Posted 09/09/2022, 1:30pm. Updated 09/13/2022 12:40pm

MASSACHUSETTS WATER RESOURCES AUTHORITY
Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director
Chair: B. Card
Vice-Chair: J. Carroll
Secretary: A. Pappastergion
Board Members:
P. Flanagan
J. Foti
B. Peña
H. Vitale
J. Walsh
P. Walsh
M. White-Hammond
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BOARD OF DIRECTORS' MEETING

To be Held on Wednesday, September 14, 2022

Time: 1:00pm

To be Held Virtually Pursuant to An Act Relative to Extending Certain State of Emergency Accommodations

WebEx Meeting Link (Registration Required)

https://mwra.webex.com/mwra/onstage/g.php?MTID=eecbd58f317200e67624a6eb6e2a96cd0

Event Number: 2341 305 6232 Password: 91422

REVISED AGENDA (1)

I. APPROVAL OF MINUTES

II. REPORT OF THE CHAIR

III. REPORT OF THE EXECUTIVE DIRECTOR

IV. EXECUTIVE SESSION

i. Approval of July 20, 2022 Executive Session Minutes

A. Real Estate

1. Watershed Land Acquisition

B. Litigation

1. *Conservation Law Foundation, Inc. v. Massachusetts Water Resources Authority*, USDC, No. 1:22-CV-10626: Update (verbal)

V. WASTEWATER POLICY & OVERSIGHT

A. Information

1. Update on Deer Island Combined Heat and Power Study
2. Interim Measures to Address PCBs at Cottage Farm CSO Facility
3. Extension Requests - Charles River and Alewife Brook/Upper Mystic River Variance Determinations

V. WASTEWATER POLICY & OVERSIGHT (continued)

B. Approvals

1. Infiltration/Inflow Local Financial Assistance Program – Funding Phase Addition

VI. WATER POLICY & OVERSIGHT

A. Information

1. Metropolitan Water Tunnel Program Update
2. Reservoir and Drought Status Update

B. Approvals

1. Five-Year Waiver of Entrance Fee

C. Contract Amendments/Change Orders

1. Agency-Wide Technical Assistance Consulting Services: CDM Smith Inc., Contract 7692, Amendment 3
2. Section 4 Walnut St Bridge Pipe Restraint Replacement: R. Zoppo Corp., Contract 7483, Change Order 3

VII. PERSONNEL & COMPENSATION

A. Approvals

1. PCR Amendments – September 2022
2. Appointment of Manager, Metro Maintenance

B. Contract Amendments/Change Orders

1. Dental Insurance: Dental Service of Massachusetts, Inc. d/b/a Delta Dental of Massachusetts Contract A631, Amendment 1

VIII. ADMINISTRATION, FINANCE & AUDIT

A. Information

1. Update on Environmental Justice Efforts
2. Delegated Authority Report – July and August 2022
3. FY 2022 Fourth Quarter Orange Notebook
4. FY22 Year-End Capital Improvement Program Spending Report
5. FY22 Year-End Financial Update and Summary

B. Approvals

1. Bond Defeasance of Future Debt Service

VIII. ADMINISTRATION, FINANCE & AUDIT (continued)

C. Contract Awards

1. Managed Cyber Security Services: NWN Corporation, Contract 7658

IX. CORRESPONDENCE TO THE BOARD

X. OTHER BUSINESS

XI. ADJOURNMENT

MASSACHUSETTS WATER RESOURCES AUTHORITY
Meeting of July 20, 2022

A meeting of the Massachusetts Water Resources Authority ("MWRA") Board of Directors was held on July 20, 2022. The meeting was conducted at MWRA's headquarters at 100 First Avenue, Boston, Massachusetts, and also virtually pursuant to pursuant to Chapter 20 of the Acts of 2021 and subsequent acts extending certain COVID-19 measures adopted during the state of emergency.

Chair Card presided from MWRA headquarters. In addition to the Chair, also present from the Board were Messrs. Flanagan (remote participation); Foti (remote participation); Pappastergion (remote participation); Peña (remote participation); Vitale (remote participation); Jack Walsh; (remote participation) and, Patrick Walsh (remote participation). Messrs. Carroll and Cook, and Ms. Wolowicz were absent.

MWRA staff participants at MWRA's headquarters included: Frederick Laskey, Executive Director and Carolyn Francisco Murphy, General Counsel. MWRA staff in attendance virtually included David Coppes, Chief Operating Officer; Carolyn Fiore, Deputy Chief Operating Officer; Thomas Durkin, Director, Finance and Retirement Board Appointed Member; Michele Gillen, Director, Administration; Kathy Murtagh, Director, Tunnel Redundancy; Paula Weadick, Director, MIS; Ethan Wenger, Director, SCADA, Metering and Monitoring; Michael Greeley, Metering and Monitoring Manager; Brian Kubaska, Assistant Director. Engineering; John Colbert, Chief Engineer; Andrea Murphy, Director, Human Resources; and Assistant Secretaries Ria Convery and Kristin MacDougall. Also in attendance virtually were Vandana Rao, Executive Office of Environmental Affairs (EEA), and Joseph Favaloro, MWRA Advisory Board (Advisory Board).

Chair Card called the meeting to order at 1:01pm. MWRA General Counsel Francisco Murphy took roll call of Board Members in attendance. The Chair announced that except for Executive Session, the meeting was open to the public virtually, via a link posted on MWRA's website (www.mwra.com). She added that the meeting would be recorded, and that the agenda and meeting materials were available on MWRA's website. She also announced that the meeting would move into Executive Session after the Executive Director's report, and that the Open Session would resume after the adjournment of Executive Session.

General Counsel Francisco Murphy explained that all motions would be individually presented and given an opportunity for discussion and deliberation; further, that after discussion and deliberation, any Board Member could request an individual roll call vote on that motion. She also noted that if no request for an individual vote were made or concerns raised, the motion would advance for an omnibus roll call vote at the conclusion of all the presentations.

APPROVAL OF JUNE 22, 2022 MINUTES

A motion was duly made and seconded to approve the minutes of the Board of Directors' meeting of June 22, 2022.

Chair Card called for any questions, discussion, or objections. Hearing none, she referred the motion to an omnibus roll call vote. (ref. I)

REPORT OF THE CHAIR

Chair Card reported that drought conditions continued across 90% of the Commonwealth, except for the Cape Cod region. She advised that the Drought Task Force would meet more frequently and respond to drought issues that may arise, and reminded Massachusetts residents to conserve water and practice fire safety. Chair Card commended Vandana Rao and the task force team; she also thanked MWRA staff for their participation in the task force and for encouraging water conservation even as Quabbin Reservoir levels remained normal. Next, she provided an update on legislative matters including the state budget, economic development, American Rescue Plan Act (ARPA) spending, and pending offshore wind legislation. Finally, Chair Card noted that the Baker-Polito Administration's ongoing environmental priorities included renewable energy, offshore wind, water infrastructure investments, and PFAS. (ref. II)

REPORT OF THE EXECUTIVE DIRECTOR

MWRA Executive Director Frederick Laskey reported that he participated in the Three Rivers Report Card event on July 15, 2022 (Charles, Mystic and Neponset Rivers) for calendar year 2021. He reported on the grades MWRA earned and the overall improvement despite record rain events. Mr. Laskey added that staff were planning tours of the MWRA sewer system for the Mystic River Watershed and Charles River Watershed Associations. Next, Mr. Laskey noted that the MWRA Advisory Board's recommendation to waive entrance fees for communities, under certain conditions, had generated interest from municipalities; he added that staff expected to present a proposal to Board members in September, 2022. He then advised that staff were temporarily taking the Deer Island and Carroll plants off the power grid on July 21, 2022, as requested by ISO New England, and that staff were closely monitoring and working to resolve a potential sodium hypochlorite supply issue at Deer Island. Mr. Laskey then briefly presented an update on the plaza restoration work performed in Arlington as part of a larger MWRA construction project. Finally, Mr. Laskey reminded Board Members that the next MWRA Board Meeting was scheduled for September, 2022, and that the Advisory Board was planning an annual field trip for August.

There was general discussion about red tide levels in Massachusetts. (ref. III)

EXECUTIVE SESSION

Chair Card requested that the Board move into Executive Session to discuss real estate, collective bargaining and litigation, since Open Session may have a detrimental effect on the negotiating, bargaining and litigating positions of the Authority. She announced that the planned topics of discussion in Executive Session were Watershed Land Acquisition, Approval and Ratification of a Collective Bargaining Agreement, The Chelsea Creek Headworks Project and a Conservation Law Foundation Litigation Update. She announced that the Board would return to Open Session after the conclusion of Executive Session.

A motion was duly made and seconded to enter Executive Session for these purposes, and to resume Open Session after Executive Session adjournment.

General Counsel Francisco Murphy reminded Board members that under the Open Meeting Law members who were participating remotely in Executive Session must state that no person is present or able to hear the discussion at their remote location. A response of "yes" to the Roll Call to enter Executive Session when their name is called would also be deemed their statement that no other person is present or able to hear the session discussion.

Upon a motion duly made and seconded, a roll call vote was taken in which the members were recorded as follows:

Yes	No	Abstain
Card		
Flanagan		
Foti		
Pappastergion		
Peña		
Vitale		
J. Walsh		
P. Walsh		

Voted: to enter Executive Session, and to resume Open Session after Executive Session adjournment.

The Board moved to Executive Session to discuss Real Estate, Collective Bargaining and Litigation since discussing such in Open Session could have a detrimental effect on the negotiating, bargaining and litigating positions of the Authority.

*** EXECUTIVE SESSION ***

The meeting entered Executive Session at 1:17pm and adjourned at 2:04pm.

*** CONTINUATION OF OPEN SESSION ***

Open Session resumed at 2:05pm. Chair Card presided.

COLLECTIVE BARGAINING ANNOUNCEMENT

Chair Card announced that during Executive Session the Board voted to approve and ratify the collective bargaining agreement with AFSCME Unit 2, which includes ATB increases of 2.5%, 2.0% and 2.0% for FY21, FY22 and FY23, respectively, and a one-time signing bonus payment of 1.5% (with a minimum of $1,000); and that the Board also authorized a one-time Hazard Pay payment of either $2,000 or $1,000 for certain members of AFSCME Unit 2.

WASTEWATER POLICY AND OVERSIGHT

Information

Update on the New Wastewater Metering System

MWRA Metering and Monitoring Manager Michael Greeley presented an update on the MWRA

Wastewater Metering Replacement Project. He explained that the new meters were put into service on January 1, 2022; that most community flows were within historical ranges; and, that staff would consult with the outliers. The presentation also included an overview of how area velocity meters and flow assessments work; and, the benefits of improved analytical techniques, technology and data verification. Finally, Mr. Greeley described MWRA's water and wastewater assessment methodologies and advised that the calendar year 2022 flow assessments would be first applied in Fiscal Year 2024.

Board Member Foti complimented staff on the presented chart on flow assessments.

Mr. Laskey noted that there were a handful of communities whose numbers have changed quite a bit. Board Member Jack Walsh questioned whether there would be a large change in community assessments. Messrs. Greeley and Ethan Wenger, Director of SCADA Metering Monitoring, provided examples of the calculations. Upon a question from Mr. Pappastergion Mr. Wenger also explained the concept of change in flow share.

MWRA Advisory Board Executive Director Joseph Favaloro noted that the new flow meters would be discussed at an upcoming Advisory Board Operations Committee meeting, and that new U.S. Census population data could also change community assessments.

Chair Card asked if there was further discussion or any objections. Hearing none, she advanced the motion to an omnibus roll call vote. (ref. V A.1)

City of Cambridge of Partial Sewer Separation Connections

MWRA Assistant Director of Engineering Brian Kubaska presented an update on a trial partial sewer separation program implemented and monitored by the City of Cambridge, in agreement with MWRA and with the support of the US EPA and MA DEP. The presentation included the locations where partial separation was implemented, scope and timeframe of the work, and predicted benefits and findings from the required reporting.

(Mr. Flanagan left the meeting during the presentation.)

Chair Card commented on the program's positive outcomes.

Board Member Jack Walsh asked if there was further questions from the Board. Hearing none, he moved to contract awards. (ref. V A.2)

Contract Awards

Braintree-Weymouth Pump Station Improvements: Walsh Construction Co. II, LLC, Contract 7366

A motion was duly made and seconded that the Executive Director, on behalf of the Authority, approve the award of Contract 7366, Braintree-Weymouth Pump Station Improvements, to the lowest responsible and eligible bidder, Walsh Construction Co. II, LLC, and execute said contract in the bid amount of $13,473,075 for a contract term of 639 calendar days from the Notice to Proceed.

MWRA Chief Engineer John Colbert presented an overview of the Braintree-Weymouth Pump Station's location and the reasons for the proposed improvement project. He explained that the project was needed to address operational and maintenance issues such as ragging and associated reduced flow rates; to eliminate the need to install manual bar racks before heavy rain events; to improve access for safe removal of pumps and screenings; and, to upgrade odor control. Finally, Mr. Colbert summarized the bid results.

Board Member Jack Walsh asked about the project's potential traffic and noise impacts, coordination with the City of Quincy, and police details. Mr. Colbert explained that there will be some additional traffic and bypass pumping for a period of time; but that there will be a building permit from the City of Quincy and a meeting with the City before the start of the work. Mr. Ethan Wenger noted that day work is currently scheduled. Board Member Jack Walsh requested that trucks carrying screenings be covered and sealed. There was further discussion about the screenings removal and transport process.

Chair Card asked if there was further discussion or any objections. Hearing none, she advanced the motion to an omnibus roll call vote. (ref. V B.1)

WATER POLICY AND OVERSIGHT

Contract Awards

Section 101 Pipeline Extension (Waltham) Engineering Services During Construction, Resident Engineering and Resident Inspection Services: CDM Smith Inc., Contract 7672

A motion was duly made and seconded to approve the recommendation of the Consultant Selection Committee to award Contract 7672, Section 101 Pipeline Extension (Waltham) Engineering Services During Construction, Resident Engineering and Resident Inspection Services to CDM Smith Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in an amount not to exceed $2,882,956.42 for a contract term of 33 months from the Notice to Proceed.

Mr. Colbert provided an overview of the Section 101 (Waltham) Improvements Project and described the terms and scope of the proposed contract to provide engineering services during construction, resident engineering and resident inspection services. He also described the qualifications of the proposed contractor, CDM Smith, Inc.

Board Member Jack Walsh asked about the number of engineers involved for the scope of work and the proposed contract price. Mr. Colbert discussed the scope, subconsultants, staffing levels and cost of the underlying construction contract. Mr. Colbert also noted that hourly rates of engineering firms are going up, and that there are inflationary issues going on with engineering firms. Chief Operating Officer David Coppes also noted the large construction contract that the services would be supporting.

Chair Card asked if there was further discussion or any objections. Hearing none, she advanced the motion to an omnibus roll call vote. (ref. VI A.1)

PERSONNEL AND COMPENSATION

Approvals

PCR Amendments - July 2022

A motion was duly made and seconded to approve amendments to the Position Control Register (PCR) as presented and filed with the records of this meeting.

MWRA Human Resources Director Andrea Murphy summarized the proposed PCR amendments, which included two title and grade changes to vacant positions in Internal Audit and one title and grade change to a vacant position in Maintenance.

Chair Card asked if there was discussion or any objections. Hearing none, she advanced the motion to an omnibus roll call vote. (ref. VII A.1)

Appointment of Deputy Director, Deer Island Wastewater Treatment Plant

A motion was duly made and seconded to approve the appointment of Mr. Chad A. Whiting to the position of Deputy Director, Deer Island Wastewater Treatment Plant (Non-Union, Grade 15) at an annual salary of $151,000, commencing on a date to be determined by the Executive Director.

Ms. Murphy described the proposed candidate's work experience and qualifications.

Chair Card asked if there was discussion or any objections. Hearing none, she advanced the motion to an omnibus roll call vote. (ref. VII A.2)

ADMINISTRATION, FINANCE AND AUDIT

Information

Delegated Authority Report – June 2022

MWRA Director of Administration Michele Gillen introduced MWRA Acting Director of Procurement Rita Mercado, and invited Board Members' questions on the Delegated Authority Report.

Board Member Vitale asked about the categorization of item P-15. MIS Director Paula Weadick discussed the training that is specific to the vendor.

Chair Card asked if there was further discussion or any objections. Hearing none, she advanced the motion to an omnibus roll call vote. (ref. VIII A.1)

Approvals

Memorandum of Agreement between MWRA and the Town of Ludlow regarding Construction and Ownership of an Antenna Tower at Nash Hill Reservoir for Installation of Communication Equipment

A motion was duly made and seconded to authorize the Executive Director, on behalf of the Authority, to execute a Memorandum of Agreement with the Town of Ludlow, substantially in the form attached to the July 20, 2022 staff summary presented and filed with the records of the meeting, related to the design and construction by Ludlow, and the ownership, operation and

maintenance by MWRA, of a new antenna tower at the Nash Hill Reservoir site, with ownership and maintenance of the communication equipment by respective permit holders.

MWRA Chief Operating Officer David Coppes presented the reasons and benefits of the proposed Memorandum of Agreement with the Town of Ludlow. The presentation began with an overview of the location and functions of an existing MWRA tower at the Nash Hill Covered Storage site. Mr. Coppes explained that under the proposed agreement, the Town would build a higher tower at the site at no cost to MWRA; obtain any necessary FAA permit approvals; and, install MWRA and the Town of South Hadley equipment at the tower. He advised that MWRA would own and maintain the tower. Finally, Mr. Coppes noted that the higher tower would benefit MWRA by reducing tree maintenance and improving signal reliability.

Chair Card asked if there was discussion or any objections. Hearing none, she advanced the motion to an omnibus roll call vote. (ref. VIII B.1)

Increasing the Cost of Living Adjustment Base for Retirees

A motion was duly made and seconded pursuant to Section 19 of Chapter 188 of the Acts of 2010, to approve the MWRA Employees' Retirement Board's vote of June 1, 2022 to accept an increase in the maximum base amount on which the retiree cost-of-living adjustment is calculated from $15,000 to $17,000 effective July 1, 2022.

Director of Finance and MWRA Retirement Board Appointed Member Thomas Durkin reported that the MWRA Retirement Fund's 2021 actuarial valuation gains were the result of earning 12.9% which exceeded the assumed rate of return of 6.9%. He provided a brief history of Cost of Living Adjustment (COLA) base increases for MWRA retirees, and an overview of MWRA Retirement System costs, funding, methodologies and unfunded actuarial accrued liability. He advised that the Retirement Board had voted on June 1, 2022 to increase the COLA base from $15,000 to $17,000, and that it respectfully requests the Board of Directors' approval.

Board Member Vitale questioned why the increase did not go to $18,000, the COLA base for some other retirement systems. Mr. Durkin explained the Retirement Board's incremental approach to COLA base increases.Board Member Vitale also asked about any planned adjustments to the OPEB trust fund given the financial landscape and whether there have been any changes or adjustments to the SMART Plan. Mr. Durkin discussed the makeup of the OPEB trust fund, the asset allocations, the positioning of the OPEB Trust Fund and retirement fund and his observations of the SMART Plan funds.

Mr. Favaloro noted that the Advisory Board had no concerns regarding the proposed COLA increase. Mr. Favaloro also noted the Advisory Board's concerns with the current schedule for 100% funding, and that the Advisory Board had recommended 100% retirement schedule funding by 2033 (rather than 2030) at the FY2023 Budget Hearings. Mr. Durkin noted his agreement with Mr. Favaloro. Mr. Durkin discussed the funding schedule to 2030 and noted that he would be bringing this issue up to the Retirement Board for discussion.

Chair Card asked if there was further discussion or any objections. Hearing none, she advanced the motion to an omnibus roll call vote. (ref. VIII B.2)

OMNIBUS ROLL CALL VOTE

Chair Card called for an omnibus roll call vote on the motions made and seconded.

An omnibus roll call vote was taken in which the members were recorded as follows:

Yes	No	Abstain
Card		
Foti		
Pappastergion		
Peña		
Vitale		
J. Walsh		
P. Walsh		

Voted: to approve the minutes of the Board of Directors' meeting of June 22, 2022; (ref. I)

Further, voted: that the Executive Director, on behalf of the Authority, approve the award of Contract 7366, Braintree-Weymouth Pump Station Improvements, to the lowest responsible and eligible bidder, Walsh Construction Co. II, LLC, and execute said contract in the bid amount of $13,473,075 for a contract term of 639 calendar days from the Notice to Proceed; (ref. V B.1)

Further, voted: to approve the recommendation of the Consultant Selection Committee to award Contract 7672, Section 101 Pipeline Extension (Waltham) Engineering Services During Construction, Resident Engineering and Resident Inspection Services to CDM Smith Inc., and to authorize the Executive Director, on behalf of the Authority, to execute said contract in an amount not to exceed $2,882,956.42 for a contract term of 33 months from the Notice to Proceed; (ref. VI A.1)

Further, voted: to approve amendments to the Position Control Register (PCR) as presented and filed with the records of this meeting; (ref. VII A.1)

Further, voted: to approve the appointment of Mr. Chad A. Whiting to the position of Deputy Director, Deer Island Wastewater Treatment Plant (Non-Union, Grade 15) at an annual salary of $151,000, commencing on a date to be determined by the Executive Director; (ref. VII A.2)

Further, voted: to authorize the Executive Director, on behalf of the Authority, to execute a Memorandum of Agreement with the Town of Ludlow, substantially in the form attached to the July 20, 2022 staff summary presented and filed with the records of the meeting, related to the design and construction by Ludlow, and the ownership, operation and maintenance by MWRA, of a new antenna tower at the Nash Hill Reservoir site, with ownership and maintenance of the communication equipment by respective permit holders; (ref. VIII B.1) and,

Further, voted: pursuant to Section 19 of Chapter 188 of the Acts of 2010, to

approve the MWRA Employees' Retirement Board's vote of June 1, 2022 to accept an increase in the maximum base amount on which the retiree cost-of-living adjustment is calculated from $15,000 to $17,000 effective July 1, 2022 (ref. VIII B.2)

CORRESPONDENCE TO THE BOARD

There was no correspondence to the Board.

OTHER BUSINESS

There was no other business.

ADJOURNMENT

A motion was duly made and seconded to adjourn the meeting.

A roll call vote was taken in which the members were recorded as follows:

Yes	No	Abstain
Card		
Foti		
Pappastergion		
Peña		
Vitale		
J. Walsh		
P. Walsh		

The meeting adjourned at 3:01pm.

Approved: September 14, 2022

Attest: _____

Andrew M. Pappastergion, Secretary

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Combined Heat and Power Study – Deer Island Treatment Plant
Black & Veatch Corporation
Contract 6963A

COMMITTEE: Wastewater Policy & Oversight

X INFORMATION
VOTE

David F. Duest, Director, Deer Island Treatment Plant
Richard J. Adams, Manager, Engineering Services
Christian A. Murphy, Program Manager I&C
Preparer/Title

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

This informational Staff Summary was included in the materials for the Board of Directors' May 25, 2022 meeting. Due to time constraints, there was not an opportunity for staff to make a presentation to the Board at that time. This Staff Summary is being resubmitted and a presentation will be made to the Board at this meeting.

RECOMMENDATION:

For information only.

DISCUSSION:

Figure 1- On-Site Thermal/Power Plant (Location of Existing CHP)

Deer Island meets approximately 57% (by energy) to 65% (by cost) of its energy requirements through onsite generation primarily from a combined heat and power system (CHP). Sludge collected from its primary and secondary treatment processes is digested in up to 12 three-million gallon egg-shaped digesters. The biogas generated within the digesters is then consumed in one of the two high-pressure boilers to create high-pressure steam. The steam passes through two steam turbine generators to generate electricity. The generator steam is discharged into a heat exchanger, which heats a hydronic (water) heat loop that distributes process and building heat throughout the Deer Island Treatment Plant. The boilers can also operate on No. 2 ultra-low-sulfur fuel oil if digester gas is not available or when supplemental fuel is required to meet Deer Island's thermal demand. (Refer to Figure 2.) The existing CHP was placed into operation in 1997.

As part of the long-term planning process for combined heat and power system infrastructure, the Board authorized the award of Contract 6963A, Combined Heat and Power Study, to Black & Veatch Corporation on March 20, 2019. The contract goal was to evaluate the existing Thermal/Power Plant and develop recommendations to reliably and economically meet Deer Island's long-term energy needs, while also maximizing onsite generation and reducing the purchase of electricity. This information was deemed essential in order to accurately develop future capital projects for Deer Island's combined heat and power system.

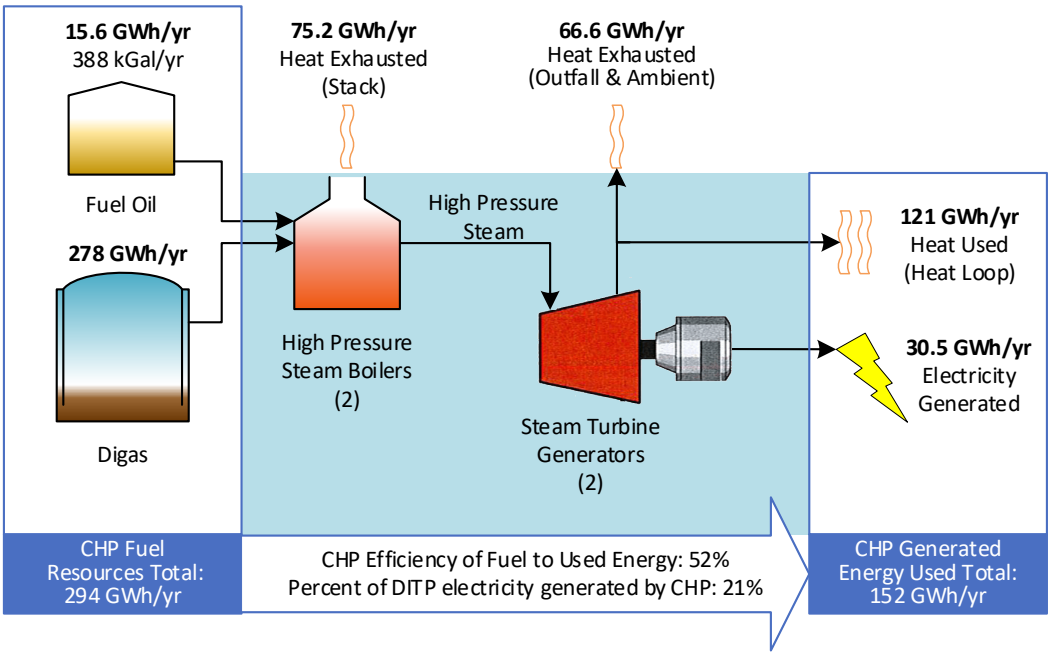


Figure 2– Schematic of Deer Island's Existing CHP

The scope of Contract 6963A consisted of the following major components:

- **Existing Energy System Asset Condition Assessment**: The remaining useful life of Deer Island's existing Thermal/Power Plant assets was estimated based on a review of maintenance history, condition inspections, similar equipment industry averages and feedback obtained from manufacturers.

- **Existing Thermal/Power Plant System Economic Evaluation:** The economic performance of the existing Thermal/Power Plant system was evaluated and used as a baseline to compare to the performance of the new combined heat and power system.

Figure 3 – Typical CHP Reciprocating Engine

- **Evaluation of CHP Technologies:** Current combined heat and power technologies were evaluated to determine their applicability for use at Deer Island. Reciprocating engines and combustion turbines were the two primary technologies that were evaluated. These two technologies were found to be the primary options due to their improved efficiency, combined with their technological maturity and commercial availability at the size required. Based on this evaluation, spark ignition reciprocating engines were selected.

- **CHP Alternatives Analysis:** An evaluation of multiple combined heat and power system alternatives was performed using the selected combined heat and power system technology. The evaluation performed for each alternative included a conceptual design to confirm engineering viability, a performance simulation to predict system operation and an economic analysis. The new combined heat and power system was then compared to the existing Thermal/Power Plant system during the same 25-year analysis period.

The new CHP that proved to be most promising based on Black & Veatch's analysis is shown in Figure 4. The existing Thermal/Power Plant steam-based system would be replaced with three hot water (hydronic) boilers fueled primarily with digester gas and supplemented with fuel oil. Electricity would be generated by an array of five spark ignition reciprocating engines fueled only with digester gas. These engines use pistons with the fuel being ignited by a sparkplug – similar to an automotive engine. Heat recaptured from the exhaust of these engines combined with the output of the new boilers would enable Deer Island to fully meet its thermal demand.

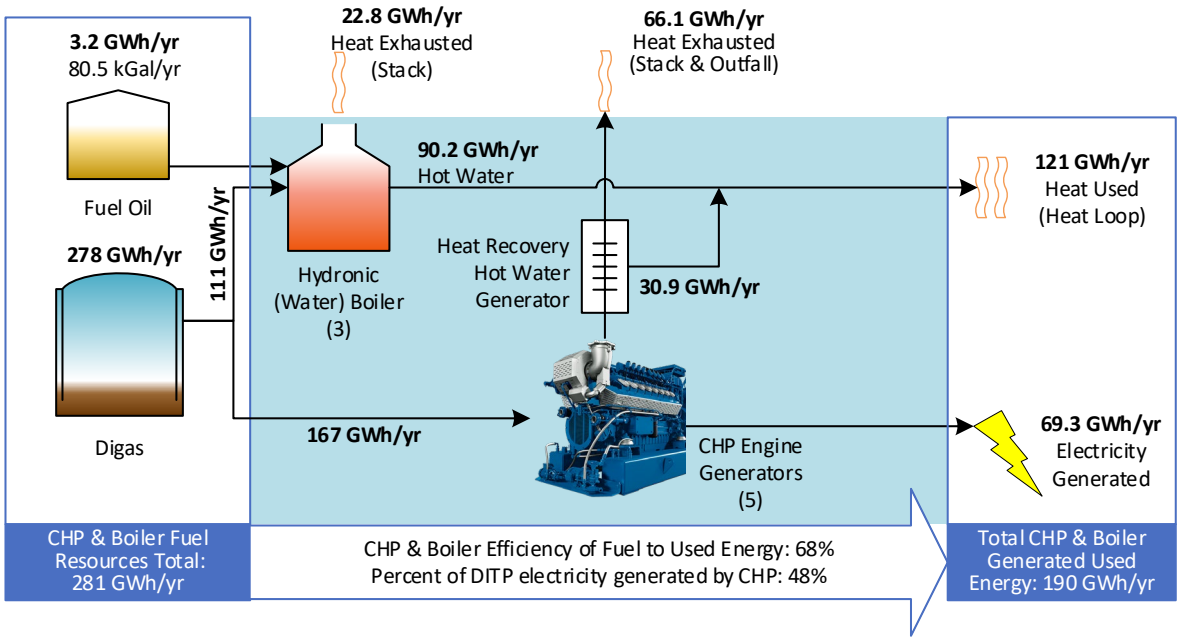


Figure 3 – Schematic of Deer Island's Proposed new CHP

The CHP alternatives analysis performed by Black & Veatch contained a performance simulation that determined the system energy flows. The simulation predicted improvements in efficiency and increases in thermal and electrical demand met from onsite resources with the new combined heat and power system.

A 25-year economic analysis was performed to determine the net present value of operating the existing Thermal/Power Plant and new combined heat and power system, as well as purchasing electricity and boiler fuel oil. The costs to design and construct the new combined heat and power system were also included in the analysis. The net present value was determined by discounting future money to a base year (2021) value using a 6% discount rate. This allowed for the comparison of monetary values over multiple years.

The results of Black & Veatch's analysis were submitted in a report and presented to staff on February 8, 2022. Based on its analysis, Black & Veatch determined, at this time, that continued use of the existing Thermal/Power Plant system would be the most cost effective alternative given that its 25-year net present value is approximately $13.1 million lower ($213.7 million vs. $226.8 million) than the new combined heat and power system.

Subsequent to the submission of Black & Veatch's final report, staff identified a number of topics that should be expanded upon due to their possible impact on net present value results. To accomplish this, staff developed a simulation using Wolfram's Mathematica software, utilizing millions of Deer Island operational data elements and manufacturer performance curves to model the new combined heat and power system. This simulation, which was used by staff to produce an independent analysis while also building upon Black & Veatch's work, identified and further refined the following issues.

- **Adjustment to Estimated Operation and Maintenance Costs**: Black & Veatch's operations and maintenance cost estimates for the Thermal/Power Plant were based on average costs per kilowatt and the amount of electricity generated, rather than a summation of historical maintenance, contract and staff costs for the facility. Staff revised these costs in its analysis. For the new plant, staff utilized the same operations costs as Black & Veatch, but used a lower maintenance cost based upon input received by CHP experts from the University of Maine. These adjustments contributed to an overall increase in the net present value of both the existing Thermal Power Plant and the new combined heat and power system with a greater impact to the existing Thermal Power Plant.

- **Adjustment to Discount Rate:** MWRA's cost of money (discount rate) is a key component of the net present value calculation. In accordance with MWRA's Life Cycle Cost Analysis guidelines, Black & Veatch used a discount rate of 6% to determine net present value. Based on follow-up discussions with MWRA's Finance Department staff, it was determined that an adjusted discount rate of 4% was a more representative figure, while still accounting for recent interest rate volatility.

- **Adjustment to Useful Life of Existing Boilers:** The existing Deer Island boilers have an industry standard design life of 40 years. Black & Veatch estimated that the boilers may have a useful life of 50+ years without the need for interim capital expenditures. Black & Veatch made this determination based on the maintenance history and current condition of the boilers. The extended boiler useful life moved its replacement costs just outside the economic analysis timeframe. Based on staff's experience with other equipment's ability to withstand the harsh conditions at Deer Island, the industry standard of 40-year design life was determined to be a more representative estimate of useful life. This also aligns with a prior assessment that was performed by Brown & Caldwell during a Thermal/Power Plant equipment condition survey performed in 2017.

The modeling performed by staff indicates that these adjustments impact the difference in the 25-year net present value between the existing Thermal/Power Plant system and the new CHP by approximately $56.2 million (from $13.1 million in favor of the existing Thermal/Power Plant to $43.1 million in favor of the new CHP) and are summarized in Table 1.

Table 1 – Results of Staff Modeling

	Consultant Results	Staff Preliminary Results		
Alternative		O&M Adjustment	Discount Rate Adjustment	Boiler Useful Life Adjustment
Existing CHP NPV	$ 214M	$ 233M	$ 290M	$ 328M
New CHP NPV	$ 227M	$ 239M	$ 284M	$ 284M
NPVΔ	**$ +13.1M 6%**	**$ +5.8M 3%** →	**$ -6.5M* 2%** →	**$ -43.1M** 13%**

* Includes O&M adjustment
**Includes O&M and discount rate adjustments

The key metric of Table 1 is NPVΔ, which is the difference between the existing Thermal/Power Plant and the new CHP net present values. A positive NPVΔ indicates that the existing Thermal/ Power Plant is more cost effective than the new CHP over the analysis period, while a negative NPVΔ indicates that the new CHP will be more cost effective. The analysis performed by staff indicates that the cost to construct and operate the new CHP is approximately $43.1 million less than the cost to replace and operate the existing Thermal/Power Plant over the 25-year analysis period.

In addition, staff also considered the following non-economic factors when comparing the existing Thermal/Power Plant to the new CHP:

- **Greenhouse Gas Emissions Reduction:** The new CHP would reduce the greenhouse gas emissions of Deer Island by reducing the amount of fuel oil consumed and electricity purchased. This does not account for renewable energy certificate purchases and sales, the inclusion of which would further decrease overall greenhouse gas emissions reduction. The reduction in greenhouse gas emissions expressed in metric tons per year and, to put it into perspective, the number of miles one would have to drive an automobile are summarized as follows:

  - Fuel Oil Consumed: 300,000 gallons/year reduction = 3,000 metric tons greenhouse gas /year = 8 million car miles/year
  - Electricity Purchased: 40 GWh/year reduction = 13,800 metric tons greenhouse gas /year = 34 million car miles/year
  - Total Reduction in Greenhouse Gas Emissions: 16,800 metric tons greenhouse gas /year = 42 million car miles/year

  Further, the social cost of carbon was estimated in an attempt to quantify the adverse economic impacts resulting from carbon in greenhouse gas emissions. While it is not revenue that MWRA would receive, it instead represents the potential benefit to the public of not emitting carbon. The rate is based on the results from a U.S. Presidential Interagency Working Group convened in 2009 to develop a social cost of carbon metric for the use of federal agencies. Using this rate the new CHP would result in a reduction of approximately $775,000 per year in Deer Island's social cost of carbon impact.

- **Increase On-Site Generation:** Along with greenhouse gas reduction is the goal of increasing the percentage of energy used at Deer Island that is generated on site. Currently, Deer Island generates 57% (by energy) to 65% (by cost) of its energy demand from onsite resources. With the new CHP, Deer Island would generate approximately 74% (by energy) to 78% (by cost) of its energy demand from on-site resources.

- **Fuel Oil Use Reduction:** Executive Order 594, Leading by Example: Decarbonizing and Minimizing Environmental Impacts of State Government sets as one of its goals the reduction of fuel oil use for heating. The new CHP will reduce Deer Island's fuel oil consumption by approximately 300,000 gallons per year, which will result in the elimination of 30 tanker truck deliveries per year.

Figure 4 - Fuel Oil Delivery at Deer Island

- **Elimination of High Pressure Steam System:** The switch to water-based hydronic boilers will eliminate hazards that accompany the operation of high-pressure steam boilers. This may also reduce operator licensing requirements making it easier to fill staffing positions that have been historically difficult to fill.

The combination of the analyses performed under Contract 6963A and the follow-up analyses performed by staff play a critical role in the development of the capital planning process for Deer Island's CHP. Staff have gained a better understanding of the performance of the existing Thermal/ Power Plant while also providing confirmation that a new CHP is viable from both an economic and environmental standpoint.

Next Steps:

The recommended next step is to procure the services of a consultant to prepare a detailed design for the new CHP. This effort would also include a conceptual design to confirm the results of staff's investigation as well as determine the location and optimal number of combined heat and power system units.

BUDGET/FISCAL IMPACTS:

The proposed FY23 CIP includes two projects related to the new CHP: 1) Contract 6730 CHP Design/Engineering Services during Construction and Resident Engineering ($11.4 million) and 2) Contract 6964 Combined Heat and Power System construction ($95.0 million). Black & Veatch estimated the design and construction cost of the new CHP to be $82.3 million.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Interim Measures to Address PCBs at Cottage Farm CSO Facility

---

COMMITTEE: Admin/Environmental & Regulatory Affairs

X INFORMATION
_____ VOTE

Rebecca Weidman, Director, Env. and Regulatory Affairs
Richard Geisler, P.G., L.S.P., Environmental Manager
Preparer/Title

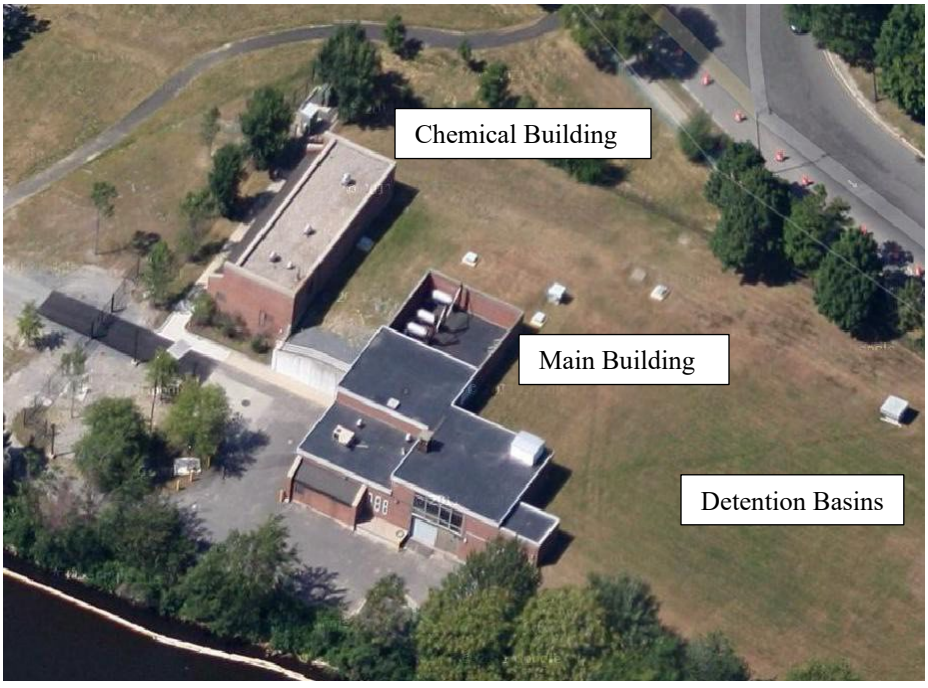
David W. Coppes, P.E.
Chief Operating Officer

RECOMMENDATION:

For information only.

DISCUSSION:

MWRA staff operates the Cottage Farm Combined Sewer Overflow Facility in Cambridge as part of the wastewater collection system for the metropolitan Boston area. This facility is located at 660 Memorial Drive along the northern shore of the Charles River in the Cambridgeport district of Cambridge. It consists of two buildings, a main building containing pump and screening equipment and a chemical building, which contains tanks and pump systems for injecting sodium hypochlorite and sodium bisulfite. The main building with associated underground detention basins was constructed in 1971. A major upgrade to Cottage Farm was completed in 2001, which included the construction of the chemical building.



In 2012 and 2013, as part of design efforts in support of planned modifications to the diesel pump engine exhaust systems and in-progress modifications to the diesel fuel supply system in the facility, paint and insulation samples were collected and analyzed for polychlorinated biphenyls (PCBs), lead, and asbestos. PCBs in paint at concentrations above 50 milligrams per kilogram (mg/kg) were identified in the main building. These concentrations represent an unauthorized use of PCBs pursuant to Toxic Substance and Control Act, and the regulations promulgated by EPA regarding PCBs Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions set forth at 40 C.F.R. Part 761. MWRA developed a PCB Abatement Plan to address the PCBs-contaminated materials. The PCB Abatement Plan was not approved by the EPA because MWRA did not pursue upgrades to the facility in 2013. MWRA staff did implement interim measures to limit PCBs exposure to allow staff to work safely at the facility, while MWRA staff determined next steps.

As presented at the December 15, 2021, meeting of the Board of Directors, MWRA staff are now planning to abate the PCBs and to replace the diesel engines in the main building, followed by a complete rehabilitation of the entire facility. Additional PCB wipe and indoor air samples were taken in October 2021 to confirm the results of the PCB sampling conducted in 2012 and 2013. Results from the 2021 sampling event were similar to the historical results. On March 4, 2022, MWRA staff submitted an updated PCB Abatement Plan to EPA to satisfy the requirements of 40 C.F.R. § 761.61(c) and included a proposal to use a risk-based approach to encapsulate certain PCBs-containing porous surfaces throughout the main building that contain PCBs above the unrestricted use high occupancy standard of 1 mg/kg.

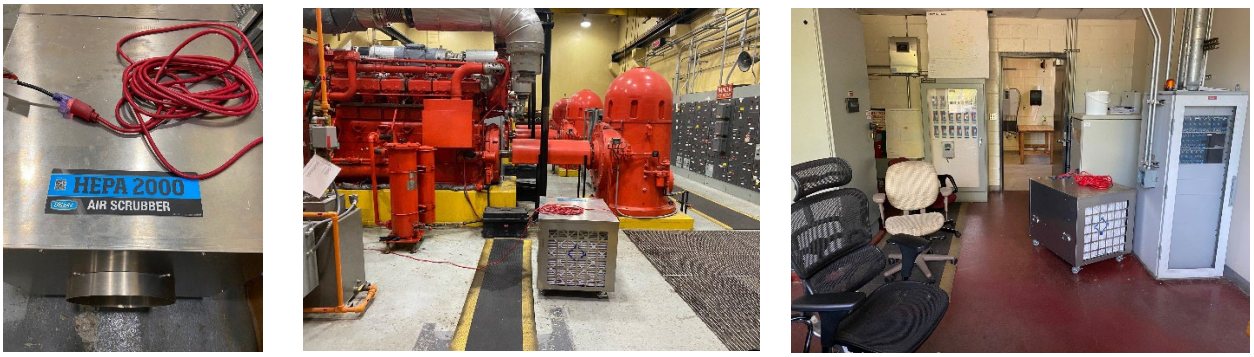
On June 13, 2022, EPA responded to MWRA with comments regarding the PCB Abatement Plan and requested the implementation of additional interim measures to protect workers when they are in the main building until the PCB abatement is completed. During a meeting between EPA and MWRA staff on June 29, 2022, it was agreed that the source of PCBs in indoor air and on unpainted surfaces was likely from dust particles created by PCB-impacted paint, which is cracking and delaminating throughout the Building. EPA asked that MWRA submit an Interim Measure Plan (IMP) to outline an approach to reduce the concentrations of PCBs in indoor air and reduce direct contact exposure with dust and paint chips in the main building as MWRA moves forward with the facility rehabilitation.

MWRA concurrently prepared the IMP and implemented interim measures to limit PCB exposure for staff entering the Building. The IMP was submitted to EPA on August 26, 2022. In accordance with the IMP, MWRA staff have implemented the following measures:

- Administrative controls have been instituted to limit the frequency of workers entering the main building. The administrative controls include restricting staff hours inside the building, logging entry and exit times of all workers inside and requiring the use of personal protective equipment (PPE), such as disposable boot covers and nitrile gloves, while inside the building. The controls will remain in place until abatement of PCBs in the main building is completed or until subsequent monitoring data demonstrates that the controls are either not necessary or can be revised.

- Regular training is being provided to staff to reinforce safe work practices and abated and unabated PCB-contaminated facilities.

- Eight air scrubbing units have been deployed inside the building utilizing HEPA filters in an effort to reduce air born dust particles. Each HEPA air scrubber unit is rated at 2,000 cubic feet per minute. Air scrubbers were deployed in the control room, the boiler room, the garage hallway, the engine room (two units), the screen room and the pump room (two units).



Air Scrubber Units Deployed in the Engine Room and Control Room

- MWRA has also contracted with CYN Environmental Services, Inc. to clean all accessible surfaces and equipment in the interior of the main building. The cleaning began on August 22, 2022, and is expected to take approximately six weeks to complete. The work is being performed by CYN staff by wiping all accessible surfaces with wet rags and HEPA vacuums.

Cleaned Sampling Room and Control Room

- A temporary office trailer and portable toilets have been brought on site so that staff who are assigned to work at the facility, for example during a storm activation, can be on the premises without having to be inside the main building, except as necessary. MWRA staff

also have remote monitoring capabilities for many of the building's functions, which further limits the need for personnel to enter the building.

MWRA plans to collect an additional round of indoor air and surface wipe samples approximately two weeks after CYN completes the cleaning (estimated to be October 2022). Semi-annual indoor air monitoring events will be conducted thereafter. The sampling locations and protocols would be approximately the same as for the sampling performed in November 2021.

Out of an abundance of caution, MWRA staff plan to expedite the encapsulation and abatement of PCB-contaminated materials accessible in the main building (approximately 80% to 90% abatement). A design contract for the encapsulation and abatement of the accessible PCB-contaminated materials will be issued in early 2023, with work to be completed by 2025. The remaining PCB encapsulation and abatement (10% to 20% of PCBs-contaminated materials) will occur during the second phase of construction (the rehabilitation of the facility), which is scheduled to be completed in 2031.

BUDGET/FISCAL IMPACTS:

The cost for the development and implementation of the IMP to date are $460,234. The bulk of this cost is for the cleaning of the main building by CYN.

The FY23 capital improvement plan includes budgets of $1,800,000 for design, contract administration and residential engineering services and $10,600,000 for construction of improvements to the chemical building, replacement of the building's pump engines and engines-related PCB abatement; and $3,700,000 for design, contract administration and residential engineering services and $20,000,000 for improvements to the remainder of the Building, of which $4,000,000 is for PCB abatement.

The costs for 80 to 90% abatement are estimated as $875,000 for design, contract administration and residential engineering services and $3,500,000 for construction. The costs for combined improvements to the main building and chemical building, including replacement of the pump engines and remaining PCB abatement, are estimated as $6,800,000 for design, contract administration and residential engineering services and $27,100,000 for construction.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Extension Requests - Charles River and Alewife Brook/Upper Mystic River Variance Determinations

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COMMITTEE: Wastewater Policy and Oversight

X INFORMATION
VOTE

Rebecca Weidman, Director of Env. & Regulatory Affairs
Brian L. Kubaska, P.E., Assistant Director of Engineering
Michael D. O'Keefe, Sr. Program Manager, Planning
Preparer/Title

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

MWRA and the Cities of Cambridge and Somerville are currently subject to the terms of certain variance determinations issued by the Massachusetts Department of Environmental Protection (MassDEP) and approved by the U.S. Environmental Protection Agency (EPA), which allow limited combined sewer overflow (CSO) discharges to the Charles River Basin and the Alewife Brook/Upper Mystic River. Among other conditions, these variance determinations require MWRA, Cambridge and Somerville to submit draft and final Updated CSO Long-Term Control Plans (Updated LTCPs) to MassDEP and EPA in June and December 2023, respectively. The variances ultimately expire in August 2024. For the unanticipated circumstances detailed herein, MWRA staff, along with Cambridge and Somerville, plan to request from MassDEP a schedule extension for submission of the Updated LTCPs. This must also be approved by EPA. This will necessitate a new expiration for the variance determinations, to a date yet to be determined, but in any event beyond their current August 2024 expiration dates.

RECOMMENDATION:

For information only.

DISCUSSION:

As part of the Boston Harbor Case (D. Mass. C.A. No. 85-0489-RGS), MWRA is required to undertake corrective actions through its approved Long-Term CSO Control Plan (Existing LTCP) to reduce or eliminate CSO discharges to Boston area surface waters affected by CSO discharges. To date, MWRA has spent $912 million primarily on 35 projects to implement the Existing LTCP, reducing CSOs by 87% and meeting the Existing LTCP CSO discharge volume and activation goals at 70 of the 86 outfalls.

In 1998, when EPA and MassDEP issued their initial approvals of MWRA's 1997 recommended CSO plan, MassDEP also issued water quality standards determinations for some of the CSO affected waterbody segments (*e.g.*, the Back Bay Fens was given a $B_{(CSO)}$ classification), and issued CSO variances for other waterbodies, including for the Charles River, Alewife Brook, and Upper Mystic River, which continue to carry a Class B standard. Class B (fresh water) and SB (Salt Water) standards indicate the water is "fishable and swimmable." Absent a variance, during

times of wet weather, when limited CSO discharges may occur, the Class B requirements for bacteria, solids, color and turbidity, and taste and odor may not be met. For receiving waterbody segments like the Neponset River, North and South Dorchester Bay, and Constitution Beach, the implemented Existing LTCP projects either eliminated or effectively eliminated (25-year level of control) CSOs, meeting the applicable water quality standard requirements. MassDEP has issued a series of multi-year CSO variances that allow MWRA, Cambridge, and Somerville to continue to have limited CSO discharges to Alewife Brook and the Upper Mystic River, as well as the Charles River lower basin. Over the years, these variances have included various conditions requiring work toward further CSO reductions.

Updated CSO Control Plans

The most recent variances were issued by MassDEP and approved by EPA for the period of September 1, 2019, through August 31, 2024 (collectively the "2019 Variances"). In addition to many conditions that must be met to further optimize and study opportunities to reduce CSO discharges by MWRA and the CSO communities of Cambridge and Somerville, a major requirement of the 2019 Variances include the development of Updated LTCPs for the CSO outfalls that each entity owns and operates that may discharge to the corresponding waterbody. Among other requirements, the Updated LTCPs must include a description of the existing level of CSO control, an evaluation of the costs and the performance and water quality improvements achieved by additional CSO control alternatives, a public participation plan, and an affordability analysis. Ultimately, each Updated LTCP must achieve compliance with the federal Clean Water Act and federal and state Surface Water Quality Standards regulations (*e.g.,* CSO elimination) or recommend and support, through Use Attainability Analyses, a change in classification of the applicable water quality standard. The schedule in the 2019 Variances requires the submission of a draft Updated LTCPs by June 30, 2023, and final recommend Updated LTCPs by December 31, 2023.

Request for a Schedule Extension

In accordance with the 2019 Variances, MWRA staff submitted a scope and schedule for the updated CSO Control Plan on April 1, 2022. Over the next several months, EPA and MassDEP each provided their comments on the scope and schedule, to which MWRA provided further clarification and responses to comments. Ultimately, on July 22, 2022, MassDEP submitted a letter accepting the scope of work, subject to several conditions and clarifications, which included the following requirements: (a) that MWRA coordinate our activities with both Cambridge and Somerville on the updated plans to be submitted by each entity to ensure consistency; (b) update the typical year (which is used for the performance objectives in the LTCP) to reflect more recent rainfall data and the projected impact of climate change; and (c) reemphasized the need for extensive public participation that allows for ample time to consider public recommendations and suggestions. Cambridge and Somerville both requested extensions to the submittal of their Draft and Final Updated LTCPs in their responses to regulator comments.

MWRA currently meets bi-weekly with Cambridge and Somerville. The substantial collaboration required to develop effective and useful Updated LTCPs, that meets the requirements of MassDEP and EPA's conditions and clarifications, necessitates an extension of the current schedule. Updating the typical year to consider the impacts of climate change, holding public meetings that will allow for outreach to Environmental Justice populations and public input at critical points in

the planning process, thoroughly analyzing proposed alternatives to CSO reduction, establishing a Special Review Procedure with the Massachusetts Environmental Policy Act (MEPA) office and then implementing that procedure, and the coordination involved among the three entities in developing the CSO control plans, all require additional time not carried in the current variance deliverable schedule. The following is an update on the current status of deliverables outlined in the 2019 Variances:

- Updating the Typical Year: Since March 2022, MWRA, Cambridge, and Somerville have been working to develop a typical year that not only reflects average rainfall and intensity in recent years, but considers the projected impacts of climate change on precipitation in the coming decades. Consultants hired by Cambridge are conducting rigorous statistical analyses and using a novel methodology, as well as getting input from a climate expert at Cornell University. Combined with the need for agreement on the final typical year by all three parties, this process is time consuming. EPA and MassDEP have stressed the importance of public input in this process, which adds even more time. Lastly, having an updated typical year is required prior to any alternatives analyses conducted as part of the Updated LTCPs, so further progress cannot be made until it is completed. Since the 2019 Variances did not mention the development of an updated typical year that considers climate change, adding this key component will take longer than expected.

- Public Participation: The 2019 Variances state that MWRA and the municipalities must develop a "public participation plan sufficient to provide for ample opportunities for the public to be informed about the development of the Plans at critical junctures, and to have opportunities to provide informed comments on the CSO abatement alternatives and recommendations." Based on the first public meeting held in June 2022, not only will more meetings be required than initially anticipated, but preparation for each one is very time consuming. Sufficient time needs to be provided for notice and outreach to communities and Environmental Justice populations as required through the recent revisions to the MEPA regulations, which became effective in January 2022. These new requirements include the need for comprehensive translation services and additional time to address public comments, which are critical to productive public input.

