

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

Third Quarter FY2022

Q1	Q2	Q3	Q4



Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
May 25, 2022

Board of Directors Report on Key Indicators of MWRA Performance

3rd Quarter - FY22

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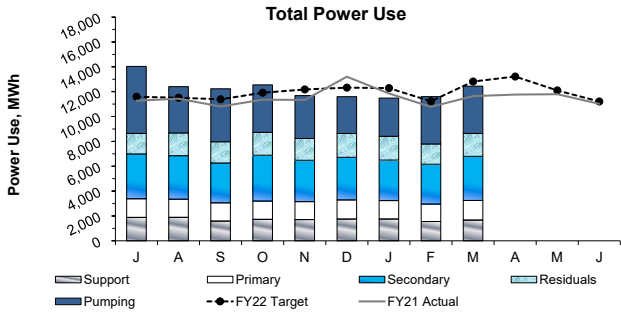
This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by MWRA's board of directors. The content and format of this report is expected to develop as time passes. Information is reported on a preliminary basis as appropriate and available for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

Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
May 25, 2022

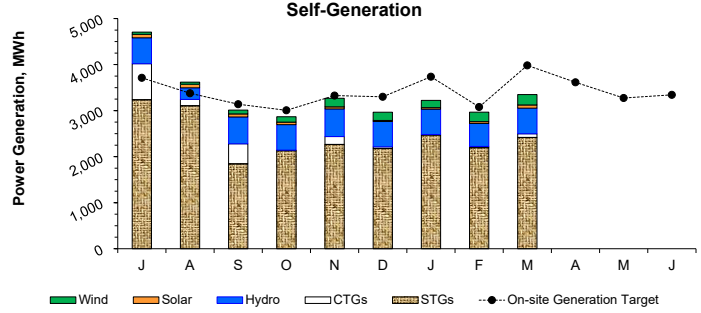
OPERATIONS AND MAINTENANCE

Deer Island Operations

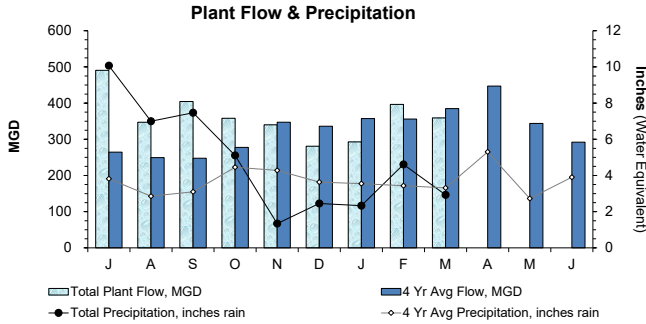
3rd Quarter - FY22



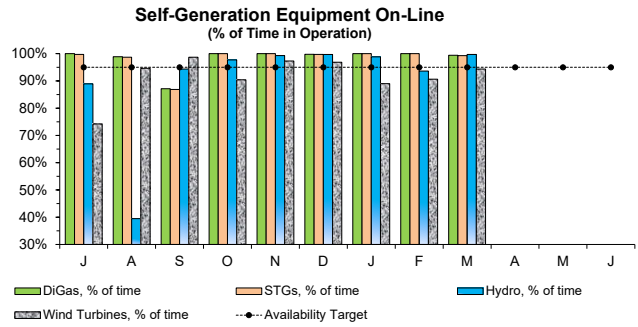
Total power usage in the 3rd Quarter was 2.2% below target as plant flow for this period was 4.5% below target with historical data (4 year average) used to generate the electricity model. As a result, power usage for all treatment process areas were similar to or below target during the 3rd Quarter. Power usage for raw wastewater pumping was 4.2% lower than expected due to the lower-than-expected plant flow.



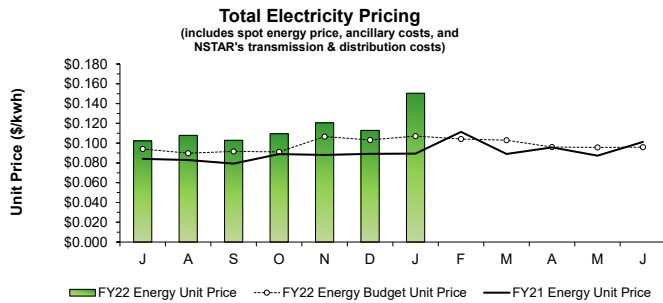
Power generated on-site during the 3rd Quarter was 4.5% below target. CTG generation was below target by 87.2% since CTG operation for storm events was not needed but had been included in the budget based on historical CTG operation. The CTGs were operated for a demand response event (which was later determined to be an error due to an issue with ISO-New England's automated notification system), for annual emissions opacity testing, and for routine maintenance/checkout purposes. STGs generation was 6.1% below target as digester gas production was 8.7% below target. Hydro Turbine generation was 10.7% above target partly due to a budget estimate that was biased low and both turbines were in operation simultaneously from February through March. Wind Turbine generation was 17.6% below target partially due to both lower wind conditions in January, as well as several electrical and mechanical issues with Wind Turbine #2 during periods in January and in March. Solar Panel generation was 7.8% below target mostly due to overcast conditions and occasional snow cover in February.



Total Plant Flow for the 3rd Quarter was 4.5% below target with the budgeted 4 year average plant flow (349.4 MGD actual vs. 366.0 MGD expected) as precipitation was 4.1% below target this quarter (9.87 inches actual vs. 10.29 inches expected).

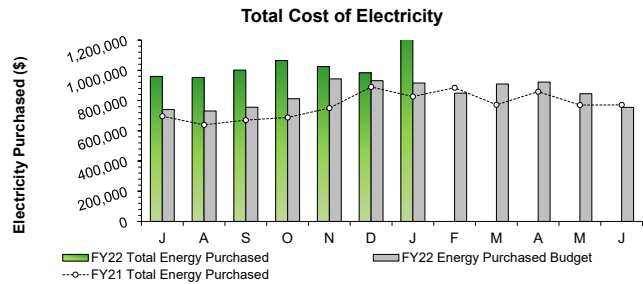


The DiGas System, STGs, and Hydro Turbine availability all exceeded the 95% availability in the 3rd Quarter. The Wind Turbine availability was 3.7% below target mainly due to electrical and mechanical issues with Wind Turbine #2, in addition to turbulent wind conditions and icing of the weather sensors following flash freeze conditions in February.



Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual Total Energy Unit Price in January (the most current invoice available) was 40.4% above target with budgetary estimates due to the high real time electricity prices for January. The actual Total Energy Unit Prices in February and March are not yet available as the complete invoices have not been received. 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 review.



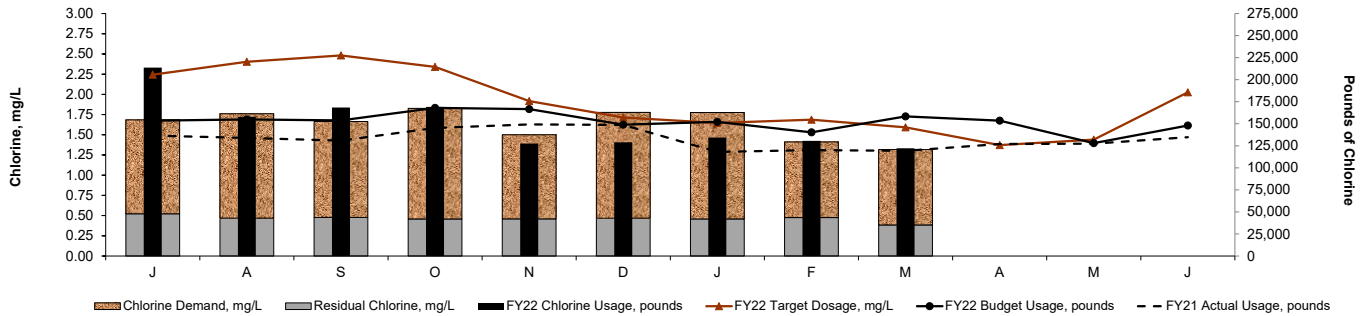
The Electricity cost data for Electricity Purchased in February and March are not yet available as the complete invoices have not been received. Year-to-date Total Cost of Electricity is \$1,415,430 (24.3% higher than budgeted through January as the Total Energy Unit Price was 17.1% higher than target and the Total Electricity Purchased was 6.1% above target.

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

Deer Island Operations

3rd Quarter - FY22

Deer Island Sodium Hypochlorite Use



The disinfection dosing rate in the 3rd Quarter was 9.0% below target with budgetary estimates. Actual sodium hypochlorite usage in pounds of chlorine was 14.1% lower-than-expected as the average plant flow was 4.5% below target. DITP maintained an average disinfection chlorine residual of 0.44 mg/L this quarter with an average dosing rate of 1.50 mg/L (as chlorine demand was 1.06 mg/L).

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	7	7	0	95.1%	84.65
A	6	6	0	99.0%	17.42
S	2	2	0	96.4%	35.02
O	4	4	0	99.3%	16.48
N	1	1	0	99.9%	2.41
D	0	0	0	100.0%	0.00
J	1	1	0	99.9%	2.89
F	2	2	0	99.8%	7.50
M	0	0	0	100.0%	0.00
A					
M					
J					
Total	23	23	0	98.6%	166.37

99.9% of all flows were treated at full secondary during the 3rd Quarter. There were three (3) secondary blending events due to high plant flows from heavy precipitation. These blending events resulted in 10.39 hours of blending and a total of 30.0 MGal of primary-only treated effluent blended with secondary effluent. The Maximum Secondary Capacity during the entire quarter was 700 MGD. Secondary permit limits were met at all times during the 3rd Quarter of FY22.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The plant achieved an instantaneous peak flow rate of 878.5 MGD in the 3rd Quarter during the morning of February 4. This peak flow occurred during a storm event that brought 2.09 inches of precipitation to the metropolitan Boston area, mostly in the form of rain. Overall, Total Plant Flow in the 3rd Quarter was 4.5% below target with the 4 year average plant flow estimate for the quarter.

There were a few snowfall records or near records for Boston in January resulting from the blizzard on January 29 caused by a nor'easter storm event that brought recordbreaking snowfall along the northeast coast. The all time record daily snowfall of 23.6 inches on January 29 tied a record that was set on February 17, 2003 and it also set a new daily snowfall record for Boston for the month of January which was previously 22.1 inches set on January 27, 2015. Additionally, the two (2) day snowfall total of 23.8 inches from January 28 to January 29 this year was the second highest two (2) day snowfall total for the month of January behind the 24.4 inches of snowfall set January 26 to January 27, 2015. This storm was the seventh biggest snowstorm of all time in Boston's recorded history. The record is still 27.6 inches set back in February 2003. DITP had additional operations and maintenance storm staffing coverage during the storm event. An Eversource technician and the Thermal Power Plant service contractor were both onsite as well to support any power related issues. Fortunately, there were no operational issues at the DITP as a result of this storm.

Odor Control Treatment:

The scrubber packing media and mist eliminator in wet chemical scrubber units #1, #2, #3 & #4 in the East Odor Control (EOC) Facility, and #2, #3 & #4 in the West Odor Control (WOC) Facility were replaced by a contractor in February and March. Brief odor control shutdowns were necessary to allow maintenance staff to install airflow isolation blanks in the fans to prevent the escape of fugitive emissions while the contractor works in the scrubber units. This work will be completed in April for a total of 11 wet chemical scrubbers in the EOC, WOC, and the Residuals Odor Control (ROC) Facilities.

Deer Island Operations

3rd Quarter - FY22

Deer Island Operations & Maintenance Report (continued)

Chemical Storage:

On February 3, at approximately 9:45am, DITP Operations staff confirmed a sodium hypochlorite leak from the underground feed piping of sodium hypochlorite Tank #2 (which had been placed online at 8:48 am). Upon discovery of this leak, staff immediately isolated the tank from service. Immediate notifications were made to all required emergency responders and regulatory agencies. Gel mats were immediately placed over the catch basin in the vicinity of the leak and staff began inspecting the storm drainage system for potential hypochlorite release to the surface water. No release to the surface water was found and the hypochlorite material that was contained within the storm drainage system was soon removed by vactor truck. Both Winthrop Fire and Boston Fire Departments responded as did the DEP. A Licensed Site Professional was also onsite to assess the impact. All parties were briefed on the event, observed the cleanup effort, and were satisfied with the response and containment of the released hypochlorite. No hypochlorite was released to the environment or surface waters. The remainder of sodium hypochlorite in Tank #2 was then transferred to storage Tank #1. Repair of the failed line will be planned for the future and Tank #2 will remain out of service until repairs are completed.

Energy and Thermal Power Plant:

Overall, total power generated on-site accounted for 26.8% of Deer Island's total power use for the 3rd Quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 26.5% of Deer Island's total electrical power use for the quarter.

On February 2, Hydro Turbine #2 was returned to service after having been out of service since October 21, 2019 due to issues stemming from repairs that were completed by the previous maintenance contractor in late 2018. A turbine inspection performed on June 17, 2020, by the current maintenance contractor, found the turbine's nose cone and shroud missing, as well as damage to the runner blade assembly. After a lengthy period of investigations and discussions with the previous maintenance contractor, MWRA settled a claim with the previous contractor in mid-2021. Since then, the current maintenance contractor has been working on the repairs. Additionally, DITP staff and various contractors made adjustments to the wicket gate system and the turbine's control system in January before the turbine was able to be successfully placed into operation. The turbine has operated through much of February and March.

DITP took delivery of 430,000 gallons of #2 fuel oil, a total of 43 oil tanker trucks, without incident from October 5 through October 15. 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.

Repairs were performed to the Residuals Odor Control Facility's rooftop mounted solar panel array on March 16. A contractor was able to repair and restore the operation of 105 solar panel modules in the array. There were a total of 525 solar panel modules in the array. However, 45 of these solar panel modules sustained damage that was beyond repair during the October 26, 2021 storm that brought severe wind conditions. Forty of these 45 damaged solar panel modules have been physically removed from the roof for safety reasons. The repaired solar panel modules consisted of 60 panel modules that were damaged during the storm but were able to be repaired, and the other 45 panel modules had been non-functional for some time (not associated with the wind damage) and had been pending repair. The array is currently operating with 480 total solar panel modules out of the original 525. This is the maximum possible capacity available at this time.

Clinton Operations & Maintenance Report

Dewatering Building:

Operations staff washed down gravity thickener # 1 surface and weirs. Maintenance staff checked equipment for proper operation and lubrication. Maintenance staff replaced a grinder on digested sludge feed line going to belt filter press.

Digester Building:

Operations staff added 10 gallons of ferric chloride to the gravity thickener to control foaming in the digester. The Facilities Specialist cleaned the dried sludge on the top of the floating digester cover. The Electrical Contractor was called to troubleshoot a mercury switch on the #1 digester sludge transfer pump.

Chemical Building:

Maintenance staff changed a three (3) inch gate valve and the check valve on the peerless sump pumps. They also checked plant equipment for proper operation and lubrication. Maintenance staff replaced the auger assembly and gear box on the upper soda ash mix tank. A contractor rewired the controls for Return Activated Sludge pump #3. Staff repaired a leaking 1 1/2" copper pipe on the soda ash water feed system.

Clarifloculator:

Operations and Maintenance staff checked both clarifiers for proper operation and lubrication. They also washed down both clarifiers.

Trickling Filters:

Maintenance staff cleaned the nozzles and flushed the trickling filter arms.

Primary Tanks:

Operations staff washed down primary tank #2, #3, and # 4. They also dewatered primary tank #3.

Headworks:

Maintenance staff completed air handler and blower PMs. Staff also cleaned the influent and mechanical bar racks and greased the upper and lower pin racks as well.

Aeration Basins:

Operations staff cleaned the online pH and Dissolved Oxygen probes.

Phosphorus Reduction Facility (PRF):

Operation staff placed the phosphorus reduction system in the PRF back on line for the lower effluent phosphorus limit season. Staff cleaned the troughs on the #1, #2, and #3 disk filters. Operations staff cleaned both CL17 chlorine analyzers.

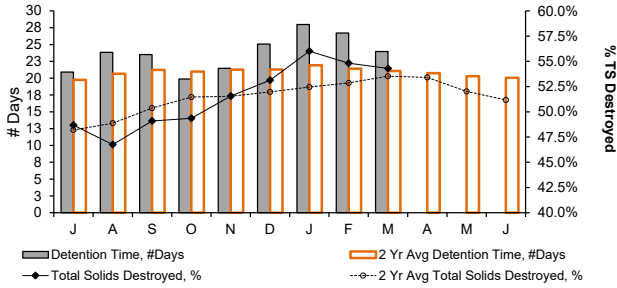
Other:

Inspection of fire sprinkler valves.
Inspection of emergency eyewash and shower stations.
Exercised both standby generators.
Exercised influent and intermediate screw pumps and tested high water level alarms.
Maintenance test operated both influent diesel pumps.
Maintenance staff pumped down electrical manholes.
Maintenance completed all PM's on Laboratory eyewash stations.

Deer Island Operations and Residuals

3rd Quarter - FY22

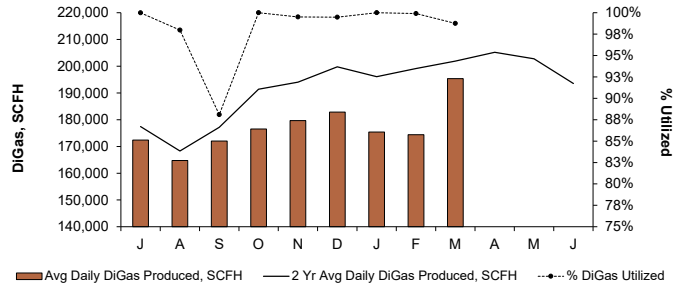
Sludge Detention Time in Digesters and Total Solids Destruction



Total solids (TS) destruction following anaerobic sludge digestion averaged 55.0% during the 3rd Quarter, 3.9% higher than the 2 year average of 52.9%. Sludge detention time in the digesters was 26.2 days, 22.1% above target. 8.0 digesters were in operation, on target with the 6 year average of 8.0 digesters. Sludge detention time was higher-than-expected as the volume of sludge going to the digesters was lower-than-expected leading to higher-than-expected solids destruction.

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

Digester Gas Production and % Utilized

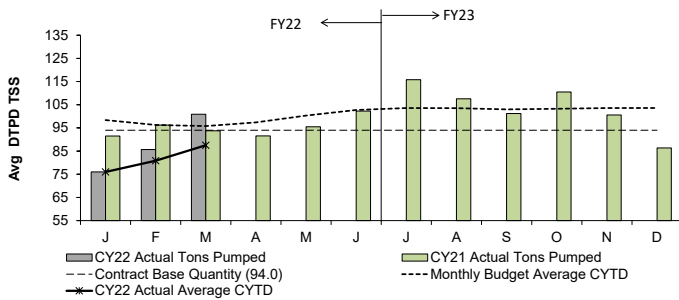


The Avg Daily DiGas Production in the 3rd Quarter was 8.7% below the 6 Year Avg Daily DiGas Production. 99.6% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant (TPP).

Residuals Pellet Plant

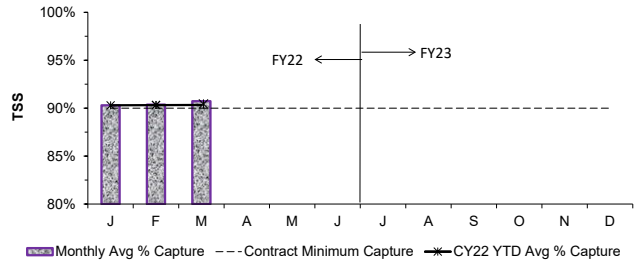
New England Fertilizer Company (NEFCO) operates the MWRA Biosolids Processing Facility (BPF) in Quincy under contract. MWRA pays a fixed monthly amount for the calendar year to process up to 94.0 DTPD/TSS as an annual average (for the extended contract period of January 1, 2021 through December 31, 2022). The monthly invoice is based on 94.0 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. On average, MWRA processes more than 94.0 DTPD/TSS each year (FY22's budget is 104.0 DTPD/TSS and the preliminary FY23's budget is 103.3 DTPD/TSS).

Sludge Pumped From Deer Island



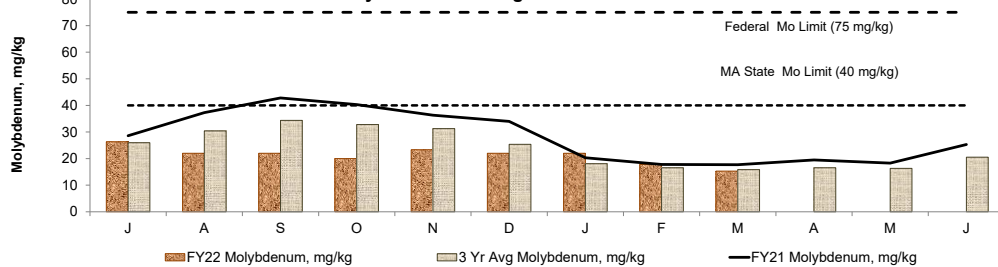
The average quantity of sludge pumped to the Biosolids Processing Facility (BPF) in the 3rd Quarter was 87.5 TSS Dry Tons Per Day (DTPD), 8.6% below target with the FY22 budget of 95.8 TSS DTPD for the same period.

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. The average capture for the 3rd Quarter was 90.47%.

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.

Overall, the levels have been below the DEP Type 1 limit for all three (3) metals. For Mo, the level in the MWRA sludge fertilizer pellets during the 3rd Quarter averaged 18.4 mg/kg, 9% above the 3 year average, 54% below the MA State Limit, and 76% below the Federal Limit.

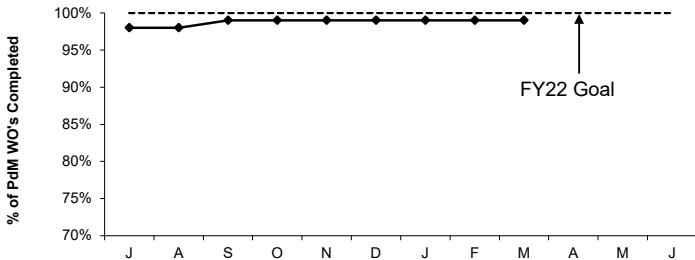
Deer Island Maintenance

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Productivity Initiatives

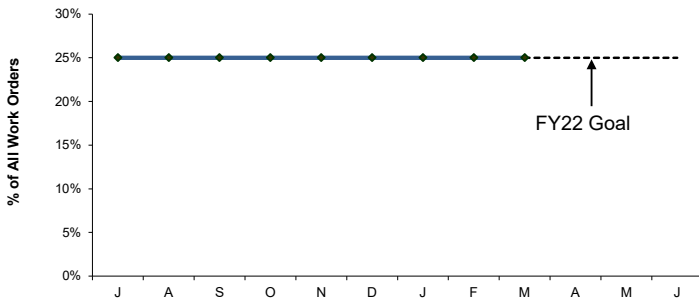
Productivity initiatives include increasing predictive maintenance compliance and increasing PdM work orders. Accomplishing these initiatives should result in a decrease in overall maintenance backlog.

Predictive Maintenance Compliance



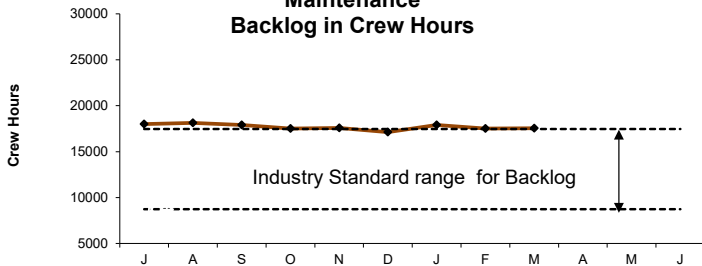
Deer Island's FY22 predictive maintenance goal is 100%. DITP completed 99% of all PdM work orders this quarter. DITP is continuing with an aggressive predictive maintenance program. Deer Island is below our goal this quarter, but we are working on meeting our goal.

Predictive Maintenance



Deer Island's increased FY22 predictive maintenance goal is 25% of all work orders to be predictive. 25% of all work orders were predictive maintenance this quarter. The industry is moving toward increasing predictive maintenance work to reduce downtime and better predict when repairs are needed.

Maintenance Backlog in Crew Hours

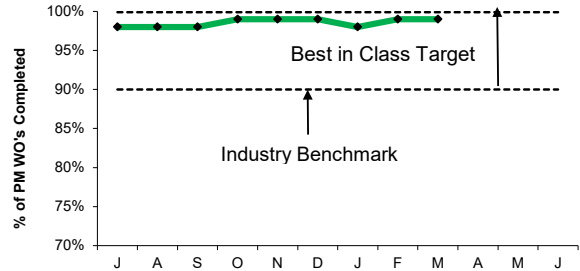


DITP's maintenance backlog at Deer Island is 17,530 hours this quarter. DITP is slightly over the industry average for backlog. The industry Standard for maintenance backlog with 97 staff (currently planned staffing levels) is between 8,730 hours and 17,460 hours. Backlog is affected by (6) vacancies; (1) HVAC Tech (3) Electricians, (1) Mechanic and (1) Plumber. Management continues to monitor backlog and to ensure all critical systems and equipment are available.

Proactive Initiatives

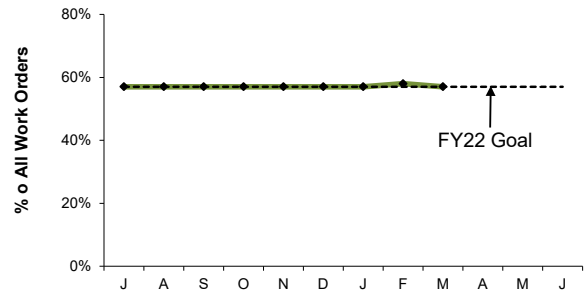
Proactive initiatives include completing 100% of all preventative maintenance tasks and increasing preventative maintenance kitting. These tasks should result in lower maintenance costs.

Preventive Maintenance Compliance



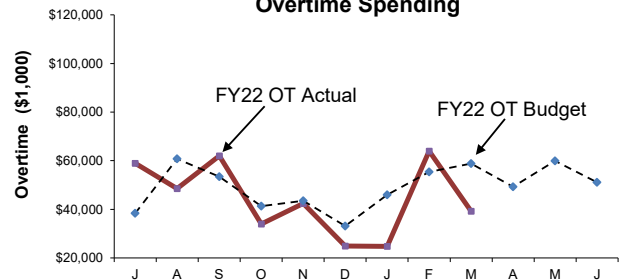
Deer Island's FY22 preventative maintenance goal is 100% completion of all work orders from Operations and Maintenance. DITP completed 99% of all PM work orders this quarter. Deer Island was slightly below our goal, but well within Industry Standards. This quarter's slight decrease is due to additional safety protocols implemented to mitigate the COVID-19 omicron surge.

Maintenance Kitting



Deer Island's increased FY22 maintenance kitting goal is 57% of all work orders to be kitted. 57% of all work orders were kitted this quarter. Kitting is staging of parts or material necessary to complete maintenance work. This has resulted in more wrench time and increased productivity.

