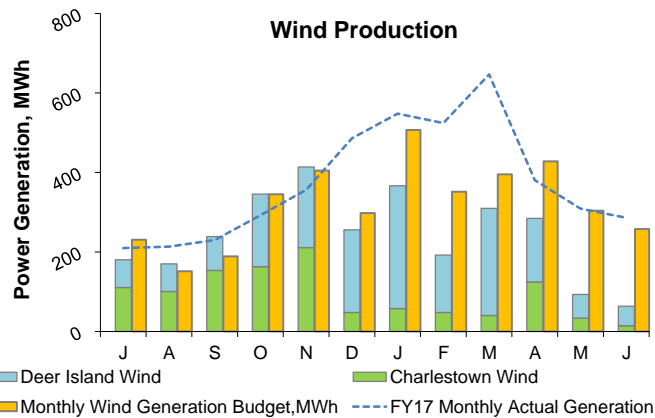
Maintenance overtime was at budget for the 4th Quarter. Overtime was used for critical maintenance repairs. Overtime for FY18 is \$529k which is \$177k over budget for the fiscal year.

Renewable Electricity Generation: Savings and Revenue

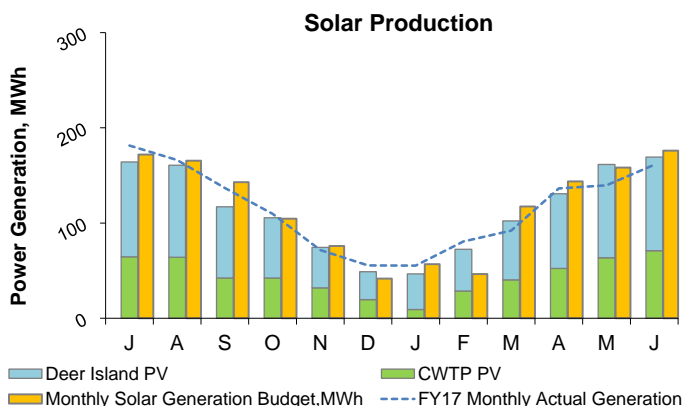
4th Quarter - FY18



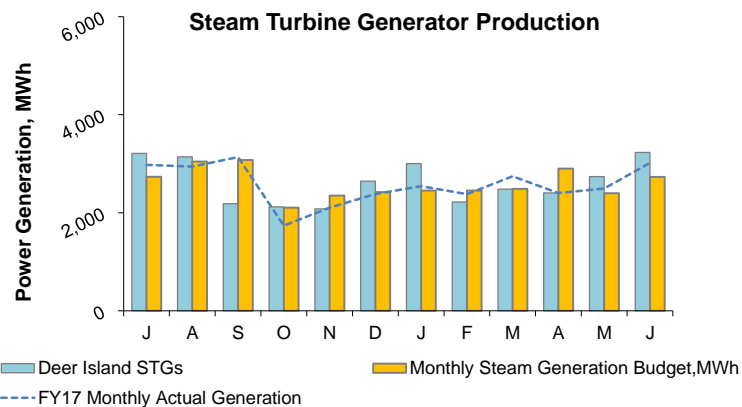
In the 4th quarter, the renewable energy produced from all hydro turbines totaled 4,806 MWh; 17% below budget³. The total energy produced in FY18 is 17,760 MWh; 25% below budget³. Oakdale attributed to most of the under-budget value (approximately 13% of it) mainly due to limited Quabbin transfers. Also, Cosgrove generation values have been underestimated by the utility company. The utility data for Cosgrove is typically corrected and reconciled in later months of the year. The total savings and revenue² to date in FY18 (actuals through April¹) is \$596,740; 41% below budget³, due to the reasons stated above. The savings and revenue value does not include RPS REC revenue (see next page).



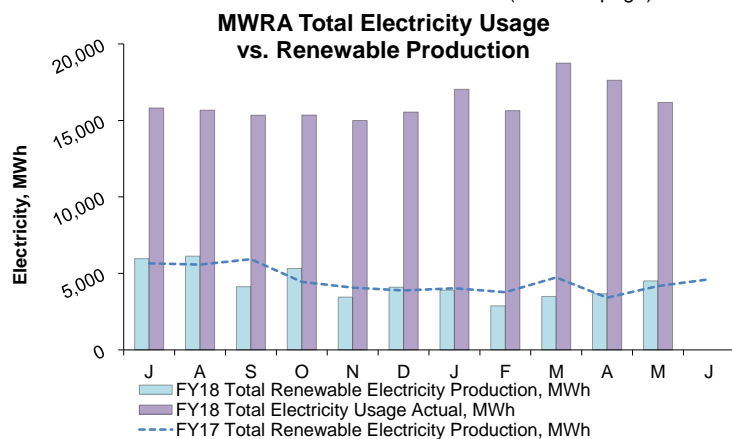
In the 4th quarter, the renewable energy produced from all wind turbines totaled 441 MWh; 55% below budget³; mostly due to Charlestown Wind and DI T2 turbines undergoing repairs. The total energy produced in FY18 is 2,914 MWh; 25% below budget³. The total savings and revenue² to date in FY18 (actuals through April¹) is \$415,016; 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 462 MWh; 3% below budget³. The total energy produced in FY18 is 1,354 MWh; 3% below budget³. The total savings and revenue² to date in FY18 (actuals through April¹) is \$126,979; 2% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



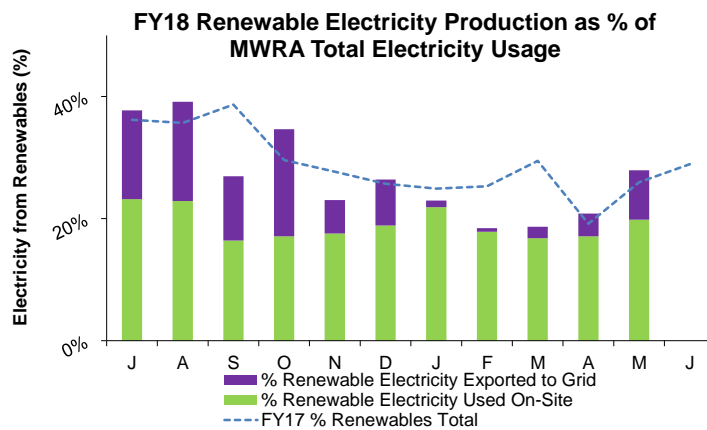
In the 4th quarter, the renewable energy produced from all steam turbine generators totaled 8,371 MWh; 4% above budget³. The total energy produced in FY18 is 31,449 MWh; 1% above budget³. The total savings and revenue² to date in FY18 (actuals through April¹) is \$2,258,820; 2% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In the first eleven months of FY18, MWRA's electricity generation by renewable resources totaled 47,485 MWh. Cosgrove hydro generation data was underestimated by the utility and will be reconciled in later months; this will be reflected in future reporting. MWRA's total electricity usage was approximately 177,976 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.

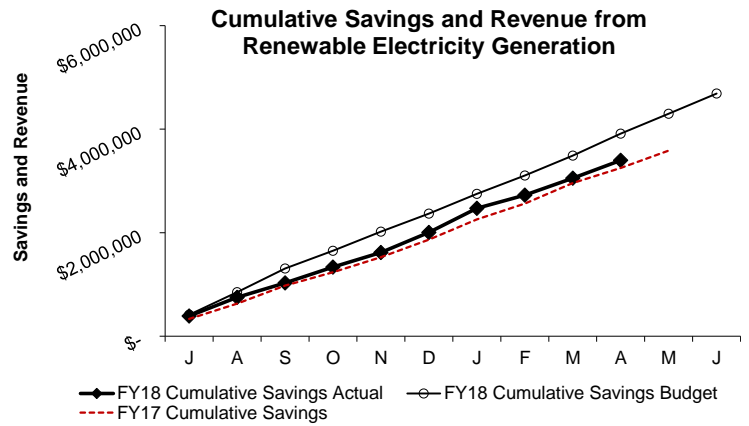
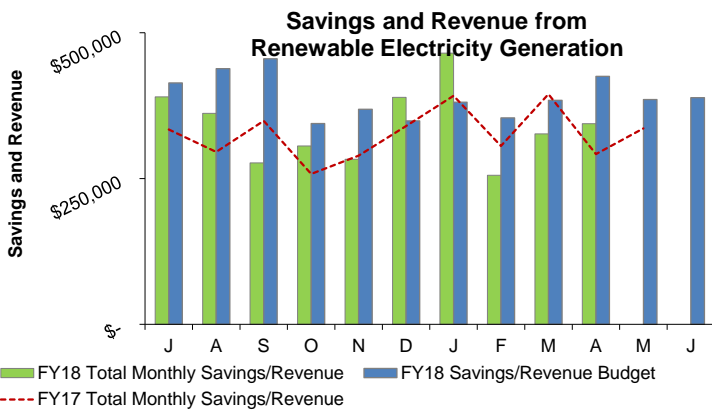
In the first 11 months of FY18, green power generation represented approximately 27% of total electricity usage. All renewable electricity generated on DI is used on-site (this accounts for more than 50% of MWRA renewable generation). Almost all renewable electricity generated off-DI is exported to the 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

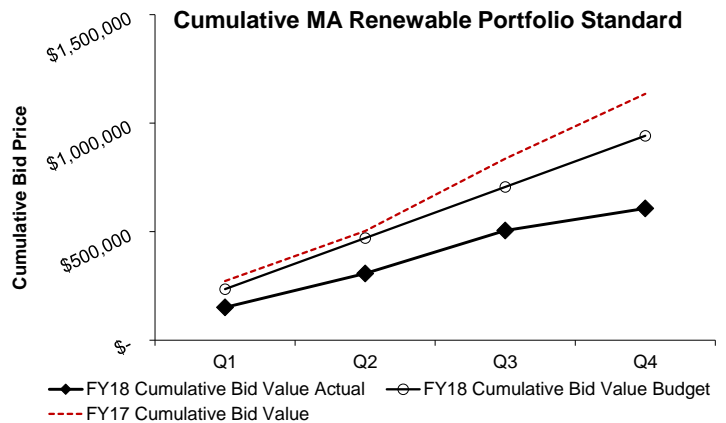
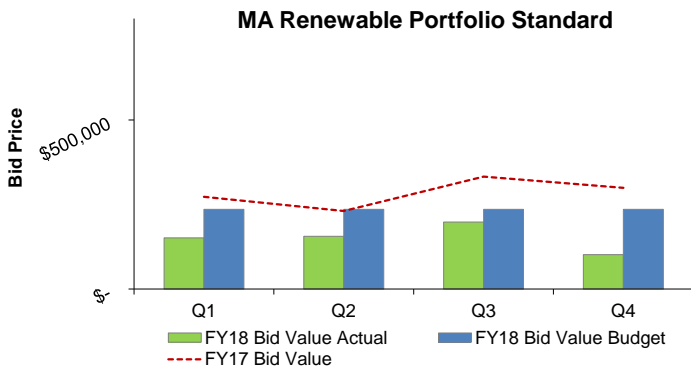
4th Quarter - FY18



Savings and revenue from MWRA renewable electricity generation in the first 10 months of FY18 (actuals only through April¹) is \$3,397,556; which is 13% below the budget³. This is mostly due to Oakdale hydro revenue being 43% under budget for the same time period. Oakdale is the second largest renewable generating facility for MWRA.

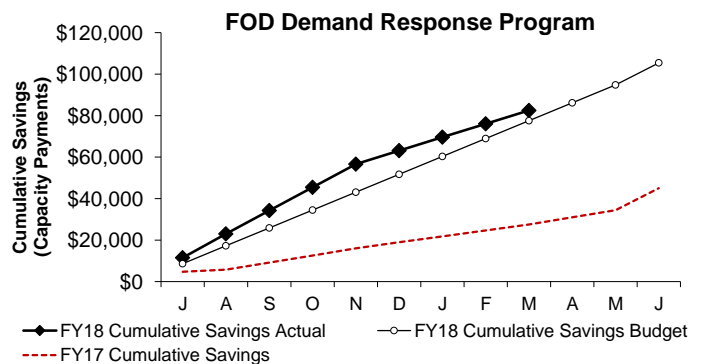
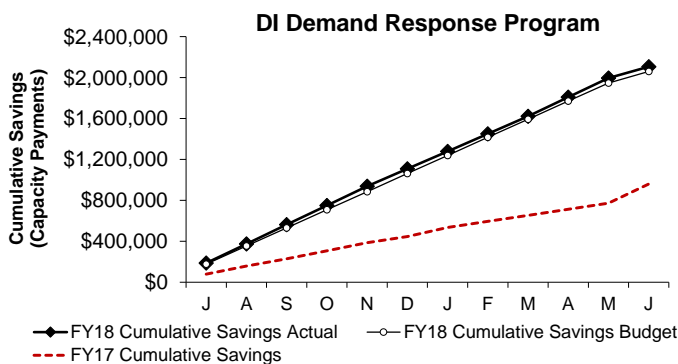
Savings and revenue² from all renewable energy sources include wind turbines, hydroelectric generators, solar panels, and steam turbines (DI). This includes savings and revenue due to electricity generation (does not include avoided fuel costs and RPS RECs).

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 Class 1, Class 2, and Solar REC renewable energy assets; 5,541 Q4 CY2017 Class I Renewable Energy Certificates (RECs), 3,085 Class II Q4 2017 RECS, and 44 Q4 CY2017 Solar RECs (SRECs) were sold for a total value of \$101,720 RPS revenue; which is 67% below budget³ for the Quarter. This is mainly due to Class I market prices being 93% below budget for the Quarter.

REC values reflect the bid value on the date that bids are accepted. Cumulative bid values reflects the total value of bids received to date.



Currently Deer Island, JCWTP, and Loring Rd participate in the ISO-New England Demand Response Programs⁴. By agreeing to reduce demand and operate the facility generators to help reduce the ISO New England grid demand during periods of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. FY18 Cumulative savings (Capacity Payments only) total \$2,105,986 for Deer Island and \$82,505 for FOD through March¹.

- 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. Chelsea Creek, Columbus Park, Ward St., and Nut Island participated in the ISO Demand Response Program through May 2016, until an emissions related EPA regulatory change resulted in the disqualification of these emergency generators, beginning June 2016. MWRA is investigating the cost-benefit of emissions upgrades for future possible participation.

Field Operations Highlights

4th Quarter – FY18

Western Water Operations and Maintenance

Carroll Water Treatment: Staff continued to support the Wachusett Aqueduct Pump Station Project. Staff continued to trouble shoot of the bearing failure and electrical issues with the standby Generator #1, cleared blockages in Soda Ash storage and Dry Feeder #1, and repaired the wiper mechanism in the UV Reactor #11.

Grounds and Aqueducts Maintenance: Staff continued to focus on large numbers of downed trees along easements and at facilities from winter snowstorms. Installed new pipe gates in Wayland to facilitate access by the fire department in the event of a brush fire. Installed interpretive trail signs on the Sudbury Aqueduct as part of the Aqueduct Trails Program.

Metro Water Operations and Maintenance

Valve Program: The 16" and 24" Pressure Reducing Valves (PRVs) at the Deer Island Tank were rebuilt in preparation for the isolation of the tank for painting. Significant staff time was devoted to supporting the various CIP construction contracts with Valve Operations. Staff assisted Bedford with the disinfection of an existing 16" water main, and assisted Revere with the opening of an emergency connection to increase pressure to the Beachmont area. Revere is installing new water mains, and various valve isolations in their system had been causing low pressure issues. Valve Staff provided PRV Training to Swampscott staff to allow them to make adjustments to control the elevation of their water storage tank. Staff deployed the Remotely Operated Vehicle (ROV) to determine valve positions within some of the isolated pipe sections in Brookline's reservoir. MWRA and Revere Staff assisted Malden with an emergency response and isolation of the city's water main, after Malden experienced a water main break on Route 1 June 18 due to a guard rail installation.

Pipeline Staff assisted the Newton with a 20" water main break that occurred on June 1st on Winchester Street. Newton and MWRA Crews worked side by side to cut out and replace the damaged section of pipe. Revere requested the isolation of our Section 55 to assist with determining the source of water entering several basements. The isolation was inconclusive, and the investigative work continues. Leak detection was performed on 45.75 miles of MWRA water main, and community leak assistance was provided to Arlington, Malden, Medford, Milton, Newton, Revere, Saugus, Somerville, and Stoneham.

Operations Engineering

Staff supported the isolations and activations of the below work, including obtaining street opening permits, meeting and coordinating with the affected communities and the development of the isolation and activation operation plans: Blow-Off Retrofits on WASM11B in Arlington and Section 70 in Stoneham; Leak Repairs in Everett, Revere, and Somerville; and

Valve Replacements in Stoneham (3 valves), Shaft 4 in Southborough, and Meter 171 in Arlington.

2018 Community Emergency Response Training Program: Participated in the 2018 Community Emergency Response Training, required by DEP, and provided by MWRA expert staff to local community MWRA staff.

Wastewater Operations & Maintenance

Headworks and Alewife Brook Pump Station Rehabilitation: Operations Staff continues to work with Engineering & Construction Staff and the Contractor on these projects. Staff remotely monitored the operation of the bypass pumping system at Alewife during rain events. Staff also coordinated several HVAC-related outages at the Chelsea Creek Headworks to restore full ventilation to the lower levels of the facility during June.

Planned Utility Power Outage at Prison Point: Eversource had a planned utility power outage for maintenance of their system on June 30th. Prison Point ran on facility generator power during the outage, and a back-up portable generator was brought to the facility, in advance, as a precaution.

Nut Island Isolation Testing: Operations Staff worked with Process Control Staff to develop procedures to test the isolation of Nut Island. The isolation testing is scheduled to take place in August 2018.

Coordination with Wentworth Institute of Technology: Staff continued to coordinate with Wentworth on their construction project which impacted water supply to the Ward Street Facility which needs an uninterrupted supply of water for the odor control wet scrubbers. Work was successfully completed on April 30th.

Metro Equipment & Facility Maintenance

Equipment Maintenance Program: The dewatering pump/motor at the South Boston CSO failed due to moisture intrusion. A spare pump/motor was installed and the unit that failed will be rebuilt and used as a spare. Staff replaced the compressor for Air Conditioning Unit #1 at Nut Island and the Motor for Pumping Unit #1 at the IPS. Infrared electrical thermography testing was conducted at the following facilities: Braintree/ Weymouth, Gillis Pump Station, Spot Pond Pump Station, Hough's Neck and South Boston CSO.

Staff replaced the motor and pulleys for the Air Handling Unit 3 at the Somerville Chemical Building, installed new piping, filters and associated valves, gauges and flowmeters in the S::CAN Room to support filter tests, and repaired the emergency lighting at Columbus Park and Chelsea Creek Headworks.

Field Operations Highlights

4th Quarter – FY18

Staff replaced Air Handler #1 at the DeLauri Pump Station, replaced the coil in Air Handler #1 at the New Neponset Pump Station, and rehabilitated Grit Belt #4 at Nut Island.

Masons installed Flood Barriers in the rear of the Chelsea Maintenance Building, installed flood barriers at Vehicle Maintenance, and pointed entrance wall at the Chelsea Facility.

Metering

Planning: Staff continued to work with contractors on the wastewater meter upgrade project. Staff worked with Verizon reps to begin upgrade of wireless modems to private network to improve security and discussed 4G Migration process. Staff reviewed progress and provided guidance for the construction of new Water Meters 34, 83, 84, 96 and 122.

Community assistance: Staff notified and provided assistance to communities eight separate times when their water use was higher than expected. Staff provided assistance via leak detection and district measurements to Malden.

TRAC

On June 6 and 7, EPA Region 1 completed an Industrial Pretreatment Audit of MWRA's Program; EPA Staff reviewed nine permits during the informal debrief at the end of the second day; EPA reviewed their limited findings, but EPA has not sent a formal summary of their findings.

TRAC issued a total of 55 MWRA 8(m) Permits work within an easement or other property interest held by the Authority. Permits were issued in an average of 75 days from the date the application was received.

Environmental Quality-Water

Algae: Routine reservoir algae and algal toxin monitoring began in May and will continue through September. Results showed neither algal toxins nor taste and odor compounds. Water quality buoy data at all three in-reservoir stations was used to help monitor the algae. Staff finalized a visual inspection checklist for routine cyanobacteria bloom monitoring at the standby reservoirs, and trained Operations staff. Staff attended an EPA Cyanobacteria Monitoring Workshop on June 26th.

Staff collected samples for the Unregulated Contaminant Monitoring Rule 4 (UCMR4) Program in April. This EPA Program monitors for 30 contaminants potentially present in drinking water, but do not have a health-based standard set under the Safe Drinking Water Act.

Water Sampling Group Staff provided community sampler training throughout the quarter for Arlington, Marlborough, Waltham, Wakefield, Weston, Wellesley, Marblehead, Medford, Milton, Quincy, Wilmington.

As part of community emergency response plan training, staff provided a demonstration deployment of the mobile contaminant monitoring system (S::CAN Unit).

Staff worked with Bedford to assess proposed sites for the installation of online chlorine analyzers in Bedford's meter vaults to better monitor water quality changes.

Staff assisted with turbidity testing of samples collected at various locations at the Wachusett Aqueduct Pump Station throughout the months of May and June as part of pump testing activities.

Staff coordinated sampling and testing of reservoir samples at Chestnut Hill throughout May, for algal toxin and enumeration in response to a cyanobacteria bloom.

Staff completed the launch of all three buoys and their sonde equipment on Wachusett Reservoir on May 11th.

Staff assisted Dive Services, Inc. in performing a dive inspection of the intake lines for the Route 12 contaminant monitoring shed on April 30th. The intake lines were found to be intact: all fishing line entanglements and debris were removed and the intake lines were cleaned.

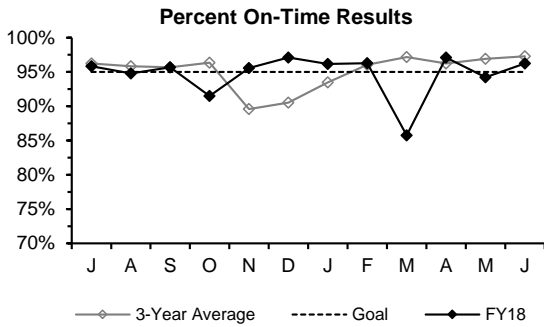
On June 12th, the contaminant monitoring system at CWTP raw water inlet was brought on-line.

Environmental Quality-Wastewater

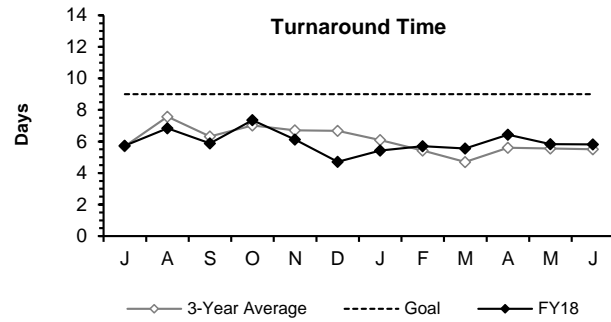
Ambient Monitoring: Water column monitoring continued through the spring, documenting a strong winter-spring phytoplankton bloom in Massachusetts and Cape Cod Bays (a natural phenomenon), and with no indications of red tide in Massachusetts Bay or waters to the north (where red tides originate). The annual Flounder Survey was completed in April and May and the monitoring consultant prepared for the Triennial Mussel Bioaccumulation Study. Staff met with EPA, DEP, and a subset of the Outfall Monitoring Science Advisory Panel to discuss the planned approach to meet permit requirement for water quality modeling, and participated in an Outfall Monitoring Science Advisory Panel Subcommittee setting up a workshop to review the Ambient Monitoring. Preparation of reports on 2017 monitoring results is ongoing.

Harbor/CSO Monitoring: CSO receiving water monitoring in support of the water quality standards variance and the CSO assessment continued, with the full sampling program starting up in April after ice out. Storm sampling was conducted for two storms in the Charles River and three in the Alewife/Mystic. CSO Facility influent samples were collected at the request of Massachusetts DEP at Cottage Farm on April 16th. Biweekly harbor-wide monitoring continued. Beach monitoring data are being posted to the web site weekly beginning Memorial Day through June (and then daily through Labor Day).

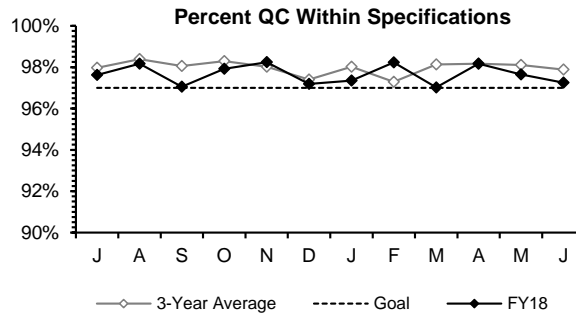
Laboratory Services 4th Quarter - FY18



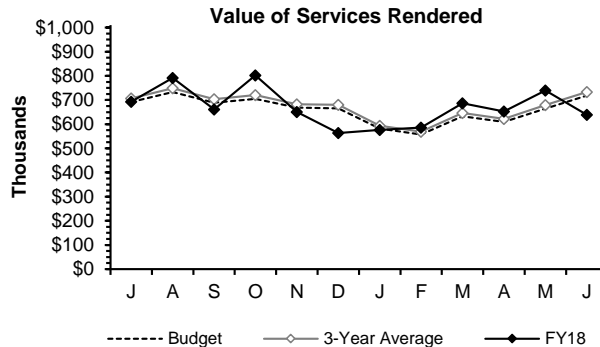
The Percent On-Time measurement was above the 95% goal two of the three months of the quarter. All regulatory reporting deadlines were met.



Turnaround Time was faster than the 9-day goal all three months of the quarter.



Percent of QC tests meeting specifications was above the 97% in-house goal all three months of the quarter.



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

Highlights:

Dr. Delaney and Mr. Blodgett published two articles on cyanide: "Is there cyanide in my drinking water" in the Association of Public Health Laboratories "Lab Matters" newsletter and "Avoiding fake cyanide in wastewater testing" in the National Environmental Laboratory Accreditation Conference newsletter.

Quality Assurance:

Microbiologists from the Indigo Team participated in an audit by the Division of Marine Fisheries against FDA requirements for our testing of Mass Bay samples for fecal coliform bacteria to show that DITP isn't adversely affecting shellfishing. There were no adverse findings. Obtained DEP certification for the revised trace organics methods that were part of EPA's Methods Update Rule for wastewater testing. This is needed for TRAC and NPDES testing. Also, we completed our Proficiency Test (PT) requirements for 2018, which are required to maintain our DEP certification for 2018. Overall we got passing results for 540 out of 545 (99.1%) chemistry and microbiology parameters. The few parameters not passed on the first try were successfully passed on the second try.

Clinton:

A special study of the mass balance of copper, iron, and phosphorus in the Clinton Treatment Plant was completed.

CSO Assessment:

We continued to perform weekend CSO receiving water sampling in the Charles and Mystic Rivers during/after significant wet weather events. This is intended to give additional data for the CSO Assessment to document the recovery of the rivers after it rains.

Mobile Lab:

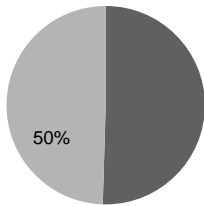
A successful drill of the Mobile Lab instruments was conducted by Lab staff at Norembega Covered Storage.

CONSTRUCTION PROGRAMS

Projects In Construction

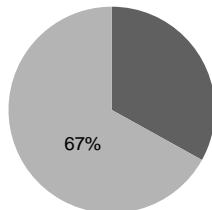
4th Quarter - FY18

Money



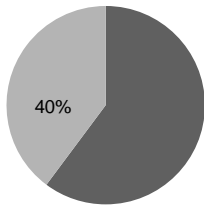
■ Amount Remaining
■ Billed to Date

Time



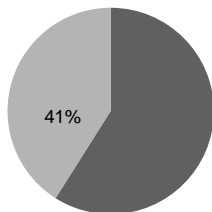
■ Days Remaining
■ Days Expended

Money



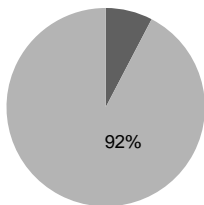
■ Amount Remaining
■ Billed to Date

Time



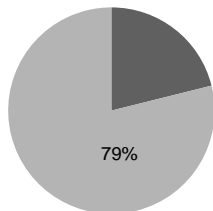
■ Days Remaining
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Money



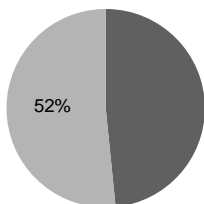
■ Amount Remaining
■ Billed to Date

Time



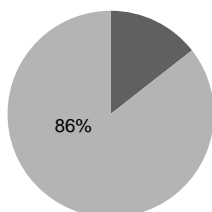
■ Days Remaining
■ Days Expended

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Reading Extension Sewer Rehabilitation

Project Summary: This project involves the rehabilitation of 10,820-linear feet of the Reading Extension Sewer and 2,280-linear feet of the Metropolitan Sewer and 62 associated manholes/structures.

Notice to Proceed: 10-Aug-2017 *Contract Completion:* 10-Dec-2018

Status and Issues: Cleaned/CCTV inspected 1,414 linear feet of cured-in-place pipe lining installed in 1991. Installed approximately 717 linear feet of cured-in-place pipe liner; replaced frame and cover at manhole 74/16+90.

Chelsea Creek Headworks Upgrade

Project Summary: This project involves a major upgrade to the entire facility including: automation of screening collection & solids conveyance, replacement of the odor control, HVAC and electrical systems.

Notice to Proceed: 22-Nov-2016 *Contract Completion:* 21-Nov-2020

Status and Issues: As of June, the Contractor excavated and removed material for the odor control foundation; excavated and graded trenches for odor control duct pedestal foundations. In addition, they installed a temporary bulkhead at the Channel 1 Effluent end, cut and chipped concrete for the new stop log guide frames for the Channel 1 effluent end.

Wachusett Aqueduct Pumping Station

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.

Notice to Proceed: 1-Mar-2016 *Contract Completion:* 14-Feb-2019

Status and Issues: As of June, the Contractor installed slide gate aluminum covers. They flushed and filled wells #1 through #7 with water from the Wachusett Aqueduct for pump testing. They continued work on the plumbing pipe, light fixtures, duct work, pipe insulation & electrical conduit, wiring, tank and equipment installation.

Alewife Brook Pump Station Improvements

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.

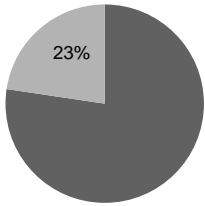
Notice to Proceed: 29-Jan-2016 *Contract Completion:* 27-Nov-2018

Status and Issues: As of June, the Contractor installed Pumps 1 and 3. They also installed the discharge piping, check valves and knife gates for Pumps 1, 2, and 3. They installed pump motor mounts, gear drive reducers and motors, drive shafts and guards for Pumps 1, 2, and 3.

Projects In Construction

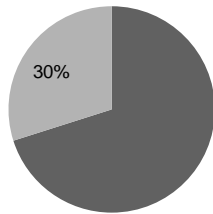
4th Quarter - FY18

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

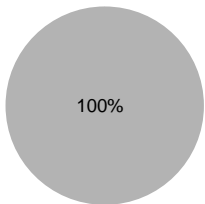
NIH Section 110 - Stoneham

Project Summary: This project consists of the replacement of 14,000 linear feet of 48-inch diameter transmission main in the Town of Stoneham.

Notice to Proceed: 5-Sep-2017 *Contract Completion:* 1-Jun-2020

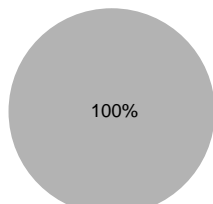
Status and Issues: As of June, the Contractor installed of 725-LF of 48" DIP water main along Woodland Road (DCR), Main Street and Wright Street. They constructed temporary water bypass along Wright Street and a local water main at Wright/Gilmore intersection.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

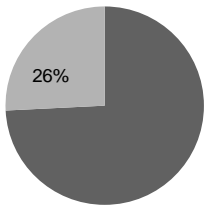
DITP Valves and Piping Replacements

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

Notice to Proceed: 23-Jun-2014 *Contract Completion:* 22-Sep-2017

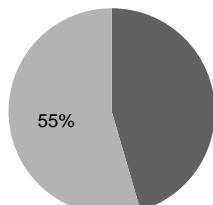
Status and Issues: The Contactor has demobilized and has completed all punchlist items. The final paperwork is being processed.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

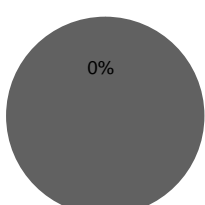
Winthrop Terminal VFD and Motor

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

Notice to Proceed: 16-Jun-2016 *Contract Completion:* 12-Mar-2020

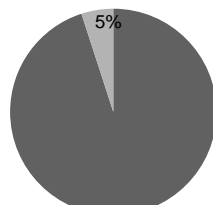
Status and Issues: VFD No. 6 operational testing on-going. VFD/Motor No. 2 string test TBA.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Gravity Thickener Rehabilitation

Project Summary: This project involves the upgrade of all six gravity thickeners, including the complete replacement of each tank's sludge and scum thickening equipment and 5 of the 6 FRP dome covers.

Notice to Proceed: 11-May-2018 *Contract Completion:* 4-Feb-2021

Status and Issues: NTP issued May 11, 2018. To date no physical work has begun.

CSO CONTROL PROGRAM
4th Quarter – FY18

All 35 projects in the Long-Term CSO Control Plan are complete, in compliance with Schedule Seven. Of the \$910.1 million budget in the FY19 CIP for the CSO Control Program, approximately \$7 million remain to be spent through 2021.

Project/Item	Status as of June 30, 2018
BWSC Dorchester Interceptor Inflow Removal	<p>MWRA's CIP and the MOU/FAA with BWSC included \$5.4 million for additional inflow removal from the BWSC Dorchester Interceptor system in the South Dorchester Bay Sewer Separation area, of which \$1.7 million was transferred to the BWSC MOU/FAA CSO account and \$1.6 million of that was withdrawn by BWSC to fund related design and construction work. On May 17, 2017, MWRA's Board of Directors authorized removing the remaining \$3.8 million from the BWSC MOU/FAA (which ended on June 30, 2017) and including this funding amount in a separate, 4-year financial assistance agreement with BWSC effective July 1, 2017. The new agreement limits MWRA financial assistance to reimbursement of the eligible costs of BWSC construction work reviewed and approved by MWRA, up to \$3.8 million. BWSC continues to perform sewer system evaluations that will support construction project recommendations.</p>
City of Cambridge Memorandum of Understanding and Financial Assistance Agreement	<p>The City of Cambridge attained substantial completion of its last project, CAM004 Sewer Separation, in December 2015 in compliance with Schedule Seven, and attained substantial completion of related surface restoration work by the end of 2017. MWRA made a final transfer of funds to the Cambridge CSO account in December 2017, in the amount of \$1,254,551, to cover eligible costs through June 30, 2018, when the 22 year-old, \$100.2 million MOU/FAA ended. Cambridge continues to support ongoing MWRA final eligibility reviews and final reconciliation of the MOU/FAA costs.</p>
MWRA CSO Performance Assessment	<p>MWRA issued the Notice to Proceed with the contract for CSO Post-Construction Monitoring and Performance Assessment to AECOM Technical Services, Inc., in November 2017. The contract includes CSO inspections, overflow metering, hydraulic modeling, system performance assessments and water quality compliance assessments culminating in the submission of a report verifying attainment of court-ordered levels of CSO control to EPA and DEP in December 2020, in compliance with the last milestone in Schedule Seven. AECOM completed the inspection of more than 200 CSO closed or active regulators and the installation of temporary overflow meters at 58 potentially active regulators by April 15, and has been collecting data from the temporary meters, from permanent MWRA and community meters, and from a network of rain gauges. AECOM is updating MWRA's collection system model with the inspection results, and will submit a first semi-annual report this fall that will document and evaluate the meter, rain gauge and model results for storms during April-June 2018. MWRA staff continue to conduct water quality sampling in Alewife Brook, the Charles River Basin and other waters affected by CSO. MWRA will submit a draft water quality analysis plan to DEP by July 31. The analysis plan will document how AECOM will analyze the water quality data to measure remaining CSO impacts and compare to the recommended CSO control plan predictions.</p>

CIP Expenditures

4th Quarter - FY18

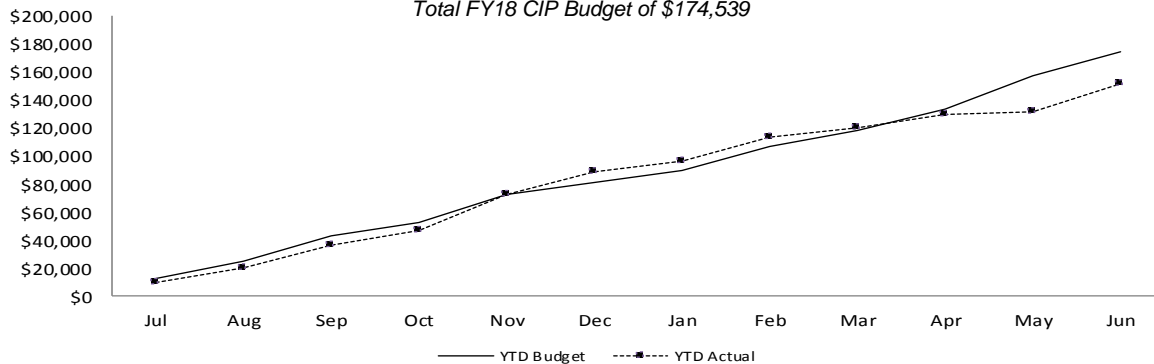
FY18 Capital Improvement Program Expenditure Variances through June by Program (\$ in thousands)				
Program	FY18 Budget Through June	FY18 Actual Through June	Variance Amount	Variance Percent
Wastewater	84,286	65,252	(19,034)	-23%
Waterworks	82,731	83,025	\$294	0%
Business and Operations Support	7,522	3,247	(4,275)	-57%
Total	\$174,539	\$151,524	(\$23,015)	-13%

Project underspending within Wastewater was due to less than budgeted community requests for I/I grants and loans, channel #1 work delays due to water main and fuel storage installations for the Chelsea Creek Headworks Upgrades Construction, construction delays related to bypass pumping for the Alewife Brook Pump Station Construction, Reading Extension Sewer lining issues, delay in award for the Deer Island Chemical Bulk Storage Tanks Relining, Residuals Mechanical and Electrical Improvements, Pump Station and CSO Condition Assessment, Clinton Roofing Rehabilitation, and Combined Heat and Power Energy Alternatives Study contracts, testing delays for the Clinton Phosphorus Reduction contract, as well as work at Deer Island anticipated for FY18 that was completed in FY17 for the Digester Sludge Pump Replacement Construction Phase 2, and lower award than budgeted for the Wastewater Metering, Study and Design contract. This was partially offset by progress on Gravity Thickener Rehabilitation, Chelsea Creek Headworks Upgrades Design/ESDC and CSO Performance Assessment. Project overspending in Waterworks was due to construction progress for the Wachusett Pump Station Construction, Southern Extra High Section 111 Construction 1 and 2, Northern Intermediate High Phases 2, 1B, and 1C, Marlborough Maintenance Facility, timing of watershed land purchases, and progress on boring work for the Weston Aqueduct Supply Mains Design/MEPA/REI contract. This was partially offset by underspending due to delay in awards for Southern Extra High Redundancy Section 111 Construction 3 and Section 53 and 99 Connections Design CA/RI, Shaft 12 Isolation Gate Design contract being terminated, and updated schedules for Carroll Water Treatment Plant SCADA and Quabbin Aqueduct and Winsor Power Station Final Design/CA/RI contracts.

Budget vs. Actual CIP Expenditures

(\$ in thousands)

Total FY18 CIP Budget of \$174,539



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 as of 6/30/2018	\$105.6 million
Unused capacity under the debt cap:	\$1.338 billion
Estimated date for exhausting construction fund without new borrowing:	MAY-19
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 / Revolving Loan	\$350 million
Budgeted FY18 capital spending*:	\$160 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

4th Quarter – FY18

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 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, 0.0% 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.

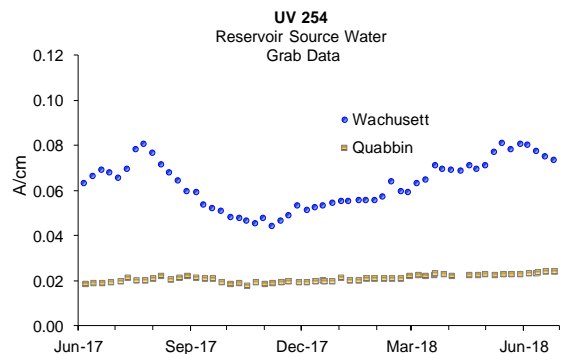
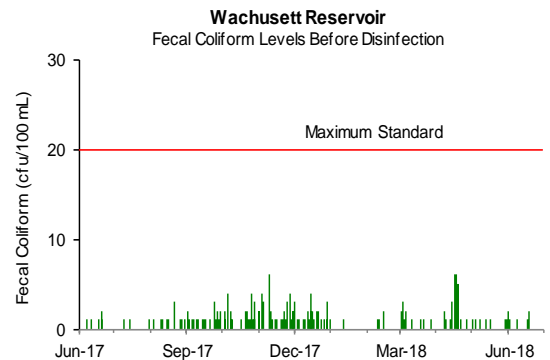
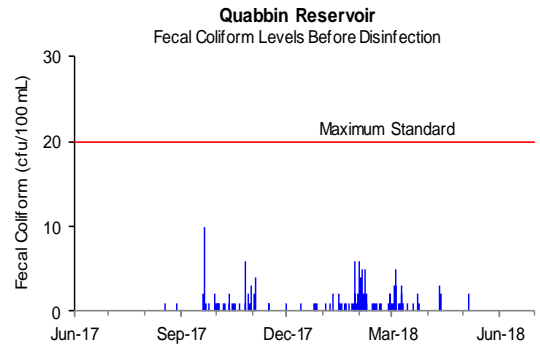
All samples collected during the 4th Quarter were below 20 cfu/100ml. **For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100mL.**

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 0.024 A/cm.

Wachusett Reservoir UV-254 levels are currently around 0.074 A/cm.



Source Water – Turbidity

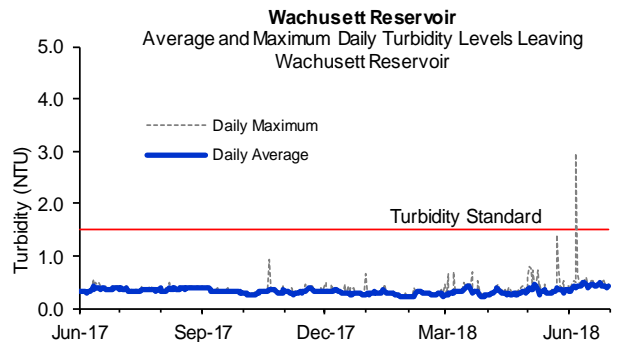
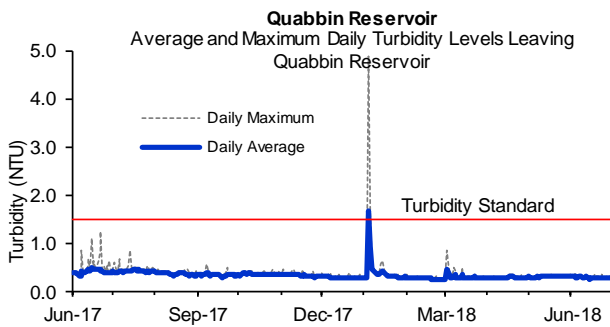
4th Quarter – FY18

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 five NTU (Nephelometric Turbidity Units), and water only can be above one 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 were within DEP standards for the quarter. Maximum turbidity results at Wachusett were within DEP standards for April and May.

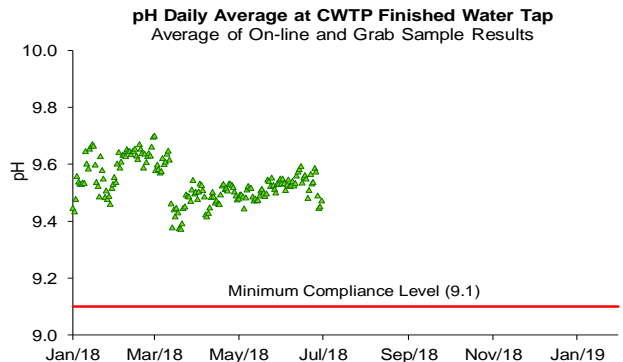
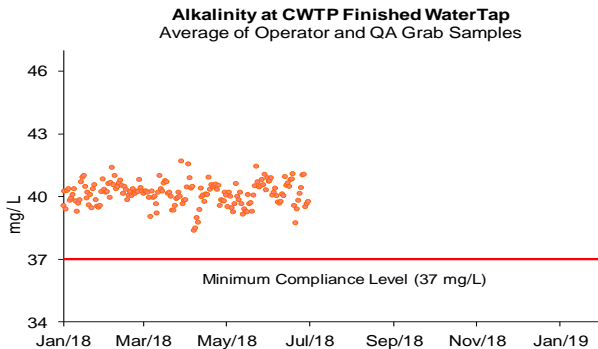
- On June 6 at 9:00AM, a 15-minute turbidity spike of 2.9 NTU was caused by pump tests at the Wachusett Aqueduct Pump Station. The pumps were shutdown at 9:05AM as soon as the increase in turbidity was detected at the CWTP inlet. Disinfection effectiveness was not affected; CT was maintained at all times, downstream disinfectant residuals were maintained, and no coliform were detected in downstream samples. Regulatory compliance was maintained.



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 finished water samples have a minimum compliance level of 9.1 for pH and 37 mg/L for alkalinity. Samples from 27 distribution system locations 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 13 and 14, 2018. Distribution system sample pH ranged from 9.4 to 9.6 and alkalinity ranged from 39 to 40 mg/L. No sample results were below DEP limits for this quarter.



Treated Water – Disinfection Effectiveness

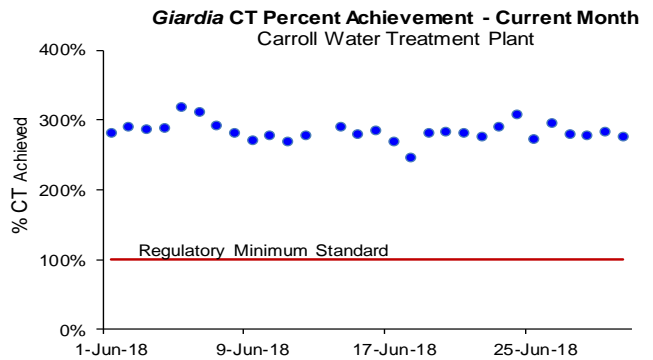
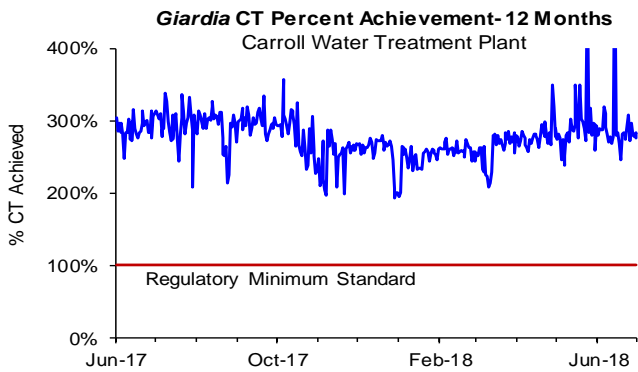
4th Quarter – FY18

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.

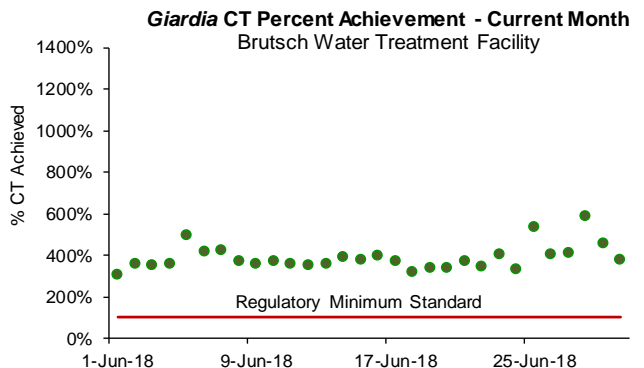
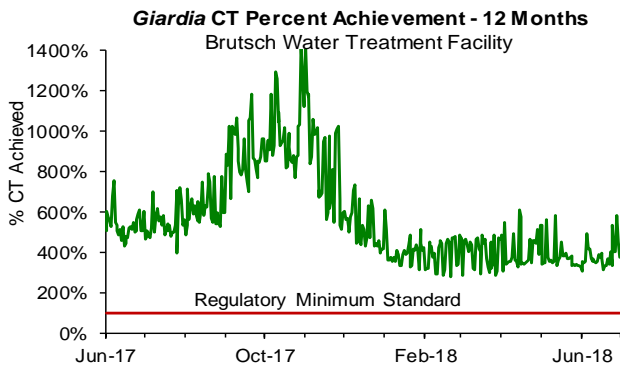
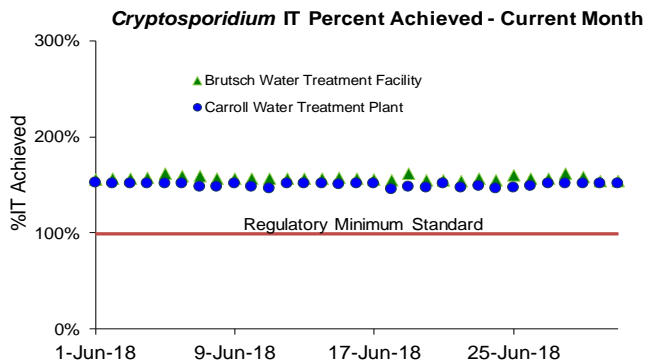
Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 2.1 to 2.9 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%.