- Alternatives Analysis: Each CSO control alternative will be evaluated using the new typical year. An Alternatives Analysis is key to developing the Updated LTCPs and has been highlighted as an important aspect of the public participation process. In order to provide the public an opportunity to provide input into the development, screening, and selection of alternatives it is expected to require three public meetings over the course of nearly a year. As a result, the Alternatives Analysis will take longer than expected.

- MEPA Review: The development of a Special Review Process (akin to the MEPA methodology used in the development of the Existing LTCP in the mid-1990s) with the MEPA office, MassDEP, Cambridge, Somerville, and MWRA for the Updated LTCPs is still under development and it is unclear how long the process will take. As this proposed extension was being developed, MWRA was anticipating the need for an additional three months of review between submission of the draft and final

Updated LTCPs. However, based upon recent discussions with the MEPA office, this amount of time may be insufficient. While some MEPA processes may run concurrently with ongoing work for the development of the Updated LTCPs, it is becoming clear that additional time may be needed. MWRA staff are working diligently to: (a) ensure that any MEPA process does not conflict with or duplicate any Updated LTCP work done to date; and (b) that the amount of time ultimately requested from MassDEP for extending the 2019 Variances' submittal deadlines accurately reflects the amount of time associated with any MEPA review. Although MEPA review was mentioned in the 2019 Variances, it was not clear that the process would apply to planning and program development in addition to the projects that will eventually be recommended. This unanticipated step will extend the original schedule.

- Preparation of the Draft and Final Updated LTCPs: Preparing both the draft and final Updated LTCPs includes several months to coordinate the drafting of the reports, as well as time for MWRA, Cambridge, and Somerville to review each other's reports, provide comments, and for those comments to be incorporated before each draft Updated LTCP is submitted to MassDEP and EPA. Both EPA and MassDEP have consistently stressed the importance of collaboration between MWRA, Cambridge, and Somerville in developing the Updated LTCPs. Staff believe that an additional time beyond the original schedule is required to successfully meet this request and submit the most effective Updated LTCPs possible.

For the reasons described above, MWRA, and Cambridge and Somerville are planning to officially request that the deadline for submission of the Updated Long-Term CSO Control Plans associated with the Charles River and the Alewife Brook/Upper Mystic River be extended. MassDEP has informed MWRA that any change in 2019 Variance deliverables or adjustments to the overall duration of the 2019 Variances, will require a full public review process as if MWRA were seeking a new variance. Staff believe that this should constitute merely a time extension to allow additional time for submission of deliverables required under the 2019 Variances, as MWRA, Cambridge, and Somerville are modifying the process required in the current Variances after suggestions from MassDEP and EPA. There is a concern, however, that MassDEP's final determinations on the extension requests may include the addition of new or modified variance conditions.

BUDGET/FISCAL IMPACTS:

Contract 7572, Amendment 3 with AECOM Technical Services, Inc. provided a contract time extension to April 7, 2025, and additional scope of service to assist MWRA in the 2019 Variance requirements, including the development of the Updated LTCPs. An extension of the 2019 Variance deliverables will go beyond the Contract 7572 end date. At a minimum, this will require a future time extension to Contract 7572. Given the additional efforts described above, budget increases to Contract 7572 are also anticipated. Any additional cost increases would be incorporated in future CIP programs.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Infiltration/Inflow Local Financial Assistance Program – Funding Phase Addition

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COMMITTEE: Wastewater Policy and Oversight

X INFORMATION
VOTE

Thomas J. Durkin
Director, Finance

Carolyn M. Fiore, Deputy Chief Operating Officer
Stephen Estes-Smargiassi, Director, Planning and Sustainability
Jon F. Szarek, P.E., Senior Program Manager
Preparer/Title

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

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve an additional $100 million funding phase (Phase 14) to the MWRA's Infiltration/Inflow Local Financial Assistance Program with 75% grants and 25% interest-free loans.

DISCUSSION:

Following the recommendations of the MWRA Advisory Board's Operations and Executive Committees, the MWRA Advisory Board voted, on April 21, 2022 that the MWRA authorize and fund Phase 14 of the Inflow/Infiltration (I/I) Community Assistance Program at the same level and with the same criteria and guidelines as Phase 12 of the I/I Community Assistance Program.

As with previous Program Phases, Phase 14 grant/loan allocations would be based on each community's share of sewer charges. Communities will be allowed to by-pass the Phase 13 'stop-gap' funding stage (100% interest-free loans) and move directly from Phase 12 grant/loan funding into Phase 14 grant/loan funding. In June 2018, Phase 13 loan-only funds, in conjunction with Phases 11 and 12 grant/loan funds, were added to the I/I Local Financial Assistance Program. The Phase 13 loan-only funds were added for communities that quickly exhausted Phases 1-12 grant/loan funds, prior to the creation of a new grant/loan program funding phase.

MWRA's I/I Local Financial Assistance Program was initiated in May 1993 to provide funding to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally owned collection systems. The program's goal is to assist member communities in improving local sewer system conditions to reduce I/I and ensure ongoing repair and replacement of the collection system. The financial assistance program is a critical component of MWRA's Regional I/I Reduction Plan.[1] Specifically, rehabilitation projects are intended to at least offset ongoing collection system deterioration

[1] As required by the National Pollutant Discharge Elimination System (NPDES) Permit for the Deer Island Treatment Plant, MWRA's Regional Infiltration/Inflow Reduction Plan was approved by MassDEP in November 2002. MWRA is required to report annually on the I/I Reduction Plan and present estimates of I/I. The Regional I/I Reduction Plan and Annual and Annual I/I Reduction Report are available online at http://www.mwra.com/comsupport/communitysupportmain.html.

to prevent a net increase in regional I/I. In the long-term, system rehabilitation should result in lower I/I, which will allow for future increases in sanitary flows (residential, commercial, industrial, and institutional) without a net increase in total wastewater flow to the Deer Island Treatment Plant. The program fosters efficient operation and maintenance of local sewer systems.

Update on Distribution of I/I Financial Assistance to Communities

An additional phase of funding is necessary due to the continued active use of the I/I Financial Assistance Program by MWRA communities, resulting in a number of communities exhausting their share of available funding.

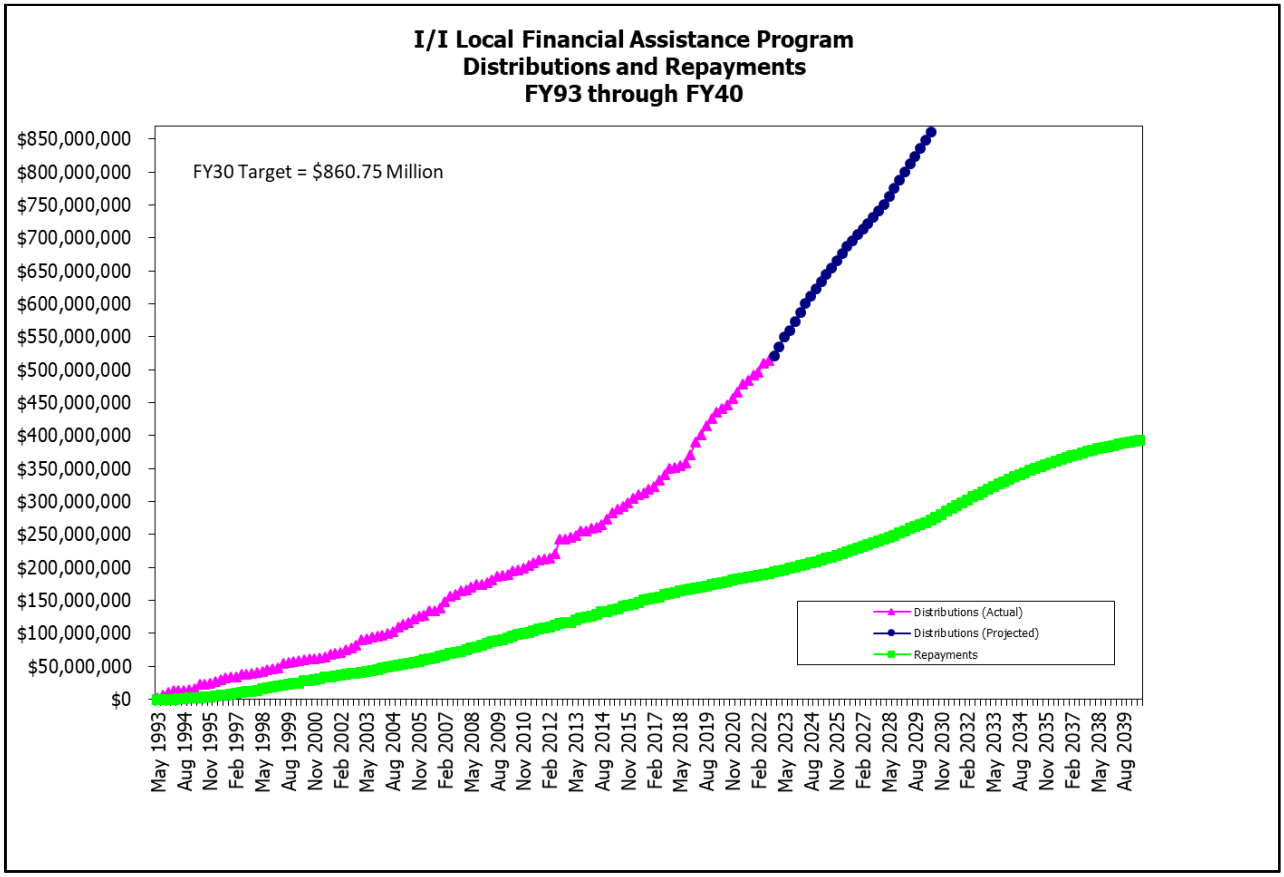
Since 1993, a total of $760.75 million in grant and loan funds have been authorized by the Board and allocated to member sewer communities through the Program's 13 funding Phases. In June 2018, based on Advisory Board recommendations, program funding Phases 11, 12, and 13 were added at $100 million per phase. Financial assistance under Phases 11 and 12 continued at 75% grants and 25% ten-year, interest-free loans (same as Phases 9 and 10). Phase 13 was added as a ten-year, interest-free loan-only phase, which communities could utilize if they had exhausted their grant/loan allocations, prior to the creation of a new grant/loan phase (Phase 14). This allowed continued progress on I/I control while awaiting a new grant/loan phase to be approved.

Through September 2022, three communities (Chelsea, Milton and Newton) have used their entire Phase 13 funding allocation and 16 communities (Burlington, Chelsea, Dedham, Everett, Hingham, Lexington, Milton, Newton, Quincy, Reading, Stoneham, Stoughton, Wakefield, Winchester, Winthrop and Woburn) have used their entire Phase 12 funding allocation.

BUDGET/FISCAL IMPACT:

The FY23 CIP includes an overall budget of $393 million for the grant portion of the I/I Local Financial Assistance Program. An additional $368 million is budgeted for the loan portion of the program. The loan portion is offset by an equal amount of loan repayments over time. Depending on the timing and level of community loan requests, loan distributions can fluctuate, sometimes causing overspending or underspending (versus budget) for any particular fiscal year.

For the total program, the budget target was $760.75 million for grant and loan distributions. With this additional funding phase, the budget target will now be $860.75 million. Phase 14 adds $75 million in grants and $25 million in zero-interest loans. Phase 14 distributions will be available through June 2030. Through September 2022, $514.7 million in grants and loans ($275.6 million in grants and $239.1 million in loans) have been distributed. The program will now have a remaining balance of $346.1 million in future community grants and loans through FY30. Community loan repayments to date are $189.5 million. As community loans are repaid, the funds are deposited into MWRA's construction fund. It should be noted that the I/I Local Financial Assistance Program spending is excluded from the MWRA's CIP Five-Year Spending Cap. The graph below presents grant and loan distributions and loan repayments (actual and projected) for Program Phases 1-14 (FY93 through FY40).



MBE/WBE PARTICIPATION:

MBE/WBE participation goals are included in the Program's Financial Assistance agreements.

ATTACHMENTS:

Attachment 1 - Phase 14 Community Funding Allocations
Attachment 2 - Phases 1-13 Community Funding Summary
Attachment 3 - Phases 12 and 13 Community Funding Summary

Attachment 1
MWRA I/I Local Financial Assistant Program
Phase 14 Funding Allocations as of September 2022

Community	Phase 14 Funding Allocation	Total Allocations (Phases 1 - 14)	Total Distributions (Phases 1 - 13)	Percent Distributed	Funds Remaining
Arlington	$1,770,000	$15,463,000	$11,455,900	74%	$4,007,100
Ashland	$530,000	$4,368,500	$2,020,060	46%	$2,348,440
Bedford	$700,000	$6,404,600	$2,843,600	44%	$3,561,000
Belmont	$1,070,000	$9,295,100	$5,135,100	55%	$4,160,000
Boston	$28,920,000	$246,611,200	$121,596,909	49%	$125,014,291
Braintree	$2,030,000	$16,439,000	$10,379,000	63%	$6,060,000
Brookline	$2,650,000	$24,085,200	$13,666,200	57%	$10,419,000
Burlington	$1,200,000	$9,542,800	$7,322,800	77%	$2,220,000
Cambridge	$5,390,000	$44,460,100	$28,830,100	65%	$15,630,000
Canton	$930,000	$7,525,900	$3,126,850	42%	$4,399,050
Chelsea	$1,750,000	$13,390,100	$11,760,100	88%	$1,630,000
Dedham	$1,180,000	$10,380,000	$8,060,000	78%	$2,320,000
Everett	$1,870,000	$15,151,500	$11,611,500	77%	$3,540,000
Framingham	$2,670,000	$23,125,000	$13,671,000	59%	$9,454,000
Hingham	$400,000	$3,192,500	$2,412,500	76%	$780,000
Holbrook	$370,000	$3,159,600	$1,349,600	43%	$1,810,000
Lexington	$1,590,000	$13,685,300	$10,565,300	77%	$3,120,000
Malden	$2,690,000	$23,483,900	$6,725,900	29%	$16,758,000
Medford	$2,440,000	$22,187,600	$7,961,600	36%	$14,226,000
Melrose	$1,330,000	$11,476,300	$8,657,300	75%	$2,819,000
Milton	$1,150,000	$10,164,500	$9,014,500	89%	$1,150,000
Natick	$1,190,000	$10,582,600	$6,832,600	65%	$3,750,000
Needham	$1,290,000	$11,217,600	$4,018,600	36%	$7,199,000
Newton	$4,340,000	$39,517,400	$34,937,400	88%	$4,580,000
Norwood	$1,650,000	$13,159,400	$6,879,400	52%	$6,280,000
Quincy	$4,170,000	$37,110,000	$31,325,000	84%	$5,785,000
Randolph	$1,330,000	$11,410,800	$4,971,058	44%	$6,439,742
Reading	$1,040,000	$8,789,100	$6,709,100	76%	$2,080,000
Revere	$2,150,000	$19,210,900	$6,302,900	33%	$12,908,000
Somerville	$3,310,000	$29,435,800	$12,116,900	41%	$17,318,900
Stoneham	$1,090,000	$8,799,900	$6,859,900	78%	$1,940,000
Stoughton	$1,060,000	$8,962,900	$6,842,900	76%	$2,120,000
Wakefield	$1,310,000	$11,086,900	$8,526,900	77%	$2,560,000
Walpole	$830,000	$6,920,000	$4,490,000	65%	$2,430,000
Waltham	$2,780,000	$25,132,400	$19,214,560	76%	$5,917,840
Watertown	$1,320,000	$11,445,800	$7,335,800	64%	$4,110,000
Wellesley	$1,180,000	$10,429,700	$4,739,700	45%	$5,690,000
Westwood	$630,000	$4,892,300	$2,591,300	53%	$2,301,000
Weymouth	$2,650,000	$21,640,900	$13,670,900	63%	$7,970,000
Wilmington	$590,000	$4,822,000	$2,462,000	51%	$2,360,000
Winchester	$880,000	$7,663,000	$5,923,000	77%	$1,740,000
Winthrop	$740,000	$6,273,400	$5,083,400	81%	$1,190,000
Woburn	$1,840,000	$18,655,500	$14,675,500	79%	$3,980,000
Totals	$100,000,000	$860,750,000	$514,674,637	60%	$346,075,363

Attachment 2
MWRA I/I Local Financial Assistance Program
Funding Summary as of September 2022

Community	Total Allocations (Phases 1 - 13)	Total Distributions (Phases 1 - 13)	Percent Distributed	Funds Remaining
Arlington	$13,703,000	$11,455,900	84%	$2,247,100
Ashland	$3,818,500	$2,020,060	53%	$1,798,440
Bedford	$5,654,600	$2,843,600	50%	$2,811,000
Belmont	$8,255,100	$5,135,100	62%	$3,120,000
Boston	$218,001,200	$121,596,909	56%	$96,404,291
Braintree	$14,419,000	$10,379,000	72%	$4,040,000
Brookline	$21,355,200	$13,666,200	64%	$7,689,000
Burlington	$8,432,800	$7,322,800	87%	$1,110,000
Cambridge	$39,250,100	$28,830,100	73%	$10,420,000
Canton	$6,635,900	$3,126,850	47%	$3,509,050
Chelsea	$11,760,100	$11,760,100	100%	$0
Dedham	$9,220,000	$8,060,000	87%	$1,160,000
Everett	$13,381,500	$11,611,500	87%	$1,770,000
Framingham	$20,375,000	$13,671,000	67%	$6,704,000
Hingham	$2,802,500	$2,412,500	86%	$390,000
Holbrook	$2,779,600	$1,349,600	49%	$1,430,000
Lexington	$12,125,300	$10,565,300	87%	$1,560,000
Malden	$20,683,900	$6,725,900	33%	$13,958,000
Medford	$19,637,600	$7,961,600	41%	$11,676,000
Melrose	$10,126,300	$8,657,300	85%	$1,469,000
Milton	$9,014,500	$9,014,500	100%	$0
Natick	$9,332,600	$6,832,600	73%	$2,500,000
Needham	$9,977,600	$4,018,600	40%	$5,959,000
Newton	$34,937,400	$34,937,400	100%	$0
Norwood	$11,589,400	$6,879,400	59%	$4,710,000
Quincy	$32,780,000	$31,325,000	96%	$1,455,000
Randolph	$10,070,800	$4,971,058	49%	$5,099,742
Reading	$7,749,100	$6,709,100	87%	$1,040,000
Revere	$16,940,900	$6,302,900	37%	$10,638,000
Somerville	$25,955,800	$12,116,900	47%	$13,838,900
Stoneham	$7,829,900	$6,859,900	88%	$970,000
Stoughton	$7,902,900	$6,842,900	87%	$1,060,000
Wakefield	$9,806,900	$8,526,900	87%	$1,280,000
Walpole	$6,110,000	$4,490,000	73%	$1,620,000
Waltham	$22,282,400	$19,214,560	86%	$3,067,840
Watertown	$10,155,800	$7,335,800	72%	$2,820,000
Wellesley	$9,249,700	$4,739,700	51%	$4,510,000
Westwood	$4,302,300	$2,591,300	60%	$1,711,000
Weymouth	$19,100,900	$13,670,900	72%	$5,430,000
Wilmington	$4,232,000	$2,462,000	58%	$1,770,000
Winchester	$6,793,000	$5,923,000	87%	$870,000
Winthrop	$5,553,400	$5,083,400	92%	$470,000
Woburn	$16,665,500	$14,675,500	88%	$1,990,000
Totals	$760,750,000	$514,674,637	68%	$246,075,363

Note: Through September 2022, three communities have used their entire Phase 13 funding allocation and sixteen communities have used their entire Phase 12 funding allocation.

Attachment 3
MWRA I/I Local Financial Assistance Program
Phases 12 and 13 Funding Summary as of
September 2022

Community	Phase 13 Funding Allocations	Phase 13 Funding Distributions	Phase 1 - 12 Funding Allocations	Phase 1 - 12 Funds Remaining
Arlington	$1,760,000	$0	$11,943,000	$487,100
Ashland	$550,000	$0	$3,268,500	$1,248,440
Bedford	$750,000	$0	$4,904,600	$2,061,000
Belmont	$1,040,000	$0	$7,215,100	$2,080,000
Boston	$28,610,000	$0	$189,391,200	$67,794,291
Braintree	$2,020,000	$0	$12,399,000	$2,020,000
Brookline	$2,730,000	$0	$18,625,200	$4,959,000
Burlington	$1,110,000	$0	$7,322,800	$0
Cambridge	$5,210,000	$0	$34,040,100	$5,210,000
Canton	$890,000	$0	$5,745,900	$2,619,050
Chelsea	$1,630,000	$1,630,000	$10,130,100	$0
Dedham	$1,160,000	$0	$8,060,000	$0
Everett	$1,770,000	$0	$11,611,500	$0
Framingham	$2,750,000	$0	$17,625,000	$3,954,000
Hingham	$390,000	$0	$2,412,500	$0
Holbrook	$380,000	$0	$2,399,600	$1,050,000
Lexington	$1,560,000	$0	$10,565,300	$0
Malden	$2,800,000	$0	$17,883,900	$11,158,000
Medford	$2,550,000	$0	$17,087,600	$9,126,000
Melrose	$1,350,000	$0	$8,776,300	$119,000
Milton	$1,150,000	$1,150,000	$7,864,500	$0
Natick	$1,250,000	$0	$8,082,600	$1,250,000
Needham	$1,240,000	$0	$8,737,600	$4,719,000
Newton	$4,580,000	$4,580,000	$30,357,400	$0
Norwood	$1,570,000	$0	$10,019,400	$3,140,000
Quincy	$4,330,000	$2,875,000	$28,450,000	$0
Randolph	$1,340,000	$0	$8,730,800	$3,759,742
Reading	$1,040,000	$0	$6,709,100	$0
Revere	$2,270,000	$0	$14,670,900	$8,368,000
Somerville	$3,480,000	$0	$22,475,800	$10,358,900
Stoneham	$970,000	$0	$6,859,900	$0
Stoughton	$1,060,000	$0	$6,842,900	$0
Wakefield	$1,280,000	$0	$8,526,900	$0
Walpole	$810,000	$0	$5,300,000	$810,000
Waltham	$2,850,000	$0	$19,432,400	$217,840
Watertown	$1,290,000	$0	$8,865,800	$1,530,000
Wellesley	$1,180,000	$0	$8,069,700	$3,330,000
Westwood	$590,000	$0	$3,712,300	$1,121,000
Weymouth	$2,540,000	$0	$16,560,900	$2,890,000
Wilmington	$590,000	$0	$3,642,000	$1,180,000
Winchester	$870,000	$0	$5,923,000	$0
Winthrop	$720,000	$250,000	$4,833,400	$0
Woburn	$1,990,000	$0	$14,675,500	$0
Totals	$100,000,000	$10,485,000	$660,750,000	$156,560,363

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Metropolitan Water Tunnel Program Update

COMMITTEE: Water Policy and Oversight

X INFORMATION
_____ VOTE

Paul V. Savard, P.E., Director, Design and Construction
Preparer/Title

Kathleen M. Murtagh, P.E.
Director, Tunnel Redundancy

RECOMMENDATION:

For information only.

DISCUSSION:

This staff summary provides an update on the following ongoing activities for the Metropolitan Water Tunnel Program:

- Evaluation of Alternatives;
- Preferred Alternative Selection;
- DEIR Submittal / Draft Section 61 Findings;
- Preliminary Design; and
- Community and Stakeholder Outreach.

Staff will provide future updates to the Board at key milestones during the remainder of the Preliminary Design phase of the Program, such as completion of the Final Environmental Impact Report, completion of the Preliminary Design Report and Program cost estimate and schedule. Staff will also provide updates to the Board throughout later phases of the Program, including Final Design.

On February 15, 2017, the Board approved staff's preferred alternative of construction of northern and southern deep rock tunnels from the Hultman Aqueduct and MetroWest Water Supply Tunnel to the Weston Aqueduct Supply Main No. 3 (WASM 3) and to the Southern Spine water mains. These two tunnels will provide the needed redundancy for the Metropolitan Tunnel System (City Tunnel, City Tunnel Extension and Dorchester Tunnel.) The Board also directed staff to proceed with preliminary design, geotechnical investigations and Massachusetts Environmental Policy Act (MEPA) review of the project. The MEPA review process is designed to provide meaningful opportunities for public review of potential environmental impacts of certain projects for which certain actions by state agencies are required. The ultimate goal is to use all feasible measures to avoid, minimize, and mitigate damage to the environment that may be associated with the Program.

On May 27, 2020, the Board approved the award of Contract 7159, Metropolitan Tunnel Redundancy Program Preliminary Design, Geotechnical Investigation and Environmental Impact Report to CDM Smith, Inc. This contract includes preliminary geotechnical investigation (deep rock borings),

evaluation of preliminary tunnel alignment and shaft site alternatives, preliminary design, preliminary contract packaging, preparation of the required MEPA filings and development of a comprehensive list of the environmental permits needed.

Evaluation of Alternatives / Preferred Alternative

The primary goal of the Program is to protect public health and water service in line with the mission of the Authority. In support of this goal, the Program is intended to:

- provide redundancy for the Metropolitan Tunnel System;
- provide normal water service and fire protection when the existing tunnel system is out of service;
- provide the ability to perform maintenance on the existing tunnel system year-round;
- provide uninterrupted water service in the event of an emergency shutdown;
- meet high day demand flow with no seasonal restrictions;
- avoid activation of emergency reservoirs;
- meet customer expectations for excellent water quality;
- preserve sustainable and predictable rates at the water utility level;
- be constructible; and
- avoid boil water orders.

Staff submitted an Environmental Notification Form (ENF) to the MEPA Office for public comment in March 2021. The ENF included an Alternatives Screening Report that documented the comparison and selection of the preferred two-tunnel concept to other surface pipe and tunnel alternatives. The Secretary of Energy and Environmental Affairs (EEA) issued a certificate on the ENF that requires the submittal of a mandatory Draft Environmental Impact Report (DEIR). The DEIR is to include an alternatives evaluation which would advance the Alternatives Screening Report that was included in the ENF and presented the preferred two-tunnel concept, as well as the study area for identifying and evaluating potential tunnel shaft sites and tunnel alignment alternatives (Refer to Figure 1).

Staff evaluated over 30 potential shaft sites within the study area. Each shaft site was considered for its potential to be used for a specific function during construction as either a Tunnel Boring Machine (TBM) launching, TBM receiving, or intermediate connection shaft. Shafts and their functions were then connected by tunnel segments (tunnel alignment between shaft sites) to comprise one alternative (a north tunnel and a south tunnel system) that together meets the Program goals for full system redundancy. The process to select shaft sites prioritized avoiding direct impacts to resource areas and sensitive receptors to the greatest extent practicable while also confirming the selected shaft sites would be constructible and meet MWRA operations requirements.

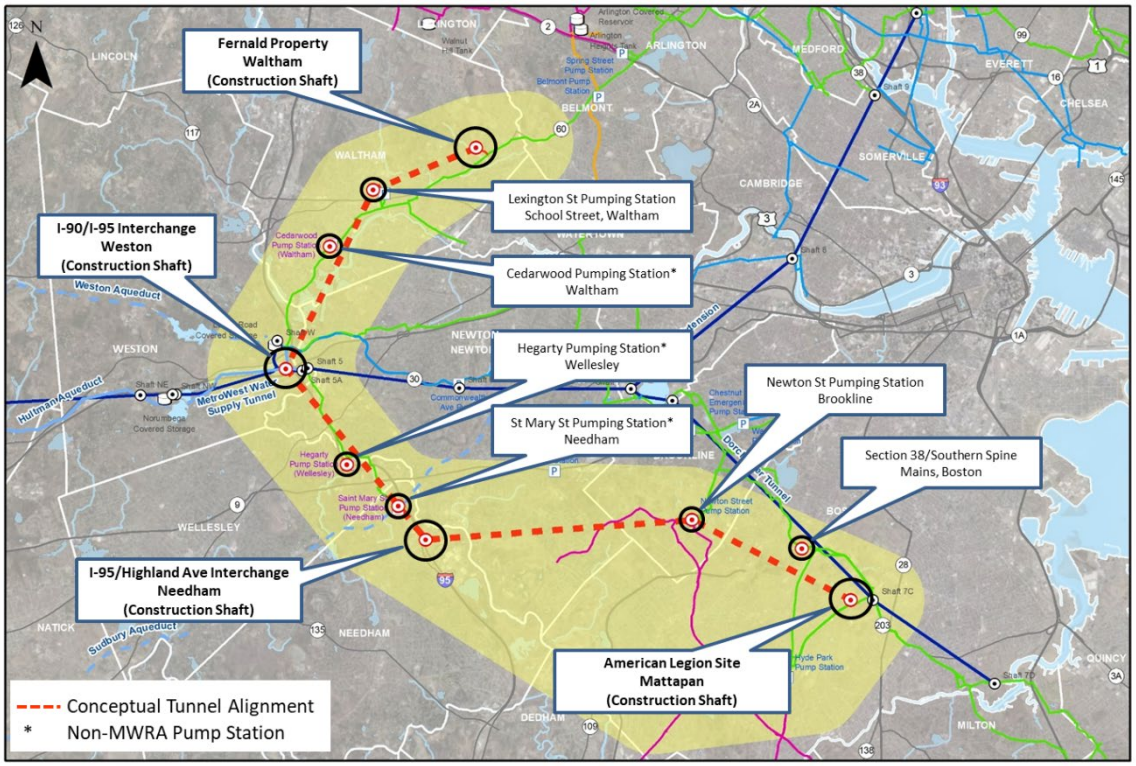


Figure 1 - Conceptual North and South Tunnel Alignment

Following an initial screening, staff narrowed down to ten tunnel alternatives based on a set of evaluation criteria. Consistent application of the evaluation criteria to the ten alternatives led to the selection of three alternatives that will proceed into the DEIR. The evaluation criteria included:

- Constructability/Engineering;
- Land Availability;
- Environmental;
- Social/Community;
- Operations;
- Cost; and
- Schedule.

The top selected alternatives were Alternative 3, Alternative 4, and Alternative 10. (Please refer to Figures 2 through 4 for the three DEIR Alternatives.) For all three selected alternatives, the tunnels will originate in the vicinity of the Interstate I-90/I-95 (I-90/I-95) Interchange in Weston where they will connect to the Hultman Aqueduct.

The North Tunnel will include a completed tunnel from the I-90/I-95 Interchange to the Fernald Property in Waltham (Segment 1) and connect to WASM 3. The South Tunnel will include a completed tunnel that can be isolated in two segments: from the I-90/I-95 Interchange to the Highland Avenue/I-95 interchange in Needham (Segment 2) and from there to the American Legion site in Mattapan (Segment 3) near Shaft 7C of the Dorchester Tunnel.

Primary distinguishing factors between the three DEIR Alternatives relate to how the shaft sites are used to construct the tunnels, direction of mining, and tunnel segment length. Operation of the tunnels would be the same for all three alternatives once construction is completed.

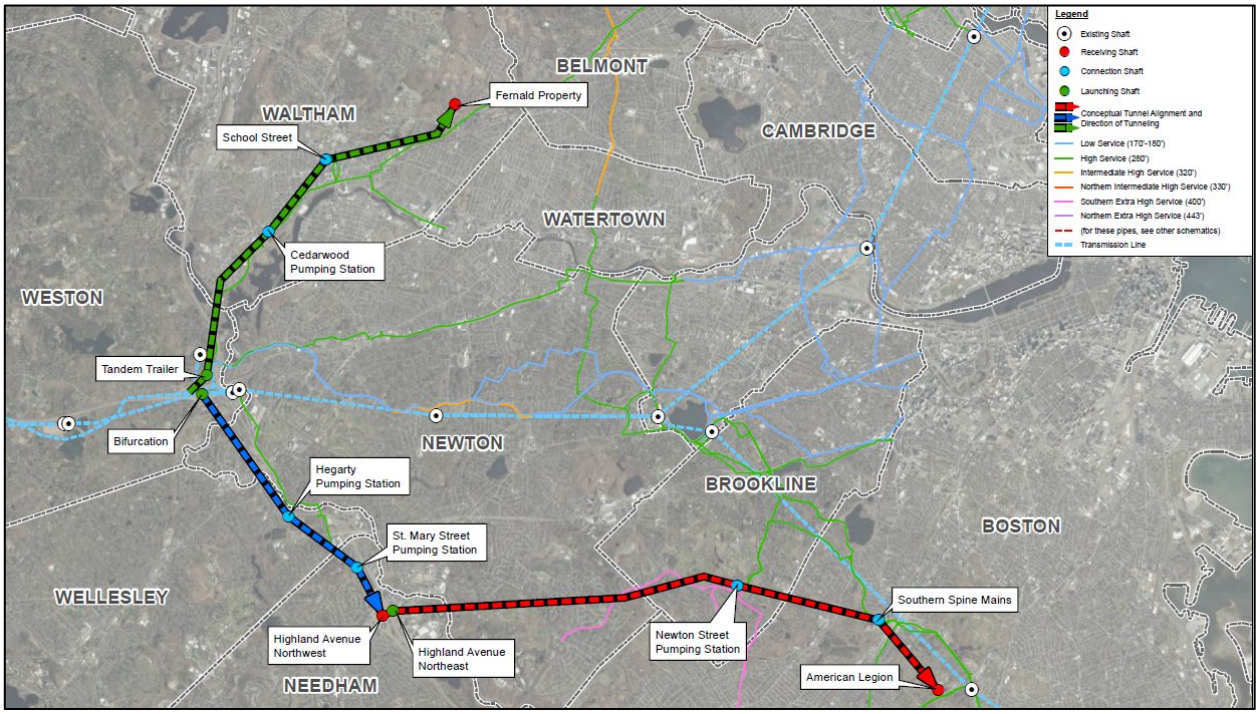


Figure 2 - Alternative 3 Tunnel Alignment

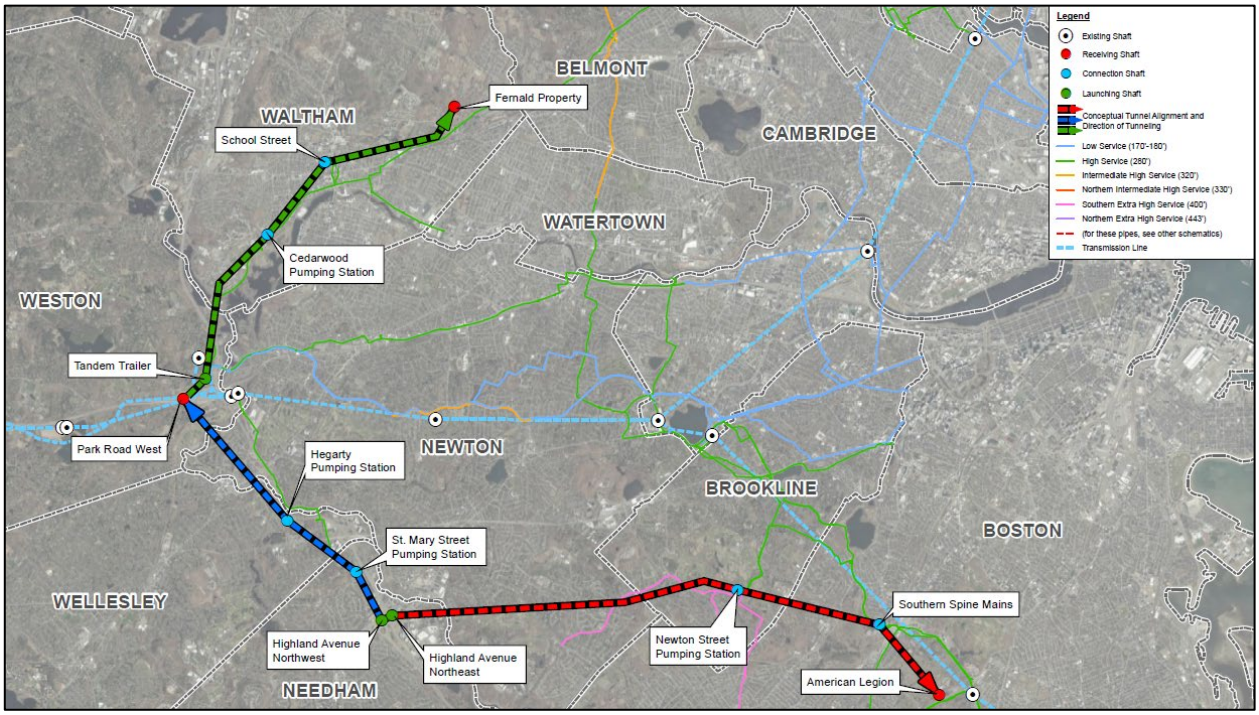


Figure 3 - Alternative 4 Tunnel Alignment

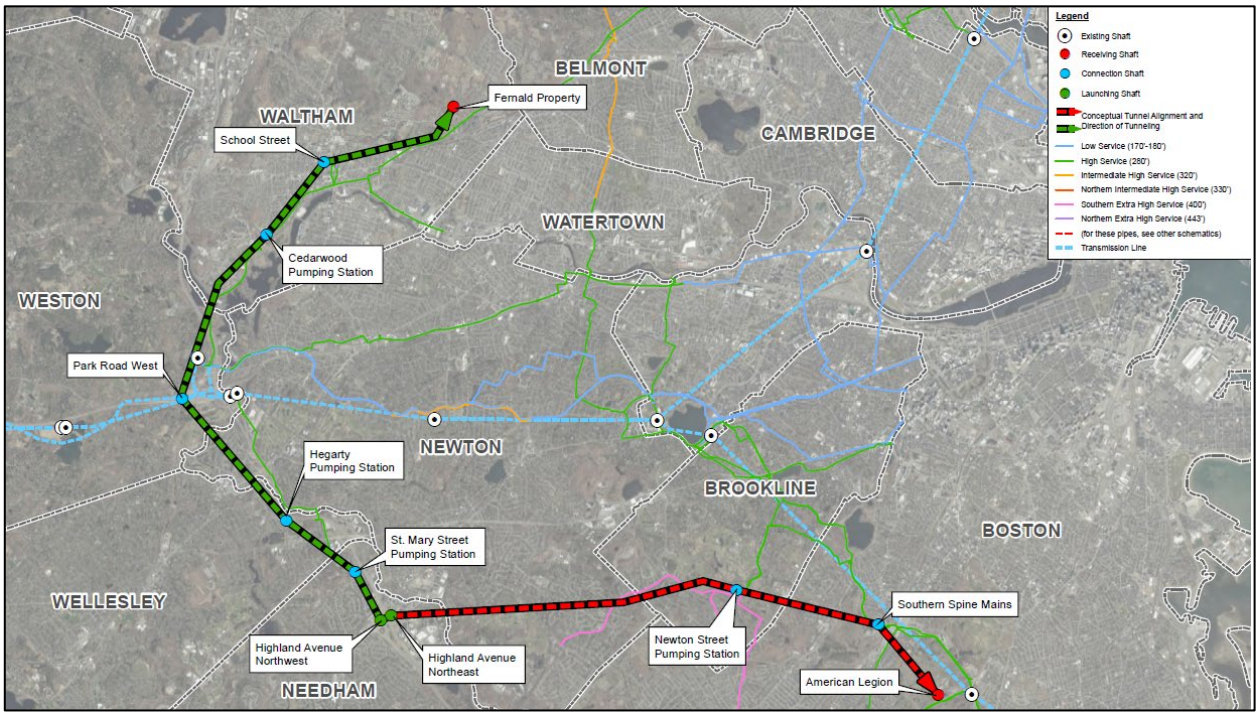


Figure 4 - Alternative 10 Tunnel Alignment

The intermediate connection points are common to all three DEIR Alternatives. For the North Tunnel, there are two intermediate connection points, both in Waltham: MWRA's Lexington Street Pumping Station; and Waltham's Cedarwood Pumping Station.

For the South Tunnel, there are four intermediate connection points: Hegarty Pumping Station in Wellesley; St. Mary Street Pumping Station in Needham; MWRA's Newton Street Pumping Station in Brookline; and MWRA's Section 38 and the Southern Spine Mains in Boston.

DEIR Submittal / Draft Section 61 Findings

The preferred alternative (Alternative 4) along with the two backup alternatives (Alternatives 3 and 10) were evaluated for the DEIR. The backup alternatives are included in the event MWRA determines the preferred alternative or its component(s) no longer effectively meet the Program's goals. Only the preferred alternative will advance into preliminary design.

The DEIR includes information on the following topics for the three DEIR Alternatives:

- Project Description and Permitting;
- Public Outreach/Environmental Justice;
- Alternatives Analysis;
- Land Alteration, Open Space, Wetlands, Rare Species Habitat, Cultural and Historical Resources;
- Water Management Act/Water Supply;
- Climate Change (adaption and resiliency, greenhouse gas emissions);
- Construction Period; and
- Responses to ENF Comments.

All three DEIR Alternatives provide the required hydraulic, redundancy, and operational features to meet the Program goals. Additionally, all have very similar environmental impact considerations for land alteration, open space, wetlands, rare species habitat, water management act, and climate change, for both the construction period and for the build condition. They also have very similar social/community impact considerations for cultural resources, community impacts, traffic, air, and noise for both the construction period and for the build condition. The results of the DEIR show that, overall, each alternative has limited impact in these areas and the DEIR identifies what can be done to minimize or mitigate the impacts that do occur.

Alternative 4 was selected as the preferred alternative in large part because it provides the most flexibility for construction and shortest overall construction schedule. Because each alternative is very similar in length of tunnel and number of shafts, the cost differences between the three alternatives was not a distinguishing factor. Selection of Alternative 4 as the preferred alternative is supported by the Program's Expert Review Panel.

The DEIR also includes Mitigation and Draft Section 61 Findings, as required by MEPA, that:

- demonstrate MWRA consulted with the MEPA Office prior to filing the DEIR for guidance on the analyses of impacts and mitigation measures appropriate for the level of Program information to be provided;
- summarize all proposed mitigation measures, including construction-period measures;
- include draft Section 61 Findings for each permit to be issued by state agencies; and
- contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and provide a schedule for implementation.

The DEIR is scheduled to be completed and submitted to the MEPA office in fall 2022. This is followed by a two-week period at the end of which the DEIR is noticed in the Environmental Monitor. The regulatory comment period is 30 days, although MEPA may provide an extension to this time, if requested. Hard copies of the DEIR will be provided to the libraries in the communities affected and it will be posted on MWRA's website. It is anticipated that the Secretary would issue a certificate along with public comments received that MWRA will need to fulfill and then file the Final EIR, which is expected to be completed in late summer 2023.

Staff are tailoring outreach to Environmental Justice communities throughout the Program to facilitate involvement in the environmental review process. The Program Team identified Environmental Justice communities within the Program Study Area and is utilizing a combination of methods to enable full participation in the environmental review process. These methods include wide dissemination and translation into relevant language of a written project summary and fact sheets for key topics such as traffic and noise/vibration, use of non-English and/or community-specific media outlets to publicize the project, including local newspapers, and hosting a project website. MWRA will provide translators for public information sessions as requested by the community.

Preliminary Design

Preliminary design of the tunnel system and surface connections has been initiated. Many aspects of the design underway are common to all three DEIR Alternatives and include geotechnical investigations, hydraulic analysis, topographic survey, shaft site design, surface piping connections, and the tunnel alignment (horizontal and vertical) between shafts. Analysis of shaft and tunneling methods and design (initial support and final liner), TBM type and capabilities,

groundwater control, ground water discharge, excavated material disposal, easement research, and tunnel disinfection, start up, and operations planning are ongoing. A draft Preliminary Design (reports and drawings) is scheduled to be completed in early 2023 with the final Preliminary Design completed in January 2024. An updated Program cost estimate and schedule will be completed toward the end of preliminary design.

The Program's Expert Review Panel (ERP) will continue to be engaged throughout this phase of the Program. ERP workshops on topics including contract packaging and value engineering of the preliminary design are planned over the next several months.

Community and Stakeholder Outreach

As the MEPA process and preliminary design have progressed, staff have simultaneously implemented a communication plan to ensure that communities and stakeholders are informed as to the importance of this effort and what can be expected in the years ahead. Staff have contacted all ten communities within the Program Study Area and have formed a working group, which includes representatives of each of the ten communities, the MWRA Advisory Board, the Water Supply Citizens Advisory Committee and the Metropolitan Area Planning Council. These working group members participate in regular meetings with the Program Team to be kept informed on progress, and provide input on certain elements of the Program. The goals of the working group meetings are to provide a collaborative and transparent process for evaluating alternatives and yield more informed comments during the MEPA process. The working group has met five times since it was formed in April 2021. Staff are holding additional meetings with community representatives of the seven communities in which the tunnel will be constructed.

The development of the preliminary design and environmental impact reports required substantial amounts of coordination with environmental regulatory agencies in order to ensure the data and documentation generated result in a robust alternatives analysis in the MEPA process. Staff have already met several times with members of the Massachusetts Department of Environmental Protection (representatives of Wetlands and Waterways, Chapter 91 licensing, Water Management Act) and the MEPA Office. These pre-filing meetings presented the proposed Program and provided an opportunity to discuss the environmental findings being described in the DEIR and the regulatory process that will be followed during design to obtain the necessary permits and approvals for construction. This ongoing interaction with regulators will give MWRA staff the opportunity to address comments and concerns raised by agencies in the environmental review and permitting phases.

MEPA requires that the DEIR delineate and describe existing land ownership and identify acquisitions and easements that may be required for the Program. Staff met with key stakeholders of the selected shaft sites, including the City of Waltham, MassDOT, the Town of Wellesley, DPH, and DCR to identify the land needed for construction and operation of the tunnels. All property stakeholders have been supportive of the Program. Discussions with other property owners have been equally effective. As the design proceeds, staff will present property acquisition needs to the Board for consideration.

BUDGET/FISCAL IMPACTS:

The FY23 CIP includes $1.6 billion for the Metropolitan Tunnel Redundancy Program. This budget will be refined at the completion of Preliminary Design.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Reservoir and Drought Status Update

COMMITTEE: Water Policy & Oversight

X INFORMATION
VOTE

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

David Coppes, P.E.
Chief Operating Officer

On August 24, 2022, following seven months of lower than normal rainfall, the Secretary of Energy and Environmental Affairs declared all regions in Massachusetts to be in Level-3 critical drought, except for the Western and Island Regions, which she declared to be in Level-2 significant drought. Although MWRA is not directly impacted by these designations, staff are providing an update on the impact of the drought on MWRA operations. Quabbin Reservoir is currently 91% full, which is within its normal operating range for this time of the year. Even if the drought continued for several years, adequate supply exists in Quabbin and Wachusett Reservoirs to fully meet the needs of MWRA's full and partial water communities and, if needed, to augment the supplies of adjacent stressed communities. While no water use restrictions are required for MWRA fully supplied customers, MWRA is urging consumers to use water wisely and continues to provide conservation information.

RECOMMENDATION:

For information only.

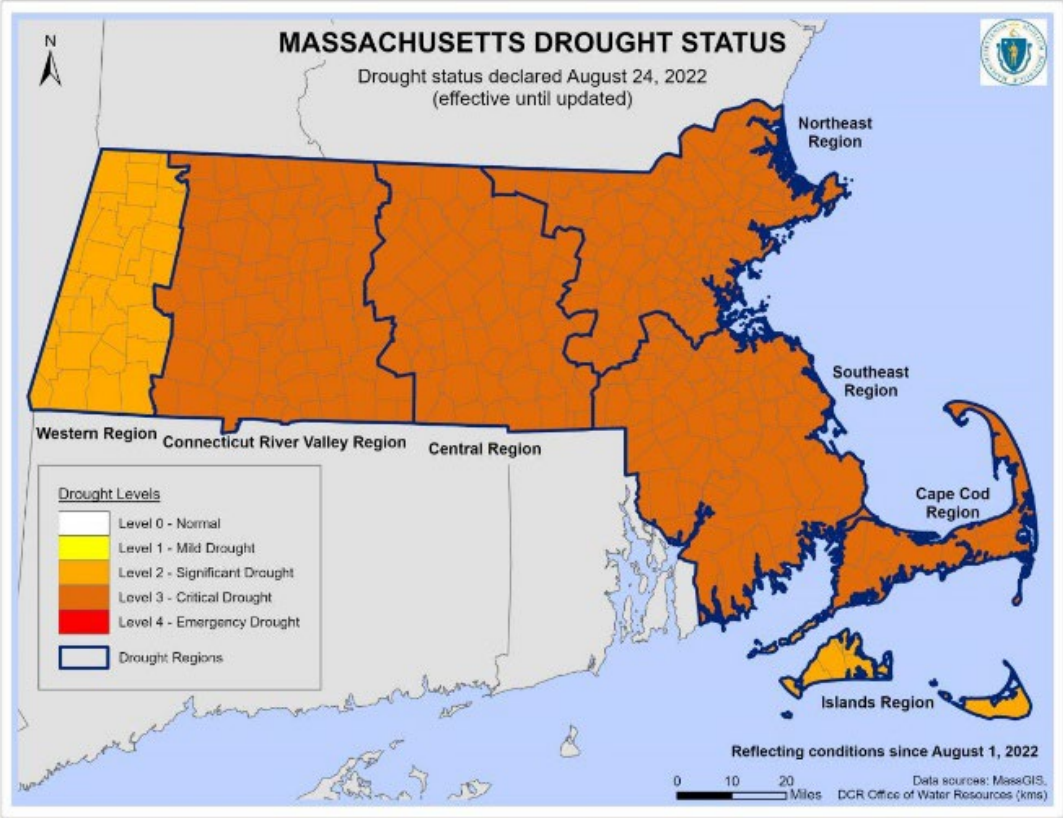
DISCUSSION:

The past seven months have been very dry, and as of August 24, upon advice of the Massachusetts Drought Management Task Force, the Secretary of Energy and Environmental Affairs Secretary has raised nearly the entire state to a Level 3 – Critical Drought status. MWRA is an active participant in the Massachusetts Drought Management Task Force and has participated in the development of the state drought response plan. The plan outlines agency responsibilities during drought conditions and sets drought stage triggers based on hydrologic conditions across the state.

The state drought plan acknowledges that MWRA has a separate drought response plan with specific triggers based on Quabbin storage levels (originally developed and approved by MassDEP during the 1989 drought). The state plan is regionally flexible; for example, small water systems may need water use restrictions during a short-term drought, while only a long-term multi-year drought affecting Quabbin and Wachusett would lead to significant restrictions in MWRA's service area. The state drought plan also leaves MWRA with primary responsibility for communication with its service area communities and customers during a drought.

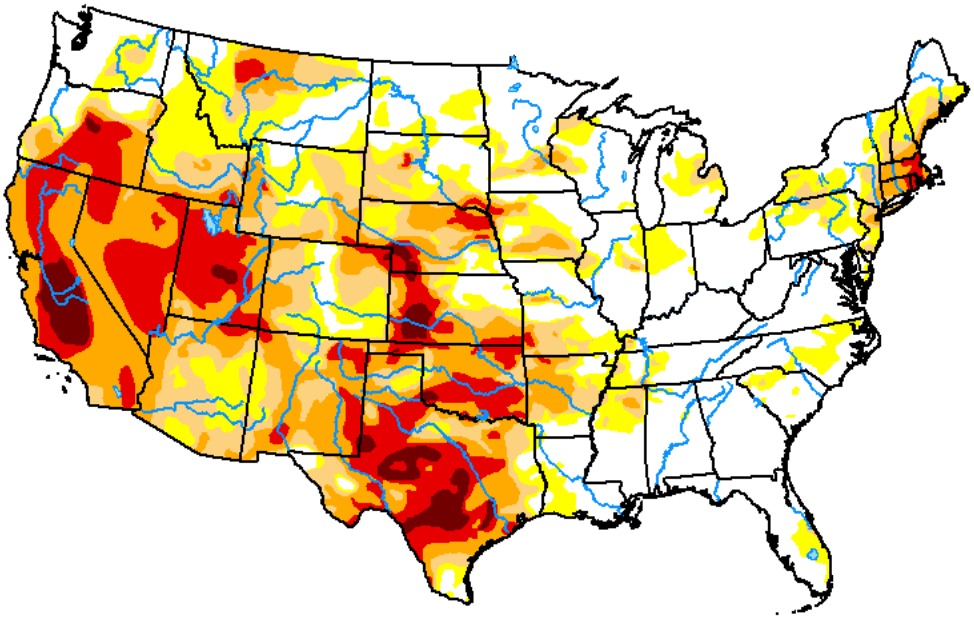
Figure 1 below shows the Massachusetts drought regions and their status as of August 24. The Drought Management Task Force meets monthly to review the series of indices that are the basis for determining appropriate action levels for the different regions within the state. The five state drought action levels are: Level 0 – Normal, Level 1 - Mild Drought (formerly Advisory), Level 2 - Significant Drought (formerly Watch), Level 3 - Critical Drought (formerly Warning), Level 4 - Emergency Drought. The task force last met on August 23 and recommended downgrading all regions of Massachusetts to Level-3 critical drought except for the Western and Island Regions.

Figure 1 – Massachusetts Drought Status
Designations August 24, 2022



The national drought status map in Figure 2 on the next page shows how this regional drought fits into the national drought picture.

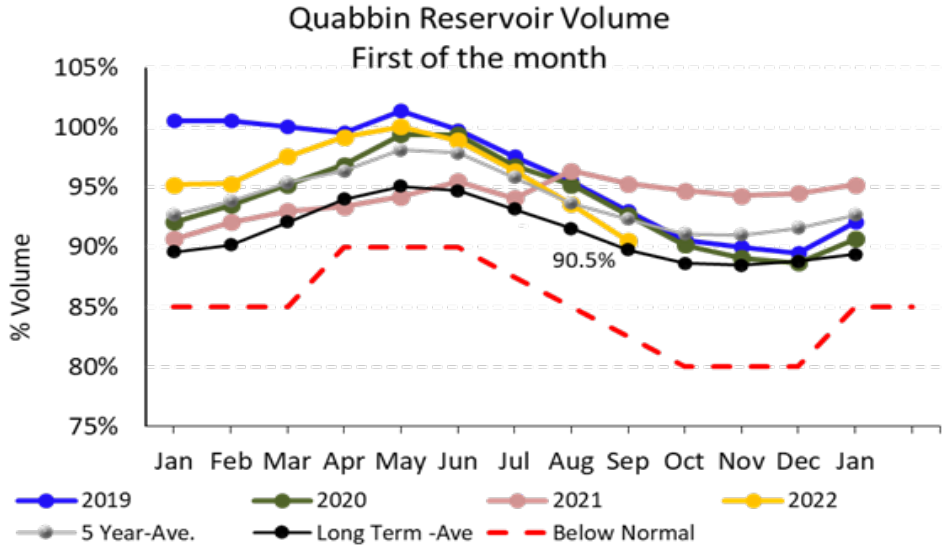
Figure 2: National Drought Status (NDMC Designation as of 8/23/2022)



MWRA Supply Outlook

Due to the long-term reductions in water use by MWRA's customers, and the immense storage volumes of the Quabbin and Wachusett reservoirs, MWRA's water system is in very good shape despite the drought. Quabbin Reservoir started the calendar year above typical levels as a result of significant rainfall during the summer and fall of 2021. In fact, Quabbin was spilling over its lower spillway right up to the fourth of July. The reservoir was 90.5 percent full at the end of August, which is within its normal operating range for this time of the year, as shown on Figure 3. Even if the drought continues for several more years, adequate supply exists in Quabbin and Wachusett Reservoirs to fully meet the needs of MWRA water communities and if needed, to augment the supplies of some of the adjacent stressed communities.