Overtime Spending

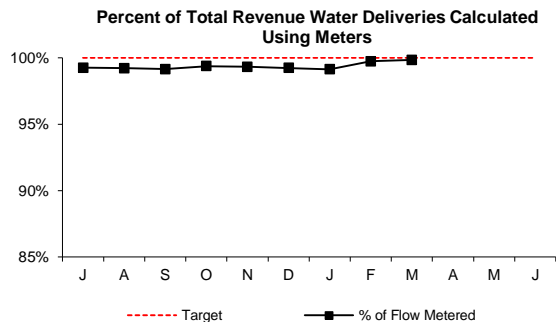


Maintenance overtime was under budget by \$32K this quarter and is \$32K under for the year. Management continues to monitor backlog and to ensure all critical equipment and systems are available. This quarter's overtime was predominately used for Storm Coverage/High Flows, Pump/Grinder Clogging Issues, Installation of Vapor Coil Bundle in Cryo Facility, Installed Centrifuge #10, and Fabrication/Installation of North Main Pumping Station Sump Area Stairs. This quarter's drop in Overtime spending was due to additional safety protocols implemented to mitigate the COVID-19 omicron surge.

Operations Division Metering & Reliability

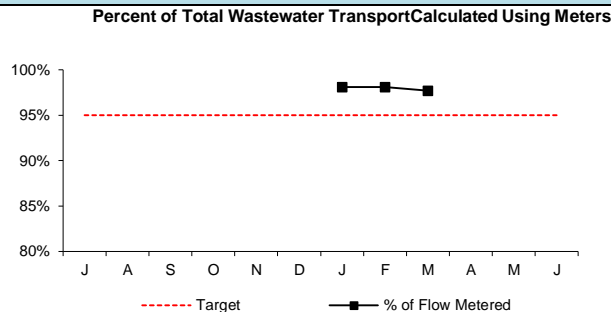
3rd Quarter - FY22

WATER METERS



The target for revenue water deliveries calculated using meters is 100%. Estimates are generated for meters that are out of service due to instrumentation problems or in-house and capital construction projects. During Q3FY22, 0.4% of the billed water flow was estimated. 99.6% was based on meter actuals. A total of 2% of the total flow was measured using annubar bypass meters, mostly due to bypass valves that were opened in Lexington to increase the available flow to Burlington. An additional 1% was billed through 3 temporary bypass setups.

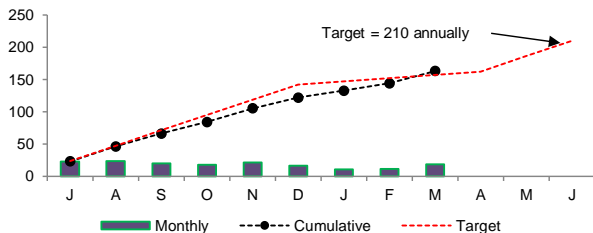
WASTEWATER METERS



The Wastewater Meter Replacement Project is complete. The new meters were installed during the period from April 2021 through December 2021. As of calendar year 2022 rates are being calculated using the new meters. The target for revenue collection meters is a 95% data capture rate. During Q3FY22, 98% of billed data was metered with only 2% estimated. All three months were above 95% target with the lowest Month at 97.7%

WATER DISTRIBUTION SYSTEM PIPELINES

Miles Surveyed for Leaks



During the 3rd Quarter of FY22, 41.03 miles of water mains were inspected. The total inspected for the fiscal year to date is 163.09.

Leak Backlog Summary

Month	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	Totals
Leaks Detected	2	2	0	1	1	1	4	1	0				12
Leaks Repaired	0	2	1	1	1	2	4	1	0				12
Backlog	5	5	4	4	4	3	3	3	3				n/a

During the 3rd Quarter five leaks were detected, and five were repaired. Refer to FY22 Leak Report below for details. Also, community service ranging from individual leak location to hydrant surveys were conducted for Arlington, Boston, Cambridge, Medford, Milton, Nahant, Newton, Revere, Saugus and Somerville.

3rd Quarter - Leak Report FY22

Date Detected	Location of Leaks	Repaired
07/01/21	Fellsay West @ Fells Ave., Medford	08/26/21
08/08/21	Fellsay East @ Pond St., Stoneham	08/18/21
07/28/21	Western Ave. @ WHDH Radio Station-Saugus	09/13/21
08/27/21	Middlesex Fells/Wellington, Medford	10/20/21
10/12/21	Middlesex Ave. @ Kensington, Somerville	11/23/21
07/01/16	241 Forest St., Winchester. Sect. 89	12/31/21
11/24/21	Waltham St. @ Lexington Line. Sec-101	12/02/21
12/27/01	River St. @ Willow St., Waltham	01/04/22
01/13/22	Dedham ST @ Brookline St., Newton	01/19/22
01/20/22	Salem St. @ Franklin St., Revere. Sec-68	01/21/22
01/23/22	Navy Rd. @ Entrance to G.E. - Lynn	01/26/22
02/16/22	#165 Bennington St, Revere @ East Boston	02/16/22

Date Detected	Location of Leaks/Unrepaired
12/04/16	710 Ashland St/Summer St. Lynn, Sect 91. Not surfacing. Leaking emergency connection valve btw MWRA & LWSC systems. LWSC has difficulty isolating 16" main.
08/27/20	Hyde Park Ave. @ River St. Hyde Park. BWSC is in process of isolating their water main first.
01/14/22	#2 Woodland Rd., Gillis P.S. - Stoneham

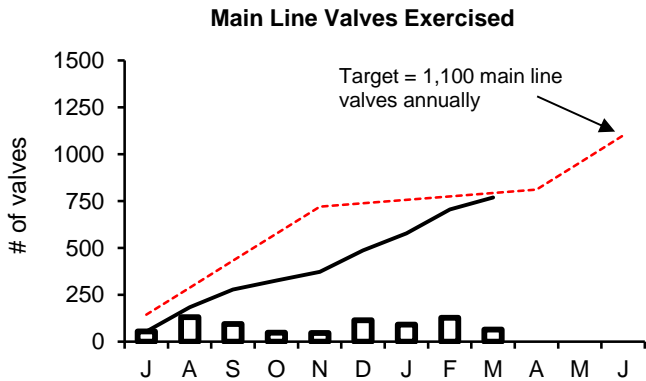
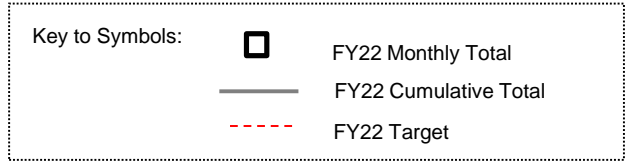
Water Distribution System Valves

3rd Quarter - FY22

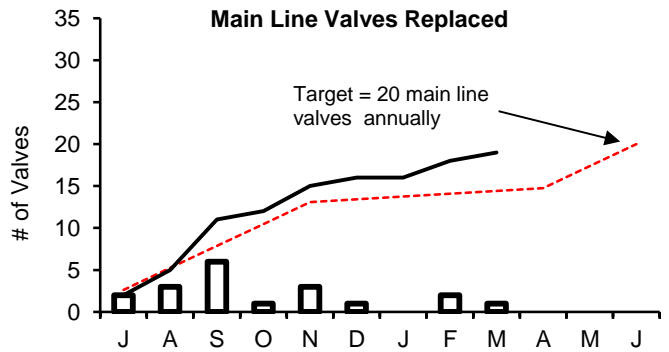
Background

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.

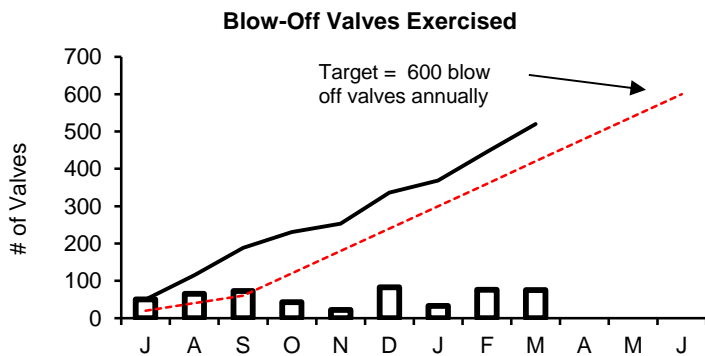
Type of Valve	Inventory #	Operable Percentage	
		FY22 to Date	FY22 Targets
Main Line Valves	2,159	97.1%	95%
Blow-Off Valves	1,317	98.6%	95%
Air Release Valves	1,380	95.8%	95%
Control Valves	49	100.0%	95%



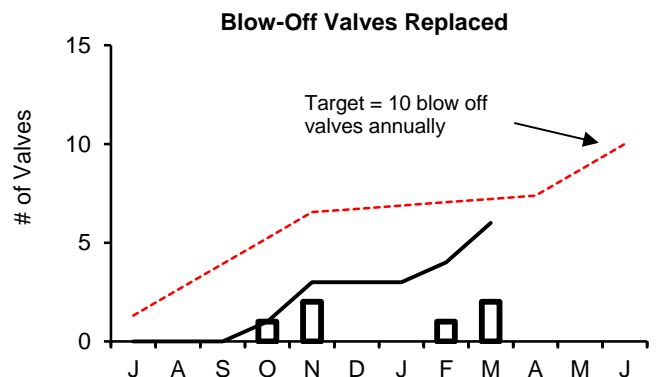
During the 3rd Quarter of FY22, 283 main line valves were exercised. The total exercised for the fiscal year to date is 769.



During the 3rd Quarter of FY22, there were three main line valves replaced. The total replaced for the fiscal year to date is nineteen.



During the 3rd Quarter of FY22, 184 blow off valves were exercised. The total exercised for the fiscal year to date is 520.



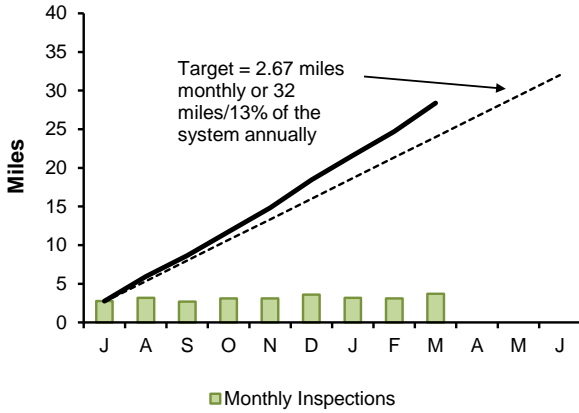
During the 3rd Quarter of FY22, there were three blow off valves replaced. The total replaced for the fiscal year to date is six. Below target due to isolation & permit issues and staff vacancies.

Wastewater Pipeline and Structure Inspections and Maintenance

3rd Quarter - FY22

Inspections

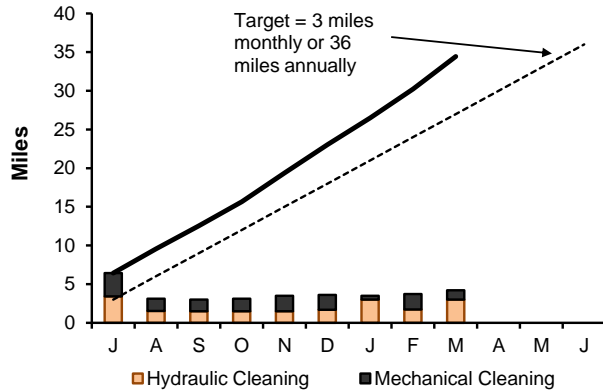
Pipeline Inspections



Staff internally inspected 9.96 miles of MWRA sewer pipe during this quarter. The year to date total is 28.39 miles. No Community Assistance was provided.

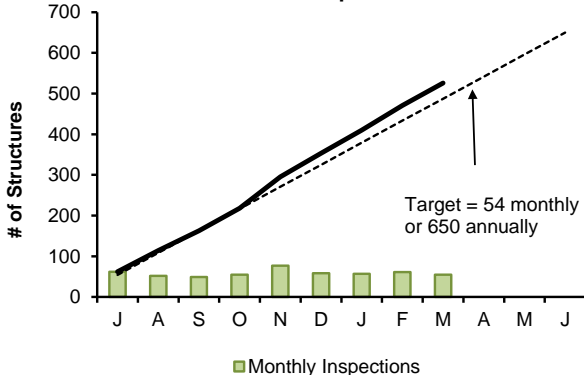
Maintenance

Pipeline Cleaning



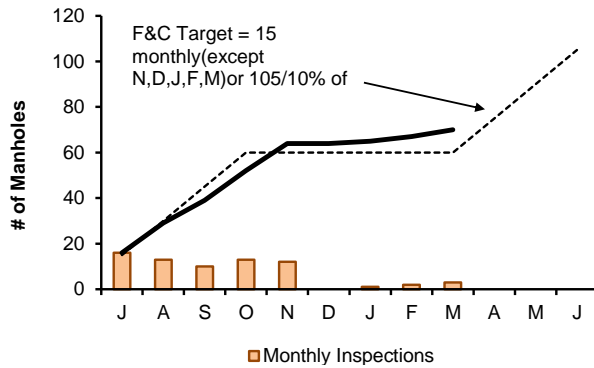
Staff cleaned 8.92 miles of MWRA sewer pipe, and removed 74 yards of grit. The year to date total is 34.44 miles. No Community Assistance was provided.

Structure Inspections



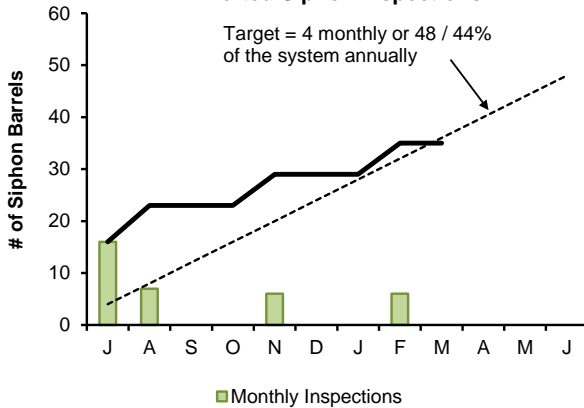
Staff inspected the 36 CSO structures and performed 137 other additional manhole/structure inspections during this quarter. The year to date total is 526 inspections.

Manhole Rehabilitation



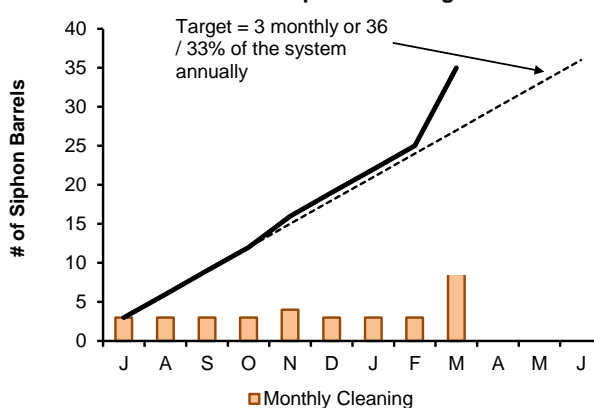
Staff replaced 3 frame and cover replacements this quarter. The year to date total is 70.

Inverted Siphon Inspections



Staff inspected 6 siphon barrels this quarter. The year total is 35 inspections.

Inverted Siphon Cleaning

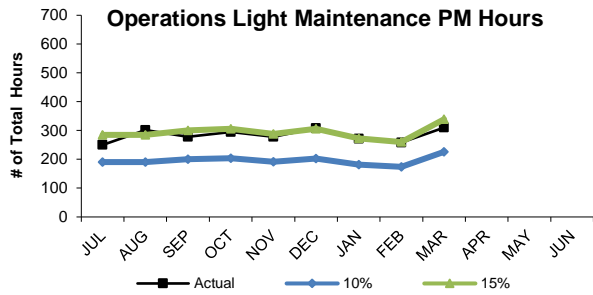


Staff cleaned 10 siphon barrels this quarter. The year total is 35.

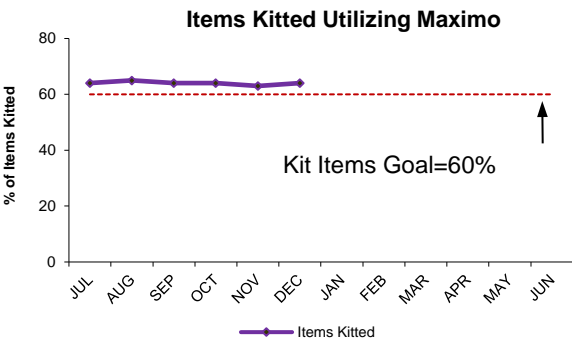
Field Operations' Metropolitan Equipment & Facility Maintenance

3rd Quarter - FY22

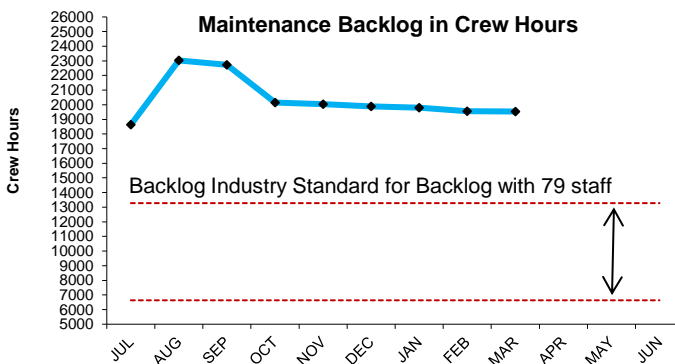
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion is 100%. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus reducing maintenance spending. Backlog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



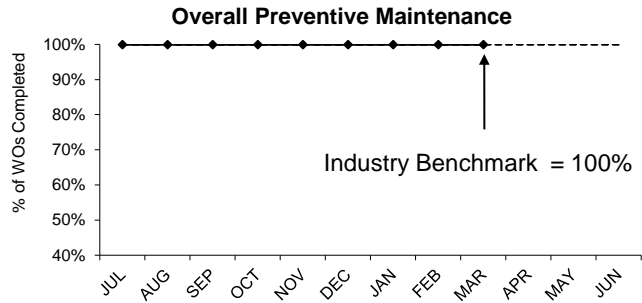
Operations staff averaged 280 hours per month of preventive maintenance during the 3rd Quarter of FY22, an average of 14% of the total PM hours for the 3rd Quarter, which is within the industry benchmark of 10% to 15%.



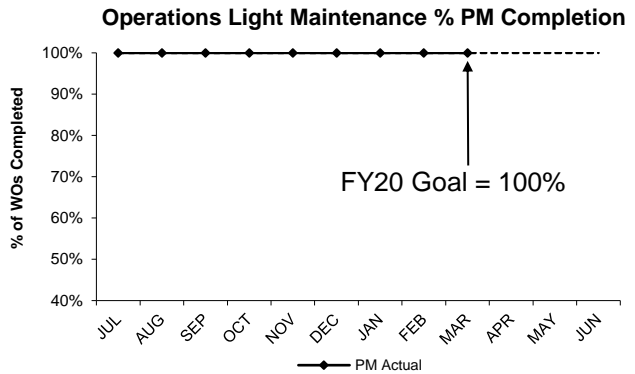
Operations' FY22 maintenance kitting goal has been set at 60% of all work orders to be kitted. Kitting is the staging of parts or material necessary to complete maintenance work. In the 3rd Quarter of FY22, 64% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.



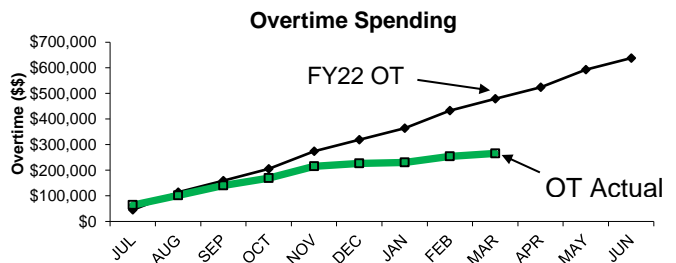
The 3rd Quarter of FY22 backlog average is 19,625 hours. Management's goal is to continue to control overtime and try to get back within the industry benchmark of 6,636 to 13,275 hours. The increase is due to vacations, vacancies and several large maintenance projects.



The Field Operations Department (FOD) preventive maintenance goal for FY22 is 100% of all PM work orders. Staff completed 100% of all PM work orders in the 3rd Quarter of FY22.



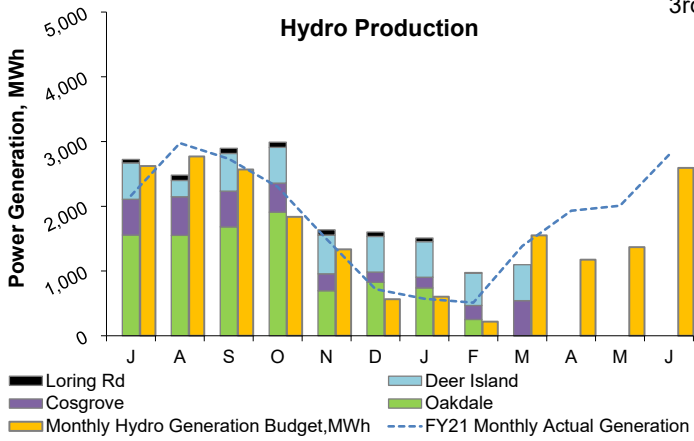
Wastewater Operations complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY22 PM goal is completion of 100% of all PM work orders assigned. Operations completed 100% of PM work orders in the 3rd Quarter of FY22.



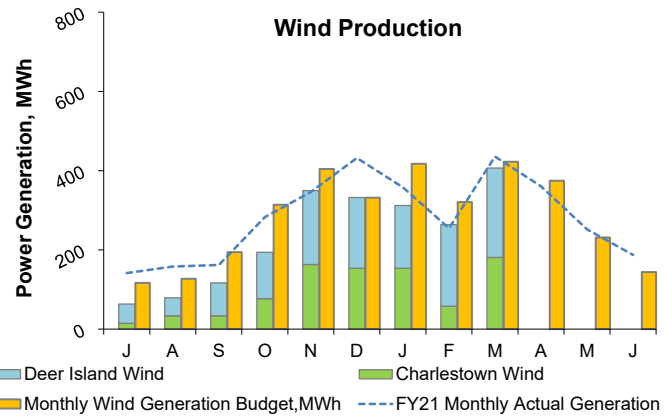
Maintenance overtime was \$40,018 under budget on average, per month, for the 3rd Quarter of FY22. Overtime is used for critical maintenance repairs and wet weather events. The overtime budget through the 3rd Quarter of FY22 is \$478,646. Overtime spending was \$265,857 which is \$212,789 under budget for the fiscal year.

Renewable Electricity Generation: Savings and Revenue

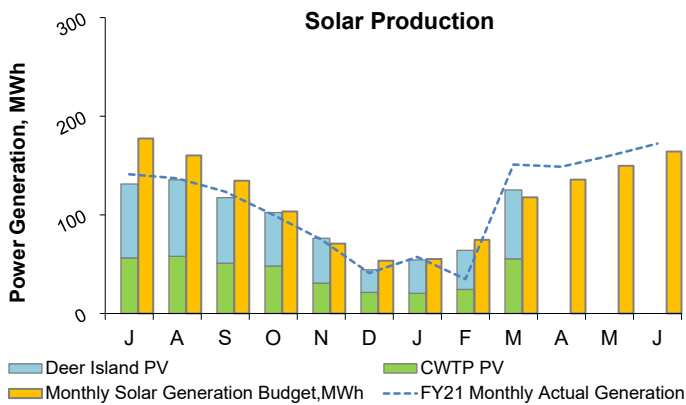
3rd Quarter - FY22



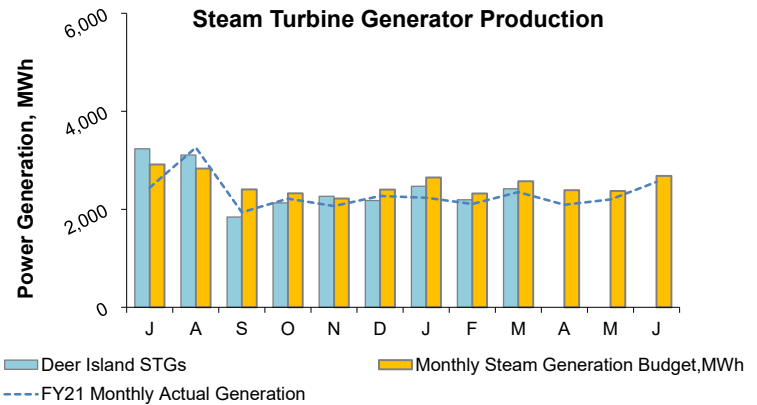
In Quarter 3 of FY22, the renewable energy produced from all hydro turbines totaled 3,695 MWh; 56 % above budget³. The total savings and revenue to date in FY22 (actuals through Jan¹) is \$1,107,266 ; 111% above budget³. The savings and revenue value does not include RPS REC revenue (see next page).



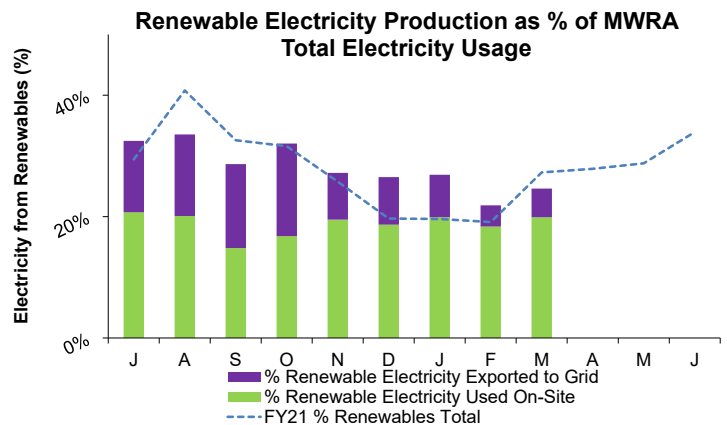
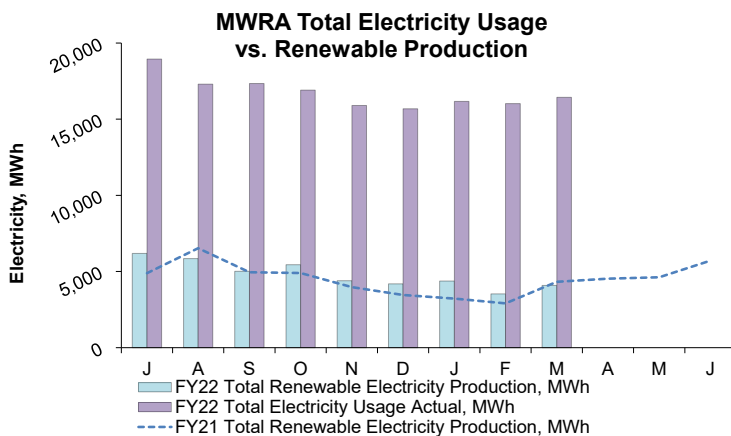
In Quarter 3 of FY22, the renewable energy produced from all wind turbines totaled 982 MWh; 15% below budget³. The total savings and revenue to date in FY22 (actuals through Jan¹) is \$235,471 ; 24% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In Quarter 3 of FY22, the renewable energy produced from all solar PV systems totaled 244 MWh; 5% above budget³. The total savings and revenue to date in FY22 (actuals through Jan¹) is \$97,374; 1% below budget³. The savings and revenue value does not include RPS REC revenue (see next page).



In Quarter 3 of FY22, the renewable energy produced from all steam turbine generators totaled 7,081 MWh; 6% below budget³. The total savings and revenue to date in FY22 (actuals through Jan¹) is \$1,979,136 ; on budget³. The savings and revenue value does not include RPS REC revenue (see next page).