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

- The chlorine dose at BWTF is adjusted in order to achieve MWRA's seasonal target of >0.75 mg/L (November 01 – May 31) and >1.0 mg/L (June 1– October 31) at Ludlow Monitoring Station.
- The chlorine dose at BWTF varied between 1.4 to 1.7 mg/L for the quarter.
- Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system for the quarter.
- Cryptosporidium* IT was maintained above 100% during the month. Off-spec water was less than 5%.



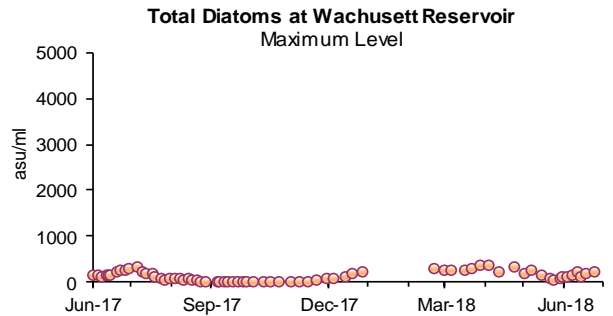
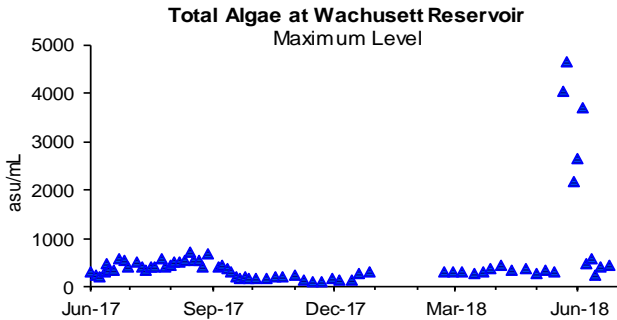
Source Water - Algae

4th Quarter – FY18

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



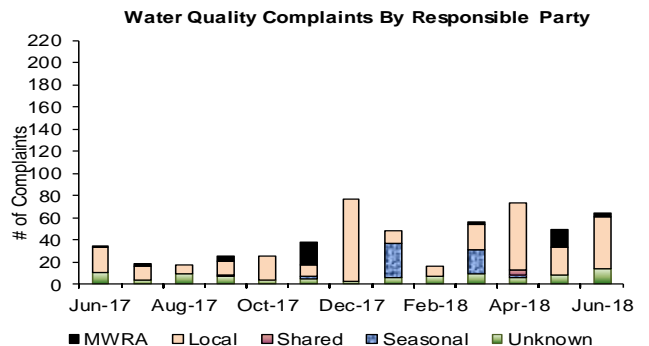
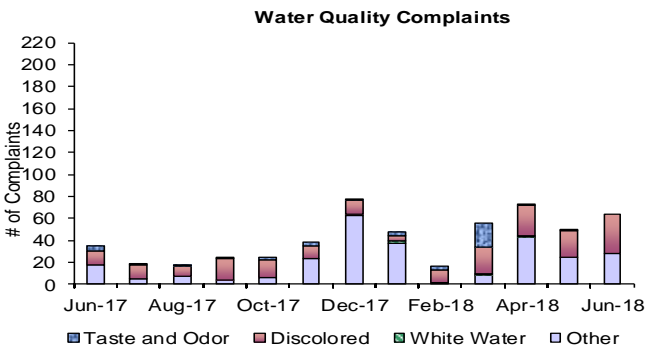
Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 187 complaints during the quarter compared to 125 complaints from 4th Quarter of FY17. Of these complaints, 88 were for "discolored water", 2 were for "taste and odor", 1 was for "white water", and 96 were for "other". Of these complaints, 132 were local community issues, 20 were MWRA related, 5 were community and MWRA shared issues, 2 were seasonal in nature, and 28 were unknown in origin.

- On April 18, Arlington reported twenty-five "no water" complaints when a section of a water main on Lake Street was isolated due to local construction work.
- On May 3, Malden reported sixteen "no water" complaints when an MWRA contractor struck a water main at Pleasant Street and Commercial Street.
- On June 1, Newton reported fourteen "no water" complaints due to a water main break on Winchester Street.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

4th Quarter – FY18

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 141 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.

Samples are tested for total coliform and 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 repeat tests confirm the presence of *E.coli* or total coliform.

Total coliform provide a general indication of the sanitary condition of a water supply. If total coliform are detected in more than 5% of samples in a month (or if more than one sample is positive when less than 40 samples are collected), the water system is required to investigate the possible source/cause with a Level 1 or 2 Assessment, and fix any identified problems.

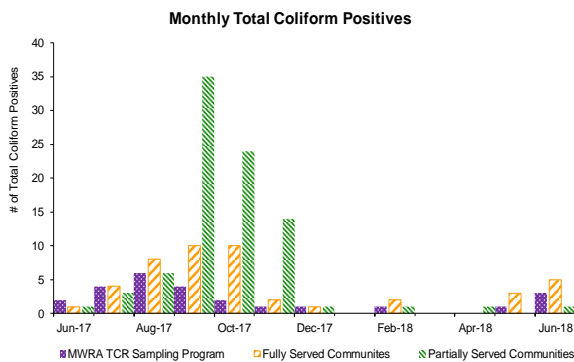
A disinfectant residual is intended to maintain the sanitary integrity of the water; MWRA considers a residual of 0.2 mg/L a minimum target level at all points in the distribution system.

Highlights

In the 4th Quarter, 10 of the 6,246 community samples (0.16% system-wide) submitted to MWRA labs for analysis tested positive for total coliform. (Marlborough - April; Everett, Stoneham, Watertown – May; Malden, Milton, Newton, Northborough, Somerville, Bedford – June) Four of the 1,982 Shared community/MWRA samples (0.20%) tested positive for total coliform. One Shared community/MWRA sample (Stoneham, May 27) tested positive for *E.coli*, but all repeat samples were clear. At the end of the 4th Quarter, only 0.4% of the samples had a chlorine residual lower than 0.2 mg/L. No community violated the TCR. As of June 20, 2018, Westborough State Hospital is now on town water supplied by Westborough.

NOTES:

- MWRA total coliform and chlorine residual results include data from community locations. In most cases these community results are indicative of MWRA water as it enters the community system; however, some are strongly influenced by local pipe conditions. Residuals in the MWRA system are typically between 1.0 and 2.8 mg/L.
- The number of samples collected depends on the population served and the number of repeat samples required.
- These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.
- Part of the Chicopee Valley Aqueduct System. Free chlorine system.



	Total Coliform # Samples (b)	# (%) Positive	E.coli # Positive	Assessment Required
a				
MWRA Locations	389	0 (0%)	0	
Shared Community/MWRA sites	1593	4 (0.25%)	0	
Total: MWRA	1982	4 (0.20%)	0	No
ARLINGTON	157	0 (0%)	0	
BELMONT	104	0 (0%)	0	
BOSTON	795	0 (0%)	0	
BROOKLINE	224	0 (0%)	0	
CHELSEA	169	0 (0%)	0	
DEER ISLAND	52	0 (0%)	0	
EVERETT	172	1 (0.58%)	0	No
FRAMINGHAM	234	0 (0%)	0	
LEXINGTON	117	0 (0%)	0	
LYNNFIELD	18	0 (0%)	0	
MALDEN	237	0 (0%)	0	
MARBLEHEAD	72	1 (0.42%)	0	No
MEDFORD	221	0 (0%)	0	
MELROSE	117	0 (0%)	0	
MILTON	105	1 (0.95%)	0	No
NAHANT	30	0 (0%)	0	
NEWTON	279	1 (0.36%)	0	No
NORTHBOROUGH	51	1 (1.96%)	0	No
NORWOOD	99	0 (0%)	0	
QUINCY	299	0 (0%)	0	
READING	130	0 (0%)	0	
REVERE	180	0 (0%)	0	
SAUGUS	104	0 (0%)	0	
SOMERVILLE	275	1 (0.36%)	0	No
SOUTHBOROUGH	30	0 (0%)	0	
STONEHAM	94	1 (1.06%)	1	No
SWAMPSCOTT	54	0 (0%)	0	
WALTHAM	216	0 (0%)	0	
WATERTOWN	133	1 (0.75%)	0	No
WESTBORO HOSPITAL	10	0 (0%)	0	
WESTON	45	0 (0%)	0	
WINTHROP	72	0 (0%)	0	
Total: Fully Served	4895	8 (0.16%)		
c				
BEDFORD	60	1 (1.67%)	0	No
CANTON	90	0 (0%)	0	
HANSCOM AFB	33	0 (0%)	0	
MARLBOROUGH	130	1 (0.77%)	0	No
NEEDHAM	123	0 (0%)	0	
PEABODY	221	0 (0%)	0	
WAKEFIELD	147	0 (0%)	0	
WELLESLEY	114	0 (0%)	0	
WILMINGTON	87	0 (0%)	0	
WINCHESTER	91	0 (0%)	0	
WOBURN	195	0 (0%)	0	
SOUTH HADLEY FD1	60	0 (0%)	0	
Total: CVA & Partially Served	1351	2 (0.15%)		
Total: Community Samples	6246	10 (0.16%)		

Chlorine Residuals in Fully Served Communities

	2017							2018					
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
% <0.1	0.1	0.2	0.9	1.0	0.7	0.7	0.5	0.2	0.1	0.1	0.0	0.2	0.0
% <0.2	0.2	0.7	2.7	2.6	2.4	2.5	1.1	0.5	0.2	0.2	0.3	0.2	0.4
% <0.5	0.6	3.2	5.7	6.2	5.6	5.7	3.1	1.4	0.5	0.8	0.7	0.4	0.7
% <1.0	1.9	6.7	12.3	10.5	9.4	9.6	6.0	3.2	2.2	1.4	1.5	1.3	1.6
% ≥1.0	98.1	93.3	87.7	89.5	90.6	90.4	94.0	96.8	97.9	98.6	98.5	98.7	98.4

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

4th Quarter – FY18

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.

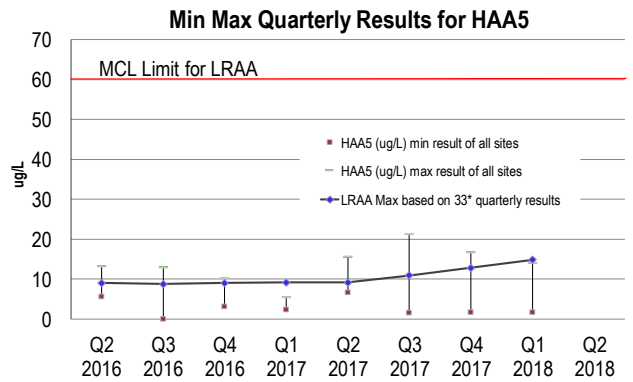
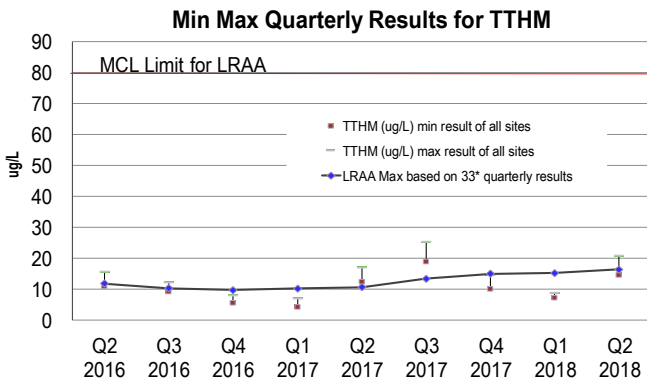
Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results. The chart below combines all three CVA communities data (Chicopee, Wilbraham and South Hadley FD1).

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.

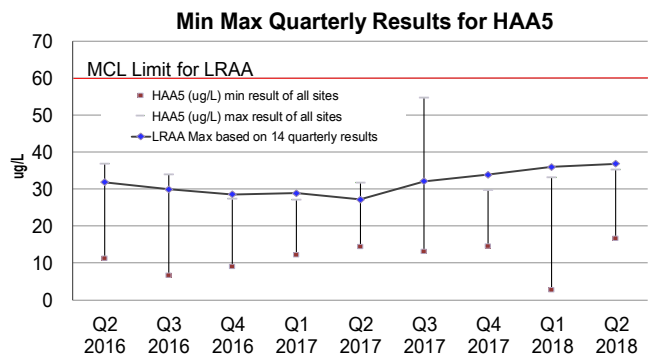
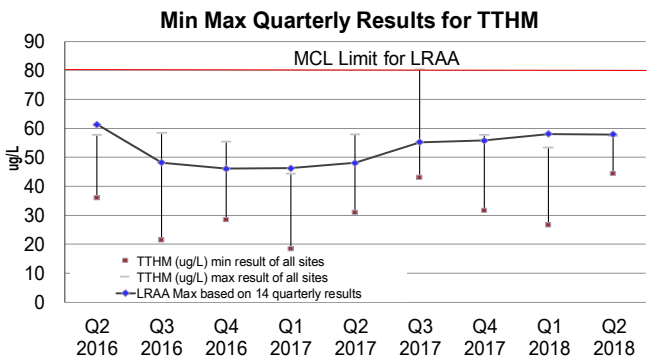
The LRAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The Max LRAA in the quarter for TTHMs = 16.4 µg/L; HAA5s = 14.8 µg/L. The current RAA for Bromate = 0.0 µg/L. CVA's DBP levels continue to be below current standards.

A quarterly DBP location in Northborough* was added to MWRA's Compliance Program in Q2, 2018. Samples for the MetroBoston communities were collected in May, but resampling of some locations was necessary due to a contract laboratory QA/QC failure resampling has occurred.

MetroBoston Disinfection By-Products



CVA Disinfection By-Products (Combined Results)



Water Supply and Source Water Management

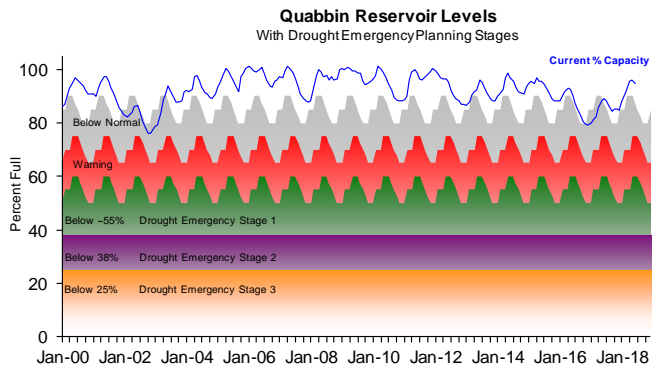
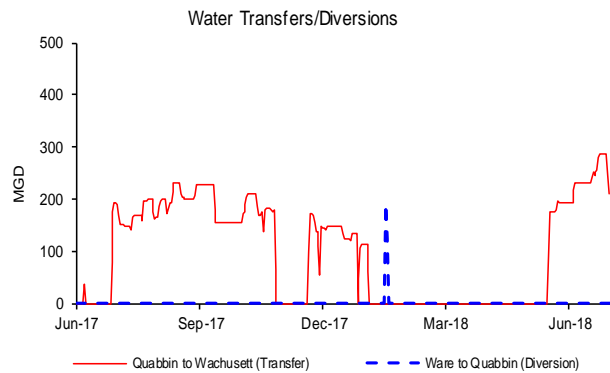
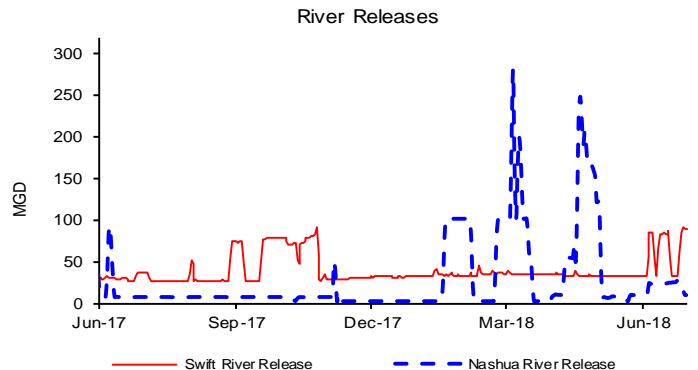
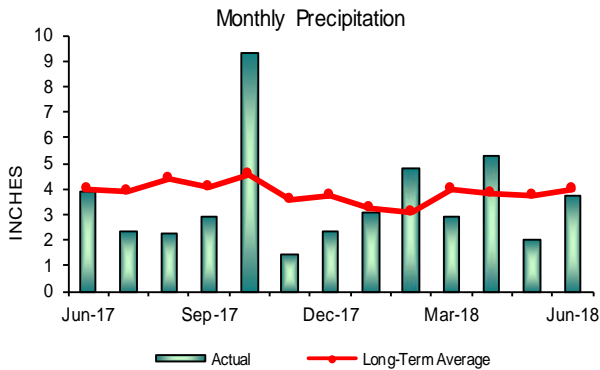
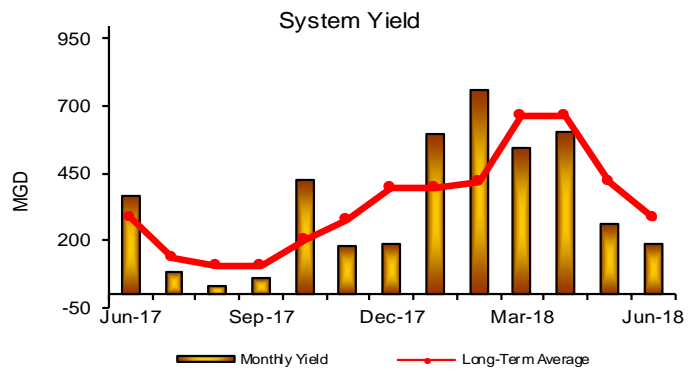
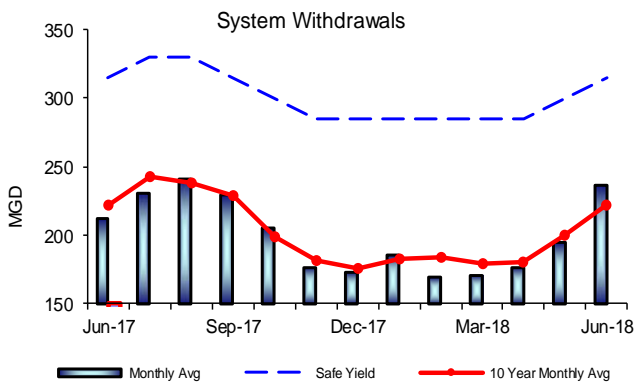
4th Quarter – FY18

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

The volume of the Quabbin Reservoir was at 94.5% as of June 30, 2018; a 1.6% increase for the quarter, which represents a gain of more than 6.6 billion gallons of storage and an increase in elevation of 0.88' for the quarter. Quabbin level is in "normal" operating range. Precipitation and yield for the quarter were below their respective long term averages. System withdrawal for the quarter was below the 10 year monthly average.



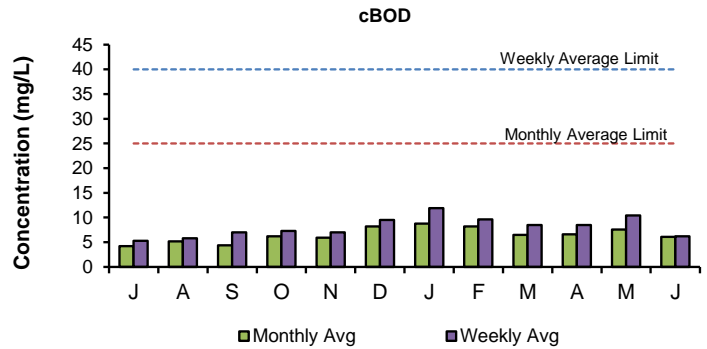
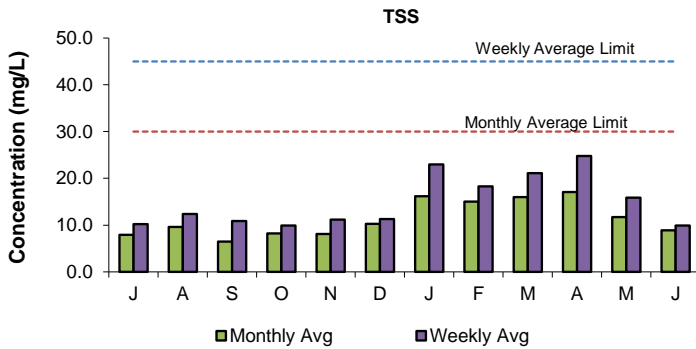
WASTEWATER QUALITY

NPDES Permit Compliance: Deer Island Treatment Plant 4th Quarter - FY18

NPDES Permit Limits

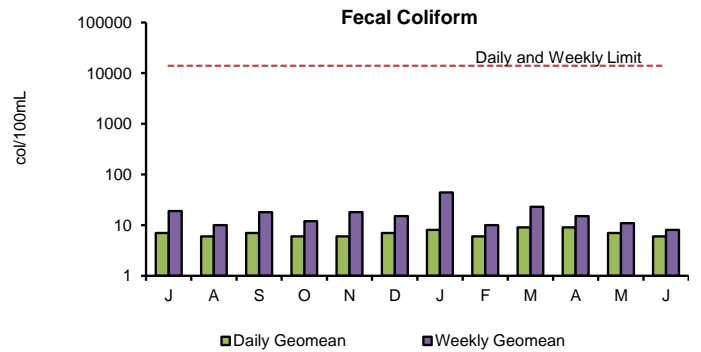
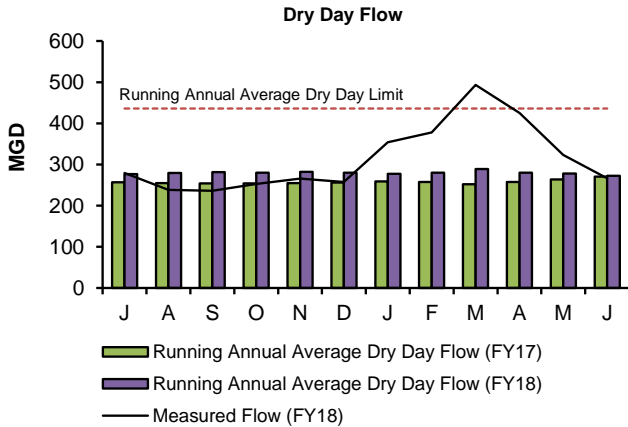
Effluent Characteristics		Units	Limits	April	May	June	4th Quarter Violations	FY18 YTD Violations
Dry Day Flow (365 Day Average):		mgd	436	279.9	278.3	272.7	0	0
cBOD:	Monthly Average	mg/L	25	6.6	7.6	6.1	0	0
	Weekly Average	mg/L	40	8.5	10.4	6.2	0	0
TSS:	Monthly Average	mg/L	30	17.1	11.7	8.9	0	0
	Weekly Average	mg/L	45	24.8	15.9	9.9	0	0
TCR:	Monthly Average	ug/L	456	0	0	0	0	0
	Daily Maximum	ug/L	631	0	0	0	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	9	7	6	0	0
	Weekly Geometric Mean	col/100mL	14000	15	11	8	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	6.5-6.9	6.3-6.9	6.6-6.9	0	0
PCB, Aroclors:	Monthly Average	ug/L	0.000045	UNDETECTED			0	0
Acute Toxicity:	Mysid Shrimp	%	≥50	>100	>100	>100	0	0
	Inland Silverside	%	≥50	>100	>100	>100	0	0
Chronic Toxicity:	Sea Urchin	%	≥1.5	100	100	100	0	0
	Inland Silverside	%	≥1.5	100	100	50	0	0

There have been no permit violations in FY18 to date at the Deer Island Treatment Plant (DITP).



Total Suspended Solids (TSS) in the effluent is a measure of the amount of solids that remain suspended after treatment. All TSS measurements for the 4th Quarter were within permit limits.

Carbonaceous Biochemical Oxygen Demand (cBOD) is a measure of the amount of dissolved oxygen required for the decomposition of organic materials in the environment. All cBOD measurements for the 4th Quarter were within permit limits.



Running Annual Average Dry Day Flow is the average of all dry weather influent flows over the previous 365 days. The Dry Day Flow for the 4th Quarter was well below the permit limit of 436 MGD.

Fecal Coliform is an indicator for the possible presence of pathogens. The levels of these bacteria after disinfection show how effectively the plant is inactivating many forms of disease-causing microorganisms. In the 4th Quarter, all permit conditions for fecal coliform were met.

NPDES Permit Compliance: Clinton Wastewater Treatment Plant 4th Quarter - FY18

NPDES Permit Limits

Effluent Characteristics		Units	Limits	April	May	June	4th Quarter Violations	FY18 YTD Violations
Flow:		mgd	3.01	2.59	2.56	2.50	0	0
BOD:	Monthly Average:	mg/L	20	1.3	2.0	1.8	0	0
	Weekly Average:	mg/L	20	1.7	2.6	2.3	0	0
TSS:	Monthly Average:	mg/L	20	5.1	4.3	4.1	0	0
	Weekly Average:	mg/L	20	6.0	4.9	4.7	0	0
pH:		SU	6.5-8.3	6.8-7.3	6.9-7.7	6.8-7.5	0	0
Dissolved Oxygen:		mg/L	6	10.2	9.0	7.7	0	0
E. Coli:	Monthly Geometric Mean:	cfu/100mL	126	5.0	5.0	6.8	0	0
	Daily Geometric Mean:	cfu/100mL	409	7.0	7.0	34.4	0	0
TCR:	Monthly Average:	ug/L	17.6	0.0	0.0	0.0	0	0
	Daily Maximum:	ug/L	30.4	0.0	0.0	0.0	0	0
Copper:	Monthly Average:	ug/L	11.6	11.3	8.9	11.3	0	0
	Daily Maximum:	ug/L	14.0	11.3	8.9	11.6	0	0
Total Ammonia Nitrogen: June 1st - October 31st	Monthly Average:	mg/L	2.0	0.28	0.00	0.14	0	0
	Daily Maximum:	mg/L	3.0	0.58	0.00	0.87	0	0
Total Phosphorus: April 1st - October 31st	Monthly Average:	mg/L	1.0*	0.07	0.18	0.10	0	0
	Daily Maximum:	mg/L	RPT*	0.14	0.36	0.17	0	0
Acute Toxicity*:		%	≥100	N/A	N/A	>100	0	0
Chronic Toxicity*:		%	≥62.5	N/A	N/A	62.5	0	0

There have been no permit violations in FY18 at the Clinton Treatment Plant.

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

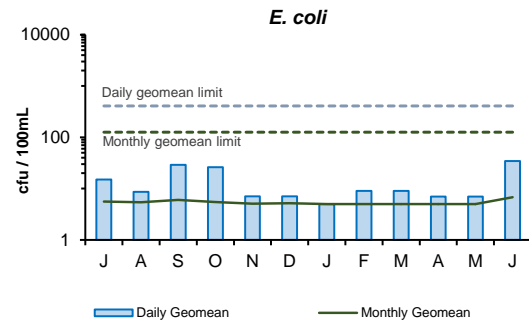
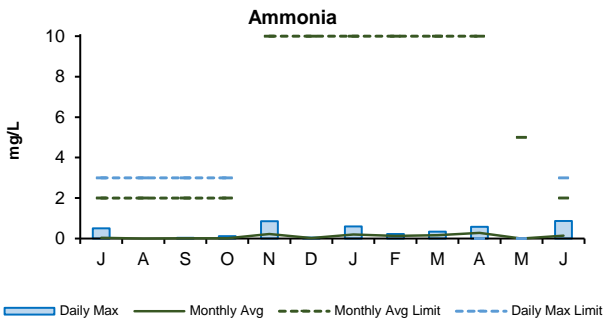
2nd Quarter: There were no permit violations in the second quarter.

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

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

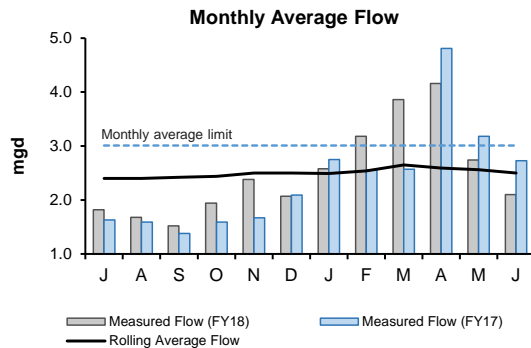
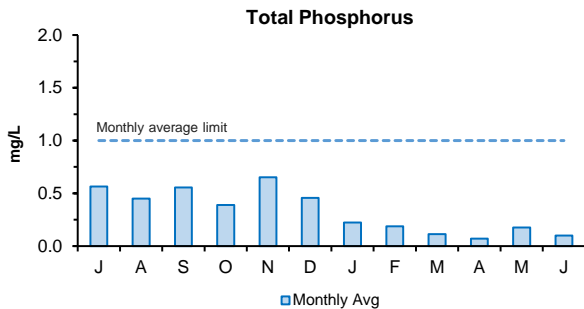
* The growing season (April 1 - October 31) monthly average phosphorus limit of 0.15 mg/L goes into effect April 1, 2019

+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 variable, dropping to 2 mg/L and 3 mg/L in June, respectively. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.

E. coli is an indicator for the possible presence of pathogens. There were no violations of permit limits in the 4th Quarter. The monthly and daily limits are 126 cfu/100 mL and 409 cfu/100 mL respectively.

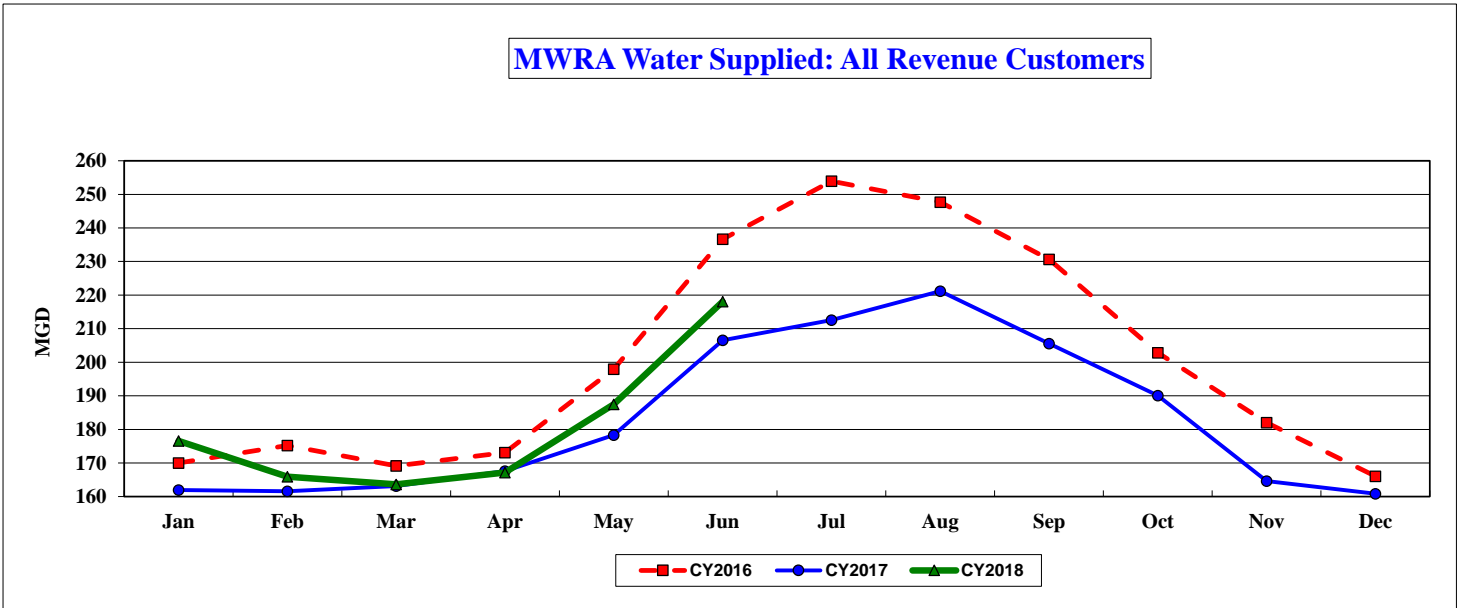


The 4th Quarter's monthly average concentrations for total phosphorus were below permit limits. An interim permit limit of 1.0 mg/L is in effect from April through October, until April 1st, 2019, when the new permit limit of 0.15 mg/L goes into effect for April - October. The new permit limit of 1.0 mg/L from November through March goes into effect November 1st, 2019.

The graph depicts the rolling annual average monthly flow, measured in million gallons per day, exiting the plant. The average monthly flows during the 4th Quarter were below the NPDES permit limit.

COMMUNITY FLOWS AND PROGRAMS

Total Water Use 4th Quarter - FY18



MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
CY2016	169.99	175.23	169.16	173.08	197.94	236.64	253.92	247.68	230.63	202.83	182.02	166.06	186.94	200.51
CY2017	161.94	161.61	163.13	167.61	178.33	206.54	212.53	221.18	205.58	190.05	164.61	160.85	173.23	182.97
CY2018	176.60	165.89	163.63	167.16	187.49	218.05	0.00	0.00	0.00	0.00	0.00	0.00	179.89	179.89

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Total	Annual Total
CY2016	5269.65	5081.63	5244.00	5192.41	6136.13	7099.33	7871.62	7678.12	6918.94	6287.65	5460.60	5147.83	34023.15	73387.92
CY2017	5020.18	4525.06	5057.00	5028.39	5528.26	6196.22	6588.51	6856.43	6167.36	5891.64	4938.30	4986.43	31355.10	66783.78
CY2018	5474.61	4644.94	5072.61	5014.75	5812.14	6541.36	0.00	0.00	0.00	0.00	0.00	0.00	32560.42	32560.42

The June 2018 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 2018 water use will be used to allocate the FY20 water utility rate revenue requirement. June 2018 water supplied of 218.0 mgd (for revenue generating users) is up 11.5 mgd or 5.6% compared to June 2017. System-wide year to date consumption for CY18 is higher than CY17 with 179.9 mgd being supplied to MWRA customers through June. This is 6.7 mgd higher than CY17, and is an increase of 3.8%. June 2018 water supplied of 218.0 mgd (for revenue generating users) is up 11.5 mgd or 5.6% compared to June 2017.

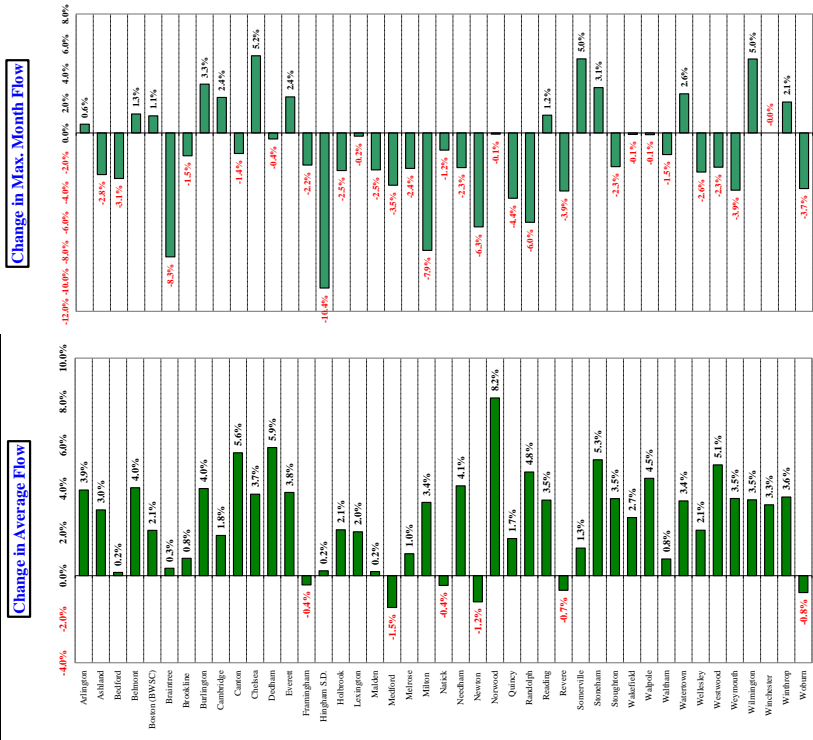
System-wide year to date consumption for CY18 is higher than CY17 with 179.9 mgd being supplied to MWRA customers through June. This is 6.7 mgd higher than CY17, and is an increase of 3.8%, and 7.05mgd less than CY16, a decrease of 3.8%.

Community Wastewater Flows

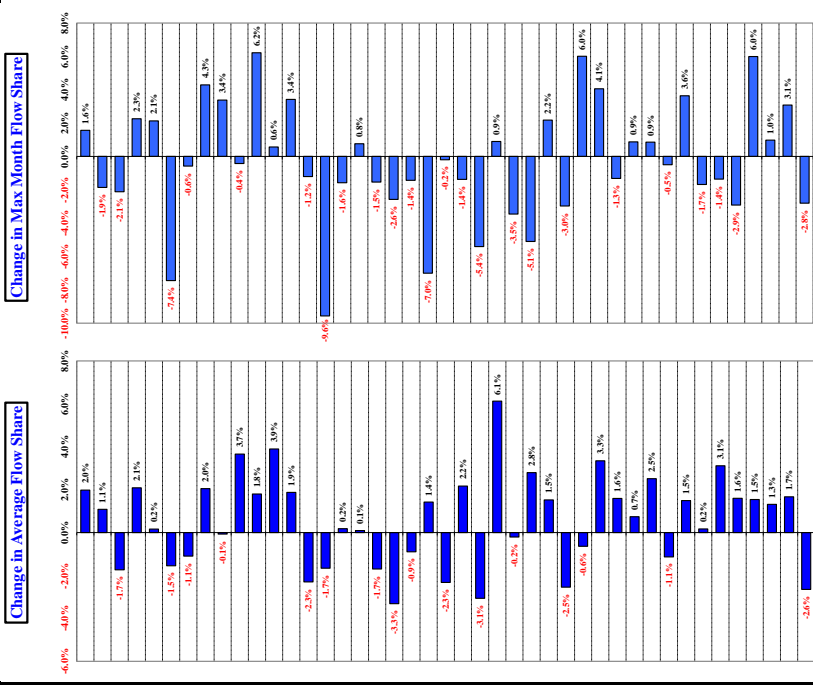
4th Quarter - FY18

How Projected CY2018 Community Wastewater Flows Could Effect FY2020 Sewer Assessments 1,2,3

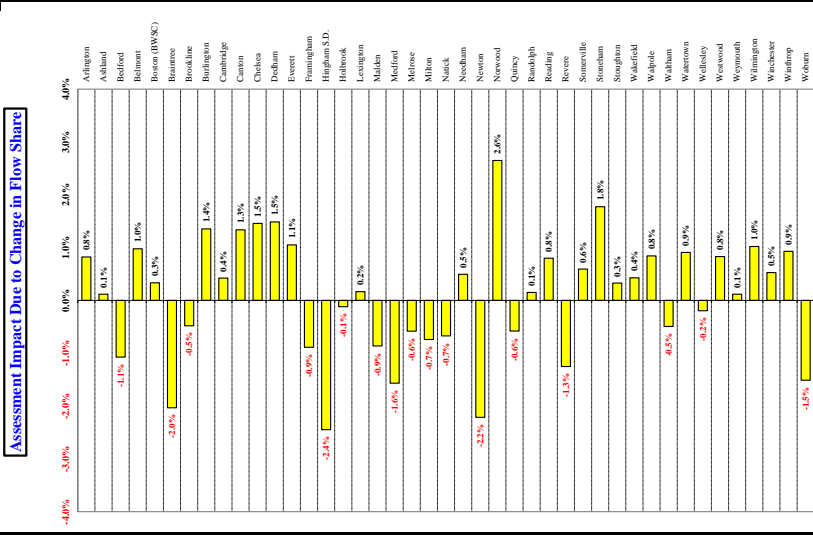
The flow components of FY2020 sewer assessments will be calculated using a 3-year average of CY2016 to CY2017 wastewater flows compared to FY2019 assessments that used a 3-year average of CY2015 to CY2017 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2016 to CY2018 flow share compared to CY2015 to CY2017 flow share, compared to all other communities in the system.



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



Notes:
 1 MWRA uses a 3-year flow average to calculate sewer assessments. Three-year averaging smoothes the impact of year-to-year changes in community flow share, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.
 2 Based on CY2015 to CY2018 average wastewater flows as of 08/27/18. Flow data is preliminary and subject to change pending additional MWRA and community review.
 3 CY2015 to CY2017 wastewater flows based on actual meter data for January to June, and project flows for July to December.
 4 Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.

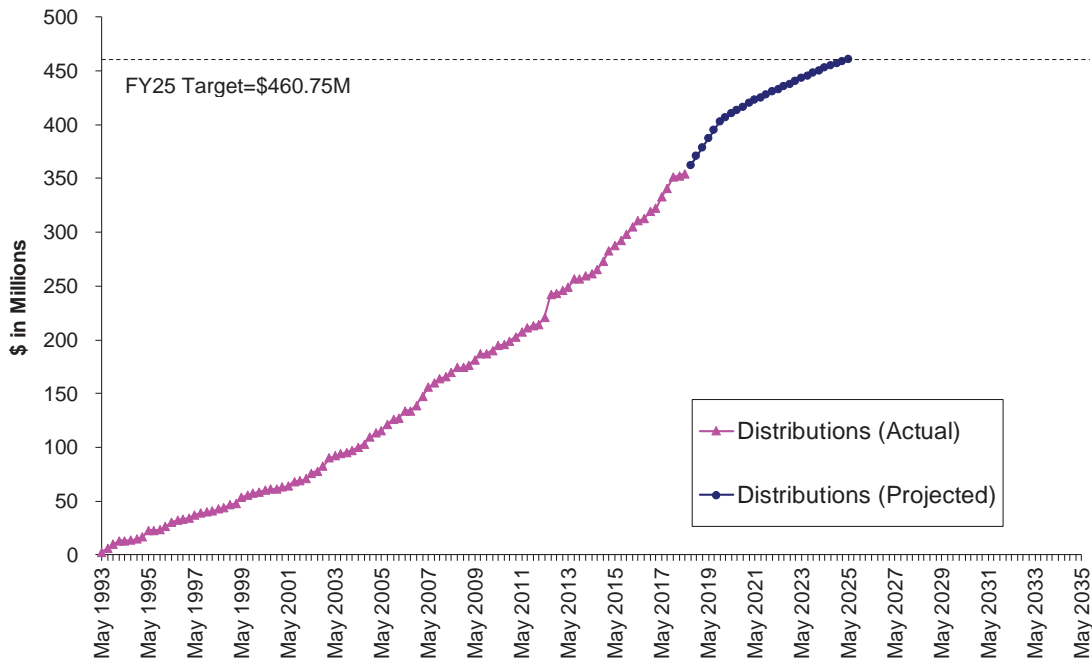
Community Support Programs

4th Quarter – FY18

Infiltration/Inflow Local Financial Assistance Program

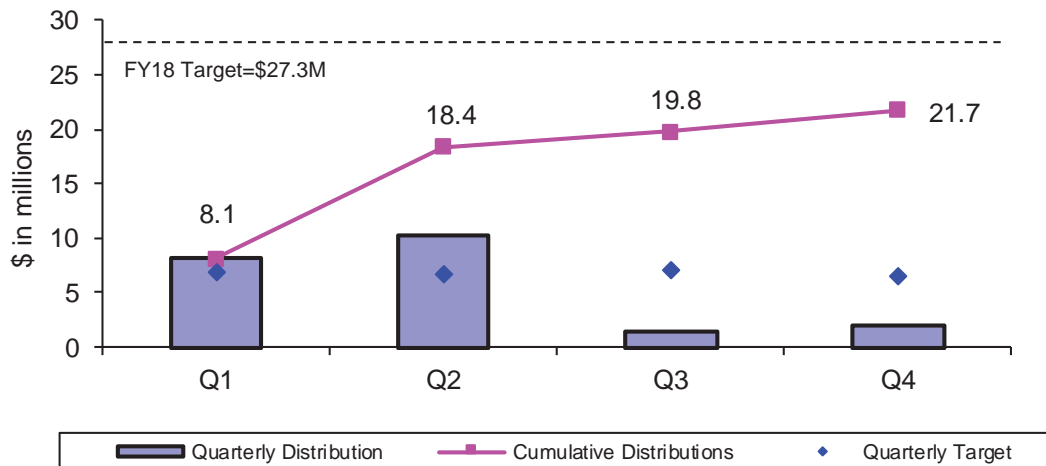
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$460.75 million in grants and interest-free loans (average of about \$14 million per year from FY93 through FY25) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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 and 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 FY18, \$1.9 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Arlington, Medford, Needham and Wellesley. Total grant/loan distribution for FY18 is \$21.7 million. From FY93 through the 4th Quarter of FY18, all 43 member sewer communities have participated in the program and more than \$354 million has been distributed to fund 545 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 FY35. All scheduled community loan repayments have been made.

FY18 Quarterly Distributions of Sewer Grant/Loans



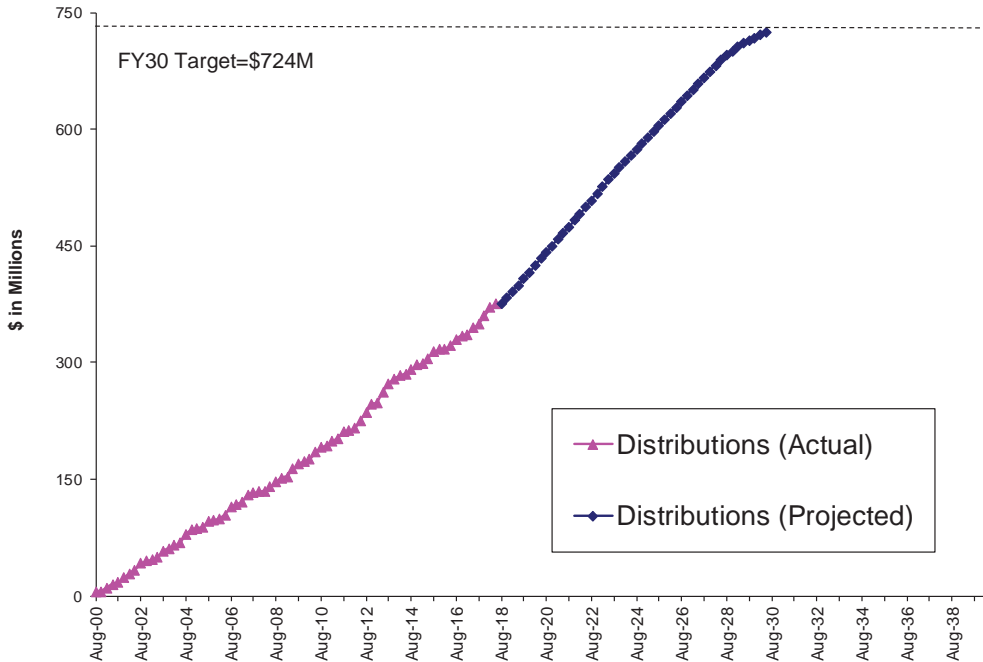
Community Support Programs

4th Quarter – FY18

Local Water System Assistance Program

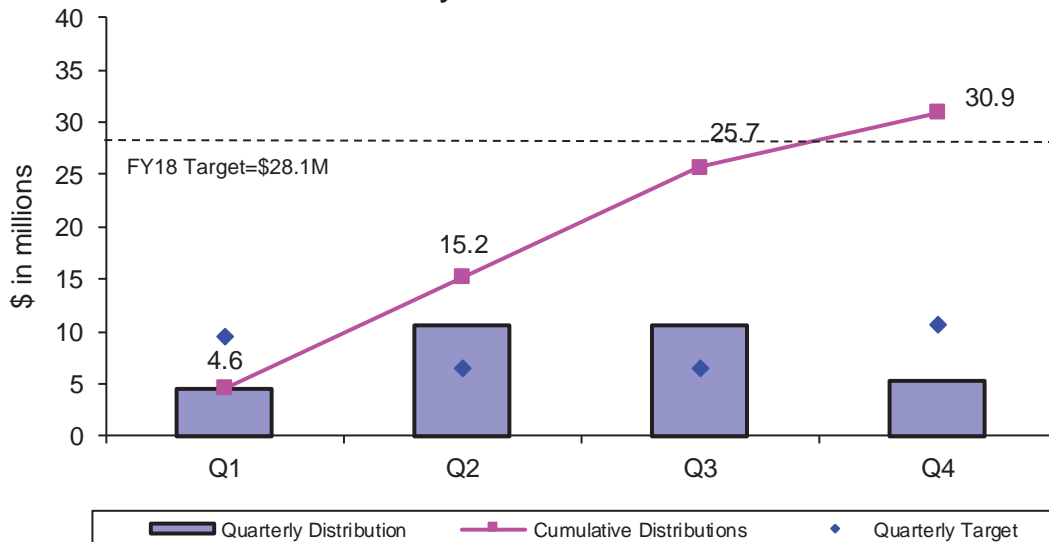
MWRA's Local Water System Assistance Programs (LWSAP) provides \$724 million in interest-free loans (an average of about \$24 million per year from FY01 through FY30) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. There have been 3 phases: Phase 1 at \$222 Million, Phase 2 at \$210 Million, and Phase 3 at \$292 Million. 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 water loan program concluded in FY13 with \$222 million in loan distributions. The Phase 2 - LWSAP continues distributions through FY23. The Phase 3 Water Loan Program is authorized for distributions FY18 through FY30.