Figure 3 – Quabbin Status



During drought conditions, MWRA staff use reservoir modeling tools to project how the system

would perform under different weather conditions. Modeling of the reservoir system indicates the level will stay in its Normal Operating Range if precipitation returns to average conditions, and even if the Driest conditions ever seen persist[1], would not drop to 'Below Normal' before 6 months. Quabbin was last 'Below Normal' in 2016. Operationally, MWRA uses the Below Normal designation as a first level alert to begin planning for drought actions.

Table 1 – Quabbin Reservoir Modeled Drought Status
Looking Forward from September 1, 2022

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

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

MWRA Drought Management Plan

The MWRA Drought Management Plan calls for conservation of water through successively more stringent demand reduction measures as drought conditions deepen. Table 2 presents the stages of this plan. Drought response actions are triggered by the level of water in Quabbin Reservoir – the seasonal saw-tooth pattern shown in Figure 4.

Table 2: MWRA Drought Management Stages

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

1 For drought modeling, Dry is defined as driest one quarter of all periods, and Driest is the driest period experienced since Quabbin Reservoir was constructed.

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

Figure 4: Quabbin End of Month Storage, Annual System Demand and Safe Yield from 1950 to 2022

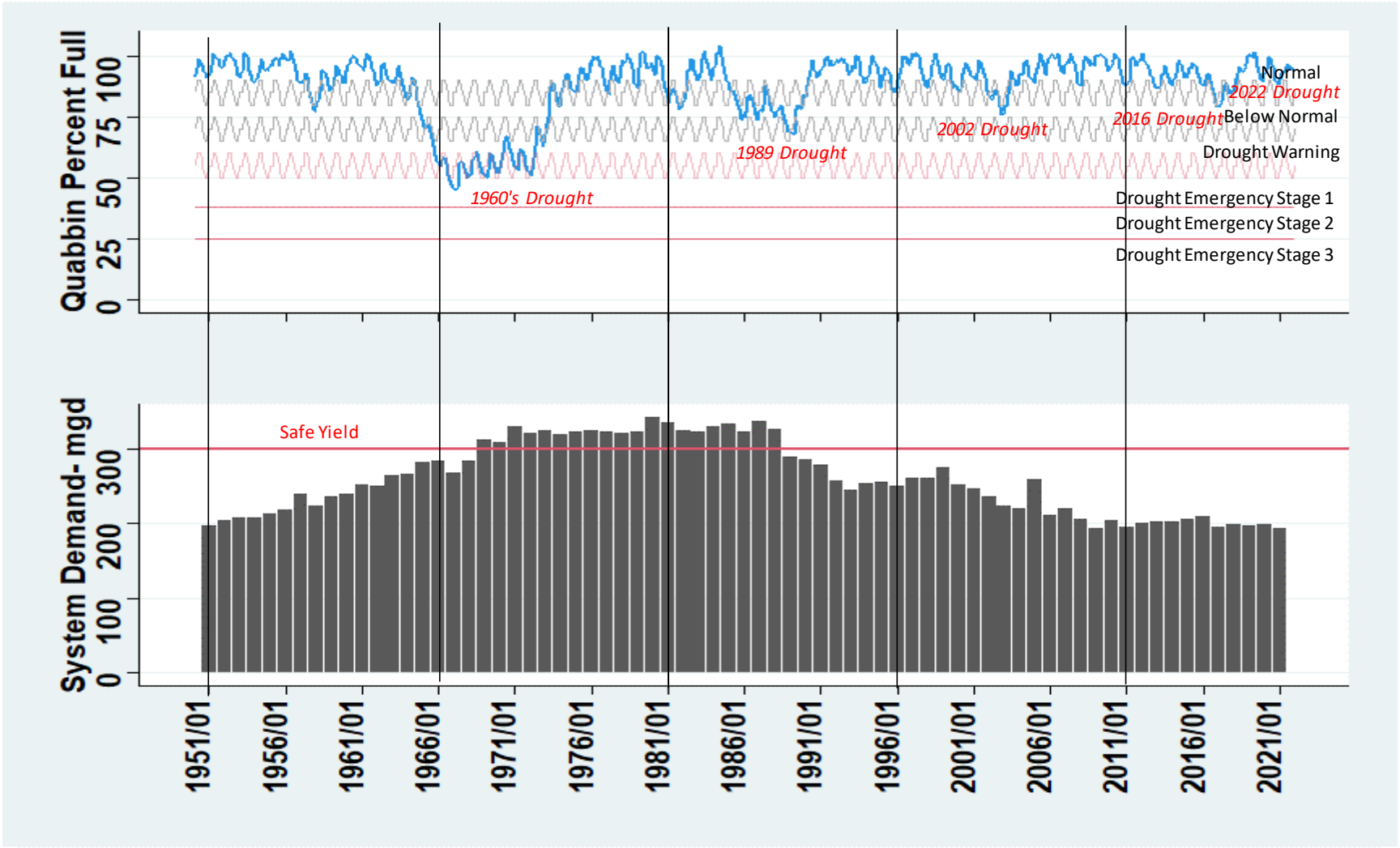


Figure 4 above shows Quabbin elevations since 1950. The saw-tooth bands correspond to MWRA drought plan stages. Past major droughts are labeled and it can be seen that, compared to previous droughts, Quabbin levels are still relatively high at this point. The lower part of the figure shows system demands for visual comparison. For a given drought, the reservoir will drop further if demands are higher. The system demand in the years prior to the 1989 drought was higher than the system's 'Safe Yield,' (the amount of water that can be reliably supplied during a critical drought by the watershed/reservoir system). As reported to the Board of Directors at the beginning of each year and shown in Figure 5, system demand has reduced significantly since 1980 and is now much lower than the system's Safe Yield. MWRA uses a Safe Yield of 300 million gallons per day (mgd) for planning and policy purposes. Given the current system demand of around 200 mgd, the MWRA system could reliably supply an additional 100 mgd through a drought as severe as the 1960s one.

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

Drought Impact on Partially Supplied, Emergency and Adjacent Communities

MWRA's drought planning assumes that there will be additional demand from partial users and potentially from neighboring non-user communities. Staff are tracking the status of all partially supplied communities to assess the impact of the drought on their supplies, and to be ready to assist if necessary. MWRA's drought planning assumes that as a drought deepens, its partially supplied member communities will use more MWRA water. Worcester's system is just within its Normal operating band at 72.5 percent of capacity, has declared a Stage 1 drought, and has called for some water use reductions. It has no current expectations of needing MWRA water. Lynn's system was at 57 percent full on August 24 and is calling for voluntary water use reductions. No non-MWRA communities have reached out to MWRA for emergency water at this time. In addition to drought concerns, several communities are taking additional water due to water quality issues. Cambridge and Wakefield are currently using 100 percent MWRA water due to concerns of elevated levels of PFAS in their local sources. At this time, Cambridge believes that it will use MWRA water for three or four months while upgrades are being made at its treatment plant. Wellesley and Burlington are also using additional water due to PFAS issues. Dedham-Westwood Water District is using additional MWRA water as it makes system improvements to reduce disinfection byproducts levels.

Total water use in July 2022 was almost 30 percent higher than July of 2021, not surprisingly, as last July was a record wet month, and this July was a record dry month. Year to date water use through July is around seven percent over the same period last year. Use is still over 90 mgd below the system safe yield.

Impact on Deer Island Sewer Flows

The drought has resulted in a reduction in sewer flows. New monthly low flow records were set at the Deer Island Wastewater Treatment Plant successively in May, June, July and August.

Next Steps

MWRA staff will continue to participate in the state Drought Management Task Force, and coordinate with other state agencies to periodically assess the status of the drought and the ongoing needs of the partial users and emergency connections. Staff will continue to do monthly forecasting of MWRA system conditions as long as the situation calls for it, and will report to the Board of Directors if conditions worsen.

BUDGET/FISCAL IMPACT:

Additional use by all other MWRA fully or partially supplied communities will be through the normal assessment process based on their proportionate share of water usage. If Worcester were to need to take water through its pump station at Shaft 3 of the Quabbin Aqueduct, it will pay the prevailing wholesale rate for any water used. Any emergency users either will also pay the prevailing rate directly to MWRA or will be billed by the community that it is interconnected to, plus a surcharge if applicable.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Five-Year Waiver of Entrance Fee

COMMITTEE: Water Policy and Oversight

_____ INFORMATION
__X__ VOTE

Carolyn Francisco Murphy
General Counsel

Matthew Horan, Deputy Director of Finance/Treasurer
Rebecca Weidman, Director, Env. and Reg. Affairs
Stephen Estes-Smargiassi, Director, Planning and Sustainability
Preparer/Title

David W. Coppes, PE
Chief Operating Officer

RECOMMENDATION:

That the Board of Directors approve revisions to MWRA Policy OP.10: Admission of New Community to MWRA Water System, to permit a waiver of MWRA's Entrance Fee, under certain conditions, for communities entering the system or purchasing additional water during the next 5 years, as further set forth herein. The five-year waiver would extend through calendar year 2027. Communities seeking the entrance fee waiver would need to show that they are seeking admission to or additional water supply from MWRA because their local sources are impacted by water quality issues, their water supply is located in a stressed basin, or local economic development is significantly constrained by their existing water supply. Communities will be responsible for the cost of connecting to MWRA's system. A total maximum of 20 million gallons per day would be available under this waiver for communities that are not currently members of MWRA. There is no volume limit for communities that are currently members of the MWRA water system.

DISCUSSION:

Communities across the Commonwealth are currently faced with a variety of issues related to their local water supplies. Regulations for emerging contaminants such as per- and polyfluoroalkyl substances (PFAS) have resulted in public water suppliers contemplating new or additional water treatment. The Commonwealth is also in the midst of the second drought in six years. Communities in the midst of dealing with water quality or quantity issues have limited opportunity to grow their local economies, including those communities growing in an environmentally sustainable way, when water supplies become limited or unreliable.

MWRA considers itself a resource for all of the Commonwealth, but it has become clear that the current requirement that new communities pay an entrance fee has been a substantial impediment. Recognizing this, after a substantial review and discussion process, the MWRA Advisory Board voted in June to recommend that the entrance fee be waived for those communities entering during a limited time (5 years) and up to a total volume of 20 million gallons per day. (Attachment II is a letter from the MWRA Advisory Board with the exact language of the vote and a link to the extensive materials used during their evaluation of the policy.)

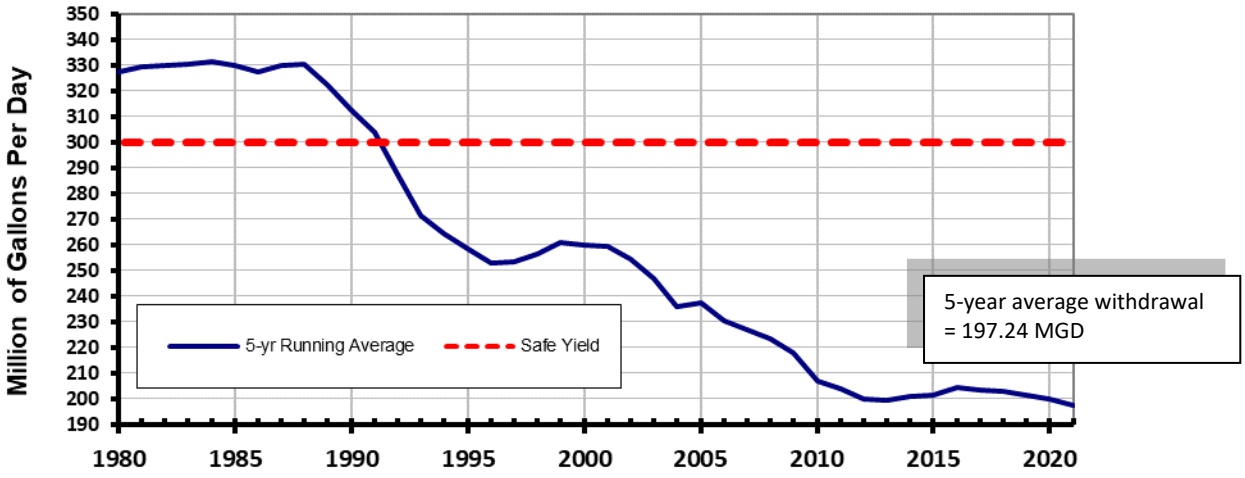
Making this change will help ensure that MWRA is viewed by communities throughout the Commonwealth as a resource available to local water suppliers as they determine long-term solutions for providing safe drinking water into the future.

The Water is Available: Safe Yield

A key question in any discussion of system expansion is whether there is and will be adequate reliable supply for both our current users and any new users admitted. This questions is answered by comparing the system's safe yield with conservative projections of future demand.

The safe yield of the Quabbin Reservoir, Ware River and Wachusett Reservoir system is 300 million gallons per day. This means that the system would be able to continue to supply an average of 300 MGD even during a severe drought: This safe yield was based on modeling of the multi-year drought of the 1960's considered to be about a 1 in 400 year occurrence event[1]. The safe yield modeling accounts for system operations during various weather conditions, and anticipates and accounts for the expected increase in use of MWRA water by our partial users and emergency users during drought conditions.

Water demand on the MWRA system has decreased dramatically since its creation in 1985 due to aggressive demand management programs, increased costs of water, sewer and energy, and national trends toward more efficient appliance and fixtures. Water use has decreased from around 340 MGD in the early 1980s to a 5-year average of 197 MGD in 2021, despite the increases in regional population and employment, and the addition of 8 new communities and the McLaughlin Fish Hatchery to the system during that time[2].



As part of development of MWRA's Waterworks System Master Plan, staff work with regional planning agencies and others to examine population and employment trends and project future

[1] Staff have also evaluated the expected performance of the reservoir system under future climate change conditions. Modeling indicates that due to the large multi-year storage capacity of the system it will likely see a small increase in safe yield with increased precipitation amounts despite the expected increased variability of "wetter wets and drier drys."

[2] Without the added communities and hatchery demands, the five-year average demand would have been almost nine MGD lower at 188.6 MGD. This further demonstrates the substantial improvements in water use efficiency within the MWRA service area, which has improved system reliability and allowed MWRA to provide service to additional communities in need of that reliable supply.

water use. For the purposes of examining the implications of system expansion, staff use a series of conservative assumptions including that current users will experience no further increases in water use efficiency, that any new population will use the state standard of 65 gallons per person, rather than the region's current use of 10 to 20 percent lower than that, and that new businesses will be no more water efficient that current businesses. MWRA's most recent Master Plan (2018) indicates that new growth through 2040 within the service area will use no more than around 29 MGD, and likely less. Staff's projections also assume that our partial user communities may need to rely on MWRA for additional supply: the Master Plan includes a long term average of 17 MGD for increased use by partial users. This assumes that there may be periods when communities take more water while upgrading treatment and that some sources in more stressed basins may be used less in the future.

The Master Plan estimated that based on the then current 50-year demand of 203 MGD, that over 50 MGD of capacity was available. As demand has continued to decrease, even that figure seems conservative. Staff are comfortable from a supply system reliability perspective with the Advisory Board's recommendation of no more than a total maximum of 20 MGD for new communities ("Maximum Amount"). Staff are not recommending a specific limit on any additional volumes for existing communities as the Master Plan's conservative water use projections already incorporate projected new residential and commercial growth in the communities.

Table 4-6 Summary of Conservative Demand Projections
(from 2018 Water Master Plan)

Current demand within the service area (5-year average)	203 MGD
Potential growth due to increased population and employment	29 MGD
Contingency for potential increase in demand from partial user communities	17 MGD
TOTAL PROJECTED DEMAND IN 2040	249 MGD
MWRA Supply System Safe Yield	300 MGD
AVAILABLE MARGIN	**51 MGD**

Costs and Revenue Implications

Many communities exploring admission to MWRA's water system have indicated that the existing Entrance Fee is an obstacle to joining MWRA. The Entrance Fee alone may be equivalent to the cost of installing additional treatment required to meet drinking water standards. The Entrance Fee does not include the infrastructure costs required to connect to MWRA's system, which can also be equal to or greater than the Entrance Fee. The following analysis looks at the financial implications of waiving the Entrance Fee.

Each fiscal year, MWRA develops new water and sewer rate revenue requirements that are sufficient to meet its current expenses, which includes debt service and operating costs. The total rate revenue requirement from the member communities is the difference between the total of current expenses less non-rate revenue (i.e. investment income, energy credits, etc.). MWRA calculates water assessments for each community by apportioning the total water rate revenue requirement to each community based on their share of total water use for the most recent calendar year.

As outlined in the next section, the production of additional volumes of water will not increase MWRA costs significantly (the marginal increase in cost for a million gallons is between 2.5%

and 4.1% of our current charge per million gallons). Since the rate revenue assessment is based on each user's share of the system, when a new community is added all the other communities' shares are reduced. This system share reduction results in lower assessment for the existing communities. The tables below provide detail on the one-year and 25-year impact of new usage totaling 5 MGD and 20 MGD, based off of the calendar 2021 water usage. More detailed projections prepared during the Advisory Board's review process for various quantities of use are available at the link in Attachment II. All show that the foregone entrance fee revenue is more than made up by the shift in communities' shares that will occur with the additional water use of new communities.

	Usage	FY23 System Share	Revenue Reallocated	Current Entrance Fee
1-Year	5 MGD	2.85%	$ 8,205,923	$ 961,045
	20 MGD	10.49%	$ 30,241,437	$ 3,581,053
25-Year	5 MGD	2.85%	$ 205,148,075	$ 21,142,990
	20 MGD	10.49%	$ 756,035,925	$ 78,783,166

As shown in the table above, based on calendar year 2021 water usage, new communities using 20 MGD would be charged approximately $30.2 million, which would proportionally reduce the assessments to the other member communities. Over 25-years that could provide a benefit of $756 million in reduced assessments to the existing members. Under this proposed change, the entrance fees shown above would not be received by MWRA. For example, the loss in entrance fees over a 25 year period for a new 20 MGD user would be $78.8 million; this is more than offset by the anticipated reallocation of revenue between existing customers over this period of nearly $756 million. It is important to note, that to the extent that the entrance fee has frequently been a major impediment causing communities to not join the MWRA system, MWRA communities have neither received the entrance fee nor the beneficial shift in rate revenue shares. Attachment III to this staff summary details the impact of a new 5 MGD and 20 MGD customers to the assessments of each of the existing members based on the FY23 assessment.

Marginal Costs of Suppling More Water

Staff reviewed cost and flow data for fiscal years 2019 to 2021 to develop the estimated marginal (variable) cost of additional water sales. All major cost categories were examined to assess if they would be likely to change with additional water sales to new MWRA communities. Most of the larger cost centers, such as staffing, will not vary; the primary variable costs will be marginal costs of treatment (additional chemicals and utilities) at the John J. Carroll Water Treatment Plant, and the energy cost of pumping in the metropolitan system (assuming some new users would likely be within one of MWRA's pumped pressure zones). There would also be an incremental, but small, revenue from additional hydroelectric generation as additional water is moved from Quabbin to Wachusett and from Wachusett to the treatment plant.

The net marginal cost of delivering a new million gallons of water to a community in one of the pumped pressure zones would be approximately of $178 per million gallons. The prevailing rate for water is $4,387.28 per million gallons, so net marginal costs are around 4.1% of total costs. Delivery to a non-pumped pressure zone would have a lower net marginal cost $110 per million

gallons or 2.5%. The marginal cost of delivering additional water is minimal for either pumped or non-pumped pressure zones of MWRA's system.

Bond Disclosures and Credit Rating

The recommended change to the entrance fee policy is not expected to negatively affect MWRA's credit worthiness. Since MWRA's current bond disclosures include a discussion of the entrance fee and due to the potential revenue impact, staff discussed the proposed changes with MWRA's bond counsel, financial advisor and with credit analysts from the rating agencies. The Enabling Act and General Revenue Bond Resolution include provisions requiring the MWRA, in setting its charges, to give account to a number of factors, including reasonable provisions to reflect the local bodies' disproportionate historic investment in the system. After review of those provisions, bond counsel indicated that current withdrawals from the Waterworks System are and have been below the safe yield, which is very different from when MWRA was created (and the Bond Resolution was adopted). As a result, MWRA could determine that in light of these changed circumstances (and possibly others), it is an appropriate time to revisit its admission policy. In revisiting the policy, MWRA would need to consider the factors listed in the Enabling Act and the Bond Resolution, but could weigh these factors differently considering the changed circumstances.

MWRA's financial advisor generally believed that the financial benefit of new members to share in the water systems costs in perpetuity was greater than the potential loss of the entrance fee, particularly if that fee is keeping a community from joining. MWRA's financial advisor also noted that diversifying the rate base with new customers could be seen as a credit positive by the bond markets. Generally the credit rating analysts focused on the potential impact to MWRA's financial metrics, and the potential risks to operations and safe yield from this change in policy. The financial metrics discussion primarily focused on whether these changes would result in significant increases to capital spending or operating costs, which would cause additional rate pressures and reduced operating margins. The rating agency analysts particularly focused on the impact to safe yield capacity and its potential impact on supply and growth on the existing members. Based on the safe yield analysis discussed above, they believed MWRA was monitoring this potential impact. Since providing additional water will likely have limited impact to operating/capital costs or on operations/safe yield, the credit analysts indicated that the proposed change should not impact MWRA's credit ratings adversely.

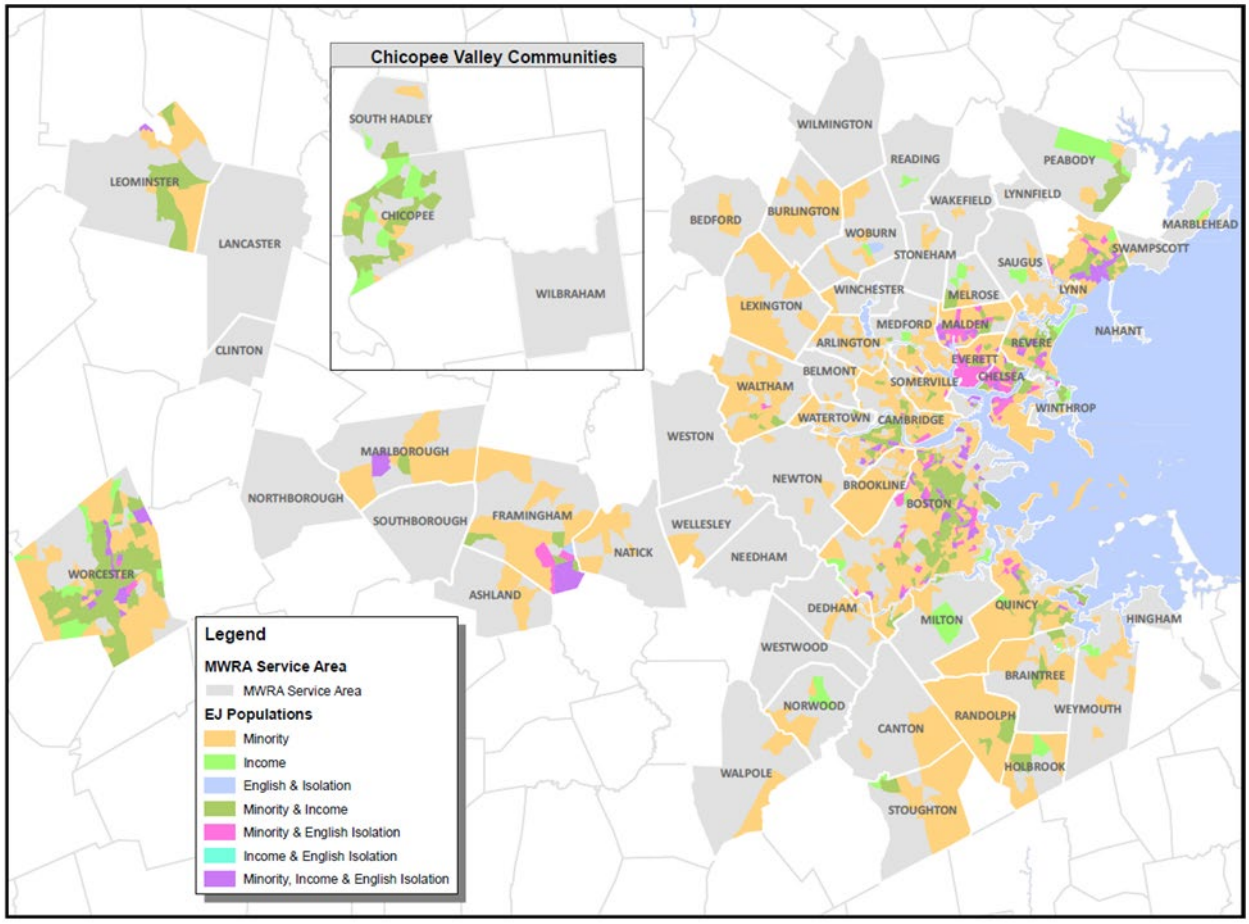
Environmental Justice and Environmental Sustainability

The admission of a new community to the MWRA system requires a substantive public review process: environmental justice and sustainability concerns will be required to be considered and documented, but initially seem unlikely to be adversely affected by the proposed change in the entrance fee policy.

MWRA's Admission Process, as set forth in Operating Policy #10 (OP.10) requires any community seeking admission to MWRA to receive certification from the Secretary of the Executive Office of Energy and Environmental Affairs that a Massachusetts Environmental Policy Act (MEPA) review has been satisfactorily completed, and an Interbasin Transfer Act approval from the Water Resource Commission (WRC) has been obtained. This information is required to be included in the applicant's admission package and is available for review during the admission process.

The goal of a MEPA review is to avoid, minimize, and mitigate damage to the environment associated with the project to the maximum extent possible. Projects requiring MEPA review require project proponents to take additional measures to improve public participation by Environmental Justice (EJ) populations located within one mile of a project or within five miles of a project if it will impact air quality. Such measures may include reaching out to EJ population contacts identified by the MEPA office, translating key documents, providing translation services at public meetings, and requiring public meetings to be held at locations accessible by public transportation. Additionally, most MEPA filings for projects within close proximity to an EJ population will now require the development of an Environmental Impact Report (EIR). These EIRs must include an assessment of existing unfair or inequitable environmental burden, an analysis of project impacts to determine disproportionate adverse effects, and an analysis of project impacts to determine climate change effects to surrounding EJ populations.

MWRA Service Area and Environmental Justice Populations



A significant portion of MWRA's service area includes EJ populations. Adverse impacts to EJ populations within and outside of our service area are likely to occur only during construction of new infrastructure. Adding additional communities to MWRA's system will reduce the share of total costs borne by all member communities, as discussed above. This would be a significant benefit to EJ populations designated as such because of income.

Project proponents undergoing the MEPA review process must also complete an assessment using the Massachusetts Climate Resilience Design Standards Tool. This tool provides: a rating of climate change exposure and risk; provides recommended climate resilience design standards for projects with physical assets; and provides guidance of best practices to support implementation. As noted previously, the incremental energy and chemical resources necessary for each additional million gallons of water produced is minimal. This incremental use of resources is likely to be significantly less than the resources required to build, operate, and maintain a new treatment plant or adding additional treatment to an existing facility.

The Massachusetts Interbasin Transfer Act (M.G.L. Ch. 21 §§8B-8D) gives the WRC authority to approve or deny transfers of water or wastewater outside of its river basin of origin. The purpose of the Act is to assure that any transfer of water or wastewater from a river basin is done in a way that protects the water-dependent resources of the donor basin. MWRA maintains releases from both the Quabbin and Wachusett Reservoirs even during drought conditions. Many rivers and streams in the Commonwealth experience chronic low flows which can potentially degrade fisheries, wetlands, water-based recreation and other water-dependent resources. Use of MWRA water to replace or supplement use of local sources can serve to improve conditions in the receiving basin.

The Interbasin Transfer Act requires that the WRC base its decision to approve an Interbasin Transfer, on finding that, at a minimum:

- all reasonable efforts have been made to identify and develop all viable sources in the receiving area of the proposed interbasin transfer;
- all practical measures to conserve water have been taken in the receiving area;
- a MEPA environmental review has been completed for the proposed interbasin transfer;
- a comprehensive forestry management program which balances water yields, wildlife habitat and natural beauty on watershed lands presently serving the receiving area has been implemented; and
- a reasonable instream flow is maintained in the river from which the water is diverted.

In summary, the existing Admission Policy, OP.10 provides a robust assessment of any environmental and EJ population impacts resulting from the admission of a new community, or a request from an existing contract community to purchase additional water.

Admission Process and Eligibility for Entrance Fee Waiver Criteria

Any community that has obtained the approval of the MWRA Board of Directors of its Admission Application on or before December 31, 2027, will be eligible for a waiver of the Entrance Fee unless for new communities the Maximum Amount has been reached prior to this date.

MWRA's Admission Process, as set forth in Operating Policy #10 (OP.10), would remain largely unchanged with the exception of the addition of a Rider (Attachment I) which would include the temporary provision for a waiver of the Entrance Fee. Should a community meet at least one of the following criteria (detailed more fully below), it may request a waiver of the Entrance Fee:

- local sources are impacted by water quality issues,
- local sources are located in a stressed basin, and/or
- local economic development is significantly constrained by their existing water supply.

Water Quality/Public Health Concerns (e.g., PFAS)

In reviewing this criterion, staff will consider any documentation developed for a Massachusetts' Drinking Water State Revolving Fund (SRF) application[3] in addition to information developed in community master plans or environmental review documents. Communities seeking a waiver based on a public health concern must be able to document that joining MWRA will help to address or correct:

- an exceedance of a Final or Proposed USEPA or MassDEP Maximum Contaminant Level, Treatment Technique, Maximum Residual Disinfectant Level, Action Level, or MassDEP Office of Research and Standards Guideline Level (SRF Tier V projects)
- an imminent threat to the reliable delivery of drinking water to a population, including threats caused by expected climate change impacts (SRF Tier IV projects) ; or
- water quality conditions as a result of Secondary Maximum Contaminant Level exceedances that make the water currently provided to customers aesthetically unfit to drink and result in consumers using or seeking an alternative water supply (SRF Tier III projects).

Stressed Basin

Communities seeking a waiver based on being located within a stressed basin must be able to establish and document that the community is located within a net groundwater depleted sub basin or basin with significant streamflow alteration due to water withdrawals. Communities should utilize available studies, U.S. Geological Survey stream gauges and GIS mapping tools, such as those provided in the Sustainable Water Management Initiative Interactive Tool[4] to document the status of local water resources.

Economic Development

Communities seeking a waiver based on economic development constraints must be able to establish and document that current water supplies are not adequate to address planned or expanded development within the community. Communities must provide any applicable local Economic Development Plans, regulatory filings, such as a MEPA review, and other relevant documentation, showing the need for additional water supplies to support development. Supporting materials must also include a discussion of how the admission to MWRA supports approved local and regional plans or encourages high-density, transit-oriented development.

Conclusion

For the reasons and upon the conditions set forth in this staff summary and the supporting materials, staff recommend this temporary waiver of the Entrance Fee. If approved by the Board,

[3] Drinking Water State Revolving Loan Fund 2023 Construction Evaluation Form. Guidance and Instructions. https://www.srfmadep.com/state-revolving-fund-applications-forms/dw/dwpef.pdf.
[4] https://mass-eoeea.maps.arcgis.com/apps/webappviewer/index.html?id=c4fd3ee7ab5544bbaa9d81eb47ffbc7a

staff will add a Rider to MWRA Policy OP #10, substantially in the form attached as Attachment I, to implement waiver requests. For new communities seeking to join the MWRA water system the Rider will automatically terminate on December 31, 2027 or the day the Maximum Amount has been reached, whichever is sooner. For communities currently members of the MWRA water system that are seeking to purchase additional water the Rider will automatically terminate on December 31, 2027.

BUDGET/FISCAL IMPACTS:

Waiving MWRA's Entrance Fee may encourage additional communities to join MWRA. The reallocation of the rate revenue requirement as a result of selling additional water is a significant benefit that will offset the potential loss of the more limited revenue associated with the collection of an Entrance Fee. If a waiver of the Entrance Fee encourages the sale of an additional 5 MGD of water, over a period of 25 years, based on the FY23 rate revenue requirement, this would provide approximately $204.5 million in revenue from new customers, which would reduce the existing communities' shares of the system.

ATTACHMENTS:

Attachment I - Redline version of OP.10 with draft Rider
Attachment II - Letter from MWRA Advisory Board with vote and results
Attachment III - Impact of 5 MGD and 20 MGD on FY23 Assessments by Community

Admission of New Community to MWRA Water System

Policy #: OP.10

Effective Date: ~~November 12, 2014~~ [1]	**Last Revised:** ~~11/12/2014~~
Contact: Planning Department, Operations	**Former Policy #:** OP.10
Reviewed by Chief Operating Officer: ~~Michael J. Hornbrook~~ David W. Coppes, P.E.	**Date:** ~~11/12/2014~~
Reviewed by Internal Audit: ~~John A. Mahoney~~ Claude Cormier	**Date:** ~~11/12/2014~~
Approved by Executive Director: Frederick A. Laskey	**Date:** ~~11/12/2014~~

Purpose

This policy explains the criteria and process the MWRA will use to evaluate a request for admission of a new community to the MWRA water system and requests from state, county, institutional and federal facilities for water service to locations in communities not included in section 8 (d) of MWRA's Enabling Act (St.1984, c.372).

Eligibility

This policy applies to communities seeking admission to the MWRA water system, and to state, county, institutional, and federal facilities seeking MWRA water for a location outside MWRA's water service area as set forth in section 8 (d) of MWRA's Enabling Act (St.1984, c.372).

Continued on next page

[1] This revision adds "Policy #: OP.10 Rider One --Entrance Fees" dated _____.

In this Policy This policy contains the following parts:

Continued on next page

Admission of New Community to MWRA Water System (OP.10), Continued

Admission Criteria

In evaluating whether to permit the admission of new communities to the MWRA waterworks system, the MWRA must evaluate the following two groups of criteria:

A. Enabling Act Criteria

- The MWRA must, in accordance with Section 8 (d) of Chapter 372 of the Acts of 1984, find that the following six criteria are met:
  - The safe yield of the watershed system, on the advice of the MDC, is sufficient to meet the new community's demand.
  - No existing or potential water supply source for the community has been abandoned, unless the Department of Environmental Protection (DEP) has declared that the source is unfit for drinking and cannot be economically restored for drinking purposes.
  - A water management plan has been adopted by the community and approved by the Water Resources Commission.
  - Effective demand management measures have been developed by the community, including the establishment of leak detection and other appropriate system rehabilitation programs.
  - A local water supply source feasible for development has not been identified by the community or DEP.
  - A water use survey has been completed which identifies all users within the community that consume in excess of twenty million gallons a year.
- Admission of the applicant community into the MWRA has received approval from the MWRA Advisory Board, the General Court, and the Governor.
- An applicant community has accepted the extension of MWRA's water system to the community by majority vote of the city council if a city or a majority vote of the town meeting if a town.

Continued on next page

Admission Criteria continued

- Providing water service to a state, county, institutional or federal facility outside MWRA's water service area has received approval from the MWRA Advisory Board.

B. Other Criteria

- Any expansion of the MWRA water service system shall strive for no negative impact on the interests of the current MWRA water communities, water quality, hydraulic performance of the MWRA water system, the environment, or on the interests of the watershed communities; shall attempt to achieve economic benefit for existing user communities; and shall preserve the rights of the existing member communities. Any evaluation of the impacts of new communities shall clearly evaluate all changes to system reliability.

- The applicant community has met all legal requirements for admission; and

- Upon admission, the applicant community will pay fair compensation for past investment in the MWRA waterworks system by existing user communities.

Application Process

A. Application

An applicant shall submit three copies of a completed application to the MWRA Executive Director for review. A copy shall also be submitted to the MWRA Advisory Board. MWRA staff will review and evaluate the completed application to determine whether the requirements of the Enabling Act and additional requirements can be met, and whether water service can be provided by MWRA without jeopardizing standards and requirements set forth in this policy.

Continued on next page

Application Process, continued

B. Requirements

- In a formal application for entrance to the MWRA waterworks system, an applicant community must provide detailed documentation to enable MWRA to make the necessary findings required by MWRA's Enabling Act (Section 8 (d) of St.1984, c.372).

In addition to providing documentation for the Section 8 (d) findings above, the applicant must provide the following.

- Documentation of approvals from the Secretary of Environmental Affairs in the MEPA process, the Water Resources Commission in the Interbasin Transfer Act process, the MWRA Advisory Board, the DEP on local source feasibility, the General Court, and the Governor. Prior to a formal application to MWRA, MWRA will strive to streamline the approval process, by review of application material concurrently with other approval processes, and by coordination with state agencies to document environmental and hydraulic impacts on MWRA's system.

- A detailed description of the water conservation and water accountability programs undertaken by the community and other entities including: leak detection and repair, commercial and industrial water conservation, residential water conservation efforts, large meter downsizing, meter replacement, municipal facility conservation, unaccounted-for water analysis (present data for UAW levels in last 3 years), true cost pricing and conservation based pricing for water and sewer service.

- Communities shall provide a plan for water conservation. MWRA encourages communities to have a plan that adheres to the Commonwealth's water conservation standards, including guidelines for lawn and landscapes. (Enforcement shall be the responsibility of the Water Resources Commission (WRC), Department of Environmental Protection (DEP) and other Commonwealth agencies.)

- A description (and copy) of municipal zoning and non-zoning measures designed to protect local sources of supply with a comparison showing how they meet DEP's regulations and policies for adequate water supply protection measures.

Continued on next page

Application Process, continued

- Copies of any studies conducted on existing and potential local water source safe yield, protection needs, contamination threats, and water demand forecasts. If no studies are available on a potential local source known to the community or DEP, then the applicant should prepare documentation on estimated safe yield, protection needs and contamination threats, even for those sources previously determined to be infeasible to develop.

- A disaggregation of the community's total water consumption by customer class: residential, industrial, commercial, municipal facilities, unaccounted-for, other, and agricultural. A listing of large customers using over one million gallons a year should be provided.

- A Local Water Supply Management Plan if the applicant is a community. For a plan contents, refer to Attachment A. A Water Management Plan approved by the Water Resources Commission will also satisfy MWRA's Local Water Supply Management Plan requirement. A community's application must address how the requested connection is consistent with the stated objectives of the community's Local Water Supply Management Plan.

  All other applicants (*i.e.,* state, county, institutional, and federal facilities) must address how the proposed water connection/water use is consistent with a Local Water Supply Management Plan, if it exists. MWRA also reserves the right to reject applications for those cases in which the community does not have a Local Water Supply Management Plan.

Continued on next page

Application Process, continued

C. MWRA Review of Application

Upon receipt of an application for admission to the waterworks system the MWRA will:

- Review the application's documentation on the necessary findings required by the MWRA's Enabling Act, and other criteria listed in the Admission Criteria.
- Review documentation submitted pursuant to the Requirements section of this Policy (Section B.) to help determine if MWRA can make the findings required listed in Admission Criteria.
- Analyze the applicant's demand impact on the MWRA waterworks system and consider the projected long-term demand of the system with the new community and contrast it to the MWRA's operations through average, wet and drought scenarios. The analysis must include the possibility of increased usage of MWRA supplies by partially supplied and non-MWRA communities due to drought conditions. Impacts on service to other community connections under various hydraulic conditions and to reservoir and watershed conditions must also be evaluated.
- Upon the request of the applicant, and subsequent to the completion of application review by MWRA staff and following consultation with the Advisory Board, submit a status report to the Board of Directors to inform it of the request, staffs' review and the status of other pending permits or approvals.

Continued on next page

Application Process, continued

D. Concurrent Reviews

Other regulatory approvals or permits may be required before a request for service may be approved. It is the responsibility of the applicant to obtain all such approvals. Copies of all applications or requests for regulatory approval shall be submitted to the MWRA as early as practicable to facilitate MWRA review of the request. MWRA will cooperate with other regulatory agencies to coordinate its review where possible, and will review and comment in other regulatory processes as appropriate. Final action by MWRA cannot be taken until the following regulatory approvals, where required, have been obtained.

- Massachusetts Environmental Policy Act – Executive Office of Environmental Affairs
- Interbasin Transfer Act - Water Resources Commission
- Local water supply source feasibility - Massachusetts Department of Environmental Protection

E. Legislation

Legislation is required to extend MWRA's water system to a local body not listed in Section 8 (d). Proposed legislation should be submitted to MWRA for review before filing. MWRA may require that certain conditions be included in the proposed legislation.

Continued on next page

Water Supply Agreement

If MWRA approves the request for new service, it will establish appropriate terms and conditions of service in the form of a water supply agreement for an initial term of five years. The agreement will be consistent with MWRA's Continuation of Contract Water Supply regulations (360 CMR 11.00). Before contract renewal, MWRA will reevaluate and assess the status of the community's demand management efforts.

The agreement will set forth as appropriate:

- Firm limits on usage, including average and maximum daily use of MWRA water and a stipulation that any increase beyond the stated amounts would require a contract revision and recalculation of the entrance fee. Any significant increase will also require new approval by the MWRA Advisory Board and MWRA Board of Directors.
- A requirement that the applicant assume all costs of connection and pay an entrance fee.
- A requirement that the applicant continue to use all local non-MWRA sources of water to the maximum feasible extent.
- A requirement that the applicant continue to implement all practicable conservation measures. Communities shall be encouraged to adhere to the Commonwealth's water conservation standards, including guidelines for lawn and landscapes, and follow the MWRA's regulations for Leak Detection (360 C.M.R. 12.00).
- A requirement that the community protect local sources of supply in accordance with DEP's guidelines for water supply protection measures.
- Other conditions as may be appropriate.

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Waivers

The MWRA may, in its discretion, waive any of the conditions or requirements set forth in this Policy and Procedure, not otherwise mandated by law or regulation, if it finds that the community has demonstrated unusual factors or extraordinary circumstances which would make imposition of the condition or requirement upon that community unfair or inappropriate and finds that the proposed action will not jeopardize the MWRA's ability to supply its water communities.

Connection Costs and Entrance Fees outlined in the following sections shall not be waived.

Entrance Fees

The MWRA will charge an entrance fee to cover the new community's fair share of the costs of the waterworks system in place at the time user joins. The entrance fee may be paid in one lump sum, or may be paid pursuant to up to a 25-year, interest-free payment plan with a grace period for the first three years, with payments to be made in years 4-25. The 25-year, interest-free payment plan shall be subject to review by the Board of Directors every five years. To be eligible for this multi-year, interest-free payment plan, a new community must take substantive steps toward admission to the MWRA prior to the adoption of any revised policy by the Board of Directors. Substantive steps include any of the following: affirmative vote to join MWRA by Town Meeting, City Council or Board of Directors, or submission of MEPA documentation indicating MWRA is the preferred option and subsequent completion of MEPA process in a timely manner.

New communities joining the MWRA waterworks system as well as communities admitted to the MWRA since 2002 who desire to increase their MWRA-approved withdrawal shall be eligible for the interest-free payment plan. The entrance fee recovers the new user's proportional share of the waterworks system's asset base, which has already been paid for by the existing users of the system. The net asset value charge will be determined through allocating 25% of the net asset value to peak use and the remaining 75% to average use.

MWRA system average annual use and peak six-month average use will be based upon the prior five calendar years of average of water consumption. The user's projected need for MWRA water will be based upon a detailed analysis of local supplies and shortfalls. Its average annual use and peak six-month average use may be based upon its projected need, but in no case shall the projected need be more than the amount approved under MEPA and the Interbasin Transfer Act. Firm contract limits will be established based upon the usage volumes used in the entrance fee calculation.

The formula is as follows:

75% of NAV Allocated to Average Use +25% of NAV Allocated to Peak Six-month system use = Total Entrance Fee

Average Use

$$\frac{\text{New user's projected MWRA "average use" needs}}{\text{System "average use"}} \times \text{NAV of of Total Waterworks System}$$

Peak Use

$$\frac{\text{New user's projected MWRA "peak use" needs}}{\text{System "peak use"}} \times \text{NAV of Total Waterworks System}$$

Continued on next page

Entrance Fees, continued	If the applicant community has purchased MWRA water under an emergency supply agreement and has paid charges, which include asset value contributions, then those contributions will be treated as credits against the total entrance fee. Payments of premium charges under an emergency supply agreement are not credited against the entrance fee.
Connections and Connection Costs	All new community water system connections shall be made directly to the MWRA transmission system wherever practical. The applicant community must pay all the costs of providing the connection. The MWRA will charge the costs to the new user as they are incurred, and as well as expenditures by MWRA for outside services necessary to make the connection. These costs may include, but are not limited to, costs of preliminary and final design, land acquisition, environmental review, pumping and storage facilities, and actual construction including construction services and resident inspection. The new user will pay only the connection cost incurred to serve its own needs. If other existing users will benefit from the new pipelines and facilities, the MWRA will assume an appropriate portion of the connection costs that will be added to the overall capital costs for water.
Application of Individual Users	The MWRA Enabling Act allows for arrangements involving the extension of the waterworks system to any local body, institution, agency or facility of the commonwealth or federal government if MWRA finds that the additional demand will not jeopardize the delivery of water to existing users and the MWRA Advisory Board approves arrangements beyond six months in length. All requests from state, county, institutional, and federal facilities outside the water service area will be subject to the policies and procedures outlined above, including the payment of entrance fees and connection costs. Connections and withdrawals by private entities outside the water service area shall remain prohibited. In the event exceptions arise to this prohibition, the applicant will be subject to the policies and procedures outlined above and shall obtain approval from: the receiving community; the transporting community; regulatory bodies, where required; the MWRA Advisory Board; the MWRA Board of Directors; and the Governor and General Court.

Continued on next page

Admission of New Community to MWRA Water System (OP.10), Continued

Annual Update	MWRA staff shall provide an annual update to the MWRA Board of Directors on the status of any new connections (connections approved within the preceding five years) into the MWRA system. This annual update shall at a minimum include information regarding the proponent entity's compliance with the conditions of approvals as stipulated within the water supply agreement and/or other affiliated contractual arrangements with the MWRA; and the status of payments due to either the MWRA or the proponent entity.

Attachment A

Local Water Supply Management Plan Outline

Water Supply

- Identify existing and potential water supplies in the community, zone II delineations, Interim Wellhead Protection Zones, and/or Zones A and B delineations for surface water sources, and watershed boundaries.
- Describe source water protection program, including compliance with DEP source water protection regulations.
- Identification of all water supply options, including compliance with DEP water protection regulations.
- Identification of all water supply options, including local, regional and conservation options.

Regional Plans

- Describe any existing regional or watershed plans and how these plans relate to the plans of the local community. Refer to reports and plans developed by regional planning agencies, local watershed associations, and other appropriate regional and/or non-governmental agencies.

Future Plans

- Analysis of existing zoning and master plan, including EOEA build-out analyses available from Massachusetts GIS.
- Identification of future water and wastewater needs and various alternatives for meeting these needs.
- Summary and evaluation of water infrastructure plans based on build-out and future needs.
- Overall summary based on above information.

Analysis and Conclusions

- An action plan, with timetables for implementation of the recommendations of the plan, a budget, and identification of people responsible for implementation.

DRAFT

Policy #: OP.10 Rider One--Entrance Fees

Dated: _____

In accordance with the terms of this Policy #: OP.10 Rider One ("Rider"), and notwithstanding anything to the contrary in Policy #: OP.10, MWRA may, in its sole discretion, waive the Entrance Fee for: (a) one or more new communities to join the MWRA water system ("New Communities"); and (b) for one or more communities that are currently members of the MWRA water system to purchase additional water ("Additional Purchase Communities").[2] This waiver is limited to a maximum total amount of 20 million gallons per day of water by one or more New Communities seeking entrance to the MWRA water system, which also seek a corresponding waiver of the Entrance Fee as reflected in a MWRA Board of Directors-approved Admission Application ("Maximum Amount"). The calculation of the Maximum Amount shall not include any amounts of water that may be approved by the MWRA Board of Directors for the Additional Purchase Communities. This Rider is effective as of _____, 2022. For New Communities seeking to join the MWRA water system this Rider shall automatically terminate on December 31, 2027, or the day the Maximum Amount has been reached, whichever is sooner. For Additional Purchase Communities that are seeking to purchase additional water this Rider shall automatically terminate on December 31, 2027.

Admission Process and Eligibility Criteria:

New Communities and Additional Purchase Communities requesting a waiver of the Entrance Fee must otherwise comply with MWRA Policy #: OP.10. New Communities and Additional Purchase Communities will be responsible for the cost of connecting to MWRA's water system. New Communities and Additional Purchase Communities that have obtained the approval of the MWRA Board of Directors of its Admission Application on or before December 31, 2027 will be eligible for a waiver, unless for New Communities the Maximum Amount has been reached prior to this date. Additionally, New Communities and Additional Purchase Communities requesting a waiver of the Entrance Fee shall demonstrate that they meet one or more of the following eligibility criteria, as more fully described below:

1. local sources of water supply are impacted by water quality/public health concerns;

2. local sources of water supply are located in a stressed basin; and/or

3. local economic development is significantly constrained by their existing water supply.

1. Water Quality/Public Health Concerns (*e.g.*, PFAS)

In reviewing for Entrance Fee waiver eligibility under this criterion, MWRA staff will consider any New Community or Additional Purchase Community documentation developed for a Massachusetts'

[2] The Additional Purchase Communities each have been admitted to the MWRA water system under Policy #: OP.10, prior to the effective date of the Rider. The Additional Purchase Communities have Water Supply Agreements with MWRA, which contain conditions requiring, among other requirements, a revision to the applicable Entrance Fee if the community seeks an increase to volume of water that the community wishes withdraw from the MWRA water system. The Additional Purchase Communities are limited to the following municipalities: Ashland, Burlington, Dedham (Dedham Westwood Water District), Reading, Stoughton, Westwood (Dedham Westwood Water District), and Wilmington.

Drinking Water State Revolving Fund ("SRF") application[3] in addition to information developed in community master plans or environmental review documents. New Communities and Additional Purchase Communities seeking an Entrance Fee waiver based on a public health concern must be able to document that joining MWRA will help to address or correct:

- an exceedance of a Final or Proposed EPA or Commonwealth of Massachusetts Maximum Contaminant Level, Treatment Technique, Maximum Residual Disinfectant Level, Action Level, or MassDEP Office of Research and Standards Guideline Level (SRF Tier V projects);
- an imminent threat to the reliable delivery of drinking water to a population, including threats caused by expected climate change impacts (SRF Tier IV projects); or
- water quality conditions as a result of Secondary Maximum Contaminant Level exceedances that make the water currently provided to customers aesthetically unfit to drink and result in consumers using or seeking an alternative water supply (SRF Tier III projects).

2. Stressed Basin

New Communities and Additional Purchase Communities seeking a waiver of the Entrance Fee based on being located within a stressed basin criterion must be able to establish and document that the community is located within a net groundwater depleted sub basin or basin with significant streamflow alteration due to water withdrawals. New Communities and Additional Purchase Communities should utilize available studies, U.S. Geological Survey stream gauges and GIS mapping tools, such as those provided in the Sustainable Water Management Initiative Interactive Tool[4] to document the status of local water resources.

3. Economic Development

New Communities and Additional Purchase Communities seeking a waiver of the Entrance Fee based on the economic development criterion, must be able to establish and document that current water supplies are not adequate to address planned or expanded development within the community. New Communities and Additional Purchase Communities must provide any applicable local Economic Development Plans, regulatory filings, such as a MEPA review, and other relevant documentation, showing the need for additional water supplies to support development. Supporting materials must also include a discussion of how the admission to MWRA supports approved local and regional plans or encourages high-density, transit-oriented development.

[3] Drinking Water State Revolving Loan Fund 2023 Construction Evaluation Form. Guidance and Instructions. https://www.srfmadep.com/state-revolving-fund-applications-forms/dw/dwpef.pdf.
[4] https://mass-eoeea.maps.arcgis.com/apps/webappviewer/index.html?id=c4fd3ee7ab5544bbaa9d81eb47ffbc7a

Advocacy & Accountability

Representing Over 3 Million People in Massachusetts Communities Since 1985

June 24, 2022

By email

Bethany A. Card, Chair, MWRA Board of Directors and Secretary of Energy & Environmental Affairs
Frederick A. Laskey, Executive Director, MWRA

Re: Proposal to Modify MWRA Policy #OP.10

Dear Madam Secretary and Mr. Laskey:

At its meeting on June 16, 2022, the MWRA Advisory Board voted to recommend to the MWRA Board of Directors modifications to MWRA Policy #OP.10 – Admission of New Community to MWRA Water System. The language voted by the Advisory Board is as follows:

> *Within five years from adoption by the MWRA Board of Directors…*
>
> *…communities outside the MWRA service area seeking entrance into the MWRA water system, who are dealing with water quality/public health concerns (such as PFAS levels, restoration/protection of a depleted River Basin), or for the opportunity for increased economic development within the community and Commonwealth),…*
>
> *shall be eligible for an entrance fee waiver…*
>
> *…provided that any costs associated with connecting to the MWRA's water system are not to be funded or paid by MWRA, and the amount of new water sold shall not exceed 20 MGD.*

Discussion on this matter began at the MWRA's Executive Committee in the fall of 2021 and represented a thorough and active debate amongst the committee's members. After each discussion, there were additional requests for information, which Advisory Board staff provided in coordination with MWRA staff. At its February 11, 2022 meeting, the Executive Committee voted 11 members in favor and 5 opposed to bring the proposal to the full Advisory Board for discussion and a potential vote.

Discussion at the Advisory Board was similarly thorough, with new concerns and questions being raised. The Advisory Board, again in coordination with MWRA staff, provided responses to these requests, and the motion was made at the June 16th Advisory Board meeting. This vote was conducted as a weighted vote of the Advisory Board with voting members totaling 61.64% of total vote share present. Of the quorum present, 97.14% voted in favor (19 members) 2.013% opposed (2 members), and 0.825% abstained (1 member) to recommend these modifications to the MWRA Board of Directors for their consideration.

The detailed packet of information that was provided to Advisory Board members can be found on our website here: https://www.mwraadvisoryboard.com/document-library/information-packet-proposal-to-amend-mwra-policy-op-10-admission-of-a-new-community-to-mwra-water-system/

Charlestown Navy Yard
100 First Avenue, Building 39 – 4th Floor
Boston, MA 02129

Joseph E. Favaloro
Executive Director
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On behalf of the Advisory Board, I respectfully request that this proposal be brought to the MWRA Board of Directors for consideration, discussion, and hopefully adoption.

Please do not hesitate to contact Advisory Board staff with any questions.