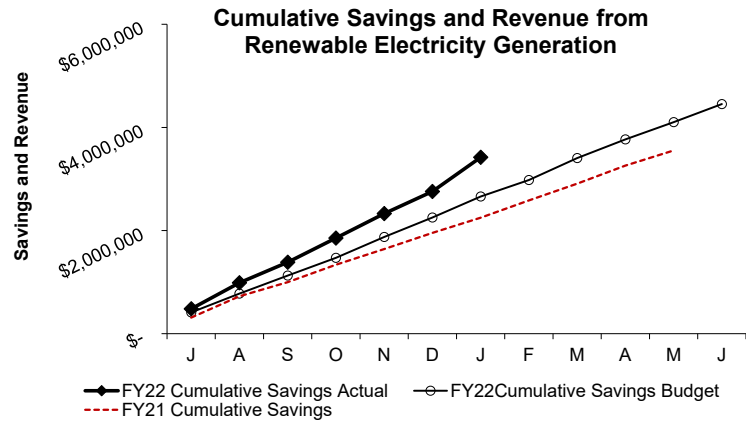
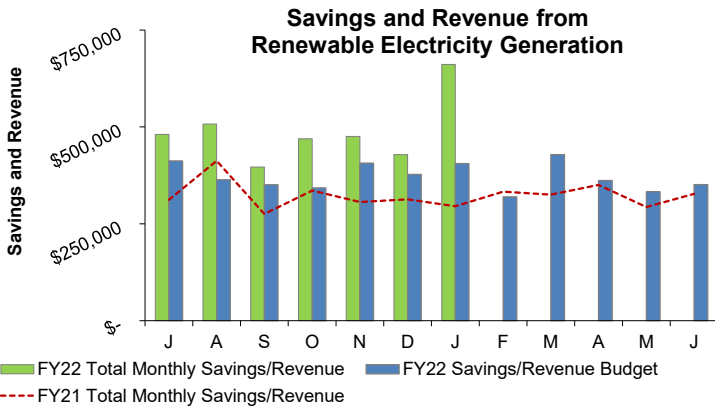
In Quarter 3 of FY22, MWRA's electricity generation by renewable resources totaled 12,002 MWh, 6% above budget. MWRA's total electricity usage was approximately 48,629 MWh. Renewable generation was 25% of total electrical use. The MWRA total electricity usage is the sum of all electricity purchased for 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.

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.

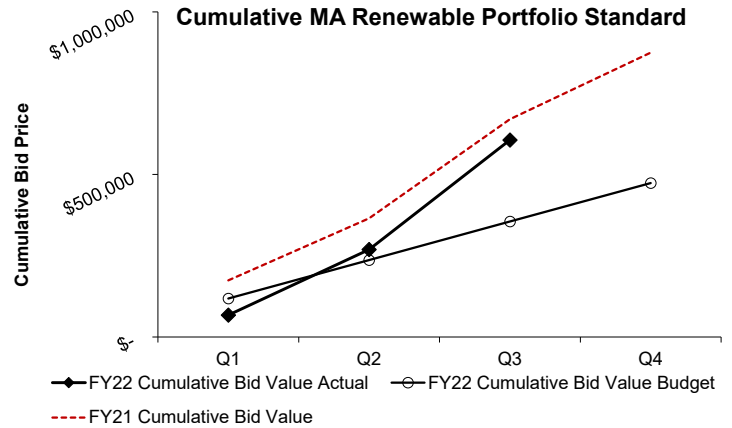
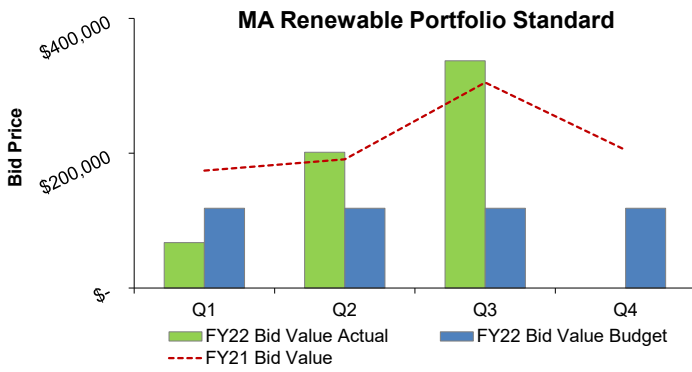
Renewable Electricity Generation: Savings and Revenue

3rd Quarter - FY22



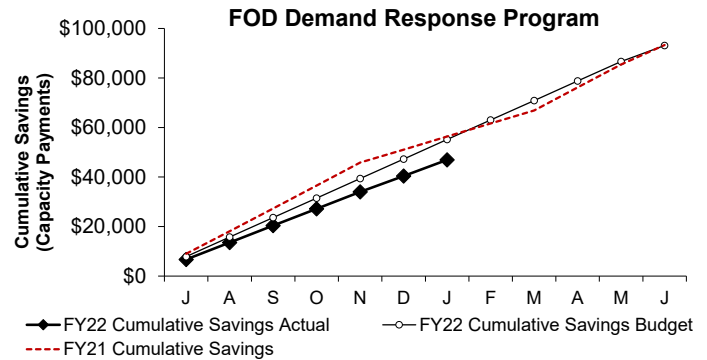
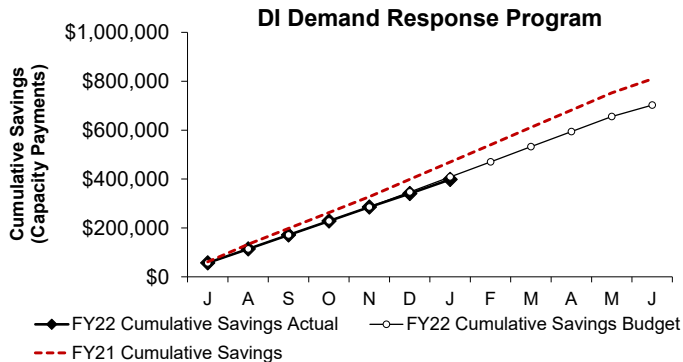
Savings and revenue from MWRA renewable electricity generation in the first seven months of FY22 (actuals only through Jan¹) is \$3,419,247 ; which is 29% above the budget³.

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



Bids were awarded during the 3rd Quarter¹ from MWRA's renewable energy assets; 5,286 Q3 CY2021 Class I Renewable Energy Certificates (RECs); 4,650 Q3 CY2021 Class 2 RECs; and 74 Q3 CY2021 Solar RECs were sold for a total value of \$201,462 RPS revenue; which is 185% above budget³ 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.

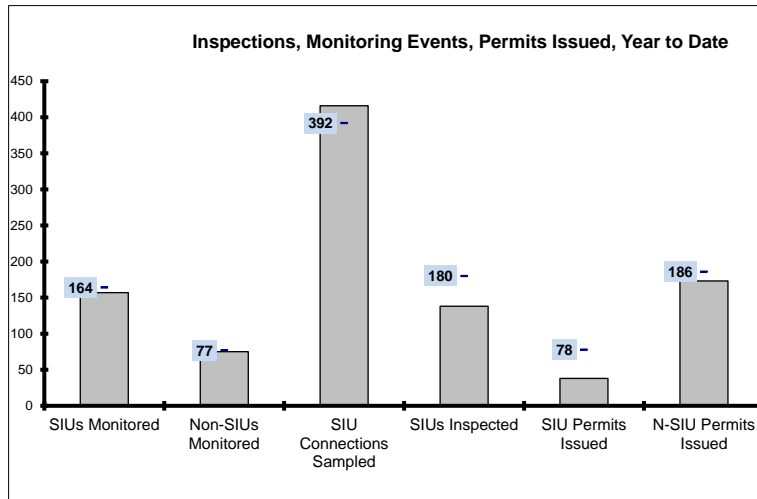


Currently Deer Island, JCWTP, Loring Rd, and Brusch participate in the ISO-New England Demand Response Programs⁴. By agreeing to reduce demand and operate the facility generators to help reduce the ISO New England grid demand during periods of high energy demand, MWRA receives monthly Capacity Payments from ISO-NE. When MWRA operates the generators during an ISO-NE called event, MWRA also receives energy payments from ISO-NE. FY22 Cumulative savings (Capacity Payments only) through January¹ total \$398,082 for DI and payments for FOD total \$46,944 for the same period¹.

- 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.

Toxic Reduction and Control

3rd Quarter - FY22



EPA Required SIU Monitoring Events for FY22: 164
YTD : 157

Required Non-SIU Monitoring Events for FY22: 77
YTD : 75

SIU Connections to be Sampled For FY22: 392
YTD: 416

EPA Required SIU Inspections for FY22: 180
YTD: 138

SIU Permits due to Expire In FY22: 78
YTD: 38

Non-SIU Permits due to Expire for FY22: 186
YTD: 173

Significant Industrial Users (SIUs) are MWRA's highest priority industries due to their flow, type of industry, and/or their potential to violate limits. SIUs are defined by EPA and require a greater amount of oversight. EPA requires that all SIUs *with flow* be monitored at least once during the fiscal year.

The "SIU Monitored" data above, reflects the number of industries monitored; however, many of these industries have more than one sampling point and the "SIU Connections Sampled" data reflect samples taken from multiple sampling locations at these industries.

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

	Number of Days to Issue a Permit						Permits Issued	
	0 to 120		121 to 180		181 or more		SIU	Non-SIU
	SIU	Non-SIU	SIU	Non-SIU	SIU	Non-SIU		
Jul	3	9	2	1	0	0	5	10
Aug	0	14	0	6	0	3	0	23
Sep	0	7	0	8	0	4	0	19
Oct	2	12	0	5	0	3	2	20
Nov	0	6	0	2	0	2	0	10
Dec	1	2	0	1	0	0	1	3
Jan	2	3	1	3	1	18	4	24
Feb	2	12	2	10	3	22	7	44
Mar	5	9	12	3	2	8	19	20
Apr							0	0
May							0	0
Jun							0	0

% YTD	39%	43%	45%	23%	16%	35%	38	173
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This is the third quarter of the MWRA fiscal year, FY22. SIU permit issuances are still far below the benchmark. This is mainly due to the incidences of staff turnover coupled with the workload of the available personnel and the lingering effects the COVID pandemic has had on the daily operations of the department.

In the third quarter, 118 permits were issued, 30 of which were SIUs. Nine of the SIU permits were issued within the 120-day timeframe, with 6 issued beyond 181 days. There were 88 non-SIU permits issued, of which 64 were issued late.

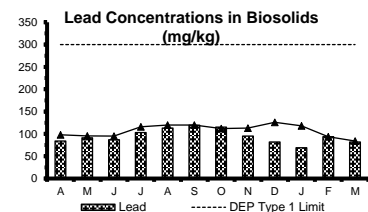
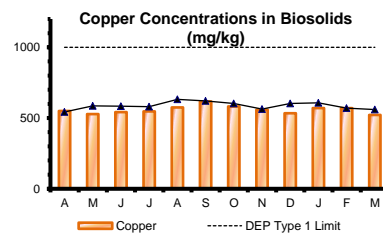
Reasons for late issuances continue to include a) waiting for critical data needed for permit processing b) delays relating to new start-up operations and c) the late payment of the relevant permit charges.

Overall, in the first three quarters of FY22, only half of the projected SIU permits have been issued and those have been issued with a 39% compliance rate, falling short of the 90% compliance rate required by the EPA.

There have also been a number of facility closings since the COVID pandemic started and these are slowly being brought to the department's attention and being processed.

For the Clinton Sewer Service area, there were no SIU permits issued so far in this fiscal year.

TRAC's annual monitoring and inspection goals are set at the beginning of each fiscal year but they can fluctuate due to the actual number of SIUs. Monitoring of SIUs and Non-SIUs is dynamic for several reasons, including: newly permitted facilities; sample site changes within the year requiring a permit change; changes in operations necessitating a change in SIU designation; non-discharging industries; a partial sample event is counted as an event even though not enough sample was taken due to the discharge rate at the time; and also, increased/decreased inspections leading to permit category changes requiring additional monitoring events.



Copper, lead, and molybdenum are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer.

Overall, copper and lead levels remain relatively constant, below the DEP Type 1 Limit, and within the range of values over the past several years.

A discussion of molybdenum concentrations in biosolids is included in the Deer Island Residuals Pellet discussion.

Field Operations Highlights

3rd Quarter – FY22

Western Water Operations and Maintenance

- Chestnut Hill Reservoir Refill via the Sudbury Aqueduct: Chestnut Hill had been lowered below its normal operating band to freeze invasive plants. To refill it, staff activated the Sudbury Aqueduct in March. It took around 7 hours for flow to reach Chestnut Hill and 3.5 days to refill it. Activation provided a training opportunity on the operation of this critical backup facility.
- Hultman Tree Project: About 5 acres of Red Pine trees along the aqueduct in Framingham were cleared as a safety measure for the houses and school in the area. The area will be replanted.
- Oakdale Turbine Bearing Inspection: While the Oakdale turbine was offline and no Quabbin transfer was taking place this spring, staff inspected the lower bearing on the turbine. No issues were identified and the turbine has subsequently been run for environmental testing.
- Carroll Water Treatment Plant Hypochlorite Project: Replacement of all the hypo piping and pumps is still underway. During the quarter, the operations team isolated, flushed, and opened the hypo storage tanks so the project team could replace the suction line piping feeding the pumps.
- Carroll Water Treatment Plant Lighting Project: Replacement of all the fixtures at CWTP with more efficient LED fixtures was completed in March.

Operations Engineering

- Section 89 Replacement: Staff provided contingency training for communities and in-house staff.
- Staff continued community assistance as needed:
 - Newton System, supported the testing of the isolation of Ward Street to support the replacement of Newton's 20 inch.
- Staff continued to manage the lead pipe rig corrosion control study at CWTP.
- Staff assisted in several wet weather storm events, compiled and finalized storm reports, monitored and reported on CSO activation durations and volumes.
- Staff provided on-going hydraulic modeling assistance for operational shutdowns.
- Staff developed simplified SOPs for water pumping stations. Staff continued Processbook development for water and wastewater facilities and OMMS updates.
- SCADA Staff completed the investigation of pump vibration issues at Alewife and resolved gate control issues of Channel 1 at Columbus Park Headworks.
- Staff improved SCADA alarming at Nut Island Headworks and supported Chelsea Headworks
- Rehabilitation Project, Nut Island Odor Control Improvements Project, and Hayes Pump Station Improvements Project.

Wastewater Operations & Maintenance

- Ward Street and Columbus Park Headworks Upgrade – Contract 7429: Operations staff continued to work Engineering staff and the consultant for this project. Staff attended meetings to discuss the lessons learned from the Chelsea Creek Headworks upgrade project.
- Chelsea Screen House: Based on the forecast for the predicted storm surge for the incoming storm on 1/26/22, the flood barrier protection was installed at the Chelsea Screen house facility as a precaution.
- Operations & Maintenance Meeting: Operations and maintenance staff attended weekly meetings to discuss the top 25 critical maintenance items that need to be addressed. Nuisance alarms: Operations and Operations Engineering staff attended bi-weekly meetings to discuss the top 15 alarms that came into SCADA to determine if operational issues are causing the condition.
- MassDEP Sewer System Overview: Staff met with MassDEP Northeast Region on 2/22/22 to discuss the operation of the MWRA wastewater collection and transport system.

Metro Equipment and Facility Maintenance

- Commonwealth Ave East Pump Station: The variable frequency drive for Pump #3 failed. MWRA electricians installed a new drive.
- Braintree/Weymouth IPS: The #1 Vortex grit pump was not operating properly. A pinch valve for the grit pump failed. MWRA mechanics installed a new pinch valve.
- An outside vendor and an MWRA Medium Voltage electrician conducted non-invasive thermal imaging scans at Columbus Park and Ward Street Headworks, Hayes, Squantum, New Neponset, Chestnut Hill, Braintree/Weymouth, Quincy, Framingham, and Gillis pump stations, and Somerville Marginal.
- New Neponset Pump Station: Light fixtures in the screen room/wet well area of the facility were corroded beyond repair. MWRA electricians replaced fixtures with more efficient LED explosion proof lighting.
- Hingham Pump Station: Operations requested better lighting in the wet well area in preparation for the valve replacement project. MWRA electricians installed new LED explosion proof fixtures.

Metering

Wastewater upgrade project:

Field Operations Highlights

3rd Quarter – FY22

- The Wastewater Meter upgrade project had conditionally accepted all meters by the December 2021 install deadline. Staff have begun tracking wastewater community flows for billing purposes. The wastewater collection system has a stated goal of billing greater than 95% of wastewater flows off metered flows. Prior to the meter replacement project, equipment reliability had left us unable to meet this goal with data capture rates typically between 88% and 93%. During Q3FY22, the new wastewater metering system will allow MWRA to bill communities with a data capture rate of 98%. Our 95% data capture goal was met all 3 months this quarter. This is the first time we met this goal across all 3 months in a quarter since 2017.

TRAC

Compliance and Enforcement

- TRAC issued 47 Notices of Violation, 6 Notices of Noncompliance and 1 Extension Letter.
- Dental Permit Fees: TRAC issued Annual Fee Invoices to the facilities permitted under the Group Permit for Dentists. The total number of invoices issued was 738, for a total of \$150,756.

Inspections and Permitting

- TRAC monitored the septage receiving sites a total of 30 times, and conducted inspections at 20 new construction and 168 existing gasoline/oil separators.
- TRAC staff conducted 44 Annual SIU Inspections and 278 other inspections. Annual SIU Inspections are required under TRAC's EPA approved Industrial Pretreatment Program. Other inspections include inspections for enforcement, permit renewal, NSIU, follow-up, temporary construction dewatering sites, group/combined permit audits, out-of-business facility reviews, and surveys.
- 118 MWRA Sewer Use Discharge Permits (Permits) were issued and/or renewed to its sewer users. One permit was issued and/or renewed in the Clinton Service Area.

Monitoring

- TRAC completed 80 first time SIU monitoring events, 33 first time NSIU monitoring events and 124 other events including Clinton NPDES and Local Limits sampling, Metropolitan Local Limits sampling, Local Limits PFAS sampling, Special Sulfide sampling, Cosgrove and Oakdale NPDES sampling, CSO NPDES sampling, Sudbury Aqueduct monitoring and CSO Hypochlorite Tank chemical sampling.

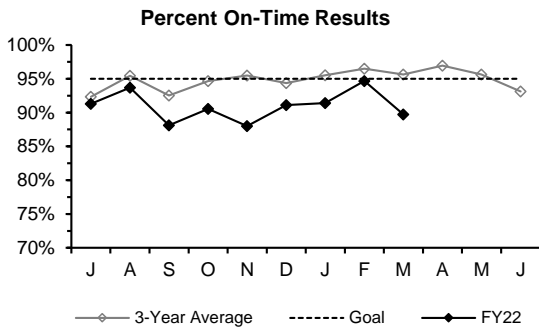
Environmental Quality-Water

- DCR algae monitoring commenced at Wachusett and Quabbin Reservoirs in March. Both reservoirs continue to be well-mixed with diatoms noted as the dominant phytoplankton. Sampling staff are preparing for algae monitoring season by establishing the annual algal toxin monitoring contract and training on the use of FlowCam Cyano fluid imaging equipment.

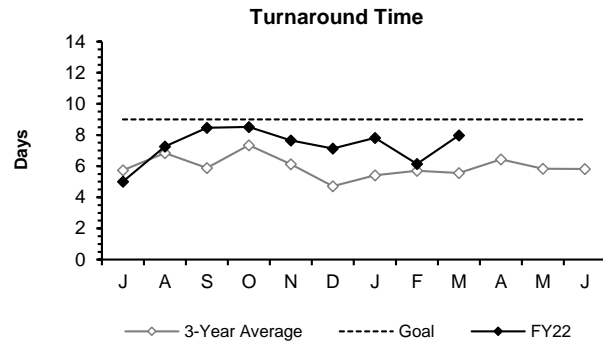
Community & In-House Support

- Sampling & Analysis: On 1/27, staff assisted Melrose with a complaint sample collection. Coliform and HPC results were non-detect and all other results were typical. On 3/23, staff assisted Hanscom AFB in collecting chlorine measurements at several coliform monitoring locations. Staff also trained their staff and the sampling contractor on proper technique for cleaning the sample taps and total chlorine testing. On 3/25, staff performed clearance samples associated with WASM-3, Segment 1A: all results were typical and bacteria results were absent for total coliform.
- Training & Guidance: Staff helped in the filming of a video for community drinking water sampling staff on proper coliform sampling technique and chlorine residual testing. On March 31, staff provided a virtual presentation to 17 MWRA and community drinking water sampling staff from several local communities on proper coliform sampling technique and chlorine residual measurement.
- Projects: Staff collected samples on six occasions during the quarter as part of the pipe-loop study. Many MWRA departments are involved in this initiative, to measure lead levels through community lead service lines with various corrosion control treatments. On March 29 and March 31, staff helped with clearance samples following an ROV inspection at four MWRA tanks: Arlington Covered, Bear Hill, Spot Pond Tank #1, and Blue Hills #1. All results were typical and bacteria results were absent for total coliform, and all tanks were cleared to go back on-line.
- Chemical Supply: Staff are closely monitoring bulk chemical inventories and adherence to delivery schedules. Staff continue to check-in with chemical suppliers to review adherence to delivery schedules and to work on chemical supply emergency planning.

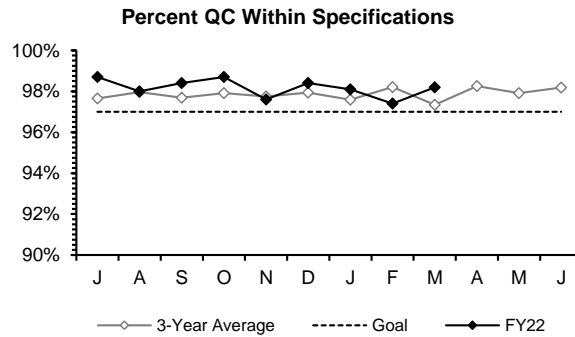
Laboratory Services 3rd Quarter - FY22



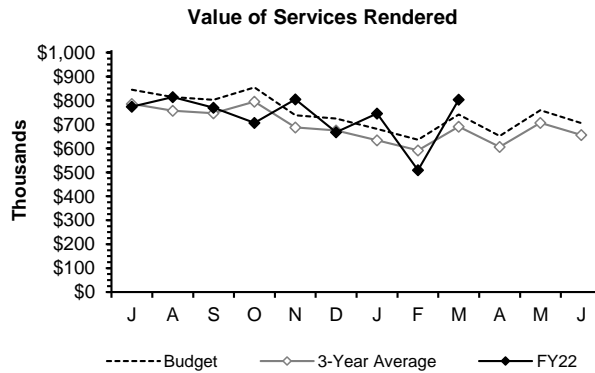
The Percent On-Time measurement continued to run below the 95% goal due to staffing vacancies.



Turnaround Time met the 9-day goal.



Percent of QC tests meeting specifications met the 97% goal.



Value of Services Rendered recovered as late samples from February were reported in March. Overall Value of Services Rendered is below the annual budget projection due to staffing vacancies.

Performance: Met Turnaround Time and Percent QC within Specification indicators for the quarter at reduced staffing level. Value of Services Rendered is slightly below budget, but ahead of the 3-year average year to date.

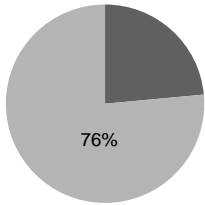
School Lead Program: During the 3rd quarter of FY22, MWRA's lab completed 32 tests from 8 schools and childcare facilities in 4 communities. Since 2016, MWRA's Laboratory has conducted over 39,000 tests from 536 schools and daycares in 44 communities. We have also completed 693 home lead tests under the DPH sampling program since 2017.

CONSTRUCTION PROGRAMS

Projects In Construction

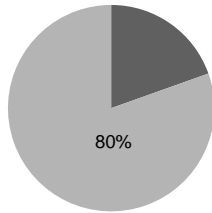
3rd Quarter – FY22

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Permanent Metering Replacement and Installation

Project Summary: This project consists of the replacement of 174 flow meters in sewer manholes located throughout the MWRA service district.

Contract Amount: \$3,291,198.64

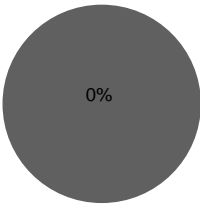
Contract Duration: 450 Days

Notice to Proceed: 3-Dec-20

Contract Completion: 26-Feb-22

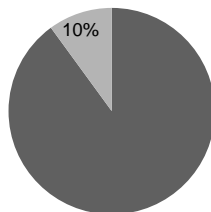
Status and Issues: As of December, the Contractor installed 173 meters of which, 159 have received final acceptance. All meter confirmations are complete.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Section 89 Replacement Pipeline

Project Summary: This project will include replacement of a 10,500-foot portion of PCCP with class IV reinforcing wire, line valves and appurtenances, and abandonment of the 118-year old, 24-inch diameter cast iron Section 29 pipeline.

Contract Amount: \$32,619,000

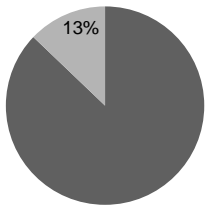
Contract Duration: 1,475 Days

Notice to Proceed: 15-Aug-21

CoContract Completion: 25-Aug-25

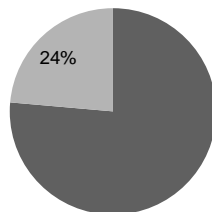
Status and Issues: As of December, the Contractor continued to secure the necessary permits, laydown areas and organizing the field office. They have continued to provide submittals for review and have completed pre-construction videos of phase one surface areas.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Low Service PRV Improvements

Project Summary: This project will replace pressure reducing valves on the Weston Aqueduct Supply Main (WASM) 4 at Nonantum Road in Boston and WASM 3 at Mystic Valley Parkway in Medford

Contract Amount: \$11,326,000

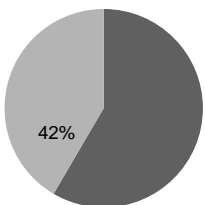
Contract Duration: 720 Days

Notice to Proceed: 14-Jul-21

Contract Completion: 4-Jul-23

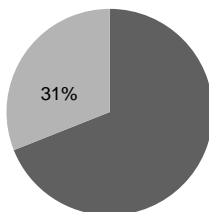
Status and Issues: As of December, the contractor Installed forms and placed concrete for the north and south vertical walls of the cast in place (CIP) vault. Loaded trucks with excavated material for disposal. They installed rebar and wall pipe sleeves for the east and west vertical walls of the CIP vault.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Rehabilitation of WASM 3

Project Summary: This project consists of the rehabilitation of 13,800 feet of 56-inch and 60-inch diameter water main in Arlington, Somerville and Medford.

Contract Amount: \$19,656,427.23

Contract Duration: 1,383 Days

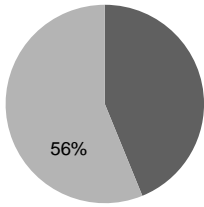
Notice to Proceed: 28-Oct-20

Contract Completion: 11-Aug-24

Status and Issues: As of December, the Contractor installed and welded a new (20 lf) 60" steel connection piece to the existing cement lined pipes, backfilled and paved at AP 14 Irvington Road Somerville. They finished cleaning and cement lining the 60" water main from AP 12 to AP 13B (505 LF) and AP 11 towards AP 10 in Town of Arlington.