Local Water System Assistance Program Distribution FY01-FY30



During the 4th Quarter of FY18, \$5.2 million in interest-free loans was distributed to fund local water projects in Arlington, Needham, Peabody and Winchester. Total loan distribution for FY18 is \$30.9 million. From FY01 through the 4th Quarter of FY18, more than \$375 million has been distributed to fund 407 local water system rehabilitation projects in 42 MWRA member water communities. Distribution of the remaining funds has been approved through FY30 and community loan repayments will be made through FY40. All scheduled community loan repayments have been made.

FY18 Quarterly Distributions of Water Loans



Community Support Programs

4th Quarter – FY18

Lead Service Line Replacement Loan Program

By its vote on March 16, 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. The Lead Service Line Replacement Loan Program is also referenced as the Lead Loan Program or LLP. Each community can develop its own program, tailored to their local circumstances. 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.

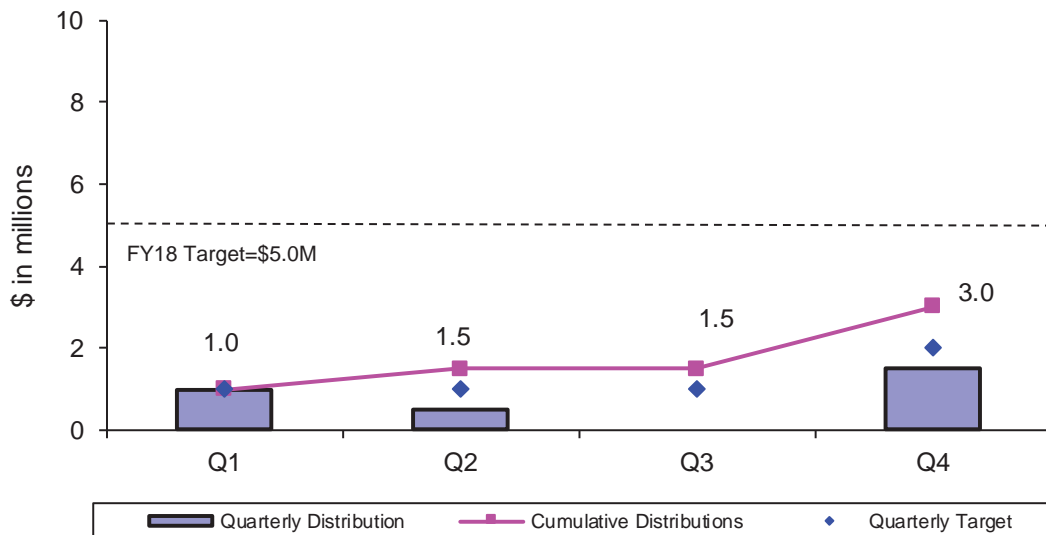
FY17 was the first year of the Lead Service Line Replacement Loan Program. During FY17, MWRA made three Lead Loan Program distributions to Newton for \$4.0 Million, Quincy for \$1.5 Million, and Winchester for \$0.5 Million.

FY18 is the second year of the Lead Loan Program. Two additional Lead Loan Program distributions were made during the 4th Quarter of FY18 to Needham (\$1,000,000) and Winchester (\$500,000). During FY18, five Lead Loan Program Distributions have been made for a total of \$3.0 Million.

Summary of Lead Loans:

Needham in FY18	\$1.0 Million
Winchester in FY18	\$0.5 Million
Revere in FY18	\$0.2 Million
Winthrop in FY18	\$0.3 Million
Marlborough in FY18	\$1.0 Million
Newton in FY17	\$4.0 Million
Quincy in FY17	\$1.5 Million
Winchester in FY17	\$0.5 Million
<u>TOTAL</u>	<u>\$9.0 Million</u>

FY18 Quarterly Distributions of Lead Service Line Replacement Loans

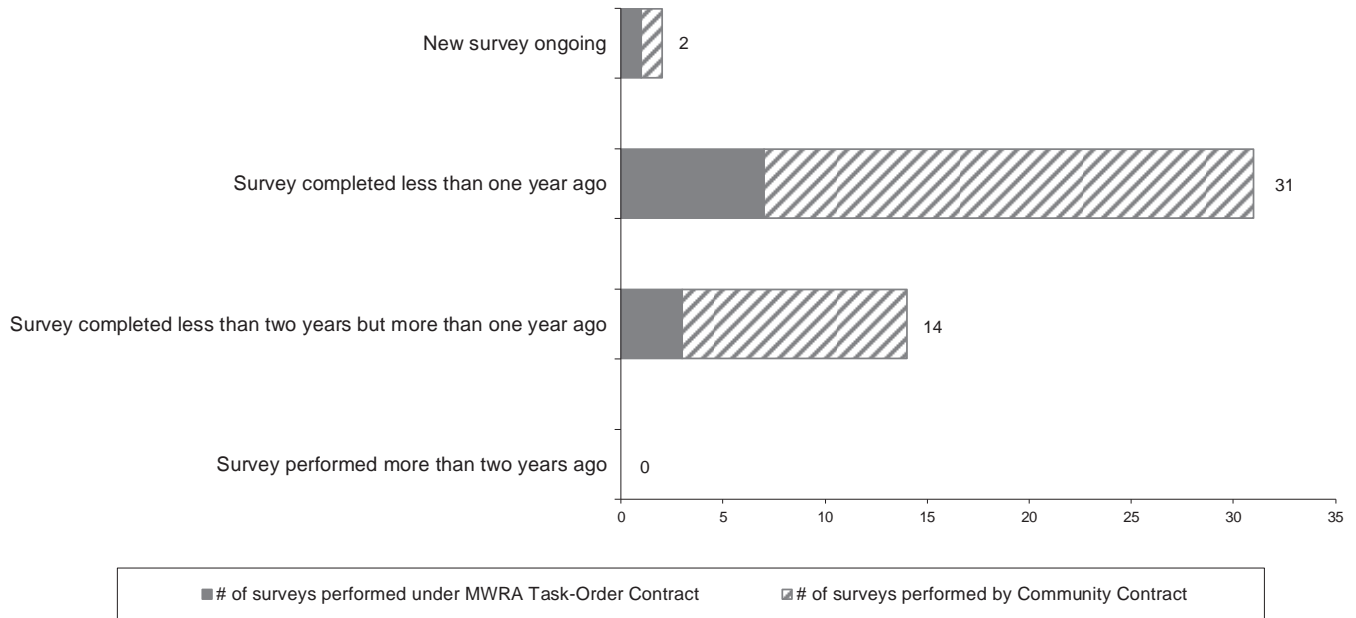


Community Support Programs

4th Quarter – FY18

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 FY18, 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 205 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	1,770	20,496	47,812	28,942	99,020
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	2,018	1,346	2,941	1,981	8,286
Toilet Leak Detection Dye Tablets	-----	6,126	1,337	4,783	668	12,914

BUSINESS SERVICES

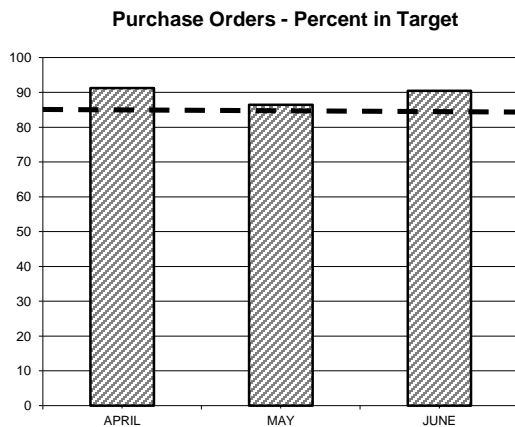
Procurement: Purchasing and Contracts

4th Quarter - FY18

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

Outcome: Processed 89% of purchase orders within target; Average Processing Time was 5.54 days vs. 4.92 days in Qtr 4 of FY17. Processed 58% (14 of 24) of contracts within target timeframes;

Purchasing



	No.	TARGET	PERCENT IN TARGET
\$0 - \$500	703	3 DAYS	83.7%
\$500 - \$2K	712	7 DAYS	94.3%
\$2K - \$5K	429	10 DAYS	92.7%
\$5K - \$10K	55	25 DAYS	83.6%
\$10K - \$25K	65	30 DAYS	86.1%
\$25K - \$50K	14	60 DAYS	57.1%
Over \$50K	39	90 DAYS	84.6%

The Purchasing Unit processed 2017 purchase orders, 46 less than the 2063 processed in Qtr 4 of FY17 for a total value of \$11,823,109 versus a dollar value of \$11,418,802 in Qtr 4 of FY17.

The purchase order processing target was not met for the \$0-\$500 dollar category due to vendor confirmations; the \$5K-\$10K category due to end user approvals and staff summary requirements; the \$25K-\$50K category due to vendor insurance requirements and staff summary requirements; and the

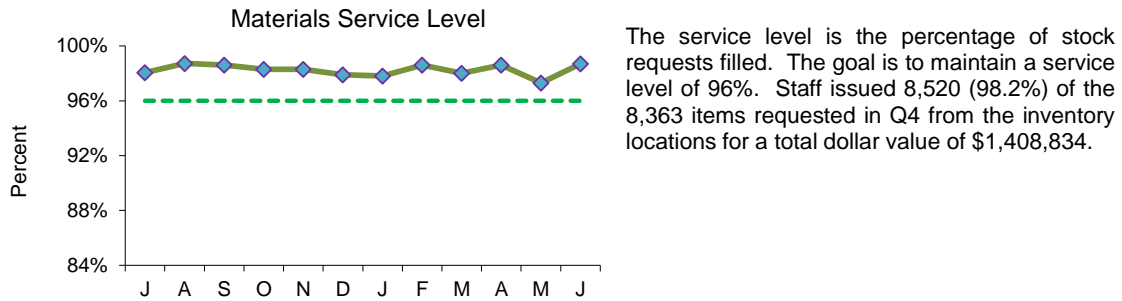
Contracts, Change Orders and Amendments

Ten contracts were not processed within the target timeframes. One contract was delayed due to the contractor's delay in providing the executed contracts and associated administrative documents. Another contract was delayed due to required changes to specifications. Four related contracts were delayed by one day due to external delays in obtaining approved insurance certificates from the firms and request that all four contracts commence simultaneously. Additionally, two contracts were delayed due to the prioritization of staff assignments. However, services were in place according to schedule. Another contract was delayed due to extensive revisions of the contract documents prior to bid required to address design issues and numerous bidder questions. The final contract was delayed due to the unexpected substitution of a selection committee member and the additional time required to respond to proposer's questions and to secure the execution of the contract.

Procurement processed twenty four contracts with a value of \$28,274,526 and four amendments with a value of \$0 (time extensions only). Fifty change orders were executed during the period. The dollar value of all non-credit change orders during Q4 FY18 was \$3,566,132 and the value of credit change orders was (\$881,692).

Staff reviewed 68 proposed change orders and 53 draft change orders.

Materials Management 4th Quarter - FY18



Inventory Value - All Sites

Inventory goals focus on:

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

The FY18 goal is to reduce consumable inventory from the July '17 base level (\$8.29 million) by 2.0% (approximately \$165,849), to \$8.12 million by June 30, 2018 (see chart below).

Items added to inventory this quarter include:

- Deer Island – shaft, joint kit, joint oil, clamps, shaft seal, retaining, spacer and wear rings for Residuals; light fixtures, power supplies, smoke detectors, potentiometer, ballasts, 3 phase monitor for Electrical Shop; dual thrust modules, oil and filters for Power & Pump; sensors, manometers, calibration gas, timer relays, switches and probes for I&C; diesel exhaust guards, air and fuel filters for Fleet Services.
- Chelsea – brakes, brake shoes, brake hardware, seals, rain guards, vehicle mats, freon, ball joints, control arms and plow modules for Fleet Services; sanding discs, sanding belts, vacuum bags and vacuum filters for Work Coordination.
- Southboro – tie down straps, spray paint and rakes for B&G; valves and power supply for Quality Assurance; unions for Maintenance and wrenches, sawblades and screwdrivers for Plumbing Shop; filters for Carroll Water Treatment Plant.

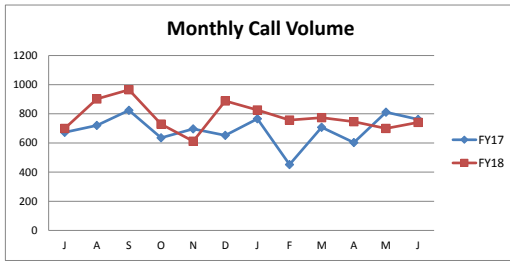
Property Pass Program:

- Five audits were conducted during Q4.
- Scrap revenue received for Q4 amounted to \$25,100. Year to date revenue received amounted to \$75,564.
- Revenue received from online auctions held during Q4 amounted to \$47,183. Year to date revenue received amounted to \$204,977.

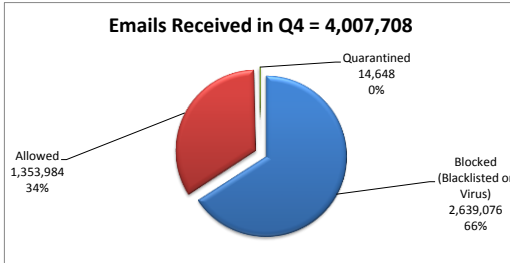
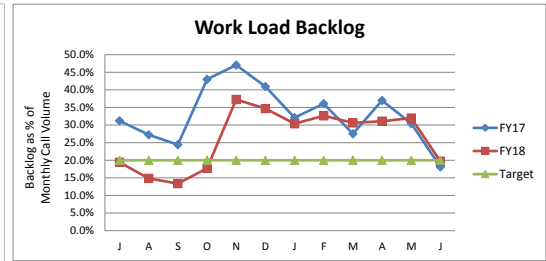
Items	Base Value July-17	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	8,292,452	8,213,447	-79,005
Spare Parts Inventory Value	8,939,710	8,724,733	-214,977
Total Inventory Value	17,232,162	17,197,479	-34,683

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.

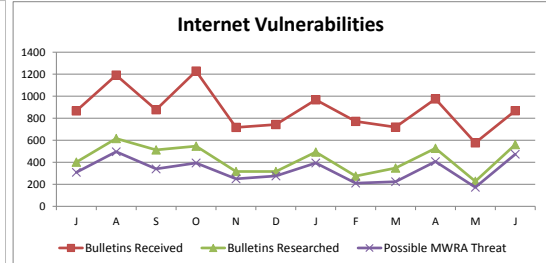
MIS Program 4th Quarter FY18



Performance & Backlog
 Call Volume: Peaked in April. FY18-Q4 call volume decreased by 1.3% from FY17-Q4.
 Call Backlog: Peaked in April. FY18-Q4 backlog average is 7.6% above targeted benchmark of 20%.



Information Security
 In Q4, pushed security fixes/updates to desktops/servers protecting against 465 vulnerabilities. McAfee quarantined 12 distinct viruses from 14 PCs. PCs are current with antivirus signatures for known malware.



Infrastructure:

Information Security Program: Annual Security Awareness training completed.

Server Backup Solution Replacement: Completed migration to CommVault.

Server Virtualization: Hardware implemented for server virtualization in CNY. Two servers migrated; to be completed in July.

Desktop Refresh: Base image created and test PCs being deployed. Windows 10 application compatibility being compiled.

Branch Office VPN Hardware Replacement: Deployment started, scheduled to be completed in July.

External Facing Server Hardware Replacement: New hardware infrastructure installed and configured. Discussion with vendors on migration strategy for moving Telog to new infrastructure environment.

Applications/Library & Records Center/Training:

Enterprise Content Management (ECM)/e-Construction: Project Overview & Charter has been signed-off. Completed 4 uses cases needed for the Technical Assistance Consulting services. Continued to work on the InfoStar application data analysis for the BHP & MWRA User Interfaces. Developed and documented 10 InfoStar Modules; sent to users for review. Additional modules to be documented. Work in process: (1) workflow for contract invoice review/approval of professional services contracts (2) Statement of Work, and (3) controlled vocabulary.

Maximo Upgrade: Upgraded with Asset Management 7.6.0.8 and IBM Control Desk (ICD) v7.6.0.3. ICD will serve as the MIS Service Desk, IT asset management, license management, contracts management, and change management tool. Developed an SOP for Maximo Control Desk IT Project Work Orders. Completed pre-Go Live data migration support activities. Nineteen out of 32 reports were converted from Magic to Maximo ICD; documentation for 12 Maximo reports completed.

GIS: New data layer was added to the Real Property Viewer and allows users to view new data as it becomes available in the Real Property database. ESRI identified a critical security vulnerability on the MWRA's version of ArcGIS Server. Staff applied the security patch to ensure secured services and data.

Lawson: ERP consultant Kinsey completed the review of HR, Payroll, Finance, Materials Management and Purchasing application customizations. Kinsey had discussions with users on issues and problems and discussed the technical upgrade roadmap with the MIS team. More meetings are expected to be scheduled with Kinsey to capture all outstanding Lawson user pain points including Supplier Portal, Strategic Sourcing and Contract Management.

PIMS: Release 10.1.4 was promoted to production to resolve issues with the Compliance Summary screen. This screen is used to check whether an industry is in significant non-compliance and if so, why.

Management Dashboard: Rolled out the Management Dashboard to non-union managers. The application provides managers a graphical calendar display of compensation, overtime, sick, and standby benefit time used by staff.

Open Checkbook: Updated the Employee and Payroll modules to roll up ten years rather than three years of financial data.

Library & Records Center: The Library fulfilled 82 research requests (304 YTD) and provided 162 periodicals, books and standards (874 YTD). Research topics include: energy market resources, General Edward Bridge, excavation work practices, molybdenum from data centers, lower Charles River water quality, lead pipe corrosion, tunnel redundancy resources, cyanobacteria, fecal contamination on recreational beaches. The Record Center (RC) handled 258 boxes (888 YTD) and scanned 171 (699 YTD) pages of documents for electronic delivery. The RC did 18 searches supporting MWRA business.

IT Training: For the quarter, 311 staff (585 YTD) attended 22 (61 YTD) classes. 31% of the workforce has attended at least one class year-to-date. 157 managers and selected Unit 6 & 9 staff attended the Cyber Security training held in 4 sessions at Chelsea and Deer Island. MAXIMO IBM Control Desk training was offered. Development included 5 Maximo Control Desk job-aids, 2 Lawson job-aids for Procurement, and re-writes of Reporting SPAM and Accessing On-Line Training job-aids.

Legal Matters

4th Quarter - FY18

PROJECT ASSISTANCE

Court and Administrative Orders:

- **Boston Harbor Litigation and CSO:** Reviewed and filed Semi-Annual Compliance and Progress Report.

Real Estate, Contract, Environmental and Other Support:

- **8(m) Permits:** Reviewed sixty (60) 8(m) permits. Drafted amendment to Babson 8(m) permit related to the use of a MWRA parcel of land in Wellesley and Needham. Drafted 8(m) permit related to the use of a MWRA parcel of land in the Fore River Shipyard in Quincy. Revised 8(m) permit related to use of MWRA parcel of land at Brattle Court Pump Station in Arlington.
- **Public Access Permits:** Drafted amendment to Town of Weston public access 8(m) permit.
- **Real Property:** Reviewed plans for land court case regarding Commonwealth real property in Brookline, MA under MWRA's care, custody, and control. Reviewed other parties' easement interests burdening MWRA's Spot Pond Covered Storage parcel of land and MWRA's easement interests adjacent in parcel of land owned by Langwood Commons LLC and drafted Memorandum of Understanding by and between MWRA and Langwood Commons LLC regarding the mutual future release of such easements. Recorded extension to order of conditions DEP 212-1097 for MWRA's Marlborough Maintenance Facility. Reviewed MWRA's real property interests at Hingham Pump Station, Spot Pond, Farwell Street in Newton, Commonwealth Avenue in Newton, Shaft 7 in Newton, the Prison Point CSO facility, Lynn and Revere adjacent to the General Edwards Bridge, Cottage Farm CSO facility, Quincy high level sewer, and Braintree/Weymouth Pump Station. Drafted one-day event license for entry at DITP for the Scleroderma Foundation. Reviewed Land Court plan related to MWRA's Clinton Water line in Brookline. Reviewed and revised letter related to removal of tree branches of adjacent property owners that overhang MWRA's Nash Hill property. Finalized license from MBTA to MWRA for MWRA's use of certain MBTA land in Dedham related to MWRA's Section 111 water main project. Drafted one-day event license for entry at DITP for Winthrop Advocacy Resources Community.
- **Wireless Cell Agreements:** Reviewed letters notifying wireless tenants at MWRA's Turkey Hill Water Tank in Arlington of scheduled painting of the water tank and their obligation to relocate their wireless equipment; assisted in drafting release and indemnification language for licensees to insulate MWRA from claims arising out of relocation of equipment.
- **Watershed Acquisitions:** Reviewed Wachusett Watershed Acquisition W-001196 located on Woodland Street in West Boylston, MA and Wachusett Watershed Acquisition, W-001206 located on Wachusett Street in Holden, MA.
- **NPDES:** Reviewed CSO variance submittal summarizing the 2017 receiving water quality in the Upper Mystic/Alewife Brook and Charles River. Reviewed requirement relative to the discharge of potable water to a water of the United States. Reviewed annual CSO discharge estimate report for 2017 required by the Lower Charles River/Charles Basin and Alewife Brook/Upper Mystic River CSO variances.
- **Legislation:** Revised legislation related to Hingham Pump Station and Stodder's Neck in Hingham concerning access easement for MWRA.
- **Public Records:** During the Fourth Quarter of FY 2018, 141 public records requests were received and 139 public records requests were closed.
- **Miscellaneous:** Reviewed draft memorandum of understanding between MWRA and the Massachusetts Office of Public Safety and Inspections for electrical inspection services.

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters

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

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

Matters Concluded

Received an arbitrator's decision in favor of the MWRA concerning a grievance brought by an employee who was allegedly working out of title.

LITIGATION/TRAC

New Matters MWRA v. Dewberry Engineers, Inc.: On April 13, 2018, MWRA filed a cost recovery action against NEL Corp., Western Surety Corp., and Dewberry Engineers, Inc. arising out of deficiencies in the design and construction of a replacement water main at Webster Avenue in Somerville, MA.

Howland Realty/Chelsea Lease Rent Abatement Demand: Made formal letter demand to landlord and landlord's counsel for either payment of *pro tanto* awards for Silver Line takings by MDOT/MBTA or for rent abatement for loss of useable space, resulting in payment of *pro tanto* payments of \$157,000 to MWRA.

Former Employee v. MWRA: Plaintiff initiated an action against MWRA arising out of his April 9, 2015 termination. Plaintiff had been terminated by MWRA due to the multiple instances of sleeping on the job, as well as his inappropriate conduct towards co-workers. Plaintiff claims his termination constitutes handicap discrimination under G.L. c. 151B. On May 29, 2018, MWRA answered Plaintiff's complaint denying Plaintiff's allegations.

Significant

Claims There are no new Significant Claims to report.

Significant

Developments DaPrato v. MWRA, C.A. No. 2015 CV 3687 D: Prepared oppositions to DaPrato post-trial motions.

D'Amico v. MWRA v. Green et al, C.A. 1784 CV 04097 C: On May 16, 2018, MWRA served Third-Party Defendant Green International Affiliates, Inc. ("Green") with a special motion to dismiss its counterclaim against MWRA on the grounds that the counterclaim is solely based upon MWRA's filing of an affirmative lawsuit against Green and is therefore prohibited under G.L. c. 231 § 59H.

Closed Cases There are no Closed Claims to report.

Closed Claims During the Fourth Quarter of FY 2018, no new subpoenas were received and one subpoena was pending at the end of the Fourth Quarter FY 2018.

Subpoenas During the Fourth Quarter of FY 2018, no new subpoenas were received and one subpoena was pending at the end of the Fourth Quarter FY 2018.

Wage

Garnishments There are currently 14 Trustee Process matters, 4 of which are considered active and are monitored by Law Division.

SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of June 2018	As of Mar 2018	As of Dec 2017
Construction/Contract/Bid Protest (other than BHP)	2	1	1
Tort/Labor/Employment	3	2	2
Environmental/Regulatory/Other	2	2	2
Eminent Domain/Real Estate	0	0	0
total – all defensive cases	7	5	5
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	9	7	7
Claims not in suit: <u>Thang Viet Vu and Oanh Vu Claim</u>	1	1	2
Bankruptcy	2	2	2
Wage Garnishment	4	15	15
TRAC/Adjudicatory Appeals	1	1	1
Subpoenas	1	1	1
TOTAL – ALL LITIGATION MATTERS	18	27	28

TRAC/MISC.

New Appeals: No new TRAC Appeals.

Settlement by Agreement of Parties No Settlement by Agreement of Parties.

Stipulation of Dismissal No Joint Stipulation of Dismissals filed.

**Notice of Dismissal
Fine paid in full** No instances of Notices of Dismissal, Fine paid in full.

Tentative Decision There were no Tentative Decisions issued in the 4th Quarter FY 2018.

Final Decisions There were no Final Decisions issued in the 4th Quarter FY 2018.

Significant Developments Twin Rivers Appeal (Docket No. 17-05) EPA submitted its report, dated June 13, 2018, advising the parties that after review of parties' sampling and test records, it found no evidence of any departure by MWRA from mandated acrolein test procedures.

INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES

4th Quarter - FY18

Highlights

During the 4th Quarter FY18, IA completed an audit of overtime practices and timesheet preparation to determine compliance with existing policies and practice. Recommendations were made to better maintain overtime records and manage overtime practices. An audit was also completed of certain Fleet Services practices, in particular recommending that the preventative job plans for vehicles be inputted into Maximo according to the manufacturers' maintenance schedules. Many of these recommendations for both assignments were already closed by the end of the quarter.

Other assignments completed include an audit of prevailing wage rates paid on construction contracts, and a report of MWRA procedures on police details. IA also completed a review of one consultant preliminary, two construction labor burden reviews and one incurred cost audit. The HEEC 2017 true-up was finalized, a NEFCo contract review for 2017 was completed and an analysis of the DITP electricity rate was prepared related to the new 2018 cost structure.

Status of Recommendations

During FY18, a total of 36 recommendations were closed, of which 18 were from prior fiscal years' audits.

IA follows-up on open recommendations on a continuous basis. All open recommendations have target dates for implementation. When a recommendation has not been implemented within 48 months, the appropriateness of the recommendation is re-evaluated.

Report Title (issue date)	Audit Recommendations		
	Open	Closed	Total
Unmatched Receipts and Accruals (6/30/15)	2	8	10
Warehouse Cycle Counts at DITP (11/5/15), Southboro (11/6/15) and Chelsea (12/4/15)	2	23	25
MIS Mobile Equipment Asset Tracking (9/26/16)	1	11	12
Wright Express (WEX) Credit Card Fuel Purchases (11/16/16)	3	10	13
Purchase Card Activity on Deer Island (3/31/17)	3	12	15
Review of Uniform Debit Card Program (3/30/18)	3	3	6
Overtime & Timesheet Review (6/30/18)	2	14	16
Fleet Services Process Review (6/30/18)	4	1	5
Total Recommendations	20	82	102

Cost Savings

IA's target is to achieve at least \$1,000,000 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 prior years' audits.

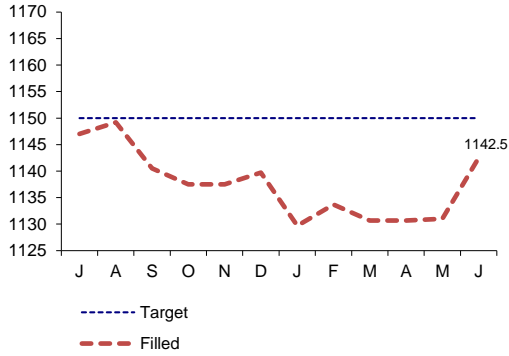
Cost Savings	FY14	FY15	FY16	FY17	FY18 Q4	TOTAL
Consultants	\$294,225	\$87,605	\$88,312	\$272,431	\$118,782	\$861,355
Contractors & Vendors	\$415,931	\$1,146,742	\$1,772,422	\$3,037,712	\$1,323,156	\$7,695,963
Internal Audits	\$923,370	\$543,471	\$220,929	\$224,178	\$203,702	\$2,115,650
Total	\$1,633,526	\$1,777,818	\$2,081,663	\$3,534,321	\$1,645,640	\$10,672,968

OTHER MANAGEMENT

Workforce Management

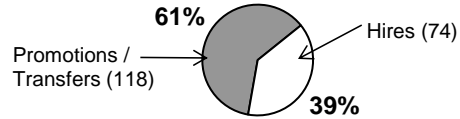
4th Quarter FY18

FTE Tracking



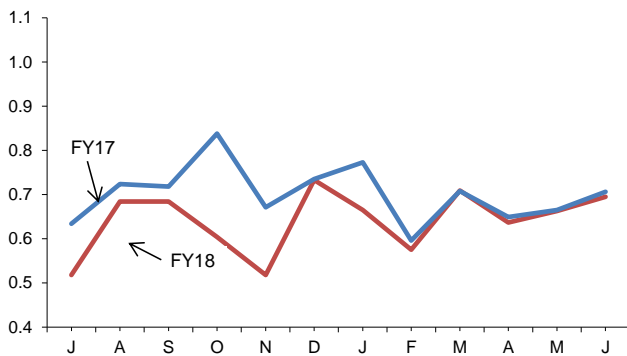
FY18 Target for FTE's = 1150
FTE's as of JUNE 2018 = 1142.5

Positions Filled by Hires/Promotions
FY18-YTD



	Pr/Trns	Hires	Total
FY16	99 (62%)	60 (38%)	159
FY17	155 (68%)	72 (32%)	227
FY18	118(61%)	74 (39%)	192

Average Monthly Sick Leave Usage
Per Employee

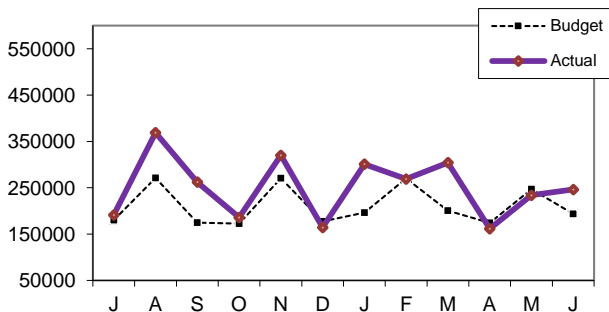


Average monthly sick leave thru the 4th Quarter of FY18 decreased as compared thru FY17 (8.08 to 7.98 days)

	Employees	YTD	Total	FMLA %	FY17
Admin	136	6.64	6.64	13.5%	7.75
Aff. Action	6	7.10	7.10	7.6%	6.28
Executive	4	3.33	3.33	19.1%	13.80
Finance	34	6.05	6.05	0.0%	8.50
Int. Audit	7	4.94	4.94	34.9%	6.51
Law	14	6.85	6.85	9.2%	8.98
OEP	8	3.57	3.57	0.0%	5.74
Operations	936	7.68	7.68	16.5%	8.55
Pub. Affs.	12	10.43	10.43	68.1%	6.31
MWRA Avg	1157	7.69	7.69	16.7%	8.42

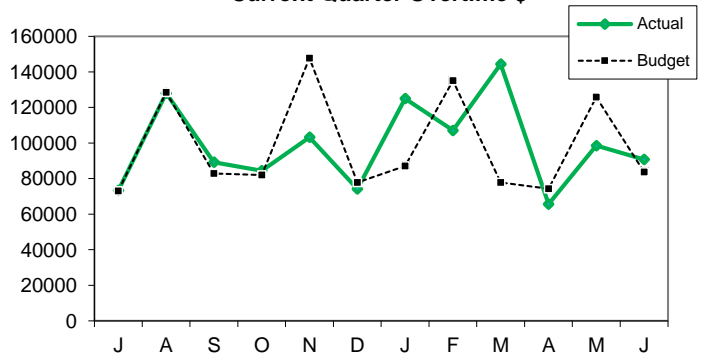
Percent of sick leave usage for FY18, attributable to Family and Medical Leave Act (FMLA) is 16.7% .

Field Operations
Current Month Overtime \$



Total Overtime for Field Operations for the fourth quarter of 2018 was \$641,632 which is \$27k over budget. Emergency overtime was \$250k, which was (\$56k) under budget due to a relatively dry spring, the majority of the OT was for rain events. Coverage overtime was \$174k, which was \$17k over budget, reflecting the month's shift coverage requirements. Planned overtime was \$217k or \$66k over budget, mainly for maintenance off hours work, planned operations, maintenance work completion, and community assistance (water truck). YTD, FOD has spent \$3,008,253 on overtime which is \$480k over budget.

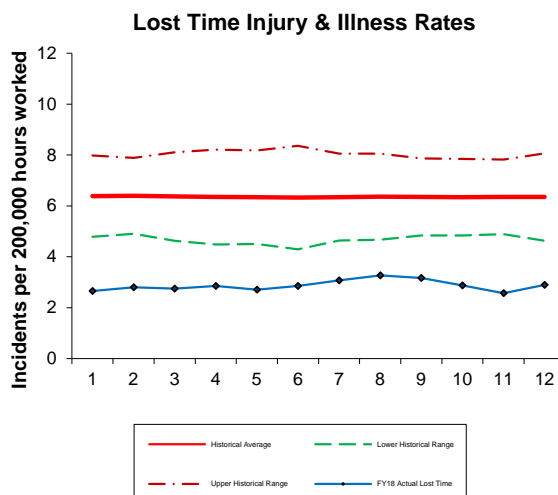
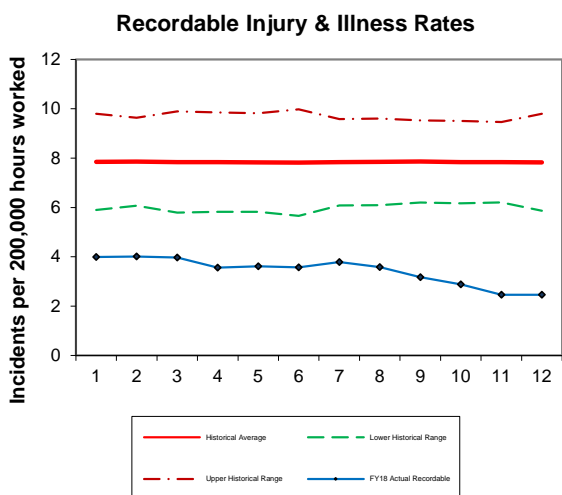
Deer Island Treatment Plant
Current Quarter Overtime \$



Deer Island's total overtime expenditure for the 4th quarter of 2018 was \$255k, which was (\$29k) under budget. Less than anticipated amount storm coverage overtime, (\$23k), combined with a lesser amount shift coverage overtime, (\$6k) mainly account for the overtime variance. A combination of planned/unplanned overtime was right on budget. YTD Deer Island has spent \$1,184,093 on overtime which is \$8k over budget.

Workplace Safety

4th Quarter - FY18



- 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 FY17. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively. FY18 actual incident rates can be expected to fall within this historical range.

WORKERS COMPENSATION HIGHLIGHTS

	4th Quarter Information		Open Claims
	New	Closed	
Lost Time	4	21	54
Medical Only	13	24	17
Report Only	14	14	

* June 30 2018 Weekly Indemnity included in Lost time Open Claims

17 Retired and Former Employees are included in Total Open Claims

	QYTD	FYTD
Regular Duty Returns	10	31
Light Duty Returns	0	2

COMMENTS:

Regular Duty Returns

APR 3 employees' returned to Full Duty, no restrictions

MAY 5 employee's returned to Full Duty, no restrictions

JUNE 2 employee returned to Full Duty, no restrictions

Light Duty Returns

APR No employees returned to Light Duty from workers' compensation

MAY No employees returned to Light Duty from workers' compensation

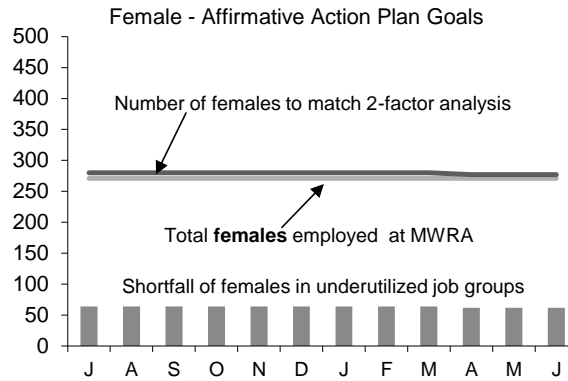
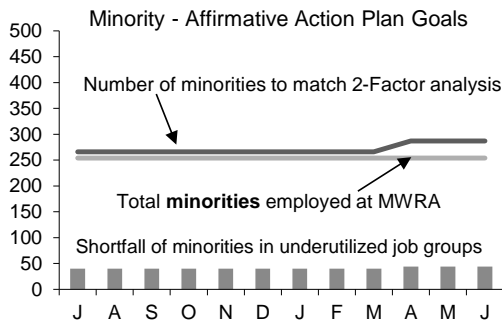
JUNE No employees returned to Light Duty from workers' compensation

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 in the month they a full

MWRA Job Group Representation
4th Quarter - FY18



Highlights:

At the end of Q4 FY18, 8 job groups or a total of 44 positions are underutilized by minorities as compared to 7 job groups or a total of 37 positions at the end of Q4 FY17; for females 7 job groups or a total of 62 positions are underutilized females as compared to 7 job groups or a total of 52 positions at the end of Q4 FY17. During Q4, 5 minorities and 3 females were hired. During this same period 1 minority and 2 females terminated. **Effective February, 2018, the Board of Directors approved the 2018 Affirmative Action's workforce goals. The new goals are the following: minorities 25.1% and females 24.3%.**

Underutilized Job Groups - Workforce Representation

Job Group	Employees	Minorities	Achievement	Minority	Females	Achievement	Female
	as of 6/30/2018	as of 6/30/2018	Level	Over or Under Underutilized	As of 6/30/2018	Level	Over or Under Underutilized
Administrator A	24	2	3	-1	10	8	2
Administrator B	23	2	4	-2	5	3	2
Clerical A	31	12	7	5	26	21	5
Clerical B	28	9	7	2	10	11	-1
Engineer A	78	27	17	10	18	16	2
Engineer B	59	14	12	2	12	7	5
Craft A	114	17	41	-24	1	4	-3
Craft B	151	24	45	-21	3	5	-2
Laborer	67	20	14	6	2	2	0
Management A	100	15	24	-9	35	39	-4
Management B	44	8	8	0	9	4	5
Operator A	67	5	13	-8	0	5	-5
Operator B	65	15	15	0	4	20	-16
Professional A	33	5	8	-3	20	16	4
Professional B	156	46	38	8	78	57	21
Para Professional	59	17	19	-2	31	46	-15
Technical A	53	13	11	2	6	12	-6
Technical B	7	3	1	2	1	1	0
Total	1159	254	287	28/-44	271	277	61/-62

AACU Candidate Referrals for Underutilized Positions

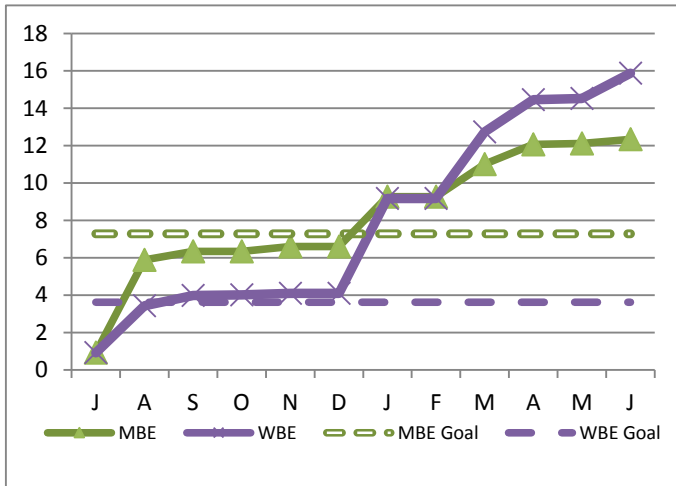
Job Group	Title	# of Vac	Requisition / Ext.	Int.	Promotion s/Transfers	AACU Ref. External	Position Status
Admin A	Director Human Resources	1	Int	Int	Int	0	Promo =WF
Admin B	Superintendent Clinton AWWTP	1	Int	Int	Int	0	Promo =WM
Management A	Deputy Contract Manager	1	Ext	Ext	Ext	0	NH = AF
Craft A	M&O Specialist	2	Int	Int	Int	0	Promo = WM (2)
Craft A	General Foreman	1	Int	Int	Int	0	Promo=WM
Craft A	WDS General Foreman	1	Int	Int	Int	0	Promo = WM
Craft B	Electrician	1	Ext	Ext	Ext	0	NH = WM
Craft B	Jr. Instrument Technician	1	Ext	Ext	Ext	0	NH = WM
Craft B	Instrument Technician	3	Ext	Ext	Ext	0	NH = (3)WM
Craft B	Facilities Specialist	1	Int/Ext	Int	Int	0	Promo = WM
Operator A	Area Supervisor	3	Int	Int	Int	0	T=(2)WM, Promo=WF
Operator A	Transmission & Treatment Operator	3	Int	Int	Int	0	T=(2)WM, Promo=WM
Operator B	Operator	1	Int	Int	Int	0	Promo = HM
Professional A	Lab Supervisor II WQ	1	Int	Int	Int	0	Promo = WF
Technical A	Communication & Control Technician	1	Int/Ext	Int	Int	0	Promo = WM
Technical A	O & M Systems Specialist	1	Int	Int	Int	0	Promo = BM

MBE/WBE Expenditures 4th Quarter - FY18

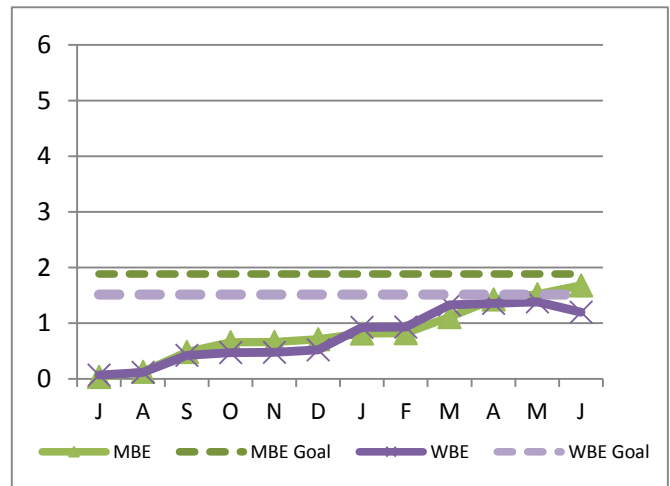
MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY18 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they 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 September.

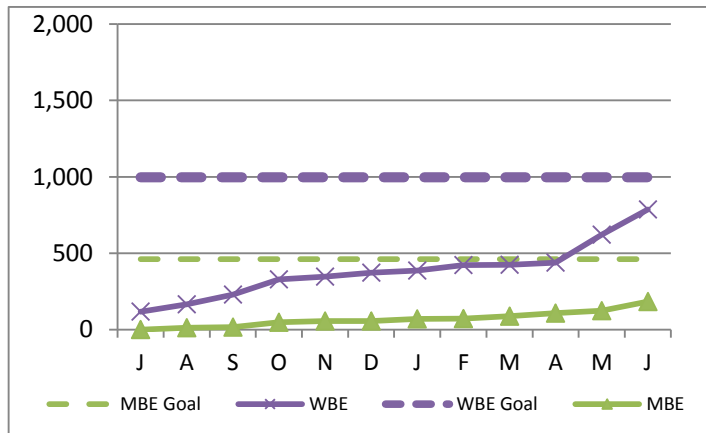
Construction



Professional Services



Goods/Services



FY18 spending and percentage of goals achieved, as well as FY17 performance are as follows:

MBE				WBE			
FY18 YTD		FY17		FY18 YTD		FY17	
Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
12,337,140	169.4%	5,628,738	99.5%	15,875,719	438.4%	3,690,334	131.3%
1,680,583	89.2%	920,597	162.8%	1,196,643	79.0%	533,917	117.5%
183,744	39.8%	179,359	29.8%	786,485	78.9%	1,553,214	181.6%
14,201,467	147.5%	6,728,694	98.6%	Totals	291.2%	5,777,465	140.2%

FY17 MBE/WBE dollar totals do not include MBE and WBE payments to prime contractors and consultants.

FY18 MBE/WBE dollar totals include F17 MBE/WBE dollars submitted in FY18.

MWRA FY18 CEB Expenses 4th Quarter - FY18

As of June 2018, total expenses are \$736.8 million, \$7.0 million or 0.9% lower than budget, and total revenue is \$751.1 million, \$7.4 million or 1.0% over budget, for a net variance of \$14.4 million.

Expenses –

Direct Expenses are \$224.7 million, \$7.8 million or 3.4% below budget.

- **Wages & Salaries** are under budget by \$3.4 million or 3.3%. Regular pay is \$3.3 million under budget, due to lower head count, and timing of backfilling positions. At the end of June, the average Full Time Equivalent (FTE) positions were 1,138, twelve fewer than the 1,150 FTE's budgeted.
- **Maintenance** expenses are \$3.1 million or 9.7% under budget due mostly to timing of projects such as the HVAC upgrades at the Braintree/Weymouth Pump Station in Field Operations and door replacements and instrumentation upgrades at Deer Island, offset by overspending for emergency repairs to gravity thickeners #5 and #6 at Deer Island.
- **Fringe Benefits** expenses are \$929k or 4.4% under budget, primarily for lower Health Insurance costs of \$824k due to fewer employees and retirees than budgeted participating in health insurance plans, and the shift from family to individual plans which are less expensive.
- **Overtime** expenses are \$461k over budget or 11.2% due to recent wet weather events and snow removal, and off-hours maintenance earlier in the fiscal year.
- **Other Materials** expenses are \$399k or 6.0% under budget due to lower expenses for Health and Safety materials at Deer Island, lower Vehicle Expenses due to lower than budgeted fuel prices, and lower Vehicle Purchases due to timing of delivery.
- **Professional Services** expenses are \$266k or 3.7% under budget due to timing of Engineering Services in Operations and Legal Services in Treasury, Law, and Administration.
- **Utilities** expenses are \$262k or 1.2% over budget, with Diesel over budget by \$280k due to and additional delivery at Deer Island to top off the tanks, partially offset by lower than Water expenses of \$97k reflecting lower use at Deer Island and water efficiency measures at the headworks.
- **Chemicals** are \$177k or 1.8% under budget due to lower flows at the Deer Island Wastewater Treatment Plant and the Carroll Water Treatment Plant and timing of deliveries. Underspending of \$304k for Soda Ash reflects lower flows and higher natural pH at CWTP, underspending of \$139k for activated carbon, \$104k for sodium hypochlorite and \$105k for hydrofluosilicic acid, partially offset by overspending of \$326k for Hydrogen Peroxide due to the lower flows at Deer Island and overspending of \$246k for Ferric Chloride also at Deer Island due to struvite control.
- **Worker's Compensation** expenses are \$176k or 7.6% under budget, primarily due to resolution of a number of claims through return to work.