Sincerely,

Lou Taverna
Chairman, MWRA Advisory Board

cc: MWRA Board of Directors
MWRA Advisory Board Executive Committee

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Massachusetts Water Resources Authority

Annual Impact of Additional Water Use: 5 MGD Customer

FY23 Water Utility Rate Revenue Requirement	$288,304,865
Annual Entrance Fee Revenue	$961,045 (25 year payback, 3 year grace)
FY23 Water Utility Rate Revenue Requirement	$287,343,820

	Based On Current Customers				Based On Current Customers Plus Additional 5 MGD Customer					
	Fiscal Year	2023	Calendar Year	2021	Fiscal Year	2023	Calendar Year	2021		
MWRA WATER CUSTOMER	Base Water Assessment	Share of System Assessment	Adjusted Water Use (MG/YR)	Share of Water Use	Base Water Assessment	Share of System Water Use and Assessment	Adjusted Water Use (MG/YR)	Share of Water Use	Assessment Impact of New Water Use	
ARLINGTON	$5,648,095	1.96%	1,220.385	1.96%	$5,469,043	1.90%	1,220.385	1.90%	-$179,051	-3.2%
ASHLAND	0	0.00%	0.000	0.00%	0	0.00%	0.000	0.00%	0	#DIV/0!
BELMONT	3,134,847	1.09%	677.347	1.09%	3,035,469	1.06%	677.347	1.06%	-99,378	-3.2%
BOSTON (BWSC)	99,390,504	34.47%	21,475.329	34.47%	96,239,704	33.49%	21,475.329	33.49%	-3,150,800	-3.2%
BROOKLINE	8,018,472	2.78%	1,732.553	2.78%	7,764,276	2.70%	1,732.553	2.70%	-254,195	-3.2%
BURLINGTON	1,253,355	0.43%	270.813	0.43%	1,213,622	0.42%	270.813	0.42%	-39,733	-3.2%
CANTON	2,022,211	0.70%	436.940	0.70%	1,958,104	0.68%	436.940	0.68%	-64,107	-3.2%
CHELSEA	5,460,876	1.89%	1,179.933	1.89%	5,287,760	1.84%	1,179.933	1.84%	-173,116	-3.2%
DEDHAM-WESTWOOD W.D.	256,078	0.09%	55.331	0.09%	247,960	0.09%	55.331	0.09%	-8,118	-3.2%
EVERETT	6,422,774	2.23%	1,387.770	2.23%	6,219,164	2.16%	1,387.770	2.16%	-203,610	-3.2%
FRAMINGHAM	9,531,024	3.31%	2,059.370	3.31%	9,228,879	3.21%	2,059.370	3.21%	-302,145	-3.2%
LEOMINSTER	0	0.00%	0.000	0.00%	0	0.00%	0.000	0.00%	0	
LEXINGTON	8,493,467	2.95%	1,835.185	2.95%	8,224,213	2.86%	1,835.185	2.86%	-269,253	-3.2%
LYNN (LWSC)	187,732	0.07%	40.563	0.07%	181,781	0.06%	40.563	0.06%	-5,951	-3.2%
LYNNFIELD W.D.	865,543	0.30%	187.018	0.30%	838,104	0.29%	187.018	0.29%	-27,439	-3.2%
MALDEN	8,758,033	3.04%	1,892.350	3.04%	8,480,393	2.95%	1,892.350	2.95%	-277,640	-3.2%
MARBLEHEAD	2,941,372	1.02%	635.543	1.02%	2,848,127	0.99%	635.543	0.99%	-93,245	-3.2%
MARLBOROUGH	6,733,069	2.34%	1,454.816	2.34%	6,519,622	2.27%	1,454.816	2.27%	-213,446	-3.2%
MEDFORD	7,666,268	2.66%	1,656.452	2.66%	7,423,238	2.58%	1,656.452	2.58%	-243,030	-3.2%
MELROSE	3,499,715	1.21%	756.184	1.21%	3,388,770	1.18%	756.184	1.18%	-110,945	-3.2%
MILTON	4,022,582	1.40%	869.160	1.40%	3,895,062	1.36%	869.160	1.36%	-127,521	-3.2%
NAHANT	578,355	0.20%	124.965	0.20%	560,021	0.19%	124.965	0.19%	-18,335	-3.2%
NEEDHAM	1,464,186	0.51%	316.367	0.51%	1,417,769	0.49%	316.367	0.49%	-46,416	-3.2%
NEWTON	14,157,661	4.91%	3,059.049	4.91%	13,708,846	4.77%	3,059.049	4.77%	-448,815	-3.2%
NORTHBOROUGH	1,508,715	0.52%	325.988	0.52%	1,460,887	0.51%	325.988	0.51%	-47,828	-3.2%
NORWOOD	4,502,690	1.56%	972.897	1.56%	4,359,949	1.52%	972.897	1.52%	-142,741	-3.2%
PEABODY	3,781,670	1.31%	817.106	1.31%	3,661,786	1.27%	817.106	1.27%	-119,884	-3.2%
QUINCY	13,856,502	4.81%	2,993.977	4.81%	13,417,234	4.67%	2,993.977	4.67%	-439,268	-3.2%
READING	2,807,828	0.97%	606.688	0.97%	2,718,817	0.95%	606.688	0.95%	-89,012	-3.2%
REVERE	6,348,919	2.20%	1,371.812	2.20%	6,147,651	2.14%	1,371.812	2.14%	-201,268	-3.2%
SAUGUS	5,020,868	1.74%	1,084.860	1.74%	4,861,700	1.69%	1,084.860	1.69%	-159,168	-3.2%
SOMERVILLE	9,471,778	3.29%	2,046.569	3.29%	9,171,511	3.19%	2,046.569	3.19%	-300,267	-3.2%
SOUTHBOROUGH	984,014	0.34%	212.616	0.34%	952,820	0.33%	212.616	0.33%	-31,194	-3.2%
STONEHAM	3,289,382	1.14%	710.738	1.14%	3,185,105	1.11%	710.738	1.11%	-104,277	-3.2%
STOUGHTON	118,822	0.04%	25.674	0.04%	115,055	0.04%	25.674	0.04%	-3,767	-3.2%
SWAMPSCOTT	2,552,649	0.89%	551.551	0.89%	2,471,727	0.86%	551.551	0.86%	-80,922	-3.2%
WAKEFIELD	2,617,209	0.91%	565.501	0.91%	2,534,240	0.88%	565.501	0.88%	-82,969	-3.2%
WALTHAM	11,044,210	3.83%	2,386.325	3.83%	10,694,096	3.72%	2,386.325	3.72%	-350,115	-3.2%
WATERTOWN	4,147,401	1.44%	896.130	1.44%	4,015,924	1.40%	896.130	1.40%	-131,478	-3.2%
WELLESLEY	3,325,451	1.15%	718.531	1.15%	3,220,030	1.12%	718.531	1.12%	-105,421	-3.2%
WESTON	2,456,156	0.85%	530.702	0.85%	2,378,293	0.83%	530.702	0.83%	-77,863	-3.2%
WILMINGTON	716,510	0.25%	154.817	0.25%	693,796	0.24%	154.817	0.24%	-22,714	-3.2%
WINCHESTER	1,943,817	0.67%	420.001	0.67%	1,882,196	0.66%	420.001	0.66%	-61,621	-3.2%
WINTHROP	1,918,276	0.67%	414.482	0.67%	1,857,464	0.65%	414.482	0.65%	-60,812	-3.2%
WOBURN	5,385,782	1.87%	1,163.707	1.87%	5,215,046	1.81%	1,163.707	1.81%	-170,736	-3.2%
NEW 5 MGD CUSTOMER					8,178,569	2.85%	1,825.000	2.85%	8,178,569	
TOTAL	$288,304,865	100.0%	62,294.098	100.0%	$287,343,820	100.0%	64,119.098	100.0%	-$961,045	-0.3%

Additional Daily Water Use:	5.000 mg
5 mgd Entrance Fee (FY22):	21,142,998

Massachusetts Water Resources Authority

Annual Impact of Additional Water Use: 20 MGD Customer

FY23 Water Utility Rate Revenue Requirement	$288,304,865	
Annual Entrance Fee Revenue	$3,581,053	(25 year payback, 3 year grace)
FY23 Water Utility Rate Revenue Requirement	$284,723,812	

	Based On Current Customers				Based On Current Customers Plus Additional 20 MGD Customer					
	Fiscal Year	2023	Calendar Year	2021	Fiscal Year	2023	Calendar Year	2021		
MWRA WATER CUSTOMER	Base Water Assessment	Share of System Assessment	Adjusted Water Use (MG/YR)	Share of Water Use	Base Water Assessment	Share of System Water Use and Assessment	Adjusted Water Use (MG/YR)	Share of Water Use	Assessment Impact of New Water Use	
ARLINGTON	$5,648,095	1.96%	1,220.385	1.96%	$4,992,847	1.75%	1,220.385	1.75%	-$655,247	-11.6%
ASHLAND	0	0.00%	0.000	0.00%	0	0.00%	0.000	0.00%	0	#DIV/0!
BELMONT	3,134,847	1.09%	677.347	1.09%	2,771,167	0.97%	677.347	0.97%	-363,680	-11.6%
BOSTON (BWSC)	99,390,504	34.47%	21,475.329	34.47%	87,860,001	30.86%	21,475.329	30.86%	-11,530,503	-11.6%
BROOKLINE	8,018,472	2.78%	1,732.553	2.78%	7,088,232	2.49%	1,732.553	2.49%	-930,240	-11.6%
BURLINGTON	1,253,355	0.43%	270.813	0.43%	1,107,950	0.39%	270.813	0.39%	-145,404	-11.6%
CANTON	2,022,211	0.70%	436.940	0.70%	1,787,610	0.63%	436.940	0.63%	-234,601	-11.6%
CHELSEA	5,460,876	1.89%	1,179.933	1.89%	4,827,348	1.70%	1,179.933	1.70%	-633,528	-11.6%
DEDHAM-WESTWOOD W.D.	256,078	0.09%	55.331	0.09%	226,369	0.08%	55.331	0.08%	-29,708	-11.6%
EVERETT	6,422,774	2.23%	1,387.770	2.23%	5,677,654	1.99%	1,387.770	1.99%	-745,120	-11.6%
FRAMINGHAM	9,531,024	3.31%	2,059.370	3.31%	8,425,310	2.96%	2,059.370	2.96%	-1,105,714	-11.6%
LEOMINSTER	0	0.00%	0.000	0.00%	0	0.00%	0.000	0.00%	0	
LEXINGTON	8,493,467	2.95%	1,835.185	2.95%	7,508,122	2.64%	1,835.185	2.64%	-985,345	-11.6%
LYNN (LWSC)	187,732	0.07%	40.563	0.07%	165,953	0.06%	40.563	0.06%	-21,779	-11.6%
LYNNFIELD W.D.	865,543	0.30%	187.018	0.30%	765,130	0.27%	187.018	0.27%	-100,414	-11.6%
MALDEN	8,758,033	3.04%	1,892.350	3.04%	7,741,995	2.72%	1,892.350	2.72%	-1,016,038	-11.6%
MARBLEHEAD	2,941,372	1.02%	635.543	1.02%	2,600,137	0.91%	635.543	0.91%	-341,235	-11.6%
MARLBOROUGH	6,733,069	2.34%	1,454.816	2.34%	5,951,951	2.09%	1,454.816	2.09%	-781,118	-11.6%
MEDFORD	7,666,268	2.66%	1,656.452	2.66%	6,776,888	2.38%	1,656.452	2.38%	-889,380	-11.6%
MELROSE	3,499,715	1.21%	756.184	1.21%	3,093,705	1.09%	756.184	1.09%	-406,009	-11.6%
MILTON	4,022,582	1.40%	869.160	1.40%	3,555,914	1.25%	869.160	1.25%	-466,668	-11.6%
NAHANT	578,355	0.20%	124.965	0.20%	511,259	0.18%	124.965	0.18%	-67,096	-11.6%
NEEDHAM	1,464,186	0.51%	316.367	0.51%	1,294,322	0.45%	316.367	0.45%	-169,863	-11.6%
NEWTON	14,157,661	4.91%	3,059.049	4.91%	12,515,201	4.40%	3,059.049	4.40%	-1,642,460	-11.6%
NORTHBOROUGH	1,508,715	0.52%	325.988	0.52%	1,333,686	0.47%	325.988	0.47%	-175,029	-11.6%
NORWOOD	4,502,690	1.56%	972.897	1.56%	3,980,323	1.40%	972.897	1.40%	-522,367	-11.6%
PEABODY	3,781,670	1.31%	817.106	1.31%	3,342,950	1.17%	817.106	1.17%	-438,720	-11.6%
QUINCY	13,856,502	4.81%	2,993.977	4.81%	12,248,980	4.30%	2,993.977	4.30%	-1,607,522	-11.6%
READING	2,807,828	0.97%	606.688	0.97%	2,482,086	0.87%	606.688	0.87%	-325,742	-11.6%
REVERE	6,348,919	2.20%	1,371.812	2.20%	5,612,368	1.97%	1,371.812	1.97%	-736,552	-11.6%
SAUGUS	5,020,868	1.74%	1,084.860	1.74%	4,438,386	1.56%	1,084.860	1.56%	-582,482	-11.6%
SOMERVILLE	9,471,778	3.29%	2,046.569	3.29%	8,372,937	2.94%	2,046.569	2.94%	-1,098,841	-11.6%
SOUTHBOROUGH	984,014	0.34%	212.616	0.34%	869,857	0.31%	212.616	0.31%	-114,158	-11.6%
STONEHAM	3,289,382	1.14%	710.738	1.14%	2,907,774	1.02%	710.738	1.02%	-381,608	-11.6%
STOUGHTON	118,822	0.04%	25.674	0.04%	105,037	0.04%	25.674	0.04%	-13,785	-11.6%
SWAMPSCOTT	2,552,649	0.89%	551.551	0.89%	2,256,511	0.79%	551.551	0.79%	-296,138	-11.6%
WAKEFIELD	2,617,209	0.91%	565.501	0.91%	2,313,581	0.81%	565.501	0.81%	-303,628	-11.6%
WALTHAM	11,044,210	3.83%	2,386.325	3.83%	9,762,948	3.43%	2,386.325	3.43%	-1,281,262	-11.6%
WATERTOWN	4,147,401	1.44%	896.130	1.44%	3,666,252	1.29%	896.130	1.29%	-481,149	-11.6%
WELLESLEY	3,325,451	1.15%	718.531	1.15%	2,939,658	1.03%	718.531	1.03%	-385,793	-11.6%
WESTON	2,456,156	0.85%	530.702	0.85%	2,171,212	0.76%	530.702	0.76%	-284,944	-11.6%
WILMINGTON	716,510	0.25%	154.817	0.25%	633,386	0.22%	154.817	0.22%	-83,124	-11.6%
WINCHESTER	1,943,817	0.67%	420.001	0.67%	1,718,311	0.60%	420.001	0.60%	-225,506	-11.6%
WINTHROP	1,918,276	0.67%	414.482	0.67%	1,695,733	0.60%	414.482	0.60%	-222,543	-11.6%
WOBURN	5,385,782	1.87%	1,163.707	1.87%	4,760,966	1.67%	1,163.707	1.67%	-624,816	-11.6%
NEW 20 MGD CUSTOMER					29,865,806	10.49%	7,300.000	10.49%	29,865,806	
TOTAL	$288,304,865	100.0%	62,294.098	100.0%	$284,723,812	100.0%	69,594.098	100.0%	-$3,581,053	-1.2%

Additional Daily Water Use:	20.000 mg
20 mgd Entrance Fee (FY22):	78,783,168

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Section 4 Walnut Street Bridge Pipe Restraint Replacement
R. Zoppo Corp.
Contract 7483, Change Order 3

Corinne M. Barrett, Director, Construction
Jeffrey Bina, P.E. Construction Coordinator
Preparer/Title

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

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Change Order 3 to Contract 7483, Section 4 Walnut Street Bridge Pipe Restraint Replacement, for an amount not to exceed $90,000, increasing the contract from $388,900 to $478,900, with no increase in contract term.

Further, to authorize the Executive Director to approve additional change orders as may be needed to Contract 7483 in an amount not to exceed the aggregate of $78,725, and 180 days in accordance with the Management Policies and Procedures of the Board of Directors.

DISCUSSION:

The existing pipe bridge at Walnut Street in Somerville spans the Lowell line of the MBTA commuter rail system and supports MWRA's Section 4 pipe, a 48-inch diameter water transmission pipeline, which supplies water to the Low Service pressure zone communities including Somerville, Medford, Malden, Everett, Revere, and Chelsea, as well as the Spot Pond Storage Facility. The pipe bridge was built in 1939 and has an approximate span between bridge abutments of 90 feet. An inspection of the pipe restraints showed significant corrosion of the steel rods to less than half of the original diameter and one rod missing. These rods restrain the full thrust load of the operating pipe and must be replaced as soon as possible.

Contract 7483 is to provide for the removal and replacement of the pipe restraining rods and support brackets for the full span of the pipe, and removal and replacement of loose and degraded grout along the bottom chord of the truss structure. Due to the need for a MBTA Right of Way access permit and the need for special equipment to access the bridge, the contract also provides a structural condition assessment of the bridge truss by a qualified structural engineer. Removal and replacement of the restraining rods will require Section 4 to be isolated and depressurized, which cannot take place during the high demand period from May 15 to September 15, and is restricted to a four-week isolation. In addition, work along and over the commuter rail tracks requires coordination and flaggers from Keolis and MBTA.

This Change Order

Change Order 3 consists of the following item:
Furnish and Install Two Steel Collars
Around Section 4 Cast Iron Pipes Not to Exceed $90,000

This contract requires the removal and replacement of three existing thrust restraint rods and installation of one missing fourth thrust restraint rod on the 48-inch Cast Iron Pipe spanning the Walnut Street Pipe Bridge.

Attachment point for missing rod highlighted with red arrow. Obstructing structural member highlighted with yellow arrow.

Prior to construction commencing, a thick amount of vegetation, a MBTA fence and the required MBTA Right of Way access permit along with the need for specialized access equipment, prevented access to confirm the location of the fourth restraint rod. Contract work included removal of this vegetation and acquiring the required permits and providing the necessary access equipment. After commencement of the contract, the contractor provided access to investigate existing conditions. Field investigation confirmed an obstruction that prevents the fourth rod from being installed as specified. The obstruction is a structural member and cannot be removed or relocated without extraordinary measures.

In order to install the fourth restraint rod, a steel collar must be installed at each end of the pipe crossing. This collar will allow the transfer of thrust load radially to avoid the obstruction. All four thrust rod loads will be shifted approximately 19 degrees around the perimeter of the pipe using these two collars. This shift will allow installation of the thrust restraint rods without interference with the pipe bridge structural member.

The approved PCO for this item of work was identified by MWRA staff as an unforeseen condition. MWRA staff and the Contractor have agreed to an amount not to exceed $90,000 for this additional work with no increase in contract term.

CONTRACT SUMMARY:

	Amount	Time	Dated
Original Contract:	$314,900	180 Days	02/15/22
Change Orders:			
Change Order 1*	$14,000	0 Days	04/11/22
Change Order 2*	$60,000	180 Days	07/28/22
Change Order 3	$90,000	0 Days	Pending
Total Change Orders:	$164,000	180 Days	
Adjusted Contract:	$478,900	360 Days	

*Approved under delegated authority

If Change Order 3 is approved, the cumulative total value of all change orders to this contract will be $164,000 or 56% of the original contract amount. Work on this project is approximately 51% complete.

BUDGET/FISCAL IMPACT:

The FY2023 CIP includes $403,900 for Contract 7483. The adjusted contract amount is $478,900 or $75,000 over the CIP amount. This amount will be absorbed within the five-year CIP spending cap.

MBE/WBE PARTICIPATION:

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

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Agency-Wide Technical Assistance Consulting Services
Contract 7692, Amendment 3
CDM Smith Inc.

COMMITTEE: Water Policy and Oversight

_____ INFORMATION
_X_ VOTE

John P. Colbert, P.E., Chief Engineer
Rebecca Weidman, Director, Env. and Reg. Affairs
Meredith R. Norton, Program Manager
Preparer/Title

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

RECOMMENDATION:

To authorize the Executive Director, on behalf of the Authority, to approve Amendment 3 to Contract 7692, Agency-Wide Technical Assistance Consulting Services, with CDM Smith Inc., increasing the contract amount by $250,000, from $4,000,000 to $4,250,000, with no increase in contract term.

DISCUSSION:

Contract 7692 is an agency-wide multi-discipline technical assistance contract which makes available, on a continuing as-needed basis, the services of a qualified, professional engineering firm to assist MWRA staff on engineering study, design, and construction support initiatives. This contract includes several engineering disciplines such as civil, structural, environmental and sanitary, mechanical and process engineering, as well as related disciplines including architecture, geotechnical, surveying, fire protection, electrical, control systems, chemical, corrosion and odor control, permitting, and security. This technical assistance contract is used on high priority and unanticipated projects, or projects that are not large enough to warrant a full procurement process, including engineering consultants' efforts to develop qualifications and cost proposals. This contract also provides expertise on short-term assignments requiring specialized disciplines that are not cost effective for MWRA to maintain in-house staff to provide. The contract is written to ensure that adequate resources are available to quickly and comprehensively respond to MWRA's needs, particularly when emergency or unanticipated situations arise.

On October 14, 2020, the Board approved the award of Contract 7692 to CDM Smith Inc. for a two-year contract term, in an amount not to exceed $2,500,000.

On March 28, 2022, the Executive Director, under delegated authority, approved Amendment 1 to Contract 7692 in an amount not to exceed $500,000, increasing the contract amount from $2,500,000 to $3,000,000, and extending the contract term by twelve months from November 23, 2022 to November 23, 2023.

On June 22, 2022, the Board approved Amendment 2 to Contract 7692 in an amount not to exceed $1,000,000, increasing the contract amount from $3,000,000 to $4,000,000 with no increase in contract term, to support the MWRA Office Consolidation construction services and the MWRA system expansion studies for the Ipswich River and South Shore Basins.

The following significant task orders have been executed under this contract:

- Resident Engineer and Engineering Services During Construction for the Office Consolidation project. This work includes construction administration services to ensure all work is completed in accordance with the construction contract documents. A notice to proceed with work on this task order was issued on July 11, 2022.

- MWRA Consolidation of Office Space Boston/Chelsea Preliminary and Final Design, and Bidding Services for the MWRA Office Consolidation construction project at the Deer Island Treatment Plant and Chelsea Facility, including architectural, electrical, plumbing, HVAC and fire protection. Design work started in January 2021 and a notice to proceed for construction was issued on July 12, 2022.

- Waltham Section 101 Design, Bidding, and Limited ESDC related task orders. This work started in October 26, 2021 and the construction contract was awarded at the May 2022 Board of Directors' Meeting for $31,900,000.

- Facility Fuel Storage Tank Replacement Siting Evaluation, Final Design and Bidding and Award for the Caruso, DeLauri, Framingham, New Neponset, and Cottage Farm CSO Facilities is in progress with an anticipated construction notice to proceed of February 2023.

- MWRA System Expansion Study of the South Shore Basin area will provide MWRA with a preliminary plan for system expansion of the Southern System. The work associated with this $300,000 task order began March 29, 2022 with completion anticipated for the end of December 2022. MWRA will be reimbursed for the costs associated with this effort through the federal aid being provided to Massachusetts under the American Rescue Plan Act (ARPA).

- MWRA System Expansion Study of the Ipswich River Basin will provide MWRA with a plan for system expansion into communities currently drawing from the Ipswich River Basin. The work associated with this $250,000 task order began March 29, 2022 and has an anticipated December 2022 completion date. MWRA will likewise be reimbursed for the costs associated with this effort through American Rescue Plan Act (ARPA).

This Amendment

This amendment, if approved, would increase the contract budget by $250,000 with no increase in contract term. The primary reason for this amendment is to provide funding for a task order of $250,000 for a System Expansion Study for the Metrowest. MWRA was approached by four communities in the Metrowest area to assess the feasibility of connecting to MWRA's drinking water system. There are now a total of nine area communities including Acton, Bedford, Concord, Dover, Lincoln, Natick, Sudbury, Wayland, and Wellesley in the Metrowest area that have

expressed an interest in MWRA as a source of drinking water. The proposed study would evaluate the expansion of the Authority's current service area to provide water services to the additional municipalities and identify potential connections, infrastructure, and associated costs for upgrades necessary. The proposed study would also evaluate options for developing a regional pipeline to allow new communities in the Metrowest area to connect to MWRA's system and provide redundancy for MWRA's existing water distribution system. All work for this task will be completed by November 23, 2023.

To date, $3,948,882.71 of the total contract amount of $4 million has been committed to pending/executed task orders with an additional $250,000 required for the Metrowest study. There are insufficient funds remaining in the contract given the executed and pending task orders. The increase in contract funds provided through this amendment will allow the proposed/new task orders to be approved, issued, and completed within the current contract duration.

CONTRACT SUMMARY:

	AMOUNT	**TIME**	**DATED**
Original Contract	$2,500,000.00	24 months	11/23/20
Amendment 1*	$500,000.00	12 months	05/02/22
Amendment 2	$1,000,000.00	0 months	07/20/22
Amendment 3	$250,000.00	0 months	Pending
Pending Amended Contract Amount	$4,250,000.00	36 months	

*Approved under delegated authority

BUDGET/FISCAL IMPACTS:

The FY23 CIP includes $3,000,000 for Contract 7692. Reimbursement of $550,000 for the System Expansion Studies from ARPA funding will be credited to the CIP for this contract. This amendment, less the credits from reimbursements, will increase the CIP for Contract 7692 to $3,700,000. The additional $700,000 will be absorbed in the five-year CIP Spending Cap. Some task order work under this contract has been and will continue to be charged to the Current Expense Budget.

MBE/WBE PARTICIPATION:

Due to the specialized and uncertain nature of this work, no minimum MBE or WBE participation requirements were established for these contracts. However, CDM Smith Inc. identified a commitment of 10% MBE participation.

STAFF SUMMARY

TO: Board of Director
FROM: Frederick A Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: PCR Amendments - September 2022

COMMITTEE: Personnel and Compensation

____ INFORMATION
_X_ VOTE

Andrea Murphy, Director of Human Resources
Preparer/Title

Michele S. Gillen
Director, Administration

RECOMMENDATION:

To approve amendments to the Position Control Register included in the attached chart.

DISCUSSION:

The Position Control Register (PCR) lists all positions of the Authority, filled and vacant. It is updated as changes occur and it is published at the end of each month. Any changes to positions during the year are proposed as amendments to the PCR. All amendments to the PCR must be approved by the Personnel Committee of the Board of Directors. All amendments resulting in an upgrade of a position by more than one grade level, and/or an amendment which creates a position increasing annual cost by $10,000 or more, must be approved by the Board of Directors after review by the Personnel and Compensation Committee.

September PCR Amendments

There are eleven PCR Amendments this month.

Organizational Changes:

1. New position in the Operations Division, Laboratory Services Department for a Unit 9 Grade 18 Chemist I position to work on lead and copper lab testing.
2. Salary adjustment to seven filled positions in the Operations Division, Grounds Maintenance and Inspection-Water Departments for OMC Laborer Unit 2, Grade 13 per union agreement for internal pay adjustment due to new recruitment rate.

BUDGET/FISCAL IMPACT:

The annualized budget impact of these PCR amendments will be will be a maximum cost of $99,382. Staff will ensure that the cost increase associated with this PCR amendment will not result in spending over the approved FY23 Wages and Salaries budget.

ATTACHMENTS:

New Job Descriptions

MASSACHUSETTS WATER RESOURCES AUTHORITY
POSITION CONTROL REGISTER AMENDMENTS
FISCAL YEAR 2023

PCR AMENDMENTS REQUIRING BOARD APPROVAL -September 14, 2022

Number	Current PCR #	V/F	Type	Current Title	UN	GR	Amended Title	UN	GR	Current/Budget Salary	Estimated New Salary	Estimated Annual $ Impact	Reason For Amendment
B4	Operations Laboratory Services TBD	N/A	N/A	N/A	N/A	N/A	Chemist I	9	18	$0	$61,338 - $84,877	$61,338 - $84,877	New position to support lead and copper lab testing.
B5	Operations Inspection - Water 3384047	F	S	OMC Laborer	2	13	OMC Laborer	2	13	$50,087	$54,530 - $54,530	$4,443 - $4,443	Per union agreement. Internal pay adjustment due to new recruitment rate.
B6	Operations Grounds Maint - Metro 5411028	F	S	OMC Laborer	2	13	OMC Laborer	2	13	$52,853	$54,530 - $54,530	$1,677 - $1,677	Per union agreement. Internal pay adjustment due to new recruitment rate. adjustment due to new recruitment rate.
B7	Operations Grounds Maint - Metro 5411037	F	S	OMC Laborer	2	13	OMC Laborer	2	13	$52,853	$54,530 - $54,530	$1,677 - $1,677	Per union agreement. Internal pay adjustment due to new recruitment rate.
B8	Operations Grounds Maint - Metro 5411031	F	S	OMC Laborer	2	13	OMC Laborer	2	13	$52,853	$54,530 - $54,530	$1,677 - $1,677	Per union agreement. Internal pay adjustment due to new recruitment rate. adjustment due to new recruitment rate.
B9	Operations Grounds Maint - Metro 5411026	F	S	OMC Laborer	2	13	OMC Laborer	2	13	$52,853	$54,530 - $54,530	$1,677 - $1,677	Per union agreement. Internal pay adjustment due to new recruitment rate.
B10	Operations Grounds Maint - Metro 5411005	F	S	OMC Laborer	2	13	OMC Laborer	2	13	$52,853	$54,530 - $54,530	$1,677 - $1,677	Per union agreement. Internal pay adjustment due to new recruitment rate.
B11	Operations Grounds Maint - West 3394038	F	S	OMC Laborer	2	13	OMC Laborer	2	13	$52,853	$54,530 - $54,530	$1,677 - $1,677	Per union agreement. Internal pay adjustment due to new recruitment rate.
				BOARD TOTAL=	8						**TOTAL:**	$75,843 - $99,382	

MWRA
POSITION DESCRIPTION

POSITION: Chemist I

PCR#:

DIVISION: Operations

DEPARTMENT: Laboratory Services, Quality Assurance

BASIC PURPOSE:

Performs a variety of moderately complex chemical analyses on water, wastewater and air, using prescribed procedures.

SUPERVISION RECEIVED:

Works under the general supervision of a Laboratory Supervisor, WQCHM, I, II, III.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Performs a wide range of moderately complex chemical analyses and tests and operates all related equipment, assuring adherence to Standard Operating Procedures (SOPs).

- Assists in research studies and in the investigations of alternative procedures and equipment by performing analyses and tests, and the appropriate preparation data.

- Provides technical direction to technicians and laboratory support personnel by reviewing and confirming the results of routine tests, and providing instruction to assure conformity to SOPs.

- Performs minor troubleshooting, maintenance and calibration duties on a variety of standard instrumentation and instructs or oversees technicians in their performance of routine equipment maintenance duties.

- Maintains current knowledge of analytical procedures and equipment.

- Follows SOPs to maintain accurate reliable data, and to affect the efficient transfer of the data to the LIMS and or other data management systems.

- Utilizes standard applications software and prepares accurate statistical and graphics displays, as instructed.

- Prepares purchase requisitions to reorder standard supplies and materials, and may lead or perform duties to take inventory of supplies and equipment parts.

- Provides instruction to technicians in laboratory safety, assures that safety procedures are followed, and maintains clean and safe work areas.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A four (4) year college degree in chemistry or a related field is required; and

(B) Two (2) years of experience in chemical analysis, quality control and statistical techniques; or

(C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

(A) Thorough knowledge of state of the art modem chemical laboratory methods, procedures, materials and equipment.

(B) Thorough knowledge and experience in proper sampling techniques and analytical procedures.

(C) Skill in the operation of the listed tools and equipment.

SPECIAL REQUIREMENTS:

- A valid Massachusetts Class D Motor Vehicle Operators License.

TOOLS AND EQUIPMENT USED:

Laboratory equipment and instruments, telephone, personal computer including word processing and other software, copy and fax machines.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential duties.

While performing the duties of this job, the employee is regularly required to reach with his arms and use hands to handle, finger, feel or operate objects, tools, or controls. The employee is regularly required to stand and walk. The employee is regularly required to sit, stand and walk. The employee is occasionally required to climb, balance, stoop, kneel, crouch, crawl and smell.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move more than 50 pounds. Specific vision abilities required by this job include close, distance, color and peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

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

While performing the duties of this job, the employee regularly works in a laboratory environment. The employee regularly works near moving mechanical parts, is frequently exposed to outdoor weather conditions, and occasionally works in high, precarious places and is exposed to fumes and airborne particles, toxic or caustic chemicals and the risk of electric shock.

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

August 2018

MWRA
POSITION DESCRIPTION

POSITION: OMC Laborer

PCR#:

DIVISION: Operations

DEPARTMENT: Wastewater Operations, Western Operations, Equipment Maintenance, Metro Pipe Maintenance

BASIC PURPOSE:

Performs routine and skilled manual tasks as assigned. Assists operations, maintenance and skilled trades staff as required. May be required for overtime in extended workday and emergency situations. May be required for regular, on-call rotations.

SUPERVISION RECEIVED:

Works under the general supervision of a foreman or supervisor.

SUPERVISION EXERCISED:

None.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Performs tasks requiring some specialized skill in the maintenance and operation of equipment such as pickup trucks, pump trucks, tractors, mowers, pumps, generators and pneumatic tools, cement mixers, air compressors, snow removal equipment, sewer maintenance equipment, etc.

- Performs manual tasks requiring some specialized skill or knowledge in assisting skilled tradesmen engaged in construction, maintenance and repair work, including minor adjustments and repair of equipment.

- Performs a variety of manual tasks in connection with valve operations, pipeline construction and maintenance such as cleaning culverts and drains, digging ditches, spreading asphalt, caulking lead joints, and assisting in valve installations, repair of valves and pipeline under pressure 6” to 72” in diameter and the chlorination of water mains.

- Gases, oils and greases trucks, automobiles and miscellaneous grounds maintenance equipment.

- Performs a variety of manual tasks in connection with building and grounds maintenance work such as grass cutting, shoveling snow, repair of fences, disposing of trash and maintaining general

building cleanliness.

- Assists personnel of a higher grade in all aspects of plant maintenance and repairs, including but not limited to diesel engine overhaul, positive displacement pump overhaul and repair, centrifugal pump overhaul and repair, re-chaining of grit channels and sedimentation tanks and building concrete structures.

- Assists in the repair of electrical and mechanical equipment.

- Assists in upkeep and cleaning of MWRA equipment, structures and facilities such as screen chambers, tidegates and regular chambers.

- Assists in the handling and storage of stock, loads, unloads, moves and transports material, equipment, freight and supplies.

- Works as a member of a multi-crew, as needed.

SECONDARY DUTIES:

- Performs related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A high school diploma or GED; or

(B) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

(A) Working knowledge of the use of common tools, construction and sewer maintenance equipment, and of one or more of the mechanical or building trades.

(B) Ability to operate various types of vehicles and equipment including light automotive trucks and equipment, ten-wheel dump trucks, snow plows, pickup trucks, tractors and power-driven grounds maintenance equipment.

(C) Ability to perform manual labor of semi-skilled nature, use/make minor repairs to small tools and simple mechanical equipment.

(D) Basic knowledge of the operation and maintenance of facilities.

(E) Ability to perform heavy manual labor for extended periods of time, under varying climatic conditions.

(F) Ability to follow oral and written instructions.

SPECIAL REQUIREMENTS:

Must possess a current valid Class B Massachusetts Commercial Drivers License.

Will be subject to the MWRA Controlled Substance and Alcohol Testing Policy and the random drug-testing program.

TOOLS AND EQUIPMENT USED:

Motor vehicle, power and hand tools, mobile radio, telephone, beeper.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee is occasionally required to stand, walk, talk or hear, sit, climb or balance. The employee is frequently required to stoop, kneel, crouch or crawl.

The employee must frequently lift and/or move up to 25 pounds and occasionally lift and/or move more than 100 pounds. Specific vision abilities required by this job include close vision, distance and peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

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

While performing the duties of this job**,** the employee regularly works in outside weather conditions. The employee regularly works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

The noise level in the work environment is very loud in field settings, and moderately loud at other work locations.

May 2001

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Appointment of Manager, Metro Maintenance Operations Division

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COMMITTEE: Personnel & Compensation

___ INFORMATION
_X_ VOTE

Andrea Murphy, Director, Human Resources
Charles Ryan, Director, Wastewater O&M
Stephen Cullen, Director, Wastewater
Preparer/Title

David W. Coppes P.E.
Chief Operating Officer

RECOMMENDATION:

To approve the appointment of Mr. William Carter to the position of Manager, Metro Maintenance (Non-union, Grade 14) at an annual salary of $146,000.00 commencing on a date to be determined by the Executive Director.

DISCUSSION:

The position of Manager, Metro Maintenance manages the maintenance group's activities to ensure proper planning and completion of maintenance work necessary to meet the operational needs and asset protection requirements of the 45 water and wastewater facilities in the metropolitan Boston area. These facilities are critical to MWRA's mission and must be available at all times. This position is responsible for implementing industry best maintenance practices to increase staff productivity, monitor asset performance indicators and implement programs to maximize asset life while reducing equipment downtime.

To be successful, the Manager, Metro Maintenance must coordinate and communicate with all departments to ensure that equipment is maintained properly and is available when required. The maintenance program is critical to the success of the operation of the metropolitan water and wastewater facilities and must be evaluated on a continuous basis to ensure short-term and long-term equipment needs are available.

The Manager, Metro Maintenance oversees a staff of 104, including all trade groups: Electrical, Mechanic, HVAC, Plumbers, Facilities Specialists, and Building and Grounds personnel. The Manager, Metro Maintenance and has two direct reports: one Senior Program Manager and one Work Coordination Manager, and reports to the Director of Wastewater Operations and Maintenance.

Selection Process

The position was posted internally. Three candidates applied for the position and were referred to the Operations Division, having met the minimum qualifications. The Director, Wastewater; Director, Wastewater Operations and Maintenance; and Manager of Operations Support interviewed all three candidates. Mr. William Carter was unanimously selected as the best qualified candidate for the position.

Mr. Carter has worked in the wastewater field for the past 17 years. Currently, Mr. Carter holds the position of Area Manager, Maintenance at Deer Island. In this position, he regularly consults with both operations and maintenance groups to identify problems and recommend solutions for the rotating assets at Deer Island. Furthermore, he provides engineering assistance to the maintenance group, including estimating equipment replacement budgets, creating technical specifications, and conducting bid reviews. Mr. Carter has good familiarity with MWRA's computerized maintenance management system (Maximo) and he is a regular contributor to the development of new job plans, plant notification/shutdown coordination, best maintenance practices and asset documentation. He has project management experience and has supervised consultants and contractors for work performed on Deer Island.

Mr. Carter has good experience with MWRA workforce procedures and programs and has a solid grasp of the expectations of a maintenance manager through direct involvement with equipment replacement upgrades and through supervision of MWRA maintenance crews. He has excelled in his current position and has become an essential resource for the Deer Island maintenance group. In his previous employment, Mr. Carter worked at AECOM for seven years preparing designs and specifications for mechanical processes at wastewater facilities.

Mr. Carter holds a Bachelor of Science degree in Mechanical Engineering Technology from Wentworth Institute of Technology and is an Engineer-in-Training (New Hampshire).

BUDGET/FISCAL IMPACT:

There are sufficient funds for this position in the FY23 Current Expense Budget.

ATTACHMENTS:

Resume of William Carter
Position Description
Organization Chart

WILLIAM J. CARTER

PROFESSIONAL EXPERIENCE:

- **Massachusetts Water Resources Authority**, Deer Island Treatment Plant, Winthrop, MA; April 2012 to Present
  - **Area Manager** – October 2016 to Present
    - Manage maintenance activities for the Liquid Train process area from April 2017 to present
    - Manage maintenance activities for the Power and Pump process area from October 2016 to April 2017
    - Oversee the work of multiple trades including Mechanics, Plumbers, Electricians, Instrument and Control Technicians, and Supervisors.
    - Monitor ongoing activities and ensure that policies and procedures are being followed
    - Assess the condition of existing assets and provide recommendations for repair or replacement
    - Ensure monthly preventative maintenance and predictive maintenance goals are met
    - Develop and manage yearly budgets for the area's maintenance activities
    - Coordinate planned maintenance with Operations staff
    - Review contract documents and provide comments from a maintenance perspective
    - Develop specifications and Staff Summaries.
  - **Project Manager, Mechanical** – April 2012 to October 2016
    - Develop professional services scopes for proposal requests
    - Prepare engineer estimates for work to be completed
    - Support maintenance and operations staff by providing engineering evaluations, recommendations, and designs
    - Investigate issues with current process equipment and systems and identify viable solutions
    - Develop technical specifications for equipment purchases
    - Develop construction sequence plans and establish lock-out/tag-out lists
    - Coordinate with multiple technical disciplines to achieve a unified solution.
    - Communicate with consultants and contractors to monitor project progress and budget
    - Review and monitor work activities of contractors for compliance with contract documents.
    - Witness field testing of equipment
    - Provide field notes to aid in updating record drawings
  - Maintain positive working relationships with operations and maintenance personnel as well as consultants, contractors, and vendors.
- **AECOM** (formerly Metcalf & Eddy), Wakefield, MA; August 2005 to April 2012
  - Developed technical specifications and design drawings for mechanical process and plumbing disciplines using sound engineering practices and ensuring applicable code compliance. Projects involved water treatment plants, wastewater treatment plants, and pumping stations.
  - Maintained files in accordance with an ISO 9001 certified Quality Management System
  - Supervise designers and drafters in the development of design drawing packages
  - Perform engineering calculations including pipe and duct sizing, as well as pump calculations
  - Created calculation spreadsheets to streamline the design process
  - Assess existing conditions of treatment facilities and pump stations

EDUCATION:

- Wentworth Institute of Technology, Boston, MA; 2001-2005
  - Bachelor of Science in Mechanical Engineering Technology, 2005
  - Associates of Applied Sciences, Mechanical Engineering Technology, 2004

LICENSE:

- Engineer-in-Training, New Hampshire Serial Number 4457

CURRENT TRAINING/CERTIFICATIONS:

- Tower Climber Competent Person, November 2019
- Permit-Required Confined Space trained
- Disaster Management for Water and Wastewater Utilities
- Pump System Optimization
- ASCE Managing the Design Process

TECHNICAL SKILLS:

- Proficient with the following software: Microsoft Word, Excel, and PowerPoint; AutoCAD, Adobe Acrobat Pro

AWARDS

- MWRA Extraordinary Service Award – 2017 – Deer Island Valve Replacement Team

COMMITEES

- AWWA Committee 285: Solids Handling Pumps

MWRA
POSITION DESCRIPTION

POSITION: Manager, Maintenance (Metro)

DIVISION: Operations

DEPARTMENT: Field Operations, Wastewater O&M

BASIC PURPOSE:

Manages the maintenance group's activities to ensure proper planning and completion of maintenance work necessary to meet operational needs and asset preservation requirements of the 45 water and wastewater facilities in the Metropolitan-Boston area. Required to be on-call for emergencies.

SUPERVISION RECEIVED:

Works under the general supervision of the Director, Wastewater Operations and Maintenance.

SUPERVISION EXERCISED:

Exercises close supervision over the assigned Senior Program Managers, Work Coordination Manager, Program Managers and Contract Services Group and maintenance line staff.

ESSENTIAL DUTIES AND RESPONSIBILITIES:

- Manages Program Managers and maintenance line staff to ensure proper assignment and functioning of the work unit.

- Reviews, monitors and evaluates work performed in facilities and recommends appropriate improvements in equipment, techniques and procedures.

- Works with the Director, Wastewater and Operations and Maintenance, Assets Manager, and Engineering group to develop long-term maintenance strategies, implements new maintenance initiatives, capital projects, and required maintenance programs. Assigns work to ensure department meets maintenance milestones identified in the Authority's business plan.

- Manages staff hiring of trades maintenance personnel. Prepares and submits organizational and personnel written recommendations to the Director, Wastewater Operations and Maintenance as needed.

- Continuously reviews staff licensing and training requirements and works with the MWRA

Training group and Occupational Health and Safety group to ensure staff are trained to perform their necessary maintenance activities in a safe and effective manner.

- Manages the development of the Maintenance Group's budget. Audits individual Program Manager's performance to budget. Identifies variances and works with staff and budget group to explain variances and take corrective action.

- With the Assistance of the Work Coordination Group, generates and reviews department's performance versus key performance indicators ("KPIs") such as work back log, preventive maintenance, and predictive maintenance. Develops new KPIs as needed. Recommends and implements corrective actions to department procedures as required.

- In conjunction with the Senior Program Manager, ensures that the MAXIMO system and Work Coordination Group are delivering the necessary information and services required to meet day-to-day maintenance planning and work needs for Field Operations.

- Works with the Directors, Senior. Program Managers, Program Managers and Engineering groups to develop long range maintenance strategies, capital program projects expenses and required maintenance projects.

- Works closely with the Work Coordination, Operations, Engineering, and other FOD Managers to provide cost effective maintenance services ensuring optimum facility performance.

- Manages department-wide efforts to track and improve crew efficiency and accountability in Field Operations.

- Manages the Maintenance staff implementation of the Reliability Centered Maintenance strategy.

- Submits annual organizational and personnel recommendations for the maintenance group to the Director, Wastewater O&M and Director, Wastewater.

- Continually reviews staff training requirements and takes the necessary steps to insure proper development and delivery of the training programs by the Training group; assists with managerial and supervisory training.

- Manages the development of the Maintenance Group's budget, audits individual manager's performance to budget, identifies variances and works with individuals to explain variances and take corrective action to minimize.

- Advises engineering personnel relative to the resolution of technical maintenance problems within the Facility.

- Approves daily allocation of personnel based on priorities established by the planning and

scheduling group, and Water and Wastewater Operations.

- Reviews work back log and takes corrective action to minimize.

- Establishes accountability and efficiency programs, goals and benchmarks for the metropolitan maintenance unit.

- Uses Maximo to the fullest extent possible to plan, track and evaluate work efforts.

- With the assistance of the Snr. Program Manager and Work Coordination Manager, obtains, reviews and analyzes data on work performed by staff; develops appropriate benchmarks and reports on significant trends with recommendations for appropriate action.

- With the assistance of the Senior Program Manager, establishes in conjunction with the Asset Manager, a comprehensive work practices that ensures proper data integrity within Maximo including updating equipment information as new equipment is purchased. Responsible for writing and/or approving equipment specifications, justifications, staff summaries and maintenance reports to ensure maintenance materials and services are acquired as needed.

- Performs quality assurance/quality control (QA/QC) audits on standard work procedures, such as but not limited to staff working on priority jobs, safety procedures being followed, appropriate staff levels by job, material availability, daily dispatch compliance, and technician work documentation on work orders and in Maximo.

- Utilizes personal computers, data terminals, and special applications software to perform related duties such as work scheduling, inventory maintenance, Maximo, Lawson, etc.

- Promotes the MWRA safety program by supporting the supervisors' weekly safety meetings, attending/supporting the monthly safety committee meetings, keeping informed of the crews' safety records and formally investigating accidents with the assistance of the Safety Group.

- Reviews assigned employees' performance per MWRA procedures.

- Acts as liaison and promotes harmonious relations with other maintenance units, vendors and MWRA departments.

- Manages the Department in a manner that is consistent with MWRA's goals of Diversity, Equity, and Inclusion. Administers the application of collective bargaining provisions and personnel policies in the work place. Serves as Step I grievance Hearing Officer.

- Participates in the Emergency Operations Center (EOC) staffing for emergency response as required.

- Acts as a back-up to the Director, Wastewater O&M in his absence.

SECONDARY DUTIES:

- Assists employees with preparation of injury/illness reports, safety and maintenance work orders, and ensure that they keep high quality, accurate related documents and records.

- Assists in maintaining harmonious labor management relations through proper applications of collective bargaining agreement provisions and established personnel policies.

- Promotes and participates in the cross-functional work practices.

- Performs other related duties as required.

MINIMUM QUALIFICATIONS:

Education and Experience:

(A) A Bachelor's degree in Engineering, Facilities Management or related discipline; and

(B) Eight (8) to ten (10) years of water / wastewater design, operations and/or maintenance management experience of which five (5) years must be management/supervisory experience, preferably in the management of a large maintenance workforce; or

(C) Any equivalent combination of education and experience.

Necessary Knowledge, Skills and Abilities:

(A) Working knowledge of the maintenance, repair, and replacement of equipment within a large industrial, water or wastewater treatment plant or liquid processing facility.

(B) Ability to plan, organize, direct, train and assign work through subordinate managers and supervisors in a unionized environment.

(C) Ability to learn and use maintenance related computer software.

(D) Knowledge, experience and understanding of maintenance practices using a computerized maintenance management system such as but not limited to Maximo and Lawson.

(E) Knowledge, experience and understanding of Reliability Centered Maintenance methodology. Familiar with its principles, application, and outcomes to increase maintenance effectiveness and productivity.

(F) Excellent interpersonal, written, and verbal communication skills.

SPECIAL REQUIREMENTS:

Is required to be part of an on-call rotation for emergencies 24 hours a day, 7 days a week

A valid Massachusetts Class D Motor Vehicle Operators License.

A valid Grade 6 wastewater operator's license or 4D Drinking Water Supply Facilities Operators license preferred.

A Certified Maintenance and Reliability Professionals (CMRP) certification preferred.

TOOLS AND EQUIPMENT USED:

Mobile radio, telephone, personal computer including word processing and other software, copy and fax machine.

PHYSICAL DEMANDS:

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to use hands to finger, handle, feel or operate objects, tools, or controls and reach with hands and arms. The employee occasionally is required to sit, stand and walk. The employee is frequently required to climb or balance; stoop, kneel, crouch, or crawl; taste or smell.

The employee must frequently lift and/or move up to 10 pounds and occasionally lift and/or move up to 25 pounds. Specific vision abilities required by this job include close vision, distance, color vision, peripheral vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT:

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

While performing the duties of this job, the employee regularly works in an office environment. The employee occasionally works in outside weather conditions. The employee occasionally works near moving mechanical parts and is occasionally exposed to wet and/or humid conditions and vibration. The employee occasionally works in high, precarious places and is occasionally exposed to fumes or airborne particles, toxic or caustic chemicals, and risk of electrical shock.

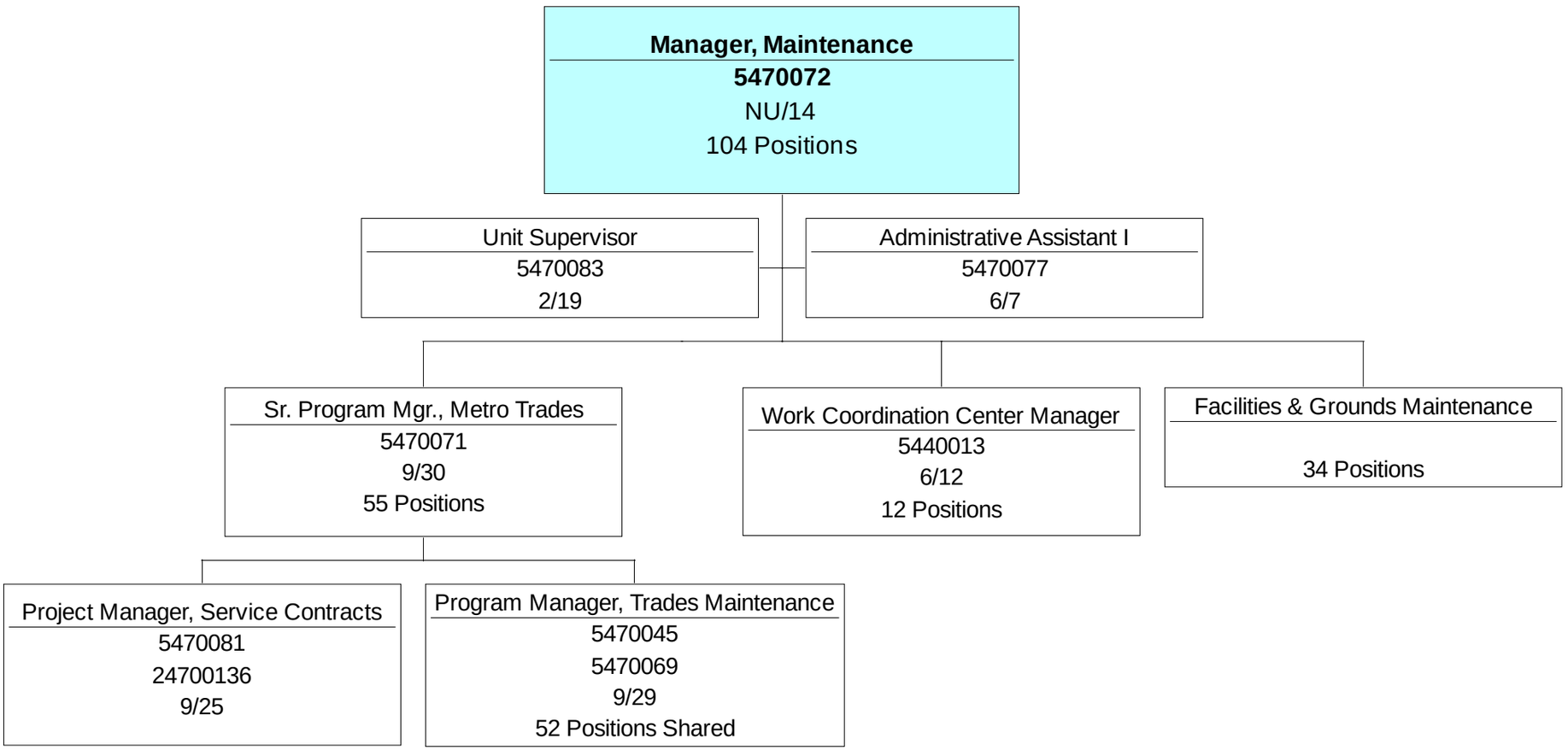
The noise level in the work environment is usually loud in field settings and moderately quiet in office settings.

August 2022

Operations - Wastewater O&M

Metro Maintenance - Summary

September, 2022



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Dental Insurance
Delta Dental of Massachusetts, Inc., d/b/a Delta Dental of Massachusetts
Contract A631, Amendment 1

COMMITTEE: Administration, Finance & Audit

_____ INFORMATION
_X_ VOTE

Andrea Murphy, Director of Human Resources
Preparer/Title

Michele S. Gillen
Director, Administration

RECOMMENDATION:

To approve Amendment 1 to Contract A631, with Delta Dental of Massachusetts Inc., d/b/a Delta Dental of Massachusetts, exercising the first option to renew, increasing the contract amount by $235,000, from $289,000 for a total not-to-exceed amount of $524,000, and extending the term by 12 months from January 1, 2023 to December 31, 2023 for a total contract term of 24 months.