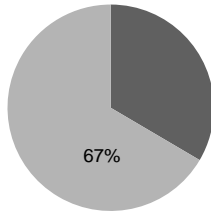
Projects In Construction 3rd Quarter – FY22

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Nut Island Odor Control and HVAC

Project Summary: This project will provide upgrades to the odor control system, heating, ventilation and air conditioning system and other equipment.

Contract Amount: \$58,541,461.62

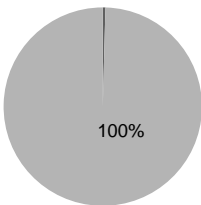
Contract Duration: 1,034 Days

Notice to Proceed: 12-Feb-20

Contract Completion: 12-Dec-22

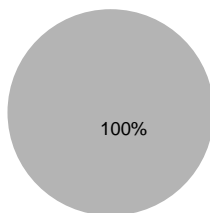
Status and Issues: As of December, the Contractor set frames and covers to grade for the underground storage tank (UST) and adjusted rebar to grade. They placed 4,000 psi concrete for the top slab, finished, and cured after which, they removed the forms and backfilled and compacted around the top slab and removed the access covers at abandoned existing USTs.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Chemical Tank Relining & Pipe Replacement

Project Summary: This project involves replacing the chlorobutyl rubber linings in 3 sodium hypochlorite and 2 sodium bisulfite storage tanks and assorted gravity thickener overflow piping at Deer Island.

Contract Amount: \$8,698,341

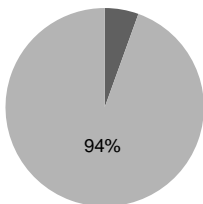
Contract Duration: 850 Days

Notice to Proceed: 13-Aug-19

Contract Completion: 10-Dec-21

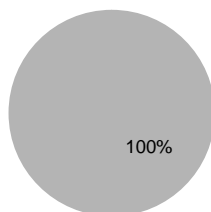
Status and Issues: As of December, the Contractor complete the 7-day leak test for Sodium Bisulfite Tank No. 2., they complete miscellaneous punch list items and began demobilizing from site.

Money



■ Amount Remaining
■ Billed to Date

Time



■ Days Remaining
■ Days Expended

Clinton Valve and Pipe Replacement

Project Summary: This project involves the replacement of return activated sludge, waste activated sludge and plant water valves and associated piping.

Contract Amount: \$488,946.27

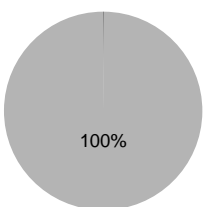
Contract Duration: 493 Days

Notice to Proceed: 8-Sep-20

Contract Completion: 14-Jan-22

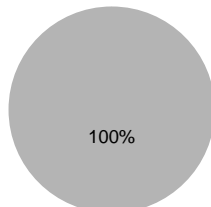
Status and Issues: As of December the Contractor addressed punch list items (valve tags, pipe stenciling, grouting, concrete repair, installation of SS chain and replacement of damaged flanges) and has completed all project related work with the exception of touch-up paint to the concrete pedestals.

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.

Contract Amount: \$20,223,830.33

Contract Duration: 1,230 Days

Notice to Proceed: 11-May-18

Contract Completion: 22-Sep-21

Status and Issues: As of December, the contract is being closed out.

CSO CONTROL PROGRAM

3rd Quarter – FY22

All 35 projects in the CSO Long-Term Control Plan (LTCP) were complete as of December 2015 in compliance with milestones in the Federal District Court Order. MWRA has completed a multi-year CSO post-construction monitoring program and performance assessment, filing the Final CSO Post Construction Monitoring Program and Performance Assessment Report with the Court and submitted copies to EPA and DEP in December 2021. The report shows that 70 of 86 outfalls met the LTCP goals for CSO activation frequency and volume. MWRA and its member CSO communities are moving forward with plans to bring 6 of the 16 CSOs in line with the LTCP goals. With respect to the remaining 10 CSO outfalls, MWRA identified potentially feasible alternatives that may enable four of these outfalls to achieve CSO LTCP volume and activation goals; but at least six CSO outfalls remained particularly challenging. In early 2022 the MWRA reached an agreement with EPA, DEP and the Conservation Law Foundation (“CLF”) on a six-part framework to govern any unfinished work. The framework consisted of: (i) submission of the Final Report (which had been achieved); (ii) three-years of additional time for certain system improvements at six of the 16 outfalls, and continued investigations as to the remaining 10 outfalls; (iii) annual reporting; (iv) periodic meetings; (v) submission of a supplemental report in December 2024 as to the 16 outfalls; and (vi) corresponding additional Schedule Seven compliance milestones for the MWRA’s submission of the annual reports and supplemental report. On February 4, 2022, the MWRA filed a motion, with the assent of EPA, DEP and CLF, to amend Schedule Seven consistent with the proposed framework. On February 18, 2022, the Court issued Schedule Seven Compliance Order Number 250 in which it allowed the request to amend Schedule Seven. In compliance with the new schedule seven milestones, MWRA has been developing the materials/tables/results that will be included in the Annual Report which covers the 2021 Calendar Year. The report will be submitted early in Q4. Of the \$913.1 million budget in the FY22 CIP for the CSO Control Program, **approximately \$2.3 million remain to be spent**, as described below.

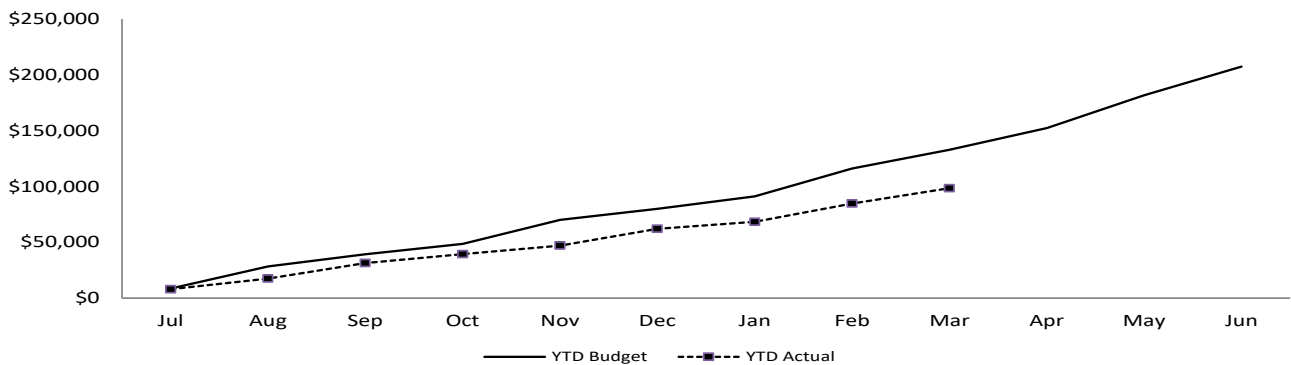
Project/Item	Status as of April 30, 2022
BWSC Dorchester Interceptor Inflow Removal	This agreement with BWSC provided up to \$3.76 million in MWRA financial assistance for reimbursement of the eligible costs of construction to remove inflow from the BWSC’s Dorchester Interceptor system. BWSC awarded one construction contract for inflow removal in the amount of \$1.58 million. BWSC completed the contract work on June 30, 2021, when the financial assistance agreement ended. MWRA has received payment requests of \$1,382,953 from BWSC for completed work, which was paid in November of 2021. No further request for payment are expect on this FAA. \$2.18 million of remaining funds in the Dorchester agreement has been transferred into a new agreement by which BWSC will construct sewer separation and other CSO improvements in East Boston (see below).
BWSC East Boston Sewer Separation and other CSO Improvements	On April 14, 2021, the MWRA Board of Directors authorized the East Boston CSO financial assistance agreement in the amount of \$2.18 million for a term of two years, from July 1, 2021 through June 30, 2023. BWSC and MWRA executed the agreement on June 10, 2021. BWSC has awarded East Boston Sewer Separation Contract 3 and is finalizing design of an upgraded connection to the MWRA system to lower CSO discharges at Outfall BOS014. BWSC has submitted a request for payment of two-thirds of the agreement amount upon contract award, which had been processed on September 16, 2021 in the amount of \$1,454,445. BWSC submitted as-builts on the BOS014 modification. MWRA is reviewing the submittal for release of the remaining one-third of the agreement amount, to be paid in the fourth quarter of FY22.
City of Cambridge Memorandum of Understanding and Financial Assistance Agreement	The City of Cambridge attained substantial completion of its last MWRA CSO plan project in December 2015 in compliance with Schedule Seven. The \$100.2 million MOU/FAA by which MWRA funded the eligible costs of the Cambridge-implemented CSO projects ended on June 30, 2018. With the assistance of internal audit, MWRA recently revisited the final eligibility review of the Cambridge construction contracts, making a few revisions and reviewing those edits with Cambridge. Cambridge is calculating the final eligible amount less the interest accrued. Once the final payment request is submitted MWRA will review. It is anticipated that the final payment will be made Q4 FY22.
City of Somerville Financial Assistance Agreement	By this agreement, MWRA will provide up to \$1.4 million upon construction award of City of Somerville’s repair of its combined sewer trunk line upstream of the Somerville Marginal CSO Facility. Pursuant to the agreement, the repair work is intended to maintain the full in-system storage capacity of the trunk sewer to support CSO control. Somerville completed the design that includes a cementitious/geopolymer lining and has awarded to National Water Main. The notice to proceed was issued in January. Somerville has request payment of the \$1.4 million to partial fund the work in accordance with the FAA. Payment was made on February 24, 2022
WRA CSO Performance Assessment – Contract 7572	<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 impact assessments, culminating in the submission of a report to EPA and DEP in December 2021 verifying whether the LTCP goals are attained. The Board approved Amendment No. 3 on February 16th increasing the contract amount from \$5.28 million to \$6.84 million and extending the contract term by three years to April 7, 2025. Approximately \$4.6 million has been spent.</p> <p>On August 30, 2019, DEP issued five-year CSO variances to water quality standards for the Lower Charles River/Charles Basin and the Alewife Brook/Upper Mystic River effective through August 31, 2024. The variance conditions include receiving water quality modeling and CSO and stormwater sampling; the evaluation of certain additional CSO controls; other requirements intended to minimize CSO discharges, their impacts and public health risk; and preparation of updated CSO control plans for these waters. In compliance with the CSO variances, MWRA has implemented a subscriber-based system to notify the public of CSO discharges at its permitted outfalls within four hours of the start of discharge at each location, using meter readings. MWRA also reports estimated discharge volumes on its CSO notification web page.</p> <p>Cambridge and Somerville are also parties to the variances and have implemented notification systems for their own outfalls. AECOM continues to make progress with CSO variance-required project evaluations and other site-specific investigations to mitigate CSO discharges at locations where LTCP goals are not yet attained. In these efforts, MWRA is maintaining close coordination with the CSO communities. CSO mitigation implemented in late 2020/early 2021 included: BWSC completed its East Boston sewer separation Contract 1 and continues to make substantial progress on Contract 3, Chelsea raised the overflow weir at Outfall CHE004, Cambridge removed heavy sediments in the Outfall CAM401A system, - all expected to bring associated outfalls into attainment with LTCP discharge goals. In addition, Cambridge completed the partial sewer separation improvements that have reduced discharges from the Cottage Farm facility. MWRA has reached the 100% design stage associated with the new interceptor connection at Chelsea’s Outfall CHE008 and has submitted an application for MA Historical Commission as required per the SRF application. Design of the new pipe connection and control gate to the Somerville Marginal Conduit upstream of the Somerville Marginal Facility continues. Once the construction is completed it is predicted to significantly reduce CSO discharges from the facility (MWR205/MWR205A). MWRA and BWSC continue to meet monthly to discuss improving the flow conveyance at Outfall BOS017 in Charlestown. The dry-weather connection modification in East Eagle Square was added to Construction contract 3 (partially funded by MWRA) is complete. BWSC submitted the as-builts for review and upon approval MWRA will release payment. BWSC’s construction contractor continues to make progress on the construction of South Boston sewer separation Contract 1 that will lower CSO discharges to Fort Point Channel.</p> <ul style="list-style-type: none"> AECOM updated the MWRA hydraulic model to Q4-2021 system conditions in part to produce an updated Typical Year CSO performance assessment relative to the LTCP activation and volume goals. The Final CSO Post Construction Monitoring Program and Performance Assessment Report was submitted to the Court and EPA and DEP on December 29, 2021. The report shows that 70 of 86 outfalls met the LTCP goals for CSO activation frequency and volume. MWRA plans to submit first Annual CSO Discharge Estimates and Rainfall Analysis for Calendar Year 2021 on April 29, 2022. MWRA and its member CSO communities are moving forward with plans to bring 6 of the 16 CSOs in line with the LTCP goals. The remaining 10 will require further investigation to determine an appropriate plan. MWRA and the CSO communities will continue to identify and evaluate alternatives to further reduce discharges at these outfalls. AECOM continued to perform evaluations to optimize the performance to the Alewife Brook and Charles River systems. Utilizing receiving water quality models of the Lower Charles River and the Alewife Brook/Upper Mystic River AECOM completed and calibrated last fall, it performed water quality assessments of current river conditions and the impacts of remaining CSO and non-CSO (dry weather and stormwater) pollution sources. MWRA responded to comments provided on the draft and distributed a final Water Quality Assessment Report to EPA, DEP, the CSO communities, Charles River Watershed Association, and Mystic River Watershed Association. MWRA submitted the Water Quality Alternatives Assessment report in December. Comments on the report were received and the MWRA will respond to each individual. Comments were outside of the scope of report and therefore the report will not be re-issued.

CIP Expenditures 3rd Quarter – FY22

FY22 Capital Improvement Program Expenditure Variances through March by Program - (\$ in thousands)				
Program	FY22 Budget Through March	FY22 Actual Through March	Variance Amount	Variance Percent
Wastewater	\$68,740	\$52,280	(\$16,460)	-24%
Waterworks	\$51,152	\$43,144	(\$8,008)	-16%
Business and Operations Support	\$12,936	\$2,902	(\$10,034)	-78%
Total	\$132,828	\$98,325	(\$34,503)	-26%

Project underspending within Wastewater was due to Prison Point Rehabilitation work on hold, timing of grant and loan distributions for the I/I Local Financial Assistance program, timing of final work for Winthrop Terminal Facility (WTF) VFD Replacement, Dorchester Interceptor Sewer, and Gravity Thickener Rehab contracts, and completion of some design and inspection tasks were later than anticipated for Ward Street and Columbus Park Headworks Upgrades Design/CA. This underspending was partially offset by work scheduled in FY21 that was completed in FY22 for the Chelsea Creek Headworks Upgrades, timing of payments for the Somerville Marginal In-System Storage and for Dorchester I/I Removal work, and work completed earlier than anticipated for East Boston CSO Control. Project underspending in Waterworks was due to updated schedules for the NIH Section 89 & 29 Replacement, timing of community distributions for the Water Loan program, less than anticipated Final Design and CA/RI work for CP-3 Sections 23, 24, and 47 Design CA/RI, and scope reduction for Sections 50 & 57 Water Rehabilitation - Design/ESDC. This underspending was partially offset by contractor progress for both WASM 3 Rehabilitation, CP-1 and WASM/Spot Pond Supply Mains Pressure Reducing Valve Improvements, and earlier than anticipated land purchase for the Tunnel Admin, Legal & Public Outreach contract.

Budget vs. Actual CIP Expenditures (\$ in thousands)
Total FY22 CIP Budget of \$207,312



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 3/26/22	\$122.5million
Unused capacity under the debt cap:	\$1.83 billion
Estimated date for exhausting construction fund without new borrowing:	May-22
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper/Revolving loan outstanding:	\$ 53 million
Commercial paper capacity / Revolving Loan	\$250 million
Budgeted FY22 Cash Flow Expectancy*:	\$186 million

* Cash based spending is discounted for construction retainage.

DRINKING WATER QUALITY AND SUPPLY

Source Water – Microbial Results and UV Absorbance

3rd Quarter – FY22

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

Sample Site: Wachusett Reservoir

Wachusett Reservoir water is sampled at the CWTP raw water tap in Marlborough before being treated and entering the MetroWest/Metropolitan Boston systems.

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

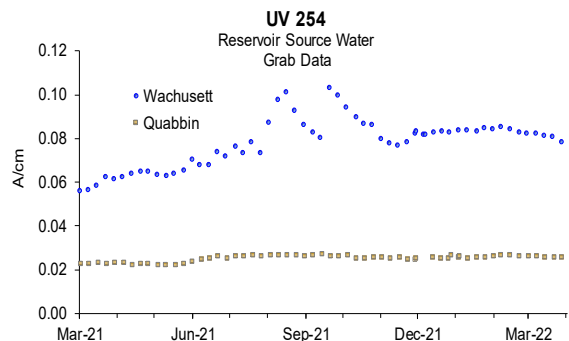
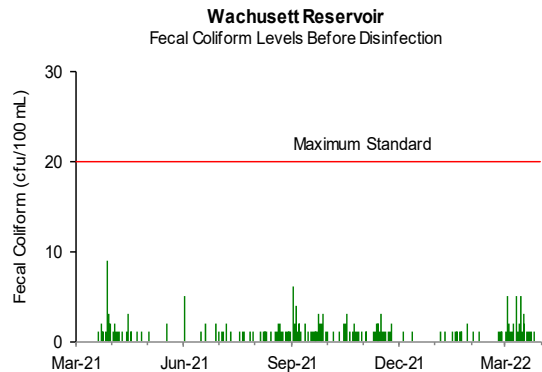
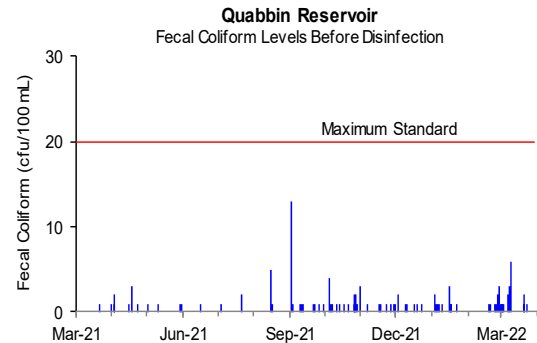
All samples collected during the 3rd Quarter were below 20 cfu/100mL. **For the current six-month period, 0.0% of the samples exceeded a count of 20 cfu/100mL.**

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 averaged 0.026 A/cm for the quarter.

Wachusett Reservoir UV-254 levels averaged 0.083 A/cm for the quarter.



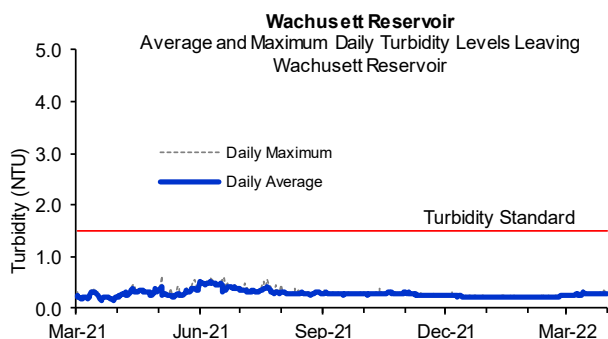
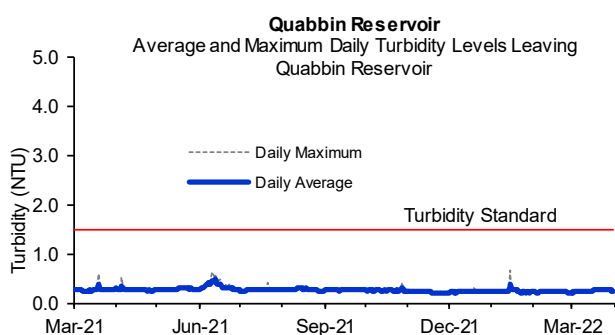
Source Water – Turbidity

3rd Quarter – FY22

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 and Wachusett were within DEP standards for the quarter.

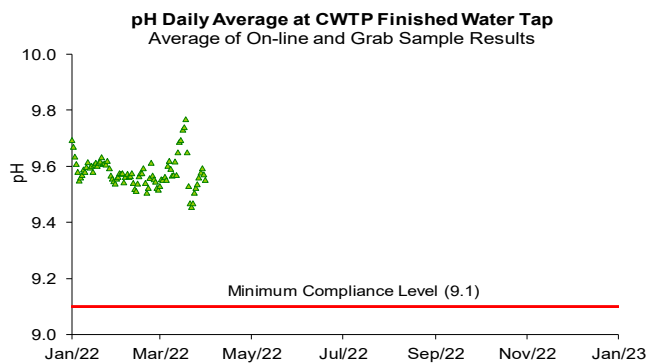
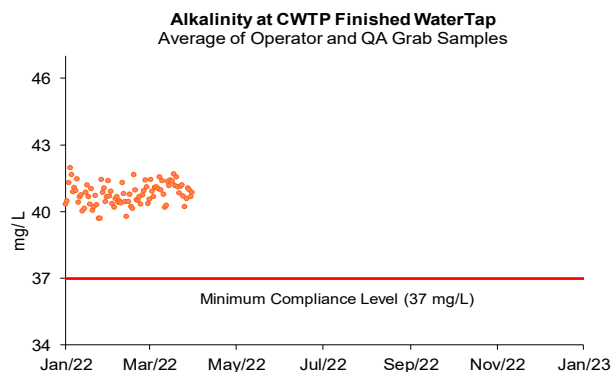


Treated Water – pH and Alkalinity Compliance

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.

Quarterly distribution system samples were collected over a course of two weeks in March. Distribution system sample pH ranged from 9.3 to 9.7 and alkalinity ranged from 39 to 41 mg/L. No sample results were below DEP limits for this quarter.



Treated Water – Disinfection Effectiveness

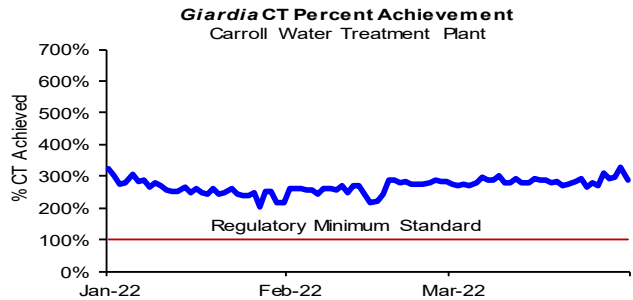
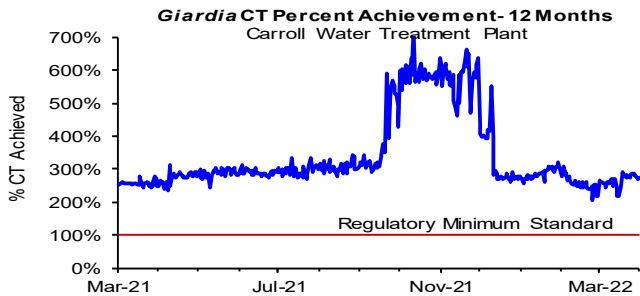
3rd Quarter – FY22

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.

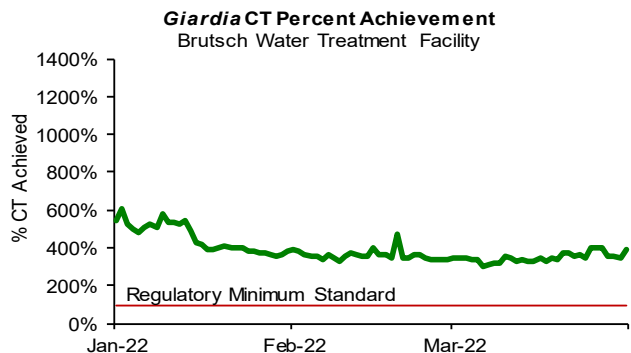
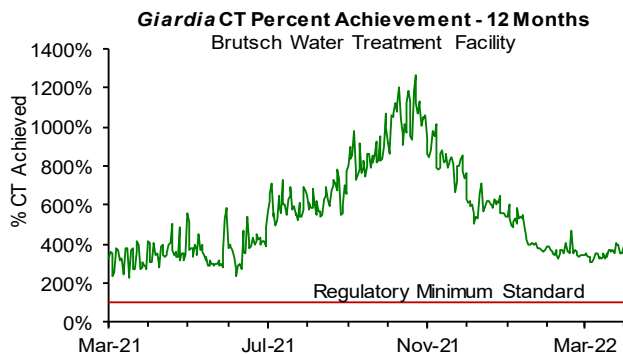
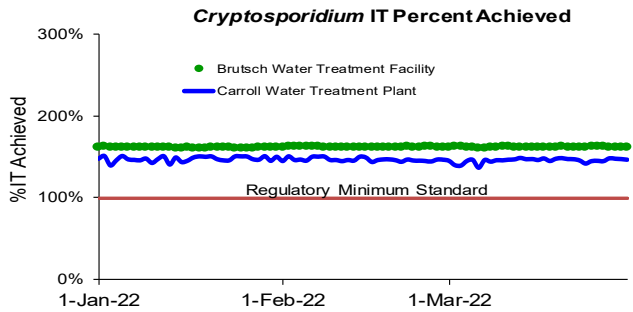
Wachusett Reservoir – MetroWest/Metro Boston Supply:

- Ozone dose at the CWTP varied between 2.3 to 2.6 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% for the quarter. Off-spec water was less than 5%.
- The ozone target was increased in mid-August 2021 through early November to reduce chlorine demand and decay, as during this time chlorine residuals declined in the distribution system.



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 - 0.85 mg/L (November 1 – May 31) and 0.85 - 1.05 mg/L (June 1 – October 31) at Ludlow Monitoring Station.
- The chlorine dose at BWTF varied between 1.22 to 1.45 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% for the quarter. Off-spec water was less than 5%.
- There was a break in the sodium hypochlorite feed piping on February 19. LMS free chlorine residuals, as measured through online analyzers and grab sampling, were below 0.2 mg/L between 6:00PM-7:10PM; this period is less than the 4-hour maximum allowable period noted in 310 CMR 22.20A (6)(a)7. Daily average for chlorine dose in February at BWTF dropped to 1.2 mg/L from 1.3 mg/L as a result of this low dose incident.



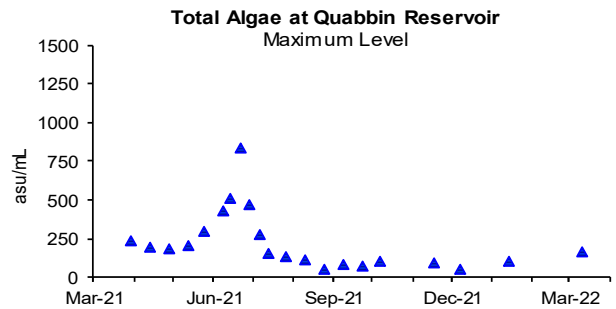
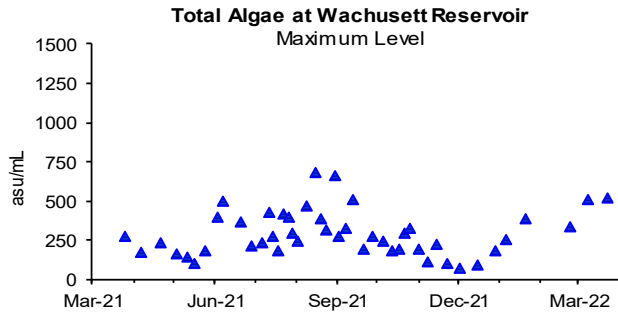
Source Water - Algae

3rd Quarter – FY22

Algae levels in the Wachusett and Quabbin 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 reservoirs with copper sulfate, an algaecide. During the winter and spring, diatom numbers may increase. While not a taste and odor concern, consumers that use filters may notice a more frequent need to change their filters.