	June 2018 Year-to-Date			
	Period 12 YTD Budget	Period 12 YTD Actual	Period 12 YTD Variance	%
EXPENSES				
WAGES AND SALARIES	\$ 104,286,370	\$ 100,875,415	\$ (3,410,955)	-3.3%
OVERTIME	4,110,637	4,571,567	460,930	11.2%
FRINGE BENEFITS	20,997,975	20,068,927	(929,048)	-4.4%
WORKERS' COMPENSATION	2,322,980	2,147,063	(175,917)	-7.6%
CHEMICALS	9,836,933	9,659,734	(177,199)	-1.8%
ENERGY AND UTILITIES	21,735,222	21,997,423	262,201	1.2%
MAINTENANCE	32,200,785	29,067,175	(3,133,610)	-9.7%
TRAINING AND MEETINGS	406,269	314,745	(91,524)	-22.5%
PROFESSIONAL SERVICES	7,221,622	6,955,638	(265,984)	-3.7%
OTHER MATERIALS	6,692,660	6,293,935	(398,725)	-6.0%
OTHER SERVICES	22,764,526	22,794,735	30,209	0.1%
TOTAL DIRECT EXPENSES	\$ 232,575,979	\$ 224,746,357	\$ (7,829,623)	-3.4%
INSURANCE	\$ 2,013,452	\$ 3,231,510	\$ 1,218,058	60.5%
WATERSHED/PILOT	25,164,006	23,756,756	(1,407,250)	-5.6%
HEEC PAYMENT	957,445	782,135	(175,310)	-18.3%
MITIGATION	1,596,950	1,574,890	(22,060)	-1.4%
ADDITIONS TO RESERVES	821,116	821,116	-	0.0%
RETIREMENT FUND	3,277,369	3,277,369	-	0.0%
POST EMPLOYEE BENEFITS	5,035,422	5,035,422	-	0.0%
TOTAL INDIRECT EXPENSES	\$ 38,865,760	\$ 38,479,198	\$ (386,562)	-1.0%
REBATE	\$ -	\$ 225,000	\$ 225,000	---
STATE REVOLVING FUND	84,931,906	80,637,870	(4,294,036)	-5.1%
SENIOR DEBT	264,560,267	280,901,707	16,341,440	6.2%
CORD FUND	-	-	-	---
DEBT SERVICE ASSISTANCE	(391,580)	(1,336,306)	(944,726)	241.3%
CURRENT REVENUE/CAPITAL	13,200,000	13,200,000	-	0.0%
SUBORDINATE MWRA DEBT	85,443,447	85,443,447	-	0.0%
LOCAL WATER PIPELINE CP	3,794,944	1,482,833	(2,312,111)	-60.9%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	10,900,000	10,900,000	-	0.0%
VARIABLE DEBT	-	(7,595,896)	(7,595,896)	---
HEEC CABLE CAPACITY RESERV	6,532,146	6,532,146	-	0.0%
DEFEASANCE ACCOUNT	-	-	-	---
TOTAL DEBT SERVICE	\$ 472,188,190	\$ 473,607,861	\$ 1,419,671	0.3%
TOTAL EXPENSES	\$ 743,629,929	\$ 736,833,416	\$ (6,796,514)	-0.9%
REVENUE & INCOME				
RATE REVENUE	\$ 717,054,000	\$ 717,054,000	\$ -	0.0%
OTHER USER CHARGES	9,011,070	9,019,144	8,074	0.1%
OTHER REVENUE	7,359,078	12,230,488	4,871,410	66.2%
RATE STABILIZATION	-	-	-	---
INVESTMENT INCOME	10,205,781	12,755,559	2,549,778	25.0%
TOTAL REVENUE & INCOME	\$ 743,629,929	\$ 751,059,191	\$ 7,429,262	1.0%

Indirect Expenses are \$38.5 million, \$387k or 1.0% under budget reflecting lower Watershed Reimbursement of \$1.4 million due to a year-end over accrual at the end of FY17 and lower PILOT payments, and lower than budgeted HECC cable O&M of \$175k partially offset by high insurance claims over budget by \$1.2 million due to a litigation loss.

Debt Service Expenses totaled \$473.4 million, \$1.4 million over budget after the transfer of \$11.9 million to the Defeasance Account. Of the \$11.9 million transferred to the Defeasance Account, \$7.6 million represents year to date savings due to lower than budgeted variable interest rates and \$4.8 million in additional interest savings due to timing of SRF borrowing and lower costs than budgeted for senior debt borrowing.

Revenue and Income –

Total Revenue and Income is \$751.1 million, \$7.4 million higher than budget, primarily due to a \$4.2 million LIBOR settlement from Barclays Bank PLC. Revenues were also over budget by \$2.5 million for favorable returns on investment income, \$228k for the final payment of a class action lawsuit settlement for derivative agreements, and \$301k for disposal of surplus material.

Cost of Debt 4th Quarter – FY18

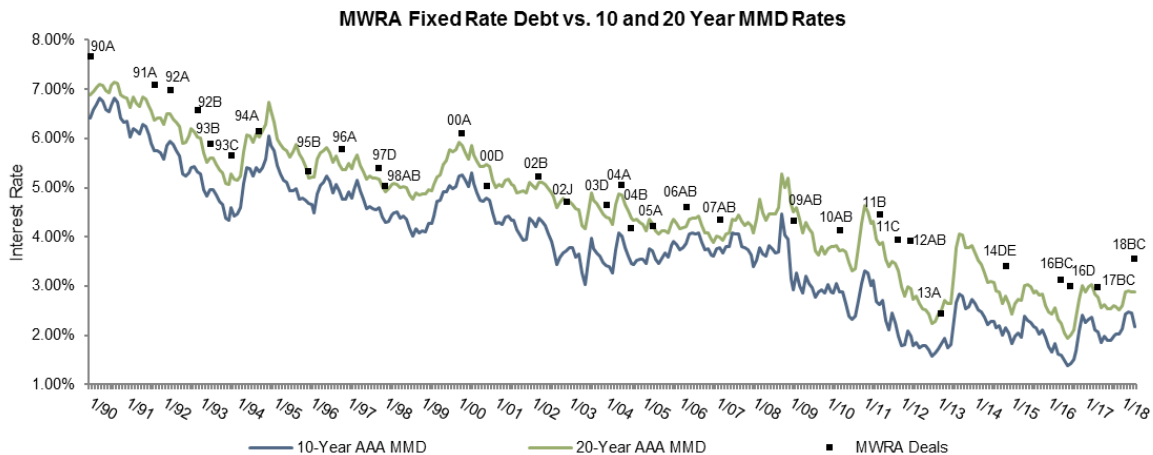
MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

Average Cost of MWRA Debt FYTD

Fixed Debt (\$3,551.7)	3.79%
Variable Debt (\$442.1)	1.51%
SRF Debt (\$942.8)	1.51%
Weighted Average Debt Cost (\$4,937)	3.13%

Most Recent Senior Fixed Debt Issue May 2018

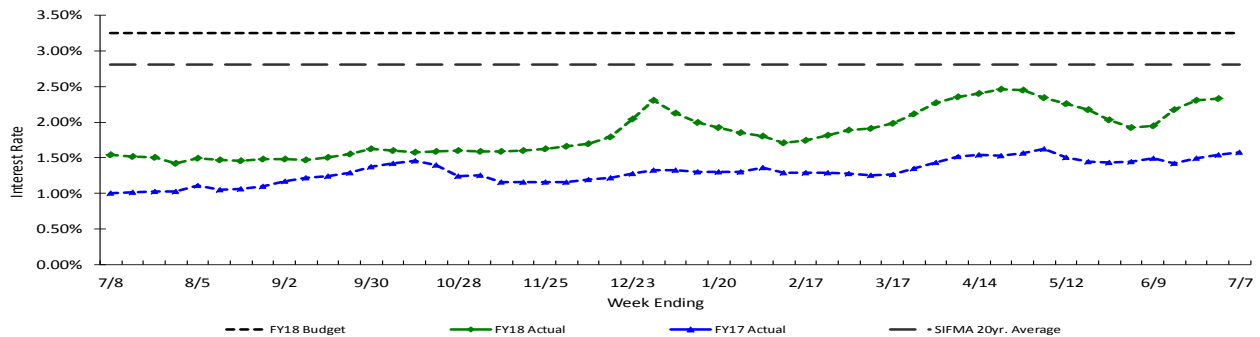
2018 Series B & C (\$129.5) 3.56%



Bond Deal	1993B	1993C	1994A	1995B	1996A	1997D	1998AB	2000A	2000D	2002B	2002J	2003D	2004A	2004B
Rate	5.89%	5.66%	6.15%	5.34%	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%	5.05%	4.17%
Avg Life	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	18.4 yrs	19.6 yrs	13.5 yrs

Bond Deal	2005A	2006AB	2007AB	2009AB	2010AB	2011B	2011C	2012AB	2013A	2014DEF	2016BC	2016D	2017BC	2018BC
Rate	4.22%	4.61%	4.34%	4.32%	4.14%	4.45%	3.95%	3.93%	2.45%	3.41%	3.12%	2.99%	2.98%	3.56%
Avg Life	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	18.8 yrs	11.2 yrs	11.7 yrs

Weekly Average Variable Interest Rates vs. Budget

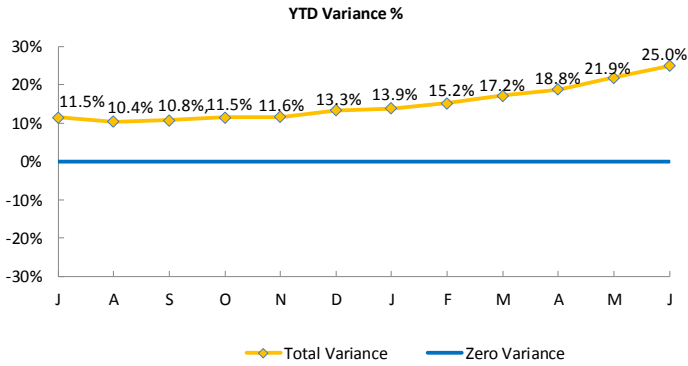


MWRA currently has ten variable rate debt issues with \$831.4 million outstanding, excluding commercial paper. Of the ten outstanding series, five have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In June, SIFMA rates ranged from a high of 1.51% to a low of 1.05% 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

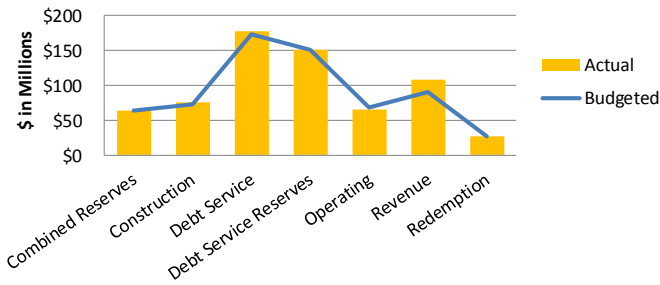
4th Quarter – FY18

Year To Date

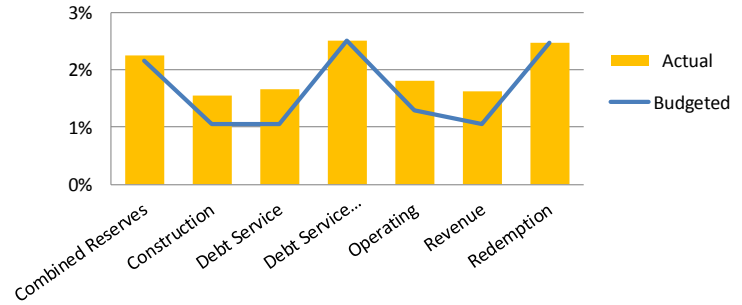


	YTD BUDGET VARIANCE			
	(\$'000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	\$4	\$66	70	5.1%
Construction	\$22	\$383	405	52.8%
Debt Service	\$41	\$1,079	1,120	61.6%
Debt Service Reserves	\$17	(\$7)	10	0.3%
Operating	(\$26)	\$176	150	17.1%
Revenue	\$183	\$611	794	84.1%
Redemption	\$0	\$0	0	0.0%
Total Variance	\$241	\$2,309	\$2,550	25.0%

YTD Average Balances Budgeted vs. Actual

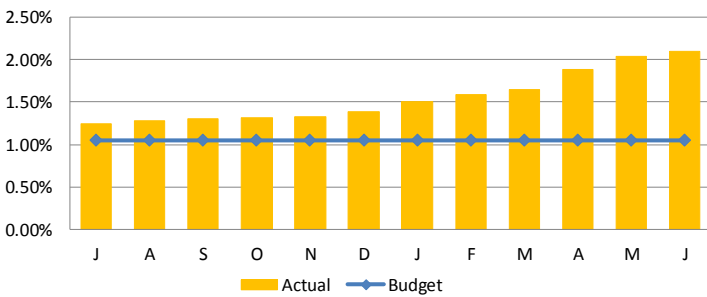


YTD Average Interest Rate Budgeted vs. Actual

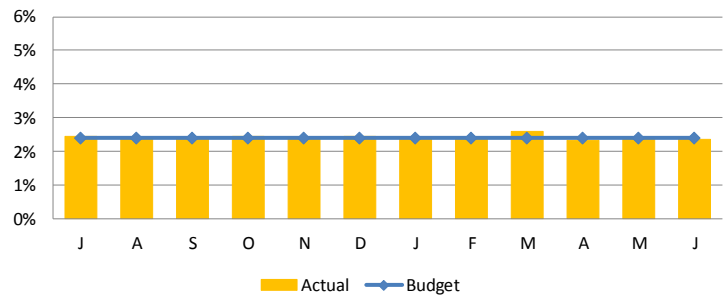


Monthly

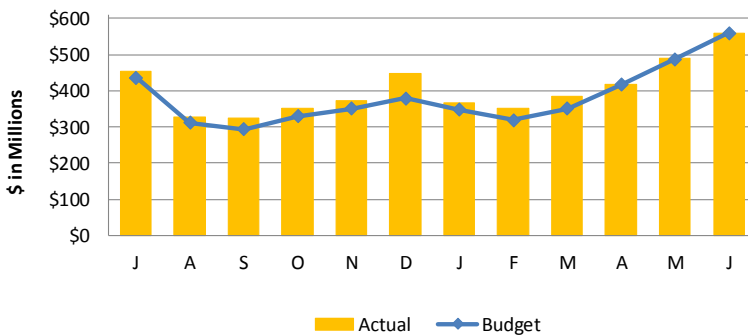
Short -Term Interest Rates



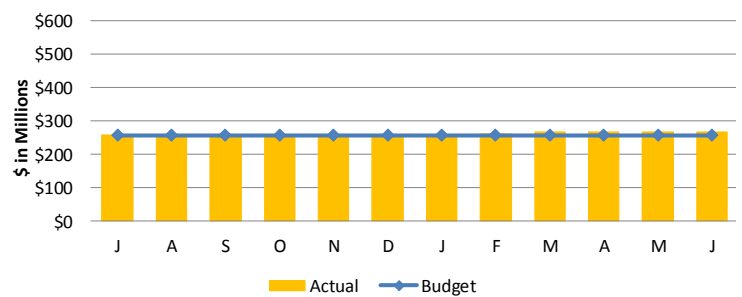
Long -Term Interest Rates



Short-Term Average Balances

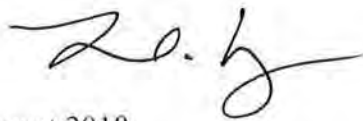


Long-Term Average Balances



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Delegated Authority Report – July and August 2018



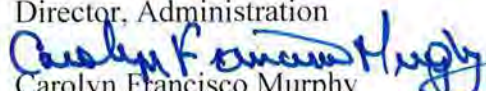
COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE

Linda D'Addario, Admin. Systems Coordinator
Barbara Aylward, Administrator A & F
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 – August 31, 2018.

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 February 21, 2018, 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.

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.

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, 2018

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	07/09/18	AIR COMPRESSOR SYSTEM SERVICE FINAL BALANCING CHANGE ORDER TO DELETE THE FOLLOWING BID ITEMS TO REFLECT ACTUAL QUANTITIES USED: ROUTINE AND EMERGENCY ON-CALL SERVICES, REPLACEMENT PARTS/TRANSPORTATION AND DISPOSAL OF WASTE OIL/CONSUMABLES.	OP-290	1	COOLING & HEATING SPECIALISTS, INC.	(\$59,640.50)
C-2.	07/09/18	HYDRAULIC EQUIPMENT SERVICE AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR ANNUAL MAINTENANCE AND INSPECTION, NON-EMERGENCY AND EMERGENCY REPAIR SERVICES FOR HYDRAULIC SYSTEMS WITHIN MWRA'S SERVICE AREA FOR A TERM OF 730 CALENDAR DAYS.	OP-368	AWARD	R. ZOPPO CORP.	\$269,600.00
C-3.	07/24/18	DAM ASSET MAINTENANCE CONSULTING SERVICES AWARD OF CONTRACT A CONTRACT FOR DAM ASSET MAINTENANCE CONSULTING SERVICES FOR A TERM OF ONE YEAR.	W325	AWARD	GZA GEOENVIRONMENTAL, INC.	\$51,000.00
C-4.	07/25/18	PERSONNEL DOCK REHABILITATION DEER ISLAND TREATMENT PLANT FINAL BALANCING CHANGE ORDER TO DECREASE THE QUANTITY OF DECK PLATE BY 192 SQUARE FEET.	7168	2	COASTAL MARINE CONSTRUCTION, LLC	(\$39,744.00)
C-5.	07/25/18	NORTHERN INTERMEDIATE HIGH SECTION 110 AND 112 - STONEHAM AND WAKEFIELD TEST, REMOVE, HANDLE, TRANSPORT AND DISPOSE OF AN ADDITIONAL 1,316.90 TONS OF GROUP IA EXCAVATED MATERIALS.	7478	11	ALBANESE D&S, INC.	\$45,762.28
C-6.	07/25/18	MAINTENANCE PAINTING, CLINTON WASTEWATER TREATMENT PLANT AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR MAINTENANCE PAINTING, CLINTON WASTEWATER TREATMENT PLANT FOR A TERM OF 1095 CALENDAR DAYS.	5569	AWARD	THE AULSON COMPANY, LLC	\$901,000.00

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS AUGUST 1 - 31, 2018

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	08/03/18	ELEVATOR MAINTENANCE SERVICES AT VARIOUS AUTHORITY FACILITIES FINAL BALANCING CHANGE ORDER TO DELETE THE FOLLOWING BID ITEMS TO REFLECT ACTUAL QUANTITIES USED: NON-EMERGENCY AND EMERGENCY REPAIR SERVICES, REPLACEMENT PARTS AND CONSUMABLE MATERIALS AND MARK-UP.	OP-273	4	BBE CORP - BUCKLEY ELEVATOR	(\$57,765.70)
C-2.	08/23/18	ROOF SYSTEM REPLACEMENT, CLINTON WASTEWATER TREATMENT PLANT AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR ROOF SYSTEM REPLACEMENT, CLINTON WASTEWATER TREATMENT PLANT, FOR A TERM OF 365 CALENDAR DAYS.	7450	AWARD	GREENWOOD INDUSTRIES, INC.	\$672,000.00
C-3.	08/23/18	COSGROVE INTAKE AND POWER STATION UPGRADES AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR ROOF SYSTEM REPLACEMENT AND UPGRADES, COSGROVE INTAKE AND POWER STATION, FOR A TERM OF 180 CALENDAR DAYS.	7022	AWARD	GREENWOOD INDUSTRIES, INC.	\$876,000.00

PURCHASING DELEGATED AUTHORITY ITEMS JULY 1 - 31, 2018

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-1	07/12/18	INVASIVE PLANT CONTROL SERVICES RECESSION OF AWARD OF A PURCHASE ORDER FOR DIVER ASSISTED SUCTION HARVESTING OF INVASIVE PLANTS AT THE WACHUSETT RESERVOIR FOR FAILURE TO SUBMIT PROOF OF INSURANCE AND AWARD OF A PURCHASE ORDER TO THE NEXT LOWEST RESPONSIVE BIDDER FOR SUCH DIVER ASSISTED HARVESTING SERVICES.	WRA-4472		AE COMMERCIAL DIVING SERVICES	\$119,000.00
P-2	07/17/18	PURCHASE OF NINE TELOG WATER METER PANELS AWARD OF A SOLE SOURCE PURCHASE ORDER FOR NINE TELOG WATER METER PANELS.			TELOG INSTRUMENTS, INC.	\$40,068.00
P-3	07/25/18	MAINTENANCE AND SUPPORT OF 100 CISCO SMARTNET SWITCHES AWARD OF A ONE-YEAR PURCHASE ORDER UNDER STATE CONTRACT ITT50 TO THE LOWEST RESPONSIVE BIDDER FOR MAINTENANCE AND SUPPORT OF 100 CISCO SMARTNET SWITCHES.	WRA-4546Q		PRESIDIO NETWORKED SOLUTIONS LLC	\$50,253.31
P-4	07/25/18	PURCHASE OF ONE DIESEL POWERED FLATBED RAMP TRUCK AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR ONE DIESEL POWERED FLATBED RAMP TRUCK.	WRA-4494		BOSTON FREIGHTLINER, INC.	\$154,217.00
P-5	07/26/18	MAINTENANCE AND SUPPORT FOR SECURITY GATEWAY SYSTEM HARDWARE AND SOFTWARE FOR SCADA NETWORK AWARD OF A ONE-YEAR SOLE SOURCE PURCHASE ORDER FOR MAINTENANCE AND SUPPORT OF SECURITY GATEWAY SYSTEM HARDWARE AND SOFTWARE FOR SCADA NETWORK.			WATERFALL SECURITY SOLUTIONS, LTD.	\$47,835.00
P-6	07/26/18	MAINTENANCE AND SUPPORT FOR SCADA SOFTWARE AWARD OF A ONE-YEAR SOLE SOURCE PURCHASE ORDER FOR MAINTENANCE AND SUPPORT OF SCADA SOFTWARE.			GE DIGITAL	\$169,683.31


PURCHASING DELEGATED AUTHORITY ITEMS AUGUST 1 - 31, 2018

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMENDMENT	COMPANY	FINANCIAL IMPACT
P-1	08/02/18	PURCHASE OF THREE FLAME ARRESTORS AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR THREE FLAME ARRESTORS FOR THE DEER ISLAND TREATMENT PLANT.	WRA-4540Q		NEW ENGLAND CONTROLS, INC.	\$43,176.00
P-2	08/08/18	PURCHASE OF 14 WORK STATIONS AND TWO WORK BENCHES WITH STORAGE CABINETS AWARD OF A PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER FOR 14 WORK STATIONS AND TWO WORK BENCHES WITH STORAGE CABINETS FOR MARLBOROUGH MAINTENANCE FACILITY.	WRA-4543Q		FASTENAL COMPANY	\$26,390.08
P-3	08/08/18	MICROSOFT PREMIER SERVICES, WEB ACCESS AND TECHNICAL SUPPORT AWARD OF A ONE-YEAR PURCHASE ORDER CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR MICROSOFT PREMIER SERVICES, WEB ACCESS AND TECHNICAL SUPPORT.	WRA-4542		CDW GOVERNMENT, LLC	\$67,670.00
P-4	08/13/18	UPGRADE SIEMENS SOFTWARE AWARD OF A SOLE SOURCE PURCHASE ORDER FOR SIEMENS ENERGY MANAGEMENT SYSTEM SOFTWARE UPGRADE AND TRAINING FOR THE DEER ISLAND TREATMENT PLANT.			SIEMENS INDUSTRY, INC.	\$31,596.00
P-5	08/17/18	LABORATORY EQUIPMENT MAINTENANCE SERVICES AWARD OF A THREE-YEAR PURCHASE ORDER TO THE LOWEST RESPONSIVE BIDDER TO PROVIDE LABORATORY EQUIPMENT PREVENTATIVE AND CORRECTIVE MAINTENANCE SERVICES FOR THE DEPARTMENT OF LABORATORY SERVICES.	WRA-4534Q		CALEY & WHITMORE CORPORATION	\$49,245.00
P-6	08/29/18	PURCHASE OF ONE 62-TON ROOF-TOP CONDENSING UNIT AWARD OF A PURCHASE ORDER FOR ONE 62-TON ROOF-TOP CONDENSING UNIT FOR THE DEER ISLAND TREATMENT PLANT.	WRA-4544Q		HTS ENGINEERING	\$31,950.00

POSITION CONTROL REGISTER (PCR) LOCATION CHANGES September, 2018 BOARD

<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>
7/14/2018	Administrative Systems Coordinator	5910039	Operations - Policy & Admin	364002	Tunnel Redundancy	The employee in this position is providing professional administrative support to the new Director of Tunnel Redundancy as the unit is starting to develop and will include additional staff in the next few months
7/7/2018	Work Order Coordinator	5440025	Work Coordination	5910043	Policy & Admin/Materials Coordination	To align staffing resources with department needs.
7/7/2018	Work Order Coordinator	2985513	Deer Island Work Coordination Maintenance	5440025	Chelsea Work Coordination	To align staffing resources with department needs.


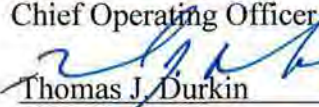
STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 19, 2018
SUBJECT: Fiscal Year 2018 Year-End Capital Improvement Program Spending Report

COMMITTEE: Administration, Finance & Audit


Kathy Sont, Budget Director
James J. Coyne, Assistant Finance Manager
Preparer/Title

 VOTE
 X INFORMATION


David W. Coppes
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).

FY18 was the last year of MWRA's five-year spending cap for FY14-18 established at \$791.7 million. The FY18 capital budget was \$174.5 million. The FY18 capital spending totaled \$151.5 million, \$23.0 million or 13.2% lower than budget.

In terms of overall spending, FY18 has improved from previous year's underspending trends.

In FY18, the Authority reached substantial completion on the Deer Island North Main Pump Station & Winthrop Terminal Facility Butterfly Valve Replacement, Northern Intermediate High Section 89 & 29 Redundancy Phase 1B Construction, Clinton Phosphorus Reduction Construction, DITP Digester Sludge Pump Replacement Phase 2, Section 80 Replacement Construction, Section 14 Water Pipeline Relocation (Malden), and Chicopee Valley Aqueduct Motorized Screens Replacement contracts.

The Authority made significant progress on several major projects at Deer Island, including the Winthrop Terminal Facility Variable Frequency Drives Replacements, Wachusett Aqueduct Pump Station, Chelsea Creek Upgrades Construction, Alewife Brook Pump Station Rehabilitation, Marlborough Maintenance Facility, and the Northern Intermediate High and Southern Extra High Redundancy water pipeline projects.

In FY18, MWRA managed 87 design and construction contracts and awarded 22 new contracts valued at \$86.5 million.

RECOMMENDATION:

For information only. The Fiscal Year 2018 Year-End Capital Program Spending Report highlights MWRA's major capital program accomplishments during FY18 and provides explanations for spending variances. *Please see Attachment A for the full Report.*

DISCUSSION:

Projects that were completed or reached substantial completion in FY18 included:

- Deer Island North Main Pump Station & Winthrop Terminal Facility Butterfly Valve Replacement - \$17.6 million
- Northern Intermediate High Service Section 89 & 29 Redundancy Phase 1B - \$12.5 million
- Clinton Wastewater Treatment Plant Phosphorus Reduction - \$7.7 million
- DITP Digester Sludge Pump Replacement Phase 2 - \$2.7 million
- Section 80 Replacement Construction - \$1.9 million
- Section 14 Water Pipeline Relocation (Malden) - \$1.6 million
- DITP Personnel Dock Rehabilitation - \$1.5 million
- Chicopee Valley Aqueduct Motorized Screens Replacement - \$1.2 million
- Sections 4,5,6, 186 Study Winthrop/Boston - \$1.2 million

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

- Wachusett Aqueduct Pump Station Construction – 91% complete
- Southern Extra High Redundancy Section 111 Phase 1 – 98% complete
- Northern Intermediate High Sections 89 & 29 Redundancy Phase 1C – 87% complete
- Marlborough Maintenance Facility – 98% complete
- Chelsea Headworks Upgrades – 39% complete
- Alewife Brook Pump Station Rehabilitation – 73% complete
- Maximo Upgrade – 93% complete

MWRA pipeline rehabilitated or constructed in FY18 totaled 2.4 miles for wastewater projects and over 4.8 miles for water projects. *Please see Attachment D for a detailed breakdown of the linear footage of pipeline rehabilitated or constructed by project for FY18.*

Major contracts awarded by MWRA in FY18 with the following Notice to Proceed dates include:

- Section 14 Water Pipeline Relocation (Malden) – July-2017
- Section 57 Water & 21/20/19 Sewer Design/Engineering Services During Construction/Resident Engineer Inspection – July 2017

- Residuals Sludge Tank & Silo Coating – September 2017
- Southern Extra High Redundancy Pipeline Section 111 Phase 2 Construction – October 2017
- Chestnut Hill Gatehouse #1 Repair – November - 2017
- CSO Performance Assessment – November 2017
- DeLauri Pump Station Screens Gates Valves & Security – February 2018
- Northern Intermediate High Redundancy Section 89 & 29 Replacement Design/Engineering Services During Construction – April 2018
- Gravity Thickener Rehabilitation – May 2018
- Low Service Pressure Reducing Valve Improvements Design/Engineering Services During Construction – June 2018
- Carroll Water Treatment Plant Technical Assistance 9 and 10 – June 2018
- As-Needed Design Contracts 16 and 17 – June 2018
- Headworks Effluent Shaft Study – July 2018
- Southern Extra High Redundancy Pipeline Section 111 Phase 3 Construction – August 2018

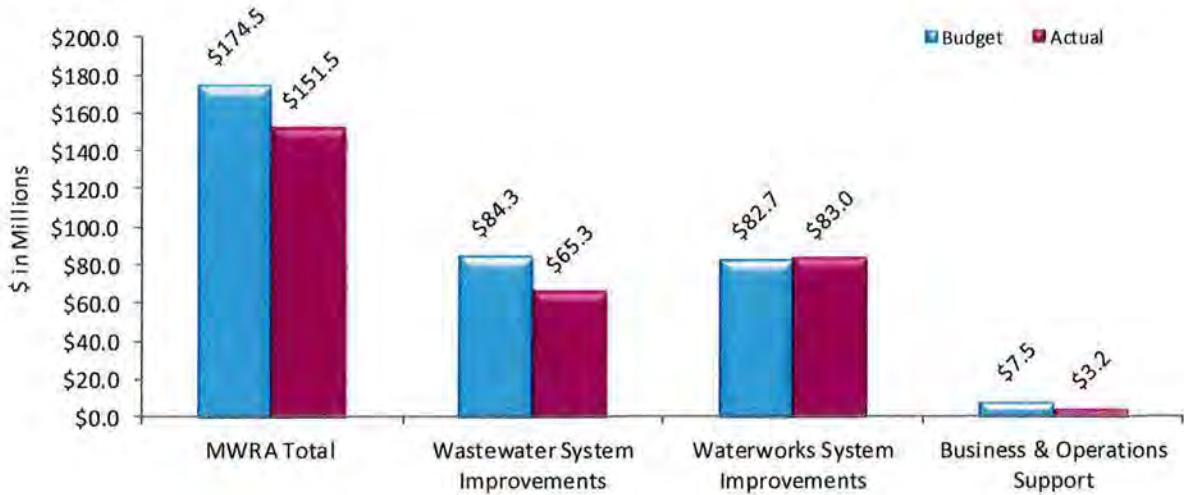
Please see Attachment C FY18 Planned versus Actual/Revised CIP Notices to Proceed for a complete list of contracts awarded.

FY18 also included overall spending of \$55.6 million for the community financial assistance programs on both the water and wastewater side. Inflow and Infiltration (I/I) spending consisted of \$14.3 million in grants and \$7.4 million in loans offset by \$8.4 million in prior period loan repayments for net spending of \$13.3 million. The Local Water System Assistance Program spending was \$30.9 million in loans, including CVA communities, offset by \$22.1 million in prior period loan repayments for net spending of \$11.8 million, and Lead Service Line Replacement loans of \$3.0 million.

Major Variances to FY18 Budget

For FY18, total Capital Improvement Program spending was budgeted at \$174.5 million. Total spending was \$151.5 million, which was \$23.0 million or 13.2% below budget. Underspending was reported in Wastewater of \$19.0 million, \$4.3 million in Business and Operations Support, and overspending of \$0.3 million in Waterworks Improvements.

**FY18 CIP Spending
Year-To-Date
June**



The table below reports the FY18 spending and variances by major program:

\$ in Millions	Budget	Actuals	\$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	46.8	40.4	(6.4)	-13.8%
Treatment	13.7	9.3	(4.3)	-31.7%
Residuals	2.9	0.4	(2.4)	-85.8%
CSO	1.9	1.9	0.0	0.9%
Other	19.1	13.3	(5.8)	-30.5%
Total Wastewater System Improvements	\$84.3	\$65.3	(\$19.0)	-22.6%
Waterworks System Improvements				
Drinking Water Quality Improvements	3.9	4.0	0.1	3.7%
Transmission	23.6	26.2	2.6	11.0%
Distribution & Pumping	41.8	40.9	(0.9)	-2.1%
Other	13.5	11.9	(1.6)	-11.5%
Total Waterworks System Improvements	\$82.7	\$83.0	\$0.3	0.4%
Business & Operations Support	\$7.5	\$3.2	(\$4.3)	-56.8%
Total MWRA	\$174.5	\$151.5	(\$23.0)	-13.2%

The \$23.0 million variance is the net of \$29.8 million in less than budgeted spending on 34 projects offset by \$6.8 million in more than budgeted spending on 11 projects. The main reasons for the variances were:

Interception & Pumping: Net underspending of \$6.4 million

- \$2.3 million for Chelsea Creek Upgrades Construction due to delays with water main and fuel oil system installations which, in turn, delayed Channel 1 work.

- \$1.6 million for Alewife Brook Pump Station Construction due to bypass pumping delays.
- \$0.6 million for Pump Stations and CSO Condition Assessment due to delay in award, \$0.6 million for Interceptor Renewal #1 Reading Extension Sewer due to issues with liner, \$0.4 million for Wastewater Metering/Study/Design due to the contract award being less than budgeted, \$0.3 million for Remote Headworks and Deer Island Shaft Study and \$0.2 million for DeLauri Pump Stations Screens and Security due to later than budgeted notice-to-proceeds, and updated schedules for Interceptor Renewal 5 New Neponset Valley Sewer Sections 607-610 Design and \$0.2 million for Nut Island Mechanical and Electrical Design contracts and \$0.1 million for Sections 23, 24, 26, and 27 Study due to being completed under budget.
- This underspending was partially offset by overspending of \$0.2 million for final work for the Caruso Pump Station Construction and \$0.1 million for Prison Point Design/Construction Administration/Resident Inspection due to project progress.

Other Wastewater: Net underspending of \$5.8 million

- \$5.8 million for Community Infiltration/Inflow (I/I) due to less than budgeted requests for grants and loans.

Wastewater Treatment: Net underspending of \$4.3 million

- Clinton: \$0.7 million for Clinton Roofing Rehabilitation due to delay in contract award and \$0.3 million for Phosphorus Reduction Construction due to less than anticipated progress including testing delays.
- Deer Island: \$1.2 million for Chemical Bulk Storage Tanks Relining due to delay in award, \$0.4 million for Digester Sludge Pump Replacement Phase 2 and \$0.3 million for Fuel System Upgrades for work scheduled for FY18 performed in FY17, \$0.3 million for Winthrop Terminal VFD Replacement Construction due to timing of delivery of VFDs and motors, and \$0.4 million for Combined Heat and Power Energy Alternatives, \$0.2 million for South System VFD Replacement Design, \$0.2 million for Expansion Joint Repair Construction, and \$0.2 million for Gas Protection System Replacement due to schedule changes.
- The underspending was partially offset by overspending of \$0.4 million for Gravity Thickener Rehabilitation due to earlier work than originally anticipated and \$0.2 million for additional work for the Personnel Dock Rehabilitation.

Business & Operations Support: Net underspending of \$4.3 million

- \$2.9 million for MIS Projects due to timing of the IT Strategic Plan implementation.
- \$1.5 million for Security Equipment due to a delay in implementing equipment initiatives.
- The underspending was partially offset by overspending of \$0.3 million due to timing of vehicle purchases.

Waterworks Transmission: Net overspending of \$2.6 million

- \$3.4 million for Wachusett Aqueduct Pump Station Construction and Engineering Services due to contractor progress, \$0.9 million for Watershed Land due to timing of

land purchases, and \$0.8 million for WASM 3 MEPA/Design/CA/RI for timing of boring work.

- This overspending was partially offset by underspending of 0.4 million for Shaft 12 Isolation Gate Design due to contract being terminated, \$0.6 million for Watershed Maintenance Garage/Washbay/Storage Facility due to delays, \$0.4 million for Quabbin Aqueduct and Winsor Power Station Design due to updated schedule, \$0.2 million for CVA Motorized Screen Replacement due to work scheduled for FY18 performed in FY17, and \$0.1 million for time extension for the Evaluation of Farm Pond Buildings and Waban Arches.

Residuals: Net underspending of \$2.4 million

- Underspending of \$1.0 million for Mechanical Improvements and \$0.9 million for Electrical Improvements due to delay in contract awards, \$0.3 million for Sludge Tank & Silo Coating for work that was postponed during the winter, and \$0.2 million for Pellet Conveyance Piping due to updated schedule.

Other Waterworks: Net underspending of \$1.6 million

- \$0.5 million for the Cosgrove Roof Replacement, \$0.5 million for the Steel Tank Improvements Design and \$0.5 million for Carroll Water Treatment Plant SCADA Design and Programming contracts due to delay in contract awards, and \$0.1 million for Quabbin Power, Communication & Security – Construction partially due to reimbursement from DCR Office of Watershed Management for work at the boat cove and less than anticipated engineering services during construction.

Water Distribution and Pumping: Net underspending of \$0.9 million

- Underspending \$2.3 million for SEH Redundancy Pipeline Section 111 Phase 3 due to delay in award as a result of permit issues, \$0.5 million for Section 53 and 99 Design CA/RI due to delay in award, \$0.4 million for Sections 50 and 57 Water and Sections 21/20/19 Sewer Design due to delay in field assessments due to weather issues, and \$0.2 million for Chestnut Hill Gatehouse #1 Repairs due contract award being less than budgeted.
- This underspending was partially offset by overspending of \$1.3 million for SEH Redundancy Pipeline Section 111 Phase 1 Construction, \$0.7 million for NIH Section 89 & 29 Redundancy Phase 2 Construction, \$0.7 million for SEH Redundancy Pipeline Section 111 Construction Phase 2, \$0.4 million for NIH Section 89 & 29 Redundancy Phase 1B, \$0.2 million for Section 89/29 Redundancy Phase 1C Construction due to contractor progress.

Drinking Water Quality Improvements: Net overspending of \$0.1 million

- \$0.6 million for contractor progress for the Marlborough Maintenance Facility, partially offset by \$0.5 million underspending on a number of small contracts.

Combined Sewer Overflow: Net overspending of \$0.1 million

- Overspending of \$0.3 million for CSO Performance Assessment due to consultant progress, partially offset by \$0.2 million for Cambridge Sewer Separation Project due to updated final cost of restoration work.

Please see Attachment B for detailed FY18 CIP variance explanations of all FY18 projects.

FY19 Outlook

Looking ahead to FY19, the projected capital spending is \$189.1 million including contingency of \$9.9 million. Projects with the largest budgeted spending in FY19 include Facility Asset Protection of \$38.0 million, Deer Island Treatment Plant Asset Protection of \$20.1 million Infiltration/Inflow Local Financial Assistance of \$19.2 million, Southern Extra High Redundancy and Storage of \$16.9 million, Northern Intermediate High Redundancy and Storage of \$16.1 million, and Waterworks Facility Asset Protection of \$11.0 million.

Staff will be completing the design and progressing to the bid and award stage on several major projects such as Deer Island Treatment Plant (DITP) Clarifier Rehabilitation Phase 2 Construction, DITP HVAC Equipment Replacement Construction, Nut Island Odor Control HVAC Improvements Construction, Prison Point Rehabilitation Construction, DITP Fire Alarm System Construction, New Connecting Mains Shaft 7 to WASM 3 CP3 Sections 23,24,47 Rehabilitation, Peabody Pipeline Construction, DITP Motor Control Center & Switchgear Replacement Construction, Metropolitan Tunnel Redundancy Conceptual Design Environmental Impact Report, Commonwealth Avenue Pump Station Improvements Construction, Chestnut Hill Emergency Pump Station Design/Construction Administration/Resident Inspection, and DITP Chemical Bulk Storage Tanks Relining.

Please see Attachment E for FY19 Planned Contract Awards.

ATTACHMENTS:

- A. Fiscal Year 2018 Year-End Capital Program Spending Report
- B. FY18 CIP Year-End Variance Report
- C. FY18 Planned versus Actual/Revised CIP Notice to Proceeds
- D. Linear Footage of Rehabilitated or New Pipelines in FY18
- E. FY19 Planned Capital Contract Awards

MASSACHUSETTS WATER RESOURCES AUTHORITY

Capital Program Spending Report

for

Fiscal Year 2018



September 19, 2018

Fiscal Year 2018 Year-End Capital Program Spending Report

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Introduction

Since its inception in 1986, MWRA has expended \$8.3 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 FY18, 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 is currently being updated, 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 \$2.7 billion on system improvements between FY19-FY28 with main emphasis on Asset Protection and Water System Redundancy initiatives including the Metropolitan Tunnels Long-Term Redundancy Project.

MWRA Capital Spending FY1986 - FY2028				
(in millions)				
Program	Expenditures FY86 - FY18		Planned Expenditures FY19 - FY28	
	Amount	% of Total	Amount	% of Total
Wastewater	\$5,913	71%	\$1,445	53%
Waterworks	\$2,280	26%	\$1,219	45%
Business & Operations Support	\$133	2%	\$50	2%
Total MWRA	\$8,326	100%	\$2,715	100%

To date, MWRA has spent \$910.1 million on the Wastewater CSO program and plans to spend an additional \$7.7 million through FY21.

To date, MWRA has distributed \$165.2 million in grants and \$189.0 million in no-interest loans to fund 545 separate projects in 43 communities under the I/I Local Financial Assistance Program. Additionally, \$384.7 million in Local Water Pipeline Assistance Program loans has been distributed to member communities.

FY18 Spending

Total CIP spending in FY18 was \$151.5 million which was \$23.0 million or 13.2% less than the \$174.5 million budgeted.

Spending by program in FY18 was:

Program	FY18 Budget (in millions)	FY18 Actuals (in millions)	Variance	% Variance
Wastewater	\$84.3	\$65.3	(\$19.0)	-22.6%
Waterworks	\$82.7	\$83.0	\$0.3	0.4%
Business & Operations Support	\$7.5	\$3.2	(\$4.3)	-56.8%
Total	\$174.5	\$151.5	(\$23.0)	-13.2%

FY18 included spending of \$26.4 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 FY18, MWRA expended \$41.3 million in water and I/I loans and \$14.3 million in I/I grants offset by \$30.5 million in prior period loan repayments for net spending of \$25.1 million. After accounting for programs which are not directly under MWRA's control, the FY18 CIP underspending is \$17.1 million or 12.0%, as shown in the table below.

Program	FY18 Budget (in millions)	FY18 Actuals (in millions)	Variance	% Variance
Wastewater less I/I and Community CSO	\$63.7	\$50.7	(\$13.0)	-20.4%
Waterworks less Water Loans	\$71.0	\$71.2	\$0.2	0.3%
Business & Operations Support	\$7.5	\$3.2	(\$4.3)	-57.3%
Total	\$142.2	\$125.1	(\$17.1)	-12.0%

FY18 Capital Program Highlights

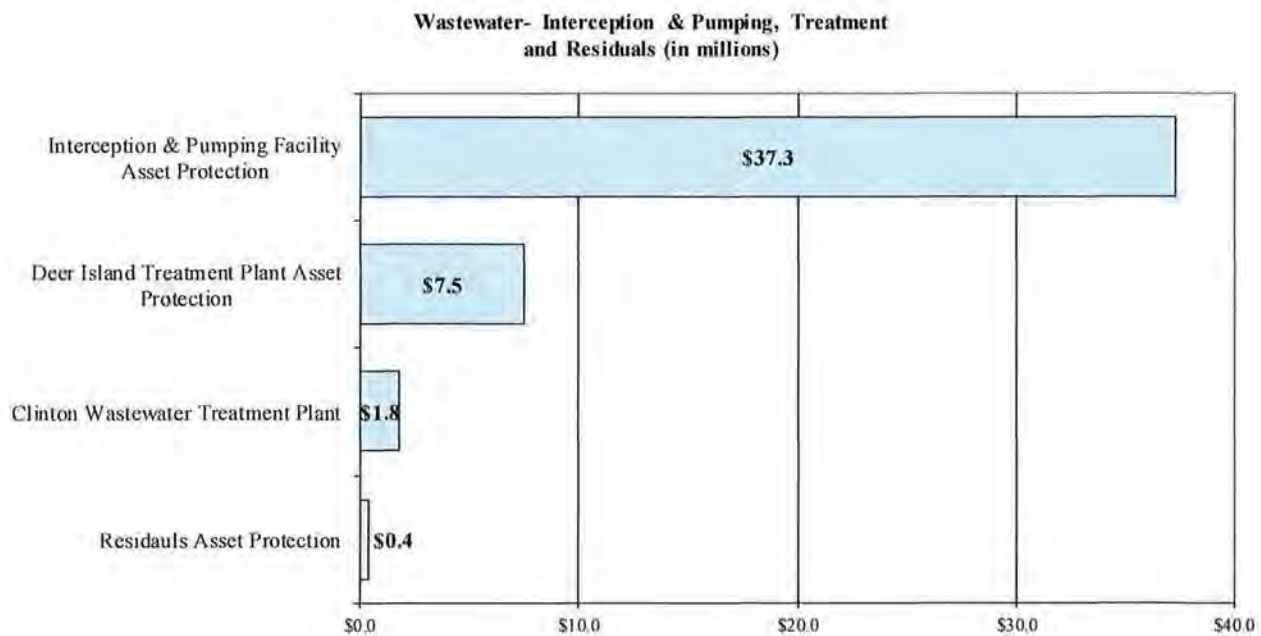
This section highlights the spending and key accomplishments by major program categories and projects.

Wastewater System

During FY18, the MWRA spent \$65.3 million on Wastewater system projects: \$40.4 million for Interception & Pumping projects, \$9.3 million for Treatment projects, \$0.4 million for Residuals, \$1.9 million for CSO projects, and \$13.3 million for Other Wastewater projects.

Wastewater Interception & Pumping, Treatment, and Residuals Projects

Total FY18 spending for Interception & Pumping was \$40.4 million, Treatment was \$9.3 million, and Residuals was \$0.4 million. The largest spending occurred on the following:



Key Accomplishments in Wastewater - Interception and Pumping:

- Interceptor Renewal 1 Reading Extension Sewer Construction
 - NTP issued in August 2017
- Quincy/Hingham Pump Stations Fuel Storage Upgrades Construction
 - NTP issued in July 2017 and was substantially complete in March 2018
- DeLauri Pump Station Screens and Security Upgrades
 - NTP issued in February 2018

- Wastewater Central Monitoring Design & Programming Services (1st contract)
 - Contract awarded in April 2018
- Prison Point Piping Rehabilitation
 - Substantially complete in September 2017
- Cambridge Branch 23,24,26,27 Study
 - Substantially complete in January 2018
- Sections 4,5,6,186 Study Winthrop/Boston
 - Substantially complete in May 2018
- Remote Headworks and Deer Island Shaft Study
 - Contract awarded in June 2018
- Chelsea Creek Headworks Upgrades Construction
 - Significant progress was made on project in FY18 – contract 39% complete.
- Alewife Brook Pump Station Rehabilitation Construction
 - Significant progress was made on project in FY18 – contract 73% complete.

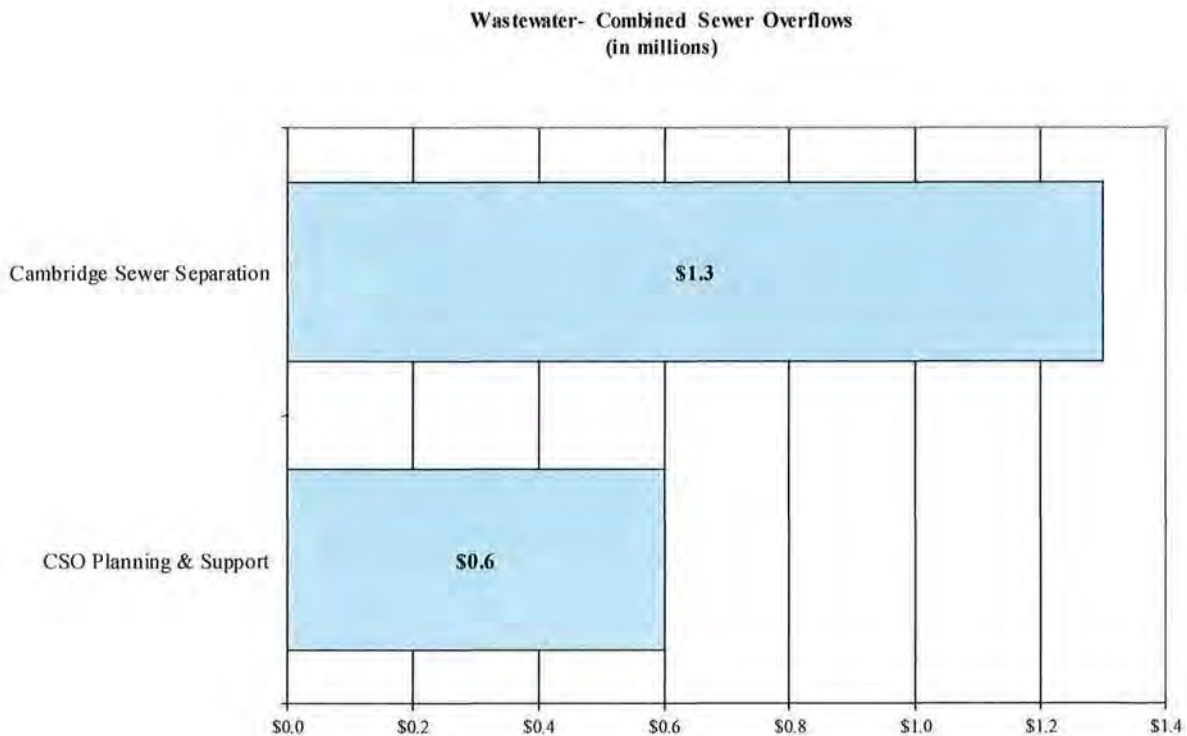
Key Accomplishments in Wastewater – Treatment and Residuals:

- Digester Sludge Pump Replacement Phase 2
 - Substantially complete in July 2017
- Residuals Sludge Tank and Silo Coating
 - NTP was issued in September 2017
- North Main Pump Station and Winthrop Terminal Facility Butterfly Valve Replacement
 - Substantially complete in September 2017
- Immediate Mechanical Improvements Repairs
 - NTP issued in September 2017 and contract completed in May 2018
- Personnel Dock Rehabilitation
 - Substantially complete in October 2017
- Miscellaneous VFD Replacement
 - NTP was issued in October 2017
- Clinton Wastewater Treatment Plant Phosphorus Reduction Construction
 - Substantially completed in March 2018
- Gravity Thickener Rehabilitation

- NTP issued in May 2018
- DITP Winthrop Terminal Facility Variable Frequency Drives Replacement Construction
 - Significant progress was made on project in FY18 – contract 30% complete

Wastewater System – Combined Sewer Overflow (CSO) Projects

Total FY18 spending for CSO projects was \$1.9 million. Of this amount, the community managed projects totaled \$1.3 million and CSO Planning & Support totaled \$0.6 million. The largest spending relates to the Cambridge Sewer Separation contract. It should be noted that community managed CSO projects are included in the CIP based on estimates for the total project costs. Once a project is completed, there is a final cost adjustment. In FY18, final cost adjustments on Cambridge CSO contracts resulted in lower costs than budgeted.