DISCUSSION:

MWRA has been providing dental insurance to all non-union employees since July 1, 1985. This benefit also covers a number of union employees who were accreted into collective bargaining units in 1994. The remaining MWRA union employees receive dental coverage through the Health and Welfare plans of their respective unions.

In December 2021, the Board of Directors approved this contract with Delta Dental of Massachusetts to provide dental insurance to eligible employees for a period of 12 months (Calendar Year 2022), with further options to renew the contract for up to three additional 12-month periods subject to Board approval.

This amendment is for the first extension covering Calendar Year 2023 and would maintain the level of coverage currently offered to eligible employees in the areas of diagnostic, preventive, basic and major restorative services as well as limited orthodontic coverage.

Contract Summary	Amount	Term	Dated
Original Contract	$289,000	One Year	01/01/2022
Amendment 1	$235,000	One Year	01/01/2023
Amended Contact Amount	$524,000		

BUDGET/FISCAL IMPACT:

The rate per employee represents a 0% increase over last year. However, the number of participants has dropped, so the total annual cost is lower. This contract covers the second half of FY23 and the first half of FY24. The FY23 Current Expense Budget includes the cost of the dental insurance for eligible employees. The total cost of the plan is dependent upon the number of employees enrolled. The remaining cost of the dental insurance program will be included in the FY24 Current Expense Budget.

MBE/WBE UTILIZATION:

There are no MBE/WBE participation requirements established for this contract due to the limited opportunities for subcontracting.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
Patterson Riley, Special Assistant for Affirmative Action
DATE: September 14, 2022
SUBJECT: Update on Environmental Justice Efforts

COMMITTEE: Administration, Finance, and Audit

__X__ INFORMATION
_____ VOTE

Tomeka Cribb-Jones, Assoc. Special Asst. for Affirmative Action
Katherine Ronan, Project Manager
Rebecca Weidman, Director, Env. and Regulatory Affairs
Preparer/Title

Michele S. Gillen
Director, Administration

RECOMMENDATION:

For information only. This is a biannual update on MWRA's efforts to implement and comply with new environmental justice initiatives and regulatory requirements.

DISCUSSION:

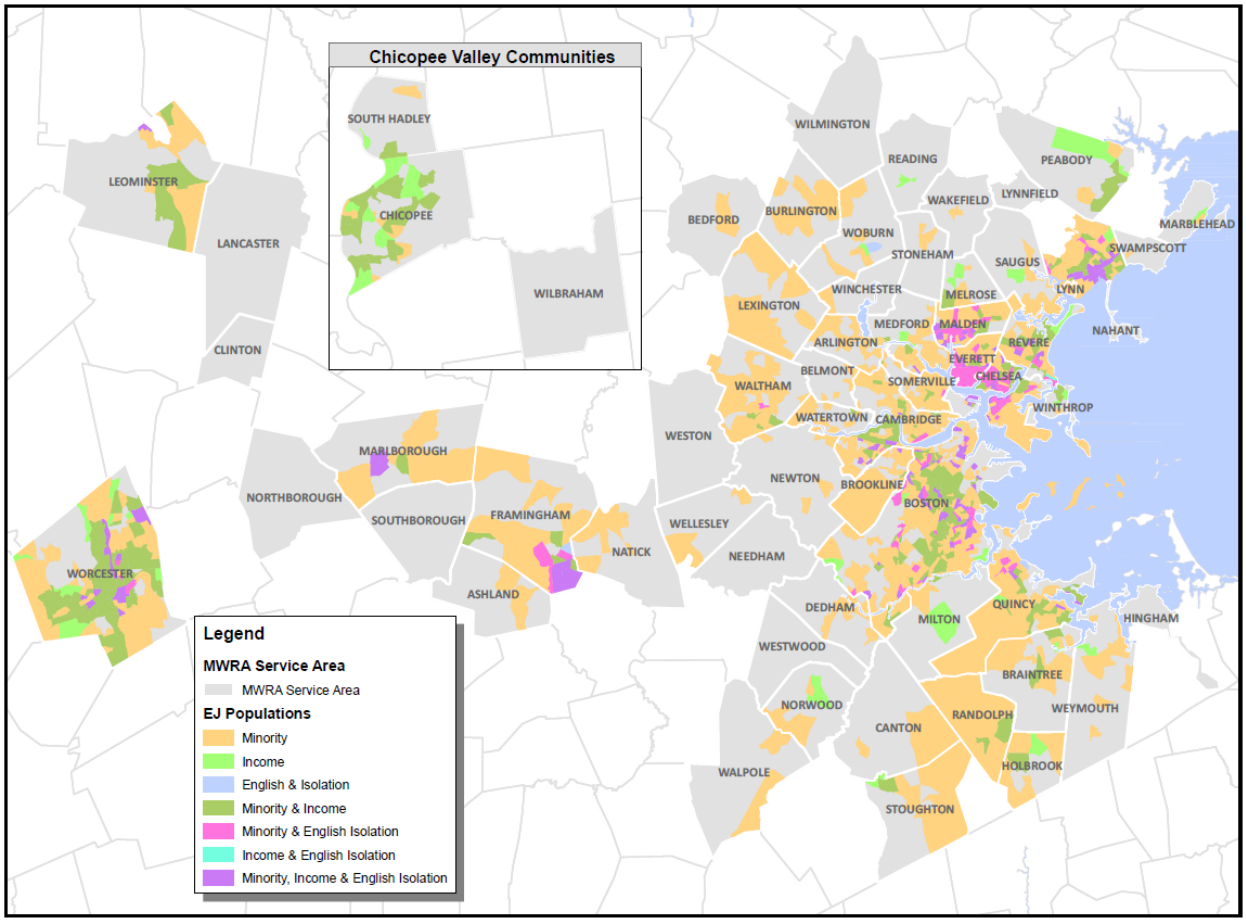
Environmental justice (EJ) is based on the principal that all people have a right to be protected from environmental hazards, and to live in and enjoy a clean and healthful environment regardless of race, color, national origin, income, or English language proficiency. In late 2021, MWRA submitted a draft EJ Strategy to the Executive Office of Energy and Environmental Affairs (EEOEA); the next step is to submit an annual report outlining progress towards implementing initiatives and projects in EJ communities at the end of 2022. MWRA must also comply with new education and outreach requirements associated with the Massachusetts Environmental Policy Act (MEPA) regulations and Massachusetts' Department of Environmental Protection's (MassDEP's) new Sewage Notification Regulations.

MWRA's EJ strategy outlines the Authority's plan for promoting EJ considerations across MWRA's programs, policies and activities. In order to implement this strategy, MWRA is taking action in various areas. The first set of activities is related to enhanced discussions and awareness of potential impacts and benefits to the EJ populations we serve and work around. The second set of activities is related to complying with new and revised regulations.

MWRA staff are reviewing current and future projects through an EJ lens, looking at the associated costs and benefits for each project to our communities (specifically EJ populations). All new engineering design and construction projects are being reviewed for their impacts and benefits to surrounding EJ populations. Beginning with the July Board package, a brief discussion characterizing the surrounding EJ populations and reviewing impacts and benefits of the project to those populations has been added to relevant staff summaries. Next, MWRA will take a comprehensive look at the Capital Improvement Plan (CIP) and include a discussion about impacted EJ populations in the CIP. MWRA also intends to develop a methodology to quantify

the cumulative environmental impact and benefit of each of our projects on the surrounding community. Further, MWRA is committed to collaborating with other state and federal agencies to review and build upon current work designed to identify EJ populations and Indigenous tribes with disproportionately high and adverse environmental exposures.

MWRA Service Area and Environmental Justice Populations



MWRA launched a new public facing EJ web page, https://www.mwra.com/02org/html/EJ.html. This new page includes a variety of resources, including links to other MWRA web pages, such as the construction project summary pages and the job posting page. Visitors to www.mwra.com are able to translate all of the web pages using "Google Translate." Staff are also developing factsheets and outreach materials for specific projects and working with translation services to translate these key documents into languages spoken in the geographic area impacted by the project. These professionally translated materials will be available on project webpages as they are developed. As MWRA's EJ program evolves and grows, we will update the EJ web page. MWRA also intends to launch an internal EJ web page. This web page will provide MWRA staff with EJ resources, trainings, mapping tools, and templates for construction design contracts, among other things.

Beginning July 6, 2022, MWRA and all other sanitary sewerage systems throughout the Commonwealth were required to comply with MassDEP's Sewage Notification Regulations (314 CMR 16.00: Notification Requirements to Promote Public Awareness of Sewage Pollution). Included in these regulations is a requirement to provide rapid notification to the public (within two hours of confirmation) of any combined sewer overflows (CSOs) or certain sanitary sewer

overflows (SSOs). All notifications must be available in the languages spoken in the communities directly affected by the discharge and identified as EJ populations due to lacking English language proficiency. To meet these requirements, MWRA is using Google Translate to translate all notifications into 14 identified EJ languages, and is issuing notices through email and text via Everbridge.

In December 2021, revised MEPA regulations (301 C.M.R. 11.00) were promulgated and include new EJ requirements. The goal of a MEPA review is to avoid, minimize, and mitigate damage to the environment associated with the project to the maximum extent possible. The MEPA regulations set 12 review thresholds (e.g., alteration of wetlands, waterways, and tidelands; new water withdrawals; additional generation of wastewater) for projects that require a state agency action (e.g., require a permit, financial assistance, or land transfer from state agencies).

The review thresholds established in the revised MEPA regulations remain unchanged. Effective the beginning of 2022, for projects required to be reviewed through MEPA, project proponents will need to take additional measures to improve public participation by EJ populations located within one mile of a project or within five miles of a project if it will impact air quality. Such measures may include reaching out to EJ population contacts identified by the MEPA office, translating key documents, providing translation services at public meetings, and requiring public meetings to be held at locations accessible by public transportation. Additionally, most MEPA filings for projects within close proximity to an EJ population will now require the development of an Environmental Impact Report (EIR). These EIRs must include an assessment of existing unfair or inequitable environmental burden, an analysis of project impacts to determine disproportionate adverse effects, and an analysis of project impacts to determine climate change effects to surrounding EJ populations.

MWRA currently has two upcoming projects that will undergo MEPA review and include an EJ analysis as part of the EIR: the Section 22 Rehabilitation Project and the Tunnel Redundancy Program. Outreach to EJ populations impacted by these projects began this month in advance of filing with MEPA. More information will be available on these efforts as the MEPA review process proceeds.

BUDGET/FISCAL IMPACTS:

There are limited budget implications for implementing the new MEPA requirements and the new Sewage Notification Regulations. MWRA staff have identified all projects currently in design that will be required to meet the new MEPA requirements. Generally, MEPA review is only required for a small percentage of MWRA's projects. For future projects, MWRA will incorporate the new outreach and analysis components into scoping and design efforts.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Delegated Authority Report – July and August 2022

COMMITTEE: Administration, Finance & Audit

X INFORMATION
___ VOTE

Michele S. Gillen
Director, Administration

Linda Grasso, Asst. to the Executive Director
Barbara Aylward, Administrator A & F
Preparer/Title

Rita C. Mercado
Acting Director of Procurement

RECOMMENDATION:

For information only. Attached is a listing of actions taken by the Executive Director under delegated authority for the period July 1 – August 31, 2022.

This report is broken down into three sections:

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

DISCUSSION:

The Board of Directors' Management Policies and Procedures, as amended by the Board on February 16, 2022, delegate authority to the Executive Director to approve the following:

Construction Contract Awards:

Up to $3.5 million if the award is to the lowest bidder.

Change Orders:

Up to 25% of the original contract amount or $1,000,000.00, whichever is less, where the change increases the contract amount, and for a term not exceeding an aggregate of six months; and for any amount and for any term, where the change decreases the contract amount. The delegations for cost increases and time can be restored by Board vote.

Professional Service Contract Awards:

Up to $1,000,000 and three years with a firm; or up to $200,000 and two years with an individual.

Non-Professional Service Contract Awards:

Up to $1,000,000 if a competitive procurement process has been conducted, or up to $100,000 if a procurement process other than a competitive process has been conducted.

Purchase or Lease of Equipment, Materials or Supplies:

Up to $3.5 million if the award is to the lowest bidder.

Amendments:

Up to 25% of the original contract amount or $500,000, whichever is less, and for a term not exceeding an aggregate of six months.

Amendments to the Position Control Register:

Amendments which result only in a change in cost center.

BUDGET/FISCAL IMPACT:

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

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS JULY 1 - 31, 2022

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	07/13/22	**MAIN LINE ADJUSTMENT PROJECT FORE RIVER RAILROAD** FINAL BALANCING CHANGE ORDER TO DECREASE THE FOLLOWING BID ITEMS: CONCRETE FOUNDATION REMOVAL; INSTALL NEW DRYWALLS, ADDITIONAL TRAFFIC CONTROL; QUINCY FIRE DEPARTMENT WATCH; QUINCY FIRE AND PUBLIC UTILITY RELOCATIONS; TEST, REMOVE, HANDLE, TRANSPORT AND DISPOSE OF GROUP 1B AND 1C EXCAVATED MATERIALS; EXCAVATE AND BACKFILL FOR NATIONAL GRID 10-INCH STEEL GAS SLEEVE.	FRR32	5	J.F. WHITE CONTRACTING CO.	($142,722.25)
C-2.	07/13/22	**NORUMBEGA COVERED STORAGE TANK CELL NO. 2 CLEANING** AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE NORUMBEGA COVERED STORAGE TANK CELL NO. 2 CLEANING FOR A TERM OF 365 CALENDAR DAYS.	W342	AWARD	R. ZOPPO CORP.	$2,339,900.00
C-3.	07/20/22	**REPLACEMENT OF EXISTING FACILITIES FUEL STORAGE TANKS, BARRE AND SOUTHBOROUGH** AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE REPLACEMENT OF EXISTING FACILITIES FUEL STORAGE TANKS IN BARRE AND SOUTHBOROUGH FOR A TERM OF 510 CALENDAR DAYS.	7555	AWARD	MECO ENVIRONMENTAL SERVICES, INC.	$1,819,888.00
C-4.	07/21/22	**ARBITRAGE REBATE COMPLIANCE SERVICES** AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR ARBITRAGE REBATE COMPLIANCE SERVICES FOR A TERM OF 3 YEARS. MWRA PRIMARILY ISSUES TAX-EXEMPT REVENUE BONDS TO FINANCE THE COST OF ITS CAPITAL IMPROVEMENT PROGRAM, AND IS REQUIRED TO COMPLY WITH THE IRS' ARBITRAGE REBATE REGULATIONS, WHICH LIMIT THE AMOUNT OF INCOME MWRA CAN RECEIVE ON ITS INVESTMENT.	F268	AWARD	PFM ASSET MGMT., LLC SUBSIDIARY OF US BANCORP ASSET MGMT., INC.	$107,100.00
C-5.	07/26/22	**SECTION 4 WALNUT STREET BRIDGE PIPE RESTRAINT REPLACEMENT** REMOVE AND DISPOSE OF EXISTING AND INSTALL NEW BELL JOINT CLAMPS AND COUPLINGS; EXTEND CONTRACT TERM BY 180 CALENDAR DAYS FROM AUGUST 14, 2022 TO FEBRUARY 10, 2023.	7483	2	R. ZOPPO CORP.	$60,000.00

CONSTRUCTION/PROFESSIONAL SERVICES DELEGATED AUTHORITY ITEMS AUGUST 1 - 31, 2022

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMEND/CO	COMPANY	FINANCIAL IMPACT
C-1.	08/01/22	**COMMONWEALTH AVENUE PUMPING STATION IMPROVEMENTS** PERFORM DISINFECTION, DECHLORINATION AND FLUSHING OF THE WASM 2 PIPELINE AFTER WARRANTY REPAIR WORK DUE TO THE EXTENDED ISOLATION OF WASM 3 DUE TO ISSUES INVOLVING WEATHER DELAYS, DEVELOPMENT OF REPAIR SCOPE, AND THE REPAIR OF A PRE-EXISTING LEAKING VALVE ON NEWTON'S SYSTEM.	7524	13	WES CONSTRUCTION CORP.	$60,491.23
C-2.	08/03/22	**ELEVATOR MAINTENANCE SERVICES AT VARIOUS FACILITIES** FINAL BALANCING CHANGE ORDER TO DECREASE THE FOLLOWING BID ITEMS: SCHEDULED PREVENTATIVE MAINTENANCE SERVICES; NON-EMERGENCY AND EMERGENCY REPAIR SERVICES; REPLACEMENT PARTS.	OP-397	3	UNITED ELEVATOR COMPANY, INC.	($51,062.71)
C-3.	08/03/22	**CARROLL WATER TREATMENT PLANT SCADA SYSTEM IMPROVEMENTS** FURNISH AND INSTALL ADDITIONAL HYDRAULIC CONTROL SYSTEM CONTROL EQUIPMENT TO ALLOW OPERATORS TO RESPOND TO EMERGENCY CONDITIONS FROM THE MAIN SCADA SYSTEM.	7582	2	LeVANGIE ELECTRIC COMPANY, INC.	$119,374.50
C-4.	08/03/22	**CHELSEA CREEK HEADWORKS MICROWAVE RADIO LINK TO THE CHELSEA MAIN OFFICE** AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE CHELSEA CREEK HEADWORKS MICROWAVE RADIO LINK TO THE CHELSEA MAIN OFFICE FOR A TERM OF 240 CALENDAR DAYS.	7785	AWARD	GREEN MOUNTAIN COMMUNICATIONS, INC.	$269,750.00
C-5.	08/08/22	**ELECTRICAL TESTING AND TECHNICAL SERVICES - METROPOLITAN BOSTON** FINAL BALANCING CHANGE ORDER TO DECREASE THE FOLLOWING BID ITEMS: SWITCHGEAR MAINTENANCE SERVICES AT VARIOUS FACILITIES; UNSCHEDULED TECHNICAL SERVICES; EMERGENCY UNSCHEDULED TECHNICAL SERVICES; MATERIALS FURNISHED IN CONNECTION WITH THE PERFORMANCE OF UNSCHEDULED TECHNICAL SERVICES.	OP-345	1	INFRA-RED BUILDING AND POWER SERVICE, CO., INC.	($269,244.10)
C-6.	08/25/22	**DEER ISLAND TREATMENT PLANT - RADIO REPEATER SYSTEM UPGRADE 2** AWARD OF A CONTRACT TO THE LOWEST RESPONSIVE BIDDER FOR THE RADIO REPEATER SYSTEM UPGRADE AT THE DEER ISLAND TREATMENT PLANT FOR A TERM OF 540 CALENDAR DAYS.	7134	AWARD	FISCHBACH & MOORE ELECTRIC GROUP, LLC	$2,499,500.00

PURCHASING DELEGATED AUTHORITY ITEMS JULY 1 - 31, 2022

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMENDMENT	COMPANY	
P-1	07/01/22	**PREVENTATIVE AND CORRECTIVE SERVICES FOR SPECTRO XRF X-RAY FLUORESCENCE SPECTROMETER** Award of purchase order to the lowest responsive bidder for three years of preventative and corrective maintenance for one Spectro XRF X-Ray Fluorescence for the Department of Laboratory Services. The Spectro EDXRF provides both qualitative and quantitative elemental analysis in heterogeneous and multi-component sample matrices ranging from pristine water to sewage, industrial discharges and solids.	WRA 5142Q		The Remi Group, LLC	$27,919.08
P-2	07/13/22	**PURCHASE ORDER CONTRACT FOR DESIGN AND IMPLEMENTATION A MENTORING PROGRAM** Award of a sole source purchase order contract to design and implement a Mentoring Program with the National Association of Clean Water Agencies' partner CORE Consulting. The mentoring program will provide staff with personal and professional development opportunities and resources.			National Association of Clean Water Agencies	$50,000.00
P-3	07/13/22	**PURCHASE OF THREE CIRCUIT BREAKERS** Award of a purchase order contract to the lowest responsive bidder for three circuit breakers for the Main Switchgear Building and the Cryogenic Oxygen Facility at the Deer Island Treatment Plant.	WRA-5138		Circuit Breaker Sales NE, LLC	$136,748.00
P-4	07/13/22	**PURCHASE ORDER FOR SOFTWARE ASSURANCE FOR MICROSOFT WINDOWS 10** Award of a purchase order contract to the lowest responsive bidder under State Contract ITS75 for three years of Software Assurance for 1,100 Microsoft Window 10 licenses. Software assurance ensures no lapse in support for feature and security updates, in addition to enhanced management, compatibility for multiple hardware platforms, and upgrades to Windows 11.	WRA-5159Q		Dell Marketing LP	$158,202.00
P-5	07/13/22	**PURCHASE ORDER TO PROVIDE VIBRATION ANALYSIS TRAINING AND SUPPORT SERVICES** Award of three separate, three-year purchase order contracts to the lowest responsive bidder to provide vibration analysis training and support services for staff at Deer Island, Western Operations facilities, and Metro Maintenance staff in Chelsea. Vibration testing and analysis are performed on equipment to monitor the condition of in-service equipment, diagnose problems, and determine what maintenance is required to correct any problems before failure occurs.	WRA-5121		M&B Engineered Solutions, Inc.	$180,210.00
P-6	07/13/22	**SUPPLY AND DELIVERY OF SODIUM BISULFITE** Award of a one-year purchase order contract to the lowest responsive bidder for the supply and delivery of sodium bisulfite. Sodium bisulfite is used at the John J. Carroll Water Treatment Plant to remove residual ozone from the water following primary disinfection. Sodium bisulfite is also used at the Clinton Wastewater Treatment Plant to eliminate chlorine residual after disinfection of wastewater.	WRA-5152		Holland Company Inc.	$199,460.00
P-7	07/13/22	**FLOW TESTING SERVICES FOR MWRA'S REVENUE WATER METERS** Award of a three-year purchase order contract to the lowest responsive bidder for flow testing services for MWRA's revenue water meters. The testing performed under this contract, which is in accordance with accepted American Water Works Association standards, helps to verify that all of MWRA's water meters are functioning properly and are calibrated accurately, resulting in reliable calculations of rate charges.	WRA-5144		Complete Control Services, Inc.	$311,025.00
P-8	07/14/22	**UTILITY POLES INSPECTION AND TREATMENT** Award of a purchase order to the lowest responsive bidder for utility pole inspection and treatment. These services include the inspection and as-needed treatment of 202 utility poles at eight locations, in accordance with 220 CMR 125.20(1)(c)(2).	WRA-5160Q		Osmose Utilities Services, Inc.	$49,769.75
P-9	07/15/22	**PURCHASE OF ONE VARIABLE FREQUENCY DRIVE CHASSIS** Award of a purchase order to the lowest responsive bidder for one variable frequency drive (VFD) chassis for the Deer Island Treatment Plant. VFDs control the pump motors in the Residual Complex that flush the pipelines used to pump digested sludge to the pellet plant.			Technical Construction Services, Inc.	$30,052.00
P-10	07/26/22	**PERSONNEL RECRUITMENT SERVICES** Award of a purchase order to the lowest responsive bidder for personnel recruitment services. Since the pandemic the MWRA has had ongoing and significant difficulty in recruiting and retaining personnel. Under this contract the MWRA will receive assistance from a staffing agency to provide staffing recruitment services to fill the open positions within the Agency.	WRA-5122		V3iT Consulting, Inc.	$85,000.00
P-11	07/26/22	**SUPPLY AND DELIVERY OF SODIUM HYPOCHLORITE** Award of a one-year purchase order to the lowest responsive bidder for the supply and delivery of sodium hypochlorite. MWRA uses 15% solution sodium hypochlorite, a combination of chlorine and caustic soda throughout its wastewater system for disinfection and odor control.	WRA-5154		Borden & Remington Corporation	$595,474.69
P-12	07/28/22	**PURCHASE ORDER FOR SUPPORT FOR THE FLEET DATA SYSTEM** Award of a sole source purchase order for one-year of support for the Fleet Data System. The Fleet Data Systems provides central tracking, reporting, and control of all fuel usage for Chelsea and Deer Island.			Fleet Data Systems LLC	$26,975.00
P-13	7/28/22	**PURCHASE ORDER FOR MAINTENANCE AND SUPPORT OF CISCO SMARTNET SWITCHES** Award of a one-year purchase order to the lowest responsive bidder under State Contract ITT72 for maintenance and support of Cisco SMARTnet Switches. Switches are component in providing network connectivity at all sites. This contract provides the technical support and maintenance for thirty-five switches, which includes software and security updates.	WRA-5168Q		ePlus Technology, Inc	$33,374.52

PURCHASING DELEGATED AUTHORITY ITEMS AUGUST 1 - 31, 2022

NO.	DATE OF AWARD	TITLE AND EXPLANATION	CONTRACT	AMENDMENT	COMPANY	
P-1	08/01/22	**PURCHASE OF 300 CROSS AND LONGITUDINAL COLLECTOR FLIGHTS** Award of a sole source purchase order for 300 cross and longitudinal collector flights for the primary and secondary clarifiers at Deer Island. The cross and longitudinal collector flights are lightweight fiberglass "paddles" that extend across each clarifier that push scum towards tip tubes at the top of each clarifier. This purchase is to replenish current warehouse inventory to support routine maintenance, which involves the replacement of damaged flights, as needed.			**Evoqua Water Technologies, LLC**	**$110,221.00**
P-2	08/01/22	**PURCHASE OF TWENTY NEW ELECTRIC CHARGING STATIONS** Award of a purchase order under State Contract VEH102 to the lowest responsive bidder for twenty new Electric Charging Stations. MWRA has been approved to participate in Eversource's EV Make Ready Program, which provides the underground infrastructure for several electric vehicle chargers at MWRA's Chelsea Facility, saving the Authority a little over $100,000, in its efforts to advance electrification of the MWRA's fleet.	**WRA-5155 VEH102**		**Voltrek, LLC**	**$326,870.40**
P-3	08/01/22	**SUPPLY AND DELIVERY OF CARBON DIOXIDE** Award of a one-year purchase order to the lowest responsive bidder for the supply and delivery of carbon dioxide for the Carroll Water Treatment Plant. Carbon dioxide is added to the water to maintain a target pH level of 9.5 to help reduce corrosion of lead and copper in the plumbing systems of older homes.	**WRA-5153**		**Linde Inc.**	**$720,000.00**
P-4	08/02/22	**PURCHASE OF EIGHT 48-INCH BELL JOINT CLAMPS** Award of a purchase order to the lowest responsive bidder for eight, 48-inch bell joint clamps to provide restrain replacements for the Section 4 Pipeline on the Walnut Street Bridge in Somerville.	**WRA-5178Q**		**F.W. Webb Company**	**$51,080.00**
P-5	08/02/22	**PURCHASE OF 100 CROSS LONGITUDINAL COLLECTOR FLIGHTS, 100 SIGMA PLUS FLIGHTS AND 100 FILLER BLOCKS** Award of a sole source purchase order for 100 Cross longitudinal collector flights, 100 Sigma Flights, and 100 filler blocks, for the Deer Island Treatment Plant. This purchase of cross longitudinal collector flights, with 100 filler blocks (associated replacement part), is to replenish current warehouse inventory to support routine maintenance, which involves the replacement of damaged flights, as needed.			**Equova Water Technologies, LLC**	**$88,934.00**
P-6	08/02/22	**PURCHASE OF 14 LOW VOLTAGE VARIABLE FREQUENCY DRIVES** Award of a purchase order to the lowest responsive bidder for 14 low voltage variable frequency drives utilized in wastewater treatment on Deer Island.	**WRA-5140**		**Flow Tech, Inc.**	**$410,200.00**
P-7	08/03/22	**PURCHASE OF ONE MUFFIN MONSTER GRINDER** Award of a sole source purchase order for replacement of one "Muffin Monster" sewage grinder for the Braintree Weymouth Pump Station.			**JWC Environmental, LLC**	**$50,918.00**
P-8	08/03/22	**PURCHASE OF 135 NORDIC DISC FILTER CARTRIDGES** Award of a sole source purchase order for 135 disc filter cartridges for the Clinton Wastewater Treatment Plant. Each super disc filter unit contains 250 filter cartridges and has the capacity to treat up to six million gallons of treated water per day.			**Westech Engineering, Inc.**	**$75,465.00**
P-9	08/03/22	**PURCHASE OF 60 BOLTED MANHOLE FRAMES AND COVER ASSEMBLIES, AND 40 GATE VALVE LOCKING FRAMES AND COVERS** Award of a sole source purchase order for 60 bolted manhole frame and cover assemblies, and 40 locking manhole frames and covers. The Authority has made a decision to install bolted manhole frame and cover assemblies on high speed roadways to minimize the possibility of manhole covers from becoming dislodged.			**EJ USA, INC.**	**$84,947.40**
P-10	08/04/22	**REPLACEMENT OF PROGRAMMABLE LOGIC CONTROLLERS IN FOUR OZONE GENERATORS** Award of a sole source purchase order for PLC replacement in four ozone generators at the John J. Carroll Water Treatment Plant.			**Aqua-Aerobic Systems, Inc.**	**$172,800.00**
P-11	08/11/22	**INSPECTION, CLEANING, AND SEDIMENT DISPOSAL OF CATCH BASINS** Award of a three-year purchase order contract for the inspection, cleaning, and disposal of sediment from catch basins at the Deer Island Treatment Plant.	**WRA-5164**		**Rapidflow Inc.**	**$45,000.00**
P-12	08/18/22	**MICROSOFT UNIFIED ENTERPRISE SUPPORT** Award of a one-year purchase order under State Contract ITS75 to the lowest responsive bidder for Microsoft Unified Enterprise Support. This contract provides critical, as-needed, 24/7 technical support and expert guidance on Microsoft Software Products including Windows operating systems, Exchange, Office Suite, SQL Server, and other Microsoft products that may be used by MWRA staff in the future	**WRA-5169Q**		**Dell Marketing LP**	**$76,567.70**
P-13	8/25/22	**TRAINING CONTACT HOURS FOR WATER OPERATOR LICENSE RENEWAL AND EXAM PREPARATION** Award of a one-year sole source purchase order for individual referrals for Training Contact Hours for water operator license renewal and mandatory exam preparation Water Distribution and Treatment exams.			**New England Water Works Association**	**$30,000.00**
P-14	08/25/22	**RENEWAL AND SUPPORT OF 1,500 OKTA SUBSCRIPTIONS** Award of a one-year purchase order under State Contract ITS60 to the lowest responsive bidder for renewal and support of 1,500 Okta subscriptions. Okta Single Sign-On provides a secure mechanism for identity and access management authentication within the Internet.	**WRA-5170**		**Carahsoft Technology Corporation**	**$169,698.43**
P-15	08/29/22	**HARDWARE SUPPORT FOR THE DEER ISLAND TREATMENT PLANT PROCESS INSTRUMENTATION AND CONTROL SYSTEM (PICS)** Award of a one-year purchase order under State Contract ITC73 to the lowest responsive bidder for hardware support for the Deer Island Treatment Plant's PICS Human Machine Interface (HMI) system. The PICS system directly controls the operation of the plant, and the HMI system allows operations staff to monitor and control the operation of field equipment through a Distributed Control System.	**WRA-5175Q**		**Hub Technical Services, LLC**	**$32,789.00**
P-16	08/29/22	**PURCHASE OF 40 HEWLETT PACKARD 2 TB SOLID STATE DRIVES** Award a purchase order under State Contract ITC73 to the lowest responsive bidder for 40 Hewlett Packard 2 TB solid state drives.	**WRA-5167Q**		**Hub Technical Services, LLC**	**$107,011.60**
P-17	08/29/22	**PURCHASE OF 100 UNINTERRUPTIBLE POWER SUPPLIES AND 100 NETWORK MANAGEMENT CARDS** Award of a purchase order to the lowest responsive bidder for 100 Uninterruptible Power Supplies (UPS) and 100 Network Management Cards.	**WRA-5162**		**AKA Comp Solutions Inc.**	**$124,403.00**

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: FY2022 Fourth Quarter Orange Notebook

COMMITTEE: Administration, Finance & Audit

X INFORMATION
___ VOTE

Carolyn M. Fiore, Deputy Chief Operating Officer
Stephen Estes-Smargiassi, Director Planning & Sustainability
Michael D. O'Keefe, Senior Program Manager, Planning
Preparer/Title

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

RECOMMENDATION:

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

DISCUSSION:

This quarterly report is prepared by MWRA staff to track a variety of MWRA performance measures for routine review by the Board of Directors. The Orange Notebook presents performance indicators for operational, financial, workforce, and customer service parameters tracked by MWRA management each month. This staff summary includes highlights from both the fourth quarter, and the fiscal year.

Staffing Levels

High levels of staff turnover continue, especially retirements, and hiring replacements continues to be difficult. During FY22, 68 percent of hires have been either internal promotions or transfers, compared to 56 percent in FY21. While hiring internally fills one vacancy, it creates another, so a lower percentage of external hires makes it difficult to restore overall staffing levels.

At the end of the FY21 there were 1,130.7 FTEs (full time equivalents), while there were only 1045.5 FTEs at the end of FY22, compared to a target of 1150 FTEs (see page 44). For comparison, in June 2021, staffing levels were at 98 percent of the staffing target, followed by a drop in December 2021 to 95 percent, a drop to 92 percent in March 2022, and most recently a drop to 91 percent in June 2022. There has been a net loss of 17 FTEs since the last update on the Orange Notebook to the Board. As discussed at the May Board meeting, staff are undertaking a number of actions to improve recruiting and retention.

Operational Impacts of Lower Staffing:

Achievement of annual targets for a number of routine activities was adversely affected by the reduced availability of staff, caused by both lower staffing levels and the COVID Omicron variant surge early in the third quarter. Examples include delays in replacements of blow-off valves (see

page 9), reduction in planned and project maintenance work resulting in backlog at the high end of optimal at Deer Island (see page 6) and higher than preferred in Field Operations (see page 11), percent on-time laboratory results below our goal (though quality control is still well above target; see page 17) and delays in issuing permits to Significant Industrial Users (SIUs) (see page 14). Of the 82 SIU permits issued during the fiscal year, half were completed within the 120 day EPA target, due in part to vacancies (which have since been filled), but also due to delays in receiving critical data needed for permit processing, delays relating to new startup operations, and the late payment of the permit charges.

Despite lower staff levels, Deer Island staff achieved a high level of preventative maintenance completion (99 percent) nearly returning to the goal of 100 percent after two years of achieving less than MWRA's goal but more than the industry benchmark of 90 percent (see page 5). Field Operations continued to meet its goal of completing 100 percent of preventive maintenance work orders (see page 11). Water Distribution and Wastewater Pipeline crews also met most of their targets (see pages 9 and 10).

Impacts of Drought on the Water System

The dry conditions during the spring have carried over into summer, resulting by the time of this Board meeting in a nearly state-wide Level 3 Drought. While the effects of the lower precipitation are evident in reduced reservoir yields (see page 28) and increased water use (see page 31), as reported in a separate staff summary, MWRA's supplies remain in their Normal Operating range for this time of year. Interestingly, the reduced rainfall and lower tributary flows within the Wachusett Reservoir watershed mean that staff can transfer larger quantities of water from Quabbin, resulting in several measures of better water quality entering the system, including UV-254 (a measure of reactive natural organic matter in the source water) (see page 22). This is in direct contrast to the situation last year during late summer and early fall when record high rainfall made it more difficult to actively manage source water quality, as reported in the second quarter Orange Notebook staff summary.

Wastewater Treatment Plant Flows

The drought is also affecting wastewater flows. Flows at the Deer Island Treatment Plant for the Fourth Quarter were 25.3 percent below target with the four-year average (269.6 mgd actual vs. 360.9 mgd expected) due to precipitation being 50.0 percent below target (5.97 inches actual vs. 11.93 inches expected) (see page 1). The plant set new low flow records in May and June (see page 2) and continues to do so during the current quarter. Lower flows reduce energy use for pumping (see page 1) and total chlorine use for disinfection, even though the dose must be higher due to the more concentrated effluent (see page 2).

Even with the current dry conditions, the Clinton Wastewater Treatment Plant is still being affected by the carry-over impacts of last year's wet conditions. As mentioned in the Third Quarter update, substantial precipitation in the summer of 2021 led to significantly higher flows from Clinton and Lancaster. This higher inflow and infiltration resulted in the 12-month rolling annual average exceeding the NPDES permit limit (3.01 mgd) for each month in the Third Quarter. These rolling annual average exceedances continued for each month in the Fourth Quarter, despite recent lower community flows. One of the four permit violations in the Fourth Quarter was for an exceedance of the monthly average copper effluent limit. This appears to be the result of the current dry conditions reducing the dilution effect of infiltration on copper concentrations in the drinking water

discharged to the community sewers. Allowable levels of copper in drinking water are substantially higher than those allowed in the NPDES discharge permit (see page 30).

Energy Costs at the Deer Island Treatment Plant

Year-to-date Total Cost of Electricity is $1,876,095 (28.1%) higher than budgeted through February as the Total Energy Unit Price was 20.6 percent higher than target and the Total Electricity Purchased was 6.2 percent above target. The actual Total Energy Unit Price in February (the most current invoice available) was 44.2 percent above target with budgetary estimates due to the high real time electricity prices for January and February (see page 1).

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

Fourth Quarter FY2022

Q1	Q2	Q3	Q4

Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
September 14, 2022

Board of Directors Report on Key Indicators of MWRA Performance
Fourth Quarter FY22

Table of Contents

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

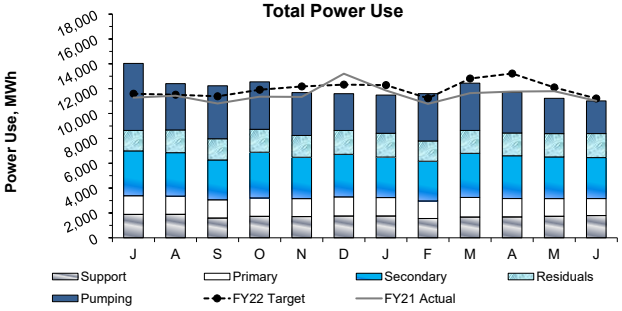
Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer

September 14, 2022

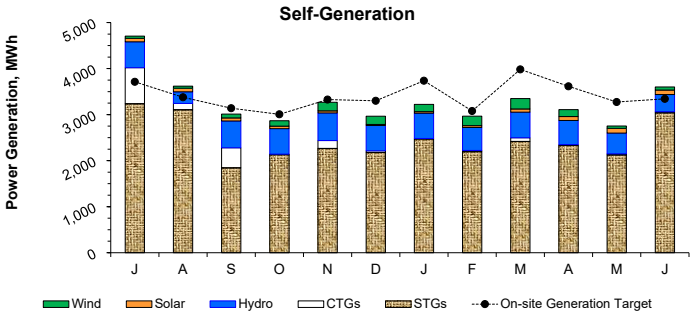
OPERATIONS AND MAINTENANCE

Deer Island Operations

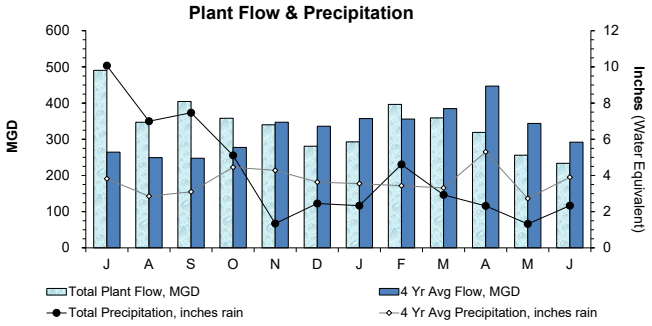
4th Quarter - FY22



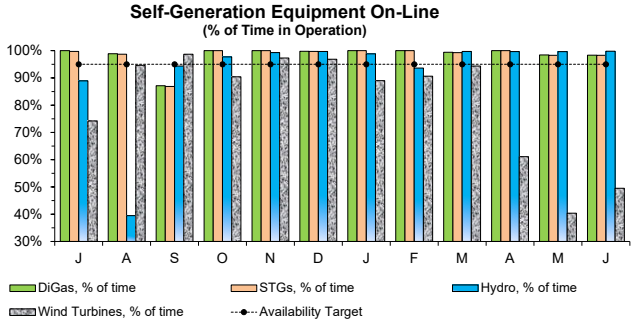
Total power usage in the 4th Quarter was 7.1% below target as plant flow for this period was 25.3% below target with historical data (4 year average) used to generate the electricity model. As a result, power used in nearly all areas and treatment processes was similar to or below target, including power used for raw wastewater pumping, which was 22.2% below target.



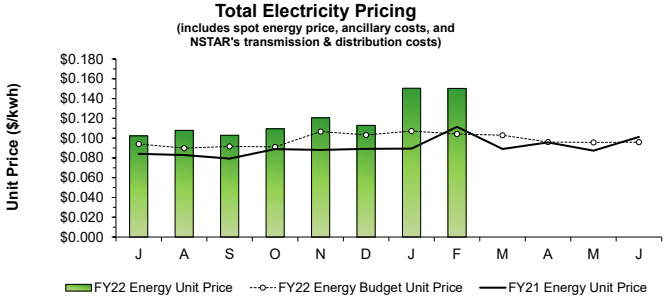
Power generated on-site during the 4th Quarter was within 1.0% of the target. CTGs generation was below target by 91.3% as the budgetary estimate based on actual generation was biased high due to extensive CTG operation in previous years for storms and for cross-harbor power cable outages during maintenance by the utility. The CTGs were operated on June 16 for an ISO-New England summer audit of the Demand Response program, and briefly for routine maintenance/checkout purposes in April and May. STGs generation was on target (+0.7%) as was Hydro Turbine generation (+1.8%). Wind Turbine generation was 38.7% below target, partially due to mechanical issues with Turbine #1 (main shaft bearing failure) which has left the turbine out of service since April 11. Solar Panel generation was 6.0% above target for the 4th Quarter.



Total Plant Flow for the 4th Quarter was 25.3% below target with the budgeted 4 year average plant flow (269.6 MGD actual vs. 360.9 MGD expected) as precipitation was 50.0% below target this quarter (5.97 inches actual vs. 11.93 inches expected.

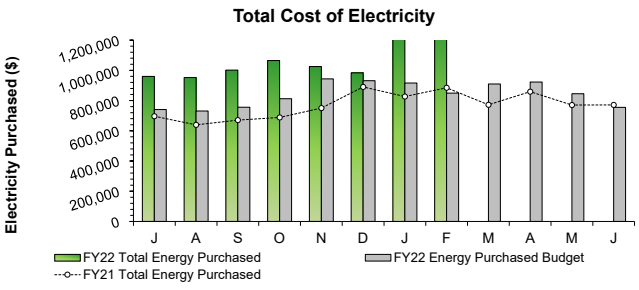


The DiGas System, STGs, and Hydro Turbine availability all exceeded the 95% availability in the 4th Quarter. Wind Turbine availability was 50.3% below target due to mechanical issues with Turbine #1 (main shaft bearing failure) which has left the turbine out of service since April 11.



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 February (the most current invoice available) was 44.2% above target with budgetary estimates due to the high real time electricity prices for January and February. The actual Total Energy Unit Prices for March, April, May, and June 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 four (4) months due to the timing of invoice receipt and review.



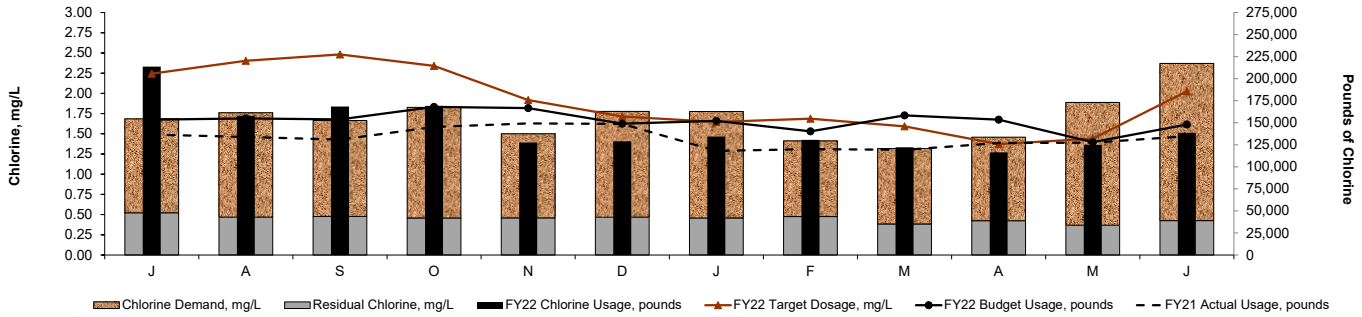
The Electricity cost data for Electricity Purchased for March, April, May, and June are not yet available as the complete invoices have not been received. Year-to-date Total Cost of Electricity is $1,876,095 (28.1%) higher than budgeted through February as the Total Energy Unit Price was 20.6% higher than target and the Total Electricity Purchased was 6.2% above target.

Note: Only months with complete Electricity Purchased data are reported. Therefore, the dataset lags by four (4) months due to the timing of invoice receipt and review.

Deer Island Operations

4th Quarter - FY22

Deer Island Sodium Hypochlorite Use



The disinfection dosing rate in the 4th Quarter was 18.0% above target with budgetary estimates. However, actual sodium hypochlorite usage in pounds of chlorine was 11.6% lower-than-expected as the average plant flow was 25.3% below target. DITP maintained an average disinfection chlorine residual of 0.41 mg/L this quarter with an average dosing rate of 1.91 mg/L (as chlorine demand was 1.50 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	1	1	0	99.9%	2.60
M	0	0	0	100.0%	0.00
J	0	0	0	100.0%	0.00
Total	24	24	0	98.9%	168.97

99.95% of all flows were treated at full secondary during the 4th Quarter. There was one (1) secondary blending event on April 19 due to high plant flows from heavy precipitation. This blending event resulted in 2.60 hours of blending and a total of 11.53 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 4th Quarter of FY22.

Deer Island Operations & Maintenance Report

Environmental/Pumping:
The plant achieved an instantaneous peak flow rate of 883.2 MGD during the morning of April 19. This peak flow occurred during a storm event that brought 0.56 inches of precipitation to the metropolitan Boston area. Overall, Total Plant Flow in the 4th Quarter was 25.3% below target with the 4 year average plant flow estimate for the quarter.

Recordsetting low monthly influent flows were recorded for May and June as the previous Total Plant Influent, North System Influent, and South System Influent flow records were broken as a result of the current regional drought conditions. These record low flows are shown in the table below and are highlighted in yellow.

May and June Low Plant Flow Records

	Previous May Low Flow Record (since plant startup July 1998)	New May Low Flow Record (set 2022)	Previous June Low Flow Record (since plant startup July 1998)	New June Low Flow Record (set 2022)	All-time Monthly Low Flow Record (since plant startup July 1998)
Total Plant Influent Flow	282.03 MGD (2016)	256.04 MGD	247.35 MGD (2016)	233.59 MGD	204.12 MGD (Sept. 2020)
North System Influent Flow	181.78 MGD (2015)	166.15 MGD	164.84 MGD (2020)	156.20 MGD	138.78 MGD (Sept. 2020)
South System Influent Flow	96.47 MGD (2016)	89.89 MGD	80.05 MGD (2016)	77.43 MGD	62.28 MGD (Sept. 2016)
Precipitation	0.92 inches (1991)	No new record set (1.32 inches)	0.00 inches (1999)	No new record set (2.33 inches)	0.00 inches (June 1999)

Secondary Treatment:
Annual turnaround maintenance was performed on Train #2 in the Cryogenic Oxygen Facility from April 25 to May 6. This two (2) week turnaround maintenance is performed on roughly half of the components and systems in the Cryogenic Oxygen Facility. During this turnaround maintenance, the contractor calibrated all the instrumentation on Cold Box unit #2 as well as, a number of other components of the oxygen plant. The same turnaround maintenance will be completed on Train #1 in the fall (likely in October).

Residuals:
Sludge feed to the digesters in both Modules #1 and #2 was temporarily suspended for several days for each digester, from May 23 to June 24, to allow the contractor to perform routine scheduled maintenance on each digester's overflow line. This maintenance is performed on only one (1) digester at a time until the work was completed in all eight (8) digesters. This routine maintenance is performed annually, typically in late fall, but was delayed by approximately six (6) months due to COVID-19 limitations during a regional peak in the infection rate of the general population.

Deer Island Operations & Maintenance Report (continued)

Odor Control Treatment:
The scrubber packing media and mist eliminator replacement project was completed on April 15. The scrubber media and mist eliminator in wet chemical scrubber units #1 through #5 in the East Odor Control (EOC) Facility, units #1 through #4 in the West Odor Control (WOC) Facility, and units #2 and #3 in the Residuals Odor Control (ROC) Facility were replaced by a contractor. 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 worked in the scrubber units.

Carbon adsorber (CAD) units #3 in the North Pumping Odor Control (NPOC) Facility, #3 and #4 in the Secondary Odor Control (SOC) Facility, and #2 in the Residuals Odor Control (ROC) Facility were emptied and refilled with new regenerated activated carbon media in May as part of routine maintenance to replace spent activated carbon.

Energy and Thermal Power Plant:
Overall, total power generated on-site accounted for 27.9% of Deer Island's total power use for the 4th Quarter. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 27.7% of Deer Island's total electrical power use for the quarter.

Wind Turbine #1 began operating intermittently starting on April 9, tripping on a rotor/generator gear ratio alarm. Staff contacted the service contractor who arrived onsite Monday April 11 and determined the turbine had experienced a main shaft rear bearing failure. The turbine will remain out of service until a cause for the failure can be determined. Once the cause is determined, to repair the main shaft rear bearing system will require the removal of the turbine blades, as well as the main shaft and housing.

On May 23, CTG-1A was taken out of service for annual maintenance on all ancillary systems including instrumentation calibrations. The work and testing were completed on schedule and the unit was returned to standby (available for operation) on May 27. During pre-checkout test operation of both CTGs ahead of this scheduled maintenance, staff identified two (2) issues with the backup CTG-2B unit, including a permissive that caused the turbine to become locked out, preventing operation of the turbine, and an intermittent ground fault issue with the 24-VDC system. Both issues were able to be corrected prior to the start of the maintenance on CTG-1A.

The boiler in the Thermal Power Plant (TPP) was taken offline in the late evening of May 31 to allow the steam system to cool sufficiently overnight before the contractor and DITP Maintenance staff could proceed with the annual dump condenser cleaning on June 1 prior to placing the steam system into summer operating mode. Boiler 201 was returned to operation later in the evening, following the dump condenser work, to restore steam production and steam turbine power generation. The TPP began operating the steam system in summer mode starting on June 2 to maximize the energy generation from the steam turbines during the seasonally lower plant heat demand period.

CTG-2B was operated for approximately 2.2 hours on July 16 for an ISO-New England declared Demand Response summer audit event.

CTG-2B successfully completed a required 2-year inspection of the start air tank on June 21 certified by the insurance inspector. This inspection requires the CTG unit to be unavailable for an estimated 12 hours, to allow time to discharge the existing air, open the vessel for inspection and to close up and recharge the air tank after completing the inspection. The start air system is required to operate the CTG. The CTG-1A start air tank is not due for an inspection until later this year in September.

Regulatory:
Emissions compliance testing on the Residuals Odor Control (ROC) treatment system on DITP was conducted by consultants from June 13 to June 14. The ROC treatment system treats combined process air from the gravity thickener and centrifuge process areas. The DITP Air Quality Operating Permit issued by the MA DEP requires that DITP conduct emissions compliance testing for the various emission units once every five (5) years to demonstrate compliance with applicable total reduced sulfur (TRS) and non-methane hydrocarbon (NMHC) emission limits. This testing requires the continuous emissions monitoring of the inlet and outlet of the odor control system over a 24-hour period for TRS at the outlet (stack) of the odor control system and for NMHC at the inlet for each process airflow. Even though it is not required by the operating permit, the inlet was also sampled for target Volatile Organic Compounds (VOCs). All the preliminary test results show that DITP was in compliance. The draft report summarizing the test results is currently being prepared by the consultants.

Other:
The MWRA officially entered into a Memorandum Of Agreement (MOA) with the MBTA in March to reconfigure the DITP public access parking lot to make the bus offload area compliant with the Americans with Disabilities Act (ADA) Standards for Accessible Design. This project to rehabilitate the public access parking lot at the entrance of the island included: making the MBTA bus offload area ADA accessible (with a new sidewalk), which required changing the direction of driving within the lot from counter-clockwise to clockwise to accommodate the new bus offload area; reducing the size of the island in the middle of the lot and reconfiguring the spaces, thus allowing for the addition of 11 parking spaces; and repaving and restriping of the parking lot. The parking lot was closed for construction starting on April 19. Parking on the Tafts Avenue Extension on the main access roadway to the DITP between the fishing pier and Gate 1 at the Thermal Power Plant was made available for public parking from 7am to 9pm during construction. Additonal parking was also available in the smaller fishing pier parking lot which opened in 2021. DITP staff were also stationed in the area to provide parking guidance for the public. The MBTA bus was rerouted during this rehabilitation to avoid this drop off point at the entrance of the island. The newly modified parking lot was reopened within the anticipated timeframe, 21 days later, on May 10.

Clinton Operations & Maintenance Report

Dewatering Building
Operations staff washed down gravity thickener # 1, the surface, and the weirs. Operations also dewatered and washed down gravity thickener # 2 in preparation for the contractor to complete repairs on the scum collecting arm. They also cleaned and flushed the gravity thickener scum well. Maintenance staff changed out the 8 inch valve on the suction line before the gravity thickener and also replaced the #1 gravity thickener muffin monster. Maintenance repaired a leak in the polymer pipe and resecured the piping brackets.

Chemical Building
Maintenance staff replaced a 3 inch gate valve and the check valve on sump pump #1. They also replaced a back pressure reducer on the # 2 ferric chloride pump. Maintenance replaced a gasket on the # 2 sodium hypochlorite tank. Maintenance staff and the electrical contractor also installed two(2) electrical outlets at the chlorine contact basin to be used for improving the mixing in this basin.

Aeration Basins
Operations staff cleaned the pH and D.O. probes. Maintenance staff replaced the Aerzen blower #2, checked the oil and ran the mechanical mixers on basins #1, #3, and #5.

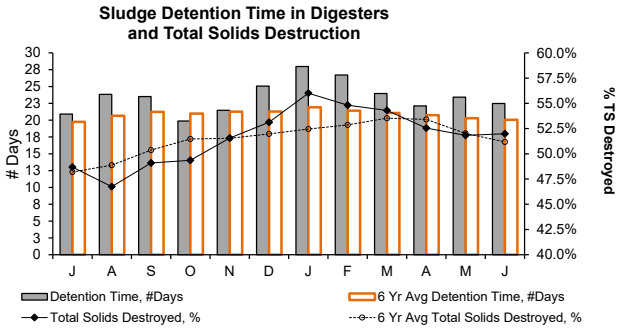
Phosphorus Building
Maintenance staff acid washed all three disk filters, cleaned the troughs, and inspected all spray nozzles. Operation staff cleaned both CL17 chlorine analyzers.