In the 3rd quarter, there were no complaints which may be related to algae reported from the local water departments.

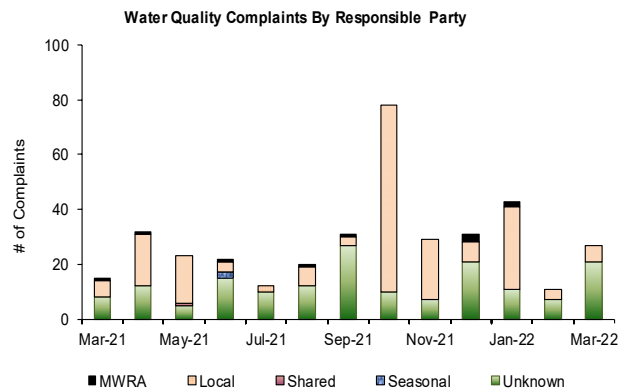
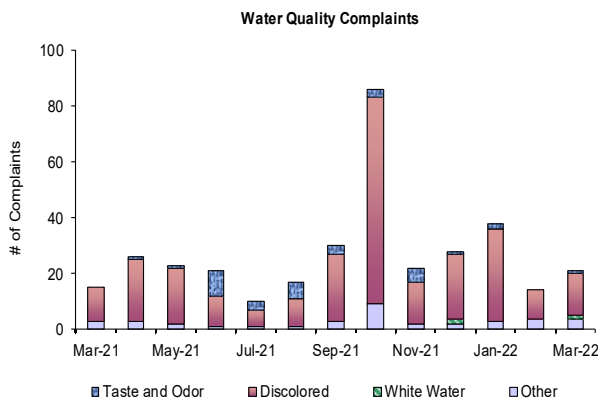


Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 81 complaints during the quarter compared to 41 complaints from 3rd Quarter of FY21. Of these complaints, 58 were for "discolored water", 3 were for "taste and odor", 1 was for "white water", and 19 were for "other". Of these complaints, 40 were local community issues, 2 were MWRA related, and 39 were unknown in origin.



Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

3rd Quarter – FY22

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 144 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*). *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.

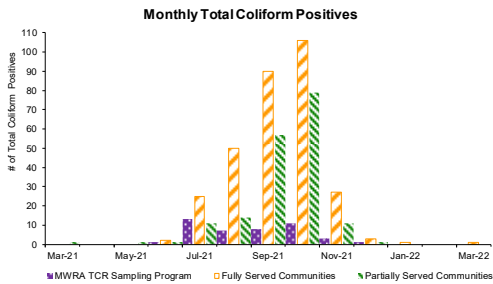
A disinfectant residual is intended to maintain the sanitary integrity of the water; MWRA considers a residual of 0.2 mg/L a minimum target level at all points in the distribution system.

Highlights

In the 3rd Quarter, two of the 6,664 samples (0.03% system-wide) submitted to MWRA labs for analysis tested positive. No communities were required to perform a Level Assessment. None of the 1905 MWRA locations or Community/MWRA Shared samples (0.00%) tested positive for total coliform. No samples tested positive for *E.coli*. Only 0.1% of the Fully Served community samples had chlorine residuals lower than 0.2 mg/L for the quarter.

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		<i>E.coli</i> Positive	# Assessment Required
		# Samples (b)	# (%) Positive		
MWRA	a	MWRA Locations	354	0 (0%)	0
		Shared Community/MWRA sites	1551	0 (0%)	0
		Total: MWRA	1905	0 (0%)	0
Fully Served		ARLINGTON	156	0 (0%)	0
		BELMONT	104	0 (0%)	0
		BOSTON	779	0 (0%)	0
		BROOKLINE	217	0 (0%)	0
		CHELSEA	169	0 (0%)	0
		DEER ISLAND	52	0 (0%)	0
		EVERETT	169	0 (0%)	0
		FRAMINGHAM	237	0 (0%)	0
		LEXINGTON	120	0 (0%)	0
		LYNNFIELD	18	0 (0%)	0
		MALDEN	234	0 (0%)	0
		MARBLEHEAD	72	0 (0%)	0
		MARLBOROUGH	126	0 (0%)	0
		MEDFORD	208	0 (0%)	0
		MELROSE	117	0 (0%)	0
		MILTON	102	0 (0%)	0
		NAHANT	30	0 (0%)	0
		NEWTON	276	0 (0%)	0
		NORTHBOROUGH	48	0 (0%)	0
		NORWOOD	99	0 (0%)	0
		QUINCY	364	0 (0%)	0
		READING	130	0 (0%)	0
		REVERE	198	1 (0.51%)	0
		REVERE			No
		SAUGUS	104	0 (0%)	0
		SOMERVILLE	255	1 (0.39%)	0
		SOMERVILLE			No
		SOUTHBOROUGH	30	0 (0%)	0
		STONEHAM	91	0 (0%)	0
		SWAMPSCOTT	51	0 (0%)	0
	WALTHAM	215	0 (0%)	0	
	WATERTOWN	130	0 (0%)	0	
	WESTON	45	0 (0%)	0	
	WINTHROP	66	0 (0%)	0	
		Total: Fully Served	5072	2 (0.04%)	
Partially Served		BEDFORD	57	0 (0%)	0
		BURLINGTON	151	0 (0%)	0
		CANTON	90	0 (0%)	0
		NEEDHAM	123	0 (0%)	0
		PEABODY	206	0 (0%)	0
		WAKEFIELD	138	0 (0%)	0
		WELLESLEY	114	0 (0%)	0
		WILMINGTON	87	0 (0%)	0
		WINCHESTER	91	0 (0%)	0
		WOBURN	199	0 (0%)	0
		Total: Partially Served	1256	0 (0.0%)	
CVA		MWRA CVA Locations	103	0 (0%)	0
		CHICOPEE	186	0 (0%)	0
		SOUTH HADLEY FD1	61	0 (0%)	0
		WILBRAHAM	46	0 (0%)	0
		Total: CVA	396	0 (0%)	
		Total: Community Samples	6664	2 (0.03%)	

Chlorine Residuals in Fully Served Communities

	2021												2022		
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
% <0.1	0.0	0.0	0.0	0.1	0.3	0.3	0.7	0.9	0.5	0.4	0.1	0.1	0.0		
% <0.2	0.0	0.0	0.0	0.2	0.7	1.3	2.8	3.1	1.7	0.8	0.1	0.2	0.0		
% <0.5	0.2	0.3	0.2	0.6	2.6	6.0	12.3	10.9	7.4	2.8	1.1	1.1	0.5		
% <1.0	1.5	2.0	1.0	2.1	8.6	17.3	27.9	26.2	15.7	7.3	3.7	4.1	2.3		
% ≥1.0	98.5	98.0	99.0	97.9	91.4	82.7	72.1	73.8	84.4	92.7	96.3	95.9	97.7		

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

3rd Quarter – FY22

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.

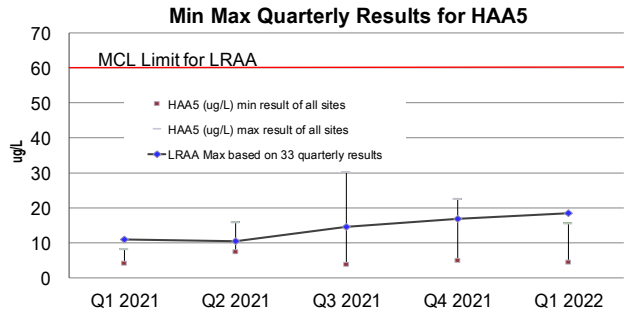
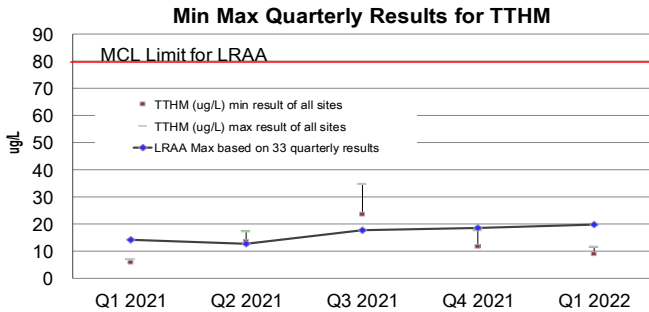
The locational running annual average calculated quarterly at each individual sampling location must be below the Total HAA5 or Total TTHM MCL standard. The charts below show the highest and lowest single values for all sites, and the LRAA of the highest location each quarter.

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 data for all three CVA communities data (Chicopee, Wilbraham and South Hadley FD1). Each community is regulated individually.

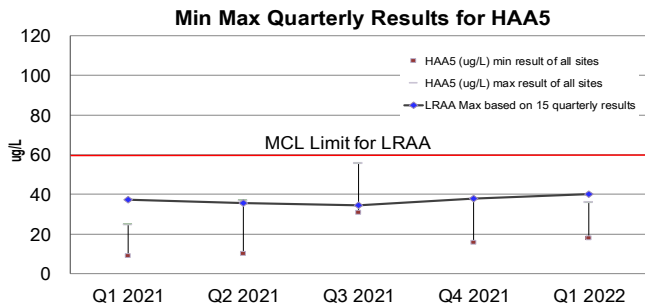
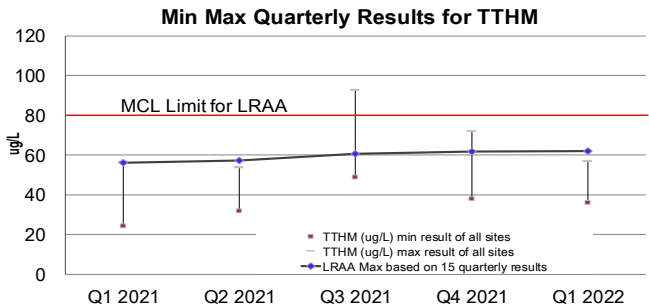
Bromate is tested monthly as required for water systems that treat with ozone. Bromide in the raw water may be converted into bromate following ozonation. EPA’s RAA MCL standard for bromate is 10 µg/L.

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 = 19.8 µg/L; HAA5s = 18.6 µg/L. The current RAA for Bromate = 0.0 µg/L. No LRAA exceedances or violations occurred this quarter for MetroBoston and any of the CVA communities. MWRA and the CVA communities continue to closely monitor and manage the disinfection process to minimize DBP production.

MetroBoston Disinfection By-Products



CVA Disinfection By-Products (Combined Results)



Water Supply and Source Water Management

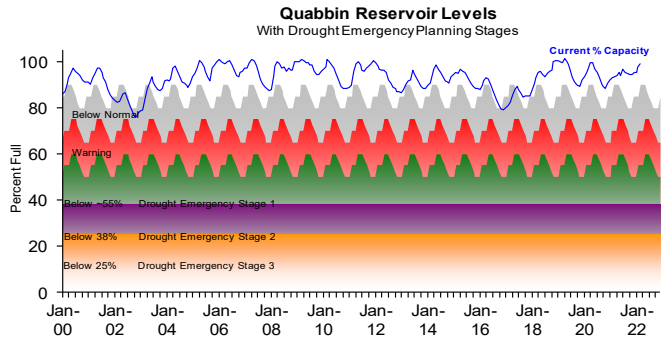
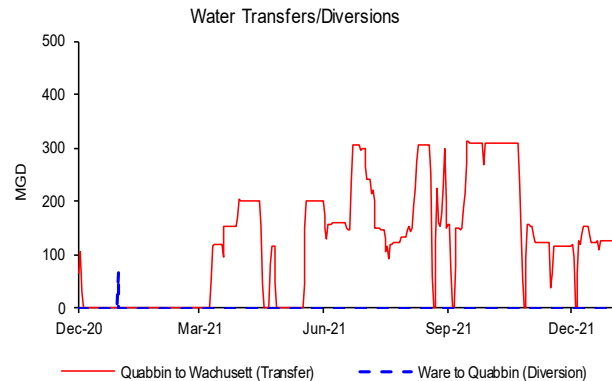
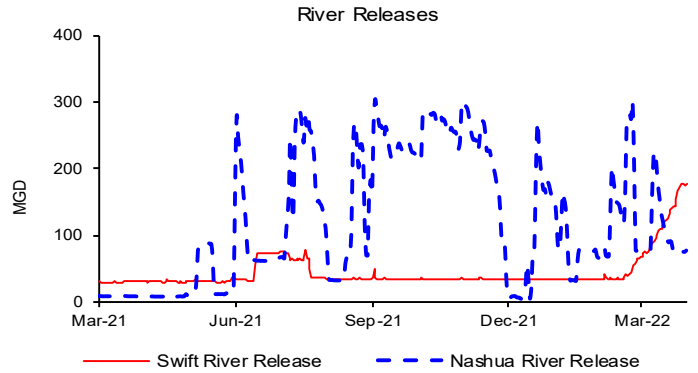
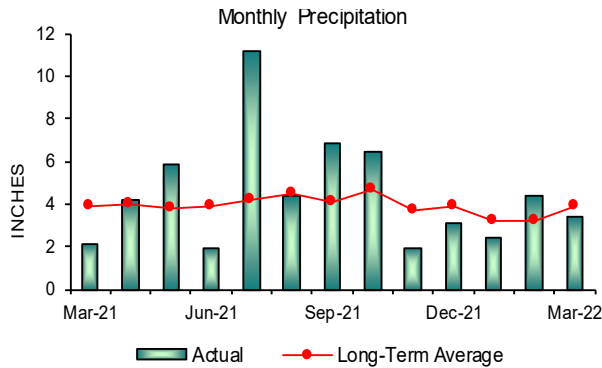
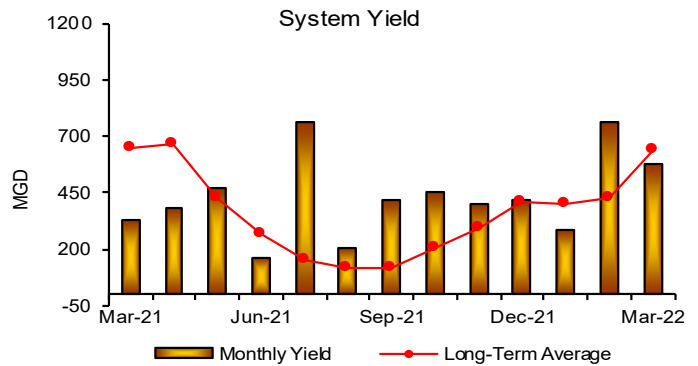
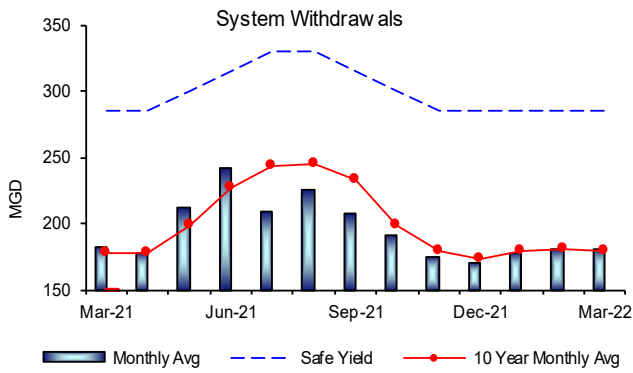
3rd Quarter – FY22

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 99.1% as of March 31, 2022; a 3.9 % increase for the quarter, which represents a gain of more than 15.8 billion gallons of storage and an increase in elevation of 2.06'. System withdrawal and precipitation were below their long term quarterly average. Yield for the quarter was above its long term quarterly average. Quabbin is in Normal Operating Range for this time of year. Quabbin began spilling on February 12, and spilled a total of 2.6 BG during the quarter. A total of 10.3 BG was released from Wachusett Reservoir during the quarter.



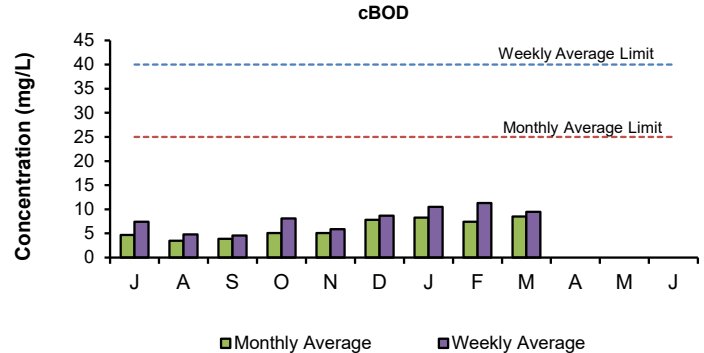
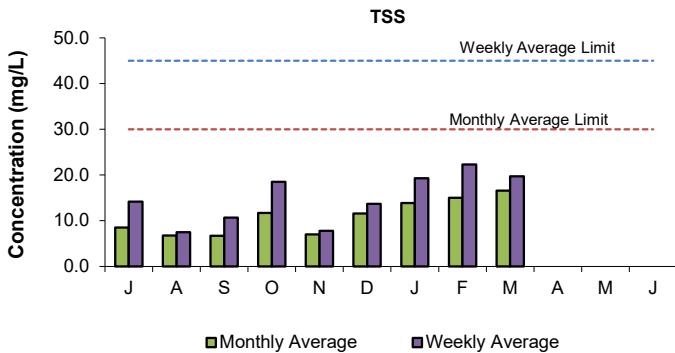
WASTEWATER QUALITY

NPDES Permit Compliance: Deer Island Treatment Plant 3rd Quarter - FY22

NPDES Permit Limits

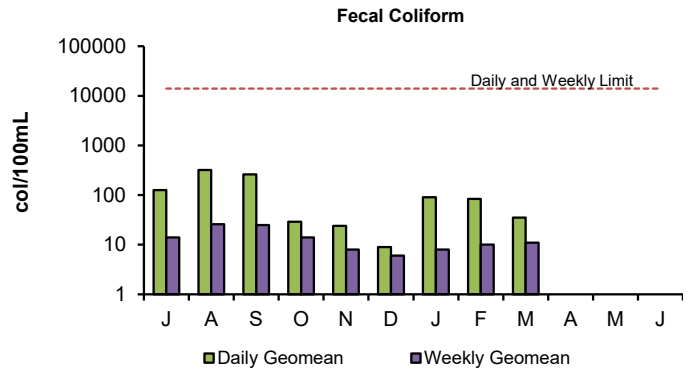
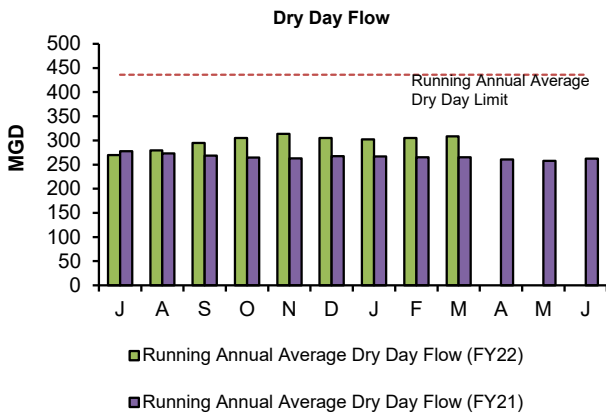
Effluent Characteristics		Units	Limits	January	February	March	3rd Quarter Violations	FY22 YTD Violations
Dry Day Flow (365 Day Average):		mgd	436	302.4	304.8	308.3	0	0
cBOD:	Monthly Average	mg/L	25	8.3	7.4	8.5	0	0
	Weekly Average	mg/L	40	10.5	11.3	9.5	0	0
TSS:	Monthly Average	mg/L	30	13.9	15.0	16.6	0	0
	Weekly Average	mg/L	45	19.3	22.3	19.7	0	0
TCR:	Monthly Average	ug/L	456	0.0	0.0	0.4	0	0
	Daily Maximum	ug/L	631	0.0	0.0	13.3	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	91	84	35	0	0
	Weekly Geometric Mean	col/100mL	14000	8	10	11	0	0
	% of Samples >14000	%	10	0	0	0	0	0
	Consecutive Samples >14000	#	3	0	0	0	0	0
pH:		SU	6.0-9.0	6.5-7	6.5-7.0	6.5-7	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	50	50	0	0

There have been no permit violations in FY22 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 3rd 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 3rd 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 3rd 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 3rd Quarter, all permit conditions for fecal coliform were met.

NPDES Permit Compliance: Clinton Wastewater Treatment Plant 3rd Quarter - FY22

NPDES Permit Limits

Effluent Characteristics		Units	Limits	January	February	March	3rd Quarter Violations	FY22 YTD Violations
Flow:	12-month Rolling Average:	mgd	3.01	3.12	3.24	3.31	3	6
BOD:	Monthly Average:	mg/L	20	3.20	3.50	1.40	0	0
	Weekly Average:	mg/L	20	4.00	4.20	2.10	0	0
TSS:	Monthly Average:	mg/L	20	4.90	4.80	2.80	0	0
	Weekly Average:	mg/L	20	5.80	6.90	4.30	0	0
pH:		SU	6.5-8.3	7.2-7.6	7-7.7	7-8.1	0	0
Dissolved Oxygen:	Daily Average Minimum:	mg/L	6	10.00	9.10	10.10	0	0
E. Coli:	Monthly Geometric Mean:	cfu/100mL	126	5	5	5	0	0
	Daily Geometric Mean:	cfu/100mL	409	7	10	7	0	0
TCR:	Monthly Average:	ug/L	17.6	0.00	0.00	0.00	0	0
	Daily Maximum:	ug/L	30.4	0.00	0.00	0.00	0	0
Copper:	Monthly Average:	ug/L	11.6	9.20	10.00	7.15	0	0
	Daily Maximum:	ug/L	14.0	9.20	10.00	8.19	0	0
Total Ammonia Nitrogen: November 1st - March 31st	Monthly Average:	mg/L	10.0	0.00	0.09	0.12	0	0
	Daily Maximum:	mg/L	35.2	0.00	0.19	0.41	0	0
Total Phosphorus: November 1st - March 31st	Monthly Average:	ug/L	1000	449	245	86	0	0
	Daily Maximum:	ug/L	RPT	620	370	211	0	0
Acute Toxicity ⁺ :	Daily Minimum:	%	≥100	N/A	N/A	>100	0	0
Chronic Toxicity ⁺ :	Daily Minimum:	%	≥62.5	N/A	N/A	62.5	0	0

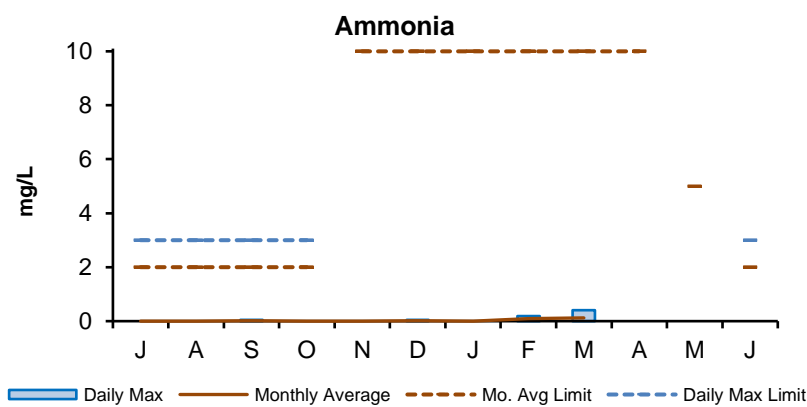
There have been six permit violations at the Clinton Treatment Plant in FY22.

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

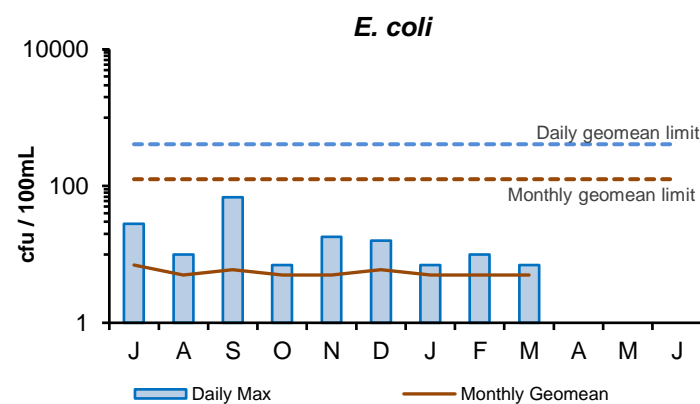
2nd Quarter: There were three permit violations in the second quarter, all rolling average flow exceedances. The 12-month rolling average flow exceeded 3.01 MGD in the 2nd quarter due to excessive rains in the region during summer 2021.

3rd Quarter: There were three permit violations in the third quarter, all rolling average flow exceedances. The 12-month rolling average flow exceeded 3.01 MGD in the 3rd quarter due to excessive rains in the region during summer 2021.

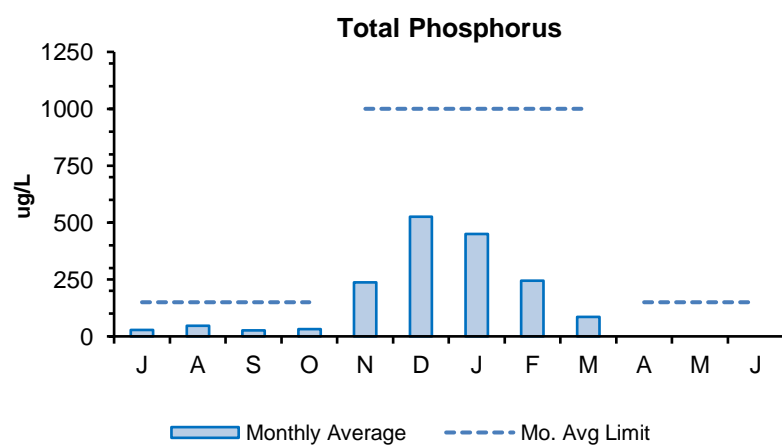
+ Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



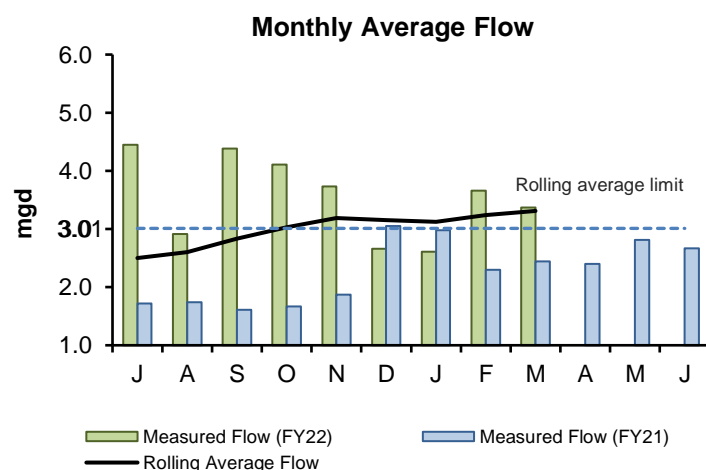
The 3rd Quarter's monthly average and daily maximum concentrations of ammonia were below the permit limits. The monthly average and daily maximum limits for the 3rd Quarter are variable. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential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



E. coli is an indicator for the possible presence of pathogens. There were no violations of permit limits in the 3rd Quarter. The monthly and daily limits are 126 cfu/100 mL and 409 cfu/100 mL respectively.