Key Accomplishments in CSO:

- All CSO sewer separation reached substantial completion in FY16 in compliance with Schedule Seven of the Federal Court’s Orders in the 1985 Clean Water Act enforcement action. Work remains in Cambridge for final restoration work through FY18. MWRA is currently required to submit bi-annual compliance and progress reports through December 2020. In addition, the CSO Performance Assessment commenced in November 2017.

Wastewater - Other

In FY18, this category includes spending only for the community managed Infiltration/Inflow (I/I) Local Financial Assistance Program.

In FY18, MWRA distributed \$14.3 million in grants and \$7.4 million in no-interest loans which is offset by repayment of prior-period loans of \$8.4 million resulting in net spending of \$13.3 million.

Waterworks System

During FY18, the MWRA spent \$83.0 million on Waterworks system projects: \$4.0 million for Drinking Water Quality Improvement projects, \$26.2 million for Transmission projects, \$40.9 million for Distribution and Pumping projects, and \$11.9 million for Other Waterworks projects.

Waterworks System – Drinking Water Quality Improvements and Transmission

Total FY18 spending for Drinking Water Quality Improvements and Transmission projects was \$4.0 million and \$26.2 million, respectively. Projects with the largest spending are listed below:



Key Accomplishments in Drinking Water Quality Improvements:

- Carroll Water Treatment Plant Liquid Oxygen Storage Yard Canopy
 - NTP issued February 2018
- Carroll Water Treatment Plant Technical Assistance 8
 - Substantially complete in November 2016
- Carroll Water Treatment Plant Technical Assistance 9 and 10
 - NTP issued June 2018

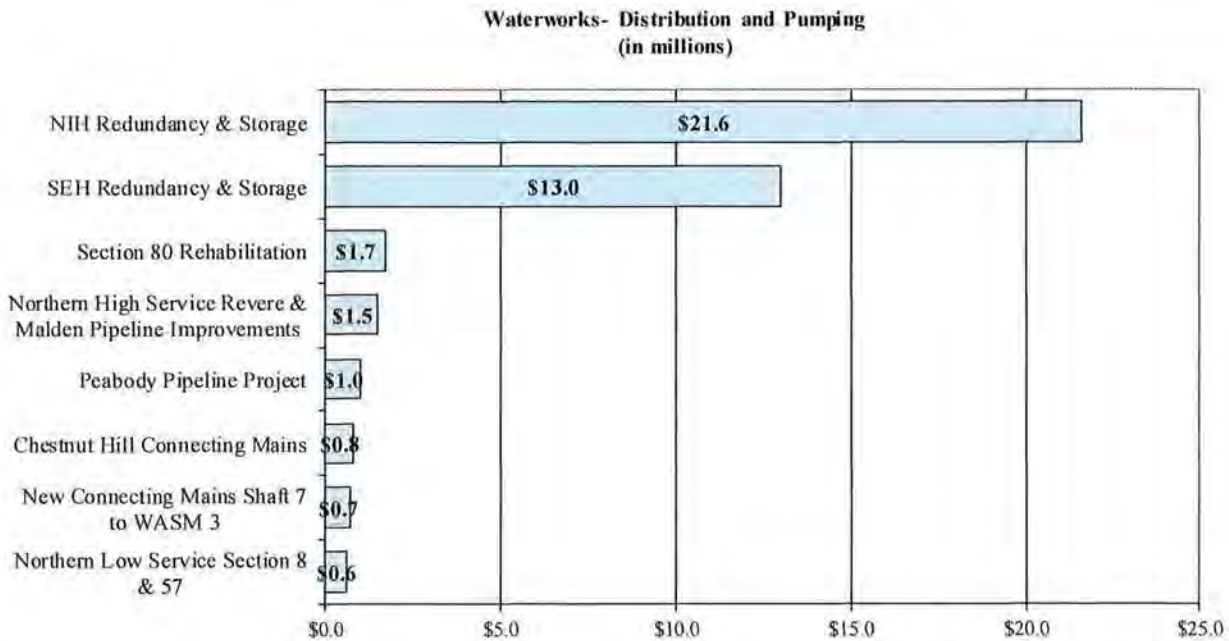
- Marlborough Maintenance Facility
 - Substantial progress was made on project in FY18 – contract 98% complete

Key Accomplishments in Transmission:

- Chicopee Valley Aqueduct Motorized Screens Replacement Construction
 - Substantially completed in August 2017
- Weston Aqueduct Supply Mains/Spot pond Supply Mains Pressure Reducing Valves Design/Construction Administration/Resident Inspection
 - NTP issued June 2018
- Wachusett Aqueduct Pump Station Construction
 - Significant progress was made on project in FY18 - contract 91% complete.

Waterworks System - Distribution and Pumping

Total FY18 spending for Distribution and Pumping projects totaled \$40.9 million. Projects with the largest spending are listed below:



Key Accomplishments in Distribution and Pumping:

- Section 50 & 57 Water & Sections 21/20/19 Sewer Design/Engineering Services During Construction
 - NTP issued July 2017
- Cathodic Protection Testing Evaluation Program

- Substantially completed in August 2017
- Section 14 Water Pipe Relocation (Malden)
 - NTP issued in July 2017 and was substantially complete in May 2018
- Northern Intermediate High Section 89 & 29 Redundancy Construction Phase 2
 - NTP issued in September 2017
- Southern Extra High Redundancy Section 111 Phase 2 Construction
 - NTP issued in October 2017
- Chestnut Hill Gatehouse #1 Repairs Construction
 - NTP issued November 2017 and was substantially completed in April 2018
- Northern Intermediate High Section 89 & 29 Redundancy Construction Phase 1B Construction
 - Substantially completed in March 2018
- Section 89 & 29 Replacement Design/Engineering Services During Construction
 - NTP issued April 2018.
- Northern Intermediate High Section 89 & 29 Redundancy Construction Phase 3
 - Contract was awarded in May 2018
- Section 80 Replacement Construction
 - Substantially completed in June 2018
- Northern Intermediate High Section 89 & 29 Redundancy – Phase 1C Construction
 - Significant progress was made on project in FY18 – contract 87% complete.
- Southern Extra High Redundancy – Section 111 Phase 1 Construction
 - Significant progress was made on project in FY18 – contract 98% complete.

Waterworks – Other

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

In FY18, MWRA distributed \$33.9 million in Local Water Pipeline Assistance Program loans to member communities offset by repayment of prior-period loans of \$22.1 million which resulted in total net receipts of \$11.8 million.

Business & Operations Support

Total FY18 spending for Business and Operations Support totaled \$3.2 million.

Key Accomplishments in Business & Operations Support:

- Technical Assistance Hazardous Materials contracts
 - NTP issued in May 2018
- As-Needed Design Contract 16 and 17
 - NTP issued in June 2018
- Information Technology Infrastructure Backup Upgrades
 - Substantially completed in June 2018
- Maximo Upgrade
 - Significant progress was made on project in FY18 - 93% 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 FY18, the MWRA rehabilitated or constructed 2.4 miles of wastewater pipeline and 4.8 miles 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 FY18.*

FY18 Spending Variances

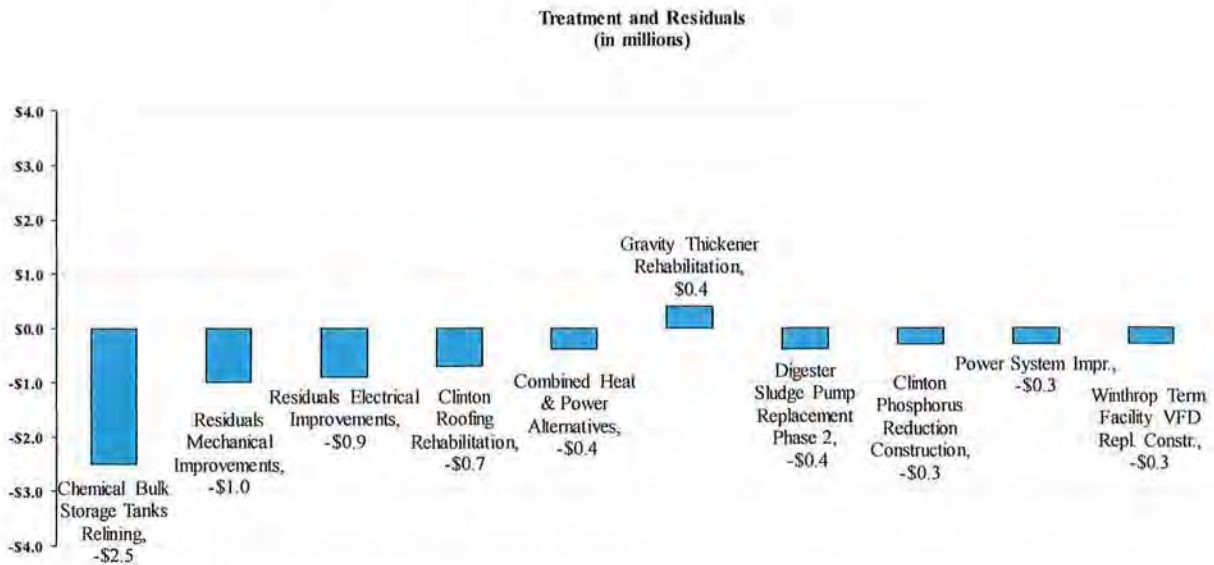
Total FY18 capital spending was \$151.5 million which was \$23.0 million or 13.2% less than the \$174.5 million budget. The variance is primarily due to underspending for the Interception & Pumping Facility Asset Protection, lower community requests for loans and grants for the Infiltration/Inflow (I/I) Local Financial Assistance Program, Deer Island Treatment Plant Asset Protection, Residuals Asset Protection, Winsor Station Pipeline Improvements, and Water Works Facility Asset Protection projects partially offset by Cosgrove Tunnel Redundancy and Northern Intermediate High projects.

Program	Budgeted Spending	Actual Spending	Variance to Budget		% Actual Spending to Total Spending
			\$	%	
Total Wastewater System	\$84,286	\$65,252	(\$19,034)	-22.6%	43%
Interception & Pumping	\$46,799	\$40,351	(\$6,448)	-13.8%	27%
Treatment	\$13,660	\$9,332	(\$4,328)	-31.7%	6%
Residuals	\$2,851	\$404	(\$2,447)	0.0%	0%
Combined Sewer Overflow	\$1,878	\$1,896	\$18	0.9%	1%
Other Wastewater Programs	\$19,097	\$13,268	(\$5,829)	-30.5%	9%
Total Waterworks System	\$82,731	\$83,025	\$294	0.4%	55%
Drinking Water Quality Improvements	\$3,881	\$4,024	\$143	3.7%	3%
Transmission	\$23,594	\$26,184	\$2,590	11.0%	17%
Distribution and Pumping	\$41,767	\$40,881	(\$886)	-2.1%	27%
Other Waterworks Programs	\$13,489	\$11,936	(\$1,553)	-11.5%	8%
Business & Operations Support	\$7,522	\$3,247	(\$4,275)	-56.8%	2%
Total MWRA	\$174,539	\$151,524	(\$23,015)	-13.2%	100%

FY18 Variances for Major Projects

Please see Attachment B for the full FY18 CIP variance explanations by project.

Wastewater – Treatment



Deer Island Treatment Plant Asset Protection:

- Total FY18 Budget: \$11.1 million

- Total FY18 Expended: \$7.5 million
- \$3.6 million less than budgeted spending
 - Underspending on projects totaling \$2.9 million, including
 - \$1.2 million for Chemical Bulk Storage Tanks Relining and \$0.4 million for Combined Heat and Power Energy Alternatives: updated schedules
 - \$0.4 million for Digester Sludge Pump Replacement Phase 2 and \$0.3 million for Power System Improvements: work anticipated in FY18 that was completed in FY17.
 - \$0.3 million for Winthrop Terminal Facility VFD Replacement Construction: timing of delivery of VFDs and motors
 - Offset by overspending totaling \$0.6 million, including:
 - \$0.4 million for Gravity Thickener Rehabilitation: started work including submittals earlier than anticipated.

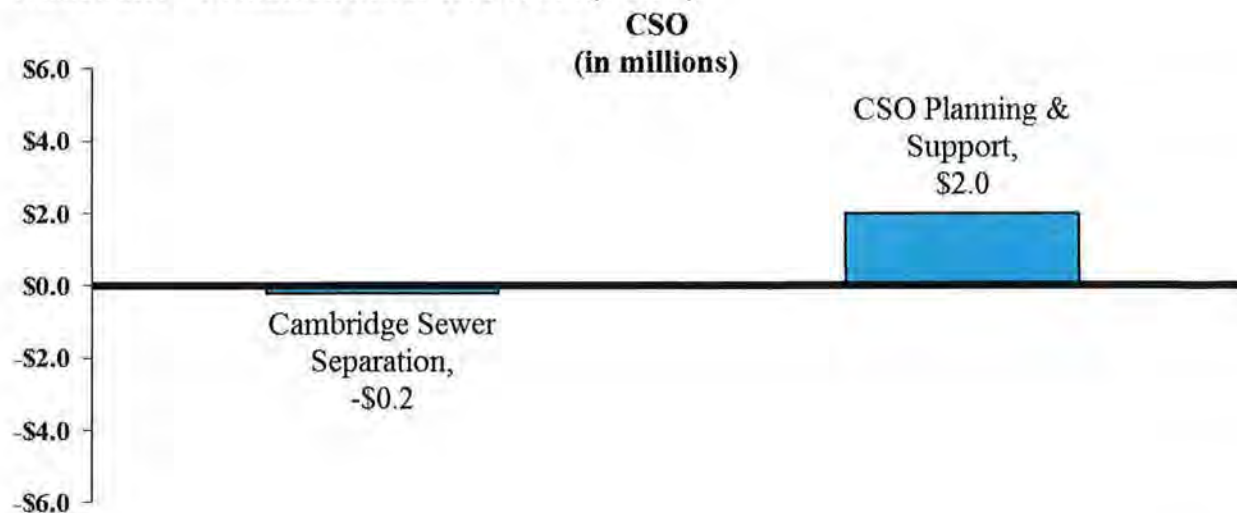
Clinton Wastewater Treatment Plant:

- Total FY18 Budget: \$2.6 million
- Total FY18 Expended: \$1.8 million
- Less than budgeted spending primarily due to updated schedule for the Clinton Roofing Rehabilitation contract of \$0.7 million and \$0.3 million on the Clinton Phosphorus Reduction contract due to time extension for delayed work including performance testing.

Residuals Asset Protection:

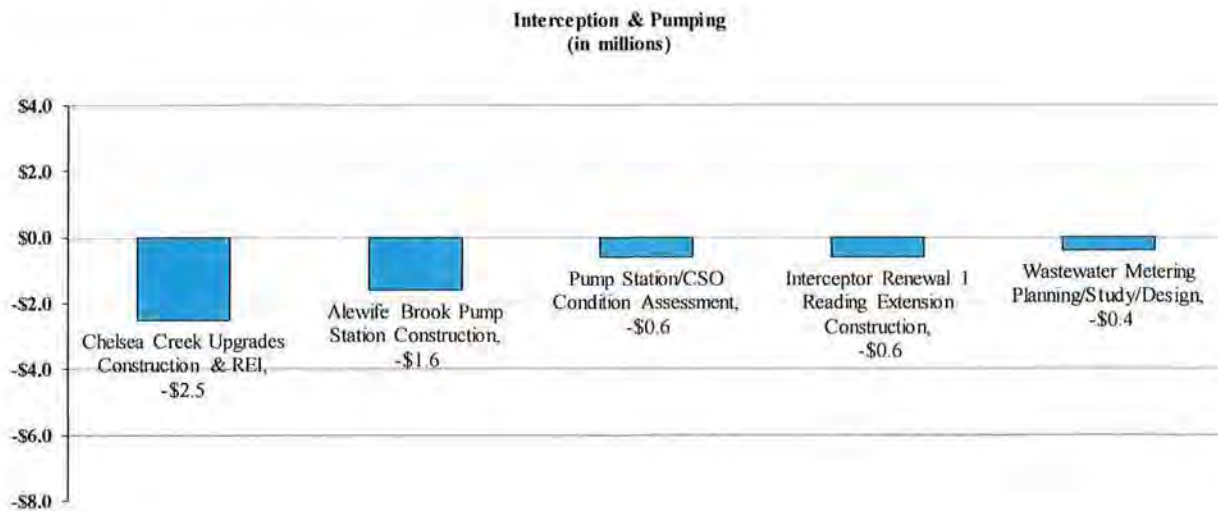
- Total FY18 Budget: \$2.9 million
- Total FY18 Expended: \$0.4 million
- Less than budgeted spending primarily due to updated schedules of \$1.0 million for the Mechanical Improvements and \$0.9 million for the Electrical Improvements.

Wastewater - Combined Sewer Overflows (CSO's)



- Total FY18 Budget: \$1.9 million
- Total FY18 Expended: \$1.9 million
 - \$0.2 million in overspending for CSO Performance Assessment due to consultant progress offset by \$0.2 million for Cambridge Sewer Separation due to updated costs for final restoration work.

Wastewater - Interception & Pumping



- Total FY18 Budget: \$46.8 million
- Total FY18 Expended: \$40.4 million
- \$6.4 million less than budgeted spending
 - Underspending in Interception & Pumping Facility Asset Protection totaling \$5.6 million, including
 - \$2.5 million for Chelsea Creek Upgrades – Construction and Resident Engineering/Inspection: water main and fuel tank installations resulted in delays in Channel 1 work
 - \$1.6 million for Alewife Brook Pump Station Construction: delays related to bypass pumping
 - \$0.6 million for Pump Station/CSO Condition Assessment: updated schedule
 - \$0.6 million for Interceptor Renewal #1 Reading Extension Construction: construction issues with the liner
 - \$0.4 million for Wastewater Metering/Study/Design: contract award being less than budgeted

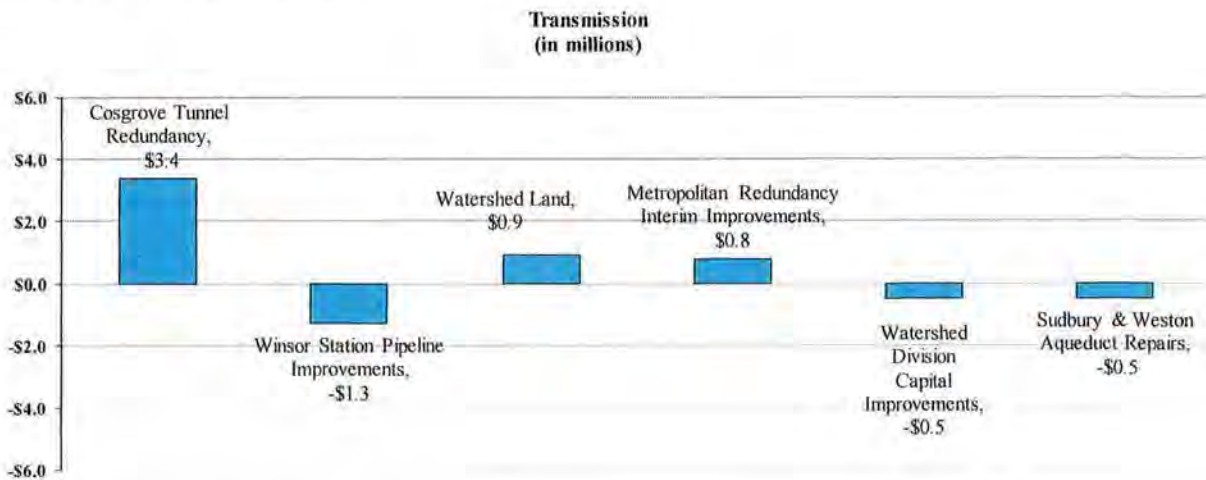
Wastewater - Other

\$5.8 million less than budgeted spending for I/I Local Financial Assistance resulting from \$3.7 million in less than budgeted grant distributions and \$1.9 million in less than budgeted no-interest loans and \$0.2 for repayments for previous loan distributions.

Waterworks - Drinking Water Quality Improvements

- Total FY18 Budget: \$3.9 million
- Total FY18 Expended: \$4.0 million
- \$0.1 million greater than budgeted spending
 - Underspending primarily due to
 - \$0.2 million for Carroll Water Treatment Plant - Existing Facilities Upgrades CP-7 Marlborough Maintenance Facility due to contractor progress partially offset by \$0.1 million for smaller projects.

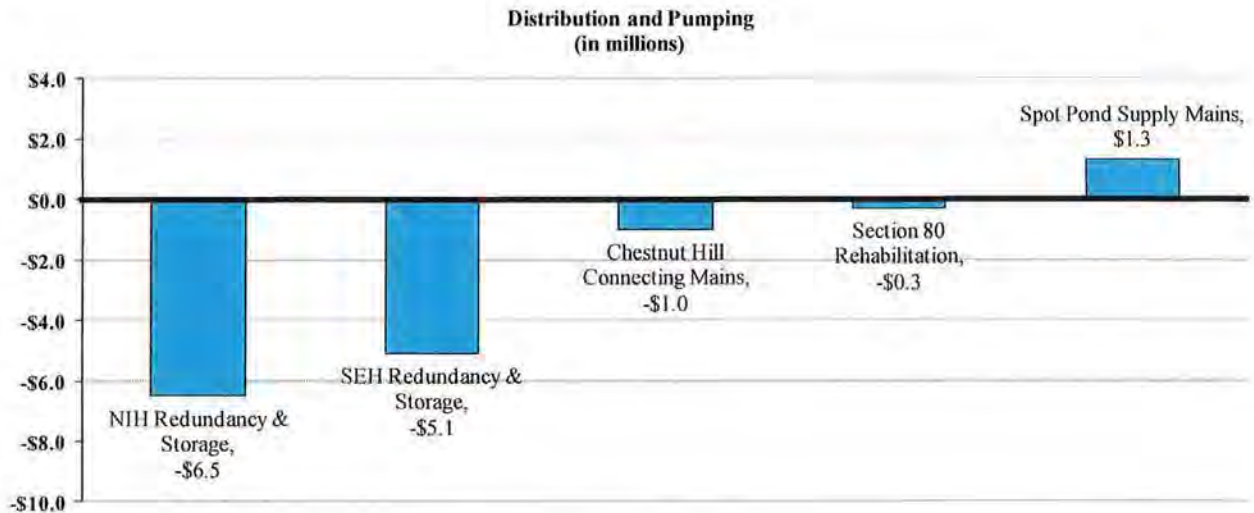
Waterworks – Transmission



- Total FY18 Budget: \$23.6 million
- Total FY18 Expended: \$26.2 million
- \$2.6 million greater than budgeted spending
 - Overspending on various projects, including
 - \$3.4 million for Cosgrove Tunnel Redundancy primarily due to greater than budgeted progress for the Wachusett Aqueduct Pump Station Construction
 - \$0.9 million for Watershed Land due to timing of land purchases
 - \$0.8 million for Metropolitan Redundancy Interim Improvements due to timing of boring work for the WASM 3 MEPA/Design/CA/RI contract project
 - Offset by underspending of \$1.3 million for Winsor Station Pipeline Improvements - Shaft 12 Isolation Gate Design of \$0.4 million due to contract being terminated, \$0.4 million for Quabbin Aqueduct and Winsor Power Station Design due to updated schedule, and \$0.3 million for final cost adjustment for the Fish Hatchery Pipeline Construction contract.
 - \$0.6 million for Watershed Division Capital Improvements for the Maintenance Garage/Washbay/Storage Facility due to delays
 - \$0.5 million for Sudbury & Weston Aqueduct Repairs of which \$0.1 million was for the Evaluation of the Farm Pond Buildings and Waban

Arches due to time extension as well as a FY17 over accrual of \$0.4 million for the Rosemary Brook Building Repair contract.

Waterworks - Distribution and Pumping



- Total FY18 Budget: \$41.8 million
- Total FY18 Expended: \$40.9 million
- \$0.9 million less than budgeted spending
 - Underspending on various projects, including
 - \$2.3 million for Southern Extra High (SEH) Redundancy & Storage Section 111 Phase 3: delay in award due to permit issues
 - \$0.5 million for Section 53 and 99 Design CA/RI: delay in award
 - \$0.4 million for Sections 50 and 57 Water and Sections 21/20/19 Sewer Design due to delay in field assessments due to weather issues
 - \$0.2 million for Chestnut Hill Gatehouse #1 Repairs: contract award being less than budgeted
 - Offset by overspending on various projects, including:
 - \$1.3 million for SEH Redundancy Pipeline Section 111 Phase 1 Construction, \$0.7 million for Northern Intermediate High (NIH) Section 89 & 29 Redundancy Phase 2 Construction, \$0.7 million for SEH Redundancy Pipeline Section 111 Construction Phase 2, \$0.4 million for NIH Section 89 & 29 Redundancy Phase 1B, \$0.2 million for Section 89/29 Redundancy Phase 1C Construction due to contractor progress.

Waterworks - Other

Local Water Pipeline Improvement Loan Program: \$0.1 million more than budgeted spending which resulted from \$0.2 million in higher than projected loan distributions and \$0.1 million in less than projected repayment due to less than projected loans in FY18.

Business & Operations Support

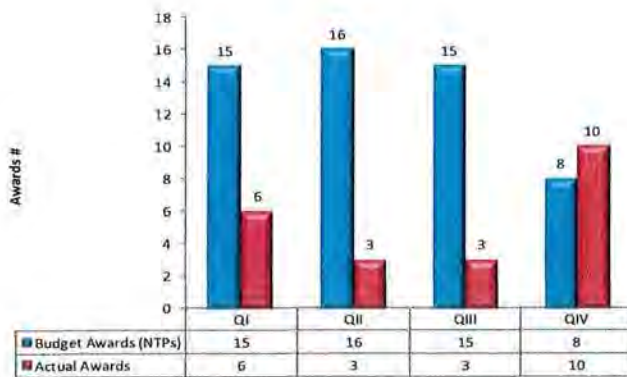
- Total FY18 Budget: \$7.5 million
- Total FY18 Expended: \$3.2 million
- \$4.3 million less than budgeted spending
 - Management Information Systems (combined): \$2.9 million for MIS Projects due to timing of the IT Strategic Plan implementation.
 - Centralized Equipment Purchase: \$1.3 million less than budgeted spending primarily due to delay in award of security equipment contracts.
 - Capital Maintenance Planning/Development: \$0.3 million less than budgeted spending primarily due to lower than projected task order work for As-Needed Design contract 14.
 - The underspending was partially offset by overspending of \$0.3 million due to timing of vehicle purchases

FY18 CIP Contract Awards

The FY18 CIP planned the award of 54 contracts with a value of \$287.5 million. During FY18, the MWRA awarded 22 contracts valued at \$86.5 million, representing 40.7% of contracts and 30% of contract funding. Of the 54 planned awards, 15 contracts were awarded, 28 are expected to be awarded in FY19, 8 have been rescheduled beyond FY19, and 3 are being done in-house or scope moved to another contract. Of the 28 contracts that moved to FY19: 2 were due to permitting issues, 10 due scope changes, 4 due to changes in priorities, and 12 due to bidder issues/outside consultant/contractor delays/additional specification review. In addition to FY18 budgeted awards, 7 contracts were awarded: 1 project Accelerated from in FY18, 4 contracts for work that was broken out from an existing phase of a project, and 2 for new contracts, bringing the total number of contracts awarded in FY18 to 22.

A comparison of the FY18 budgeted contracts and the FY18 actual contract awards are detailed below:

FY18 Contracts (\$ in Millions)				
Program	Budget		Actual	
	#	\$	#	\$
Total MWRA	54	287.5	22	86.5
Wastewater	30	211.1	8	26.7
Waterworks	22	71.9	10	53.9
Business Operations & Support	2	4.5	4	5.9



Please refer to Attachment C for a full listing of contracts planned to be awarded in FY18 and actual awards.

Change Orders Review

Management of change orders remains a top priority. Total change orders for MWRA-managed active capital projects were 5.2% of award value through June 2018. This percentage is within the target of 10% for change orders as a percentage of awards.

Master Plan and the FY18 CIP Process

To arrive at the FY18 Final CIP, the Authority identified the needs of the programs taking into account the recommendations of the Master Plan. The long-term strategy for capital work is identified in the Authority’s Master Plan which was published in 2006, updated in 2013, and latest master plan is expected to be completed by the end of 2018. The Master Plan serves as a road map for inclusion of projects in the CIP in every budget cycle. In FY18, two new projects were added from the Master Plans.

The updated Master Plans will be focused on capital needs over the next 40-years and are intended to be the principal framework for annual capital planning. The Plans will focus on projects that require capital spending during the next two 5-year CIP cap cycles: FY19-23 and FY24-28. Potential capital needs during the next 10-year (FY29-38) and 20-year (FY39-53) planning periods will also be identified.

FY18 Final FY14-18 Base-Line Cap

The Final FY14 CIP established the FY14-18 Base-Line Cap budget at \$791.7 million, with projected capital expenditures of \$718.0 over five years. This was the third five-year Cap established by the Authority since FY04 and is significantly lower than the prior two five-year Cap periods which each exceeded \$1.1 billion. 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	

FY18 was the final year of the Base-Line Cap and the FY18 budget anticipated five-year Cap period expenditures of \$617.0, or 14.1% less than the five-year Base-Line Cap expenditures.

The Final FY18 CIP budget included in addition to FY14-18 capital expenditures of \$617.0 million, contingency of \$17.1million offset by \$82.3 million in Community Loan Program Support and \$7.9 million in Chicopee Valley Aqueduct adjustments. The total Final FY18 projected FY 14-18 Cap spending of \$543.9 million was \$173.0 million or 21.9% less than the Base-Line Cap. \$82.3 million of the underspending is due to redefining the Cap in FY15 at the recommendation of the Advisory Board by excluding the Community Financial Assistance programs.

FY18 Final		FY14	FY15	FY16	FY17	FY18	Total FY14-18
	Projected Expenditures	\$102.2	\$103.6	\$95.1	\$141.2	\$174.9	\$617.0
Contingency	0.0	0.0	0.0	7.3	9.8	17.1	
Inflation on Unawarded Construction	0.0	0.0	0.0	0.0	0.0	0.0	
Less: I/I Program	0.0	(17.5)	(13.6)	(18.4)	(19.1)	(68.6)	
Less: Water Loan Program	0.0	1.4	5.3	(8.7)	(11.7)	(13.7)	
Less: Chicopee Valley Aqueduct Projects	(5.6)	(1.2)	(0.4)	(0.1)	(0.6)	(7.9)	
FY18 Proposed FY14-18 Spending	\$96.6	\$86.3	\$86.4	\$121.3	\$153.4	\$543.9	

The FY18 Final CIP budget complies with the overall Base-Line Cap requirement.

FY19-23 Cap Spending

MWRA spending during the FY19-23 timeframe is planned to be \$984.8 million, with additional spending of \$123.2 million for the community I/I loan and grant program and \$32.4 million for the community water pipeline loan program.

Annual cash flows for the FY19-23 cap period are shown below in millions:

FY19 Final		FY19	FY20	FY21	FY22	FY23	Total FY19-23
	Projected Expenditures	\$179.20	\$276.10	\$251.30	\$194.90	\$150.40	\$1,051.80
I/I Program	-19.2	-25.7	-24.3	-27.9	-26.1	-123.2	
Water Loan Program	-8.3	-8.4	-7.2	-5.6	-2.8	-32.4	
MWRA Spending	151.7	241.9	219.7	161.4	121.4	\$896.2	
Contingency	9.9	15.9	14.5	11	8.2	59.4	
Inflation on Unawarded Construction	0.7	5	7.8	7.2	8.5	29.3	
Chicopee Valley Aqueduct Projects	0	0	0	0	0	0	
FY19 Final FY19-23 Spending	\$162.30	\$262.80	\$242.00	\$179.60	\$138.10	\$984.8	

FY19 Outlook Based on FY19 CIP

Looking ahead to FY19, the projected capital spending is \$189.1 million including contingency of \$9.9 million. Projects with the largest budgeted spending in FY19 include Facility Asset Protection of \$38.0 million, Deer Island Treatment Plant Asset Protection of \$20.1 million Infiltration/Inflow Local Financial Assistance of \$19.2 million, Southern Extra High Redundancy and Storage of \$16.9 million, Northern Intermediate High Redundancy and Storage of \$16.1 million, and Waterworks Facility Asset Protection of \$11.0 million.

In FY19, 55 contracts or phases of projects with a total budget of \$405.7 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 Deer Island Treatment Plant (DITP) Clarifier Rehabilitation Phase 2 Construction, DITP HVAC Equipment Replacement Construction, Nut Island Odor Control HVAC Improvements Construction, Prison Point Rehabilitation Construction, DITP Fire Alarm System Construction, New Connecting Mains Shaft 7 to WASM 3 CP3 Sections 23,24,47 Rehabilitation, Peabody Pipeline Construction, DITP Motor Control Center & Switchgear Replacement Construction, Metropolitan Tunnel Redundancy Conceptual Design Environmental Impact Report, Commonwealth Avenue Pump Station Improvements Construction, Chestnut Hill Emergency Pump Station Design/Construction Administration/Resident Inspection, and DITP Chemical Bulk Storage Tanks Relining. *Please see Attachment E for FY19 Planned Contract Awards.*

**ATTACHMENT B
FY18 CIP Year-End Variance Report (000s)**

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Treatment	\$13,660	\$9,332	(\$4,328)	-31.7%	<u>Underspending</u> Chemical Bulk Storage Tanks Relining: \$1.2M (scope and schedule changes) Digested Sludge Pump Replacement - Phase 2: \$396k and Power System Improvements - Construction: \$311k (for work scheduled for FY18 performed in FY17) Clinton Wastewater Treatment Plant Phosphorus Reduction - Construction: \$296k (six-month time extension due to delays including preliminary testing) WTF VFD Replacement - Construction: \$270k (custom manufactured with long lead times and timing of installation) Clinton Roofing: \$660k, Combined Heat & Power Alternatives Study: \$415k, Expansion Joint Repair - Construction 3: \$224k, Future South System Pump Station VFD Replacements- Design: \$171k, and Gas Protection System Replacement: \$167k, (schedule changes) Fish Pier Safety Systems: \$142k (project moved to MWRA security program) Motor Control Center Switchgear Replacement - Design/ESDC/REI: \$129k (consultant behind schedule) <u>Offset Overspending</u> Gravity Thickener Rehab: \$408k (contractor progress) Phosphorus Removal - Design/ESDC: \$323k (due to amendment for additional work and time extension) Personnel Dock Rehab: \$156k (additional rehab work required)
Residuals	\$2,851	\$404	(\$2,447)	-85.8%	Mechanical Improvements and Electrical improvements: \$2.0M (delay in contract awards) Sludge Tank & Silo Coating: \$250k (commencement of work delayed) Pellet Piping Relocation: \$167k (schedule change)
CSO	\$1,878	\$1,896	\$18	0.9%	<u>Underspending</u> Cambridge Sewer Separation: \$198k (updated cost for final restoration work) <u>Offset Overspending</u> CSO Performance Assessment: \$266k (consultant progress greater than planned)
Other Wastewater	\$19,097	\$13,268	(\$5,829)	-30.5%	<u>Underspending</u> I/I Local Financial Assistance: \$5.8M (less than budgeted requests for grants and loans)
Total Wastewater	\$84,286	\$65,252	(\$19,034)	-22.6%	

**ATTACHMENT B
FY18 CIP Year-End Variance Report (000s)**

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Waterworks					
Drinking Water Quality Improvements	\$3,881	\$4,024	\$143	3.7%	<u>Overspending</u> Marlborough Maintenance Facility: \$632k (contractor progress) <u>Offset Underspending</u> Miscellaneous contracts totaling \$407k
Transmission	\$23,594	\$26,184	\$2,590	11.0%	<u>Overspending</u> Wachusett Aqueduct Pump Station - Design/ESDC and Construction: \$3.4M (due to project progress) Watershed Land Acquisition: \$864k (timing of land purchases) WASM 3 - MEPA/Design/CA/RI: \$811k (field work scheduled for FY17 performed in FY18) <u>Offset Underspending</u> Shaft 12 Isolation Gates - Design/CA/RI: \$417k (preliminary design report indicates construction costs to be greater than anticipated and therefore project to be reevaluated) Hatchery Pipeline - Design/ESDC/RI and Construction: \$463k (reconciliation of final costs) Maintenance Garage/Wash Bay/Storage Building: 460k (construction contract not yet awarded) CVA Motorized Screens Replacement - Construction: \$208k (work scheduled for FY18 performed in FY17) Quabbin Aqueduct and Winsor Power Station - Final Design/CA/RI: \$400k (schedule change) Evaluation of Farm Pond Buildings & Waban Arches: \$132k (project is substantially complete and will be less than budgeted.

ATTACHMENT B
FY18 CIP Year-End Variance Report (000s)

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Distribution & Pumping	\$41,767	\$40,881	(\$886)	-2.1%	<u>Overspending</u> NIH Section 89/29 Redundancy Phase 1B and 1C and Phase 2 : \$1.2M, SEH Redundancy Pipeline Section 111 Phase 1 - Construction: \$1.3M, and Redundancy Pipeline Section 111 Phase 2 - Construction: \$645k (all due to project progress) Section 14 Water Pipe Relocation (Malden): \$232k (additional change order work) <u>Offset Underspending</u> SEH Redundancy Pipeline Section 111 Phase 3 - Construction: \$2.3M (contract award later than anticipated) Sections 53 and 99 Connection -Design/CA/RI: \$533k (schedule change) Chestnut Hill Gatehouse No. 1 Repair - Construction: \$200k (award less than budget) Sections 50 & 57 Water & 19/20/21 Sewer Rehab - Design/ESDC: \$366k (delay in field testing due to weather. Work has resumed.) Sections 89 & 29 Rehab - Design: \$158k (schedule shift) Sections 23, 24, 47 Rehab - Final Design/CA/RI: \$144k (Delay due to coordination of field work to determine pipe condition and establish test pits.)
Other Waterworks	\$13,489	\$11,936	(\$1,553)	-11.5%	<u>Underspending</u> CWTP SCADA Upgrades - Design, Programming/REI: \$500k, and Cosgrove Intake Roof Replacement: \$450k (schedule change) Steel Tank Improvements - Design/CA/RI: \$470k (due to schedule shift) Quabbin Power, Communication & Security - Design: \$150k (due to timing) Quabbin Power, Communication & Security - Construction: \$122k (partially due to reimbursement from DCR Office of Watershed Management for work at boat cove)
Total Waterworks	\$82,731	\$83,025	\$294	0.4%	

**ATTACHMENT B
FY18 CIP Year-End Variance Report (000s)**

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Business & Operations Support					
Total Business & Operations Support	\$7,522	\$3,247	(\$4,275)	-56.8%	<u>Underspending</u> Security Equipment: \$1.5M (delay in implementing equipment initiatives) MIS Projects: \$2.9M (timing of IT Strategic Plan implementation) <u>Offset Overspending</u> Vehicle Purchases: \$261k (timing of vehicle purchases) Fish Hatchery Pipeline Hydroelectric: \$199k (reconciliation of final cost)
Total MWRA	\$174,539	\$151,524	(\$23,015)	-13.2%	

ATTACHMENT C
FY18 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Project	Contract No.	Subphase	Notice to Proceed	FY19 Final Notice to Proceed	Total Contract Amount	Award Amount	Vendor	Schedule Change Reason Code*
Residuals Asset Protection	7153	Mechanical Improvements	Jul-17	Jun-18	\$ 2.0			3 & 7
DI Treatment Plant Asset Protection	7131	Misc. VFD Replacement Construction	Jul-17	Oct-17	5.3	0.5	U.S. Electrical Services, inc.	1
NHS - Revere & Malden Pipeline Improvements	6957	Sect 14 Water Pipeline Relocate (Malden)	Jul-17	Jul-17	1.3	1.4	Albanese Brothers, Inc.	1
Northern Low Service Rehabilitation Section 8	7540	Sec 57 Water & 21/20/19 Sewer Design/Engineering Services During Construction/Resident Engineer Inspection	Jul-17	Jul-17	5.8	6.0	Weston & Sampson Engineers, Inc.	1
SEH Redundancy & Storage	7504	Redundancy Pipeline Section 111 - Construction 2	Jul-17	Oct-17	15.2	17.2	P. Gioioso and Sons, Inc.	1
Residuals Asset Protection	7151	Sludge Tank & Silo Coating	Aug-17	Sep-17	0.8	0.6	Soep Painting Corp.	1
Applications Improvements Program	7438	Enterprise Content Mgmt	Sep-17	Jul-18	4.0			3 & 5
Information Security Program ISP	7440	Electronic Security Plan Implementation	Sep-17	Jan-20	0.5			6
Facility Asset Protection	7237	Headworks Effluent Shaft - Study	Sep-17	Jul-18	0.5	1.4	Mott MacDonald, LLC	1
Facility Asset Protection	7551	Wiggins Term Pump Station Design	Sep-17	Nov-18	0.5			3 & 5
Facility Asset Protection	7553	Fuel Oil Tank Replacement Design	Sep-17	Deleted/Scope moved to another contract	1.5			2
Residuals Asset Protection	7152	Electrical Improvements	Sep-17	Jul-18	2.2			3 & 7
Clinton Wastewater Treatment Plant	7450	Clinton Roofing Rehabilitation	Sep-17	Jun-18	1.2			3 & 7
Chestnut Hill Connecting Mains	7382	Chestnut Hill Gatehouse # 1 Repair Construction	Sep-17	Nov-17	1.0	0.8	T Ford Comp.	1

**ATTACHMENT C
FY18 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Contract No.	Subphase	Notice to Proceed	FY19 Final Notice to Proceed	Total Contract Amount	Award Amount	Vendor	Schedule Change Reason Code*
Waterworks Facility Asset Protection	7022	Cosgrove/Gillis Pump Station/Cottage Farm CSO Flat Roof Replacement (Cosgrove only)	Sep-17	Aug-18	0.9			3 & 5
CSO Support	7572	CSO Performance Assessment	Oct-17	Nov-17	3.0	2.9	AECOM Technical Services, Inc.	1
Braintree-Weymouth Relief Facilities	7326	Mill Cove Siphon Sluice Gates - Design	Oct-17	Apr-24	0.8			5
Corrosion & Odor Control	7365	NI Mechanical & Electrical Upgrades Design/Construction Administration/Resident Engineering Inspection	Oct-17	Jul-23	1.6			6
Facility Asset Protection	7361	DeLauri Pump Station Screens Gates Valves & Security	Oct-17	Feb-18	1.1	1.3	Daniel O'Connell's Sons, Inc.	1
DI Treatment Plant Asset Protection	6880	Cathodic Protection - Design/Engineering Services During Construction	Oct-17	Deleted/Scope moved to another contract	1.4			2
DI Treatment Plant Asset Protection	6963	Combined Heat and Power Alternatives Study	Oct-17	Jan-19	0.8			3 & 7
DI Treatment Plant Asset Protection	7449	Chemical Bulk Storage Tanks Relining	Oct-17	Jun-18	5.0			3 & 7
NIH Redundancy & Storage	7116	Section 89 & 29 Replacement - Design/ESDC	Oct-17	Apr-18	3.2	3.9	Stantec Consulting Services	1
SEH Redundancy & Storage	7505	Redundancy Pipeline Section 111 - Construction 3	Oct-17	Jun-18	10.0	19.4	RJV Construction Corp.	1
Watershed Division Capital Improvements	7569	Quabbin Administration Building Conceptual Design Report	Oct-17	Oct-19	0.2			6
DI Treatment Plant Asset Protection	7167	Gas Protection System Replacement	Nov-17	Sep-18	2.0			3 & 5

**ATTACHMENT C
FY18 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Contract No.	Subphase	Notice to Proceed	FY19 Final Notice to Proceed	Total Contract Amount	Award Amount	Vendor	Schedule Change Reason Code*
NHS - Revere & Malden Pipeline Improvements	7485	Sect 53 and 99 Connections-Design Construction Administration/Resident Inspection	Nov-17	Oct-18	5.2			3 & 5
Central Monitoring System	7581	CWTP SCADA Upgrades Design Programming Resident Engineering	Nov-17	Jan-19	2.2			3 & 7
Facility Asset Protection	7162	Pump Stations & CSOs Condition Assessment	Dec-17	Aug-19	3.3			5
Residuals Asset Protection	7173	Pellet Piping - Relocate	Dec-17	Sep-18	3.0			3 & 7
Clinton Wastewater Treatment Plant	7372	Valves & Screw Pumps Replacement	Dec-17	Dec-18	1.5			3 & 5
July 2017 - December 2017		31 Contracts Planned			\$ 87.0	\$ 55.5		
Braintree-Weymouth Relief	7435	B/W Improvements - Design/Construction Services/Resident Inspection	Jan-18	Sep-18	0.8			3 & 5
Wastewater Central Monitoring	7578	Design & Programming Services (first phase)	Jan-18	Apr-18	3.5	\$0.2	Overture Partners, LLC	1
Facility Asset Protection	7515	Interceptor Renewal 5 Milton - NNVS Design Construction Administration/Resident Inspection	Jan-18	Sep-23	2.0			5
DI Treatment Plant Asset Protection	7094	HVAC Equipment Replacement Resident Engineering Inspection	Jan-18	Aug-18	2.0			3 & 7
DI Treatment Plant Asset Protection	7110	HVAC Equipment Replacement - Construction	Jan-18	Aug-18	38.8			3 & 7
DI Treatment Plant Asset Protection	7126	South System Pump Station VFD Replacement Design/Engineering Services During Construction	Jan-18	Feb-19	4.8			3 & 5
South Spine Distribution Mains	7155	Section 22 North - Facility Plan/Environmental Impact Report	Jan-18	Jan-19	1.0			3 & 6
Carroll Water Treatment Plant	7543	Technical Assistance 9	Jan-18	Jun-18	0.6	1.0	Hazen and Sawyer	1

**ATTACHMENT C
FY18 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)**

Project	Contract No.	Subphase	Notice to Proceed	FY19 Final Notice to Proceed	Total Contract Amount	Award Amount	Vendor	Schedule Change Reason Code*
Carroll Water Treatment Plant	7544	Technical Assistance 10	Jan-18	Jun-18	0.6	1.0	Stantec Consulting Services, Inc.	1
Waterworks Facility Asset Protection	6832	Steel Tank/Impr Des CA/RI	Jan-18	Feb-19	3.0			3 & 5
Winsor Station Pipeline Improvements	7460	Winsor Power Station Final Design/Construction Administration/Resident Inspection	Jan-18	Jan-24	4.4			6
Watershed Division Capital Improvements	7577	Maintenance Garage/Wash Bay/Storage Building Construction	Jan-18	Jan-18	2.3			3 & 7
DI Treatment Plant Asset Protection	6705	Expansion Joint Repair - Construction 3	Mar-18	Sep-19	2.0			6
NHS - Revere & Malden Pipeline Improvements	7536	Sec 56 Pipe Demolition Construction	Mar-18	Jan-19	0.6			3 & 4
Metro Tunnel Redundancy	7159	Conceptual Design Engineering Impact Report	Mar-18	Jan-19	7.5			3 & 5
DI Treatment Plant Asset Protection	6723	Eastern Seawall Design/Engineering Services During Construction/Resident Engineering Inspection	Apr-18	Apr-19	0.7			3 & 6
DI Treatment Plant Asset Protection	7428	Gravity Thickener Rehabilitation	Apr-18	May-18	16.9	19.6	Walsh Construction Company	1
NHS - Revere & Malden Pipeline Improvements	7454	Section 56 Replacement/Saugus Design Construction Administration/Resident Inspection	Apr-18	Jan-19	2.0			3 & 4
New Connect Mains-Shaft 7 to WASM 3	6955	Replacement Section 25, 75, 59 & 60 Design Construction Administration/Resident Inspection	Apr-18	Oct-18	3.0			3 & 6
Wastewater Central Monitoring	7580	Equipment/Hardware	Apr-18	Jun-18	2.1			3 & 6