Headworks
Plant staff hosed clean Lancaster's Parshall Flume. Maintenance staff cleaned the influent and mechanical bar rack, and greased the upper and lower pin racks. They also installed a new sump pump # 2 in lower grit.

Digester Building
Maintenance staff greased the floating covers and the mixer. They also changed the oil in sludge recirculation pumps #1 and #2 and installed a new circulating pump and motor in the sludge heat exchanger. The Facilities Specialist continued with concrete repair work on the loading dock and the stairs.

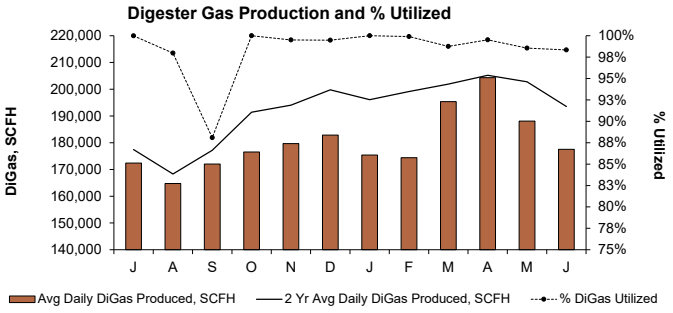
Deer Island Operations and Residuals

4th Quarter - FY22



Total solids (TS) destruction following anaerobic sludge digestion averaged 52.1% during the 4th Quarter, on target (-0.2%) with the 6 year average of 52.2%. Sludge detention time in the digesters was 22.7 days, 11.4% above target. 7.8 digesters were in operation, below target with the the 6 year average of 8.0 digesters due to scheduled routine maintenance. Sludge detention time was higher-than-expected as the volume of sludge going to the digesters was lower-than-expected.

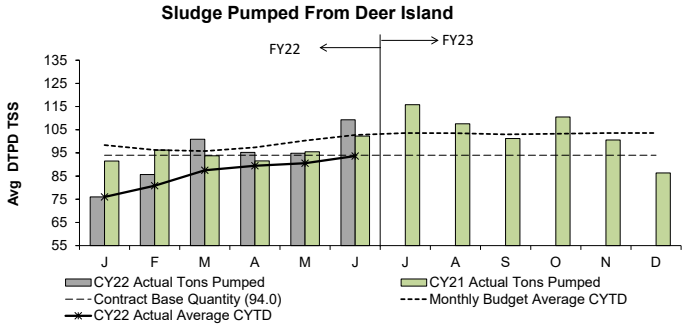
Total solids (TS) destruction is dependent on sludge detention time which is determined by primary and secondary solids production, plant flow, and the number of active digesters in operation. Solids destruction is also significantly impacted by changes in the number of digesters and the resulting shifting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



The Avg Daily DiGas Production in the 4th Quarter was 5.2% below the 6 Year Avg Daily DiGas Production. 98.8% of all the DiGas produced in the quarter was utilized at the Thermal Power Plant (TPP).

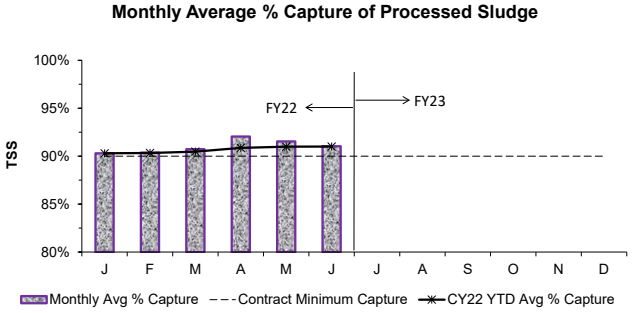
Residuals Pellet Plant

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).

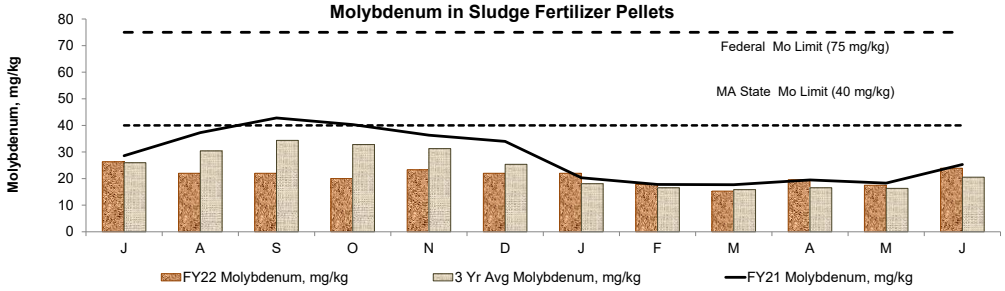


The average quantity of sludge pumped to the Biosolids Processing Facility (BPF) in the 4th Quarter was 99.8 TSS Dry Tons Per Day (DTPD), 9.0% below target with the FY22 budget of 109.6 TSS DTPD for the same period.

The overall CY22 average quantity of sludge pumped through July is 93.7 DTPD, 8.8% below target compared to the CY22-to-date average budget of 102.7 DTPD for the same time period.



The contract requires NEFCO to capture at least 90.0% of the solids delivered to the Biosolids Processing Facility. The average capture for the 4th Quarter was 91.54%.



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.

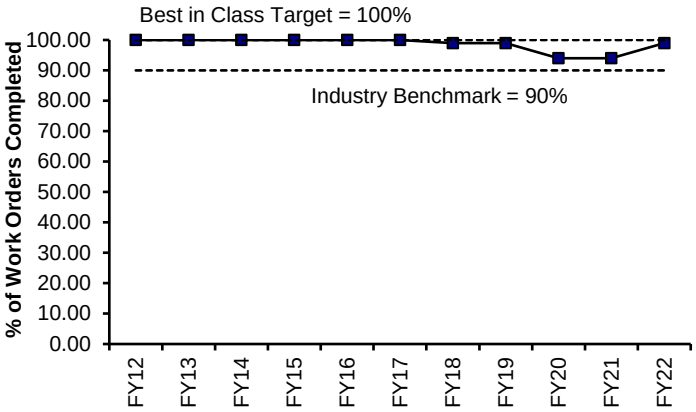
Overall, the levels have been below the DEP Type 1 limit for all three (3) metals. For Mo, the level in the MWRA sludge fertilizer pellets during the 4th Quarter averaged 20.3 mg/kg, 14% above the 3 year average, 49% below the MA State Limit, and 73% below the Federal Limit.

Deer Island Yearly Maintenance Metrics

FY22

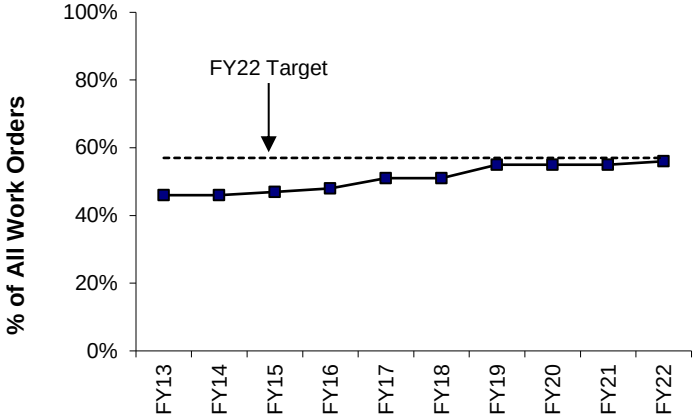
Proactive and Productivity Measures

Preventative Maintenance



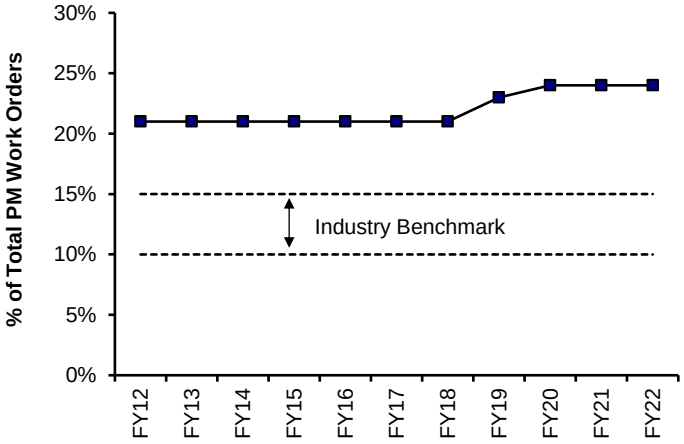
The industry benchmark is 90% for Preventative Maintenance (PM) completion. Upon reaching the 90% goal in FY05, the target goal was increased to the "Best in Class" Target of 100% PM completion. Reliability-Centered Maintenance (RCM) and PM optimization efforts have continued since FY01. PM completion rate was 99% in FY22 .

Maintenance Kitting



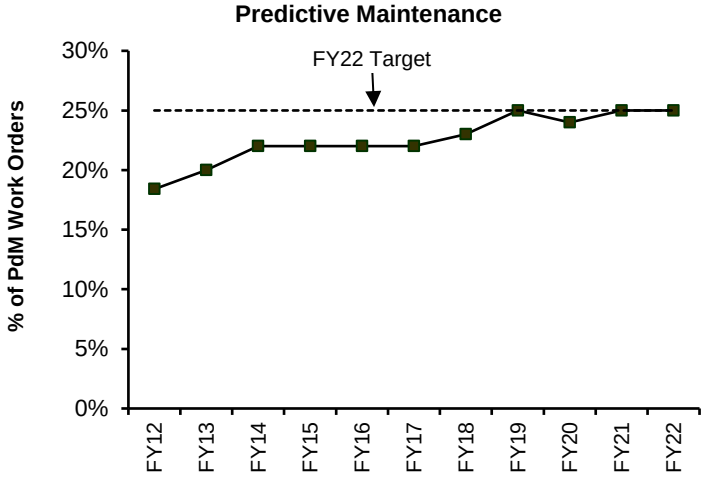
Preventive Maintenance (PM) inventory items were loaded into Maximo to assign spare parts for equipment to PM work orders. DITP reached the PM kitting goal of 100%. In FY12 a new graph was developed to track kitting of all maintenance work orders in an effort to increase wrench time. Staff continues to fine-tune the process to "kit" all maintenance work orders. Kitting is considered a best practice by maintenance and reliability professionals. It entails staging parts necessary to complete maintenance work. Kitting allows maintenance staff to spend more time "turning the wrench" and less time waiting for parts at the stockroom window. Kitting for FY22 was 57%, meeting DITP's goal of 57%.

Operations Light Maintenance PMs



The percentage of preventive maintenance work order hours completed by Operations staff (non maintenance staff) increased from less than 1% in January 2002 to the current level of 24% in FY22. DITP reached the industry benchmark range of 15% in April 2003 and has exceeded the goal through FY22. Operations completes approximately 684 PM work orders per month.

Predictive Maintenance

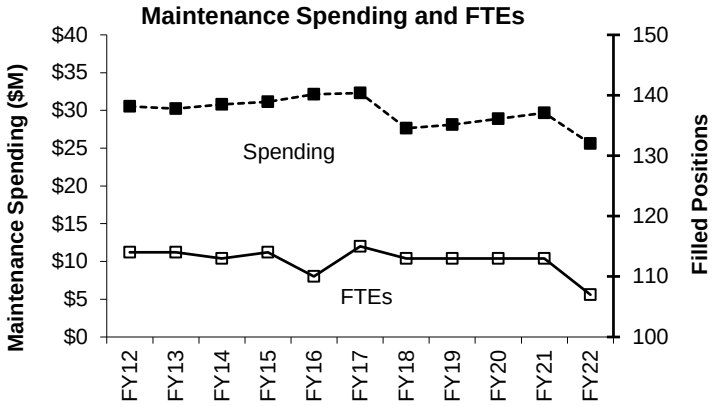


Predictive maintenance has steadily increased from 2% in FY03 to 25% in FY22, DITP's met the FY25 goal of 25%. This percentage in predictive maintenance was achieved through the expanded use of lubrication, vibration, thermography, and acoustic ultrasonic testing techniques. The Condition Monitoring Group continually reviews and investigates new opportunities and initiatives to expand condition monitoring testing and analysis.

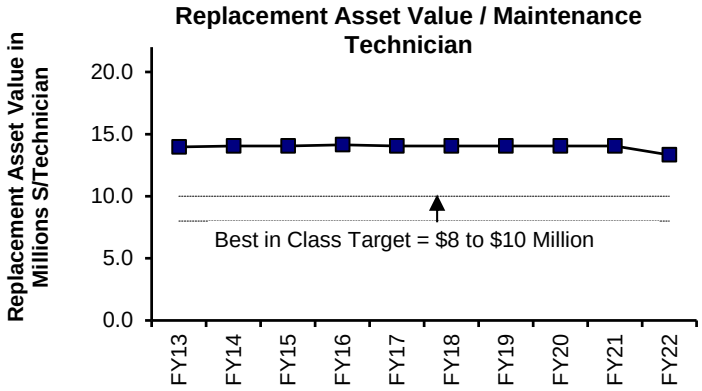
Deer Island Yearly Maintenance Metrics

FY22

Overall Maintenance Program Measures

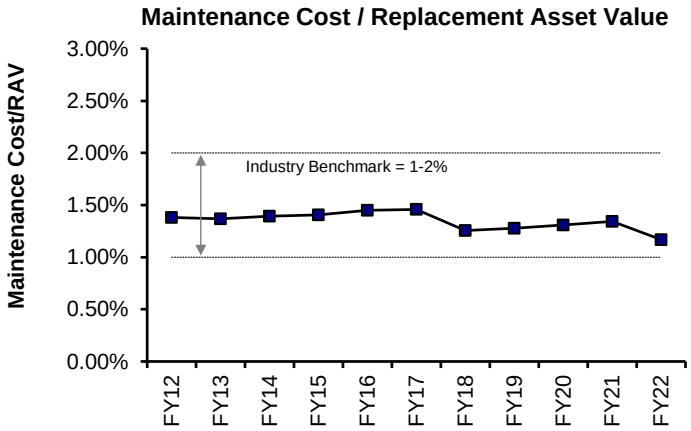


DITP's Maintenance staff is currently at 107 FTE's. Maintenance staff levels ended at 107 due to retirements and hiring challenges for trades personnel. Maintenance has worked to meet our goals though implementation of numerous maintenance efficiencies including: Operations performing light maintenance, cross-functional training and flexibility, and Reliable-Centered Maintenance. This year's Maintenance spending decreased for materials and services.

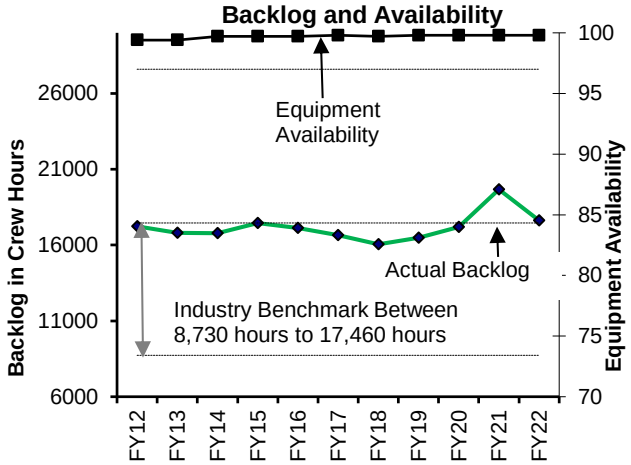


DITP adopted a "best in class" target of $8-$10 Million/Technician for maintenance staffing. DITP remains above this Best in Class. However, as the plant ages and additional equipment replacements are expected, DITP management will reassess staffing as needed.

The Maintenance Spending graph shows actual annual maintenance spending and CIP asset replacements (equipment costs only). Maintenance staff continues to evaluate plant assets and requirements for replacement of obsolete equipment to ensure the plant operates at maximum efficiency. In FY22, overall spending decreased slightly from FY21 due to a reduction in CIP Spending. Maintenance Projects in FY22; SSPS VFD Replacements, Gravity Thickener Rehabilitation, Gravity Thickener Overflow Piping Replacement, Gas Protection System Replacements, Installation of two W3 Strainers, and Installation of LED Emergency Lights throughout DITP.



The industry benchmark for annual maintenance spending is between 1% to 2% of replacement asset value, currently DITP is at 1.17%. The plant's replacement asset value is calculated at approximately $2.6 billion dollars. DITP's current maintenance spending is within the industry benchmark. Overall maintenance spending has decreased slightly from last year. DITP Maintenance CEB spending is $22.9 million. CIP spending was $2.6 million (equipment costs only), down $2.4 million from the previous year. CIP/CEB Spending totaled $25.6 million in FY22.



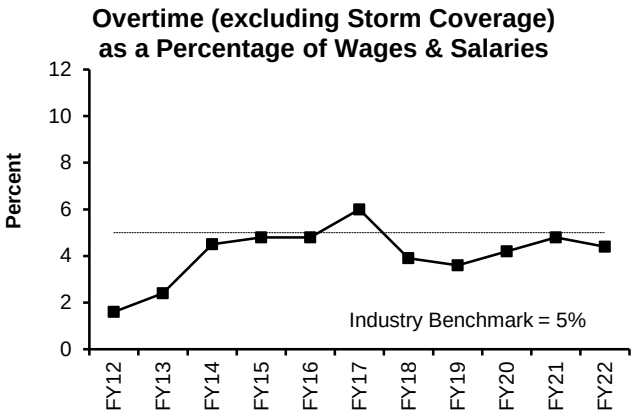
Industry benchmark for Equipment Availability is 97%. Deer Island has exceeded this benchmark over for the last ten years. In FY22 the availability was 99.8%. The high percentage in Equipment Availability during FY22 is due to redundancy of equipment and effective/efficient maintenance practices.

Industry Benchmark for Backlog is between 8,730 to 17,460 hours for maintenance based on current staffing, the total average backlog for FY22 was 17,649 hours, which is slightly above industry benchmark. DITP Maintenance has made significant progress in decreasing our backlog.

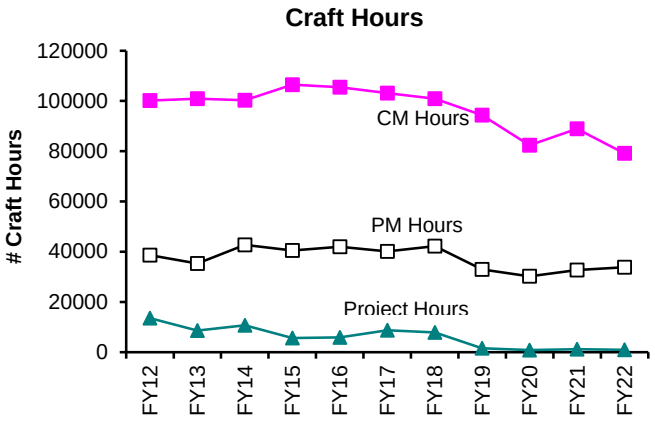
Deer Island Yearly Maintenance Metrics

FY22

Overall Maintenance Program Measures (cont.)



Management continues its effort to keep overtime below the industry benchmark. DITP maintenance overtime was 4.4% for FY22. Management has taken steps to reduce overtime spending by limiting overtime to repair critical equipment and systems only. DITP has been under the Industry Benchmark every year except FY17, due to the increase in overtime for the Eversource Cable Outage.



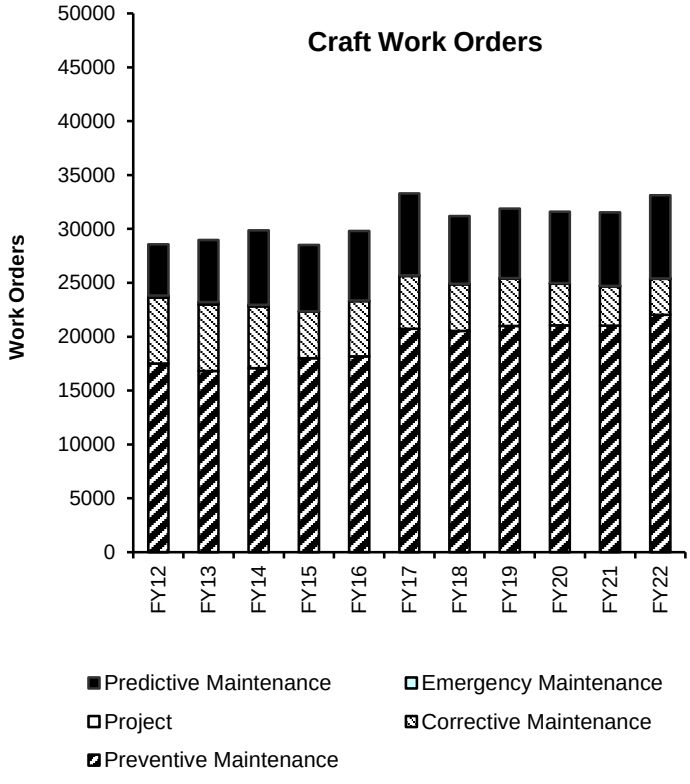
This years significant decrease in Corrective Maintenance (CM) hours was due to staffing issues (retirements and hiring challenges for trades personnel

Preventative and Project work orders roughly stayed the same.

Continued optimization of the Preventive Maintenance (PM) program through the transfer of some light maintenance tasks from Maintenance to Operations staff (24% of PM work orders in FY22), elimination of duplicate work orders, combining some PM's, increasing PM frequency due to equipment history.

This years significant decrease in Corrective Maintenance (CM) hours was due to staff focused on critical work orders only to ensure all required equipment was available.

Maintenance did complete some significant maintenance work in FY22: Overhauled Centrifuge #10, Repaired Dewatering Line, Repair of Winthrop Terminal Facility RWW Pump #5, Disinfection W3L Valve Installation, Fabrication of RSL Shafts/Access Hatches, Installation of Vapor Coil Bundle for CJ:LOX.TK/LVAP-1, Rebuild of Admin/Lab Chiller #3, Waste Gas Burner Flare #2 Manifold Pipe Repair and DITP Parking Lot Upgrade, Installation of two W3 Strainers, and Installation of LED Emergency Lights throughout DITP.



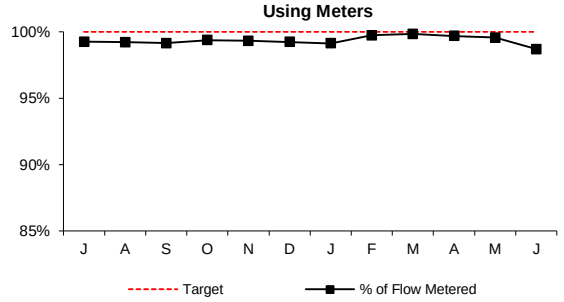
During FY22, the overall number of work orders increased .4% from the previous year. The increase is due to aging equipment replacements, with increased preventative schedules.
The Planning department is continuously modifying PM, PdM, and CM Job Plans to ensure maintenance is being performed efficiently and effectively, while ensuring reliability and availability of DITP's Assets.

Operations Division Metering & Reliability

4th Quarter - FY22

WATER METERS

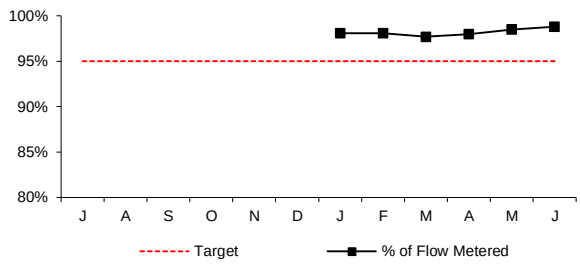
Percent of Total Revenue Water Deliveries Calculated Using Meters



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 Q4 FY22, 0.7% of the billed water flow was estimated. 99.3% was based on meter actuals. A total of 1.5% 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 0.2% was billed through a temporary bypass setup at meter 243 in Arlington.

WASTEWATER METERS

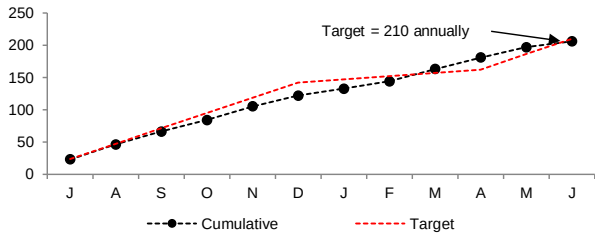
Percent of Total Wastewater TransportCalculated Using Meters



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 Q4F Y22, 98.6% of billed data was metered with only 1.4% estimated. All six months since the new wastewater meters have been online have been above the 95% target with the lowest month at 97.9%

WATER DISTRIBUTION SYSTEM PIPELINES

Miles Surveyed for Leaks



During the 4th Quarter of FY22, 43.04 miles of water mains were inspected. The total inspected for the fiscal year to date is 206.13.

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	0	1	3	16
Leaks Repaired	0	2	1	1	1	2	4	1	0	0	1	2	15
Backlog	5	5	4	4	4	3	3	3	3	3	3	4	n/a

During the 4th Quarter four leaks were detected, and three 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, Malden, Medford, Newton, Revere, Saugus, Somerville, Wakefield and Woburn.

4th Quarter - Leak Report FY22

Date Detected	Location of Leaks	Repaired
07/01/21	Fellsway West @ Fells Ave., Medford	08/26/21
08/08/21	Fellsway 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
05/18/22	W. Roxbury Pkwy. @ VFW Pkwy, Boston	05/19/22
06/01/22	Metropolitan Ave. @ Summit St., Milton	06/28/22
06/06/22	Bellevue St. @ Prospect St., Waltham	06/16/22

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
06/09/22	West St. @ Pierce St., Hyde Park

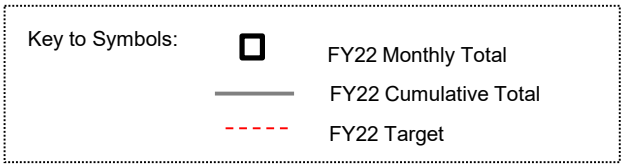
Water Distribution System Valves

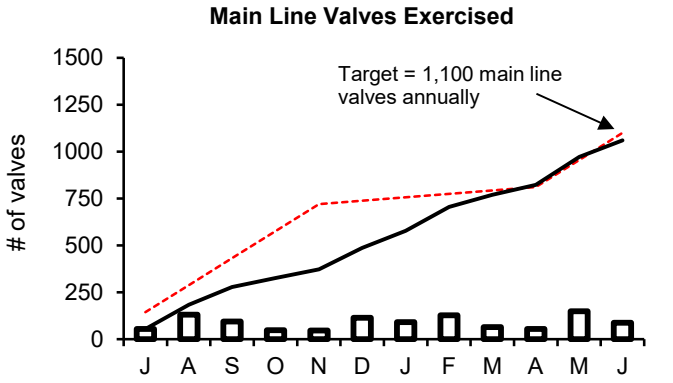
Quarter 4 - FY22

Background

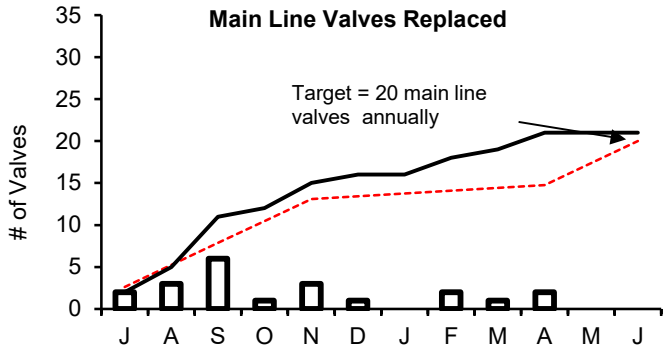
Valves are exercised, rehabilitated, or replaced in order to improve their operating condition. This work occurs year round. Valve replacements occur in roadway locations during the normal construction season, and in off-road locations during the winter season. Valve exercising can occur year round but 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%

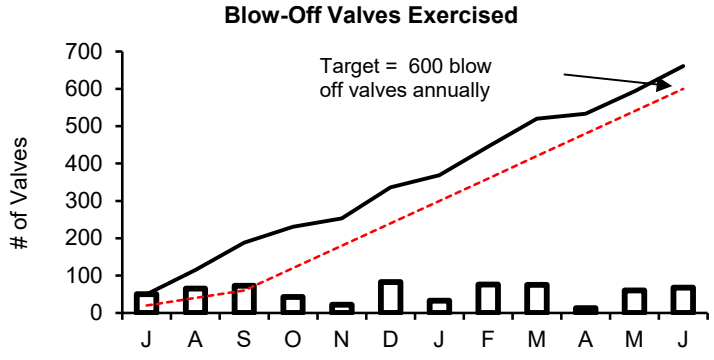




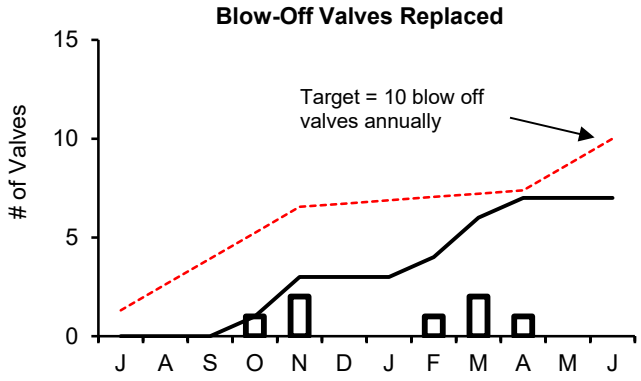
During the 4th Quarter of FY22, 291 main line valves were exercised. The total exercised for the fiscal year to date is 1,060.



During the 4th Quarter of FY22, there were two main line valves replaced. The total replaced for the fiscal year to date is 21.



During the 4th Quarter of FY22, 141 blow off valves were exercised. The total exercised for the fiscal year to date is 661.



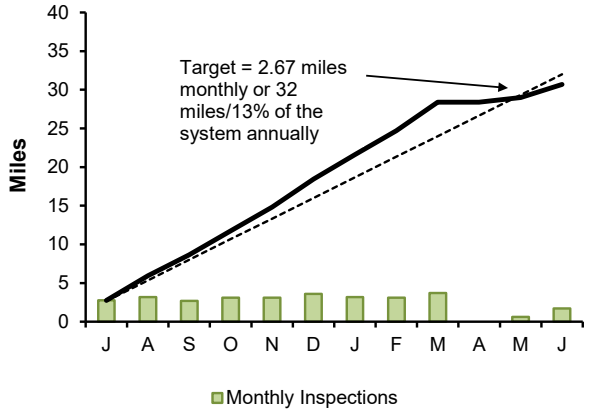
During the 4th Quarter of FY22, there was one blow off valve replaced. The total replaced for the fiscal year to date is seven. Below target due to isolation & permit issues and staff vacancies.

Wastewater Pipeline and Structure Inspections and Maintenance

ONB 4th Quarter FY22

Inspections

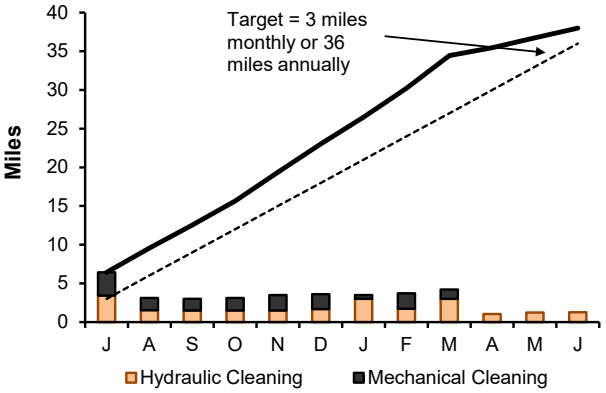
Pipeline Inspections



Staff internally inspected 2.30 miles of MWRA sewer pipe during this quarter.The year to date total is 30.69 miles. No Community Assistance was provided.

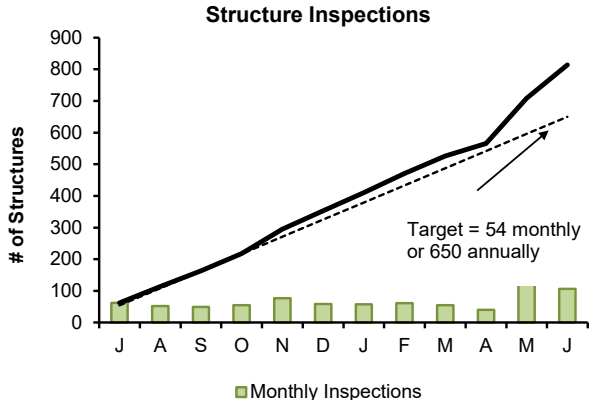
Maintenance

Pipeline Cleaning



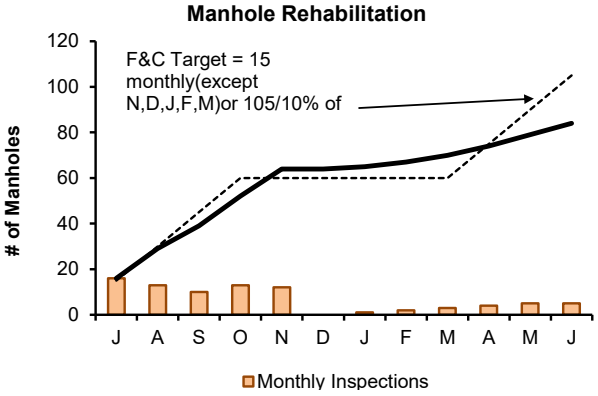
Staff cleaned 3.56 miles of MWRA sewer pipe, and removed 35 yards of grit. The year to date total is 38.00 miles. No Community Assistance was provided.

Structure Inspections



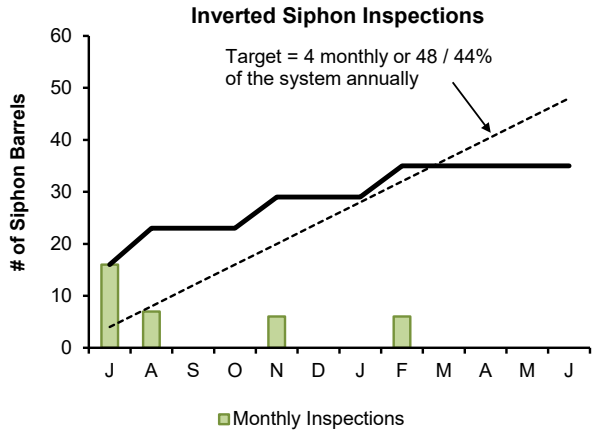
Staff inspected the 36 CSO structures and performed 252 other additional manhole/structure inspections during this quarter. The year to date total is 814 inspections.

Manhole Rehabilitation



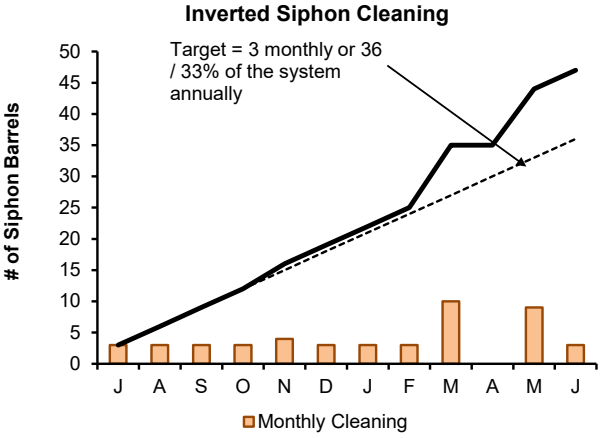
Staff replaced 14 frame and cover replacements this quarter.The year to date total is 84.

Inverted Siphon Inspections



Staff did not inspect any siphon barrels this quarter. The year total is 35 inspections.

Inverted Siphon Cleaning

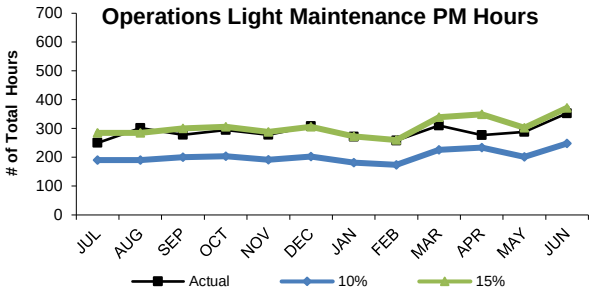


Staff cleaned 12 siphon barrels this quarter. The year total is 47.

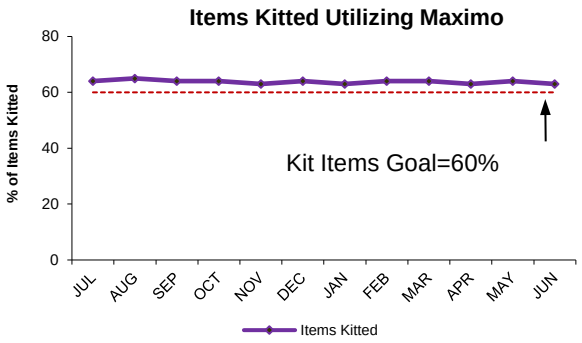
Field Operations' Metropolitan Equipment & Facility Maintenance

4th Quarter - FY22

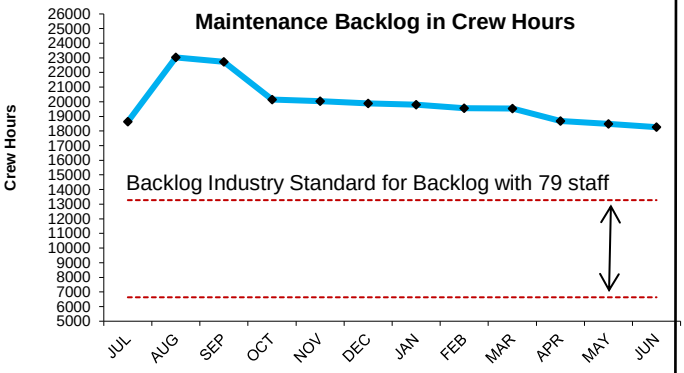
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion is 100%. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus reducing maintenance spending. Backlog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



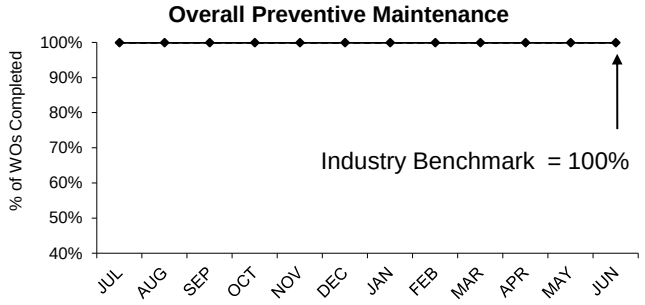
Operations staff averaged 306 hours per month of preventive maintenance during the 4th Quarter of FY22, an average of 14% of the total PM hours for the 4th Quarter, which is within the industry benchmark of 10% to 15%.



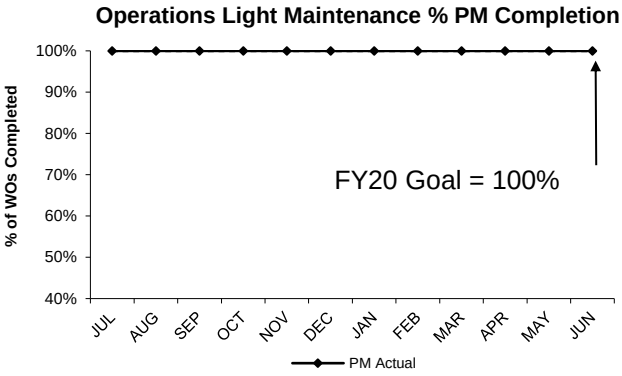
Operations' FY22 maintenance kitting goal has been set at 60% of all work orders to be kitted. Kitting is the staging of parts or material neccesary to complete maintenance work. In the 4th Quarter of FY22, 63% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.



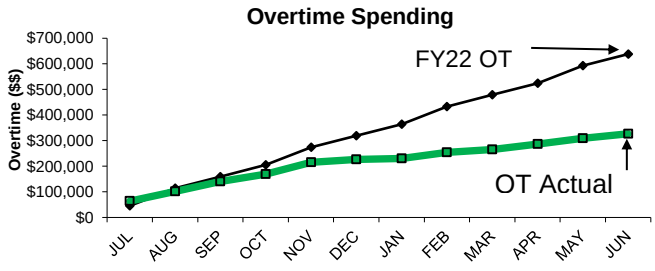
The 4th Quarter of FY22 backlog average is 18,476 hours. Management's goal is to continue to control overtime and try to get back within the industry benchmark of 6,636 to 13,275 hours. The increase is due to vacations, vacancies and several large maintenance projects.



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 4th Quarter of FY22.



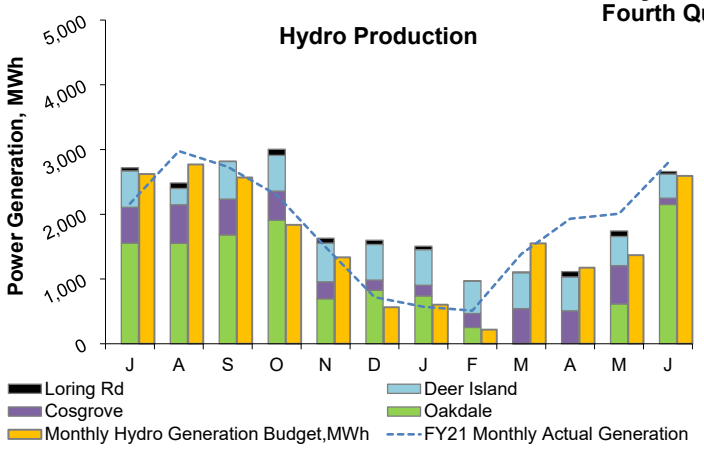
Wastewater Operations complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY22 PM goal is completion of 100% of all PM work orders assigned. Operations completed 100% of PM work orders in the 4th Quarter of FY22.



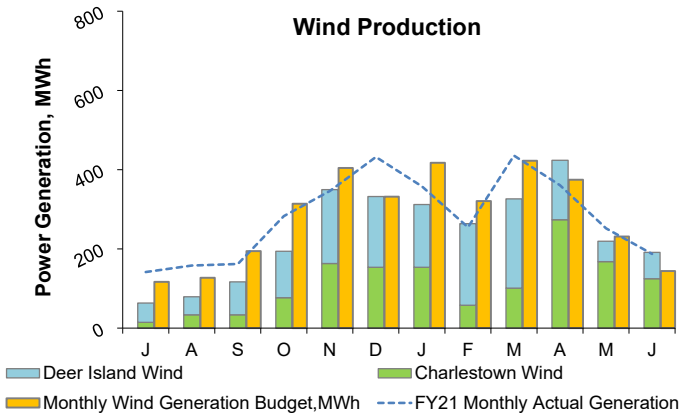
Maintenance overtime was $34,421 under budget on average, per month, for the 4th Quarter of FY22. Overtime is used for critical maintenance repairs and wet weather events. The overtime budget through the 4th Quarter of FY22 is $638,195. Overtime spending was $326,889 which is $311,306 under budget for the fiscal year.

Renewable Electricity Generation: Savings and Revenue

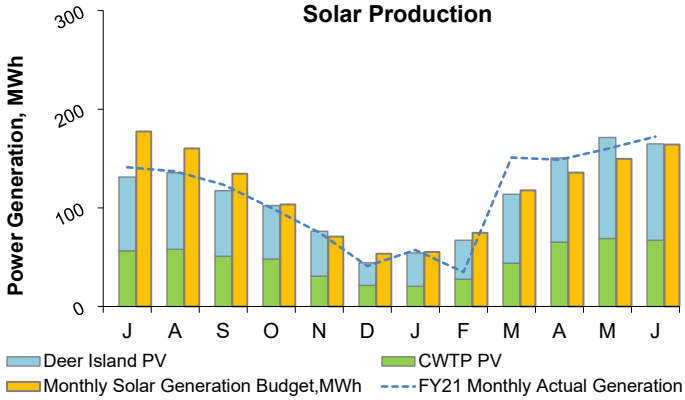
Fourth Quarter, 2022 - FY22



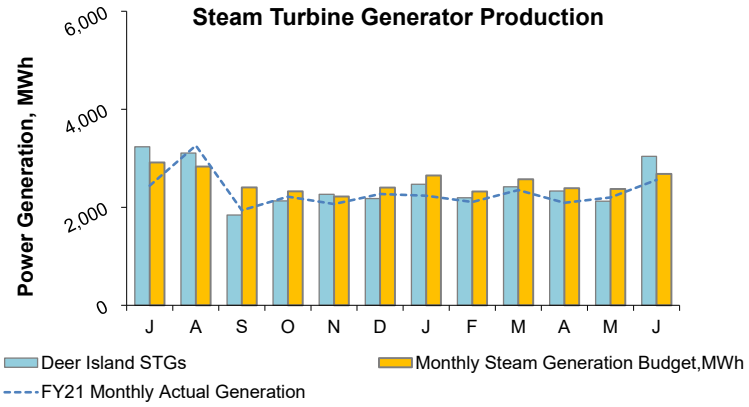
In Q4 of 2022, the renewable energy produced from all hydro turbines totaled 5,638 MWh; 10 % above budget[3]. The total savings and revenue to date in FY22 (actuals through Feb[1]) is $1,230,077 ; 129% above budget[3]. The savings and revenue value does not include RPS REC revenue (see next page).



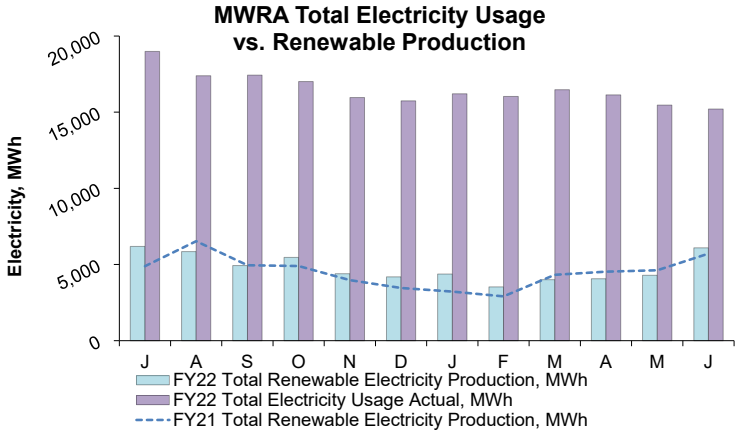
In Q4 of 2022, the renewable energy produced from all wind turbines totaled 835 MWh; 11% above budget[3]. The total savings and revenue to date in FY22 (actuals through Feb[1]) is $281,198 ; 23% below budget[3]. The savings and revenue value does not include RPS REC revenue (see next page).

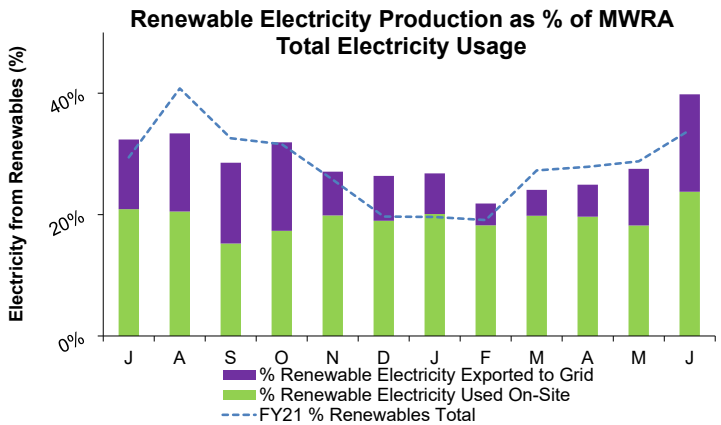


In Q4 of 2022, the renewable energy produced from all solar PV systems totaled 487 MWh; 11% above budget[3]. The total savings and revenue to date in FY22 (actuals through Feb[1]) is $109,678 ; 3% above budget[3]. The savings and revenue value does not include RPS REC revenue (see next page).



In Q4 of 2022, the renewable energy produced from all steam turbine generators totaled 7,496 MWh; 1% above budget[3]. The total savings and revenue to date in FY22 (actuals through Feb[1]) is $2,308,973 ; 17% above budget[3]. The savings and revenue value does not include RPS REC revenue (see next page).



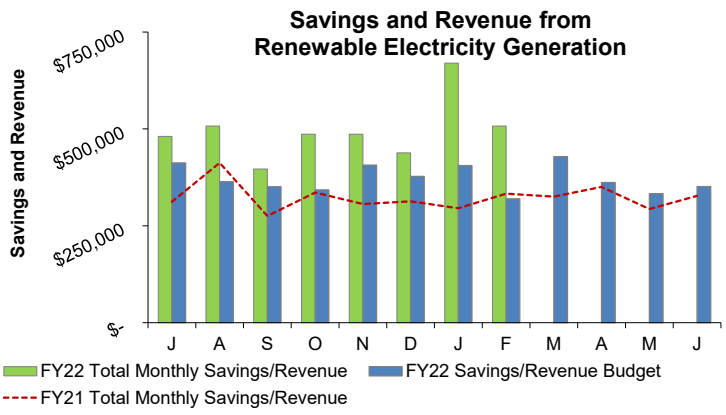


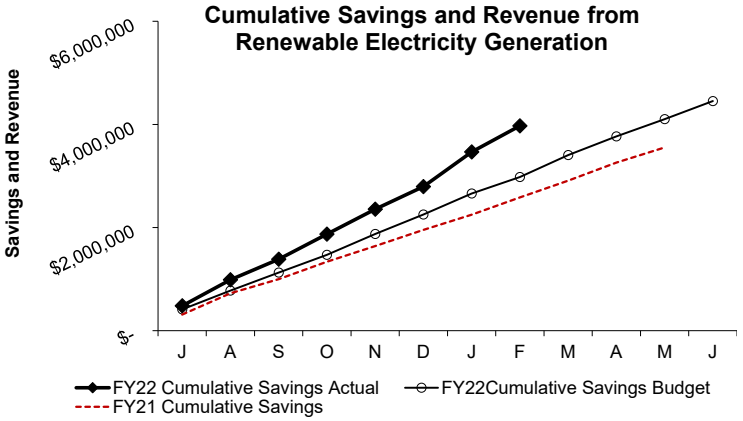
In Q4 of 2022 , MWRA's electricity generation by renewable resources totaled 14,456 MWh, 5% above budget. MWRA's total electricity usage was approximately 46,817 MWh. Renewable generation was 31% of total electric use. The MWRA total electricity usage is the sum of all electricity purchased for Deer 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

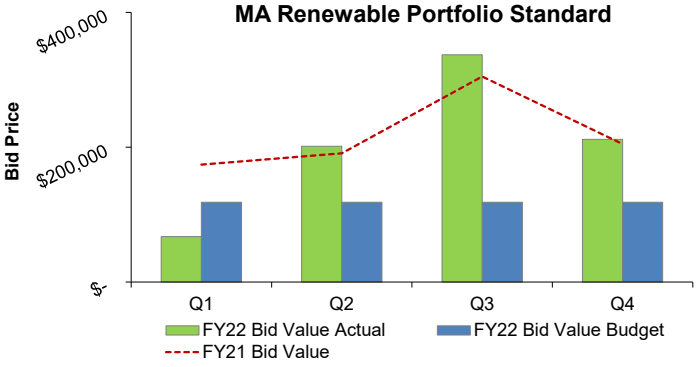
Fourth Quarter 2022 - FY22

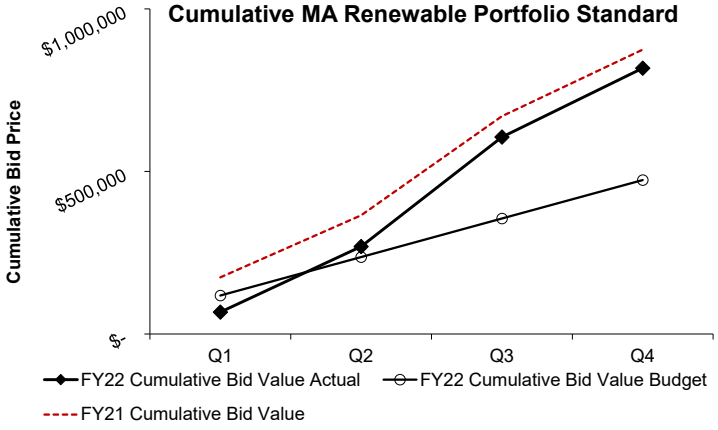




Savings and revenue from MWRA renewable electricity generation in the first eight months of FY22 (actuals only through Feb[1]) is $3,929,926 which is 32% above the budget[3].

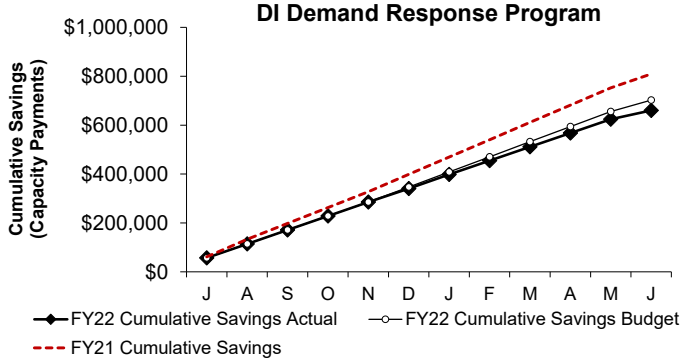
Savings and revenue[2] from all renewable energy sources include wind turbines, hydroelectric generators, solar panels, and steam turbines (DI). This includes savings and revenue due to electricity generation (does not include avoided fuel costs and RPS RECs).
The use of DITP digester gas as a fuel source provides the benefit of both electricity generation from the steam turbine generators, and provides thermal value

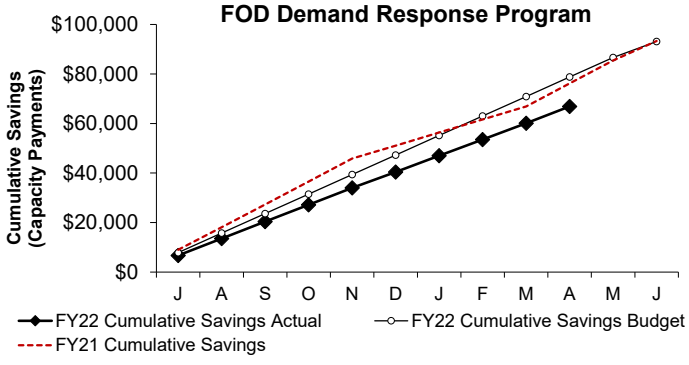




Bids were awarded during the 4th Quarter[1] from MWRA's renewable energy assets; 3,216 Q4 CY2021 Class I Renewable Energy Certificates (RECs); 2,973 Q4 CY2021 Class 2 RECs; and 37 Q4 CY2021 Solar RECs were sold for a total value of $211,682 RPS revenue; which is 79% above budget[3] for the Quarter.

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.