Total phosphorus limits are most stringent during the growing season from April to October. The 3rd Quarter's monthly average concentrations for total phosphorus were below permit limits.



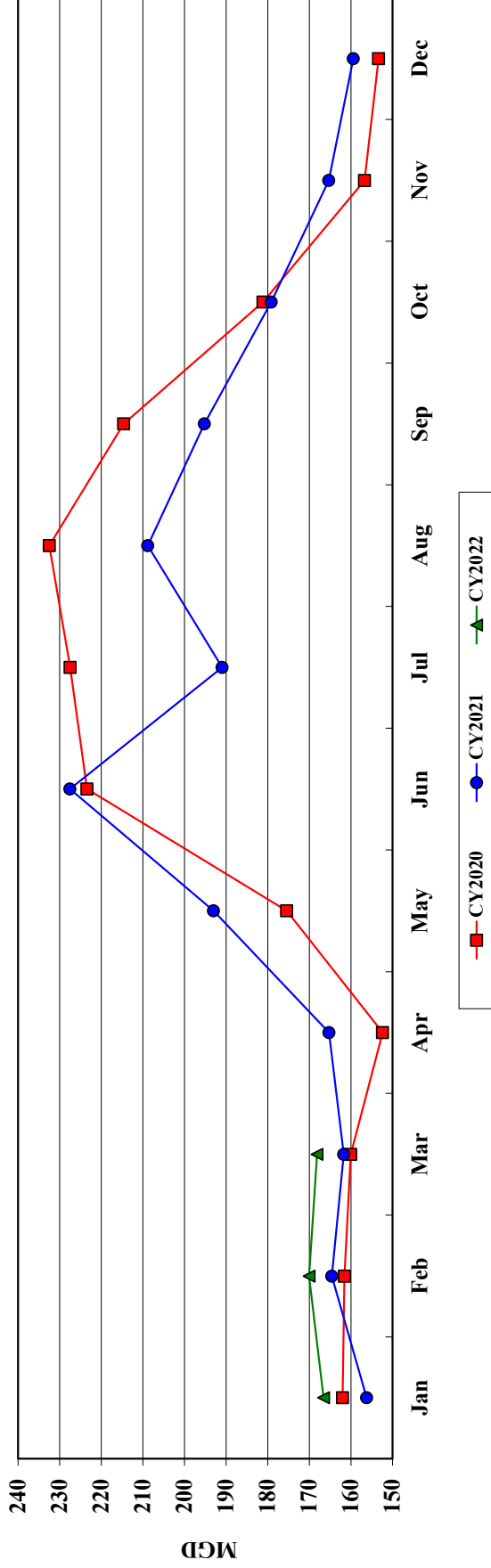
The graph depicts the rolling annual average monthly flow, measured in million gallons per day, exiting the plant. The 12-month rolling average flows during the 3rd Quarter were above the permit limit.

COMMUNITY FLOWS AND PROGRAMS

Customer Water Use

3rd Quarter - FY22

MWRA Water Supplied: All Revenue Customers



MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Total
CY2020	162.016	161.551	160.018	152.368	175.435	223.405	227.454	232.496	214.617	181.110	156.727	153.367	244.467	183.462
CY2021	156.213	164.567	161.697	165.284	192.998	227.522	190.945	208.810	195.229	179.116	165.302	159.442	160.701	180.641
CY2022	166.570	170.056	168.115	-	-	-	-	-	-	-	-	-	168.187	168.187

MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Total	Annual Total
CY2020	5,022.510	4,684.968	4,960.567	4,571.025	5,438.470	6,702.146	7,051.078	7,207.384	6,438.520	5,614.399	4,701.821	4,754.375	14,668.045	67,147.263
CY2021	4,842.593	4,607.873	5,012.608	4,958.533	5,982.944	6,825.661	5,919.300	6,473.120	5,856.857	5,552.611	4,959.064	4,942.705	14,463.074	65,933.870
CY2022	5,163.682	4,761.563	5,211.556	-	-	-	-	-	-	-	-	-	15,136.802	15,136.802

The March 2022 Community Water Use Report was recently distributed to communities served by the MWRA Metropolitan and Chicopee Valley 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 2022 water use will be used to allocate the FY2024 water utility rate revenue requirement.

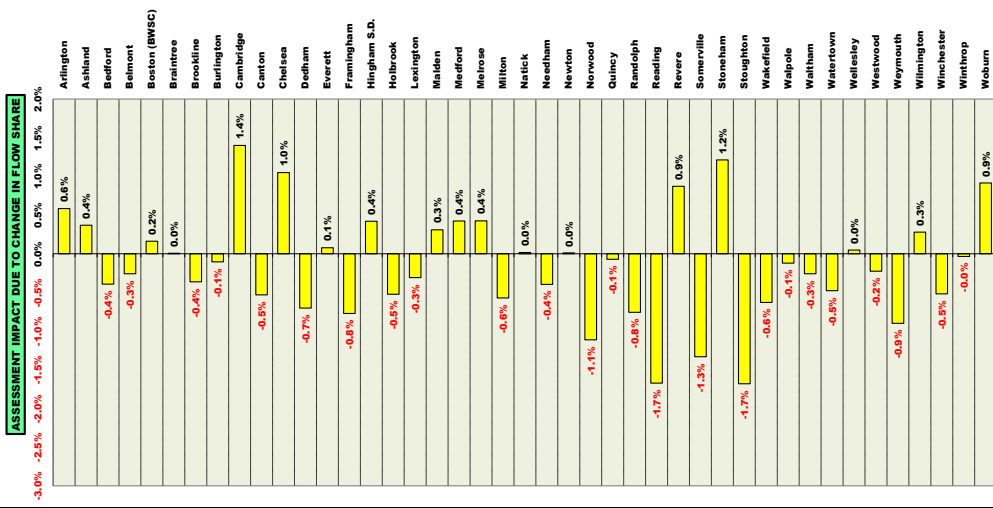
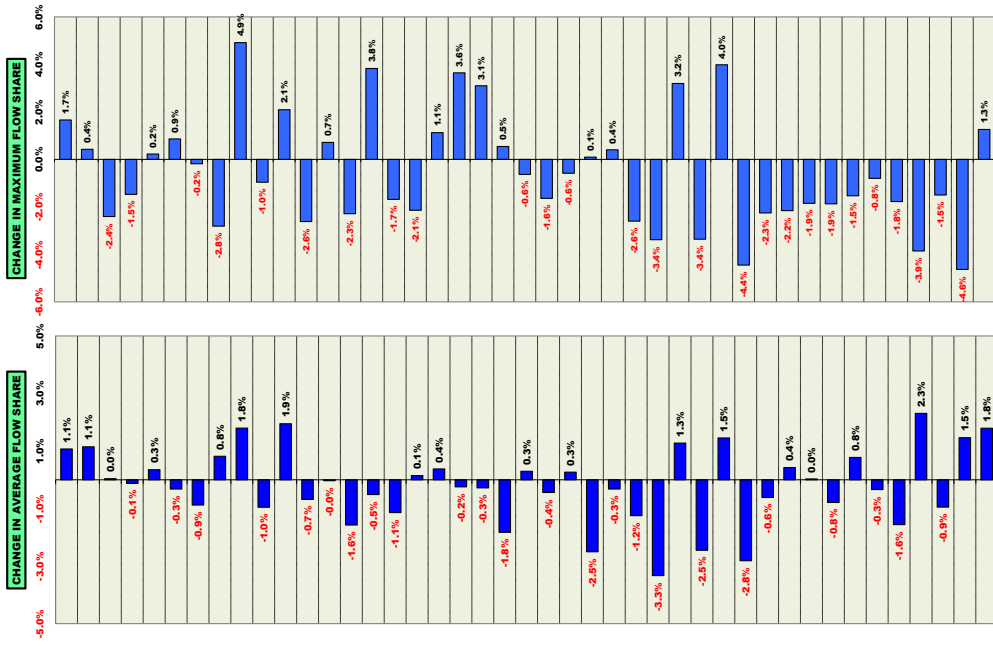
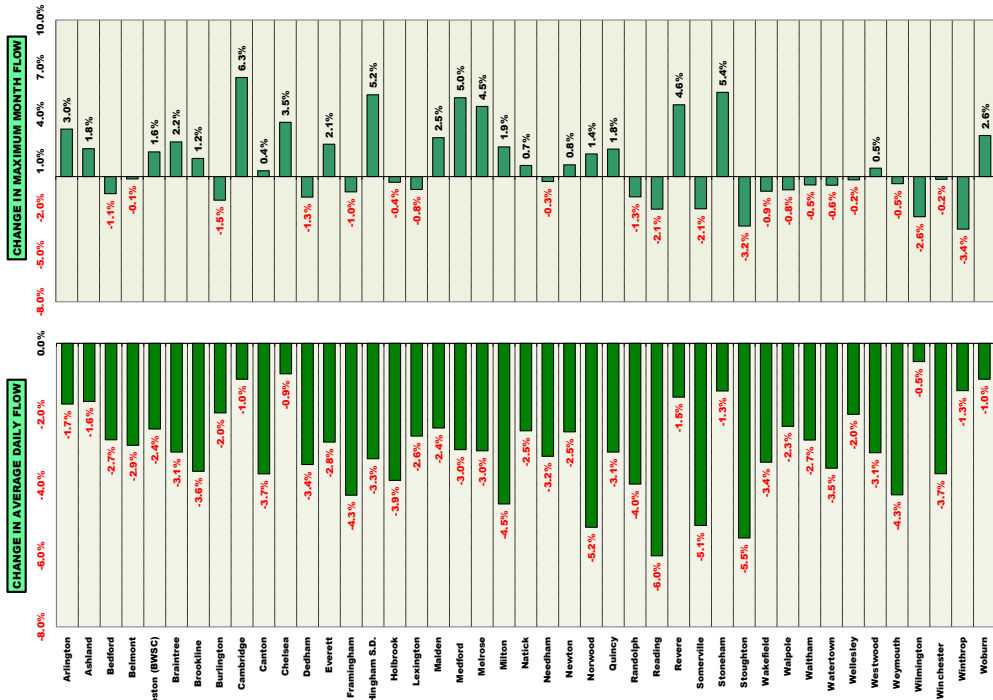
MWRA customers used an average of 168.19 mgd in the 3rd quarter (Jan-Mar 2022) of FY2022. This is an increase of 7.5 mgd or 4.7% compared to the 3rd quarter of FY2021.

Community Wastewater Flows

3rd Quarter - FY22

How CY2019-21 Community Wastewater Flows Could Effect FY2023 Sewer Assessments

The flow components of FY2023 sewer assessments will be calculated using a 3-year average of CY2019 to CY2021 wastewater flows compared to FY2022 assessments that will use a 3-year average of CY2018 to CY2020 wastewater flows.



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

But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2019 to CY2021 flow share compared to CY2018 to CY2020 flow share, compared to all other communities in the system.

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 actual flows for 2018 and 2019, and January to March, and June to December 2020. April & May 2020 based on the average of three prior years, adjusted for 2020 water use. January to December 2021 estimate based on the average of the three prior years.
³ Flow data is preliminary and subject to change pending additional MWRA and community review.
⁴ Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.

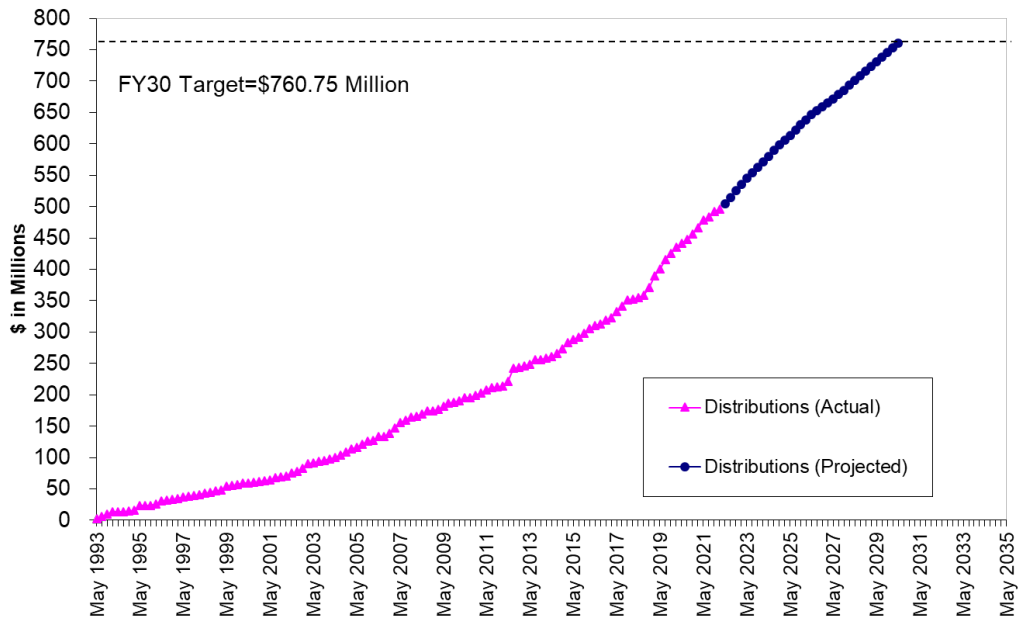
Community Support Programs

3rd Quarter – FY22

Infiltration/Inflow Local Financial Assistance Program

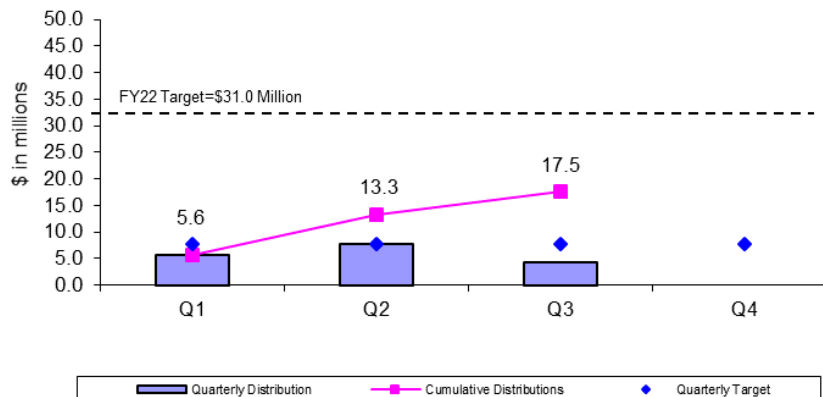
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides \$760.75 million in grants and interest-free loans (average of about \$20 million per year from FY93 through FY30) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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 through 12 funds (total \$360 million) are distributed as 75% grants and 25% loans with interest-free loans repaid to MWRA over a ten-year period. Phase 13 provides an additional \$100 million in ten-year loan-only funds.

I/I Local Financial Assistance Program Distribution FY93-FY30



During the 3rd Quarter of FY22, \$4.2 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Arlington, Brookline and Weymouth. Total grant/loan distribution to date for FY22 is \$17.4 million. From FY93 through the 3rd Quarter of FY22, all 43 member sewer communities have participated in the program and \$496 million has been distributed to fund 642 local I/I reduction and sewer system rehabilitation projects. 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.

FY22 Quarterly Distributions of Sewer Grant/Loans

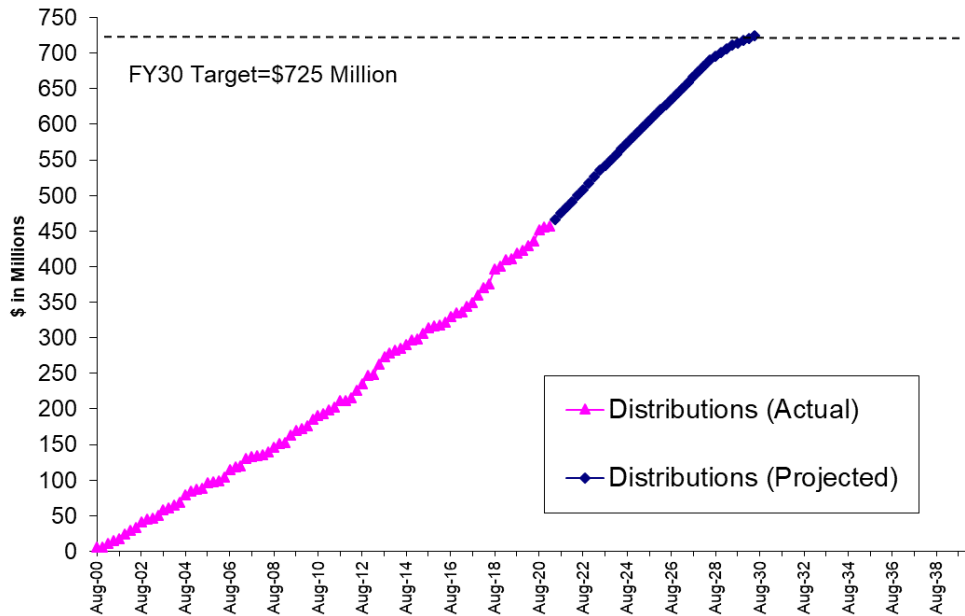


Community Support Programs 3rd Quarter – FY22

Local Water System Assistance Program

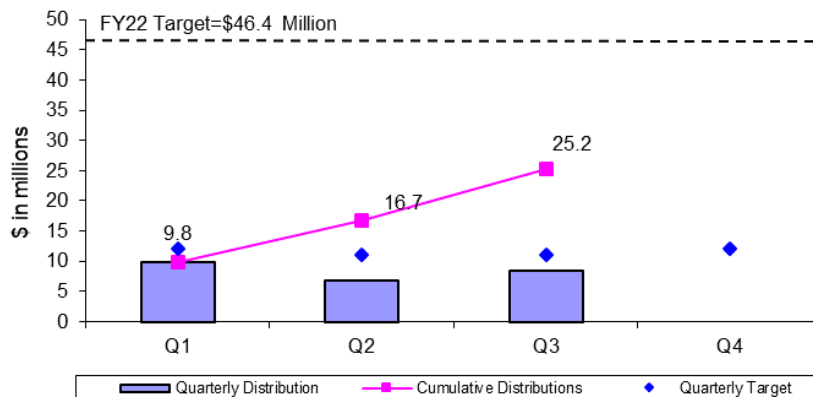
MWRA's Local Water System Assistance Programs (LWSAP) provides \$725 million in interest-free loans (an average of about \$24 million per year from FY01 through FY30) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. There have been 3 phases: Phase 1 at \$222 Million, Phase 2 at \$210 Million, and Phase 3 at \$293 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 3rd Quarter of FY22, \$8.5 million in interest-free loans was distributed to fund local water projects in Arlington, Malden, and Weston. Total loan distribution to date for FY22 is \$25.2 million. From FY01 through the 3rd Quarter of FY22, \$492 million has been distributed to fund 496 local water system rehabilitation projects in 43 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.

FY22 Quarterly Distributions of Water Loans



Community Support Programs

3rd Quarter – FY22

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 – MWRA made three Lead Loans.

FY18 was the second year of the Lead Loan Program - MWRA made five Lead Loans.

FY19 was the third year of the Lead Loan Program - MWRA made four Lead Loans.

FY20 was the fourth year of the Lead Loan Program - MWRA made eight Lead Loans.

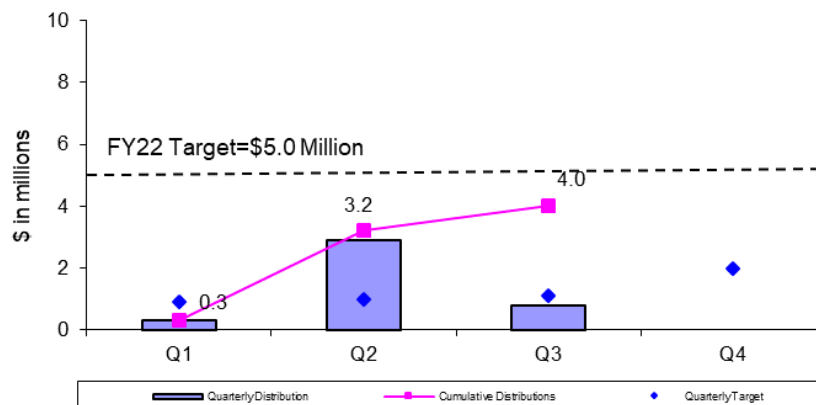
FY21 is the fifth year of the Lead Loan Program – MWRA made seven Lead Loans.

FY22 is the sixth year of the Lead Loan Program – MWRA made four Lead Loans in the first three quarters.

Summary of Lead Loans:

Winthrop in FY22	\$0.8 Million	Winthrop in FY18	\$0.3 Million
Somerville in FY22	\$1.6 Million	Marlborough in FY18	\$1.0 Million
Revere in FY22	\$1.3 Million	Newton in FY17	\$4.0 Million
Chelsea in FY22	\$0.3 Million	Quincy in FY17	\$1.5 Million
Watertown in FY21	\$0.6 Million	Winchester in FY17	\$0.5 Million
Marlborough in FY21	\$2.0 Million	TOTAL	\$29.0 Million
Everett in FY21	\$1.5 Million		
Boston in FY21	\$2.6 Million		
Winthrop in FY21	\$0.8 Million		
Chelsea in FY21	\$0.3 Million		
Winchester in FY21	\$0.6 Million		
Everett in FY20	\$0.5 Million		
Marlborough in FY20	\$1.0 Million		
Winchester in FY20	\$0.6 Million		
Winthrop in FY20	\$0.7 Million		
Weston in FY20	\$0.2 Million		
Everett in FY20	\$1.0 Million		
Somerville in FY20	\$0.9 Million		
Chelsea in FY20	\$0.3 Million		
Marlborough in FY19	\$1.0 Million		
Winthrop in FY19	\$0.5 Million		
Chelsea in FY19	\$0.1 Million		
Everett in FY19	\$1.0 Million		
Needham in FY18	\$1.0 Million		
Winchester in FY18	\$0.5 Million		
Revere in FY18	\$0.2 Million		

FY22 Quarterly Distributions of Lead Service Line Replacement Loans

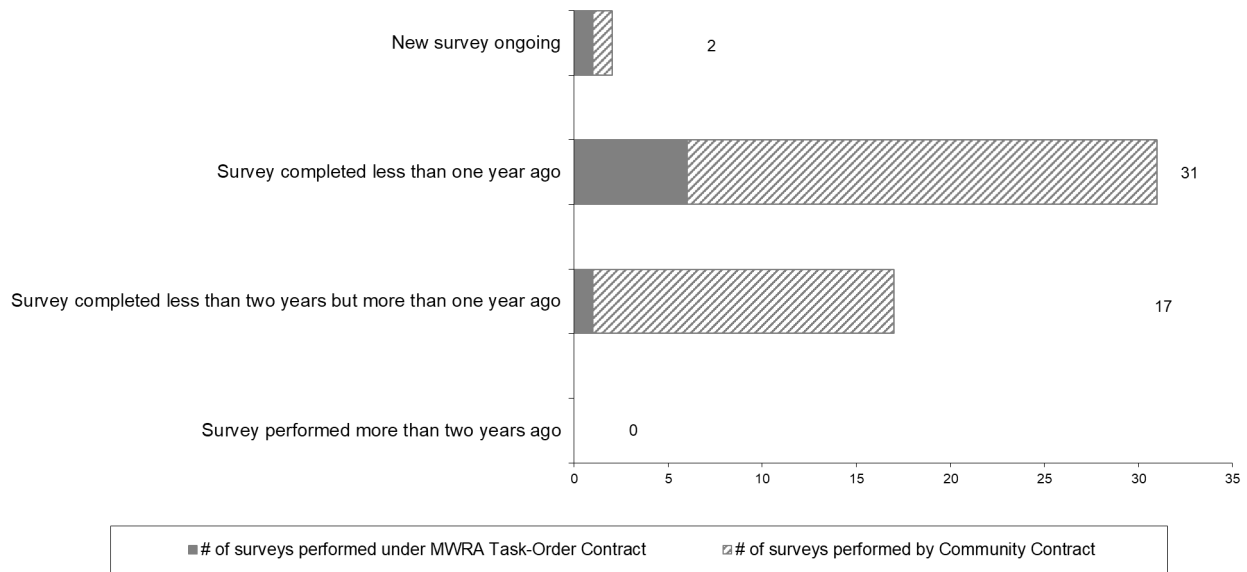


Community Support Programs

3rd Quarter – FY22

Community Water System Leak Detection

To ensure member water communities identify and repair leaks in locally-owned distribution systems, MWRA developed leak detection regulations that went into effect in July 1991. Communities purchasing water from MWRA are required to complete a leak detection survey of their entire distribution system at least once every two years. Communities can accomplish the survey using their own contractors or municipal crews; or alternatively, using MWRA’s task order leak detection contract. MWRA’s task order contract provides leak detection services at a reasonable cost that has been competitively procured (3-year, low-bid contract) taking advantage of the large volume of work anticipated throughout the regional system. Leak detection services performed under the task order contract are paid for by MWRA and the costs are billed to the community the following year. During the 3rd Quarter of FY22, 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 200 mgd. The local Water Conservation Program includes distribution of water conservation education brochures (indoor - outdoor bill-stuffers) and low-flow water fixtures and related materials (shower heads, faucet aerators, and toilet leak detection dye tabs), 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	732	11,057	33		11,822
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	1,070	970	372		2,412
Toilet Leak Detection Dye Tablets	_____	1,432	657	1,344		2,433

BUSINESS SERVICES

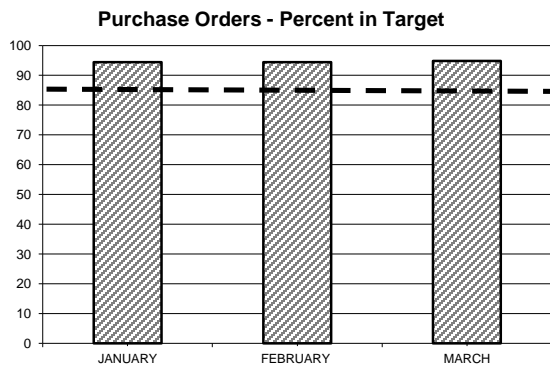
Procurement: Purchasing and Contracts

3rd Quarter - FY22

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

Outcome: Processed 95% of purchase orders within target; Average Processing Time was 4.51 days vs. 3.77 days in Quarter 3 of FY21. Processed 54% (7 of 13) of contracts within target timeframes; Average Processing Time was 203 days vs. 204 days in Quarter 3 of FY21.

Purchasing



	No.	TARGET	PERCENT IN TARGET
\$0 - \$500	495	3 DAYS	89.8%
\$500 - \$2K	610	7 DAYS	97.8%
\$2K - \$5K	447	10 DAYS	97.3%
\$5K - \$10K	46	25 DAYS	91.3%
\$10K - \$25K	90	30 DAYS	92.2%
\$25K - \$50K	20	60 DAYS	60.0%
Over \$50K	29	90 DAYS	100.0%

The Purchasing Unit processed 1737 purchase orders, 152 less than the 1889 processed in Qtr 3 of FY21 for a total value of \$12,639,174 versus a dollar value of \$6,056,680 in Qtr 3 of FY22.

The purchase order processing target was not met for the \$25K - \$50K category due to specification revisions and staff summary requirements.