ATTACHMENT C
FY18 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Project	Contract No.	Subphase	Notice to Proceed	FY19 Final Notice to Proceed	Total Contract Amount	Award Amount	Vendor	Schedule Change Reason Code*
Metropolitan Redundancy Interim Improvements	7560	Tops of Shafts Design/Construction Administration/Resident Inspection	Apr-18	Jul-18	1.6			3 & 7
DI Treatment Plant Asset Protection	7395	Clarifier Rehabilitation Phase 2 - Construction	Jun-18	Nov-18	100.0			3 & 7
Sudbury/Weston Aqueduct Repairs	7491	Weston Aqueduct Sluice Gates - Design	Jun-18	Deleted/Scope moved to another contract	0.4			2
January 2018 - June 2018		23 Contracts Planned			\$ 200.4	\$ 21.8		
Total FY18		54 Contract Awards Planned			\$ 287.5			

Unplanned Awards

Residuals Asset Protection	7153A	Mechanical Improvements		Sep-17		\$ 0.1	IPC Lydon, LLC	1
Carroll Water Treatment Plant	7085G	Liquid Oxygen Storage Yard Canopy		Feb-18		\$ 0.3	D&C Construction Co., Inc.	1
Capital Maintenance and Planning	7498	As-Needed Design Contract 16		Jul-18		\$ 2.5	Hazen & Sawyer	1
Capital Maintenance and Planning	7604	As-Needed Design Contract 17		Jul-18		\$ 2.5	Kleinfelder Northeast	1
Technical Assistance	605TA	Hazardous Materials		May-18		\$ 0.5	Geosphere Environmental Management	1
Technical Assistance	606TA	Hazardous Materials		May-18		\$ 0.5	Green Seal Environmental	1
Metropolitan Redundancy Interim Improvements	7575	Low Service Pressure Reducing Valve Improvements Design/ESDC	Jul-18	Jun-18	\$ 2.1	\$ 2.8	Green Seal Environmental	1
Total Unplanned Awards		7 Unplanned Contract Awards				\$ 9.2		
Total Awards July 2017-June 2018	22 contracts awarded					\$ 86.5		

Note: Contracts Bolded were awarded

ATTACHMENT C
FY18 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

*** Reason Codes:**

1. NTP issued in FY18.
2. Project/Phase eliminated or being performed in-house; or phase completed but on hold.
3. NTP expected in FY19
4. Schedule change due to permitting.
5. Scope changes.
6. Changes in priorities.
7. Bidder Issue/Outside Design Delay/Contractor issue/Additional specification review

ATTACHMENT D

**Linear Footage Of Rehabilitated Or New Pipelines
FY18 (July 2017-June 2018)**

	<u>Contract #</u>	<u>Type</u>	<u>Linear Feet</u>
<u>WASTEWATER PROJECTS</u>			
Reading Extension Sewer Rehabilitation	7164	Rehab	11,642
Chelsea Creek Headworks Upgrades	7161	New	760
Prison Point Piping Rehabilitation	7459	Rehab	158
Alewife Brook Pump Station Rehabilitation	6797	New	70
<u>WATERWORKS PROJECTS</u>			
NIH Section 110 & 112 Phase 1C	7478	New	7,214
NIH Section 110 Phase 2	7067	New	2,061
SEH Section 111 CP-1	6454	New	6,506
		Rehab	1,000
SEH Section 111 CP-2	7504	New	5,239
		Rehab	1,453
Wachusett Aqueduct Pump Station	7157	New	1,000
Section 14 Malden Relocation	6957	New	400
Section 80 Replacement	7532	New	217
Marlborough Maintenance Facility	6650B	New	16

TOTAL PIPELINE REHABILITATED OR CONSTRUCTED IN FY18

	<u>Linear Feet</u>	<u>Miles</u>
Wastewater Projects	12,630	2.4
Water Projects	<u>25,106</u>	<u>4.8</u>
Total	37,736	7.1

ATTACHMENT E
FY19 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Program / Project	Contract No.	Subphase	Notice to Proceed	Total Contract Amount
Applicat Improvements Program	7286	Lawson Enhancements	Jul-18	\$2.7
Applicat Improvements Program	7438	Enterprise Content Management	Jul-18	\$1.3
Information Technology Management Program	7408	IT Project Management Methodology	Jul-18	\$0.2
Facility Asset Protection	7237	Remote Hdwks & DI Shaft Study	Jul-18	\$0.8
Residuals Asset Protection	7152	Electrical Improvements	Jul-18	\$2.2
Waterworks Facility Asset	7634	Paint Bellevue II and Turkey Hill Tanks	Jul-18	\$5.7
Dam Projects	7614	Sudbury/Foss Dam Design Construction Administration/Resident Inspection	Jul-18	\$0.2
Metropolitan Redundancy Interim Improvements	7560	Tops of Shaft Design/Construction Administration/Resident Inspection	Jul-18	\$2.2
Metropolitan Redundancy Interim Improvements	7575	Weston Aqueduct Supply Mains/Spot Pond Supply Mains Pressure Reducing Valves Design/Construction Administration/Resident Inspection	Jul-18	\$4.2
DI Treatment Plant Asset Protection	7094	HVAC Equipment Replacement Resident Engineering Inspection	Aug-18	\$2.0
DI Treatment Plant Asset Protection	7110	HVAC Equipment Replacement - Construction	Aug-18	\$40.2
766 Waterworks Facility Asset Protection	7022	Cosgrove Intake Roof Replacement	Aug-18	\$0.6
Capital Maintenance Planning & Support	7629	As-Needed Construction Services/Resident Engineering Inspection Contract 1	Sep-18	\$1.5
Capital Maintenance Planning & Support	7630	As-Needed Construction Services/Resident Engineering Inspection Contract 2	Sep-18	\$1.5
Braintree-Weymouth Relief Facilities	7435	B/W Improvements - Design/Construction Services/Resident Inspection	Sep-18	\$1.9
Residuals Asset Protection	7173	Pellet Piping - Relocate	Sep-18	\$3.0
DI Treatment Plant Asset Protection	7167	Gas Protect System Replacement Phase 1	Sep-18	\$1.0
DI Treatment Plant Asset Protection	7373	Gravity Thickener Overflow Pipe Replacement	Sep-18	\$1.5

ATTACHMENT E
FY19 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Program / Project	Contract No.	Subphase	Notice to Proceed	Total Contract Amount
Waterworks Facility Asset Protection	6888	Gillis PS/CF Roof Replacement	Sep-18	\$0.4
Waterworks Facility Asset Protection	7025	Generator Docking Station	Sep-18	\$0.8
NHS - Revere & Malden Pipeline Improvements	7485	Sect 53 and 99 Connection-Design Construction Administration/Resident Inspection	Oct-18	\$4.8
New Connect Mains-Shaft 7 to WASM 3	6955	Repl Sect 25, 75, 59 & 60 Design Construction Administration/Resident Inspection	Oct-18	\$2.7
Waterworks Facility Asset Protection	7542	Water Meter Upgrade Design Construction Administration/Resident Inspection	Oct-18	\$0.2
Metropolitan Redundancy Interim Improvements	7574	Chestnut Hill Emergency Pump Station Design/Construction Administration/Resident Inspection	Oct-18	\$6.7
Facility Asset Protection	7421	Sections 4, 5, 6, 186 - Design Construction Administration/Resident Inspection	Nov-18	\$1.7
Facility Asset Protection	7551	Wiggins Term Pump Station Design	Nov-18	\$0.5
DI Treatment Plant Asset Protection	7395	Clarifier Rehabilitation Phase 2 - Construction	Nov-18	\$129.9
Corrosion & Odor Control	7548	Nut Island Odor Ctrl HVAC Improvements Construction Phase 2	Dec-18	\$38.2
Clinton Wastewatr Treatment Plant	7372	Valves & Screw Pumps Replacement	Dec-18	\$1.9
July 2017 - December 2017		29 Contracts Planned		\$260.6
MWRA Facilities Management	6983	Design/Engineering Services	Jan-19	\$0.2
Siphon Structure Rehabilitation	6224	Design/Construction Services/Resident Inspection	Jan-19	\$1.5
Wastewater Meter System-Equipment Replacement	7639	Meter Modems-Antenna Replacement	Jan-19	\$0.4
DI Treatment Plant Asset Protection	6963	Combined Heat & Power Alternatives Study	Jan-19	\$0.8
DI Treatment Plant Asset Protection	7051	Fire Alarm System Replacement - Construction	Jan-19	\$20.0
DI Treatment Plant Asset Protection	7426	Fire System Replacement - Resident Engineering Inspection	Jan-19	\$2.1

ATTACHMENT E
FY19 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Program / Project	Contract No.	Subphase	Notice to Proceed	Total Contract Amount
NHS - Revere & Malden Pipeline Improvements	7454	Section 56 Replacement/Saugus Design Construction Administration/Resident Inspection	Jan-19	\$2.0
NHS - Revere & Malden Pipeline Improvements	7536	Section 56 Pipe Demolition Construction	Jan-19	\$1.5
Cathodic Protection Of Distribution Mains	6440	Cathodic Protection Shafts E&L	Jan-19	\$0.9
South Spine Distribution Mains	7155	Section 22 North - Facility Plan/Environmental Impact Report	Jan-19	\$1.0
Central Monitoring System	7581	CWTP SCADA Upgrade Design Program Resident Engineering	Jan-19	\$4.1
Metropolitan Tunnel Redundancy	7159	Conceptual Design Environmental Impact Report	Jan-19	\$9.0
Metropolitan Redundancy Interim Improvements	7524	Commonwealth Ave Pump Station Improvements Construction	Jan-19	\$7.0
DI Treatment Plant Asset Protection	7126	South System Pump Station VFD Replace Design/Engineering Services During Construction/Resident Engineering Inspection	Feb-19	\$4.5
DI Treatment Plant Asset Protection	7397	Clarifier Rehabilitation Phase 2 - Resident Engineering Inspection	Feb-19	\$3.0
DI Treatment Plant Asset Protection	7420	Motor Control Center & Switchgear Replacement Construction	Feb-19	\$10.6
Peabody Pipeline Project	6893	Peabody Pipeline Construction	Feb-19	\$15.2
Waterworks Facility Asset Protection	6832	Steel Tank/Improvements Design Construction Administration/Resident Inspection	Feb-19	\$3.3
Facility Asset Protection	7279	Interceptor Renewal 3, Dorchester Interceptor Sewer - Construction	Mar-19	\$5.6
Facility Asset Protection	7462	Prison Point Rehabilitation - Construction	Mar-19	\$31.7
DI Treatment Plant Asset Protection	6723	E Seawall Design/Engineering Services During Construction/Resident Engineering Inspection	Apr-19	\$0.7
DI Treatment Plant Asset Protection	7134	Radio Repeater System Upgr. 2	Apr-19	\$2.5
New Connect Mains-Shaft 7 to WASM 3	6392	CP3-Sect 23,24,47, Rehabilitation	Apr-19	\$14.3

ATTACHMENT E
FY19 PLANNED CAPITAL CONTRACT AWARDS (\$ in Millions)

Program / Project	Contract No.	Subphase	Notice to Proceed	Total Contract Amount
Metropolitan Redundancy Interim Improvements	7599	Shafts 5&9 Bldg Improvements Design Construction Admiistration/Resident Inspection	Apr-19	\$0.8
Sudbury/Weston Aqued. Repairs	7369	Weston Aqueduct Sluice Gates - Construction	May-19	\$1.1
Facility Asset Protection	7554	Fuel Oil Tank Repl Construction Phase 1	Jun-19	\$1.4
January 2019 - June 2019		26 Contracts Planned		\$145.1
Total FY19		55 Planned Contract Awards		\$405.7

STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: FY18 Year-End Financial Update and Summary



COMMITTEE: Administration, Finance & Audit

INFORMATION
 VOTE

~~Kathy Somi, Budget Director~~
Preparer/Title


Thomas J. Durkin
Director, Finance

RECOMMENDATION:

For information only. This staff summary provides the financial results and variance highlights for Fiscal Year 2018, based on the audited fiscal year-end financial close.

DISCUSSION:

The total FY18 year-end variance is \$14.2 million (after \$19.1 million defeasance), due to lower direct expenses of \$7.8 million and indirect expenses of \$387,000, offset by higher debt service costs of \$1.4 million and higher revenue of \$7.4 million.

The largest variances in comparison with the budget are highlighted below:

\$7.8 million of below budget direct expenses were the result of lower spending for Wages & Salaries, Maintenance, Fringe Benefits, Other Materials, Professional Services, Chemicals, Worker's Compensation, and Training and Meetings.

\$4.2 million higher revenue was due to unbudgeted receipt from the settlement between various State Attorneys General and Barclays PLC for attempting to manipulate the LIBOR market.

\$2.0 million higher revenue for better than anticipated investment income performance.

\$944,726 Debt Service Assistance, as in prior years, was applied against the FY19 budget.

Staff are recommending that the approximately \$14 million FY18 surplus be used to defease debt to provide targeted rate relief for communities in future challenging years. This rate management 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.

FY18 Current Expense Budget

The CEB expense variances for fiscal year 2018 by major budget category were:

- Net Lower Direct Expenses of \$7.8 million, or 3.4% under budget. Spending was lower for Wages & Salaries, Maintenance, Fringe Benefits, Other Materials, Professional Services, Chemicals, Worker's Compensation, and Training and Meetings. This is offset by higher spending on Overtime, Utilities, and Other Services.
- Net Lower Indirect Expenses of \$387,000, or 1.0%, due to lower Watershed reimbursements and lower expenses for the existing HEEC cable, offset by higher spending for Insurance.
- Net Higher Debt spending of \$1.4 million, or 0.3% for execution of defeasance.

FY18 Budget and FY18 Actual Year-to-Date Variance by Expenditure Category
(in millions)

	FY18 Budget YTD	FY18 Actual YTD	\$ Variance	% Variance
Direct Expenses	\$232.6	\$224.7	-\$7.8	-3.4%
Indirect Expenses	\$38.9	\$38.5	-\$0.4	-1.0%
Capital Financing	\$472.2	\$473.6	\$1.4	0.3%
Total	\$743.6	\$736.8	-\$6.8	-0.9%

Totals may not add due to rounding

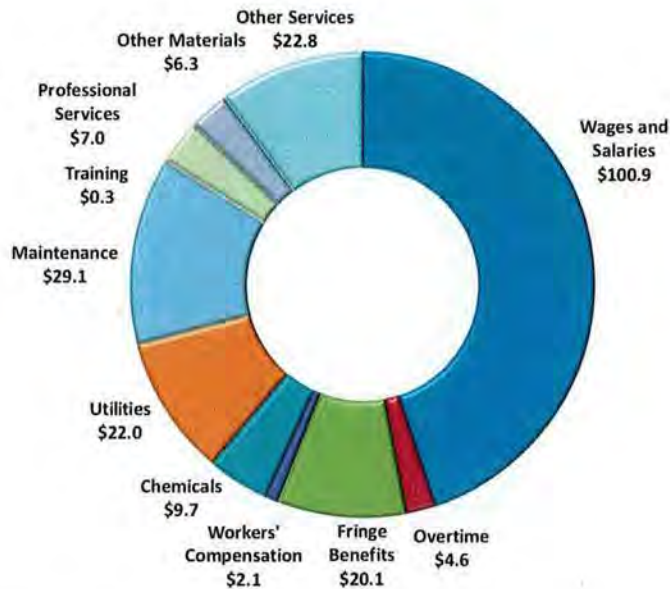
Total Revenues of \$751.0 million were \$7.4 million, or 1.0% over budget, reflecting a \$4.2 million receipt from the settlement between various State Attorneys General and Barclays PLC for attempting to manipulate the LIBOR market. LIBOR is a standard financial index used to set the cost of various variable-rate loans. Revenues were also over budget by \$2.5 million for favorable returns on investment income (average short-term rates were higher than budgeted: 1.59% vs. 1.05%), \$301,000 for disposal of surplus material, \$228,000 for the final payment of a class action lawsuit settlement for derivative agreements, \$157,000 for settlement on the Chelsea Facility lease associated with the land taking by the MBTA, and \$106,000 for energy reimbursements. This is offset by lower than budgeted revenue of \$297,000 for the sale of RPS credits.

Please refer to Attachment 1 for a more detailed comparison by line item of the budget variances for the year to date.

Direct Expenses

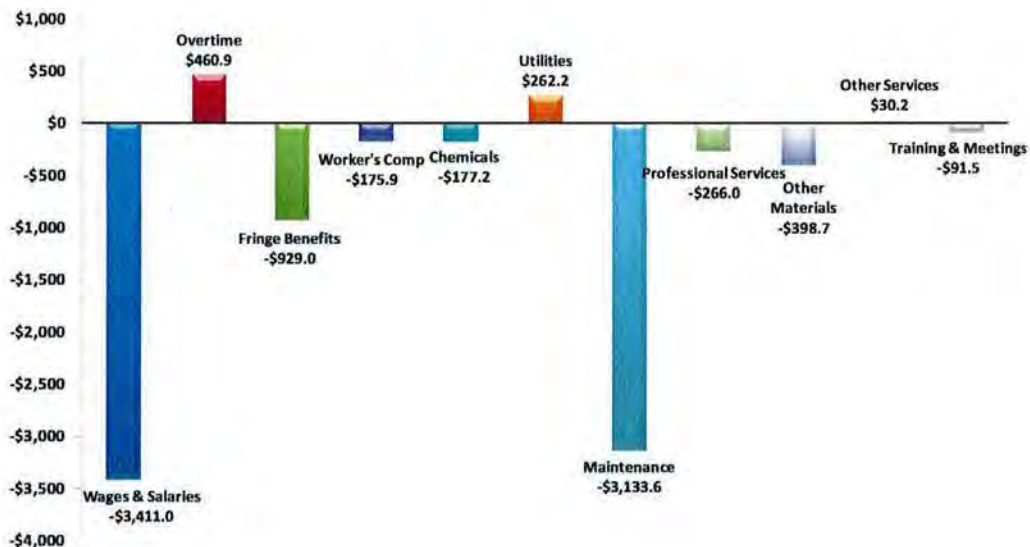
Year-to-date direct expenses totaled \$224.7 million, \$7.8 million, or 3.4%, less than budgeted.

**FY18 Year-to-Date Direct Expenses
(in millions)**



Lower than budgeted spending for Wages & Salaries, Maintenance, Fringe Benefits, Other Materials, Professional Services, Chemicals, Worker’s Compensation, and Training and Meetings was partially offset by higher spending for Overtime, Utilities, and Other Services.

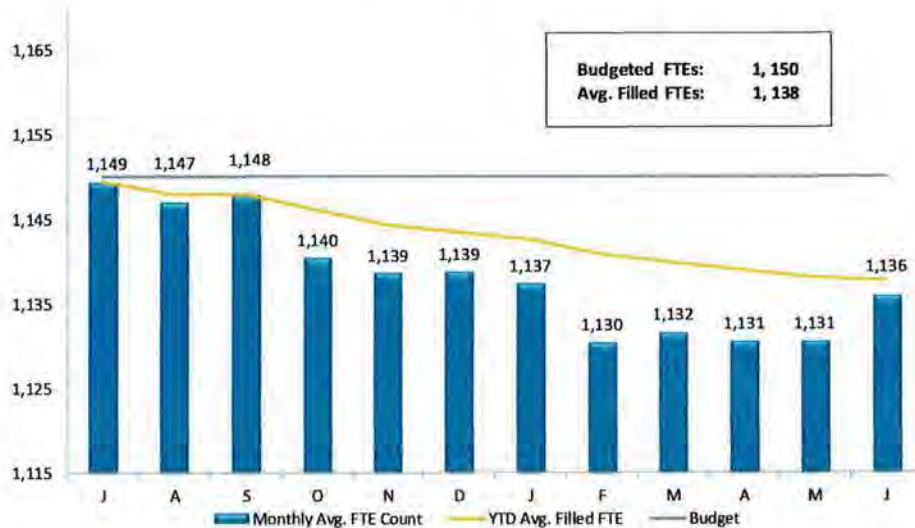
**FY18 Year-to-Date Direct Expense Variance
(in thousands)**



Wages and Salaries

Wages and Salaries are under budget by \$3.4 million, or 3.3%. Year to date, there have been 12 fewer average FTEs (1,138 versus 1,150 budget), lower average new hire salaries versus retirees' as well as the timing of backfilling vacant positions, and lower leave balance accruals contributed to Regular Pay being under budget.

FY18 MWRA Full Time Equivalent (FTE) Position Trend



Maintenance

Maintenance was under budget by \$3.1 million, or 9.7%. While there were numerous components to the underspending for Maintenance year-to date, underspending at Deer Island included timing of the door replacement project and of instrumentation upgrades and motor replacements, offset by overspending for emergency repairs to gravity thickeners #5 and #6. In Field Operations there were a number of items underspent, offset by other items that were overspent. Some of the areas of underspending included a change in the plan of the inspection of the South Boston CSO tunnel, which now will use in-house staff to do the initial inspection. In addition, there was lower spending in Pipeline Maintenance for paving, lower spending on instrumentation contract, and at the Chelsea Facility for carpet replacement and service contracts. MIS was also underspent for lower annual maintenance cost for the Managed Security Solutions Project and delay in the start of the MWRA PC replacement project.

Fringe Benefits

Fringe Benefit spending was lower than budgeted by \$929,000, or 4.4%, primarily for lower Health Insurance costs of \$824,000 due to fewer employees and retirees than budgeted participating in health insurance plans, and the mix change from family to individual plans, which are less expensive. Dental Insurance was lower by \$55,000, and Unemployment payments were also lower than budgeted by \$39,000.

Other Materials

Other Materials were less than budgeted by \$399,000, or 6.0%. There were various items under budget, including Computer Hardware due to delay of the start of the PC replacement project and upgrade of the audio/video equipment in the various conference rooms, Health and Safety Materials at Deer Island, Vehicle Purchases due to delivery of some vehicles slipping into FY19, Equipment/Furniture at DITP, EnQual Water, and FOD Admin, Computer Software in SCADA due to timing of purchases, and Vehicle Expenses due to lower than budgeted fuel prices, offset by overspending for postage associated with the unbudgeted Environmental Wastewater Quality Brochure.

Professional Services

Professional Services were under budget by \$266,000, or 3.7%. The overall underspending year-to-date is due to Legal Services in Law and Administration and as-needed Engineering Services in Operations.

Chemicals

Chemicals were lower than budget by \$177,000, or 1.8%. The majority of the variance or Chemicals was the result of lower flows both at Deer Island and the Carroll Plant, 13% and 6% respectively, the quality of the influent at Deer Island and the water quality at the Carroll Plant. The underspending was offset by higher than budgeted spending on Ferric Chloride and Hydrogen Peroxide at Deer Island due to struvite control and odor control respectively. It is important to note that Chemicals variances are also based on the timing of deliveries which in general reflect the usage patterns.

Worker's Compensation

Worker's Compensation expenses were lower than budget by \$176,000, or 7.6%. The lower Worker's Compensation expenses were primarily due to reductions in medical payments and reserves of \$137,000 resulting from resolution of a number of claims through return to work and \$40,000 for administrative fees associated with these claim. Compensation payments were on budget for the fiscal year.

Training & Meetings

Training & Meetings expenses were less than budgeted by \$92,000, or 22.5% due to timing.

Overtime

Overtime expenses were higher than budgeted by \$461,000, or 11.2%. The overspending for the fiscal year was mainly in Metro Maintenance and Water Operations for maintenance and emergency leak repairs, wet weather and snow removal; and Wastewater Operations for wet weather events. Field Operations performed off-hours maintenance work, reported in prior monthly financial staff summaries, to alleviate project backlogs due to staff vacancies in Western

Water Operations, replaced manhole covers and frames prior to a major repaving project, and replaced an HVAC unit at the Chelsea facility. The overspending was offset by year-to-date lower spending for Laboratory Services, Administration, and Clinton.

Utilities

Utilities were overspent by \$262,000, or 1.2%. Diesel fuel overspending is \$280,000 for additional purchased of diesel fuel last fall for running the CTGs during work associated with the HEEC cable which turned off the electricity supplied by Eversource. The overspending at DITP was offset by underspending in Field Operations due to favorable pricing earlier in the fiscal year. It should be noted that the price of diesel fuel has been increasing in the last few months. In addition, Electricity is overspent by \$84,000, or 0.5%, for overspending at DITP, offset by underspending in FOD. The overspending is offset by lower spending for Water of \$97,000, or 4.6% at wastewater and water facilities.

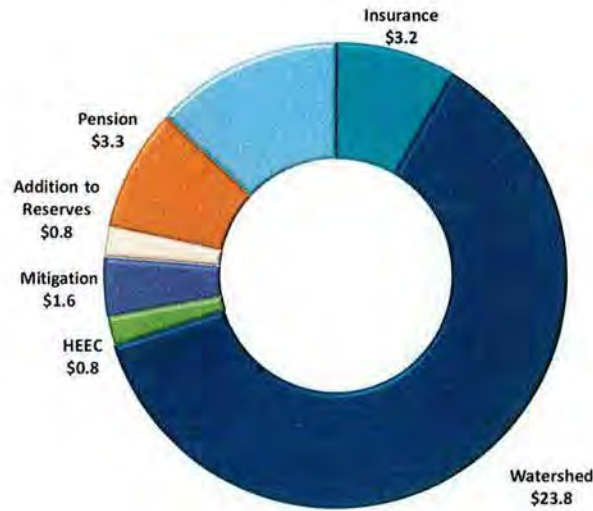
Other Services

Other Services were slightly over budget by \$30,000 or 0.1%. There were numerous components over budget, including Sludge Pelletization of \$554,000 due to higher year-to-date quantities related in part to struvite control during the cleaning of one digester and the gravity thickener emergency repairs. This was offset by lower spending in Telephones of \$241,000 associated with data lines for the SCADA system in FOD, and Other Services of \$238,000 for a number of services, including timing of remediation projects managed by Real Property/Environmental Management and timing of Technical Assistance for Lead issues.

Indirect Expenses

Year-to-date Indirect Expenses totaled \$38.5 million, which is \$387,000 or 1.0% under budget. There are variances within the lines that comprise Indirect Expenses, including higher Insurance claims of \$1.3 million resulting from the outcome of a recent litigation, offset by lower Insurance premiums of \$67,000. Watershed costs are lower than budget by \$1.2 million resulting from lower reimbursable costs associated with capital projects and an over-accrual at the end of FY17 of Watershed operating expenses of \$286,000 and lower than budgeted PILOT payments of \$220,000. HEEC charges are under budget by \$175,000 for the existing cross-harbor cable.

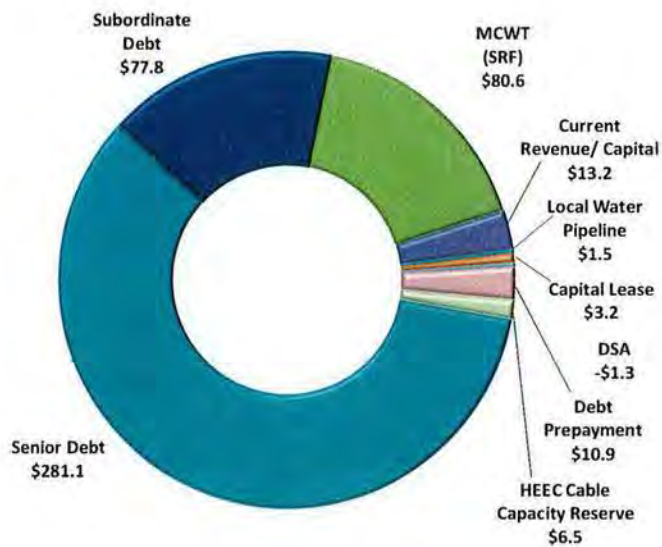
**FY18 Year-to-date Indirect Expenses-YTD
(in millions)**



Capital Financing

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

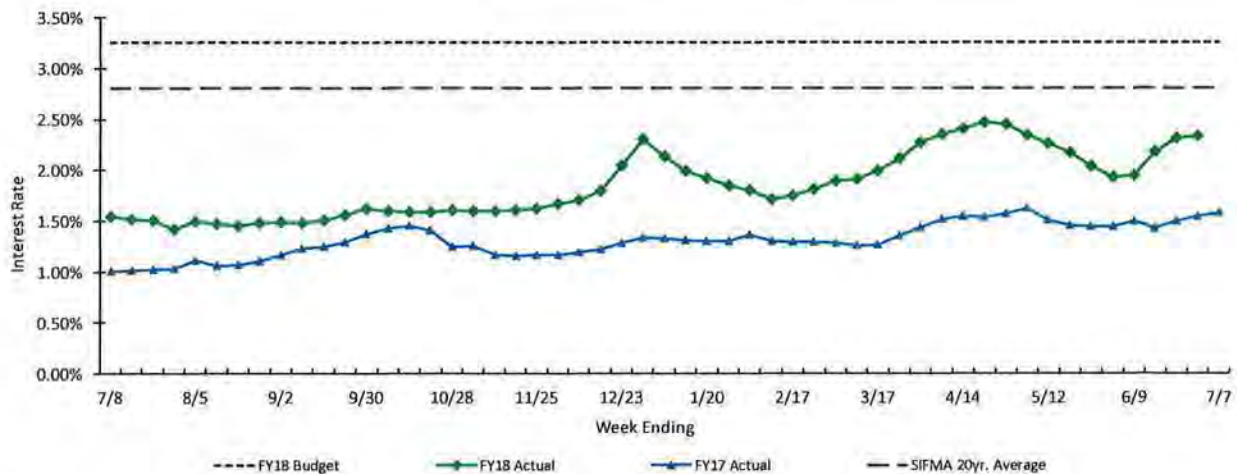
**Year-to-date FY18 Capital Finance
(in millions)**



Year-to-date Capital Financing expenses for FY18 totaled \$473.6 million, which was over budget by \$1.4 million after a \$19.1 million defeasance executed in June. The favorable impact of the short-term variable rates is \$9.9 million year-to-date, \$4.3 million relates to the timing of SRF borrowing, and \$2.6 million relates to the favorable impact of the May refunding and delaying the senior debt borrowing to May versus January. The Authority also received \$944,726 in unbudgeted Debt Service Assistance.

The graph below reflects the FY18 actual variable rate trend by week year-to-date against the FY18 Budget.

**Weekly Average Interest Rate on MWRA Variable Rate Debt
(Includes liquidity support and remarketing fees)**



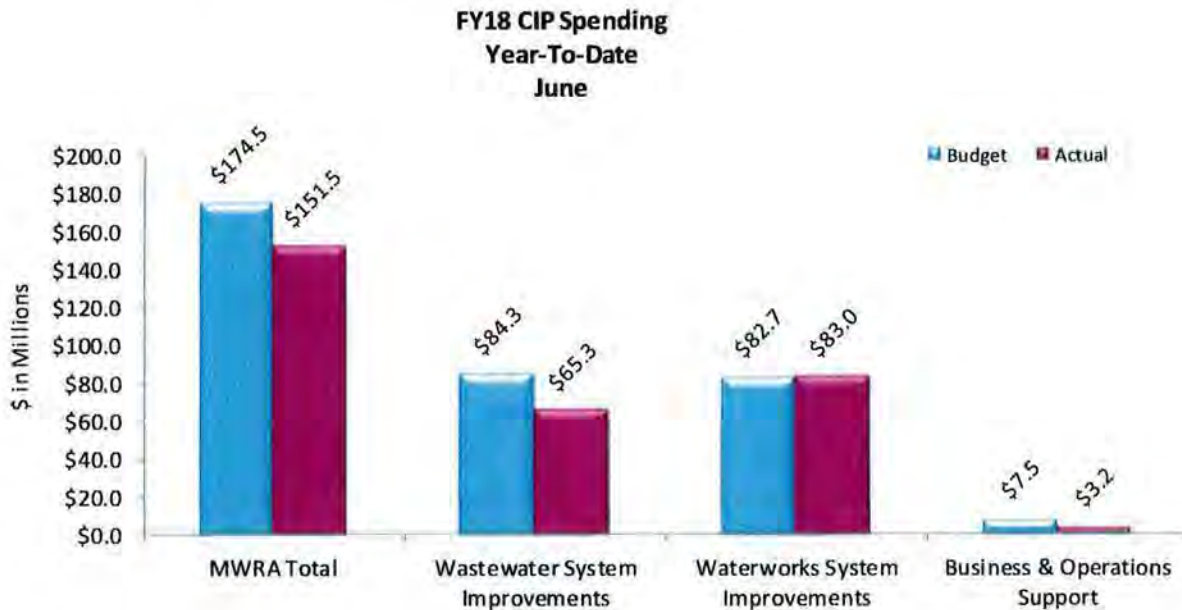
Revenue & Income

Year-to-date Revenues of \$751.1 million were \$7.4 million, or 1.0% over budget, reflecting a \$4.2 million receipt from the settlement between various State Attorneys General and Barclays PLC for attempting to manipulate the LIBOR market. LIBOR is a standard financial index used to set the cost of various variable-rate loans. Revenues were also over budget by \$2.0 million for favorable returns on investment income (average short-term rates were higher than budgeted: 1.59% vs. 1.05%), \$301,000 for disposal of surplus material, \$228,000 for the final payment of a class action lawsuit settlement for derivative agreements, \$157,000 for settlement of Chelsea Facility lease associated with the MBTA land taking, and \$105,000 for energy reimbursements. This is offset by lower than budgeted revenue of \$297,000 for the sale of RPS credits.

FY18 Capital Improvement Program

Capital expenditures in Fiscal Year 2018 through June total \$151.5 million, \$23.0 million, or 13.2%, under budget.

After accounting for programs which are not directly under MWRA's control, most notably the Inflow and Infiltration (I/I) grant/loan program, the Local Water Pipeline loan program, and the community managed Combined Sewer Overflow (CSOs) projects, capital spending totaled \$125.2 million, \$17.1 million, or 12.0%, under budget.



Overall CIP spending reflects the underspending of \$19.0 million in Wastewater Improvements, \$4.3 million in Business and Operations Support, and overspending of \$0.3 million in Waterworks Improvements. Major variances in Wastewater are primarily due to less than anticipated community requests for grants and loans for the Infiltration/Inflow (I/I) Local Financial Assistance Program, and construction delays in both the Chelsea Creek Headworks Upgrades due to water main and fuel storage tank installations, and Alewife Brook Pump Station Rehabilitation due to bypass pumping issues, and a later award for the Deer Island Chemical Bulk Storage Relining Construction and Residuals Mechanical and Electrical contracts. Waterworks variances are primarily due to contractor progress on the Wachusett Pump Station Construction, Southern Extra High Redundancy Section 111 Phases 1 and 2, Northern Intermediate High Section 89 & 29 Redundancy Construction Phase 1B,1C, and 2, and WASM 3 MEPA Design as well as timing of watershed land purchases, partially offset by a later award for Southern Extra High Section 111 Phase 3 Construction.

\$ in Millions	Budget	Actuals	\$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	46.8	40.4	(6.4)	-13.8%
Treatment	13.7	9.3	(4.3)	-31.7%
Residuals	2.9	0.4	(2.4)	-85.8%
CSO	1.9	1.9	0.0	0.9%
Other	19.1	13.3	(5.8)	-30.5%
Total Wastewater System Improvements	\$84.3	\$65.3	(\$19.0)	-22.6%
Waterworks System Improvements				
Drinking Water Quality Improvements	3.9	4.0	0.1	3.7%
Transmission	23.6	26.2	2.6	11.0%
Distribution & Pumping	41.8	40.9	(0.9)	-2.1%
Other	13.5	11.9	(1.6)	-11.5%
Total Waterworks System Improvements	\$82.7	\$83.0	\$0.3	0.4%
Business & Operations Support	\$7.5	\$3.2	(\$4.3)	-56.8%
Total MWRA	\$174.5	\$151.5	(\$23.0)	-13.2%

Totals may not add due to rounding

FY18 Year-to-date Spending by Program:

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

Interception & Pumping: Net underspending of \$6.4 million

- \$2.3 million for Chelsea Creek Upgrades Construction due to delays with water main and fuel oil system installations which, in turn, delayed Channel 1 work.
- \$1.6 million for Alewife Brook Pump Station Construction due to bypass pumping delays.
- \$0.6 million for Pump Stations and CSO Condition Assessment due to delay in award, \$0.6 million for Interceptor Renewal #1 Reading Extension Sewer due to issues with liner, \$0.4 million for Wastewater Metering/Study/Design due to the contract award being less than budgeted, \$0.3 million for Remote Headworks and Deer Island Shaft Study and \$0.2 million for DeLauri Pump Stations Screens and Security due to later than budgeted notice-to-proceeds, and updated schedules for Interceptor Renewal 5 New Neponset Valley Sewer Sections 607-610 Design and \$0.2 million for Nut Island Mechanical and Electrical Design contracts and \$0.1 million for Sections 23, 24, 26, and 27 Study due to being completed under budget.
- This underspending was partially offset by overspending of \$0.2 million for final work for the Caruso Pump Station Construction and \$0.1 million for Prison Point Design/Construction Administration/Resident Inspection due to project progress.

Other Wastewater: Net underspending of \$5.8 million

- \$5.8 million for Community Infiltration/Inflow (I/I) due to less than budgeted requests for grants and loans.

Wastewater Treatment: Net underspending of \$4.3 million

- Clinton: \$0.7 million for Clinton Roofing Rehabilitation due to delay in contract award and \$0.3 million for Phosphorus Reduction Construction due to less than anticipated progress including testing delays.

- Deer Island: \$1.2 million for Chemical Bulk Storage Tanks Relining due to delay in award, \$0.4 million for Digester Sludge Pump Replacement Phase 2 and \$0.3 million for Fuel System Upgrades for work scheduled for FY18 performed in FY17, \$0.3 million for Winthrop Terminal VFD Replacement Construction due to timing of delivery of VFDs and motors, and \$0.4 million for Combined Heat and Power Energy Alternatives, \$0.2 million for South System VFD Replacement Design, \$0.2 million for Expansion Joint Repair Construction, and \$0.2 million for Gas Protection System Replacement due to schedule changes.
- The underspending was partially offset by overspending of \$0.4 million for Gravity Thickener Rehabilitation due to earlier work than originally anticipated and \$0.2 million for additional work for the Personnel Dock Rehabilitation.

Business & Operations Support: Net underspending of \$4.3 million

- \$2.9 million for MIS Projects due to timing of the IT Strategic Plan implementation.
- \$1.5 million for Security Equipment due to a delay in implementing equipment initiatives.
- The underspending was partially offset by overspending of \$0.3 million due to timing of vehicle purchases.

Waterworks Transmission: Net overspending of \$2.6 million

- \$3.4 million for Wachusett Aqueduct Pump Station Construction and Engineering Services due to contractor progress, \$0.9 million for Watershed Land due to timing of land purchases, and \$0.8 million for WASM 3 MEPA/Design/CA/RI for timing of boring work.
- This overspending was partially offset by underspending of 0.4 million for Shaft 12 Isolation Gate Design due to contract being terminated, \$0.6 million for Watershed Maintenance Garage/Washbay/Storage Facility due to delays, \$0.4 million for Quabbin Aqueduct and Winsor Power Station Design due to updated schedule, \$0.2 million for CVA Motorized Screen Replacement due to work scheduled for FY18 performed in FY17, and \$0.1 million for time extension for the Evaluation of Farm Pond Buildings and Waban Arches.

Residuals: Net underspending of \$2.4 million

- Underspending of \$1.0 million for Mechanical Improvements and \$0.9 million for Electrical Improvements due to delay in contract awards, \$0.3 million for Sludge Tank & Silo Coating for work that was postponed during the winter, and \$0.2 million for Pellet Conveyance Piping due to updated schedule.

Other Waterworks: Net underspending of \$1.6 million

- \$0.5 million for the Cosgrove Roof Replacement, \$0.5 million for the Steel Tank Improvements Design and \$0.5 million for Carroll Water Treatment Plant SCADA Design and Programming contracts due to delay in contract awards, and \$0.1 million for Quabbin Power, Communication & Security – Construction partially due to reimbursement from DCR Office of Watershed Management for work at the boat cove and less than anticipated engineering services during construction.

Water Distribution and Pumping: Net underspending of \$0.9 million

- Underspending \$2.3 million for SEH Redundancy Pipeline Section 111 Phase 3 due to delay in award as a result of permit issues, \$0.5 million for Section 53 and 99 Design CA/RI due to delay in award, \$0.4 million for Sections 50 and 57 Water and Sections 21/20/19 Sewer Design due to delay in field assessments due to weather issues, and \$0.2 million for Chestnut Hill Gatehouse #1 Repairs due contract award being less than budgeted.
- This underspending was partially offset by overspending of \$1.3 million for SEH Redundancy Pipeline Section 111 Phase 1 Construction, \$0.7 million for NIH Section 89 & 29 Redundancy Phase 2 Construction, \$0.7 million for SEH Redundancy Pipeline Section 111 Construction Phase 2, \$0.4 million for NIH Section 89 & 29 Redundancy Phase 1B, \$0.2 million for Section 89/29 Redundancy Phase 1C Construction due to contractor progress.

Drinking Water Quality Improvements: Net overspending of \$0.1 million

- \$0.6 million for contractor progress for the Marlborough Maintenance Facility, partially offset by \$0.5 million underspending on a number of small contracts.

Combined Sewer Overflow: Net overspending of \$0.1 million

- Overspending of \$0.3 million for CSO Performance Assessment due to consultant progress, partially offset by \$0.2 million for Cambridge Sewer Separation Project due to updated final cost of restoration work.

Construction Fund Balance

The construction fund balance was \$105.6 million as of the end of June. Commercial Paper/Revolving Loan availability was \$128.0 million to fund construction projects.

ATTACHMENTS:

Attachment 1 – Variance Summary June 2018

Attachment 2 – Current Expense Variance Explanations

Attachment 3 – Capital Improvement Program Variance Explanations

Attachment 4 – FY18 Budget vs. FY18 Projections for the Current Expense Budget

ATTACHMENT 1
FY18 Actuals vs. FY18 Budget

	June 2018 Year-to-Date				
	Period 12 YTD Budget	Period 12 YTD Actual	Period 12 YTD Variance	%	FY18 Approved
EXPENSES					
WAGES AND SALARIES	\$ 104,286,370	\$ 100,875,415	\$ (3,410,955)	-3.3%	\$ 104,286,370
OVERTIME	4,110,637	4,571,567	460,930	11.2%	4,110,637
FRINGE BENEFITS	20,997,975	20,068,927	(929,048)	-4.4%	20,997,975
WORKERS' COMPENSATION	2,322,980	2,147,063	(175,917)	-7.6%	2,322,980
CHEMICALS	9,836,933	9,659,734	(177,199)	-1.8%	9,836,933
ENERGY AND UTILITIES	21,735,222	21,997,423	262,201	1.2%	21,735,222
MAINTENANCE	32,200,785	29,067,175	(3,133,610)	-9.7%	32,200,785
TRAINING AND MEETINGS	406,269	314,745	(91,524)	-22.5%	406,269
PROFESSIONAL SERVICES	7,221,622	6,955,638	(265,984)	-3.7%	7,221,622
OTHER MATERIALS	6,692,660	6,293,935	(398,725)	-6.0%	6,692,660
OTHER SERVICES	22,764,526	22,794,735	30,209	0.1%	22,764,526
TOTAL DIRECT EXPENSES	\$ 232,575,979	\$ 224,746,357	\$ (7,829,623)	-3.4%	\$ 232,575,979
INSURANCE	\$ 2,013,452	\$ 3,231,510	\$ 1,218,058	60.5%	\$ 2,013,452
WATERSHED/PILOT	25,164,006	23,756,756	(1,407,250)	-5.6%	25,164,006
HEEC PAYMENT	957,445	782,135	(175,310)	-18.3%	957,445
MITIGATION	1,596,950	1,574,890	(22,060)	-1.4%	1,596,950
ADDITIONS TO RESERVES	821,116	821,116	-	0.0%	821,116
RETIREMENT FUND	3,277,369	3,277,369	-	0.0%	3,277,369
POST EMPLOYEE BENEFITS	5,035,422	5,035,422	-	0.0%	5,035,422
TOTAL INDIRECT EXPENSES	\$ 38,865,760	\$ 38,479,198	\$ (386,562)	-1.0%	\$ 38,865,760
REBATE	\$ -	\$ 225,000	\$ 225,000	---	
STATE REVOLVING FUND	84,931,906	80,637,870	(4,294,036)	-5.1%	\$ 84,931,906
SENIOR DEBT	264,560,267	280,901,707	16,341,440	6.2%	264,560,267
CORD FUND	-	-	-	---	-
DEBT SERVICE ASSISTANCE	(391,580)	(1,336,306)	(944,726)	241.3%	(391,580)
CURRENT REVENUE/CAPITAL	13,200,000	13,200,000	-	0.0%	13,200,000
SUBORDINATE MWRA DEBT	85,443,447	85,443,447	-	0.0%	85,443,447
LOCAL WATER PIPELINE CP	3,794,944	1,482,833	(2,312,111)	-60.9%	3,794,944
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%	3,217,060
DEBT PREPAYMENT	10,900,000	10,900,000	-	0.0%	10,900,000
VARIABLE DEBT	-	(7,595,896)	(7,595,896)	---	-
HEEC CABLE CAPACITY RESERV	6,532,146	6,532,146	-	0.0%	6,532,146
DEFESANCE ACCOUNT	-	-	-	---	-
TOTAL DEBT SERVICE	\$ 472,188,190	\$ 473,607,861	\$ 1,419,671	0.3%	\$ 472,188,190
TOTAL EXPENSES	\$ 743,629,929	\$ 736,833,416	\$ (6,796,514)	-0.9%	\$ 743,629,929
REVENUE & INCOME					
RATE REVENUE	\$ 717,054,000	\$ 717,054,000	\$ -	0.0%	\$ 717,054,000
OTHER USER CHARGES	9,011,070	9,019,144	8,074	0.1%	9,011,070
OTHER REVENUE	7,359,078	12,230,488	4,871,410	66.2%	7,359,078
RATE STABILIZATION	-	-	-	---	-
INVESTMENT INCOME	10,205,781	12,755,559	2,549,778	25.0%	10,205,781
TOTAL REVENUE & INCOME	\$ 743,629,929	\$ 751,059,191	\$ 7,429,262	1.0%	\$ 743,629,929

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY18 Budget YTD June	FY18 Actuals YTD June	FY18 YTD Actual vs. FY18 Budget		Explanations
			\$	%	
Direct Expenses					
Wages & Salaries	104,286,370	100,875,415	(3,410,955)	-3.3%	Wages and Salaries are under budget by \$3.4 million. Year to date, there have been 12 fewer average FTEs (1,138 versus 1,150 budget), lower average new hire salaries versus retirees, the timing of backfilling vacant positions, and lower leave balance accruals contributed to Regular Pay being under budget.
Overtime	4,110,637	4,571,567	460,930	11.2%	Higher spending mainly in Metro Maintenance of \$201,000, for off-hours maintenance, wet weather events, and snow removal; Water Operations of \$179,000; and Wastewater Operations of \$122,000 for wet weather events. Some examples of off-hour maintenance work include off-hours work to alleviate a project backlog in western ops due to staff vacancies, replacement of manholes in a community prior to a major repaving job, and crane rigging to hoist replacement HVAC units into place at the Chelsea maintenance facility. The higher spending is offset by lower spending for Laboratory Services of \$39,000; Administration of \$29,000 for CNY; and Clinton of \$21,000.
Fringe Benefits	20,997,975	20,068,927	(929,048)	-4.4%	Lower than budget mainly in Health Insurance of \$824,000, due to fewer than budgeted participants in health insurance plans, increased contribution by external new higher vs. lower contribution rates of staff retiring, and the shift from family to individual plans which are less expensive; lower Dental Insurance of \$59,000; lower Unemployment Insurance of \$39,000; lower Tuition Reimbursement of \$28,000; and lower Medicare payments of \$13,000.
Worker's Compensation	2,322,980	2,147,063	(175,917)	-7.6%	Underspending due to lower Medical Payments of \$137,000, and Management Costs of \$40,000. Compensation Payments were virtually on budget for the fiscal year. Medical payments were lower due to adjustments to reserves for claims resolved through return to work. Management Costs were adjusted as well to reflect resolution of outstanding cases. It is important to note that spending on this line item can change significantly depending on future claims and severity of cases.

**ATTACHMENT 2
Current Expense Variance Explanations**

Total MWRA	FY18 Budget YTD June	FY18 Actuals YTD June	FY18 YTD Actual vs. FY18 Budget		Explanations
			\$	%	
Chemicals	9,836,933	9,659,734	(177,199)	-1.8%	Underspending for Soda Ash of \$304,000 primarily at CWTP; Activated Carbon of \$139,000 at DITP; Hydrofluosilicic Acid of \$105,000 at CWTP; Sodium Hypochlorite of \$104,000 primarily at DITP, offset by over spending at CWTP; Carbon Dioxide of \$62,000 at CWTP; Sodium Bisulfite of \$53,000 primarily at DITP and CWTP; and Liquid Oxygen of \$44,000 at CWTP. This is offset by overspending on Ferric Chloride of \$346,000 at DITP and Hydrogen Peroxide of \$326,000 also at DITP. The majority of underspending for Chemicals is the result of lower flows both at DITP and CWTP, 13% and 6% respectively through May and the quality of the influent both at DITP and CWTP. It is important to note that Chemicals variances are also based on deliveries which in general reflect the usage patterns. However, the timing of deliveries is an important factor.
Utilities	21,735,222	21,997,423	262,201	1.2%	Overspending in Diesel Fuel of \$280,000. \$479,000 overspending in Diesel Fuel at DITP due to running the CTGs last fall during some work associated with the HEEC cable which supplies electricity to DITP, offset by \$199,000 underspending in FOD due to favorable pricing; and Electricity of \$84,000 or 0.5% for overspending at DITP, offset by underspending in FOD at the wastewater facilities. This is offset by underspending Water of \$97,000 in FOD due to change to water seals at wastewater pump stations and over accrual at the end of FY 17 for water pump stations, and at DITP due to slightly lower water use (3.3% less use).