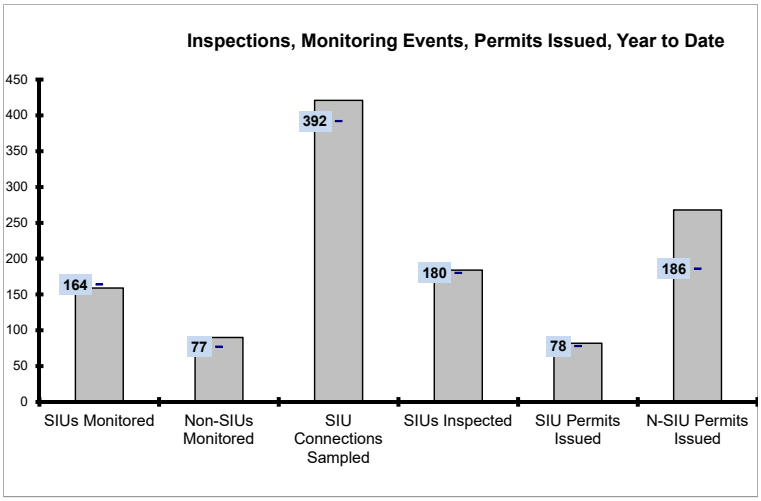


Currently Deer Island, JCWTP, Loring Rd, and Brutsch participate in the ISO-New England Demand Response Programs[4]. By agreeing to reduce demand and operate the facility generators to help reduce the ISO New England grid demand during periods of high energy demand, MWRA receives monthly Capacity Payments 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 June[1] total $660,190 for DI and payments for FOD total $66,900 through April[1].

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

4th Quarter - FY22



EPA Required SIU Monitoring Events
for FY22: 164
YTD : **159**

Required Non-SIU Monitoring Events
for FY22: 77
YTD : **90**

SIU Connections to be Sampled
For FY22: 392
YTD: **421**

EPA Required SIU Inspections
for FY22: 180
YTD: **184**

SIU Permits due to Expire
In FY22: 78
YTD: **82**

Non-SIU Permits due to Expire
for FY22: 186
YTD: **268**

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

The "SIU Monitored" data above, reflects the number of industries monitored; 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								
	0 to 120		121 to 180		181 or more		Permits Issued	
	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	1	12	4	1	1	6	6	19
May	6	18	6	10	4	15	16	43
Jun	19	21	0	1	3	11	22	33
% YTD	50%	47%	33%	19%	17%	34%	82	268

This is the last quarter of the MWRA fiscal year, FY22. While the department caught up with overall numbers of SIU and non-SIU permits issued, due to staff turnover coupled with the workload of the available personnel and the lingering effects the COVID pandemic, the EPA standards were not achieved .

In the fourth quarter, 139 permits were issued, of which 44 were SIUs. Twenty-six of the SIU permits were issued within the 120-day timeframe, with eight issued beyond 181 days. There were 95 non-SIU permits issued, of which 44 were issued late.

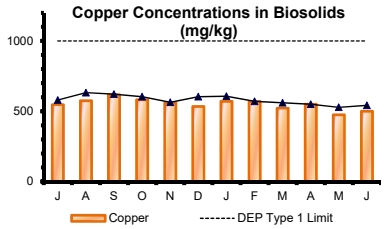
Reasons for late issuances continue to include a) waiting for critical data needed for permit processing b) delays relating to new start-up operations and c) the late payment of the relevant permit charges.

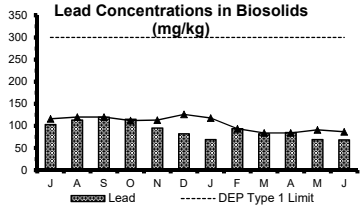
Overall, in this fiscal year, FY22, SIU permits have been issued with an EPA 50% compliance rate, falling short of the 90% compliance rate required.

During FY22, six SIUs changed status - three SIUs changed status from SIU to Non-SIU or went out of business while three industries were added to the SIU list. TRAC met the FY22 goals for number of SIU permits issued and completed SIU Inspections.

For the Clinton Sewer Service area, there were no SIU permits issued during the FY22 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
4th Quarter – FY22

Western Water Operations and Maintenance

- Carroll Water Treatment Plant: In April, staff conducted a planned shutdown for approximately 4 hours to update the PLC settings for the UV system and ensure they are compatible with the upgraded SCADA equipment.

- The Hypochlorite Project to replace all the piping and pumps continued. All piping away from the pumps was completed in May. Three out of 5 of the new pumps are in place. Troubleshooting on the pump controls has continued through June.

- As part of the Marlborough pump station project, the main CWTP gate was closed on 2/28. An excavation was performed to reach the 30" supply line but a redesign for the tap and excavation was required. Most work was completed in May and the main gate was reopened in mid-June.

- Nash Hill Tank Inspection: As part of a larger storage tank inspection, staff isolated Nash Hill storage tank #1 in April and #2 in May. After successful ROV internal inspections, the tanks were tested and returned to service.

- Wachusett Reservoir Spill Drills: MWRA and DCR staff participated in two interagency drills at Wachusett Reservoir. On May 18, there was an drill with a number of state and local organizations along with PanAm and CSX railroad that responded to a simulated leaking derailed train car. Containment booms were actually deployed as part of this exercise. During the last week in June, staff took part in an EPA sponsored multi-day drill to discuss and respond to a possible spill of radioactive material. This was an interagency drill and involved many internal and external groups including EPA, DEP and MDPH.

Operations Engineering

- Staff provided support for system expansion planning to the north and south, and began the development of an Emergency Action plan for Newton and communities supplied by Section 80.

Wastewater Operations & Maintenance

- Nut Island Headworks Odor Control & HVAC Improvements: The contractor continued work on
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- the facility odor control system and HVAC equipment. Operations staff assisted with demolition and startup of existing air handling units in the pump and blower room and south mechanical room, installation of MCC buckets for new equipment, installation of temporary ductwork to maintain facility ventilation, relocation of existing fire alarm circuits and fire sprinkler piping in conflict with new equipment, commissioning odor control fans and dampers, and layout and initial commissioning of new wet scrubber equipment.
-

Metro Equipment and Facility Maintenance

Columbus Park Headworks: Staff rehabilitated the #3 channel, including of all new chain, a new shaft, sprockets and flyghts as needed.

- Hingham Pump Station: Staff installed new suction, discharge and check valves for 3 pumps, and a plug valve on the bypass pump connection.
- New Neponset Pump Station: Electricians installed LED lights in the screen room.
- IPS: Vendor removed and replaced Facility Main Transformer.
- Chelsea Creek Headworks: Staff inspected Channel # 1 as part of facility turn over from Construction.
- Various Facilities: MWRA Electricians worked with Infra-Red Building and Power conducting non-invasive thermal imaging maintenance on electrical switch gear at Cottage Farm, Loring Road, Framingham Pump Station and Commonwealth Ave Pump Station.

TRAC

Compliance and Enforcement: TRAC issued 59 Notices of Violation, 3 Extension Letters, 4 Notices of Noncompliance/Order to Comply, 1 Return to Permit Letter, and 1 Penalty Assessment Notice.

Inspections and Permitting:

- This quarter TRAC issued a total of 78 MWRA 8(m) Permits allowing companies to work within an easement or other property interest held by the Authority. Permits were issued in an average of 94 days from the date of application.
- TRAC monitored the septage receiving sites 10 times and conducted 15 inspections of permitted

septage haulers. Staff inspected 31 new and 12 existing gasoline/oil separators.

- TRAC staff conducted 42 Annual SIU Inspections and 217 other inspections, including inspections for enforcement, permit renewal, NSIU, follow-up, temporary construction dewatering sites, group/combined permit audits, out-of-business facility reviews, and surveys.
- 139 MWRA Sewer Use Discharge Permits were issued and/or renewed. One permit was issued and/or renewed in the Clinton Service Area.

Monitoring: TRAC completed 5 first time SIU monitoring events, 16 first time NSIU monitoring events and 385 other events including Clinton NPDES sampling, Clinton Local Limits sampling, Metropolitan Local Limits sampling, Clinton and Metropolitan 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

- Algae: DCR and MWRA conducted sampling at Wachusett and Quabbin reservoirs. Low levels of nuisance algae were identified but were below levels of concern. The buoy data continues to help assess potential algae concentrations and focus sampling efforts.

Wachusett & Quabbin Reservoir Monitoring Buoys

- On April 25, Buoys B2 (near Cosgrove Intake) and B4 (Basin South) were deployed on Wachusett Reservoir. Buoys B3 (Basin North) and B5 (Quabbin Intake) were deployed on May 3 and 12.

- Regulatory Sampling: During spring Lead and Copper Rule sampling, four sites had results over the lead action level. In response staff collected and tested samples near those locations and all met pH and alkalinity limits. Staff collected quarterly samples for the Optimum Water Quality Parameters program during June, measuring pH and alkalinity at 27 sites across the MWRA service area. All samples met DEP required limits.

- Non-Regulatory: Starting in May, staff collected monthly conducted nitrification monitoring at all MWRA storage tanks. Staff participated in an expert panel discussion on distribution system water quality, and two multi-agency contamination response drills.

- Training & Guidance:
  - In June, MWRA posted a YouTube video on proper sampling for coliform and chlorine.
  - Staff conducted five chemical delivery training sessions for Wastewater Operator and Water Operator staff during the quarter.

Environmental/Chemical Contract Management

- Staff are closely monitoring bulk chemical inventories and adherence to delivery schedules, which includes communication with chemical suppliers. Met with Operations, Procurement, and EnQual staff to review the draft Emergency Action Plan for chemical shortages on May 4th.

Environmental Quality-Wastewater

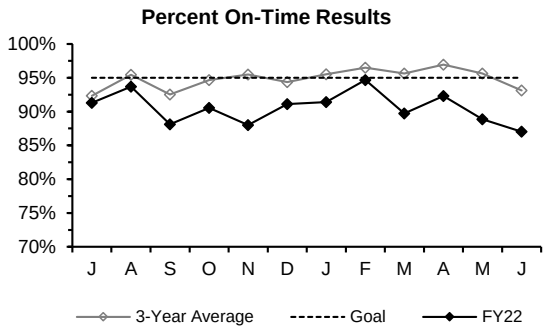
- Ambient Monitoring: Due to elevated paralytic shellfish poisoning observations by the Division of Marine Fisheries on June 21, *Alexandrium* rapid response surveys were initiated per our protocol, with the first survey combined with the regular water column survey on June 28. In April staff participated in the annual technical workshop on 2021 monitoring results, and provided the Outfall Monitoring Science Advisory Panel with a requested briefing on aspects of the Bays Eutrophication Model.

- Harbor/CSO Receiving Water Monitoring: Biweekly harbor and daily CSO receiving water monitoring continues. Daily posting of DCR beach monitoring data on MWRA's web site began before Memorial Day and will continue through the summer swimming season.

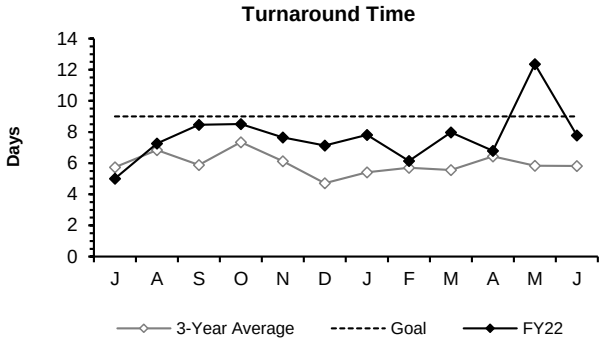
- Permitting and Compliance Reporting: Submitted Preliminary Public Notification Plan required by new sewage notification regulations and continued preparing for enhanced notifications that are required starting July 6. Worked with DLS on a required pH study to supplement the Deer Island permit application; submitted results to DEP and received approval to maintain a lower limit of pH 6 in the coming Deer Island permit. Submitted comments to EPA and MassDEP on the NPDES medium wastewater treatment plant general permit, which will apply to Clinton.

Laboratory Services

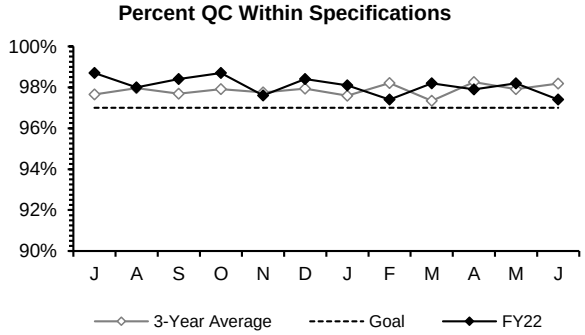
4th Quarter - FY22



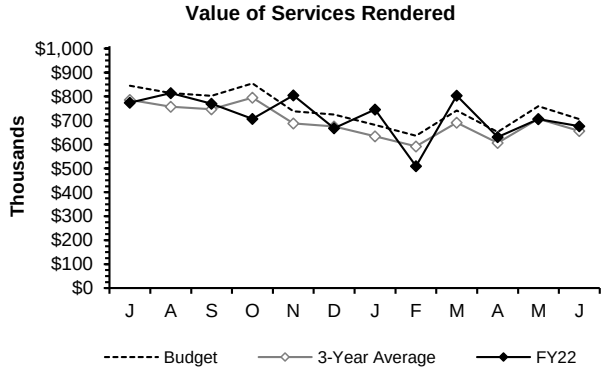
The Percent On-Time measurement continued to run below the 95% goal due to staffing vacancies.



Turnaround Time met the 9-day goal.



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



Value of Services Rendered continued to run below the annual budget projection due to staffing vacancies.

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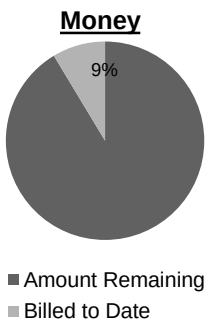
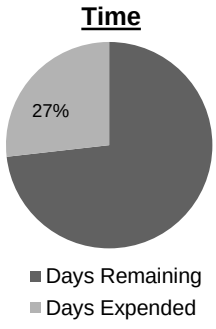
Performance: Met Turnaround Time (average of 3 months) and Percent QC within Specification indicators for the quarter at reduced staffing level. Value of Services Rendered is slightly below budget, but ahead of the 3-year average for the year.

School Lead Program: During FY22, MWRA's lab completed 1,416 tests from 96 schools and childcare facilities in 34 communities. Since 2016, MWRA's Laboratory has conducted over 40,000 tests from 538 schools and daycares in 44 communities. We have also completed over 700 home lead tests under the DPH sampling program since 2017.

CONSTRUCTION PROGRAMS

Projects In Construction
4th Quarter – FY22





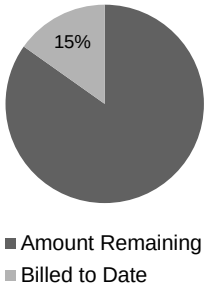
Carroll Water Treatment Plant SCADA Improvements

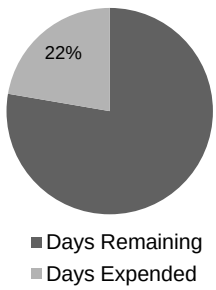
Project Summary: This project will replace SCADA Control equipment at the Carroll Plant, to enhance cybersecurity, redundancy, ensure future reliability, and maintain secure plant operations.

Contract Amount: $12,929,159.87 *Contract Duration:* 1,127 Days

Notice to Proceed: 1-Sep-21 *Contract Completion:* 2-Oct-24

Status and Issues: As of June, the Contractor laid out the routing of the conduits in the Chemical Building, installed the new conduits into control panel WHUV:IJNST.CP-01 in the PLC Room and poured the concrete for 14 equipment pads in the Operations Building, Ozone Building and the Chemical Building.





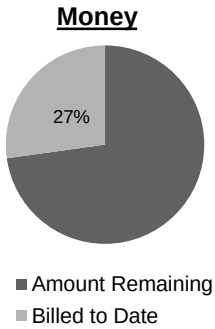
Section 89 Replacement Pipeline

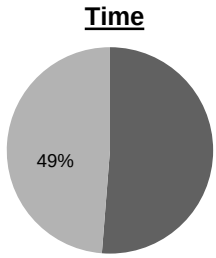
Project Summary: This project will include replacement of a 10,500-foot portion of PCCP with class IV reinforcing wire, line valves and appurtenances, and abandonment of the 118-year old, 24-inch diameter cast iron Section 29 pipeline.

Contract Amount: $32,619,000 *Contract Duration:* 1,475 Days

Notice to Proceed: 5-Aug-21 *Contract Completion:* 19-Aug-25

Status and Issues: As of June, the Contractor completed installing 132 LF of 36" DI Pipe from Sta.0+00-B to Sta.1+32-B to connect the existing Section 110. They also backfilled/restored the area at Gillis Pump Station, Stoneham. In addition, they completed installing water services and hydrant laterals from the new 12" ductile iron local water main at Forest Street, Winchester.





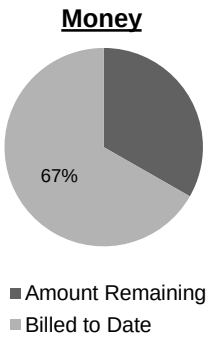
Low Service PRV Improvements

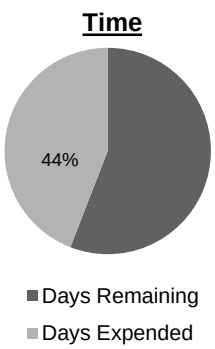
Project Summary: This project will replace pressure reducing valves on the Weston Aqueduct Supply Main (WASM) 4 at Nonantum Road in Boston and WASM 3 at Mystic Valley Parkway in Medford

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 June, the Contractor completed driving H-piles, installing wailers and wooden lagging for Phase 2 SOE. They excavated and removed existing pipe and concrete structures within Phase 2 SOE. They also placed stone embedment to approx. 16" below pipe invert.





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.

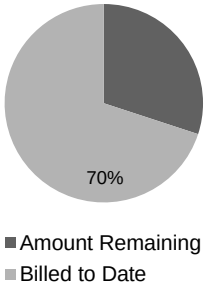
Contract Amount: $19,656,427.23 *Contract* Duration: 1,383 Days

Notice to Proceed: 28-Oct-20 *Contract Completion:* 11-Aug-24

Status and Issues: As of June, the Contractor completed all restoration work including concrete placement, tree plantings with application of porous pavement, and installation of concrete planters, benches and bike rack. In addition, they replaced a section of sidewalk and access ramps, replaced granite curbing, and completed temporary paving.

Projects In Construction
4th Quarter – FY22

Money



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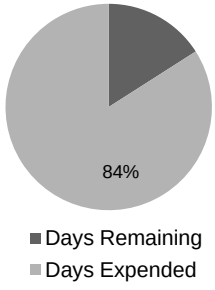


Nut Island Odor Control and HVAC

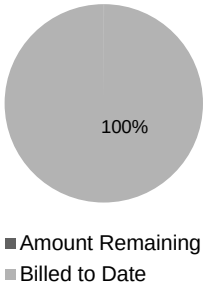
Project Summary: This project will provide upgrades to the odor control system, heating, ventilation and air conditioning system and other equipment.

Contract Amount: $58,913,925.69 *Contract Duration:* 1,034 Days

Notice to Proceed: 12-Feb-20 *Contract Completion:* 12-Dec-22

Status and Issues: As of June, the Contractor installed rebar and placed concrete for walls and slabs to elevation 139.00 (up to door 12D). They removed and replaced rebar for the slab at elevation 141.17 and placed 4,500 psi concrete. In addition, they patched holes in the concrete walls and started removal of existing standing seam roof.

Money



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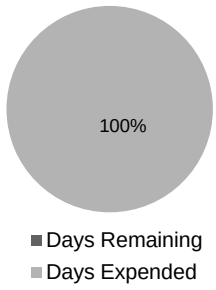


Chemical Tank Relining & Pipe Replacement

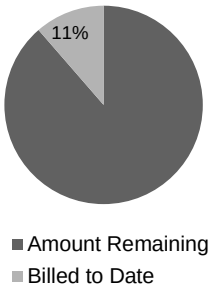
Project Summary: This project involves replacing the chlorobutyl rubber linings in 3 sodium hypochlorite and 2 sodium bisulfite storage tanks and assorted gravity thickener overflow piping at Deer Island.

Contract Amount: $8,794,899 *Contract Duration:* 850 Days

Notice to Proceed: 13-Aug-19 *Contract Completion:* 10-Dec-21

Status and Issues: This project is complete. Staff are awaiting bids for a future project to replace this one.

Money



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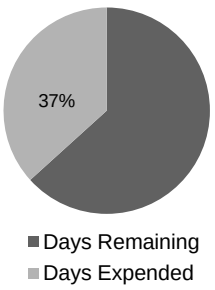


DITP Odor Control Damper Replacement

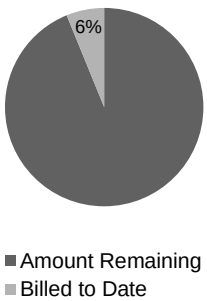
Project Summary: This project involves replacing three existing 30-inch diameter steel dampers with stainless steel dampers, surface preparation and coatings application on the existing 30-inch diameter ductile iron pipe. ,

Contract Amount: $538,000 *Contract Duration:* 365 Days

Notice to Proceed: 3-Feb-22 *Contract Completion:* 3-Feb-23

Status and Issues: As of June, the fabrication of the stainless steel dampers and spool piece continues.

Money



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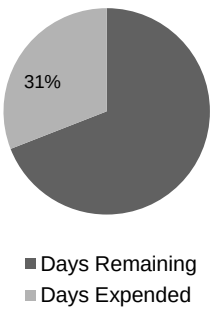


Clinton Screw Pump Replacement

Project Summary: This project involves demolishing and replacing three screw pumps and motors and three existing 72-inch by 60-inch pump isolation slide gates and associated electrical and controls.

Contract Amount: $3,452,985 *Contract Duration:* 540 Days

Notice to Proceed: 14-Jan-22 *Contract Completion:* 8-Jul-23

Status and Issues: As of June, the major equipment submittals were approved. The Contractor completed site verification of the isolation gate measurements and completed the sub surface utility investigation.

CSO CONTROL PROGRAM
4th 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. On April 29, 2022 the MWRA filled with the Court the Annual Compliance report along with the Annual Report for Calendar Year 2021 CSO Discharge Estimates and Rainfall Anlayses in compliance with the new schedule seven milestones. Quarterly Meetings will be held with DEP/EPA through Sept. 2024 per Court Order associated with 16 outfalls. First meeting held March 28, the second meeting Scheduled for June. Of the $913.1 million budget in the FY22 CIP for the CSO Control Program, **approximately $1.8 million remain to be spent**, as described below.

Project/Item	Status as of June30, 2021
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 expected 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 Memorandum of Understanding and Financial Assistance Agreement	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. **BWSC will be submitting a request for the release of the remaining one-third of the agreement amount, to be paid in the first quarter of FY23.**
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	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**. 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. Cambridge and Somerville are also parties to the variances and have implemented notification systems for their own outfalls. **First meeting on June 29th**. 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. **Bids for were received on July 22nd for the Interceptor Connection at Chelsea's Outfall CHE008, D'Allessandro Corp. (West Bridgewater, MA) was the low bidder at $1,570,000..** 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 completed approximately 45% of the construction of South Boston sewer separation Contract 1 that will lower CSO discharges to Fort Point Channel.** • 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 submitted the 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. **MWRA responded to comments on the report.**

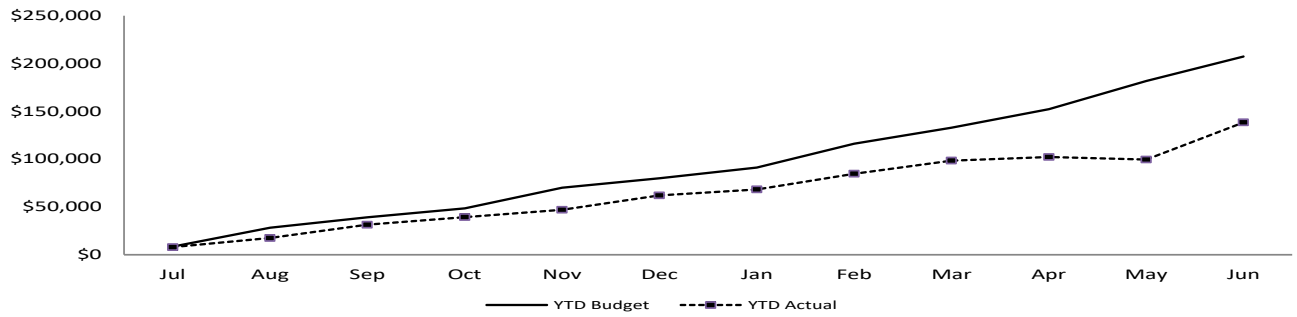
CIP Expenditures
4rd Quarter – FY22

FY22 Capital Improvement Program Expenditure Variances through June by Program - ($ in thousands)				
Program	FY22 Budget Through June	FY22 Actual Through June	Variance Amount	Variance Percent
Wastewater	$109,856	$70,400	($39,456)	-35%
Waterworks	$75,012	$62,801	($12,211)	-16%
Business and Operations Support	$22,445	$5,262	($17,183)	-76%
Total	$207,312	$138,462	($68,850)	-33%

Project underspending within Wastewater was due to Prison Point Rehabilitation work on hold, updated schedules for DI Motor Control Center & Switchgear Replacements, Primary & Secondary Clarifier Rehab, Fire Alarm System Replacement, DI Dystor Membrane Replacements, timing of final work and costs for Winthrop Terminal Facility (WTF) VFD Replacement and Dorchester Interceptor Sewer, completion of some design and inspection tasks were later than anticipated for Ward Street and Columbus Park Headworks Upgrades Design/CA, and timing of work for the Nut Island Odor Control and HVAC Improvements. This underspending was partially offset by work scheduled in FY21 that was completed in FY22 for the Chelsea Creek Headworks Upgrades and Wastewater Metering project, and work completed earlier than anticipated for East Boston CSO Control. Project underspending in Waterworks was due to timing of community distributions for the Water Loan program, updated schedules for the NIH Section 89 & 29 Replacement, Wachusett Lower Gate House Boiler and Lead Replacement, less than anticipated Final Design and CA/RI work for CP-3 Sections 23, 24, and 47, and scope reduction for Sections 50 & 57 Water Rehabilitation - Design/ESDC. This underspending was partially offset by contractor progress for WASM 3 CP-1, NEH CP-1 and WASM/Spot Pond Supply Mains Pressure Reducing Valve Improvements, award higher than budgeted and contractor progress for CP-3 Sections 23, 24, and 47 Construction, 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 6/30/22	$123 million
Unused capacity under the debt cap:	$1.835 billion
Estimated date for exhausting construction fund without new borrowing:	Aug-22
Estimated date for debt cap increase to support new borrowing:	Not anticipated at this time
Commercial paper/Revolving loan outstanding: Commercial paper capacity / Revolving Loan	$ 73 million $177 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

4th Quarter – FY22

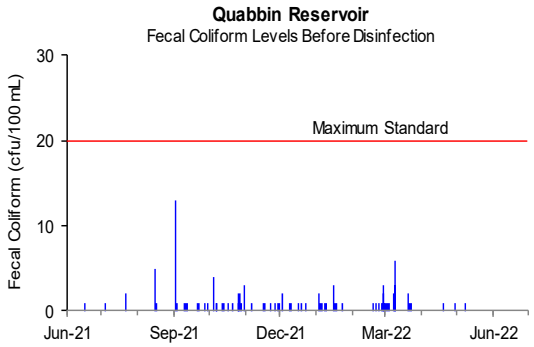
Source Water – Microbial Results

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.**

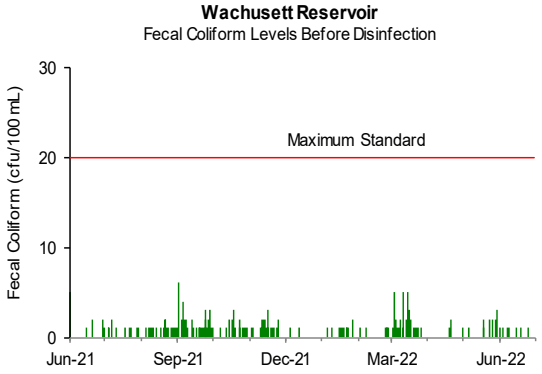


Sample Site: Wachusett Reservoir

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

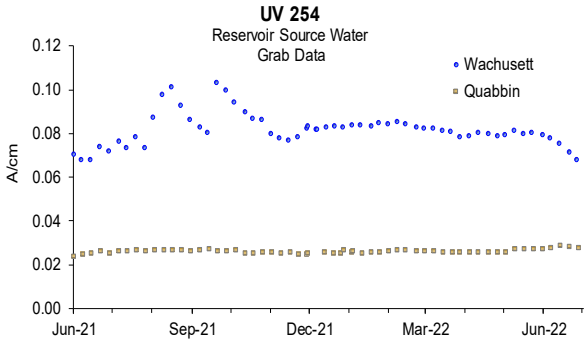


Source Water – UV Absorbance

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

Quabbin Reservoir UV-254 levels averaged 0.026 A/cm for the quarter.

Wachusett Reservoir UV-254 levels averaged 0.077 A/cm for the quarter.



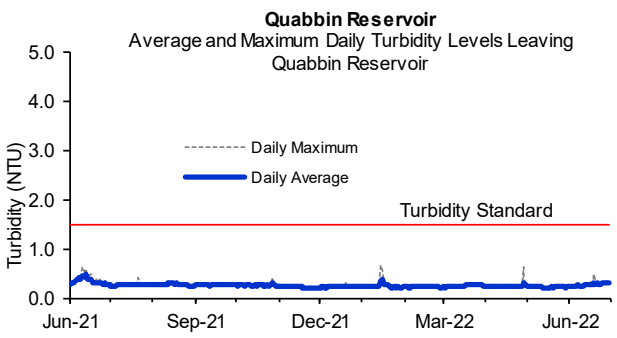
Source Water – Turbidity

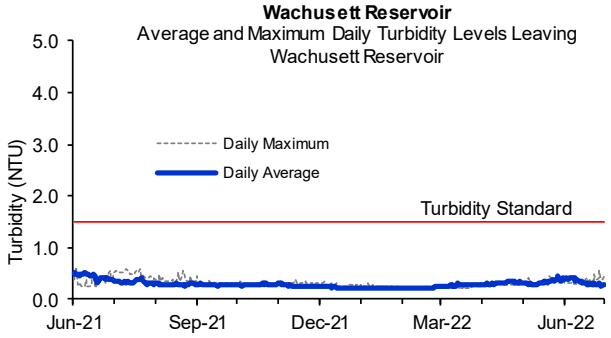
4th Quarter – FY22

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.



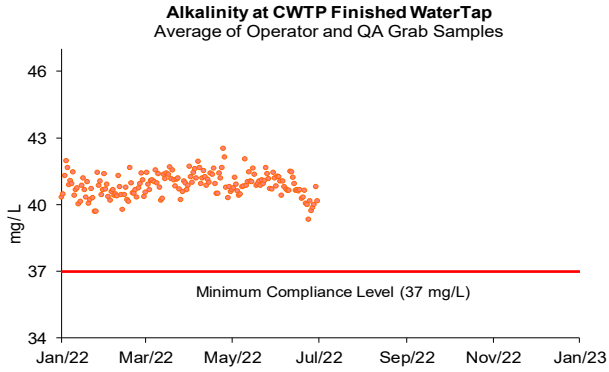


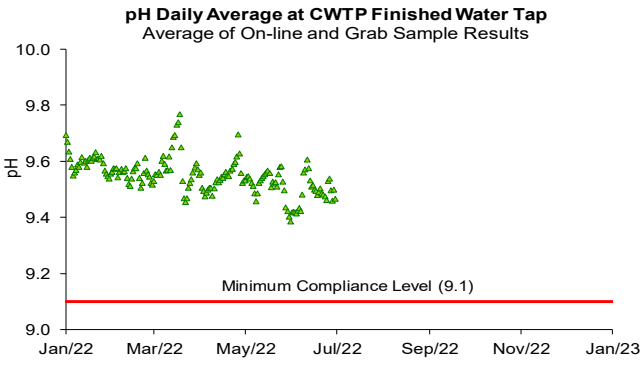
Treated Water – pH and Alkalinity Compliance

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 9.5 to 9.7 and alkalinity ranged from 40 to 42 mg/L. No sample results were below DEP limits for this quarter.





Treated Water – Disinfection Effectiveness

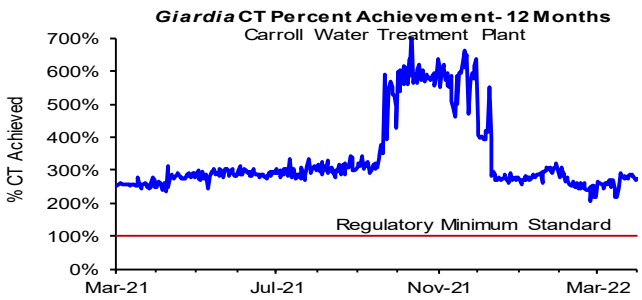
4th Quarter – FY22

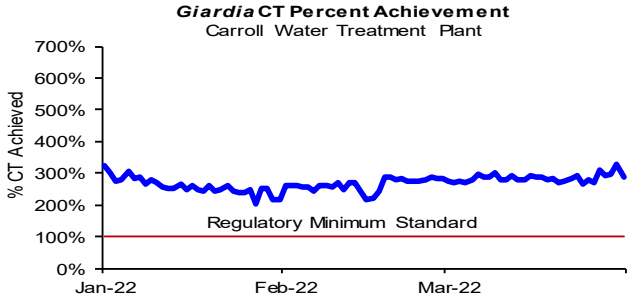
At the Carroll Water Treatment Plant (CWTP), MWRA meets the required 99.9% (3-log) inactivation of *Giardia* using ozone (reported as CT: concentration of disinfectant x contact time) and the required 99% (2-log) inactivation of *Cryptosporidium* using UV (reported as IT: intensity of UV x time). MWRA 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:

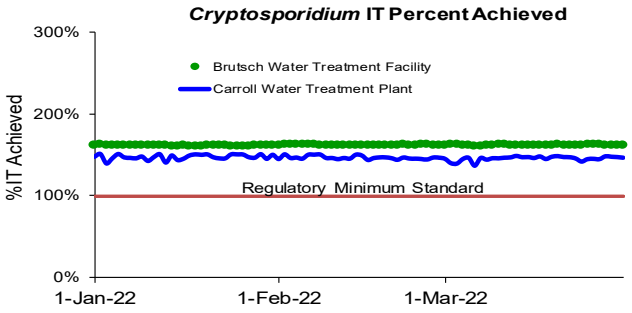
- The chlorine dose at the CWTP varied between 3.1 and 3.7 mg/L for the quarter.
- Ozone dose at the CWTP varied between 2.3 to 3.0 mg/L for the quarter.
- *Giardia* CT was maintained above 100% at all times the plant was providing water into the distribution system this quarter, as well as every day 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.

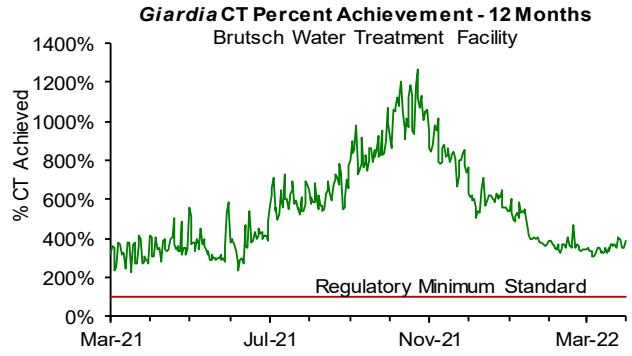


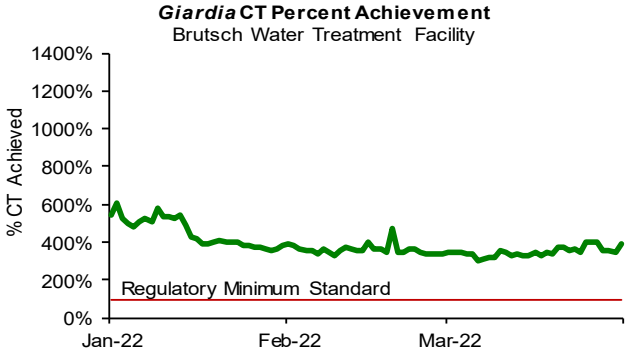


Quabbin Reservoir (CVA Supply) at: Brutsch Water Treatment Facility

- 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 1.30 to 1.86 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%.







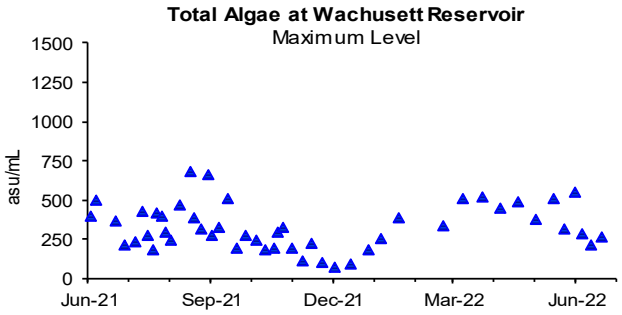
Source Water - Algae

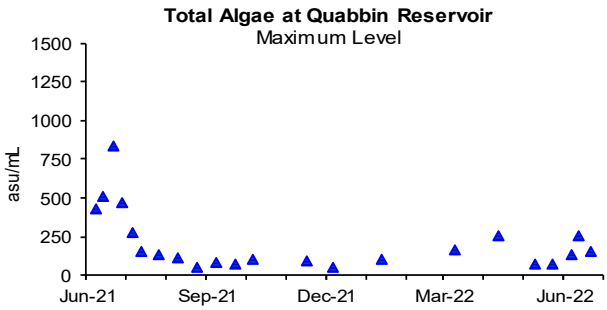
4th Quarter – FY22

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 4th quarter, there were no complaints which may be related to algae reported from the local water departments.



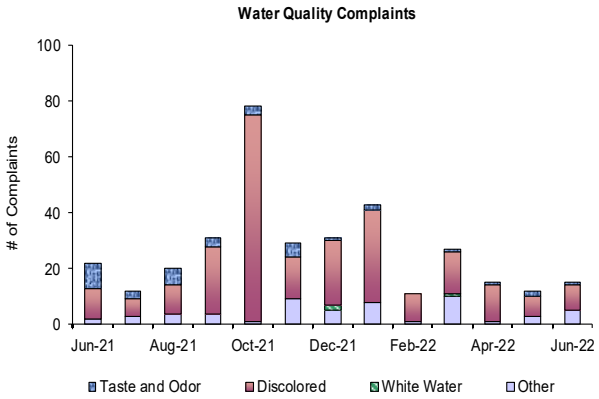


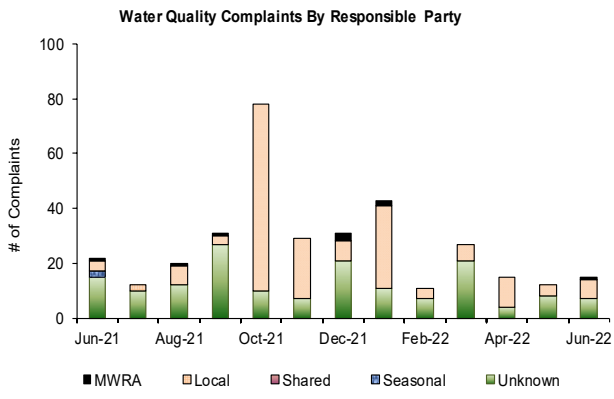
Drinking Water Quality Customer Complaints: Taste, Odor, or Appearance

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 42 complaints during the quarter compared to 77 complaints from 4th Quarter of FY21. Of these complaints, 29 were for “discolored water”, 4 were for “taste and odor”, and 9 were for “other”. Of these complaints, 22 were local community issues, 1 was an MWRA related issue, and 19 were unknown in origin.





Bacteria & Chlorine Residual Results for Communities in MWRA Testing Program

4th 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 4th Quarter, seven of the 6,667 samples (0.10% system-wide) submitted to MWRA labs for analysis tested positive. No communities were required to perform a Level Assessment. (Boston, Bedford, Medford, Newton, Peabody, Reading, Revere – June). Three of the 1928 MWRA locations or Community/MWRA Shared samples (0.16%) tested positive for total coliform. No samples tested positive for *E.coli*. Only 0.03% of the Fully Served community samples had chlorine residuals lower than 0.2 mg/L for the quarter.

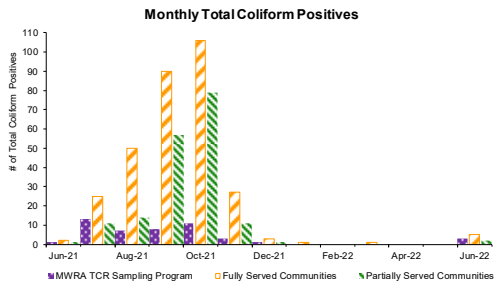
NOTES:

a) 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.

b) The number of samples collected depends on the population served and the number of repeat samples required.

c) These communities are partially supplied, and may mix their chlorinated supply with MWRA chloraminated supply.

d) Part of the Chicopee Valley Aqueduct System. Free chlorine system.



			Total Coliform # Samples (b)	Total Coliform # (%) Positive	*E.coli* # Positive	Assessment Required
MWRA	a	MWRA Locations	400	0 (0%)	0	
		Shared Community/MWRA sites	1528	3 (0.20%)	0	
		Total: MWRA	1928	3 (0.16%)	0	No
Fully Served		ARLINGTON	156	0 (0%)	0	
		BELMONT	104	0 (0%)	0	
		BOSTON	782	1 (0.13%)	0	No
		BROOKLINE	224	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	118	0 (0%)	0	
		LYNNFIELD	18	0 (0%)	0	
		MALDEN	234	0 (0%)	0	
		MARBLEHEAD	72	0 (0%)	0	
		MARLBOROUGH	126	0 (0%)	0	
		MEDFORD	192	1 (0.52%)	0	No
		MELROSE	117	0 (0%)	0	
		MILTON	102	0 (0%)	0	
		NAHANT	30	0 (0%)	0	
		NEWTON	278	1 (0.36%)	0	No
		NORTHBOROUGH	48	0 (0%)	0	
		NORWOOD	99	0 (0%)	0	
		QUINCY	364	0 (0%)	0	
		READING	133	1 (0.75%)	0	No
		REVERE	198	1 (0.51%)	0	No
		SAUGUS	104	0 (0%)	0	
		SOMERVILLE	252	0 (0%)	0	
		SOUTHBOROUGH	30	0 (0%)	0	
		STONEHAM	91	0 (0%)	0	
		SWAMPSCOTT	51	0 (0%)	0	
		WALTHAM	216	0 (0%)	0	
		WATERTOWN	130	0 (0%)	0	
		WESTON	45	0 (0%)	0	
		WINTHROP	66	0 (0%)	0	
		Total: Fully Served	*5007*	*5 (0.10%)*		
Partially Served	c	BEDFORD	58	1 (1.72%)	0	No
		BURLINGTON	149	0 (0%)	0	
		CANTON	90	0 (0%)	0	
		NEEDHAM	123	0 (0%)	0	
		PEABODY	209	1 (0.48%)	0	No
		WAKEFIELD	136	0 (0%)	0	
		WELLESLEY	114	0 (0%)	0	
		WILMINGTON	87	0 (0%)	0	
		WINCHESTER	91	0 (0%)	0	
		WOBURN	208	0 (0%)	0	
		Total: Partially Served	*1265*	*2 (0.16%)*		
CVA	d	MWRA CVA Locations	104	0 (0%)	0	
		CHICOPEE	186	0 (0%)	0	
		SOUTH HADLEY FD1	60	0 (0%)	0	
		WILBRAHAM	45	0 (0%)	0	
		Total: CVA	*395*	*0 (0%)*		
		Total: Community Samples	*6667*	*7 (0.10%)*		

Chlorine Residuals in Fully Served Communities

	2021							2022					
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
% <0.1	0.1	0.3	0.3	0.7	0.9	0.5	0.4	0.1	0.1	0.0	0.0	0.0	0.0
% <0.2	0.2	0.7	1.3	2.8	3.1	1.7	0.8	0.1	0.2	0.0	0.0	0.1	0.0
% <0.5	0.6	2.6	6.0	12.3	10.9	7.4	2.8	1.1	1.1	0.5	0.6	0.5	0.5
% <1.0	2.1	8.6	17.3	27.9	26.2	15.7	7.3	3.7	4.1	2.3	2.3	2.1	2.6
% ≥1.0	97.9	91.4	82.7	72.1	73.8	84.4	92.7	96.3	95.9	97.7	97.7	97.9	97.4

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

4th 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.

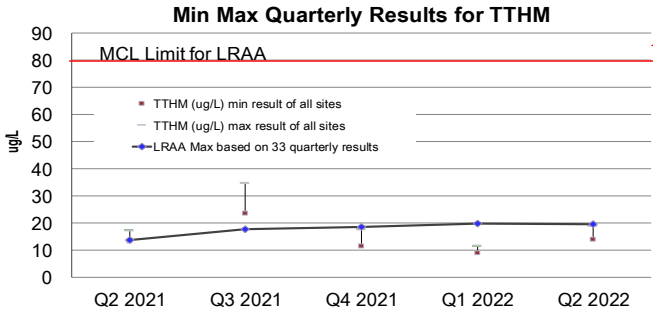
The locational running annual average calculated quarterly at each individual sampling location must be below the Total HAA5 or Total TTHM MCL standard. The charts below show the highest and lowest single values for all sites, and the LRAA of the highest location each quarter.

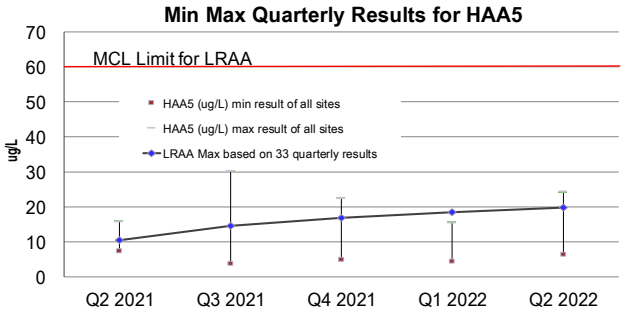
Partially served and CVA communities are responsible for their own compliance monitoring and reporting, and must be contacted directly for their individual results. The chart below combines data for all three CVA communities data (Chicopee, Wilbraham and South Hadley FD1). Each community is regulated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

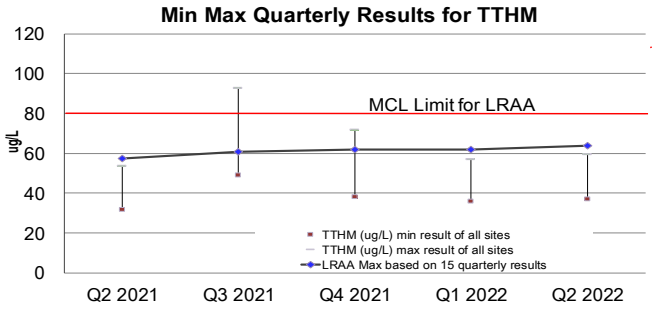
The LRAA for TTHMs and HAA5s for MWRA's Compliance Program (represented as the line in the top two graphs below) remain below current standards. The Max LRAA in the quarter for TTHMs = 19.6 ug/L; HAA5s = 19.9 ug/L. The current RAA for Bromate = 0.0 µg/L No LRAA exceedances or violations occurred this 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.

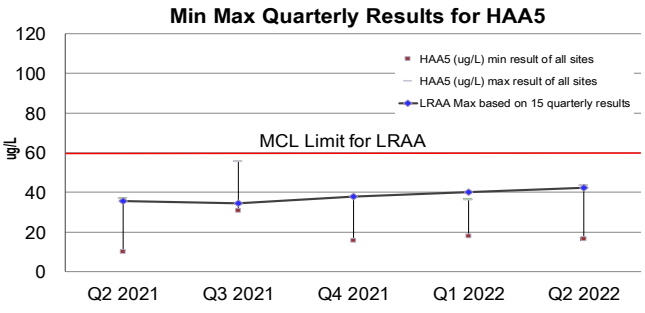
MetroBoston Disinfection By-Products





CVA Disinfection By-Products (Combined Results)





Water Supply and Source Water Management

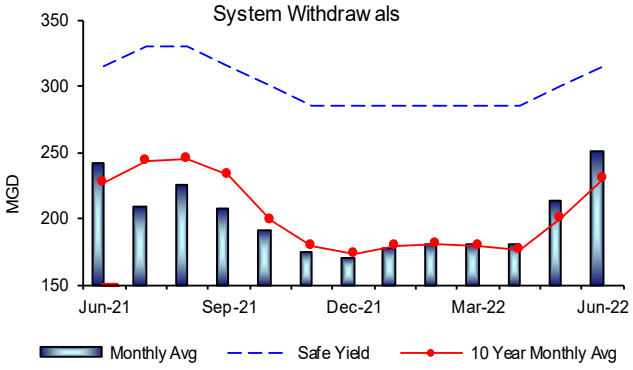
4th Quarter – FY22

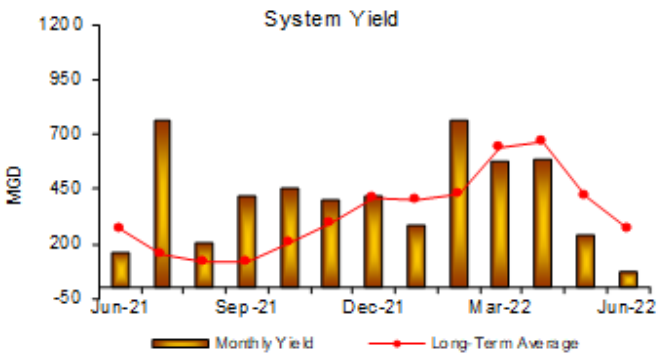
Background

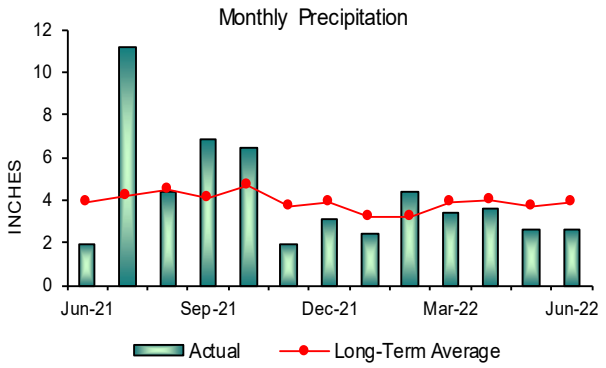
A reliable supply of water in MWRA's reservoirs depends on adequate precipitation during the year and seasonal hydrologic inputs from watersheds that surround the reservoirs. Demand for water typically increases with higher summer temperatures and then decreases as temperatures decline. Quabbin Reservoir 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.

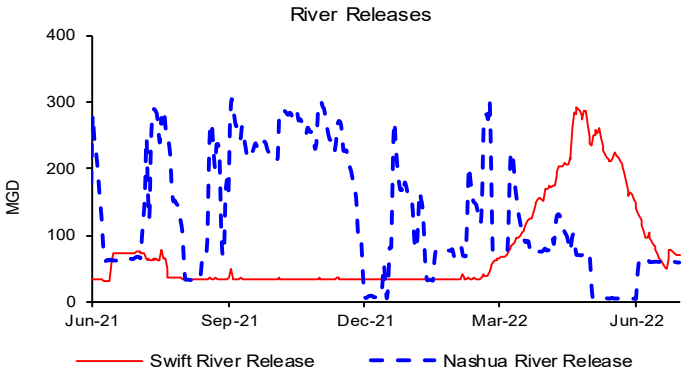
Outcome

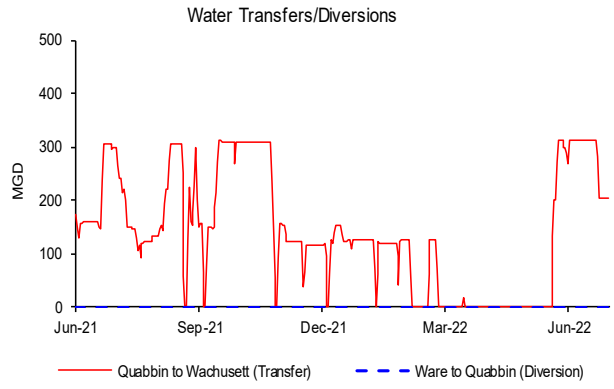
The volume of the Quabbin Reservoir was at 96.5% as of June 30, 2022; a 2.7 % decrease for the quarter, which represents a loss of more than 11 billion gallons of storage and a decrease in elevation of 1.42'. System withdrawal and precipitation were below their long term quarterly averages. Yield for the quarter was below its long term quarterly average. Quabbin is in Normal Operating Range for this time of year.