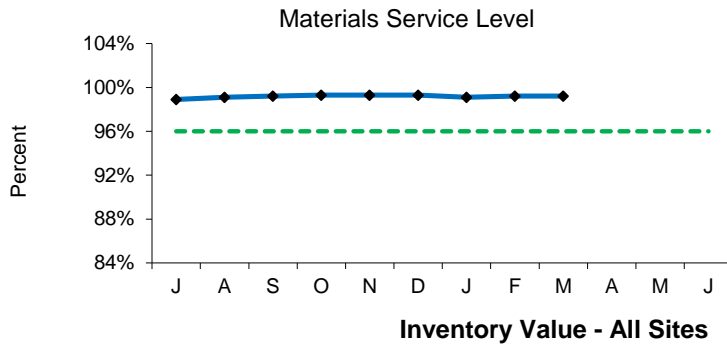
Contracts, Change Orders and Amendments

Procurement executed thirteen contracts with a value of \$25,512,383 and four amendments with a value of \$2,426,113. Twenty five change orders were executed during the period. The dollar value of all non-credit change orders during Q3 FY22 was \$1,762,194 and the value of credit change orders was (\$322,451).

Six contracts were not executed within the target timeframes. One contract was delayed due to delays receiving signed documents from the contractor. Another contract was delayed due to staff summary requirements. A third contract was not executed within the target timeframe due to the decision to extend the existing contract. A fourth contract required additional time to review contract specifications and another was delayed due to the additional time required to prepare the project specifications to reflect a Chapter 30 project. The final contract was not executed within the target timeframe due to the need for one of the filed sub-bid categories for the contract to be re-bid in order to clarify the scope of the work/bid documents.

Staff reviewed 9 proposed change orders and 7 draft change orders.

Materials Management 3rd Quarter - FY22



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 7,014 (99.2%) of the 7,070 items requested in Q3 from the inventory locations for a total dollar value of \$1,286,741.

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 FY22 goal is to reduce consumable inventory from the July '21 base level (\$8.7 million) by 2.0% (approximately \$175,120), to \$8.5 million by June 30, 2022.

Items added to inventory this quarter include:

- Deer Island – hydraulic, engine, fuel, air and oil filters for Fleet Services; nylon brushes and wire wheels for HVAC; pressure gauges, motor brushes and cables for Electrical; flooring for B&G.
- Chelsea –flow monitor gaskets, fuses, headlamps and transmitters for Metering; expansion joints, retainer ring set, saw blades, air and fuel filters and pump for Planning; sensor assembly for Operations Engineering.
- Southboro – ball valves, elbows, adapters, tees, reducing bushings, couplings and unions for Plumbing; portable batteries for all Trades.

Property Pass Program:

- Twelve audits were conducted during Q3.
- Scrap revenue received for Q3 amounted to \$15,445. Year to date revenue received amounted to \$40,908.
- Revenue received from online auctions held during Q3 amounted to \$22,239. Year to date revenue received amounted to \$485,195.

Items	Base Value July-21	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	8,756,035	9,073,242	317,207
Spare Parts	9,317,998	9,316,109	-1,889
Total	18,074,033	18,389,351	315,318

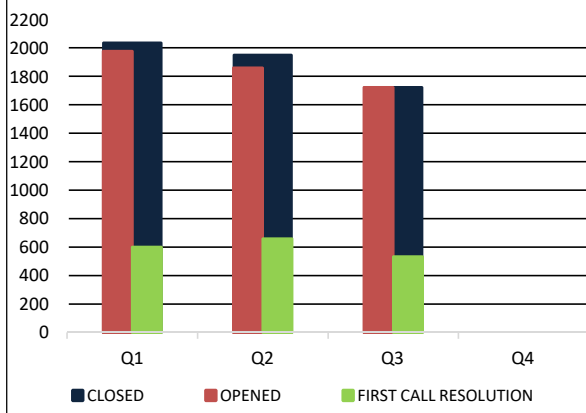
Note: New adds are items added at an inventory location for the first time for the purpose of servicing a group/department to meet their business needs/objectives.

MIS Program

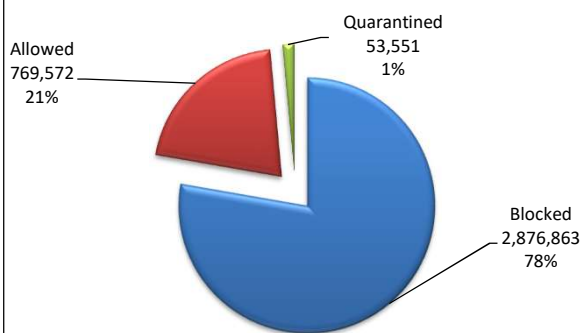
3rd Quarter – FY22

Numbers & Statistics

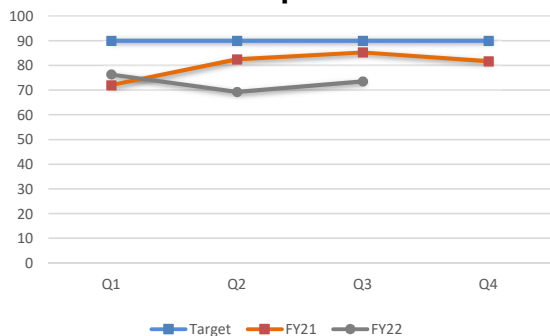
Monthly Call Volume



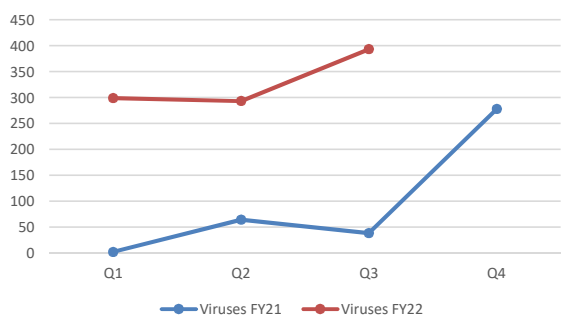
Emails Received: 3,699,986



PC Compliance



Viruses Caught by McAfee



Project Updates

Infrastructure & Security

Managed Security Services Contract: A six month extension of the existing MSSP contract is being procured. The scope continues to be drafted for the new MSSP contract advertisement of the new procurement is anticipated for May.

Identity and Access Management: Implementation of the Okta single sign-on (SSO) solution was started during Q2 and is targeted to complete in Q4. Initial integrations will be with Webex, GIS and LMS.

PBX (Telephone System Upgrade): Verizon network circuit upgrades were completed in Chelsea, Pellet Plant, Nut Island, CWTP, Walpole and Clinton sites. While circuit upgrades are underway, the server configurations are nearing completion, with functional tests underway. Pilot group cutover scheduled for April.

Expansion of Wi-Fi Networking: Wireless is now available at CWTP and DI Primary Ops. Cabling updates and Wi-Fi access point installation continued to be scoped and implemented in DI.

Cyber Security Awareness Training: New cycle for cyber security awareness training has begun. MIS has begun to identify updated or new modules that will be part of the curriculum. Timing and coordination are still being considered.

Laptop Deployment: Deployment of laptops to approved teleworkers that are currently using their own devices has started and is 20% complete.

Cell Phone Upgrades: iPhone 8 to iPhone 11 upgrade completed.

Other Software & Custom Applications

A&F Year End: Assisted the Treasury Department in producing year end tax forms and filed the 2021 1099 tax forms electronically to the Internal Revenue Service for the first time, subsequently correcting one via the same process.

ECM/Electronic Document Management: Continued to meet on data and document migration, file structure, CADD standards, naming conventions, etc. Vendor continued to build out new workflow processes, set up the backend repository that will hold all MWRA drawings going forward, and continued to provision the physical records module. Process for moving over electronic files was defined and disseminated to end users in anticipation of the full migration.

MWRA Website Replacement: SOW was rewritten to include option for cloud solutions and updated Form 2 began routing. Anticipated posting of RFQ/P in May.

Learning Management System: Several data issues were discovered prior to anticipated go-live. Continued to work on resolving those issues along with adding courses and certificate programs to the system. New anticipated go-live date scheduled for June.

PIMS: Dental Permitting fees completed and invoiced (738 permits for a total of \$150,756). Installed two new software releases that contained several enhancements and bug fixes.

Library, Record Center, & Training

Library: undertook 22 research requests, supplied 12 books for circulation, provided 10 articles, and 11 new standards. The MWRA Library Portal supported 675 end user searches. Research topics included: Alewife Reservation and Alewife CSO, Alewife Brook sediment, Wachusett Lower Gatehouse-Venturi Meters, Green Infrastructure Funding.

Record Center (RC): The Record Center added 79 new boxes, handled 144 total boxes, and shredded (25) 65 gallon bins of confidential documentation on-site. It performed 126 database/physical box searches for multiple departments on various topics, including administrative info, law cases, and project documents for Engineering.

Training: Training: In Q3, 47 online IT lessons were taken, by 14 employees, spanning 52 hours (260 YTD). 2 total sessions of 2 standard class lessons were taken by 7 employees, spanning 7 hours (312 YTD). 1 outside certification was earned (4 YTD), by 2 employees (7, YTD), spanning 48 hours (320 YTD).

Legal Matters
3rd Quarter FY 2022

PROJECT ASSISTANCE

Real Estate, Contract, Environmental and Other Support:

- **8(m) Permits and Licenses:** Reviewed one hundred and thirty (130) 8(m) permits. Finalized amendment to public access 8(m) permit for the Town of Southborough. Drafted Amendment to Northborough Public Access 8 (m) permit.
- **Real Property:** Drafted Traffic Signalization Memorandum of Agreement; researched property interests along Griffin Way and Eastern Avenue, Chelsea for Traffic Signalization project. Researched and reviewed Article 97 for acquisition of property interests for Tunnel Redundancy Project. Finalized legal review of Quabbin Watershed Preservation Restriction – W-001227 and Wachusett Watershed Fee Acquisition W-001217. Reviewed MWRA property rights in the area of 9 Ledges Road in Newton, MA. Revised language and reviewed revised plan for grant of temporary and permanent water easements in Woburn, MA related to MWRA Contract 7117 – Northern Intermediate High Section 89 Replacement Pipeline. Mapping and overlay of property interests and various use restrictions for 125 Barton Road, Wellesley (Hegarty Pump Station). Researched and confirmed ownership for Elm Street Pump Station, Framingham. Reviewed Chelsea Creek Headworks parcels to determine ownership and title reference as well as property located between MDC/MWRA parcels; researched Suffolk Registry of Deeds and Land Court records and plans, reviewed historical MWRA memoranda regarding Chelsea Creek Headworks parcel and confirmed Land Court determination for property to update MWRA database. Reviewed Taking 424, Hultman Aqueduct, and confirmed Commonwealth’s ownership for Tunnel Redundancy. Reviewed property rights for 525 Lincoln Street in Brighton. Reviewed Chelsea lease requirements related to proposed improvements by landlord. Recorded Notice of Restriction for property at 340 Marginal Street, Chelsea. Reviewed title, plans, and documents for parcel concerning a land court case. Obtained plans and records for property development in Stoneham. Reviewed property rights in area of Beaver Brook Reservation for 6543 WASM3 Rehab project. Reviewed DCR construction permit process for accessing MWRA infrastructure.
- **Energy:** Reviewed U.S. Department of Energy (DOE) funding announcement and guidance under the Hydroelectric Production Incentive Program, which is mandated by Section 242 of the Energy Policy Act of 2005. Assisted with preparation of related DOE applications for the Loring Road and CVA Fish Hatchery hydro facilities. Reviewed Nstar Electric and Western Massachusetts Electric Company (d/b/a Eversource Electric) recent rate case filing (D.P.U. 22-22) and potential rate impacts to the Authority’s Deer Island and other facilities located in the Eversource service territory. Provided assistance regarding updates to the Interconnection Service Agreements for the Cosgrove and Oakdale hydropower facilities, as well as applicability of Commonwealth Small Hydro Net Metering Program to the Cosgrove facility. Reviewed and revised draft agreement between MWRA and Eversource regarding EV charging “make-ready” program at the MWRA Chelsea facility.
- **Environmental/NPDES:** Reviewed and revised one new water supply contract and two water supply renewal agreements. Prepared and finalized Amendment Three to a Memorandum of Agreement between the Authority and the Boston Water and Sewer Commission regarding the Union Park facility. Reviewed and prepared comments regarding EPA's general NDPEs permit for medium wastewater treatment facilities, which is applicable to MWRA's Clinton wastewater treatment facility. Reviewed and finalized Activity and Use Limitation, Opinion Letter, MMIP, and Notice of PCB Restriction documents related to Chelsea Creek Headworks facility project. Reviewed state PFAS task force draft report. Assisted TRAC with: (a) preparation of Penalty Assessment Notice; and (b) sewer use permit Request for Reconsideration.

- **Miscellaneous:** Drafted terms for Tunnel Redundancy consultant contract. Reviewed and approved documents for submission to Records Conservation Board for destruction. Prepared historical deeds, plans of land and easements for permanent archiving with Records Center. Researched MWRA land takings and added to database for mapping and archiving electronic records. Collaborated with Real Property Division to improve and expand Real Property/GIS interactive database with information for Alford Street Pump Station, Fore River Shipyard, Chelsea Creek Headworks and Caruso Pump Station. Updated schedule and sequencing of tasks for property acquisitions to support Tunnel Redundancy. Reviewed general conditions and advised on a warranty claim. Reviewed MWRA executive session minutes for real property and security matters and identified those for recommendation for release. Summarized House Bill 4345 and compared to Senate Bill 2622 and identified proposed terms applicable to MWRA. Collaborated with Tunnel Redundancy Department to outline process for disposition of real property interests by DCR and DCAMM. Reviewed IRS tax filing requirements and notice of sale for 167-175 School Street, Waltham and confirmed responsibilities with seller's attorney. Reviewed and confirmed FY 2022 – 2023 real property taxes for 167-175 School Street, Waltham and verified with Waltham's Assessing Office assignment of land use code for tax exemption and effective date. Edited geotechnical consultant contract. Summarized Senate Bill 1179 for proposed changes to the prevailing wage law and applicability to MWRA. Reviewed certified payroll reports, researched prevailing wage law, advised on employee health and pension coverages versus employer costs and deductions. Updated reference guide for commonly used codes from Statewide Records Retention schedule, and reviewed documents, identified applicable codes and retention periods for various MWRA departments. Reviewed and edited MIS security policies and video surveillance program to bring current with applicable laws. Researched law and provided guidance for use of electronic signatures for contract documents.
- **Public Records Requests:** During the 3rd Quarter of FY22, MWRA received and responded to one hundred eighty seven (187) public records requests.

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters

Two demands for arbitration were filed.

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

Matters Concluded

Received a decision in favor of the MWRA from the Department of Unemployment Assistance's Board of Review following the MWRA's appeal of a Review Examiner's decision awarding benefits to a former employee.

Settled an arbitration case alleging the MWRA violated a collective bargaining agreement when an employee alleged he was bypassed for overtime.

A union withdrew a demand for arbitration regarding a grievance alleging that MWRA violated a collective bargaining agreement when an employee was not granted a lateral transfer.

A union withdrew a demand for arbitration regarding a grievance alleging that MWRA violated a collective bargaining agreement when an employee was terminated.

LITIGATION/CLAIMS

New Lawsuits/Claims: The Conservation Law Foundation sent MWRA a February 23, 2022 Notice of Intent to File Suit against MWRA for alleged violations of the Clean Water Act,

claiming that MWRA failed to properly implement its industrial pretreatment program between fiscal years 2017 and 2021.

Teneo Funds SPVi , LLC vs. Ermont, Inc.;
Suffolk Superior Court C.A. No. 2184-CV-01563
MWRA received notice of receivership for Ermont, Inc.

Vosburg v. Dept. of Unemployment Assistance (DUA) and MWRA: Worcester District Court C.A. No. 2262-000304
A former employee filed a Complaint appealing the denial of benefits by DUA.

Significant Developments:

DiGregorio, et al. v. Griffin Way, LLC v. MWRA:
Suffolk Superior Court C.A. No. 2084-CV-02429-K
The Court approved a proposed settlement of the litigation during a hearing on the Plaintiff's Assented to Motion to Approve Settlement held on January 7th.

(Employee) v. MWRA: Suffolk Superior Court C.A. No. 21-1434
The conclusion of plaintiff's deposition was held on February 8, 2022. A former MWRA employee's deposition was also taken.

GEICO v. MWRA: Suffolk Superior Court C.A. No. 2184CV02107
The parties reached a settlement of the subrogation claim and are expected to finalize the Settlement Agreement in April.

Closed Cases:

DiGregorio, et al. v. Griffin Way, LLC v. MWRA:
Suffolk Superior Court C.A. No. 2084-CV-02429-K
The parties finalized and signed a Settlement Agreement. A Stipulation of Dismissal was filed on March 8, 2022. The matter is now closed.

Closed Claims:

There are no closed claims to report.

Subpoenas:

During Third Quarter FY 2022, two subpoenas were received and two subpoenas were closed.

Wage Garnishments

There are two wage garnishment matters that are active and monitored by Law Division.

SUMMARY OF PENDING LITIGATION MATTERS

TYPE OF CASE/MATTER	As of Mar 2022	As of Dec 2021	As of Sept 2021
Construction/Contract/Bid Protest (other than BHP)	0	0	0
Tort/Labor/Employment	4	5	3
Environmental/Regulatory/Other	3	3	3
Eminent Domain/Real Estate	0	0	1
Total	7	8	7

Other Litigation matters (restraining orders, etc.)	2	2	2
Total – all pending lawsuits	9	10	9
Claims not in suit:	0	0	1
Bankruptcy	2	1	1
Wage Garnishment	2	2	2
TRAC/Adjudicatory Appeals	0	0	0
Subpoenas	0	0	1
TOTAL – ALL LITIGATION MATTERS	13	13	14

TRAC/MISC.

New Appeals: There were no new appeals in the 3rd Quarter FY 2022.

Settlement by Agreement of Parties There were no Settlements by Agreement of Parties in the 3rd Quarter FY 2022.

Stipulation of Dismissal No Stipulations of Dismissal were filed in 3rd Quarter FY 2022.

Notice of Dismissal Fine paid in full No Notices of Dismissal for Fines Paid in Full were filed in the 3rd Quarter FY 2022.

Tentative Decision No Tentative Decisions were issued in the 3rd Quarter FY 2022.

Final Decisions No Final Decisions were issued in the 3rd Quarter FY 2022.

**INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES
3rd Quarter FY22**

Highlights

During the 3rd quarter FY22, Internal Audit (IA) continued to work with management to enhance controls and procedures to increase inspection compliance. An internal review of inspection compliance is progressing and an internal review of water and wastewater licenses and certifications is nearing completion.

In addition, IA issued 34 indirect cost rate letters to professional service consultants, completed 2 incurred cost reviews while 4 are in process, and completed 1 labor burden review while 1 is in process. Management advisory services included continued analysis on delegation of authority.

There were 3 policies updated with several others updates in process.

Status of Recommendations

During FY22, 21 recommendations were closed.

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 36 months, the appropriateness of the recommendation is re-evaluated.

All Open Recommendations Pending Implementation – Aging Between 0 and 36 Months

Report Title (issue date)	Audit Recommendations		
	Open	Closed	Total
Asset Tracking – Fleet Data Verification (8/21/19)	1	15	16
Fleet Services Non-Plated Equipment Inspections (3/30/20)	3	12	15
Overhead Crane Inspections (4/28/21)	-	11	11
Compliance Status of Employees' Mandatory Confined Space Entry Training (6/30/21)	7	1	8
Total Recommendations	11	39	50

Cost Savings

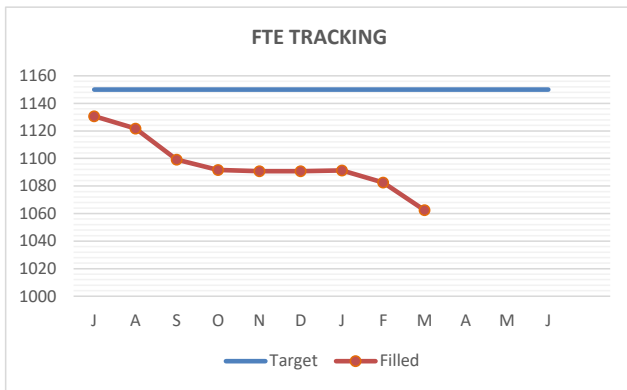
IA's target is to achieve at least \$1,000,000 in cost savings each year. Cost savings vary each year based upon many factors. In some cases, cost savings for one year may be the result of prior years' audits.

Cost Savings	FY18	FY19	FY20	FY21	FY22 Q3	TOTALS
Consultants	\$118,782	\$262,384	\$643,845	\$563,525	\$2,349	\$1,590,885
Contractors & Vendors	\$1,323,156	\$3,152,884	\$2,097,729	\$1,547,223	\$652,163	\$8,773,155
Internal Audits	\$204,202	\$210,063	\$212,517	\$214,458	\$165,564	\$1,006,804
Total	\$1,646,140	\$3,625,331	\$2,954,091	\$2,325,206	\$820,076	\$11,370,845

OTHER MANAGEMENT

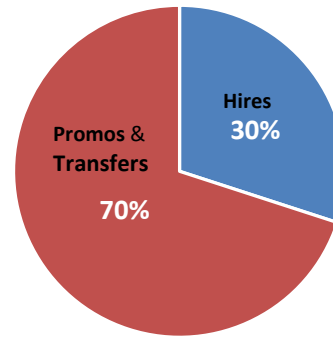
Workforce Management

3rd Quarter - FY22

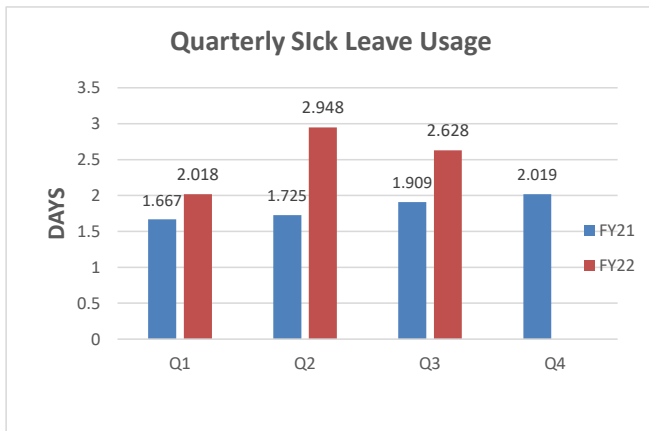


FY22 Target for FTE's = 1150
 FTE's as of March 2022 = 1062.5
 Tunnel Redundancy as of Mar 2022 = 10

Position Filled by Hires/Promos & Transfer for YTD



	Pr/Trns	Hires	Total
FY20	84 (59%)	58 (41%)	142
FY21	81 (56%)	64 (44%)	145
FY22	95 (70%)	40 (30%)	135

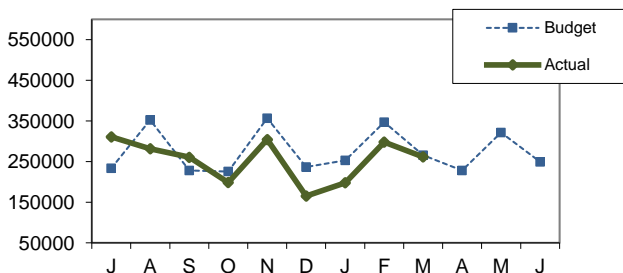


Average quarterly-sick leave for the 3rd Quarter of FY22 has increased compared to the 3rd Quarter of FY21 (2.628 from 1.909)

	Number of Employees	YTD (usage to date)	Annualized Total	Annual FMLA %	FY21
Admin	132	5.05	6.73	10.3%	5.87
Aff. Action	5	6.96	9.27	38.1%	3.14
Executive	3	2.24	2.99	0.0%	3.60
Finance	31	4.62	6.15	0.0%	3.17
Int. Audit	5	0.78	1.04	0.0%	0.89
Law	11	8.58	11.44	21.4%	5.83
OEP	4	5.23	6.97	0.0%	1.33
Operations	869	8.22	10.96	21.1%	7.95
Tunnel Red	10	2.79	3.71	27.3%	1.62
Pub. Affs.	9	7.93	10.57	57.5%	1.13
MWRA Avg	1079	1.13	10.13	20.7%	7.32

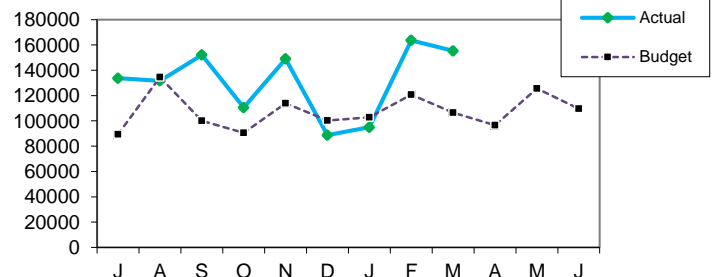
Percent of sick leave usage for FY22, attributable to Family and Medical Leave Act (FMLA) is 20.7%.

Field Operations Current Month Overtime \$



Total Overtime for Field Operations for March was \$262k which is (\$1k) under budget. Emergency overtime was \$108k, which is (\$22k) under budget. Snow Removal was \$11k, Rain events were \$34k, Emergency Maintenance was \$8k and OT Retro Pay was \$49k. Coverage overtime was \$113k, which is \$69k over budget, reflecting the month's shift coverage requirements and included \$51k in OT Retro Pay. Planned overtime was \$41k or (\$46k) under budget with combined spending of \$14k for Maintenance, \$4k for Planned Ops, and \$18k for OT Retro Pay

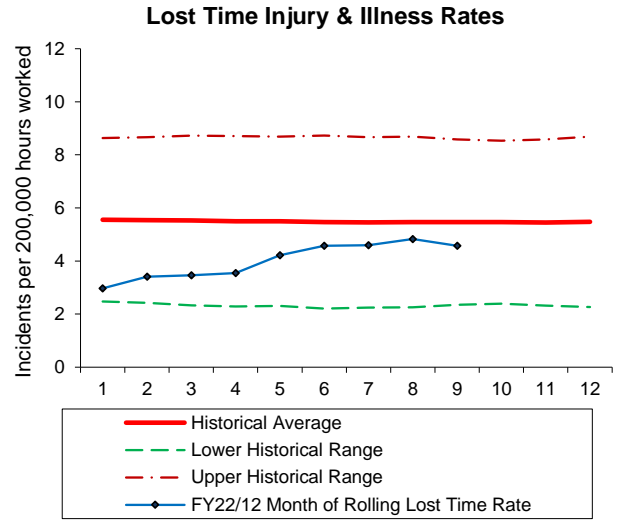
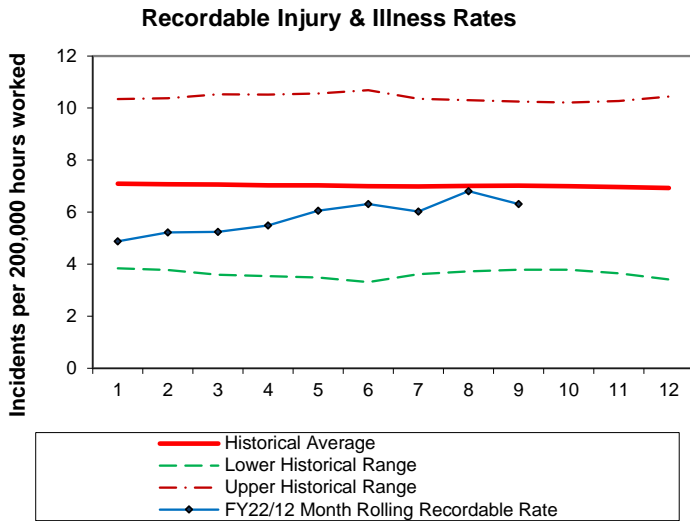
Deer Island Treatment Plant Current Month Overtime \$



Deer Island's total overtime expenditure in March 2022 was \$155k, which was \$49k or 45.8% over budget. In March 2022 Deer Island experienced higher than anticipated shift coverage of \$75k. This is offset by lower than anticipated storm coverage of (\$22k) and planned/unplanned overtime of (\$4k). YTD Deer Island's overtime spending is \$1.2M, which is \$221k or 23.0% over budget due to higher than anticipated shift coverage of \$275k and storm coverage of \$31k. This is offset by lower than anticipated planned/unplanned overtime of (\$85k).