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY18 Budget YTD June	FY18 Actuals YTD June	FY18 YTD Actual vs. FY18 Budget		Explanations
			\$	%	
Maintenance	32,200,785	29,067,175	(3,133,610)	-9.7%	<p>Services were underspent by \$1.8 million and Materials were underspent by \$1.4 million.</p> <p>Underspending in Specialized Equipment Services of \$975,000 in DITP for timing of PIC upgrade, FOD for instrumentation service contract; Plant & Machinery Materials of \$942,000 primarily in DITP for timing on various items like CTG spare parts, and the W3 strainer on the non-potable water system; Building & Grounds Services of \$874,000 for timing of door replacement contract at DITP, timing of the painting contract at Clinton, and at the Chelsea Facility for carpet replacement and service contracts; Computer Licenses/Upgrades of \$399,000 in MIS associated with lower cost for annual maintenance agreement for the Managed Security Solutions Project; Electrical Materials of \$384,000 primarily in DITP for timing of instrumentation upgrades and motor replacements; HVAC Materials of \$316,000 primarily in DITP for timing of condenser purchases; Electrical Services of \$301,000 in DITP resulting from the delay of the lighting upgrade project; Pipeline Services of \$277,000 for paving in Water Pipe Maintenance; and Computer Materials of \$235,000 for delay in the start of the PC replacement plan.</p> <p>Overspending in Plant & Machinery Services of \$1.2 million is comprised of emergency repairs to DITP's gravity thickener #5 & 6; and Building & Grounds Materials of \$101,000 in DITP.</p>

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY18 Budget YTD June	FY18 Actuals YTD June	FY18 YTD Actual vs. FY18 Budget		Explanations
			\$	%	
Training & Meetings	406,269	314,745	(91,524)	-22.5%	Underspending in Operations at DITP and FOD and MIS.
Professional Services	7,221,622	6,955,638	(265,984)	-3.7%	Underspending in Legal Services of \$178,000 in Law and HR; Engineering Services of \$76,000 in Operations primarily at DITP and Clinton, offset by overspending in FOD; Lab & Testing & Analysis of \$50,000 at DLS; and Audit Services of \$34,000 in Finance for the lower cost. This is offset by overspending in Other Professional Services of \$45,000 primarily HR for training and Security of \$40,000 for facility security contracts.
Other Materials	6,692,660	6,293,935	(398,725)	-6.0%	Lower than budgeted spending for Computer Hardware of \$158,000 for delay in the start of the PC replacement project now scheduled in FY19 and delays in the upgrade of the A/V equipment in conference rooms; Health and Safety of \$131,000 primarily at DITP, Op Support, and DLS; Vehicle Purchase/Replacement of \$126,000 due to delivery of some vehicles slipping into FY19; Equipment/Furniture of \$76,000 in DITP, EnQual Water, and FOD Admin; Computer Software of \$69,000 in SCADA Maintenance due to timing; and Vehicle Expenses of \$61,000 due to lower prices for fuel than budgeted. This is offset by overspending in Postage of \$155,000 associated with the unbudgeted Wastewater Consumer Confidence Report and Lab & Testing Supplies of \$148,000 in DLS.
Other Services	22,764,526	22,794,735	30,209	0.1%	Higher than budgeted spending for Sludge Pelletization of \$554,000 due to higher year to date quantities related to Struvite control and the gravity thickener emergency repairs; and Space Lease/Rentals of \$168,000 primarily due to Internal Audit's completing their annual audit of CY16 operating expenses and FY17 property taxes which determined we owe the landlord \$41,000 and increased the common area maintenance and property taxes portions of the monthly bill for FY18. This is offset by lower spending in Telephone of \$241,000 associated with data lines for the SCADA system; Other Services of \$238,000 for a number of services, including timing of remediation projects managed by Real Property/Environmental Management and timing of Technical Assistance for Lead issues; and Police Details of \$82,000 primarily in Water Pipeline Maintenance and Meter Maintenance.
Total Direct Expenses	232,575,979	224,746,357	(7,829,622)	-3.4%	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY18 Budget YTD June	FY18 Actuals YTD June	FY18 YTD Actual vs. FY18 Budget		Explanations
			\$	%	
Indirect Expenses					
Insurance	2,013,452	3,231,510	1,218,058	60.5%	Higher claims than budgeted of \$1.3 million due to an adverse court case decision, offset by lower premiums of \$67,000.
Watershed/PILOT	25,164,006	23,756,756	(1,407,250)	-5.6%	Lower Watershed Reimbursement of \$1.2 million due to lower reimbursable costs in FY18 associated with capital projects and over accrual at the end of FY17 as compared to the actual amount paid in the first quarter of FY18 and \$220,000 in lower PILOT payments.
HEEC Payment	957,445	782,135	(175,310)	-18.3%	Lower than budgeted charges for O&M charges for existing HEEC cable.
Mitigation	1,596,950	1,574,890	(22,060)	-1.4%	Actual inflation rate was 2.08% vs. 2.5% used for the budget.
Addition to Reserves	821,116	821,116	-	0.0%	
Pension Expense	3,277,369	3,277,369	-	0.0%	
Post Employee Benefits	5,035,422	5,035,422	-	0.0%	
Total Indirect Expenses	38,865,760	38,479,198	(386,562)	-1.0%	
Debt Service					
Debt Service	472,579,770	474,944,167	2,364,397	0.5%	The favorable impact of the short-term variable rates is \$9.9 million year-to-date, \$4.3 million relates to the timing of SRF borrowing, and \$2.6 million relates to the favorable impact of the May refunding and delaying the senior debt borrowing to May versus January. This overall favorable \$16.8 million variance is offset by \$19.1 million defeasance executed in June.
Debt Service Assistance	(391,580)	(1,336,306)	(944,726)	241.3%	Unbudgeted receipt of Debt Service Assistance
Total Debt Service Expenses	472,188,190	473,607,861	1,419,671	0.3%	
Total Expenses	743,629,929	736,833,416	(6,796,513)	-0.9%	
Revenue & Income					
Rate Revenue	717,054,000	717,054,000	-	0.0%	
Other User Charges	9,011,070	9,019,144	8,074	0.1%	
Other Revenue	7,359,078	12,230,488	4,871,410	66.2%	\$4.4 million for two settlements, \$4.2 million receipt for settlement between various State Attorneys General and Barclays PLC for attempting to manipulate the LIBOR market and \$228,000 for the final payment of a class action lawsuit settlement for derivative agreements; \$301,000 for disposal of surplus material; \$157,000 for settlement of Chelsea Facility lease associated with the MBTA land taking, and \$105,000 for revenue attributable to energy reimbursements. This is offset by lower revenue of \$297,000 for energy RPS credits.
Rate Stabilization	-	-	-		
Investment Income	10,205,781	12,755,559	2,549,778	25.0%	Investment Income is over budget mostly due to short term rates higher than budget (1.59% vs. 1.05% budget).
Total Revenue	743,629,929	751,059,191	7,429,262	1.0%	
Net Revenue in Excess of Expenses	-	14,225,775	14,225,775		

**ATTACHMENT 3
FY18 CIP Year-End Variance Report (000's)**

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Wastewater					
Interception & Pumping (I&P)	\$46,799	\$40,351	(\$6,448)	-13.8%	<p><u>Underspending</u> Chelsea Creek Headworks Upgrades - Construction and REI: \$2.5M (due to water main and fuel storage tank installations delays) Alewife Brook Pump Station Rehab - Construction: \$1.6M (due to bypass pumping issues) Wastewater Meter System Planning/Study/Design: \$414k (less than budget award) Pump stations and CSO condition assessment: \$610k, Interceptor Renewal 5 Milton - Design CA/RI: \$200k, and Nut Island Mechanical & Electrical Upgrades - Design/CA: \$224k (schedule changes) Remote Headworks & Deer Island Shafts Rehab - Study: \$250k (schedule change - contract awarded in June) Reading Extension Sewer - Construction: \$563k (work delayed pending correction of lining deficiency) DeLauri Pump Station Screens and Security: \$166k (later than budgeted notice-to-proceed) Cambridge Branch Section 27, 26, and 24: \$144k (completed under budget)</p> <p><u>Offset Overspending</u> Caruso Pump Station Improvements - Construction: \$165k (additional change order work) Nut Island Odor Control & HVAC Improvements - Design/CA/REI: \$209k, and Prison Point Rehab - Design/CA/RI: \$190k (consultant progress)</p>

ATTACHMENT 3
FY18 CIP Year-End Variance Report (000's)

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Treatment	\$13,660	\$9,332	(\$4,328)	-31.7%	<u>Underspending</u> Chemical Bulk Storage Tanks Relining: \$1.2M (scope and schedule changes) Digested Sludge Pump Replacement - Phase 2: \$396k and Power System Improvements - Construction: \$311k (for work scheduled for FY18 performed in FY17) Clinton Wastewater Treatment Plant Phosphorus Reduction - Construction: \$296k (six-month time extension due to delays including preliminary testing) WTF VFD Replacement - Construction: \$270k (custom manufactured with long lead times and timing of installation) Clinton Roofing: \$660k, Combined Heat & Power Alternatives Study: \$415k, Expansion Joint Repair - Construction 3: \$224k, Future South System Pump Station VFD Replacements- Design: \$171k, and Gas Protection System Replacement: \$167k, (schedule changes) Fish Pier Safety Systems: \$142k (project transferred to MWRA security program) Motor Control Center Switchgear Replacement - Design/ESDC/REI: \$129k (consultant behind schedule) <u>Offset Overspending</u> Gravity Thickener Rehab: \$408k (contractor progress) Phosphorus Removal - Design/ESDC: \$323k (due to amendment for additional work and time extension) Personnel Dock Rehab: \$156k (additional rehab work required)
Residuals	\$2,851	\$404	(\$2,447)	-85.8%	Mechanical Improvements and Electrical improvements: \$2.0M (delay in contract awards) Sludge Tank & Silo Coating: \$250k (commencement of work delayed) Pellet Piping Relocation: \$167k (schedule change)
CSO	\$1,878	\$1,896	\$18	0.9%	<u>Underspending</u> Cambridge Sewer Separation: \$198k (updated cost for final restoration work) <u>Offset Overspending</u> CSO Performance Assessment: \$266k (consultant progress greater than planned)
Other Wastewater	\$19,097	\$13,268	(\$5,829)	-30.5%	<u>Underspending</u> I/I Local Financial Assistance: \$5.8M (less than budgeted requests for grants and loans)
Total Wastewater	\$84,286	\$65,252	(\$19,034)	-22.6%	

**ATTACHMENT 3
FY18 CIP Year-End Variance Report (000's)**

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Waterworks					
Drinking Water Quality Improvements	\$3,881	\$4,024	\$143	3.7%	<u>Overspending</u> Marlborough Maintenance Facility: \$632k (contractor progress) <u>Offset Underspending</u> Miscellaneous contracts totaling \$407k
Transmission	\$23,594	\$26,184	\$2,590	11.0%	<u>Overspending</u> Wachusett Aqueduct Pump Station - Design/ESDC and Construction: \$3.4M (due to project progress) Watershed Land Acquisition: \$864k (timing of land purchases) WASM 3 - MEPA/Design/CA/RI: \$811k (field work scheduled for FY17 performed in FY18) <u>Offset Underspending</u> Shaft 12 Isolation Gates - Design/CA/RI: \$417k (preliminary design report indicates construction costs to be greater than anticipated and therefore project to be reevaluated) Hatchery Pipeline - Design/ESDC/RI and Construction: \$463k (reconciliation of final costs) Maintenance Garage/Wash Bay/Storage Building: 460k (construction contract not yet awarded) CVA Motorized Screens Replacement - Construction: \$208k (work scheduled for FY18 performed in FY17) Quabbin Aqueduct and Winsor Power Station - Final Design/CA/RI: \$400k (schedule change) Evaluation of Farm Pond Buildings & Waban Arches: \$132k (project is substantially complete and will be less than budgeted).

ATTACHMENT 3
FY18 CIP Year-End Variance Report (000's)

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Distribution & Pumping	\$41,767	\$40,881	(\$886)	-2.1%	<u>Overspending</u> NIH Section 89/29 Redundancy Phase 1B and 1C and Phase 2 : \$1.2M, SEH Redundancy Pipeline Section 111 Phase 1 - Construction: \$1.3M, and Redundancy Pipeline Section 111 Phase 2 - Construction: \$645k (all due to project progress) Section 14 Water Pipe Relocation (Malden): \$232k (additional change order work) <u>Offset Underspending</u> SEH Redundancy Pipeline Section 111 Phase 3 - Construction: \$2.3M (contract award later than anticipated) Sections 53 and 99 Connection -Design/CA/RI: \$533k (schedule change) Chestnut Hill Gatehouse No. 1 Repair - Construction: \$200k (award less than budget) Sections 50 & 57 Water & 19/20/21 Sewer Rehab - Design/ESDC: \$366k (delay in field testing due to weather. Work has resumed.) Sections 89 & 29 Rehab - Design: \$158k (schedule shift) Sections 23, 24, 47 Rehab - Final Design/CA/RI: \$144k (Delay due to coordination of field work to determine pipe condition and establish test pits.)
Other Waterworks	\$13,489	\$11,936	(\$1,553)	-11.5%	<u>Underspending</u> CWTP SCADA Upgrades - Design, Programming/REI: \$500k, and Cosgrove Intake Roof Replacement: \$450k (schedule change) Steel Tank Improvements - Design/CA/RI: \$470k (due to schedule shift) Quabbin Power, Communication & Security - Design: \$150k (due to timing) Quabbin Power, Communication & Security - Construction: \$122k (partially due to reimbursement from DCR Office of Watershed Management for work at boat cove)
Total Waterworks	\$82,731	\$83,025	\$294	0.4%	

ATTACHMENT 3
FY18 CIP Year-End Variance Report (000's)

	FY18 Budget YTD June	FY18 Actuals YTD June	YTD Actuals vs. Budget		Explanations
			\$	%	
Business & Operations Support					
Total Business & Operations Support	\$7,522	\$3,247	(\$4,275)	-56.8%	<u>Underspending</u> Security Equipment: \$1.5M (delay in implementing equipment initiatives) MIS Projects: \$2.9M (timing of IT Strategic Plan implementation) <u>Offset Overspending</u> Vehicle Purchases: \$261k (timing of vehicle purchases) Fish Hatchery Pipeline Hydroelectric: \$199k (reconciliation of final cost)
Total MWRA	\$174,539	\$151,524	(\$23,015)	-13.2%	

Attachment 4
FY18 Actual versus FY18 Year-End Projection

TOTAL MWRA	FY18 Projection	FY18 Actual	Change FY18 Actual vs. FY18 Projection	
			\$	%
EXPENSES				
WAGES AND SALARIES	\$ 100,782,302	\$ 100,875,415	\$ 93,113	0.1%
OVERTIME	4,577,713	4,571,567	(6,146)	-0.1%
FRINGE BENEFITS	20,149,975	20,068,927	(81,048)	-0.4%
WORKERS' COMPENSATION	2,572,308	2,147,063	(425,245)	-16.5%
CHEMICALS	9,692,216	9,659,734	(32,482)	-0.3%
ENERGY AND UTILITIES	22,253,248	21,997,423	(255,825)	-1.1%
MAINTENANCE	32,673,083	29,067,175	(3,605,908)	-11.0%
TRAINING AND MEETINGS	402,531	314,745	(87,786)	-21.8%
PROFESSIONAL SERVICES	6,896,945	6,955,638	58,693	0.9%
OTHER MATERIALS	6,472,686	6,293,935	(178,751)	-2.8%
OTHER SERVICES	22,932,606	22,794,735	(137,871)	-0.6%
TOTAL DIRECT EXPENSES	\$ 229,405,613	\$ 224,746,357	\$ (4,659,256)	-2.0%
INSURANCE	\$ 2,805,581	\$ 3,231,510	\$ 425,929	15.2%
WATERSHED/PILOT	24,157,126	23,756,756	(400,370)	-1.7%
HEEC PAYMENT	819,191	782,135	(37,056)	-4.5%
MITIGATION	1,574,890	1,574,890	-	0.0%
ADDITIONS TO RESERVES	821,116	821,116	-	0.0%
RETIREMENT FUND	3,277,369	3,277,369	-	0.0%
POSTEMPLOYMENT BENEFITS	5,035,422	5,035,422	-	-
TOTAL INDIRECT EXPENSES	\$ 38,490,695	\$ 38,479,198	\$ (11,497)	0.0%
DEBT SERVICE				
State Revolving Funds (SRF)	\$ 80,637,871	80,637,871	\$ -	0.0%
Senior Debt	263,760,267	281,126,702	17,366,435	6.6%
Subordinate Debt	85,443,447	85,443,447	-	0.0%
Local Water Pipeline CP	1,482,833	1,482,833	-	0.0%
Capital Lease	3,217,060	3,217,060	-	0.0%
Current Revenue for Capital	13,200,000	13,200,000	-	0.0%
Debt Prepayment	10,900,000	10,900,000	-	0.0%
Variable Rate Debt	(7,727,273)	(7,595,896)	131,377	-1.7%
Debt Service Assistance	(1,336,306)	(1,336,306)	-	-
Defeasance Account			-	N/A
Projected/Actual Defeasance	20,000,000		(20,000,000)	
HEEC Cable Capacity Reserve Fund	6,532,146	6,532,146	-	-
TOTAL DEBT SERVICE	\$ 476,110,045	\$ 473,607,856	(2,502,189)	-0.5%
TOTAL EXPENSES	\$ 744,006,353	\$ 736,833,410	\$ (7,172,942)	-1.0%
REVENUE & INCOME				
RATE REVENUE	\$ 717,054,000	\$ 717,054,000	\$ -	0.0%
OTHER USER CHARGES	9,011,070	9,019,144	8,074	0.1%
OTHER REVENUE	12,159,078	12,230,488	71,410	0.6%
RATE STABILIZATION	-	-	-	-
INVESTMENT INCOME	12,183,869	12,755,559	571,690	4.7%
TOTAL REVENUE & INCOME	\$ 750,408,017	\$ 751,059,191	\$ 651,174	0.1%
Surplus after Defeasance	\$ 6,401,664	\$ 14,225,781	\$ 7,824,116	122.2%

STAFF SUMMARY


TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Bond Defeasance of Future Debt Service



COMMITTEE: Administration, Finance & Audit

X VOTE
 INFORMATION

Matthew R. Horan, Treasurer *MMA*
Sean R. Cordy, Sr. Financial Analyst *src*
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 \$14.0 million defeasance to reduce future year rate increases. The \$14.0 million in available funds is derived from the FY18 surplus after \$19.1 million was utilized to execute a defeasance in June 2018. These funds will be used to prepay debt service coming due in FY20 through FY22 (\$13.9 million in principal and \$75,900 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 and predictable.

RECOMMENDATION:

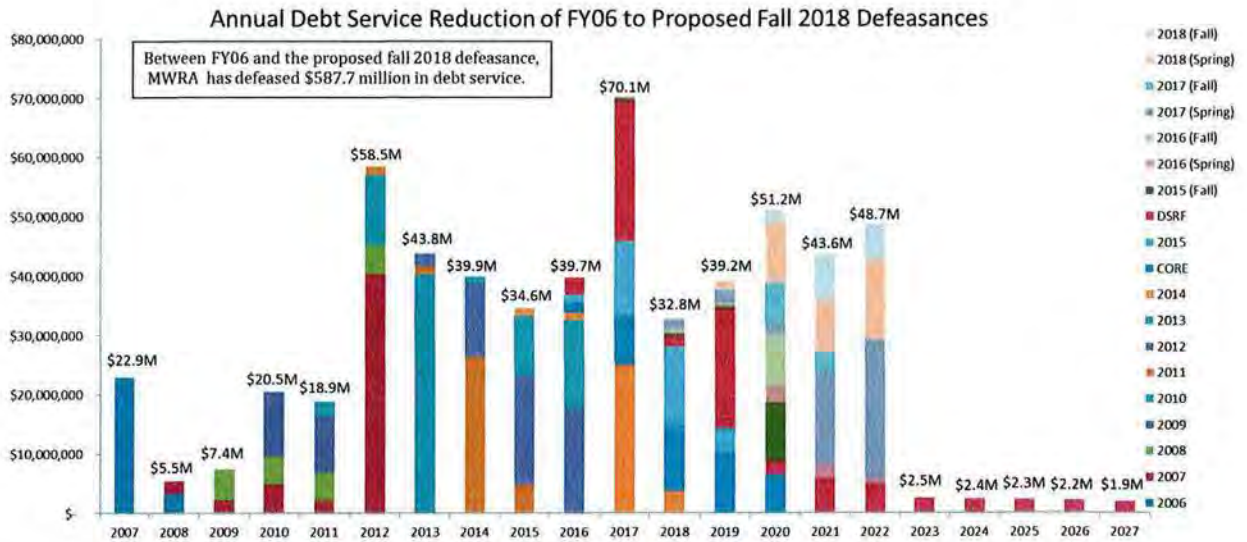
To authorize the Executive Director or his designee, on behalf of the Authority, to enter into, execute and deliver all necessary agreements and other instruments and to take such other actions necessary to effectuate the redemption and defeasance of an aggregate principal amount of \$13,930,000 of outstanding 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 \$15,538,400 in the FY20 through FY22 timeframe.

DISCUSSION:

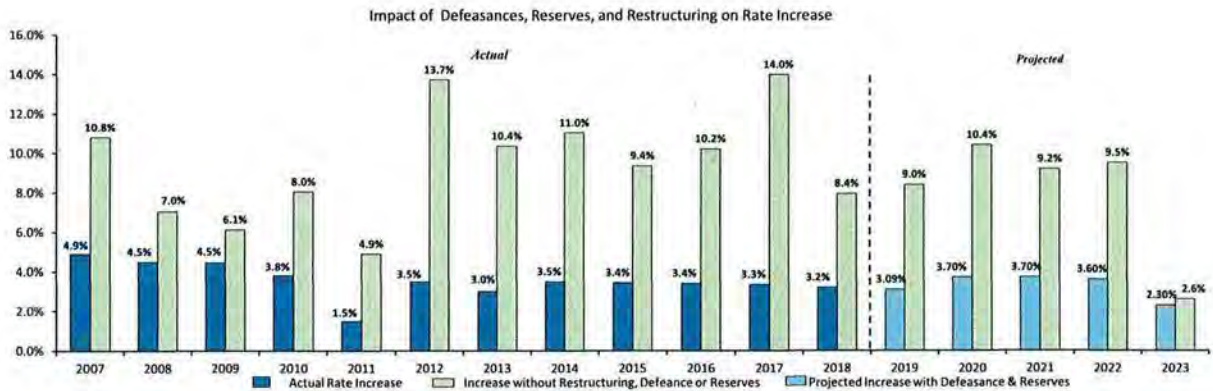
As described in more detail in the FY18 Year-end Financial Update and Summary Staff Summary presented at this meeting, MWRA has approximately \$14.0 million available from the FY18 budget to execute a defeasance of outstanding debt. These funds are available after the use of approximately \$10.9 million from the budgeted FY18 Optional Debt Prepayment and approximately \$19.1 million from the FY18 surplus to defease \$29.4 million in outstanding principal executed in June 2018.

MWRA's ongoing use of defeasances has had a significant impact in lowering future debt service payments and limiting annual rate revenue increases. From 2006 through this proposed

transaction, MWRA has defeased \$587.7 million in debt service to reduce future year rate revenue requirements. 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 bonds available to be defeased, and have identified the maturities of the bonds in the following table as the most advantageous defeasance candidates.

Series	Maturity	Call Date	Principal	Defeasance Cost ¹
2002J	August 1, 2020	August 1, 2020	\$ 1,380,000	\$ 1,455,900
2009B	August 1, 2021	August 1, 2019	\$ 7,000,000	\$ 7,000,000
2009B	August 1, 2022	August 1, 2019	\$ 5,550,000	\$ 5,550,000
Total			\$ 13,930,000	\$ 14,005,900

(1) Defeasance costs is only anticipated funds from surplus and does not included current year deposits. Assumes no interest earned on escrow

The following table details the annual budget savings by fiscal year for the proposed FY18 defeasance.

Budget Reduction by Fiscal Year			Total CEB Savings
2020	2021	2022	
\$ 2,083,400	\$ 7,627,500	\$ 5,827,500	\$ 15,538,400

The proposed defeasance reduces debt service by a total of \$15.5 million between FY20 and FY22. The total debt service reduction attributable to the defeasance is approximately \$1.5 million higher than the defeasance cost because the 2009 Series B bonds are callable prior to their maturity date. 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. Since 2006, MWRA has avoided \$31.7 million in interest by defeasing callable bonds.

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:

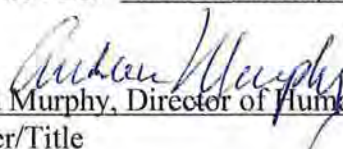
The defeasance of these bonds will decrease the FY20 through FY22 debt service requirement by \$15.5 million. The cost associated with bond counsel and financial advisory services will be paid out of the Treasury Department’s professional services budget.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Dental Insurance
 Delta Dental of Massachusetts
 Contract A613, Amendment 1

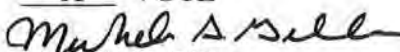


COMMITTEE: Administration, Finance & Audit


Andrea Murphy, Director of Human Resources
 Preparer/Title

 INFORMATION

 X VOTE


Michele S. Gillen
 Director, Administration

RECOMMENDATION:

To approve Amendment 1 to Contract A613, with Delta Dental of Massachusetts, exercising the first option to renew, increasing the contract amount by \$360,000, from \$352,000 for a total not-to-exceed amount of \$712,000, and extending the term for twelve months from January 1, 2019 to December 31, 2019 for a total contract term of 48 months.

DISCUSSION:

The Authority has been providing dental insurance to all non-union employees since July 1, 1985. This benefit also covers a number of union employees who were accreted into collective bargaining units in 1994. The remaining MWRA union employees receive dental coverage through the Health and Welfare plans of their respective unions.

In December 2017, the Board of Directors approved a contract with Delta Dental of Massachusetts to provide dental insurance to eligible employees for a period of twelve months (Calendar Year 2018), with further options to renew the contract for up to three additional twelve-month periods subject to Board approval. A summary of the contract is set forth below.

This amendment is for the first extension covering Calendar Year 2019 and would maintain the level of coverage currently offered to eligible employees in the areas of diagnostic, preventive, basic and major restorative services as well as limited orthodontic coverage.

Contract Summary			
	Amount	Term	Dated
Original Contract	\$352,000	One Year	01/01/2018
Amendment 1	\$360,000	One Year	01/01/2019

BUDGET/FISCAL IMPACT:

This contract covers the second half of FY19 and the first half of FY20. The FY19 Current Expense Budget includes the cost of the dental insurance for eligible employees. The total cost of the plan is dependent upon the number of employees enrolled. The remaining cost of the dental insurance program will be budgeted for FY20.

MBE/WBE UTILIZATION:

There are no MBE/WBE participation requirements for this contract.



MASSACHUSETTS WATER RESOURCES AUTHORITY

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

Frederick A. Laskey
Executive Director

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WASTEWATER POLICY & OVERSIGHT COMMITTEE MEETING

to be held on

Wednesday, September 19, 2018

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

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

Time: Immediately following AF&A Committee

AGENDA

A. Contract Awards

1. Supply and Delivery of Sodium Hypochlorite to the Deer Island Treatment Plant: Borden & Remington Corporation, Bid WRA-4552
2. Supply, Delivery and Disposal of Regenerated Activated Carbon to the Deer Island Treatment Plant: Carbon Activated Corporation, Bid WRA-4554
3. Struvite, Scum, Sludge and Grit Removal Services at the Deer Island Treatment Plant: Moran Environmental Recovery, Bid WRA-4551

B. Contract Amendments/Change Orders

1. Chelsea Creek Headworks Upgrade: BHD/BEC JV 2015, A Joint Venture, Contract 7161, Change Order 18

C. Approvals

1. Deer Island HEEC Cable Funding (Materials to follow)

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the

Wastewater Policy and Oversight Committee

July 18, 2018

A meeting of the Wastewater Policy and Oversight Committee was held July 18, 2018 at the Authority headquarters in Charlestown. Committee Chair Flanagan presided. Present from the Board were Messrs. Carroll, Cotter, Pappastergion, Peña, Vitale and Walsh. Ms. Wolowicz and Mr. Foti were absent. Among those present from the Authority staff were Frederick Laskey, Steven Remsberg, David Coppes, Thomas Durkin, Richard Adams, Corinne Barrett, David Duest, Eleanor Duffy, Carolyn Francisco-Murphy, Carl Leone, Louise Miller and Kristin MacDougall. The meeting was called to order at 11:53 a.m.

Information

Update on Deer Island Cable Progress

Staff made a presentation to update the Board of Directors on the status of progress to date in connection with acquisition and installation of a new under harbor cable to serve MWRA's Deer Island facilities. (Mr. Pappastergion returned to the meeting during the presentation.) There was discussion and questions and answers.

Mr. Vitale requested a copy of the presentation.

Approvals

* Extension of the Sunset Date for Malden's Phase 6 Infiltration/Inflow Local Financial Assistance Program Funding

Staff made a presentation and recommended a one-time modification to MWRA's Infiltration/Inflow Local Financial Assistance Program Phase 6 grant allocation for Malden. There was brief discussion and questions and answers.

The Committee recommended approval (ref. WW B.1.)

* Committee recommendation approved by the Board on July 18, 2018

Contract Awards

* As-Needed Resident Engineering and Resident Inspection Services: Kleinfelder Northeast, Inc., Contract 7629 MWH Constructors, Inc., Contract 7630

Staff made a verbal presentation about the project and recommended award of separate contracts to the two responsible and eligible bidders, Kleinfelder Northeast, Inc. And MWH Constructors, Inc. There was brief discussion and questions and answers.

The Committee recommended approval (ref. WW C.1.)

* Sole Source Purchase Order for the Upgrade of the PICS Ovation™ HMI System and One Year of Software Support for the Deer Island Treatment Plant: Emerson Process Management Power & Water Solutions, Inc.


Staff made a verbal presentation that provided an overview of the PICS Ovation™ HMI System and recommended the award of a sole source purchase order and support contract. There was brief discussion and questions and answers.

The Committee recommended approval (ref. WW C.2.)

The meeting adjourned at 12:17 a.m.

* Committee recommendation approved by the Board on July 18, 2018

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 19, 2018
SUBJECT: Supply and Delivery of Sodium Hypochlorite to the Deer Island Treatment Plant
Borden & Remington Corporation
Bid WRA-4552

COMMITTEE: Wastewater Policy & Oversight

 INFORMATION

 X VOTE



Michele S. Gillen

Director of Administration

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



David W. Coppes, P.E.

Chief Operating Officer

RECOMMENDATION:

To approve the award of Purchase Order Contract WRA-4552, a one-year contract for the supply and delivery of sodium hypochlorite to the Deer Island Treatment Plant, to the lowest responsive bidder, Borden & Remington Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said purchase order contract in an amount not to exceed \$1,613,683.48 for a period of one year, from November 17, 2018 through November 16, 2019.

DISCUSSION:

MWRA uses sodium hypochlorite, which is a combination of chlorine and caustic soda, at the Deer Island Treatment Plant primarily to disinfect the plant's effluent. It is also used in the plant's odor control systems.

Sodium hypochlorite is stored in three above ground tanks, each 30 feet high and 40 feet in diameter (shown at right), with a capacity to hold 250,000 gallons per tank.

Sodium hypochlorite is generally manufactured in different strengths: 15%, 19%, and 20% solution. The differing strengths do not affect the Deer Island treatment processes in any way; the only differences between them are unit cost,



availability and the amount of material delivered. The most common and widely available strength is the 15% grade solution, but this requires the largest delivered volume. In previous contracts, MWRA has purchased both 15% and 19% solution. Under the existing contract, also with Borden & Remington Corporation, MWRA is purchasing solely the 19% grade solution. Although the unit price for 19% is slightly higher, the total cost is less because less volume is delivered to the treatment plant. Upon delivery, and no matter the delivered strength, staff dilute the delivered product to an end use strength of 10% -12%. When comparing actual total chlorine purchased, the 19% has proven to be more cost-effective, and results in 22% less trucks being driven to Deer Island.

Procurement Process

Bid WRA-4552 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 3496), and five potential bidders were solicited through the e-Portal.

On July 31, 2018, Event 3496 closed, with the following results:

Borden & Remington Corporation	Estimated Gallons	Percentage Solution	Unit Price Per Gallon	Extended Bid Price
	2,200,000	15% Solution	\$0.7575	\$1,666,500.00
	1,750,199	19% Solution	\$0.9220	\$1,613,683.48
	1,650,000	20% Solution	No Bid	No Bid
Kuehne Chemical Corporation	Estimated Gallons	Percentage Solution	Unit Price Per Gallon	Extended Bid Price
	2,200,000	15% Solution	\$1.50	\$3,300,000.00
	1,750,199	19% Solution	\$1.90	\$3,325,378.10
	1,650,000	20% Solution	\$2.00	\$3,300,000.00

Vendors were given the option to provide a unit bid price for any of the three available grades of sodium hypochlorite. Under the current contract with Borden & Remington Corporation, which expires on November 16, 2018, MWRA is paying a fixed price of \$0.7346 per gallon for 19% solution for an annual cost of \$1,285,696.19. Compared to the existing contract, the cost per gallon price has increased by 25.5% or \$0.1874 per gallon. The not to exceed amount of the contract is not a firm commitment of cost or a guarantee of purchase to the vendor; MWRA will only pay for product delivered and received.

Sodium hypochlorite is manufactured from two different products in approximately equal parts, chlorine and caustic soda. The caustic soda market has historically been very volatile. During the past year, the market demand for caustic soda has dramatically increased. The past year's increases are a direct result of several factors. Globally, the largest end user of caustic soda is the alumina industry. In 2017, the Asian alumina industry grew, driving up the global demand of caustic soda. Domestically, the largest producers of caustic soda in the United States are located in the Gulf Coast. As the global demand of caustic soda has increased, domestic producers have increased

exports, further driving up prices. This upward trend was accelerated after Hurricane Harvey hit the Gulf Coast in August 2017 and temporarily stalled production.

The large discrepancy in bid prices can be attributed to a more aggressive bidding approach taken by Borden & Remington compared to Kuehne. On May 30, 2018, the Board of Directors approved a one-year, \$1,612,080 contract with Univar USA, Inc. to supply a 15% grade of sodium hypochlorite to the John J. Carroll Water Treatment Plant at a cost of \$0.783 per gallon. A representative from Univar stated that it did not submit a bid because it did not feel they could be competitive with bid prices for the 19% solution option.

Staff have reviewed Borden & Remington Corporation's bid and have determined that it meets all of the requirements of the bid specifications. Therefore, staff recommend the award of this one-year purchase order contract to Borden & Remington Corporation, as the lowest responsive bidder.


BUDGET/FISCAL IMPACT:

The FY19 Current Expense Budget contains sufficient funding for Supply and Delivery of Sodium Hypochlorite. The Proposed FY20 CEB will also include sufficient funds for the remaining term of the contract.

MBE/WBE/PARTICIPATION:

Borden & Remington Corporation is not a certified Minority- or Women-owned business.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 19, 2018
SUBJECT: Supply, Delivery, and Disposal of Regenerated Activated Carbon for the Deer Island Treatment Plant
Carbon Activated Corporation
Bid WRA-4554

COMMITTEE: Wastewater Policy & Oversight

David F. Duest, Director, DIWWTP
Carolyn Francisco Murphy, Director of Procurement
Preparer/Title

 INFORMATION

 X VOTE


Michele S. Gillen

Director of Administration



David W. Coppes, P.E.

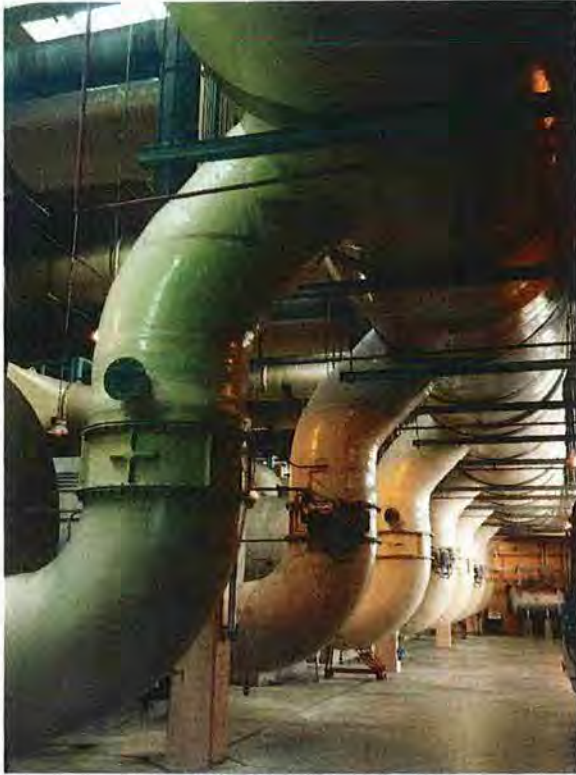
Chief Operating Officer

RECOMMENDATION:

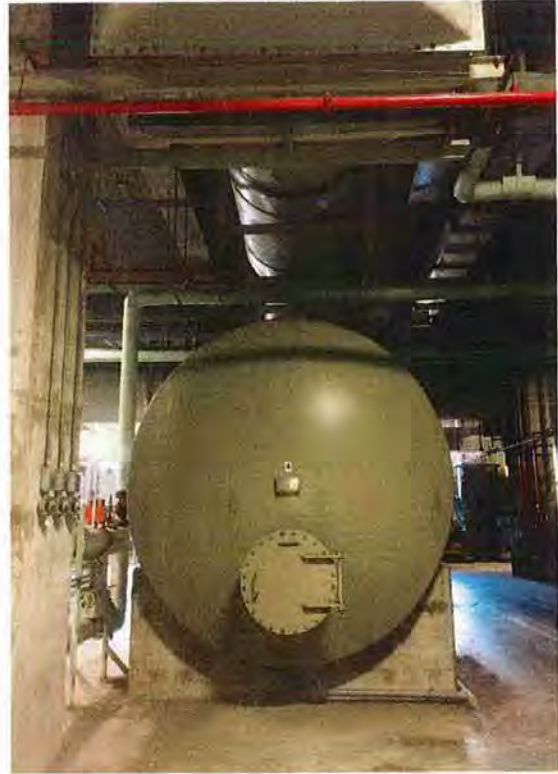
To approve the award of Purchase Order Contract WRA-4554, a three-year contract for the supply, delivery, and disposal of regenerated activated carbon for the Deer Island Treatment Plant, to the lowest responsive bidder, Carbon Activated Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said purchase order contract in an amount not to exceed \$1,110,750 for a period of three years, from December 11, 2018 through December 10, 2021.

DISCUSSION:

The Deer Island Treatment Plant's Title V air permit requires that any air contaminated during wastewater treatment must be treated to remove odor-causing compounds prior to release to the atmosphere. Therefore, gases from the areas above the primary clarifiers, secondary reactors, and gravity thickeners, as well as air from grit removal, centrifuge operations, and pump station wet wells, must be drawn off and treated prior to release to the environment. The permit sets a maximum emission limit for hydrogen sulfide (H₂S) at 1 ppm and various limits for volatile organic compounds. To reduce these compounds as required, Deer Island can operate most of its odor control facilities with either single-stage or dual-stage odor control systems, using wet scrubbers and/or carbon adsorbers.



East Odor Control Carbon Room



Residuals Carbon Unit #4

To optimize operating costs while continuing to meet air permit limits, staff evaluated different configurations for using the air scrubber units in the various odor control areas. Staff determined that carbon adsorption alone can lower contaminants to within the specified limits for most of the year and reduce the use of wet scrubbers in some process areas accordingly. This, in turn, reduces chemical, water, electricity and maintenance costs. However, these revisions in process result in a corresponding increase in the frequency of carbon change-outs. For some process areas at Deer Island and other wastewater facilities, it is more cost effective to operate on activated carbon adsorbers alone than operating both carbon adsorbers and wet scrubbers.

There are 29 carbon adsorption drums throughout the Deer Island plant of varying capacities, containing between 12,000 to 31,000 pounds of activated carbon. All odor control areas contain more carbon drums than needed to allow for maintenance and change-out without impacting the operation or performance against the air permit. A drum is removed from service for carbon replacement when the air samples from the outermost layer of the carbon bed indicate that the carbon is no longer effectively removing the target compounds.



Deer Island Odor Control Emission Stacks

Staff estimate that approximately 400,000 pounds of regenerated carbon will be required each year under this contract, for a period of three years. The scope of work also includes the removal and disposal of spent carbon, which is often shipped to a reprocessing plant where it is sorted by granular size and “regenerated.” If the carbon is not considered re-usable, the vendor is responsible for disposal.

Procurement Process

Bid WRA-4554 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 3498), and five potential bidders were solicited through the e-Portal.

On July 30, 2018, Event 3498 closed, with the following results:

VENDOR	1,200,000 lbs of removed and disposed carbon	1,200,000 lbs of newly delivered and installed carbon	NYLON SCREEN 11,250 sq. feet	TOTAL BID
Carbon Activated Corp.	\$0.20/lb = \$240,000	\$0.72/lb = \$864,000	\$0.60/s.f. = \$6,750	\$1,110,750.00
Nichem Company	\$0.48/lb = \$576,000	\$0.65/lb = \$780,000	\$10.00/s.f. = \$112,500	\$1,468,500.00

Bidders were instructed to submit bids on a price-per-pound basis that would include all costs for removal and disposal of spent carbon, and a separate line item for the installation of newly

delivered carbon. Bidders were also asked to submit a bid price for nylon screen material that is placed on top of the activated carbon to maintain an evenly distributed bed of carbon in each drum; so that any air up-draft does not disrupt the carbon bed.

Under the current contract with Carbon Activated Corporation, which expires on December 10, 2018, MWRA is paying a price of \$0.165 per pound for the removal, \$0.63 per pound for the delivery and installation, and \$0.90 a square foot for the nylon screen. The new contract will result in an increase of roughly 16% from the existing contract. Carbon Activated Corporation obtains its raw activated carbon from China. A recent increase in import costs has resulted in an increase in material costs for this contract.

Staff have reviewed all bids and have determined that Carbon Activated Corporation's bid meets all of the requirements of the specifications. Carbon Activated Corporation has performed in accordance with the terms of its current Deer Island contract. Staff have been satisfied with the product and service provided by the company under that contract and under other Authority contracts with one exception. Virgin carbon delivered by Carbon Activated Corporation to the Nut Island Headworks in late February/early March of 2017 did not meet the specified requirements for breakthrough capacity. MWRA applied a credit of \$77,600 against Carbon Activated Corporation's invoice, which represented the estimated cost difference for the carbon furnished. Testing for breakthrough capacity does not apply to the Deer Island carbon because Deer Island uses regenerated carbon rather than virgin carbon. The specifications for the Deer Island contract do provide for testing, at the Authority's discretion, to confirm compliance with the specified product requirements including testing for iodine value and butane activity.

Therefore, staff recommend the award of this purchase order contract to Carbon Activated Corporation as the lowest responsive bidder.

BUDGET/FISCAL IMPACT:

The FY19 Current Expense Budget contains sufficient funding for supply, delivery, and disposal of regenerated activated carbon. The Proposed FY20 and FY21 CEBs will also include sufficient funds for the remaining two years of this contract.

MBE/WBE PARTICIPATION:

Carbon Activated Corporation is not a certified Minority- or Woman-owned business.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 19, 2018
SUBJECT: Struvite, Scum, Sludge, and Grit Removal Services at the Deer Island Treatment Plant
Moran Environmental Recovery, LLC
WRA-4551

COMMITTEE: Wastewater Policy & Oversight

 INFORMATION

 X VOTE


Michele S. Gillen

Director of Administration

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



David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To approve the award of Purchase Order Contract WRA-4551, a two-year contract to provide struvite, scum, sludge and grit removal services at the Deer Island Treatment Plant, to the lowest responsive bidder, Moran Environmental Recovery, LLC, and to authorize the Executive Director, on behalf of the Authority, to execute said purchase order contract in an amount not to exceed \$901,960 for a period of two years, from September 19, 2018 through September 18, 2020.

DISCUSSION:

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.

Staff mitigate struvite build-up with the addition of ferrous and/or ferric chloride to the digesters, which binds up soluble phosphate and



reduces the risk of struvite formation. However, struvite build-up can still occur. When it does, it requires the specialized services and industrial equipment of specialty contractors, often working in confined spaces.

Staff also use these specialized services to clean severe blockages or build-up of scum, sludge and grit in a number of other process areas of the plant. An example of struvite that has been removed can be seen in the picture on the right.



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 as a last-resort measure, as MWRA staff are generally the first option in clearing blockages. Deer Island utilizes 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 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 that is 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. In addition to this contract, the Board of Directors authorized the award of WRA-4425 in November 2018 to Kemira Water Solutions, Inc., for \$1,490,000 for a one-year supply of ferrous chloride for use in struvite prevention.

Procurement Process

Bid WRA-4551 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 3494), and six potential bidders were solicited through the e-Portal.

On August 1, 2018, Event 3494 closed with the following results:

BIDDER	TOTAL BID PRICE
Moran Environmental Recovery, LLC	\$ 901,960.00
Clean Harbors Environmental Services	\$ 928,400.00
Clean Venture, Inc.	\$1,027,850.00

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 400 tons of solid material and 50,000 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 as-needed off-hour emergency work, 250 hours of which are with a five-person crew and 250 hours of which are with a three-person crew. These bid items will only be used 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.

Staff have reviewed Moran Environmental's bid and have determined that it meets all of the requirements of the bid specifications. This firm's bid is 3% less than Clean Harbors' bid, the incumbent on the current contract. Moran Environmental has previously performed these services and staff were satisfied with the vendor's performance. Therefore, staff recommend the award of this purchase order contract to Moran Environmental Recovery, LLC as the lowest responsive bidder.

BUDGET/FISCAL IMPACT:

The FY19 Current Expense Budget contains sufficient funding for struvite, scum, sludge and grit removal. Future CEBs will also include sufficient funds for the remaining term of this contract.

MBE/WBE PARTICIPATION:

Moran Environmental Recovery, LLC is not a certified Minority- or Women-owned business.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Chelsea Creek Headworks Upgrade
BHD/BEC 2015, A Joint Venture
Contract 7161, Change Order 18



COMMITTEE: Wastewater Policy & Oversight

INFORMATION
 VOTE

Martin E. McGowan, Construction Coordinator
Corinne M. Barrett, Director, Construction
Preparer/Title



David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 18 to Contract 7161, Chelsea Creek Headworks Upgrade, with BHD/BEC 2015, A Joint Venture, for an amount not to exceed \$400,000.00, increasing the contract amount from \$79,438,131.46 to \$79,838,131.46, with no increase in contract term.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7161 in an amount not to exceed the aggregate of \$250,000, in accordance with the Management Policies and Procedures of the Board of Directors.

DISCUSSION:

The Chelsea Creek Headworks is one of three remote headworks facilities that provides preliminary treatment and flow control of the wastewater from MWRA's Northern Service Area before reaching the Deer Island Treatment Plant. Preliminary treatment at the headworks facilities includes grit and screenings removal, which prevents excessive wear and maintenance of equipment at the North Main Pump Station, and protects the cross harbor tunnels from filling with debris. The Chelsea Creek Headworks was constructed in the 1960s and received its last significant upgrade in 1987.

This project is the first of the complete upgrades to the three headworks facilities and includes automation of the screenings collection and solids conveyance system, allowing the facility to be unstaffed during dry weather flows. The following items are being replaced:

- grit collector systems;
- existing climber screens with catenary screens;

- influent and effluent sluice gates;
- the gates' hydraulic operating system with electric gate actuators;
- HVAC systems will be upgraded;
- a new carbon adsorber odor control system is being installed and redundancy is being added to both systems;
- ancillary systems including the emergency generator, fuel oil tank, and transformer are being replaced;
- instrumentation and control systems are being upgraded;
- the communications tower is being replaced and a communications building is being added;
- abatement of hazardous building materials including paint containing PCBs, flood protection measures to protect the facility to the 100-year flood elevation plus 2.5 feet, and upgrades to meet current code requirements for egress, plumbing, electrical; and,
- fire suppression.