Workplace Safety

3rd Quarter - FY22



- "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. Each month this rate is calculated using the previous 12 months of injury data.
- "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. Each month this rate is calculated using the previous 12 months of injury data.
- The "Historical Average" is computed using the actual MWRA monthly incident rates for FY99 through FY22. The "Upper" and "Lower Historical Ranges" are computed using these same data – adding and subtracting two standard deviations respectively.
- With Changes in state law, in February 1, 2019, MWRA began record keeping and reporting according to Federal OSHA standards for injury and illness record keeping. Strictly adhering to the federal OSHA reporting regulation has caused an increase in recorded injuries and illnesses. This increase is causing both the Recordable injury and illness Rate and the Lost Time Injury and Illness rate to trend higher than in past years but does not necessarily mean there is an increase in injuries or illnesses. OSHA injuries and illnesses, and lost time are recorded differently than the Massachusetts Workers' Compensation standards and could result in an increase in the OSHA rate while the Workers' Compensation claims are decreasing. Over time, the rise on the charts should stabilize as new data replaces the older data.

WORKERS COMPENSATION HIGHLIGHTS

	3rd Quarter Information		Open Claims
	New	Closed	
Lost Time	14	18	63
Medical Only	15	24	15
Report Only	13	29	
	QYTD		FYTD
Regular Duty Returns	7		21
Light Duty Returns	0		0
Indemnity payments as of March 2022 included in open claims listed			21

COMMENTS:

Regular Duty Returns

Jan 3 Employees returned to full duty/no restrictions
Feb 1 Employees returned to full duty/no restrictions
March 3 Employees returned to full duty/no restrictions

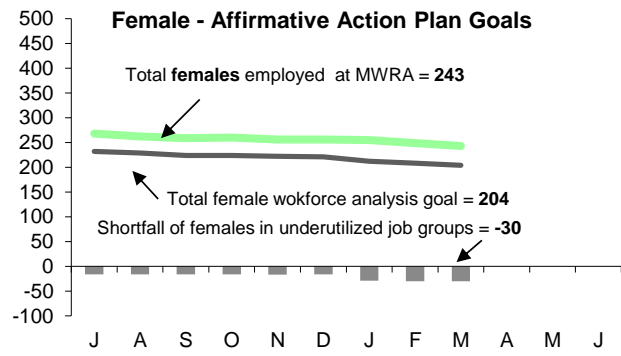
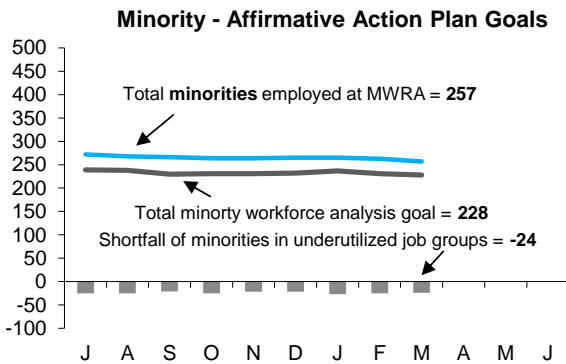
Light Duty Returns

Jan N/A
Feb N/A
March N/A

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

MWRA Job Group Representation

3rd Quarter - FY22



Highlights:

At the end of Q3 FY22, 6 job groups or a total of 24 positions are underutilized by minorities as compared to 5 job groups for a total of 27 positions at the end of Q3 FY21; for females 8 job groups or a total of 30 positions are underutilized by females as compared to 4 job groups or a total of 13 positions at the end of Q3 FY21. During Q3, 4 minorities and 4 females were hired. During this same period 5 minorities and 6 females were terminated.

Underutilized Job Groups - Workforce Representation

Job Group	Employees	Minorities	Achievement	Minority	Females	Achievement	Female
	as of 3/31/2022	as of 3/31/2022	Level	Over or Under Underutilized	As of 3/31/2022	Level	Over or Under Underutilized
Administrator A	24	3	2	1	12	6	6
Administrator B	24	2	5	-3	8	6	2
Clerical A	22	9	2	7	19	16	3
Clerical B	21	7	5	2	3	10	-7
Engineer A	82	23	19	4	20	15	5
Engineer B	55	17	14	3	12	13	-1
Craft A	117	17	21	-4	0	5	-5
Craft B	131	22	25	-3	1	6	-5
Laborer	59	19	13	6	4	2	2
Management A	88	21	18	3	32	25	7
Management B	40	10	8	2	6	10	-4
Operator A	59	4	14	-10	2	4	-2
Operator B	68	21	7	14	3	1	2
Professional A	29	6	7	-1	16	11	5
Professional B	157	44	47	-3	76	40	36
Para Professional	47	17	10	7	21	25	-4
Technical A	50	13	10	3	6	8	-2
Technical B	6	2	1	1	2	1	1
Total	1079	257	228	53/-24	243	204	69/-30

AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/Transfers	AACU Ref. External	Position Status
Craft A	M & O Specialist	1	Int./Ext.	0	0	NH = WM
Craft B	Plumber/Pipefitter	1	Int./Ext.	0	0	NH = HM
Craft B	Second Class Engineer	1	Int./Ext.	0	0	NH = WM
Para Professional	Records Center Specialist	2	Int./Ext.	0	2	NH = 2BM
Professional A	Sr. Staff Counsel	1	Int./Ext.	0	0	NH = WM
Professional B	Environmental Scientist	1	Int./Ext.	0	0	NH = WF
Professional B	Sr. Laboratory Technician	1	Int./Ext.	0	0	NH = WF

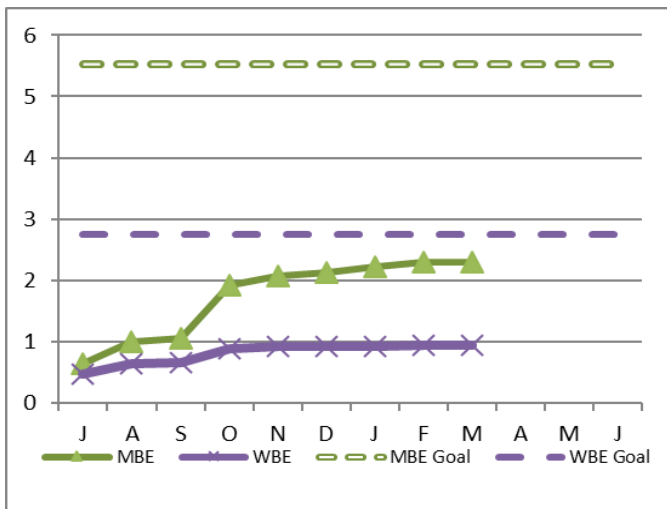
MBE/WBE Expenditures

3rd Quarter - FY22

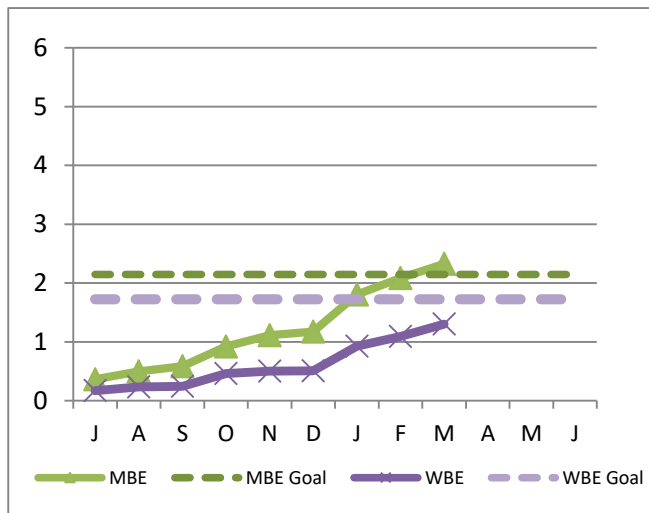
MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY21 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they 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 March.

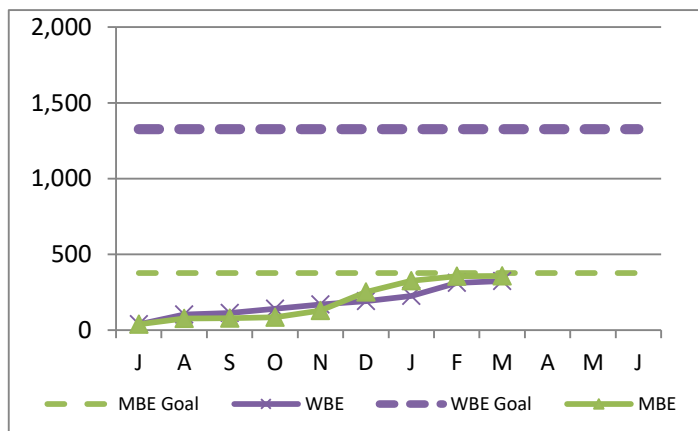
Construction



Professional Services



Goods/Services



FY22 spending and percentage of goals achieved, as well as FY21 performance are as follows:

MBE			
FY22 YTD		FY21	
Amount	Percent	Amount	Percent
2,294,866	41.6%	4,234,355	51.6%
2,325,720	108.4%	2,439,855	107.0%
357,614	94.9%	403,728	113.2%
4,978,200	61.9%	7,077,938	65.3%

WBE			
FY22 YTD		FY21	
Amount	Percent	Amount	Percent
934,719	34.0%	3,238,772	79.3%
1,300,896	75.5%	554,298	30.3%
324,085	24.4%	528,645	40.9%
Totals	44.2%	4,321,715	60.0%

FY22 MBE/WBE dollar totals do not include MBE and WBE payments to prime contractors and consultants.

MWRA FY22 CEB Expenses through 3rd Quarter – FY22

As of March 2022, total expenses are \$560.8 million, \$13.0 million or 2.3% lower than budget, and total revenue is \$614.2 million, \$4.0 million or 0.7% over budget, for a net variance of \$17.0 million.

Expenses –

Direct Expenses are \$175.5 million, \$12.0 million or 6.4% under budget.

- **Wages & Salaries** are \$8.6 million under budget or 10.3%. Regular pay is also \$8.6 million under budget, due primarily to lower head count, and timing of backfilling positions. YTD through March, the average Full Time Equivalent (FTE) positions was 1,111, fifty-six fewer than the 1,167 FTE's budgeted.
- **Ongoing Maintenance** expenses are \$2.4 million under budget or 10.3%, primarily due to the timing of projects.
- **Other Materials** expenses are \$1.1 million under budget or 25.7%, due to timing differences for Other Materials.
- **Fringe Benefits** expenses are \$979k million under budget or 5.7%, primarily due lower health insurance expense \$774k under budget, reflecting the lower headcount.
- **Workers Compensation** expenses are \$878k under budget or 44.8%, primarily due to under spending for Compensation Payments of \$589k and Medical Payments of \$257k. Due to uncertainties of when spending will happen, the budget is spread evenly throughout the year.
- **Professional Services** expenses are \$522k under budget or 8.4%, primarily due to under spending for Computer System Consultant of \$779k and Engineering of \$287k. Underspending was partially offset by higher spending on Other Professional Services and Security which were over budget by \$520k and \$162k, respectively.
- **Chemicals** expenses are \$334k under budget or 3.6%, primarily due to under spending for Hydrogen Peroxide of \$306k based on usage as excessive rainfall helped lower H2S levels at Deer Island, Polymer of \$68k, Activated Carbon of \$68k primarily due to timing of replacements at DITP, and Soda Ash of \$53k driven by Water Operations due to lower average flows at CWTP. These are partially offset by higher spending for Ferric Chloride of \$152k, Sodium Bisulfite of \$89k, and Liquid Oxygen of \$85k.
- **Utilities** expenses are \$3.4 million over budget or 17.9%, primarily due over spending for Electricity of \$2.7 million due to higher flows at Deer Island which accounted for \$1.8 million of the electricity variance. Field Operations accounted for overspending of \$0.9 million in electricity over spending. Deer Island purchased 5.1% more kWh than planned as plant flows were 15.1% over budget due to wet weather events earlier in the year. Higher electricity prices also contributed to the spending variance. Higher spending for diesel, \$730k over budget, reflects higher quantity purchase at a higher price.

Indirect Expenses are \$41.8 million, \$1.0 million or 2.4% under budget. Lower Watershed Reimbursements of \$986k due primarily to lower spending on Equipment, Fringe, and Telecommunications as well as under budget net HEEC payments of \$186k, which are partially offset by higher Insurance cost of \$153k, due to Claims being \$150k over budget.

Capital Finance Expenses totaled \$343.5 million, matching budget after the transfer of \$12.7 million to the Defeasance account, driven by lower than budgeted variable interest expense of \$7.8 million, \$3.6 million related to the refunding and new money transaction, and lower SRF spending of \$1.4 million as a result of timing.

Revenue and Income –

Total Revenue and Income is \$614.2 million, or \$4.0 million over budget. Other Revenue was \$3.0 million over budget, due to Payments from the Commonwealth of Massachusetts of \$1.2 million for Debt Service Assistance, higher Miscellaneous Revenue of \$898,000 driven by \$443,000 in reimbursement from the Commonwealth of Massachusetts for Biobot costs associated with FY21, Energy Rebates of \$697,000, and Income from the Disposal of Equipment of \$256,000. Other User Charges were over budget by \$0.9 million primarily for unplanned water use by the Town of Burlington. Investment Income was \$179,000 over budget due to higher than budgeted average balances.

	Mar 2022 Year-to-Date			
	Period 9 YTD Budget	Period 9 YTD Actual	Period 9 YTD Variance	%
EXPENSES				
WAGES AND SALARIES	\$ 83,685,418	\$ 75,048,039	\$ (8,637,379)	-10.3%
OVERTIME	3,882,522	3,849,118	(33,404)	-0.9%
FRINGE BENEFITS	17,126,762	16,147,829	(978,933)	-5.7%
WORKERS' COMPENSATION	1,960,619	1,082,976	(877,643)	-44.8%
CHEMICALS	9,160,965	8,827,344	(333,621)	-3.6%
ENERGY AND UTILITIES	18,773,895	22,125,357	3,351,462	17.9%
MAINTENANCE	23,111,929	20,733,392	(2,378,537)	-10.3%
TRAINING AND MEETINGS	355,634	166,853	(188,781)	-53.1%
PROFESSIONAL SERVICES	6,233,218	5,711,588	(521,630)	-8.4%
OTHER MATERIALS	4,392,622	3,263,345	(1,129,277)	-25.7%
OTHER SERVICES	18,750,654	18,524,283	(226,371)	-1.2%
TOTAL DIRECT EXPENSES	\$ 187,434,238	\$ 175,480,124	\$ (11,954,111)	-6.4%
INSURANCE	\$ 2,957,700	\$ 3,110,380	\$ 152,680	5.2%
WATERSHED/PILOT	21,127,031	20,141,266	(985,765)	-4.7%
HEEC PAYMENT	5,243,965	5,057,789	(186,176)	-3.6%
MITIGATION	1,270,020	1,270,020	-	0.0%
ADDITIONS TO RESERVES	1,059,485	1,059,485	-	0.0%
RETIREMENT FUND	11,205,000	11,205,000	-	0.0%
POST EMPLOYEE BENEFITS	-	-	-	---
TOTAL INDIRECT EXPENSES	\$ 42,863,201	\$ 41,843,939	\$ (1,019,262)	-2.4%
STATE REVOLVING FUND	\$ 68,713,702	\$ 67,323,372	\$ (1,390,330)	-2.0%
SENIOR DEBT	180,111,317	176,537,607	(3,573,710)	-2.0%
DEBT SERVICE ASSISTANCE	(1,287,870)	(1,287,870)	-	0.0%
CURRENT REVENUE/CAPITAL	-	-	-	---
SUBORDINATE MWRA DEBT	93,562,068	93,562,068	-	0.0%
LOCAL WATER PIPELINE CP	-	-	-	---
CAPITAL LEASE	2,412,795	2,412,795	-	0.0%
VARIABLE DEBT	-	(7,778,815)	(7,778,815)	---
DEFEASANCE ACCOUNT	-	12,742,855	12,742,855	---
DEBT PREPAYMENT	-	-	-	---
TOTAL CAPITAL FINANCE EXPENSE	\$ 343,512,011	\$ 343,512,011	\$ -	0.0%
TOTAL EXPENSES	\$ 573,809,450	\$ 560,836,074	\$ (12,973,373)	-2.3%
REVENUE & INCOME				
RATE REVENUE	\$ 594,063,000	\$ 594,063,000	\$ -	0.0%
OTHER USER CHARGES	6,733,168	7,594,088	860,920	12.8%
OTHER REVENUE	5,548,016	8,513,638	2,965,622	53.5%
RATE STABILIZATION	937,500	937,500	-	0.0%
INVESTMENT INCOME	2,952,358	3,131,489	179,131	6.1%
TOTAL REVENUE & INCOME	\$ 610,234,042	\$ 614,239,715	\$ 4,005,672	0.7%

Cost of Debt 3rd Quarter – FY22

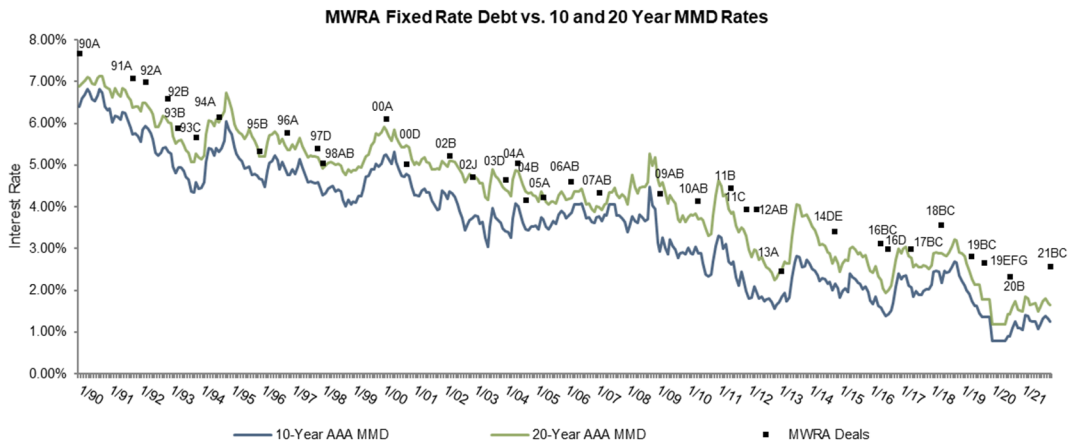
MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

Average Cost of MWRA Debt FYTD

Fixed Debt (\$3.41 billion)	3.22%
Variable Debt (\$299.1million)	0.49%
SRF Debt (\$822.0 million)	1.63%
Weighted Average Debt Cost (\$4.53 billion)	2.75%

Most Recent Senior Fixed Debt Issue December 2021

2021 Series B and C (\$748.0 million) 2.56%

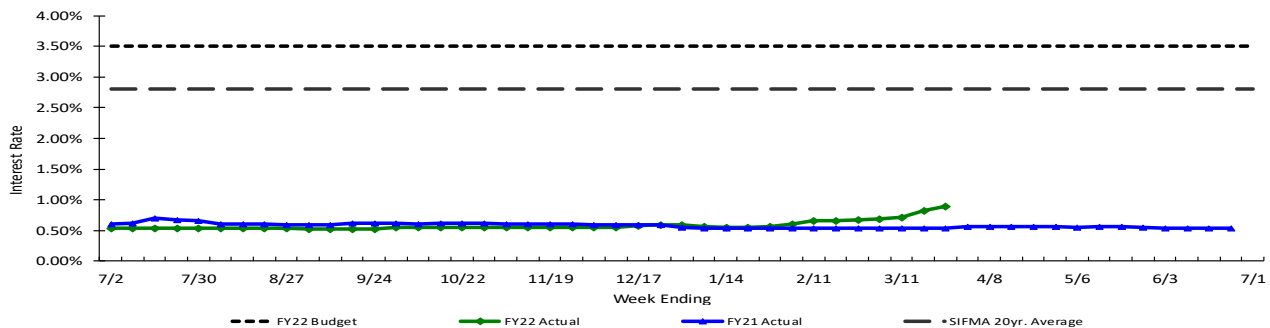


Bond Deal	1996A	1997D	1998AB	2000A	2000D	2002B	2002J	2003D	2004A	2004B	2005A	2006AB	2007AB	2009AB
Rate	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%	5.05%	4.17%	4.22%	4.61%	4.34%	4.32%
Avg Life	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs	18.4 yrs	19.6 yrs	13.5 yrs	18.4 yrs	25.9 yrs	24.4 yrs	15.4 yrs

Bond Deal	2010AB	2011B	2011C	2012AB	2013A	2014D-F	2016BC	2016D	2017BC	2018BC	2019BC	2019EFG	2020B	2021BC
Rate	4.14%	4.45%	3.95%	3.93%	2.45%	3.41%	3.12%	2.99%	2.98%	3.56%	2.82%	2.66%	2.33%	2.56%
Avg Life	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	11.9 yrs	9.73 yrs.	15.6 yrs	12.2 yrs

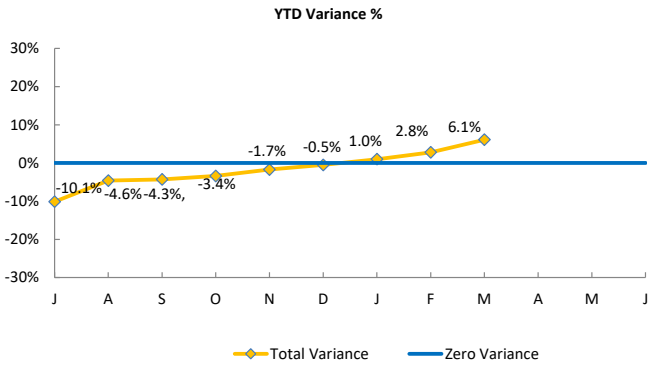
Weekly Average Variable Interest Rates vs. Budget

MWRA currently has nine variable rate debt issues with \$532.7 million outstanding, excluding commercial paper. Of the ten outstanding series, four have portions which have been swapped to fixed rate. Variable rate debt has been less expensive than fixed rate debt in recent years as short-term rates have remained lower than long-term rates on MWRA debt issues. In March, the SIFMA rate ranged from a high of 0.49% to a low of 0.20% 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.



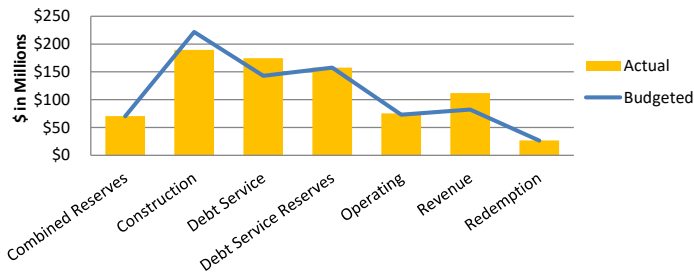
Investment Income 3rd Quarter – FY22

Year To Date

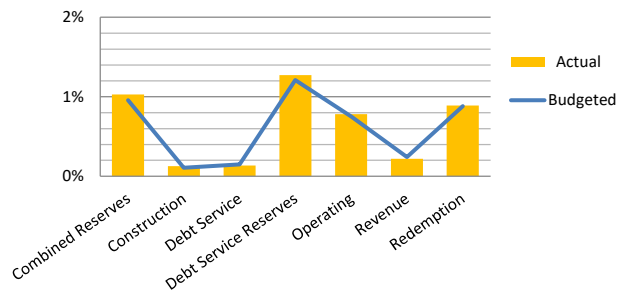


	YTD BUDGET VARIANCE				
	(\$000)				
	BALANCES IMPACT	RATES	IMPACT	TOTAL	%
Combined Reserves	\$1		\$39	40	8.0%
Construction	(\$20)		\$13	(8)	-4.4%
Debt Service	\$35		(\$20)	15	9.8%
Debt Service Reserves	\$4		\$73	77	5.5%
Operating	\$20		(\$1)	19	4.8%
Revenue	\$52		(\$18)	34	23.4%
Redemption	(\$0)		\$1	1	0.6%
Total Variance	\$92		\$87	\$179	6.1%

YTD Average Balances Budgeted vs. Actual

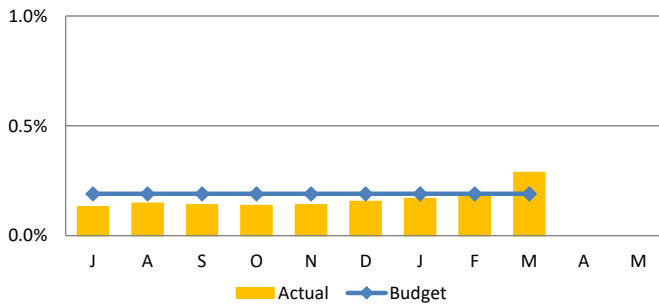


YTD Average Interest Rate Budgeted vs. Actual

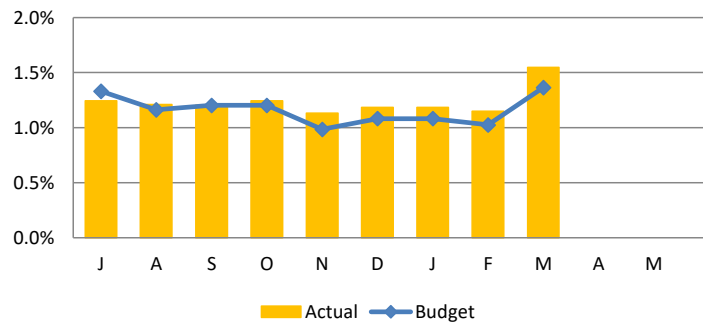


Monthly

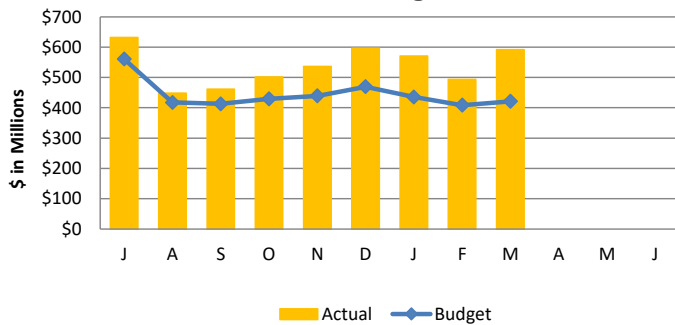
Short -Term Interest Rates



Long -Term Interest Rates



Short-Term Average Balances



Long-Term Average Balances