This Change Order

Change Order 18 consists of the following two items:

Perform a Deep Soil Boring and Design, Furnish and Install Sixteen 70-foot Micropiles to Support a Concrete Mat Foundation for the New Microwave Antenna Tower in lieu of Specified 22-foot by 22-foot Concrete Mat Foundation

Not to exceed \$325,000

The Contractor is required under the contract to demolish the existing 160-foot microwave antenna tower and construct a new 160-foot tower and required foundation at another location on the Chelsea Creek Headworks site. The existing tower was installed in the 1990s and must be relocated from its current location to provide access to the new grit and screenings dumpsters, which are being moved inside the facility as part of this contract. The new tower location was changed during design when a decision was made to relocate the outdoor odor control equipment from the north side of the site to the south side, as a new hotel was being built north of the facility. Additional soil borings were not taken at this time. However, the contract documents stated that MWRA had conducted soil borings in the location of the new tower and a Geotechnical report was available for review. After commencement of the contract and during submittal phase, the tower installation subcontractor requested this information, so that the tower manufacturer could complete the design of the foundation. Since this information was not available, the Contractor was required to perform a deep soil boring to determine the soil capacity so that the detailed design of the foundation could be completed. Once this information was available, the design resulted in a 32-foot by 32-foot mat foundation, which is significantly larger than the foundation indicated in the contract documents. A foundation of this size would be in conflict with an existing 24-inch natural gas main and the MWRA sewer that runs between the Headworks and Screen House. To avoid these conflicts, the tower installation subcontractor proposed a micropile foundation that will fit within the available space. The Contractor will furnish and install sixteen 70-foot micropiles to support a 24-foot x 21.5-foot concrete mat foundation for the new antenna tower in lieu of the specified foundation.



Proposed microwave antenna tower footprint (red) and 24-inch gas main (yellow) and MWRA sewer (green)



Drilling micropile and preparing for pile load test to confirm pile capacity

The approved PCO for this item has been identified by MWRA staff as a design omission. MWRA staff, the Consultant, and the Contractor have agreed to an amount not to exceed \$325,000 for this additional work with no increase in contract term. Staff and the Contractor are currently negotiating the final lump sum cost of this item. The Contractor proceeded with this work at its own risk in order to continue with the remainder of the contract work.

Furnish and Install Additional Reinforcing Steel and Longer H-Section Piles at the Thrust Blocks, Stone Bedding and Filter Fabric and Perform Additional Load Testing on Piles for the 36-inch Water Main

Not to exceed \$75,000

The Contractor is required to relocate an existing MWRA 36-inch water main (Section 37) adjacent to the Chelsea Headworks to accommodate construction of the new outdoor odor control equipment. This relocation includes 200 linear feet of ductile iron pipe with concrete thrust blocks at the 90-degree and 45-degree bends. Soil boring data collected during design indicated the top 10 feet of soil is comprised of urban fill, peat, sea shell debris, and silty sand. These soils are not suitable for supporting the loads of the new pipe and thrust blocks, so the design requires pile foundations using steel H-section piles. After commencement of the contract, the consultant realized the concrete thrust blocks at the 45-degree bends had insufficient reinforcing steel and the H-section piles supporting these thrust blocks were not long enough to provide the necessary friction to transfer the anticipated loads in these locations. To correct this error, the Contractor must install additional reinforcing steel and increase the steel H-section piles from 20-feet to 65-feet. One of the two piles had already been driven when this error was discovered, so the pile had to be spliced to provide the required length.

Additionally, pile caps are spaced approximately every 10-feet along the length of this pipe section. The contract documents indicate that the use of ¾-inch stone as bedding for the water main at each of the pile caps and incorrectly indicates the use of compacted soil in the areas between the pile caps. After commencement of the contract and prior to installing the water main, the consultant determined that ¾-inch stone should be used for bedding along the entire pipe length along with a geotextile filter fabric to prevent the bedding from being fouled with silt and fines in

the surrounding soil. To correct this error, the Contractor will furnish and install a geotextile filter fabric and ¾-inch stone under the entire length of the 36-inch water main.

Finally, a number of piles supporting the water main were driven to the specified depth with fewer hammer blows compared to the test piles. This caused concern that the soil conditions in local areas had less capacity than the soil borings and pile testing indicated and these piles may not provide the necessary skin friction to prevent settling. Excessive settlement of the water main piles could potentially cause a major water leak. Due to the proximity of the water main, odor control facility and existing Headworks building, a water leak could cause significant damage and be extremely difficult to repair. Staff felt it was prudent to have the Contractor conduct additional static load testing along with a settlement monitoring program to confirm the questionable piles still achieved the required design capacity. The additional load testing and settlement monitoring program showed no settlement at the rated load and the water main installation was able to proceed without additional modifications to the pile support system.



Additional reinforcing steel installed at thrust block.



Stone bedding and filter fabric along length of pipe.

The first two items on the approved PCO have been identified by MWRA staff as design errors, and the final item has been identified as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to an amount not to exceed \$75,000 for this additional work with no increase in contract term. Staff and the Contractor are currently negotiating the final lump sum cost of this item. The Contractor proceeded with this work at its own risk in order to proceed with the remainder of the contract work.

CONTRACT SUMMARY:

	<u>Amount</u>	<u>Time</u>	<u>Dated</u>
Original Contract:	\$72,859,000.00	1,460 Days	11/22/16
Change Orders:			
Change Order 1	\$252,512.00	0 Days	06/29/17
Change Order 2*	\$208,431.00	0 Days	07/24/17
Change Order 3	\$1,129,740.20	0 Days	07/24/17
Change Order 4*	\$237,870.00	0 Days	10/18/17
Change Order 5	\$304,036.26	0 Days	12/21/17
Change Order 6*	\$207,226.00	0 Days	01/26/18

Change Order 7	\$1,278,783.00	0 Days	02/07/18
Change Order 8	\$937,267.00	0 Days	02/22/18
Change Order 9	\$17,321.00	0 Days	04/03/18
Change Order 10*	\$20,879.00	0 Days	04/11/18
Change Order 11*	\$200,000.00	0 Days	05/18/18
Change Order 12	\$1,000,000.00	0 Days	05/31/18
Change Order 13*	\$129,783.00	0 Days	06/12/18
Change Order 14	\$500,000.00	0 Days	06/28/18
Change Order 15*	\$24,634.00	0 Days	08/20/18
Change Order 16*	\$21,584.00	0 Days	08/24/18
Change Order 17*	\$109,065.00	0 Days	Pending
Change Order 18	<u>\$400,000.00</u>	<u>0 Days</u>	Pending
Total of Change Orders:	\$6,979,131.46	0 Days	
Adjusted Contract:	\$79,838,131.46	1,460 Days	

*Approved under delegated authority

If Change Order 18 is approved, the cumulative value of all change orders to this contract will be \$6,979,131.46 or 9.6% of the original contract amount. Work on this contract is approximately 44% complete.

BUDGET/FISCAL IMPACT:

The FY19 Capital Improvement Program budget includes \$80,520,000 for Contract 7161. Including this change order for \$400,000.00, the adjusted subphase total is \$79,838,131.46.

MBE/WBE PARTICIPATION:

The MBE/WBE participation requirements for this project were established at 3.4% and 3.8%, respectively. The Contractor has been notified that these requirements are still expected to be met.




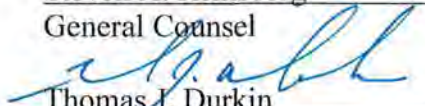
STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Deer Island HEEC Cable Funding



COMMITTEE: Wastewater Policy & Oversight

VOTE
 INFORMATION


Brian A. Rozowsky
Director, Internal Audit
David W. Coppes, P.E.
Chief Operating Officer

Steven A. Remsberg
General Counsel

Thomas J. Durkin
Director of Finance

RECOMMENDATION:

To authorize the Executive Director or his designee, on behalf of the Authority, to reach an understanding with Harbor Electric Energy Company (HEEC) regarding the application of progress payments as and when made by MWRA "on account" including prior to completion of the cable to keep HEEC's interim construction financing and borrowing costs to a minimum relative to HEEC's expenditures upon the new cross harbor electric cable, all consistent with the provisions of the parties' May 9, 2017 Memorandum of Agreement approved by the Board of Directors on May 8, 2017.

DISCUSSION:

The Memorandum of Agreement – New Electric Cable to Deer Island between MWRA and HEEC dated and executed on May 9, 2017, (MOA) provides for the construction of a new cross harbor electric cable to serve as a source of electricity to Deer Island, replacing the existing cable. The original estimated Total Project cost was \$114 million. The current estimate is \$115.6 million. MWRA and HEEC agreed that MWRA will pay 50% of the Total Project (net of the negotiated \$17.5 million credit for the value of the service life remaining in the existing cable) at the in-service date estimated to be December 31, 2019 or earlier if the parties agree.

It has been preliminarily determined by the Massachusetts Department of Public Utilities (DPU #17-136) that HEEC is entitled to charge MWRA an Allowance for Funds Used During Construction (AFUDC) even though the MOA did not expressly refer to AFUDC as a component of HEEC's costs. DPU's preliminary decision remains subject always to both parties' final arguments following the cable's installation concerning amounts of allowable AFUDC and the

proper methodology for calculating those costs. AFUDC is essentially a combination of interest expense on borrowed funds and a rate of return on capital invested while in construction. The current estimated AFUDC rate is 6.66% with the final rate to be approved by DPU.

Since tax-exempt bonds have restrictions as to their use and cannot be utilized to finance this project, MWRA will be using available Current Revenue for Capital funds to pay the cost. Those funds are invested in the Massachusetts Municipal Depository Trust money market account currently earning 2.22%. The interest earned on those funds is less than the estimated AFUDC.

Therefore, to minimize this cost for MWRA, staff propose making progress payments rather than waiting to pay the full 50% of the project on or about December 31, 2019. This option is expressly provided for in the May 9, 2018 MOA.

HEEC reports that approximately \$27.5 million has been spent to date. Staff will evaluate the most advantageous amount and timing of MWRA's progress payment to minimize the AFUDC charge.

BUDGET/FISCAL IMPACT:

There will be two funding sources for this project. 50% of the new cable project after credits will be paid to HEEC from the balance of the Current Revenue for Capital funds budgeted in FY2019 and prior years. The annual "capacity charge" of the new cable, similar to the old cable's financial arrangement, will be funded from the Indirect Expense section of the Current Expense Budget over 30 years.



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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WATER POLICY AND OVERSIGHT COMMITTEE MEETING

to be held on

Wednesday, September 19, 2018

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

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

Time: Immediately following Wastewater Committee

AGENDA

A. Information

1. Update on Water Quality (Verbal Report)

B. Contract Awards

1. Demolition of Section 56 Water Main, General Edwards Bridge: R. Zoppo Corporation, Contract 7536

C. Contract Amendments/Change Orders

1. Northern Intermediate High Section 110 – Stoneham and Wakefield: Albanese D&S, Inc., Contract 7478, Change Order 13
2. Wachusett Aqueduct Pumping Station: BHD/BEC JV 2015, A Joint Venture, Contract 7157, Change Order 51

MASSACHUSETTS WATER RESOURCES AUTHORITY

Meeting of the

Water Policy and Oversight Committee

July 18, 2018

A meeting of the Water Policy and Oversight Committee was held on July 18, 2018 at the Authority headquarters in Charlestown. Committee Vice Chair Peña presided. Present from the Board were Messrs. Carroll, Cotter, Flanagan, Pappastergion, Vitale and Walsh. Ms. Wolowicz and Mr. Foti were absent. Among those present from the Authority staff were Frederick Laskey, Steven Remsberg, David Coppes, Carolyn Fiore, Thomas Durkin, Corinne Barrett, Bethany Card, John Colbert, Joshua Das, Carmine DeMaria, Stephen Estes-Smargiassi, Michele Gillen, Carl Leone, Nava Navanandan, Michael Rivard, Jeremiah Sheehan, Vincent Spada and Kristin MacDougall. The meeting was called to order at 10:17 a.m.

Information

Update on Lead and Copper

Staff made a presentation to update the Board of Directors on current issues and activities related to lead in drinking water. There was discussion and questions and answers.

Accomplishments on Construction Contracts

Staff made a presentation to update the Board of Directors on recent water construction contracts and milestones that have been achieved.

Approvals

* Emergency Water Supply Agreement with the Town of Burlington

Staff made a presentation about a proposed Emergency Water Supply Agreement with the Town of Burlington, as presented and filed with the records of the meeting. There was brief discussion and questions and answers.

The Committee recommended approval (ref W B.1)

* Committee recommendation approved by the Board on July 18, 2018

Contract Awards

*** Bellevue 2 Tank and Turkey Hill Steel Water Storage Tanks Painting: Worldwide Industries, Corp., Contract 7634**

Staff made a presentation about the project, recommended award of MWRA Contract 7634 to Worldwide Industries Corp., the lowest responsible and eligible bidder, and authorized the Executive Director, on behalf of the Authority, to execute said contract. There was brief discussion and questions and answers.

The Committee recommended approval (ref. W C.1.)

Contract Amendments/Change Orders

*** Weston Aqueduct Supply Main 3: Design, Construction Administration and Resident Engineering Services: Stantec Consulting Services, Inc., Contract 6539, Amendment 1**

Staff made a presentation about the project and recommended approval of Amendment 1 to MWRA Contract 6539. There was brief discussion and questions and answers.

The Committee recommended approval (ref. W D.1.)

*** Wachusett Aqueduct Pumping Station, BHD/BEC JV 2015, A Joint Venture: Contract 7157, Change Order 39**

Staff made a presentation about the project and recommended approval of Change Order 2 to MWRA Contract 7157. There was brief discussion and questions and answers.

The Committee recommended approval (ref. W D.2.)

*** Northern Intermediate High Section 110-Stoneham: Albanese D&S, Inc., Contract 7067, Change Order 2**

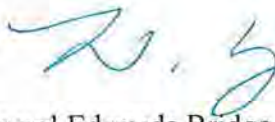
Staff made a verbal presentation about the project and recommended approval of Change Order 39 to MWRA Contract 7157. There was brief discussion and questions and answers.

The Committee recommended approval (ref. W D.3.)

The meeting adjourned at 11:32 a.m.

* Committee recommendation approved by the Board on July 18, 2018

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 19, 2018
SUBJECT: Demolition of Section 56 Water Main General Edwards Bridge
R. Zoppo Corporation
Contract No. 7536

COMMITTEE: Water Policy & Oversight


INFORMATION

VOTE


Michele S. Gillen

Director of Administration

John Colbert, P.E., Acting Chief Engineer
Geetha Mathiyalakan, P.E., Program Manager
Preparer/Title


David W. Coppes, P. E.
Chief Operating Officer

RECOMMENDATION:

To approve the award of Contract 7536, Demolition of Section 56 Water Main General Edwards Bridge, to the lowest responsible and eligible bidder, R. Zoppo Corporation, and to authorize the Executive Director, on behalf of the Authority, to execute said contract, in the bid amount of \$1,898,500, for a contract term of 150 calendar days from the Notice to Proceed.

BACKGROUND:

MWRA's Section 56 water main was constructed in 1934 and crosses the Saugus River at the Revere/Lynn city line. The 20-inch diameter steel pipe runs along the underside of the General Edwards Bridge. The crossing between the north and south bridge abutments is approximately 1,400 feet long (see Attachments 1 and 2). It transitions to a 30-inch diameter flanged steel pipe that runs vertically within concrete towers on either side of the draw bridge, down to two tunnel shafts, and under the federal navigation channel (see Figure 1).

Section 56 is part of the Northern High service area and supplies Nahant, Swampscott, Marblehead, Peabody and the GE facility in Lynn. The section of pipeline on the General Edwards Bridge is no longer in service due to severe corrosion and the area is being served through other, redundant pipelines. The pipe support bracket angles have damaged the bridge girders due to thermal expansion and failure of the pipe expansion joints. The Massachusetts Department of Transportation (MassDOT) has requested that MWRA remove the pipe support bracket angles that are damaging the bridge. Staff propose to remove the water main and pipe support bracket angles from the bridge through this construction contract (see Figure 2). The FY19 CIP includes a separate project for the design and construction of a new water main under the Saugus River to replace this section using horizontal directional drilling.



Figure 1 – General Edwards Bridge, East Elevation.

DISCUSSION:

This contract includes asbestos and lead paint encapsulation, and removal of the 20-inch and 30-inch steel water main from the General Edwards Bridge. The portion of the water main that runs vertically within the towers down from the bridge on either side of the draw bridge, and the portion of the pipe that is under the federal channel and the tunnel shafts, is proposed to be abandoned in place. The work includes capping the remaining pipe at each open end, and demolition of the existing 20-inch butterfly isolation valves and valve vaults located north and south sides of the bridge abutments.



Figure 2 - Pipe and support bracket angles.

The anticipated construction procedure will include work from on top of the bridge, work from a crane or lifter mounted on a barge, and access to shallow areas with limited headspace. This contract also includes permit and regulatory requirements of the U. S. Army Corps of Engineers, U.S. Coast Guard Construction Approval, Revere and Lynn Orders of Conditions, MassDOT permit to access State Highway, and DCR Construction Access Permit for the proposed installation of staging, barges, or other means necessary to provide access to the work. The Army Corps of Engineers general permit requires that the barge work in the Saugus River be performed between November 15 and February 15 to protect fish species.

Procurement Process:

Contract 7536 was advertised in the Central Register, the Boston Herald, El Mundo and the Banner Publication, and bid utilizing MWRA's e-procurement system (Event Document 3532) in accordance with Massachusetts General Laws, Chapter 30. Five bids were received and opened on August 31, 2018. The bid results were as follows:

<u>Bidders</u>	<u>Bid Amount</u>
R. Zoppo Corporation	\$1,898,500
<i>Engineers Estimate</i>	<i>\$1,920,903</i>
S&R Corporation	\$2,169,992
Unified Contracting, Inc.	\$2,373,860
Mackay Construction	\$2,482,401
Northern Construction Service	\$3,089,800

R. Zoppo Corporation submitted a bid price that is \$22,403 (1.2%) lower than the Engineer's Estimate, and 14.3 % lower than the next lowest bidder.

Staff discussed the bid with R. Zoppo Corporation and confirmed that the bid price reflects all specified work including permit constraints, time restrictions from the state highway access permit, and contaminated materials such as lead-containing paint and asbestos containing insulation. References for the firm were checked and found to be favorable. R. Zoppo Corporation is experienced with performing work on the state highway system for MassDOT and has completed projects for MWRA, including the recent Section 80 Emergency Repair (Contract OP-352), Beacon Street Water Line Repair (Contract 7458), and Wachusett Reservoir Spillway Improvements and Quabbin Reservoir Drain and Spillway Repair (Contract 7020).

After reviewing the bid and interviewing the Contractor, staff have concluded that R. Zoppo Corporation 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 payment of prevailing wages, as required. Therefore, staff recommend that Contract 7536 be awarded to R. Zoppo Corporation as the lowest responsible and eligible bidder.

BUDGET/FISCAL IMPACT:

The FY19 Capital Improvement Program includes a budget of \$1,481,214 for Contract 7536. The recommended contract award amount is \$1,898,500 or \$417,286 over budget. This amount will be absorbed within the five-year CIP spending cap.

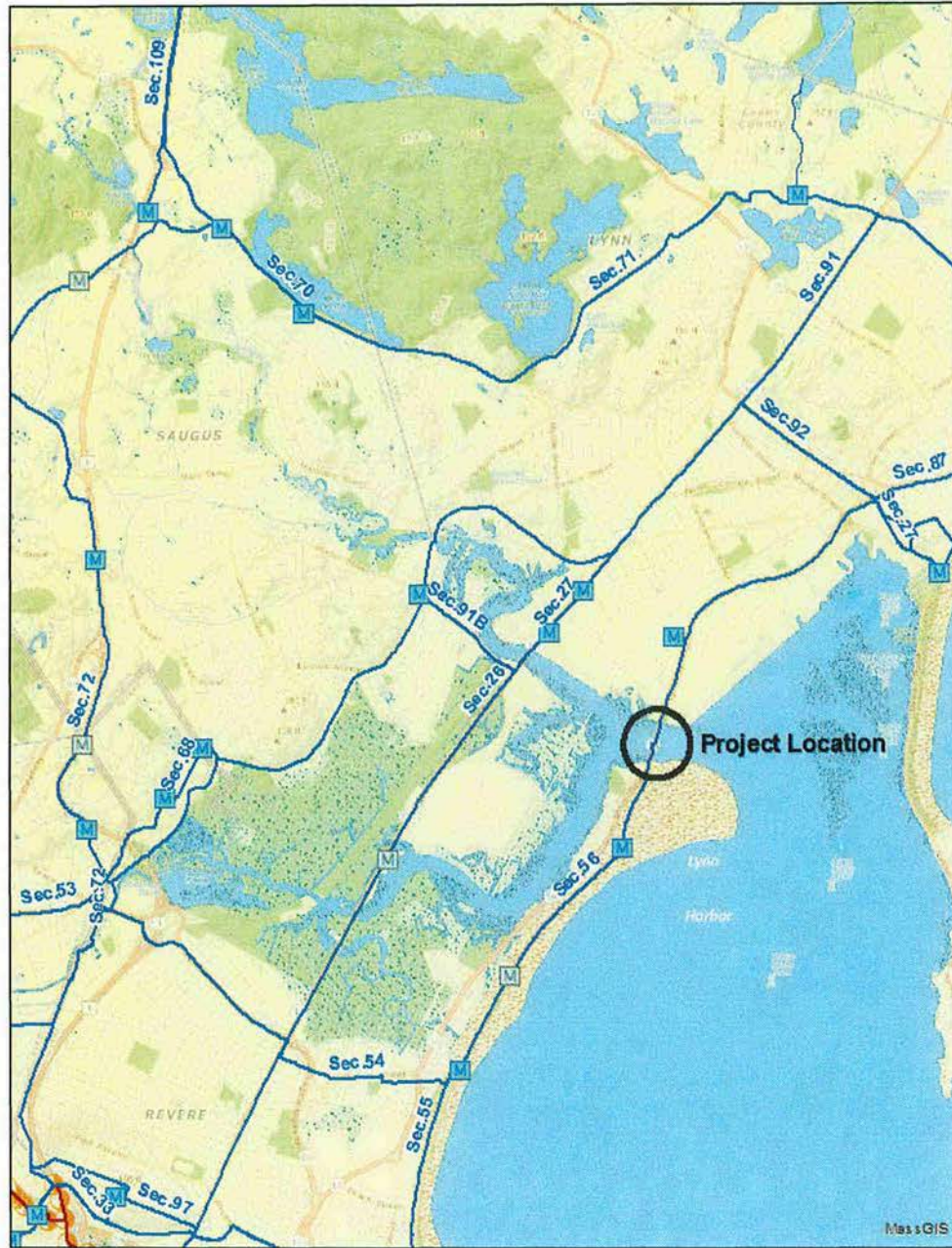
MBE/WBE PARTICIPATION:

There were no minimum MBE and WBE participation requirements established for this contract due to the limited opportunities for subcontracting.

ATTACHMENTS:

1. Section 56 Saugus River Crossing/Project Location
2. General Edwards Bridge – Approximate Limits of the demolition under Contract 7536

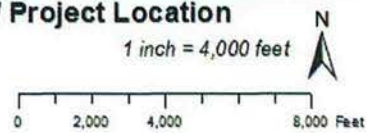
Attachment 1



Section 56 Saugus River Crossing / Project Location




1 inch = 4,000 feet



Attachment 2




STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director 
DATE: September 19, 2018
SUBJECT: Northern Intermediate High Section 110 – Stoneham and Wakefield
Albanese D&S, Inc.
Contract 7478, Change Order 13

COMMITTEE: Water Policy and Oversight

INFORMATION
 VOTE

Corinne M. Barrett, Director, Construction
Jeremiah Sheehan, Construction Coordinator
Preparer/Title


David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 13 to Contract 7478, Northern Intermediate High Section 110 – Stoneham and Wakefield, with Albanese D&S, Inc., for a net amount not to exceed \$5,132.00, increasing the contract amount from \$18,567,415.21 to \$18,572,547.21, with no increase in the contract term.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7478 in an amount not to exceed the aggregate of \$250,000, in accordance with the Management Policies and Procedures of the Board of Directors.

DISCUSSION:

From the Gillis Pump Station at Spot Pond in Stoneham, there is currently a sole 48-inch pipeline, Section 89, that provides water supply to the MWRA's Northern Intermediate High service area of Reading, Stoneham, Wakefield, Wilmington, Winchester, and Woburn. This Section 89 pipeline is a three-mile-long, four-foot diameter, pre-stressed concrete cylinder pipe transmission pipeline without adequate redundancy other than a century old 24-inch pipeline, Section 29. Due to water demands and lack of redundancy, Section 89 cannot be taken out of service for inspection or for repairs. Also any unexpected failure of this pipeline, Section 89, would result in a rapid loss of water supply to Reading, Stoneham and Woburn, and potential water restrictions in Wakefield, Wilmington and Winchester.

The project goal is to design and construct a new pipeline that will provide redundancy to the above communities so that Section 89 can be removed from service for inspection and

rehabilitation. Contract 7478 or Phase 3 contract consists of the installation of 7,800 linear feet of 48-inch water transmission pipeline in the Town of Stoneham and 2,600 linear feet of 12-inch and 16-inch diameter water transmission pipelines in Wakefield. This is one of the final phases in the construction of a redundant pipeline to serve the above communities.

This Change Order

Change Order 13 consists of the following two item:

Increase Traffic Control Allowance

Not to Exceed \$100,000.00

In addition to the lump sum amount included in the Contractor's bid for traffic control specified on the Construction Zone Safety Plan (CZSP) drawings, the contract included an additional \$300,000 allowance for police details and other traffic control. Several factors have resulted in an overrun of the traffic control allowance. Under the contract, the Contractor is reimbursed for the difference between the original base rate for Town of Stoneham police details at \$47.79 per hour and any future increases. Since the start of construction, the regular hourly base rate for police details has risen to the current rate of \$62.37.

Also, in order to install the new pipeline on major streets like North Street and William Street, lengthy detours of vehicle traffic to smaller side streets are necessary. As a result of the increased vehicle traffic, residents are complaining at public meetings about excessive speeding on the side streets. The Town of Stoneham has directed the MWRA to hire additional police details and implement traffic calming measures to minimize speeding. In order to complete the work within the specified time frame additional crews were necessary to install the 48-inch water main. At times, the Contractor has had as many as five pipe laying crews working in a small radius near Oak Street. This multitude of crews is requiring additional traffic detours that were not envisioned in the original CZSP drawings. This is resulting in the assignment of additional police details to ensure traffic flow issues are minimized. Moreover, during school season the assignment of additional police details is necessary to facilitate access to the Robin Hood Elementary school through the construction zone detours for parents and school buses.



Police Details at intersection of Main Street and North Street



Police Detail at Oak Street

The approved PCO for this item has been identified by MWRA staff as an overrun in quantities. MWRA staff, the Consultant, and the Contractor have estimated an amount not to exceed \$100,000 for the additional police details required for the remaining work with no increase in contract term.

Decrease the Town of Stoneham Fire Department

(\$94,868.00)

The contract allowed the use of blasting in order to remove the estimated quantity of 9,900 cubic yards of ledge along the pipeline alignment. For safety reasons, it is a mandatory requirement of the Town of Stoneham Fire Department that a Fire Detail officer is present during blasting with dynamite. While the contract included an allowance of \$100,000 for Town of Stoneham Fire Department services in anticipation of the blasting the Contractor, after attempting blasting for two weeks, chose to use a backhoe mounted hydraulic rammer to break the ledge in lieu of blasting, (see pictures). As a result of the Contractor's method of ledge removal the Town of Stoneham Fire Department services were not required, resulting in a credit of (\$94,868.00) to the contract.



Size of Hydraulic Rammer



Backhoe Mounted Hydraulic Rammer

The approved PCO for this item has been identified by MWRA staff as an underrun in quantities. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum credit amount of (\$94,868).

CONTRACT SUMMARY:

	<u>Amount</u>	<u>Time</u>	<u>Dated</u>
Original Contract:	\$17,817,999.00	610 Days	01/12/17
Change Orders:			
Change Order 1*	\$48,394.28	0 Days	06/07/17
Change Order 2*	\$20,000.00	0 Days	10/02/17
Change Order 3*	\$20,000.00	0 Days	10/16/17
Change Order 4*	\$14,850.00	0 Days	10/30/17
Change Order 5	\$424,646.00	0 Days	12/27/17
Change Order 6*	\$9,565.00	0 Days	03/02/18

Change Order 7*	\$83,034.59	0 Days	04/04/18
Change Order 8*	\$0.00	0 Days	04/11/18
Change Order 9*	\$14,504.06	0 Days	04/25/18
Change Order 10*	\$13,660.00	0 Days	07/11/18
Change Order 11*	\$45,762.28	0 Days	07/25/18
Change Order 12*	\$55,000.00	0 Days	09/10/18
Change Order 13	\$5,132.00	<u>0 Days</u>	Pending
Total Change Orders:	\$754,548.21	0 Days	
Adjusted Contract:	\$18,572,547.21	610 Days	

*Approved under delegated authority

If Change Order 13 is approved, the cumulative value of all change orders to this contract will be \$754,548.21 or 4.2% of the original contract amount. Work on this contract is approximately 92% complete.

BUDGET/FISCAL IMPACT:

The FY19 Capital Improvement Program budget includes \$18,662,000 for Contact 7478. Including this change order for \$5,132, the adjusted subphase total is \$18,572,547.21.

MBE/WBE PARTICIPATION:

The MBE/WBE participation requirements for this project were established at 7.24% and 3.6%, respectively. The Contractor has been notified that these requirements are still expected to be met.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 19, 2018
SUBJECT: Wachusett Aqueduct Pumping Station
BHD/BEC JV 2015, A Joint Venture
Contract 7157, Change Order 51



COMMITTEE: Water Policy and Oversight

 INFORMATION
 X VOTE

Corinne M. Barrett, Director, Construction
Vincent Spada, P.E. Construction Coordinator
Preparer/Title


David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 51 to Contract 7157, Wachusett Aqueduct Pumping Station, with BHD/BEC JV 2015, A Joint Venture, for a lump sum amount of \$273,755.00, increasing the contract amount from \$50,144,832.03 to \$50,418,587.03, with no increase in contract term.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7157 in an amount not to exceed the aggregate of \$250,000, in accordance with the Management Policies and Procedures of the Board of Directors.

DISCUSSION:

The water transmission system between the Wachusett Reservoir and the John J. Carroll Water Treatment Plant consists of the Cosgrove Tunnel and the Wachusett Aqueduct. The Cosgrove Tunnel provides the primary raw water supply to the Carroll Plant and the Wachusett Aqueduct is an emergency back-up. Although rehabilitation of the Wachusett Aqueduct in 2003 allowed its use during a short winter duration so that the Cosgrove Tunnel could be connected to the Carroll Plant, it is limited in its flow capacity (approximately 240 MGD) and it cannot meet the grade line requirements of the Carroll Plant in the event of an emergency. Since the Wachusett Aqueduct operates at a lower hydraulic grade line than the Cosgrove Tunnel, water cannot flow from it into the Carroll Plant's ozone contactors without pumping. If the Wachusett Aqueduct were needed in an emergency, the Carroll Plant would have to be shut down and temporary chlorination facilities would have to be installed at the upstream-end of the aqueduct, at the base of the Wachusett dam, to provide disinfection. Demand management would be required during periods of summer high water use if demand exceeded the aqueduct's capacity.

Once completed, this new pumping station will allow the Wachusett Aqueduct to provide up to 240 MGD of redundant capacity for the Cosgrove Tunnel. Completion of the Hultman Aqueduct rehabilitation and interconnections project provided redundancy for the MetroWest Water Supply Tunnel. Together, these projects will provide water transmission redundancy from Wachusett Reservoir to the metropolitan tunnel system.

This Change Order

Change Order 51 consists of the following 3 items:

Furnish and Install a Rip Rap Outlet Channel at the
Surge Tank Overflow

\$161,389.00

The contract documents require the installation of a rip rap discharge channel into the forebay for the surge tank overflow. The discharge channel was designed for short, 10 second duration, surge tank overflow events resulting from rapid pump station shutdown as in a power failure. During pump testing, water from the Wachusett Aqueduct pumped to the Carroll Water Treatment Plant exceeded allowable turbidity levels resulting in suspension of testing. Staff were able to resume testing by pumping to the surge tank to overflow, thereby flushing the Aqueduct and pump station until turbidity levels stabilized. Testing to the treatment plant could



Surge Tank Overflow

then be resumed. This method will be used in the future following long periods of inactivity to reduce the chance of turbidity exceedances. This method requires overflowing high volumes of water for 10 to 15 minute durations. Due to the large water volume and increased duration, significant erosion of the rip rap discharge channel and forebay bank occurred. It was unforeseen that the surge tank would be used to flush the Aqueduct at high volumes for long durations. The Contractor must now repair the existing discharge channel and furnish and install additional rip rap and filter fabric to rebuild the rip rap channel wider and deeper than originally constructed and furnish and install a 12-foot x 7-foot reinforced concrete stilling basin at the surge tank outlet.

This item has been identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of \$161,389.00 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to continue with the remainder of the contract work.

Modify Pump Surge Control Valve Operation

\$79,409.00

The contract documents require the installation of pump surge control valves at each of the seven vertical turbine pumps. The control strategy developed during design to bring on an additional pump was to force the plant inlet channel to overflow from the additional pump until the ozone contactors could slowly adjust to the higher flow. The purpose of this was to prevent a rapid change in the water level in the ozone contactors that would adversely impact the contactor operation. Plant operations staff have subsequently begun operating the influent level at a lower setpoint to reduce the potential for spilling raw water during normal operations. A modification to the control valve programming is needed to control the flow rate into the ozone contactors by slowing the opening speed of the surge control valves to a rate that will allow an additional pump to be brought on line without adversely impacting the ozone contactors.

Additional analog data wiring is required between the seven pump surge control valve programmable logic controllers (PLC) and the pumping station PLC. The additional wiring is needed to monitor the control valve closing time.



Pump Surge Control Valves

This item has been identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of \$79,409.00 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to continue with the remainder of the contract work.

Modify the Hultman Intake Building Box Culvert

\$32,957.00



Hultman Culvert

The contract documents include demolition of an existing underground 120-inch diameter concrete encased steel wye structure that joins the 120-inch diameter Hultman Intake Building outlet pipe and an abandoned 120-inch diameter pipe. The steel wye had to be removed to allow connection to the existing Hultman outlet pipe and new precast concrete box culvert discharge to the forebay. When the steel wye was excavated and removed, it was discovered that the centerline of the outlet pipe from the Hultman Intake Building was over two feet south of the location shown on the record drawings and the abandoned pipe, that was indicated as plugged in the

record drawings, was not plugged. The excavation had to be filled, the support of excavation had to be relocated, and the area re-excavated to complete the work. In addition, the abandoned pipe must be plugged in accordance with the MWRA standard practice to prevent unintended access to a potentially structurally unsafe abandoned pipe.

This item has been identified by MWRA staff as an unforeseen condition. MWRA staff, the Consultant, and the Contractor have agreed to a lump sum amount of \$32,957.00 for this additional work with no increase in contract term. The Contractor proceeded with this work at its own risk in order to continue with the remainder of the contract work.

CONTRACT SUMMARY:

	<u>Amount</u>	<u>Time</u>	<u>Dated</u>
Original Contract:	\$47,011,000.00	1,260 Days	03/01/16
Change Orders:			
Change Order 1*	(\$1,500,000.00)	(180) Days	07/25/16
Change Order 2*	\$14,766.00	0 Days	10/26/16
Change Order 3*	\$24,822.00	0 Days	11/16/16
Change Order 4*	\$199,629.92	0 Days	12/12/16
Change Order 5	\$328,039.00	0 Days	12/23/16
Change Order 6*	\$23,202.00	0 Days	01/18/17
Change Order 7*	\$24,533.12	0 Days	02/06/17
Change Order 8*	\$189,495.00	0 Days	03/06/17
Change Order 9	\$100,079.80	0 Days	03/23/17
Change Order 10*	\$24,521.45	0 Days	04/03/17
Change Order 11*	\$24,455.00	0 Days	04/12/17
Change Order 12*	\$24,659.00	0 Days	04/19/17
Change Order 13*	\$22,491.00	0 Days	05/03/17
Change Order 14*	\$19,515.00	0 Days	05/22/17
Change Order 15	\$306,664.00	0 Days	06/12/17
Change Order 16*	\$200,000.00	0 Days	07/24/17
Change Order 17*	\$23,350.00	0 Days	07/27/17

Change Order 18	\$608,007.00	0 Days	07/27/17
Change Order 19*	\$19,866.00	0 Days	08/14/17
Change Order 20*	\$222,828.00	0 Days	10/04/17
Change Order 21	\$285,385.00	0 Days	10/04/17
Change Order 22*	\$19,436.00	0 Days	10/24/17
Change Order 23*	\$24,888.00	0 Days	10/30/17
Change Order 24*	\$183,838.00	0 Days	11/28/17
Change Order 25	\$290,963.00	0 Days	11/29/17
Change Order 26*	\$22,404.00	0 Days	12/12/17
Change Order 27*	\$21,710.00	0 Days	01/03/18
Change Order 28*	\$23,825.00	0 Days	02/22/18
Change Order 29*	\$24,931.00	0 Days	02/22/18
Change Order 30*	\$15,297.00	0 Days	03/20/18
Change Order 31*	\$141,686.00	0 Days	05/14/18
Change Order 32	\$292,910.00	0 Days	06/06/18
Change Order 33*	\$23,068.00	0 Days	06/18/18
Change Order 34*	\$24,317.00	0 Days	06/18/18
Change Order 35*	\$24,773.00	0 Days	06/28/18
Change Order 36*	\$23,511.00	0 Days	07/09/18
Change Order 37*	\$18,563.00	0 Days	07/09/18
Change Order 38*	\$22,858.00	0 Days	07/11/18
Change Order 39	\$508,549.00	0 Days	07/23/18
Change Order 40*	\$24,239.00	0 Days	07/30/18
Change Order 41*	\$24,271.00	0 Days	07/31/18
Change Order 42*	\$21,892.00	0 Days	08/06/18
Change Order 43*	\$20,415.00	0 Days	08/13/18
Change Order 44*	\$20,000.00	0 Days	08/14/18
Change Order 45*	\$24,909.00	0 Days	08/27/18
Change Order 46*	\$23,709.00	0 Days	09/10/18
Change Order 47*	\$23,825.74	0 Days	09/12/18
Change Order 48*	\$24,896.00	0 Days	09/12/18
Change Order 49*	\$20,000.00	0 Days	Pending
Change Order 50*	\$11,840.00	0 Days	Pending
Change Order 51	<u>\$273,755.00</u>	<u>0 Days</u>	Pending
Total of Change Orders:	\$3,407,587.03	(180 Days)	
Adjusted Contract:	\$50,418,587.03	1080 Days	

*Approved under delegated authority

If Change Order 51 is approved, the cumulative total value of all change orders to this contract will be \$3,407,587.03 or 7.2% of the original contract amount. Work on this contract is 96% complete.

BUDGET/FISCAL IMPACT:

The FY19 CIP includes a budget of \$49,876,796 for Contract 7157. Including this change order for a lump sum amount of \$273,755, the adjusted sub phase total will be \$50,418,587.03 or \$541,791.03 over budget. This amount will be absorbed 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.



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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BOARD OF DIRECTORS' MEETING

to be held on

Wednesday, September 19, 2018

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: A. Pappastergion
Board Members:
K. Cotter
P. Flanagan
J. Foti
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. PCR Amendments for September 2018 (ref. P&C A.1)
2. Appointment of Director, Procurement (ref. P&C A.2)
3. Appointment of Manager, Occupational Health and Safety, Administration (ref. P&C A.3)
4. Appointment of Manager, Training and Development, Human Resources (ref. P&C A.4)
5. Appointment of Manager, Power Generation, Deer Island (ref. P&C A.5)
6. Appointment of Senior Program Manager, Water Quality, ENQUAL (ref. P&C A.6)
7. Appointment of Director, Design and Construction, Tunnel Redundancy (ref. P&C A.7)
8. Bond Defeasance of Future Debt Service (ref. AF&A B.1)
9. Deer Island HEEC Cable Funding [Materials to follow] (ref. WW C.1)

B. Contract Awards

1. Supply and Delivery of Sodium Hypochlorite to the Deer Island Treatment Plant: Borden & Remington Corporation, Bid WRA-4552 (ref. WW A.1)
2. Supply, Delivery and Disposal of Regenerated Activated Carbon to the Deer Island Treatment Plant: Carbon Activated Corporation, Bid WRA-4554 (ref. WW A.2)
3. Struvite, Scum, Sludge and Grit Removal Services at the Deer Island Treatment Plant: Moran Environmental Recovery, Bid WRA-4551 (ref. WW A.3)
4. Demolition of Section 56 Water Main, General Edwards Bridge: R. Zoppo Corporation, Contract 7536 (ref. W B.1)

C. Contract Amendments/Change Orders

1. Dental Insurance: Delta Dental of Massachusetts, Contract A613, Amendment 1 (ref. AF&A C.1)
2. Chelsea Creek Headworks Upgrade: BHD/BEC JV 2015, A Joint Venture, Contract 7161, Change Order 18 (ref. WW B.1)
3. Northern Intermediate High Section 110 – Stoneham and Wakefield: Albanese D&S, Inc., Contract 7478, Change Order 13 (ref. W C.1)
4. Wachusett Aqueduct Pumping Station: BHD/BEC JV 2015, A Joint Venture, Contract 7157, Change Order 51 (ref. W C.2)

V. OTHER BUSINESS

VI. CORRESPONDENCE TO THE BOARD

VII. EXECUTIVE SESSION

A. Real Estate:

1. Watershed Land Acquisition Approval
2. Simpson Housing/Langwood Commons/Stoneham Water Tank – Declaration of Easements as Surplus to MWRA's Needs

B. Litigation:

1. Annual Summary of Litigation and Construction Claims
2. Richard DaPrato/Settlement Authority/Status of Appeal

3. Settlement of Existing Claims for Contract Breaches Under MWRA Contracts 6974C and 7302

VIII. ADJOURNMENT

MASSACHUSETTS WATER RESOURCES AUTHORITY
Meeting of the Board of Directors
July 18, 2018

A meeting of the Board of Directors of the Massachusetts Water Resources Authority was held on Wednesday, July 18 at the Authority headquarters in Charlestown. Vice Chair Carroll presided. Present from the Board were Messrs. Cotter, Flanagan, Pappastergion, Peña, Vitale and Walsh. Chair Beaton, Mr. Foti and Ms. Wolowicz were absent. Among those present from the Authority staff were Frederick Laskey, Executive Director, Steven Remsberg, General Counsel, David Coppes, Chief Operating Officer, Carolyn Fiore, Deputy Chief Operating Officer, Thomas Durkin, Director of Finance, Michele Gillen, Director of Administration, Andrea Murphy, Director of Human Resources, Ria Convery, Assistant Secretary, and Kristin MacDougall, Assistant to the Board of Directors. The meeting was called to order at 1:07 p.m.

REPORT OF THE EXECUTIVE DIRECTOR

Mr. Laskey recognized Louise Miller who will leave her position as MWRA Budget Director to accept an appointment as Wayland Town Manager. He also recognized Matthew Romero who will leave his position as MWRA Advisory Board Communications Director to serve as Executive Director for the Massport Community Advisory Committee.

Additionally, Mr. Laskey noted that MWRA has notified community officials and residents about the need for water conservation as recommended by the Commonwealth's Drought Management Task Force. He also noted that the MWRA Advisory Board Field trip will be held on Thursday, August 23, 2018.

APPROVAL OF JUNE 20, 2018 MINUTES

Upon a motion duly made and seconded, it was

Voted: to approve the minutes of the Board of Directors' meeting of June 20, 2018, as presented and filed with the records of the meeting.

APPROVALS

Emergency Water Supply Agreement with the Town of Burlington

Upon a motion duly made and seconded, it was

Voted: to authorize the Executive Director, on behalf of the Authority, to execute an Emergency Water Supply Agreement with the Town of Burlington, which authorization is expressly conditioned upon MWRA Advisory Board approval for a period of emergency water supply beyond thirty days.

PCR Amendments – July 2018

Upon a motion duly made and seconded, it was

Voted: to approve amendments to the Position Control Register (PCR) as presented and filed with the records of the meeting.

Appointment of Deputy Contracts Manager

Upon a motion duly made and seconded, it was

Voted: to approve the appointment of Ms. Rita C. Mercado to the position of Deputy Contracts Manager, Administration Division (Unit 6, Grade 13) at an annual salary of \$120,130.72 commencing on a date to be determined by the Executive Director.

Appointment of General Counsel

Upon a motion duly made and seconded, it was

Voted: to approve the appointment of Ms. Carolyn Francisco-Murphy to the position of General Counsel, Law Division (Non-Union, Grade 17) at an annual salary of \$164,569, commencing on a date to be determined by the Executive Director.

Extension of the Sunset Date for Malden's Phase 6 Infiltration/Inflow Local Financial Assistance Program Funding

Upon a motion duly made and seconded, it was

Voted: to approve a one-time modification to the Infiltration/Inflow (I/I) Local Financial Assistance Program Guidelines to extend the sunset date for Malden's Phase 6 grant allocation of \$471,600 (45% of the total grant/loan allocation of \$1,048,000) for a six-month period from June 30, 2018 to December 30, 2018, contingent upon a Malden City Council sewer bond authorization vote.

Tunnel Redundancy Department Staffing

Upon a motion duly made and seconded, it was

Voted: to approve the Metropolitan Tunnel Redundancy Program staffing plan as presented and filed with the records of the meeting.

CONTRACT AWARDS

Bellevue 2 Tank and Turkey Hill Steel Water Storage Tanks Painting: Worldwide Industries Corp., Contract 7634

Upon a motion duly made and seconded, it was

Voted: to approve the award of Contract 7634, Painting for Bellevue 2 and Turkey Hill Steel Water Storage Tanks, to the lowest responsible and eligible bidder, Worldwide Industries Corp. and to authorize the Executive Director, on behalf of the Authority, to execute said contract in the bid amount of \$3,962,463, for a contract term of 180 calendar days from the Notice to Proceed.

As-Needed Resident Engineering/Resident Inspection Services: Kleinfelder Northeast, Inc., Contract 7269 and MWH Constructors, Inc., Contract 7630

Upon a motion duly made and seconded, it was

Voted: to approve the recommendation of the Consultant Selection Committee to award two separate contracts to provide as-needed Resident Engineering and Resident Inspection Services, and to authorize the Executive Director, on behalf of the Authority, to execute Contract 7629 with Kleinfelder Northeast, Inc., and Contract 7630 with MWH Constructors, Inc., each in an amount not to exceed \$1,500,000 and for a contract term of thirty-six months from the Notice to Proceed.

Sole Source Purchase Order Software/Hardware Upgrade of the PICS Ovation™ HMI System and One Year Software Support: Emerson Process Management Power & Water Solutions, Inc.

Upon a motion duly made and seconded, it was

Voted: to approve the award of a sole source purchase order contract for the upgrade of the PICS Ovation™ Human Machine Interface system and one year of software support for the Deer Island Treatment Plant to Emerson Process

Management Power & Water Solutions, Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said purchase order contract in an amount not to exceed \$648,340.

CONTRACT AMENDMENTS/CHANGE ORDERS

Weston Aqueduct Supply Main 3: Design, Construction Administration and Resident Engineering Services: Stantec Consulting Services, Inc., Contract 6539, Amendment 1

Upon a motion duly made and seconded, it was

Voted: to authorize the Executive Director, on behalf of the Authority, to approve Amendment 1 to Contract 6539, Weston Aqueduct Supply Main 3: Design, Construction Administration and Resident Engineering Services with Stantec Consulting Services, Inc., to increase the contract amount by an amount not to exceed \$30,210 from \$15,482,625 to \$15,512,835, and increase the contract term by 243 calendar days from October 1, 2026 to June 1, 2027.

Wachusett Aqueduct Pumping Station, BHD/BEC JV 2015, A Joint Venture: Contract 7157, Change Order 39

Upon a motion duly made and seconded, it was

Voted: to authorize the Executive Director, on behalf of the Authority, to approve Change Order 39 to Contract 7157, Wachusett Aqueduct Pumping Station, with BHD/BEC JV 2015, A Joint Venture, for a lump sum amount of \$508,549, increasing the contract amount from \$49,396,286 to \$49,904,835, with no increase in contract term, and to authorize the Executive Director to approve additional change orders as may be needed to Contract 7157 in an amount not to exceed the aggregate of \$250,000, in accordance with the Management Policies and Procedures of the Board of Directors.

Northern Intermediate High Section 110-Stoneham: Albanese D&S, Inc., Contract 7067, Change Order 2

Upon a motion duly made and seconded, it was

Voted: to authorize the Executive Director, on behalf of the Authority, to approve Change Order 2 to Contract 7067, Northern Intermediate High Section 110 Stoneham, with Albanese D&S Inc., for an amount not to exceed \$350,000, increasing the contract amount from \$22,757,300 to \$23,107,300, with no increase in contract term, and to authorize the Executive Director to approve

additional change orders as may be needed to Contract 7067 in an amount not to exceed the aggregate of \$250,000, in accordance with the Management Policies and Procedures of the Board of Directors.

EXECUTIVE SESSION

It was moved to enter executive session to discuss real estate and litigation and thereafter to return to open session solely for the purpose of adjournment.

Upon a motion duly made and seconded, a roll call vote was taken in which the members were recorded as follows:

<u>Yes</u>	<u>No</u>	<u>Abstain</u>
Carroll		
Cotter		
Flanagan		
Pappastergion		
Peña		
Vitale		
Walsh		

Voted: to enter executive session for the purpose of discussing strategy with respect to real estate and litigation, in that such discussions may have a detrimental effect upon the negotiating positions of the Authority.

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EXECUTIVE SESSION

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The meeting returned to open session at 1:21 p.m. and adjourned at 1:22 p.m.

Approved: September 19, 2018

Attest:

Andrew M. Pappastergion, Secretary