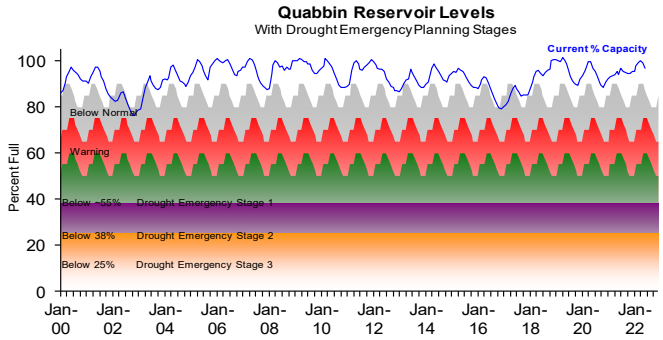












WASTEWATER QUALITY

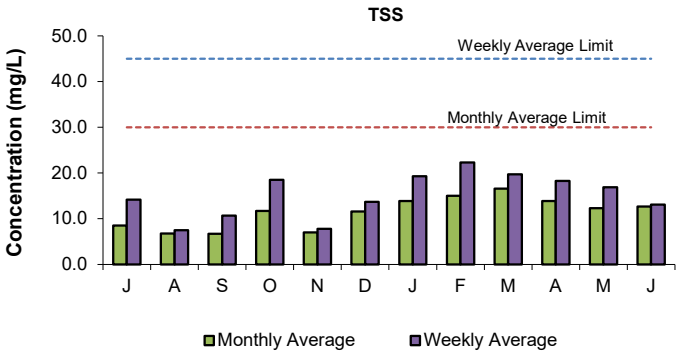
NPDES Permit Compliance: Deer Island Treatment Plant

4th Quarter - FY22

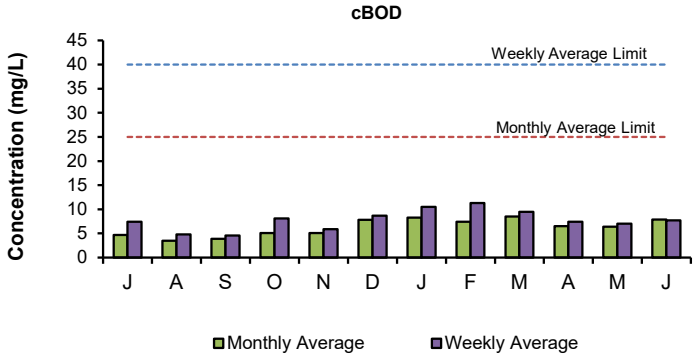
NPDES Permit Limits

Effluent Characteristics		*Units*	*Limits*	*April*	*May*	*June*	*4th Quarter Violations*	*FY22 YTD Violations*
Dry Day Flow (365 Day Average):		mgd	436	308.0	302.5	297.0	0	0
cBOD:	Monthly Average	mg/L	25	6.5	6.4	7.9	0	0
	Weekly Average	mg/L	40	7.4	7.0	7.7	0	0
TSS:	Monthly Average	mg/L	30	13.9	12.3	12.7	0	0
	Weekly Average	mg/L	45	18.3	16.9	13.1	0	0
TCR:	Monthly Average	ug/L	456	0.0	0.0	0.0	0	0
	Daily Maximum	ug/L	631	0.0	0.0	0.0	0	0
Fecal Coliform:	Daily Geometric Mean	col/100mL	14000	22	11	53	0	0
	Weekly Geometric Mean	col/100mL	14000	8	8	10	0	0
	% of Samples >14000	%	10	0	0	0	0	0
	Consecutive Samples >14000	#	3	0	0	0	0	0
pH:		SU	6.0-9.0	6.5-6.9	6.5-7.0	6.5-6.9	0	0
PCB, Aroclors:	Monthly Average	ug/L	0.000045	UNDETECTED			0	0
Acute Toxicity:	Mysid Shrimp	%	≥50	>100	>100	>100	0	0
	Inland Silverside	%	≥50	>100	>100	>100	0	0
Chronic Toxicity:	Sea Urchin	%	≥1.5	100	100	100	0	0
	Inland Silverside	%	≥1.5	50	100	50	0	0

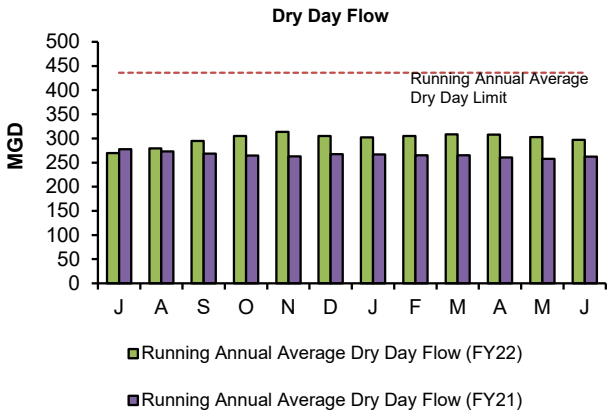
There have been no permit violations in FY22 to date at the Deer Island Treatment Plant (DITP).



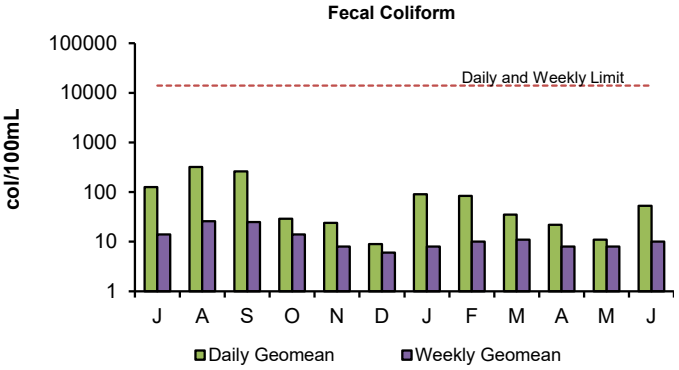
Total Suspended Solids (TSS) in the effluent is a measure of the amount of solids that remain suspended after treatment. All TSS measurements for the 4th Quarter were within permit limits.



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



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



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

NPDES Permit Compliance: Clinton Wastewater Treatment Plant

4th Quarter - FY22

NPDES Permit Limits

Effluent Characteristics		*Units*	*Limits*	*April*	*May*	*June*	*4th Quarter Violations*	*FY22 YTD Violations*
Flow:	12-month Rolling Average:	mgd	3.01	3.37	3.31	3.25	3	9
BOD:	Monthly Average:	mg/L	20	1.10	1.10	1.30	0	0
	Weekly Average:	mg/L	20	1.30	1.60	1.40	0	0
TSS:	Monthly Average:	mg/L	20	2.10	1.60	1.10	0	0
	Weekly Average:	mg/L	20	2.60	2.40	1.70	0	0
pH:		SU	6.5-8.3	7.2-7.8	7.3-7.8	7.2-7.7	0	0
Dissolved Oxygen:	Daily Average Minimum:	mg/L	6	9.90	9.00	8.30	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	0.13	0.00	0	0
	Daily Maximum:	ug/L	30.4	0.00	4.00	0.00	0	0
Copper:	Monthly Average:	ug/L	11.6	7.15	10.10	12.25	1	1
	Daily Maximum:	ug/L	14.0	7.15	10.10	12.90	0	0
Total Ammonia Nitrogen:	Monthly Average:	mg/L	2.0	0.05	0.00	0.02	0	0
June 1st - October 31st	Daily Maximum:	mg/L	3.0	0.11	0.00	0.14	0	0
Total Phosphorus:	Monthly Average:	ug/L	150	39	66	74	0	0
April 1st - October 31st	Daily Maximum:	ug/L	RPT	51	123	140	0	0
Acute Toxicity+:	Daily Minimum:	%	≥100	N/A	N/A	>100	0	0
Chronic Toxicity+:	Daily Minimum:	%	≥62.5	N/A	N/A	100	0	0

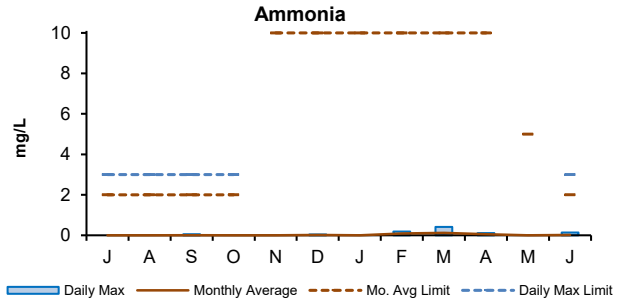
There have been nine permit violations at the Clinton Treatment Plant in FY22.

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.

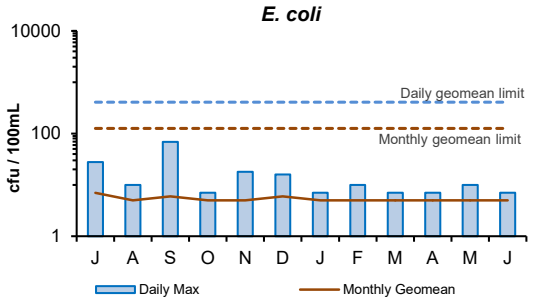
3rd Quarter: There were three permit violations in the third quarter, all rolling average flow exceedances. The 12-month rolling average flow exceeded 3.01 MGD in the 3rd quarter due to excessive rains in the region during summer 2021.

4th Quarter: There were four permit violations in the fourth quarter. Three were rolling average flow exceedances. The 12-month rolling average flow exceeded 3.01 MGD in the 4th quarter due to excessive rains in the region during summer 2021. The other violation was an exceedance of the monthly average copper limit.

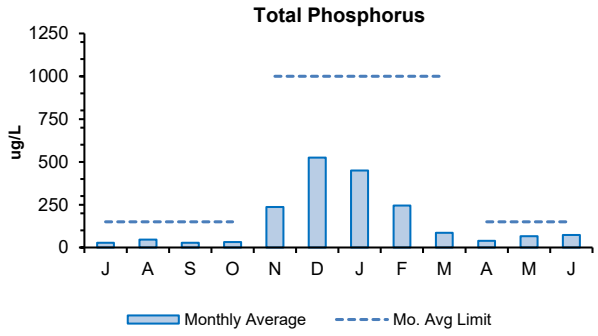
+ Toxicity testing at the Clinton Treatment Plant is conducted on a quarterly basis.



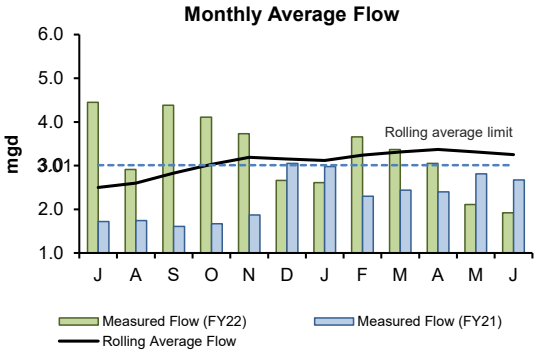
The 4th Quarter's monthly average and daily maximum concentrations of ammonia were below the permit limits. The monthly average and daily maximum limits for the 4th Quarter are variable. The permit limits are most stringent from June to October when warm weather conditions are most conducive to potential eutrophication.



E. coli is an indicator for the possible presence of pathogens. There were no violations of permit limits in the 4th 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 4th Quarter's monthly average concentrations for total phosphorus were below permit limits.

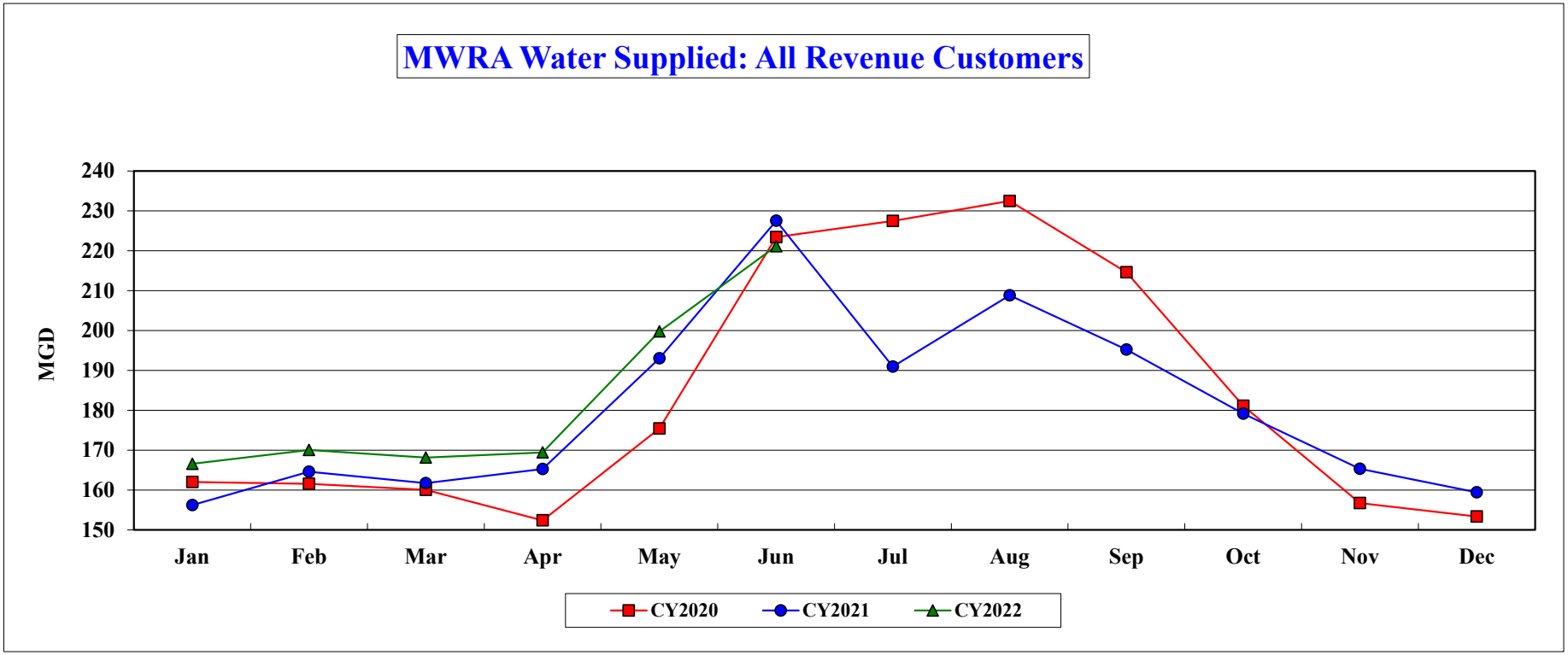


The graph depicts the rolling annual average monthly flow, measured in million gallons per day, exiting the plant. The 12-month rolling average flows during the 4th Quarter were above the permit limit.

COMMUNITY FLOWS AND PROGRAMS

Customer Water Use

4th Quarter - FY22



MGD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Average	Annual Average
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	172.416	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	178.067	180.641
CY2022	166.570	170.056	168.107	169.415	199.769	221.149	-	-	-	-	-	-	182.576	182.576

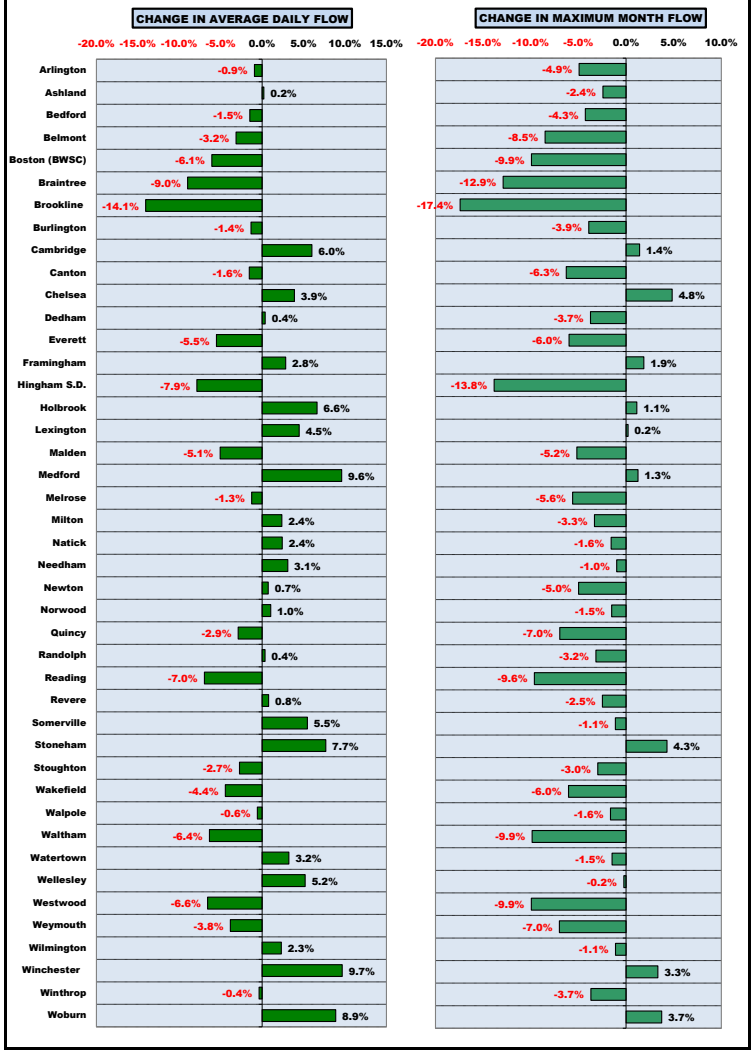
MG	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD Total	Annual Total
CY2020	5,022.510	4,684.968	4,960.567	4,571.025	5,438.470	6,702.146	7,051.078	7,207.384	6,438.520	5,614.399	4,701.821	4,754.375	31,379.686	67,147.263
CY2021	4,842.593	4,607.873	5,012.608	4,958.533	5,982.944	6,825.661	5,919.300	6,473.120	5,856.857	5,552.611	4,959.064	4,942.705	32,230.213	65,933.870
CY2022	5,163.682	4,761.563	5,211.326	5,082.449	6,192.845	6,634.472	-	-	-	-	-	-	33,046.338	33,046.338

The June 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.

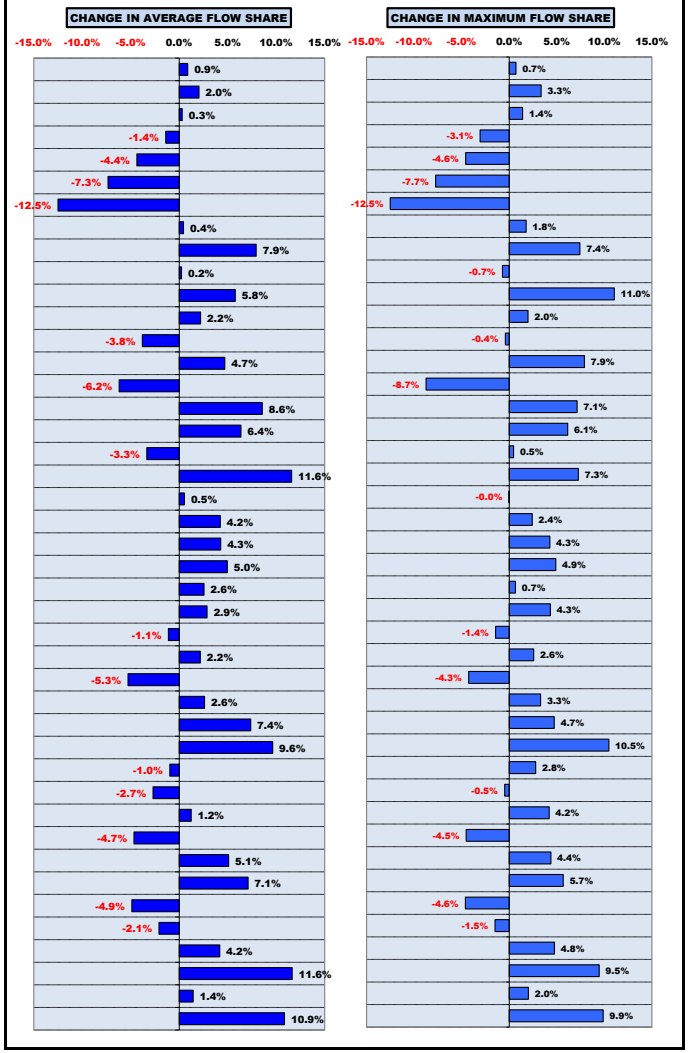
MWRA customers used an average of 196.81 mgd in the 4th quarter (Apr-Jun 2022) of FY2022. This is an increase of 1.57 mgd or 0.8% compared to the 4th quarter of FY2021.

How CY2020-22 Community Wastewater Flows Could Effect FY2024 Sewer Assessments [1,2,3]

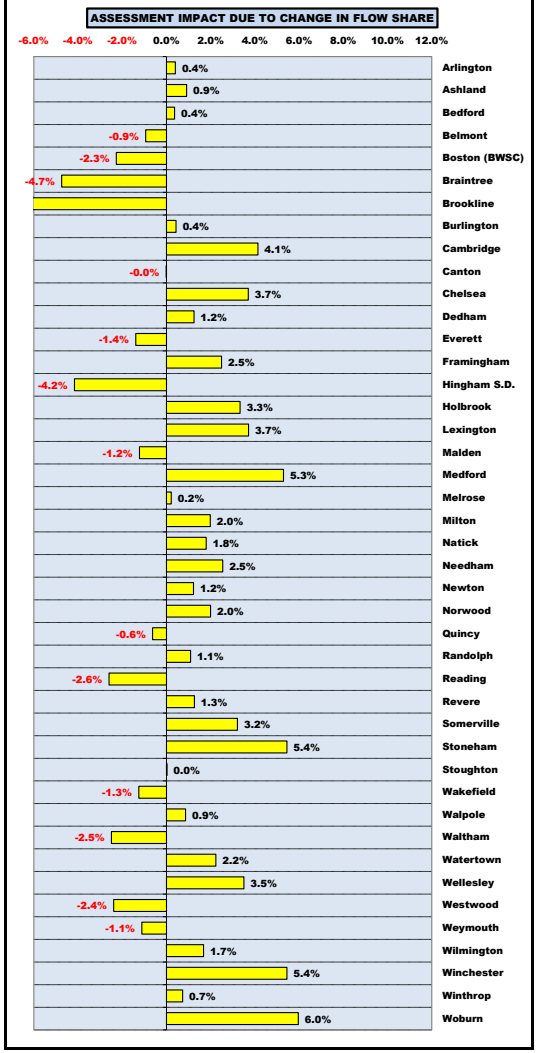
The flow components of FY2024 sewer assessments will be calculated using a 3-year average of CY2020 to CY2022 wastewater flows compared to FY2023 assessments that will use a 3-year average of CY2019 to CY2021 wastewater flows.



But as MWRA's sewer assessments are a ZERO-SUM calculation, a community's assessment is strongly influenced by the RELATIVE change in CY2020 to CY2022 flow share compared to CY2019 to CY2021 flow share, compared to all other communities in the system.



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



[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 2019 and 2022 (through April), 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 estimated based on the average of the three prior years.

[3] Flow data is preliminary and subject to change pending additional MWRA and community review.

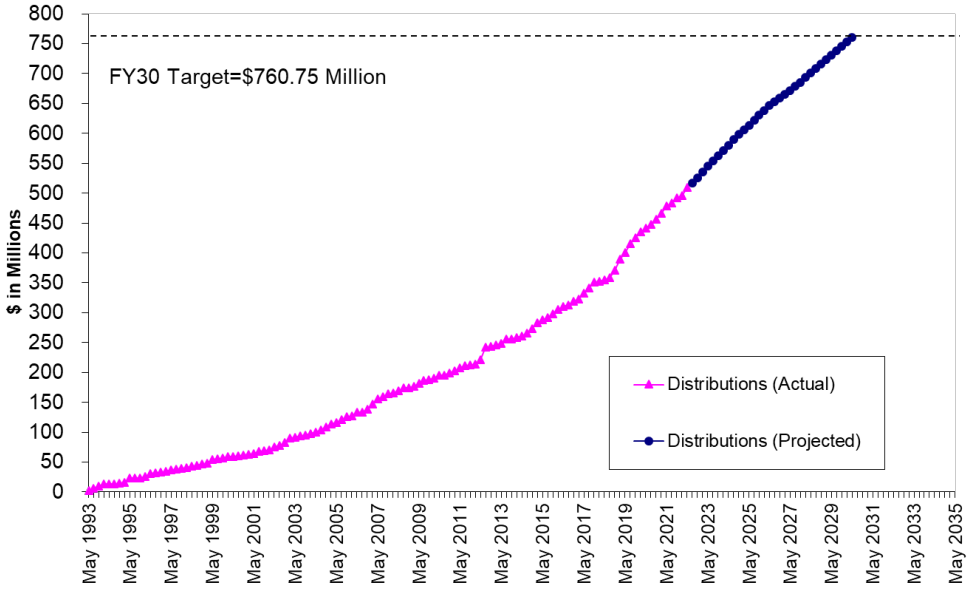
[4] Represents ONLY the impact on the total BASE assessment resulting from the changes in average and maximum wastewater FLOW SHARES.

Community Support Programs
4th Quarter – FY22

Infiltration/Inflow Local Financial Assistance Program

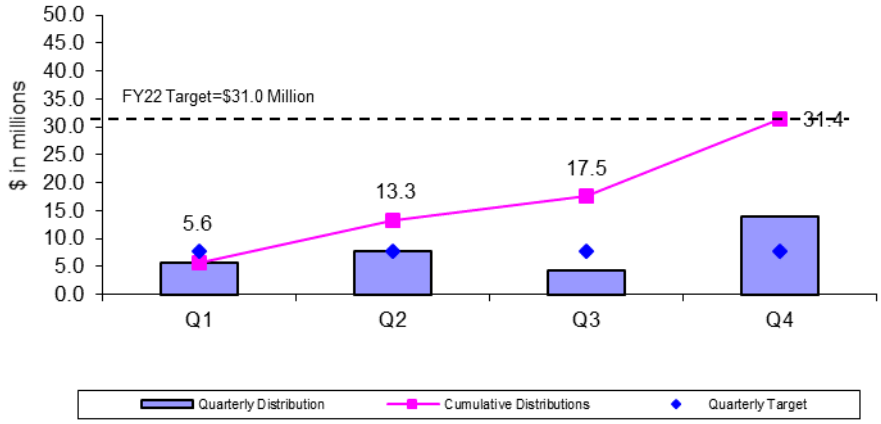
MWRA's Infiltration/Inflow (I/I) Local Financial Assistance Program provides $760.75 million in grants and interest-free loans (average of about $20 million per year from FY93 through FY30) to member sewer communities to perform I/I reduction and sewer system rehabilitation projects within their locally-owned 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 4th Quarter of FY22, $13.9 million in financial assistance (grants and interest-free loans) was distributed to fund local sewer rehabilitation projects in Boston, Braintree, Canton and Everett. Total grant/loan distribution to date for FY22 is $31.3 million. From FY93 through the 4th Quarter of FY22, all 43 member sewer communities have participated in the program and $510 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

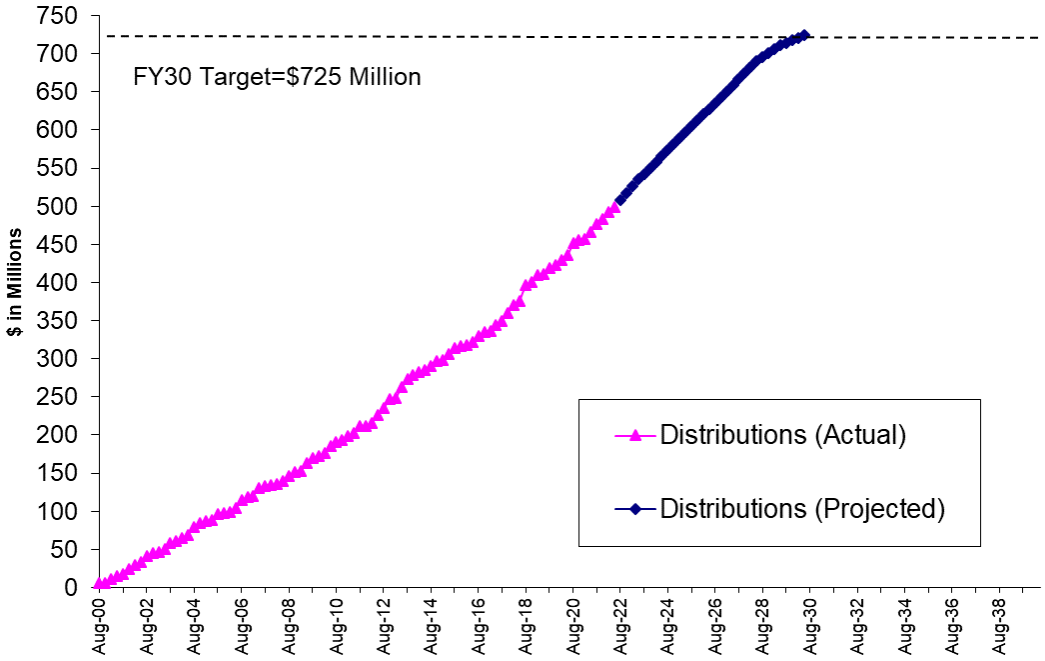


Community Support Programs
4th Quarter – FY22

Local Water System Assistance Program

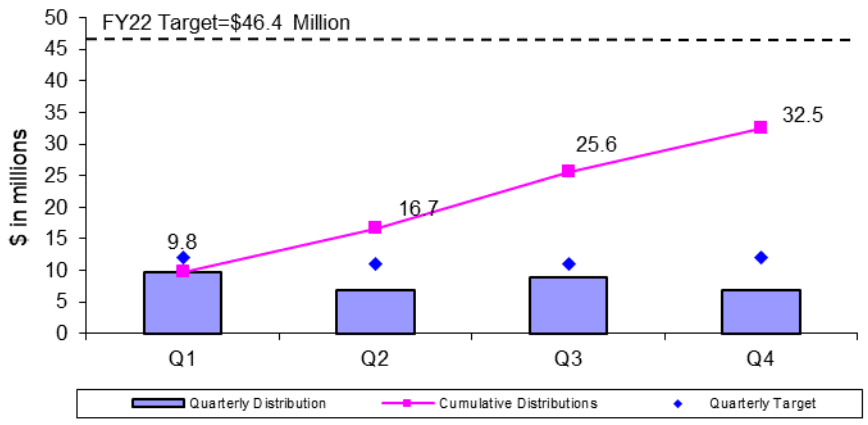
MWRA's Local Water System Assistance Programs (LWSAP) provides $725 million in interest-free loans (an average of about $24 million per year from FY01 through FY30) to member water communities to perform water main rehabilitation projects within their locally-owned water distribution systems. There have 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 4th Quarter of FY22, $6.9 million in interest-free loans was distributed to fund local water projects in Lexington, Lynnfield, Melrose, and Stoneham. Total loan distribution to date for FY22 is $32.4 million. From FY01 through the 4th Quarter of FY22, $499 million has been distributed to fund 500 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
4th 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.

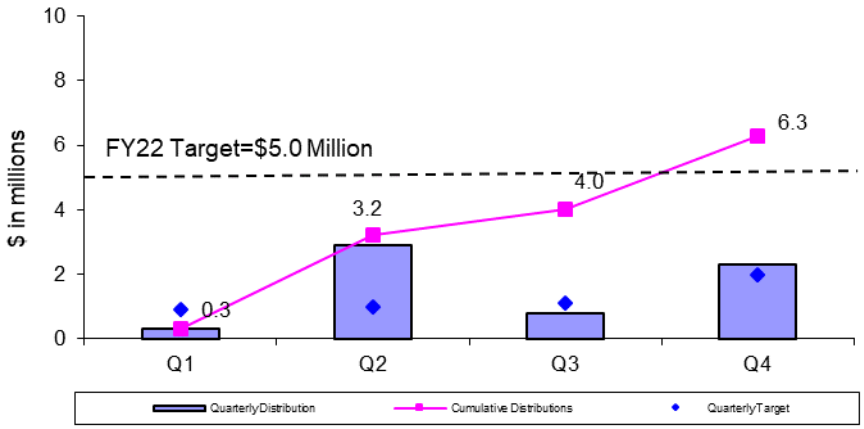
FY21 is the fifth year of the Lead Loan Program – MWRA made seven Lead Loans.

FY22 is the sixth year of the Lead Loan Program – MWRA made six Lead Loans.

Summary of Lead Loans:

Everett in FY22	$1.5 Million
Boston in FY22	$0.9 Million
Winthrop in FY22	$0.8 Million
Somerville in FY22	$1.6 Million
Revere in FY22	$1.3 Million
Chelsea in FY22	$0.3 Million
Watertown in FY21	$0.6 Million
Marlborough in FY21	$2.0 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
Winthrop in FY18	$0.3 Million
Marlborough in FY18	$1.0 Million
Newton in FY17	$4.0 Million
Quincy in FY17	$1.5 Million
Winchester in FY17	$0.5 Million
TOTAL	$31.4 Million

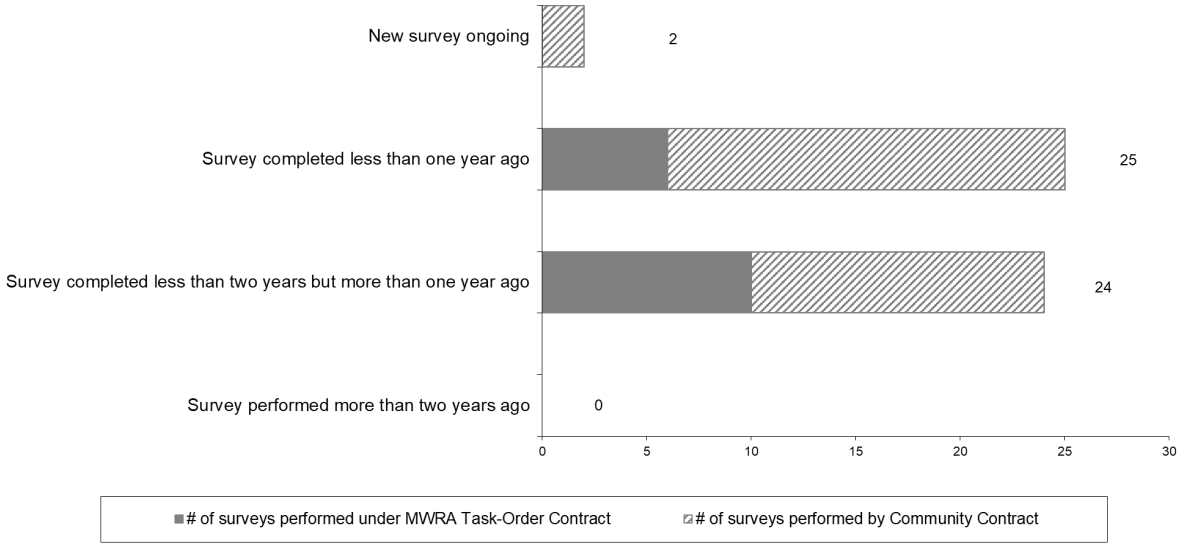
FY22 Quarterly Distributions of Lead Service Line Replacement Loans



Community Support Programs
4th 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 4th 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	11,066	124	24,662	36,584
Low-Flow Fixtures (showerheads and faucet aerators)	10,000	1,070	1,091	551	1,433	4,145
Toilet Leak Detection Dye Tablets	_____	1,432	715	1,286	678	4,111

BUSINESS SERVICES

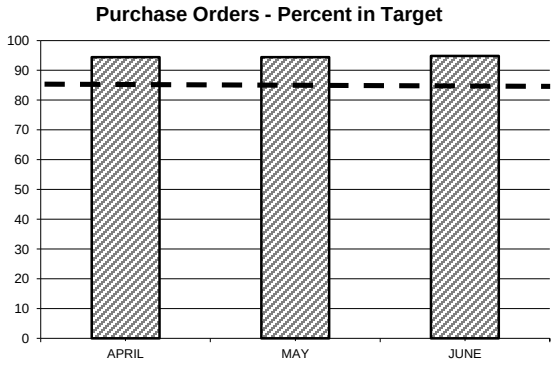
Procurement: Purchasing and Contracts

4th Quarter - FY22

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

Outcome: Processed 91% of purchase orders within target; Average Processing Time was 5.39 days vs. 4.41 days in Qtr 4 of FY21. Processed 70% (7 of 10) of contracts within target timeframes; Average Processing Time was 122 days vs. 138 days in Qtr 4 of FY21.

Purchasing



	No.	TARGET	PERCENT IN TARGET
$0 - $500	482	3 DAYS	84.2%
$500 - $2K	562	7 DAYS	93.7%
$2K - $5K	443	10 DAYS	96.3%
$5K - $10K	50	25 DAYS	88.0%
$10K - $25K	55	30 DAYS	78.1%
$25K - $50K	33	60 DAYS	84.8%
Over $50K	32	90 DAYS	100.0%

The Purchasing Unit processed 1657 purchase orders, 46 less than the 1703 processed in Qtr 4 of FY21 for a total value of $15,684,353 versus a dollar value of $11,880,029 in Qtr 4 of FY21.

The purchase order processing target was not met for the $0 - $500 category due to item clarifications; the $10K - $25K category due to price confirmations, end user evaluations and sole source requirements; and the $25K - $50K category due to staff summary requirements.

Contracts, Change Orders and Amendments

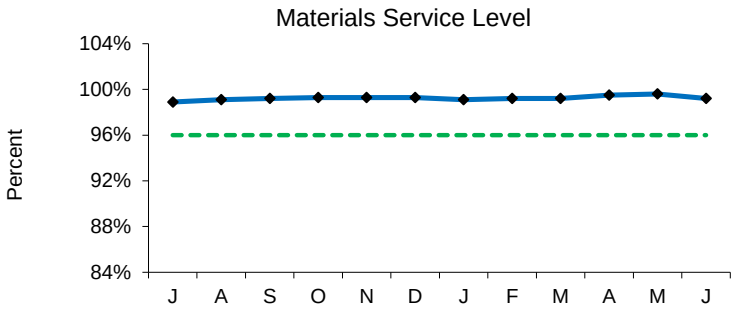
Procurement executed ten contracts with a value of $14,295,071 and five amendments with a value of $2,761,973. Eighteen change orders were executed during the period. The dollar value of all non-credit change orders during Q4 FY22 was $982,322 and the value of credit change orders was ($389,938).

Three contracts were not executed within the target timeframes. The first contract was delayed due to delays associated with the contractor signing the MWRA contract agreement documents. Another contract was delayed due to delays associated with negotiations regarding the terms and conditions in addition to delays associated with the drafting of the contract for two parties. The final contract was delayed due to negotiations between MWRA and the vendor regarding contract language.

Staff reviewed 26 proposed change orders and 19 draft change orders.

Materials Management

4th Quarter - FY22



The service level is the percentage of stock requests filled. The goal is to maintain a service level of 96%. Staff issued 7,348 (99.5%) of the 7,387 items requested in Q4 from the inventory locations for a total dollar value of $1,928,347.

Inventory Value - All Sites

Inventory goals focus on:

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

The FY22 goal is to reduce consumable inventory from the July '21 base level ($8.5 million) by 2.0% (approximately $170,754), to $8.3 million by June 30, 2022. This goal has been achieved. Consumable inventory reduction amounted to $287,514, a value of $116,760 over the goal.

Items added to inventory this quarter include:

- Deer Island – wire brushes, wire wheels, batteries and compressor for HVAC; motor oil, hydraulic oil, cabin filters for Fleet Services; air filters, disconnect switch, expansion joint and coolant for Maintenance; syringe filters and sample pads for Lab; transformer and fuses for Electrical.
- Chelsea – batteries, air, oil and fuel filters for Fleet Services; silicone earplugs for Safety; voltage detector and plugs for Electrical; lamps for Facilities; ink cartridges for Procurement; motor and gear box for FOD.
- Southboro – flanges, unions, couplings, caps and adapters for Plumbing; air filters for Fleet Services; gaiters and safety glasses for all Trades.

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Property Pass Program:

- Fourteen audits were conducted during Q4.
- Scrap revenue received for Q4 amounted to $33,136. Year to date revenue received amounted to $74,045.
- Revenue received from online auctions held during Q4 amounted to $90,599. Year to date revenue received amounted to $575,794.

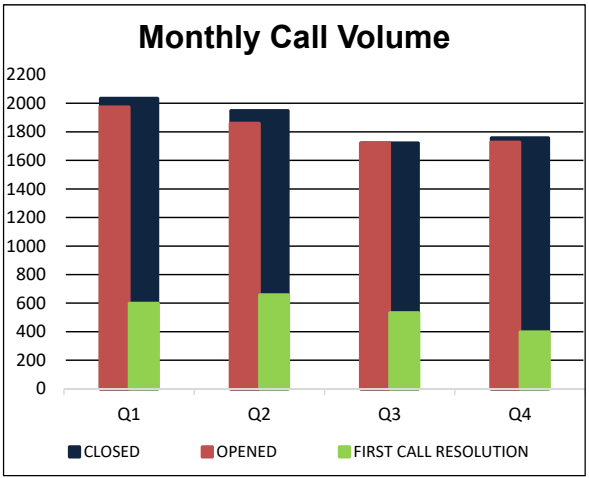
Items	Base Value July-21	Current Value w/o Cumulative New Adds	Reduction / Increase To Base
Consumable Inventory Value	8,537,690	8,250,176	-287,514
Spare Parts	9,317,998	9,274,200	-43,798
Total	17,855,688	17,524,376	-331,312

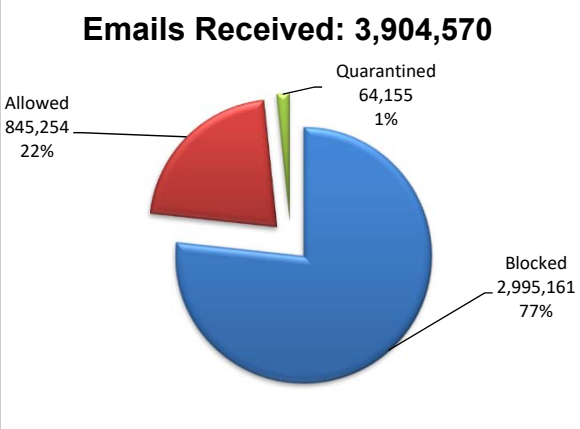
Note: New adds are items added at an inventory location for the first time for the purpose of servicing a group/department to meet their business needs/objectives.

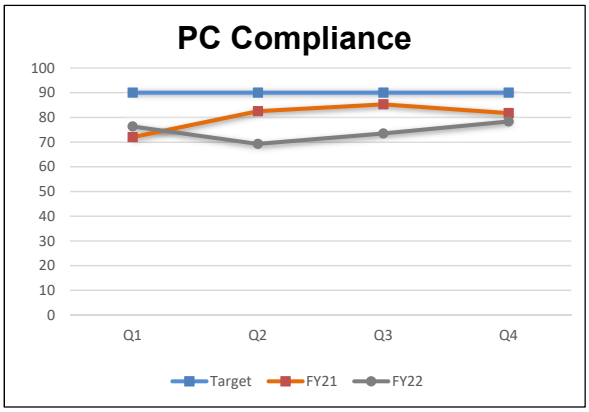
MIS Program

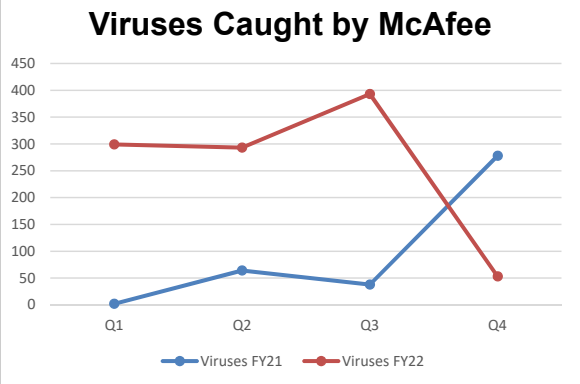
Fourth Quarter – FY22

Numbers & Statistics









Project Updates

Infrastructure & Security

Managed Security Services Contract: The RFQ/P package was completed, and bidding was initiated and completed during Q4. Selection Committee to meet during Q1 FY23 for evaluation and recommendation.

Identity and Access Management: Implementation of the Okta single sign-on (SSO) solution continued in Q4, and application was integrated with 5 other key applications (LMS, PBX, GIS, etc). Okta's multi-factor authentication (MFA) solution was procured, and migration from Cisco DUO MFA has begun, to be completed in Q1 FY23.

PBX (Telephone System Upgrade): VOIP phones roll-out started in Q4 of FY22. It will be completed for all Authority (minus DI) in Q1 of FY2023. Cabling and other required infrastructure upgrades that started during FY22 will continue through 2023.

Firewall Replacement: Cutover from the Cisco firewalls that were serving as MWRA's single gateway to the Internet and were End of Life to the new Fortinet firewalls was completed in Q4. The new firewalls also cover Intrusion Detection and Prevention and web-based filtering which were previously done by outdated applications.

Foriclient VPN Solution: The new Forticlient VPN solution has been deployed to a pilot group of MIS users with Okta MFA in preparation for the full MWRA roll out.

Laptop Deployment: Deployment of laptops to approved teleworkers that are currently using their own devices was completed in Q4.

Other Software & Custom Applications

Union Contract Processing: MIS has worked with Human Resources to implement the recently completed Union contract settlements. Retroactive and hazard pay as well as signing bonuses were calculated and paid back to 2020 for all unions except Union #2.

ECM/Electronic Document Management: Training for Subject Matter Experts (SMEs) began in May and User Acceptance Testing (UAT) started shortly thereafter. Testing will continue through the summer while vendor continues to work on workflow design changes and bugs that are identified during that testing. Significant progress continues to be made on data and document migration from various systems.

MWRA Website Replacement: RFQ/P was posted in May, but none of the responses met the requirements of the SOW. Completed internal evaluation of the SOW and decided to repost in the future with updated requirements.

Learning Management System: Integrated LMS with LinkedIn and Okta SSO, and updated the dashboards for Learners, Managers, and Administrators in preparation for go live in Q1FY23.

Oracle Contract Migration to SSCM: MIS has completed the migration of open Contracts from our legacy Oracle application to Infor's Contract management Module. A total of 272 open contracts have been migrated. MIS will be retiring the legacy Oracle Contract Module once the closed contracts have been archived and are accessible to users with a reporting solution.

Library, Record Center, & Training

Library: undertook 18 research requests, supplied 15 books for circulation, provided 9 articles, and 7 new standards. The MWRA Library Portal supported 725 end user searches. Research topics included: technique for chlorine:ammonio jar test, Forbes Hill Open Reservoir Quincy, PFAS research, Frederick Stearns-history of Water System.

Record Center (RC): The Record Center added 174 new boxes, handled 241 total boxes, and shredded (41) 65 gallon bins and (10) 96 gallon bins of confidential documentation on-site. It performed 60 database/physical box searches for multiple departments on various topics, including administrative info, law cases, and project docs for Engineering.

Training: In Q4, 24 online IT lessons were taken, by 9 employees, spanning 35 hours (295 YTD). 21 total sessions of 6 standard class lessons were taken by 15 employees, spanning 132 hours (444 YTD). 0 outside certification were earned.

PROJECT ASSISTANCE

Real Estate, Contract, Environmental and Other Support:

- **8(m) Permits and License Agreements:** Reviewed seventy (70) 8(m) permits. Drafted one-day license for use of area at DITP for a non-profit event. Finalized amendment to the public access 8(m) permit for the Town of Southborough. Revised draft amendment to Town of Northborough public access 8(m) permit. Drafted initial amendment to public access 8(m) permit for the Town of Sherborn.

- **Real Property:** Drafted license from Town of Wellesley to MWRA related to borings to be taken at 100 Walnut Street in Wellesley for Tunnel Redundancy program. Reviewed property rights in Quincy in areas of Forbes Hill Standpipe and Rhoda Street. Revised licenses for Chelsea Traffic light project. Researched property rights for land subject to Article 97 process for potential shaft sites for Tunnel Redundancy. Finalized Memorandum of Agreement, draft legislation and quitclaim deed with revised plan for 12 Cleverly Court, Quincy. Researched title to commonwealth owned properties in the care of DCR, DPH and DCAMM for Metropolitan Water Tunnel Program. Researched and reviewed order of taking and construction plans for MWRA Sewer Main at 159-174 Ruggles, Roxbury. Reviewed and edited preliminary easement and plan for Suffolk Downs development project. Researched various property references in Newton for MWRA notice letter to abutters. Researched property rights and Article 97 concerning parcels of land near Hegarty Pump Station, Wellesley. Drafted cease and desist order related to unauthorized construction activities within the Sudbury Aqueduct property by the owner of 251 Grant Avenue in Newton, MA. Reviewed Sudbury Aqueduct property rights in Sherborn, MA. Finalized grant of permanent water easements document and easement plan related to new MWRA water meters and water main lines at proposed development in Revere/Boston at site of former Suffolk Downs. Reviewed MWRA property interests and plans of land concerning Sudbury Aqueduct. Reviewed Quabbin Aqueduct takings and plans. Researched temporary and permanent easements for MWRA Contract 6224: Siphon/Junction Structure Rehab Project. Researched property rights for land subject to Article 97 process for potential shaft site. Reviewed CNY Building 39 lease and amendments identifying tenant obligations before lease expiration. Recorded AUL at Suffolk Registry of Deeds for property at Marginal Street, Chelsea. Drafted Memorandum of Agreement between MWRA and the Town of Ludlow regarding construction and ownership of an antenna tower at Nash Hill Reservoir for communication equipment.

- **Energy:** Provided legal support to the energy team regarding updates to the Cosgrove and Oakdale Hydro facilities' Interconnection Services Agreements with National Grid and related interconnection processes.

- **Environmental/NPDES:** Assisted TRAC with collection of a $20,000 civil administrative penalty. Reviewed summary of CSO receiving water quality monitoring in Charles River and Upper Mystic River/Alewife Brook. Drafted memorandum relative to April 28, 2022, decision by the United States Court of Appeals for the First Circuit in Blackstone Headwaters Coal., Inc. v. Gallo Builders, Inc. Finalized comments regarding EPA's general NDPES permit for medium waste water treatment facilities, which is applicable to MWRA's Clinton wastewater treatment plant facility. Prepared case summary of *West Virginia v. Environmental Protection Agency, No. 20-1530 (2022)*.

- **Miscellaneous:** Drafted notice letters for survey and boring work in Waltham pursuant to statutory right of entry. Edited Professional Services Long Form Agreement. Reviewed EOEA Article 97 Land Disposition Policy. Verified terms of Verizon's permit for wireless equipment at MWRA's Turkey Hill water tank, Arlington. Reviewed 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. 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. Researched personal information exemption, G. L. c. 4, § 7 (26)(c). Researched regulations and statutory requirements for water operator license and wastewater treatment operator licenses and requested information from DPL, DEP and NEIWPCC for certifications/licenses. Reviewed Bays Eutrophication Model for MWRA Procurement OP-442 and confirmed readiness for public bidding process. Reviewed and provided guidance on amendments to parental guarantee agreements for Procurement Division. Reviewed Cingular and Verizon permit agreements for the installation, operation, and maintenance of wireless equipment on MWRA's Turkey Hill water tank in Arlington. Finalized Memorandum of Agreement for Chelsea Traffic Signalization. Edited geotechnical consultant contract. Collaborated with Real Property Division to improve and expand Real Property/GIS interactive database with information for Clinton Path waterline. Edited contract documents for easement takings associated

with Section 101 Water Main Ext. Finalized legal review of MWRA video surveillance policy. Reviewed documents concerning section 1 of Chapter 2015 of the Acts of 2018 concerning DCAMM and DCR granting a permanent subsurface easement and temporary subsurface easement. Summarized Senate Bill 1179 entitled, An Act to Prevent Wage Theft, Promote Employer Accountability, and Enhance Public Enforcement.Reviewed procurement documents for Metropolitan Water Tunnel Program lease for core storage facility. Reviewed legislation for Senate Bill 2104 and House Bill 3213 concerning a further extension of remote participation for public meetings subject to the Open Meeting Law. Researched statutory and common law public record exemptions. Researched updates to COVID-19 vaccine mandate and litigation.

- **Public Records Requests:** During the 4th Quarter of FY22, MWRA received and responded to one hundred seventy one (171) public records requests.

LABOR, EMPLOYMENT AND ADMINISTRATIVE

New Matters

Two demands for arbitration were filed.

An unfair labor practice charge was filed alleging that MWRA failed to bargain to resolution or impasse prior to implementing a COVID vaccination policy.

A union filed a charge of prohibited practice at the Massachusetts Department of Labor Relations alleging the MWRA violated Chapter 150E when it announced it would not bargain over the decision to make changes to job descriptions.

A union filed a petition for mediation to secure a successor Collective Bargaining Agreement.

Matters Concluded

Settled an arbitration case alleging the MWRA violated a collective bargaining agreement when two employees alleged to be working out of title.

Settled two Department of Labor Relations matters regarding the PFML Contribution Rate.

LITIGATION/CLAIMS

New Lawsuits/Claims:

Conservation Law Foundation ("CLF") v. MWRA, U.S. District Court 1:22-cv-10626: A complaint was filed in federal district court alleging Clean Water Act violations in connection with MWRA's Industrial Pretreatment Program. Plaintiff seeks declaratory and injunctive relief, civil penalties and attorneys' fees and costs.

MWRA v. Saba Development LLC, et al., Suffolk Superior Court C.A. No. 2284CV00968: MWRA filed a Complaint for declaratory judgment and injunctive relief against the property owners Saba Development, LLC and Farzin Kiani to end unpermitted construction operations within the Sudbury Aqueduct property ("Aqueduct") to the rear of Defendants' residential property at 251 Grant Avenue in Newton. The Defendants began the restoration work on June 23rd. Once MWRA has verified that Defendants are in full compliance, the lawsuit will be dismissed.

Significant Developments:

(Current Employee) v. MWRA, Suffolk Superior Court C.A. No. 21841434: On June 8, 2022, the Court allowed MWRA's motion to compel certain records. Discovery remains ongoing.

GEICO v. MWRA, Suffolk Superior Court C.A. No. 2184CV02107: The parties reached a settlement of GEICO's subrogation claim and are expected to file a Stipulation of Dismissal shortly.

Closed Cases:

(Former Employee) 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. A Judgement in favor of MWRA and DUA was entered on May 27, 2022.

(Former Employee) v. MWRA, Suffolk Superior Court C.A. No. 1684CV3708E: The parties participated in mediation. The Plaintiff's employment claims were settled and a Joint Notice of Dismissal was filed on June 6, 2022. This matter is closed.

MWRA v. Bharat Bhushan, et al., Suffolk Superior Court C.A. No. 1984CV03586: A Joint Stipulation of Dismissal was filed with the court on May 12, 2022 after MWRA approved Defendants' subsequent remediation of the site. The matter is now closed.

Closed Claims: There are no closed claims to report.

Subpoenas: During Fourth Quarter FY 2022, no subpoenas were received and one subpoena was 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 June 2022	As of Mar 2022	As of Dec 2021
Construction/Contract/Bid Protest (other than BHP)	0	0	0
Tort/Labor/Employment	3	4	5
Environmental/Regulatory/Other	4	3	3
Eminent Domain/Real Estate	0	0	0
Total	**7**	**7**	**8**
Other Litigation matters (restraining orders, etc.)	2	2	2
Total – all pending lawsuits	**9**	**9**	**10**
Claims not in suit:	0	0	0
Bankruptcy	2	1	1
Wage Garnishment	2	2	2
TRAC/Adjudicatory Appeals	0	0	0
Subpoenas	0	0	0
TOTAL – ALL LITIGATION MATTERS	**13**	**13**	**13**

TRAC/MISC.

New Appeals: There were no new appeals in the 4th Quarter FY 2022.

Settlement by Agreement of Parties There were no Settlements by Agreement of Parties in the 4th Quarter FY 2022.

Stipulation of Dismissal No Stipulations of Dismissal were filed in 4th Quarter FY 2022.

Notice of Dismissal Fine paid in full No Notices of Dismissal for Fines Paid in Full were filed in the 4th Quarter FY 2022.

Tentative Decision No Tentative Decisions were issued in the 4th Quarter FY 2022.

Final Decisions No Final Decisions were issued in the 4th Quarter FY 2022.

INTERNAL AUDIT AND CONTRACT AUDIT ACTIVITIES
4th Quarter FY22

Highlights

During the 4th quarter FY22, Internal Audit (IA) coordinated with management to conduct a fleet physical inventory of all plated vehicles and equipment (planned for 1st quarter FY23). This procedure will provide additional information for an internal review of inspection compliance which is progressing. An internal review of water and wastewater license and certifications is nearing completion. An internal review of MIS assets is progressing.

In addition, IA completed a true-up of 2021 operating expenses for the HEEC cable, reviewed the Fore River Railroad 2021 tax return, issued 55 indirect cost rate letters to professional service consultants, completed preliminary reviews of 3 professional service contracts while 1 other was in process, completed 4 incurred cost reviews while 3 are in process and completed 2 labor burden review while 2 are in process. Management advisory services included support on MWRA's leases.

There are 6 new security policies under review.

Status of Recommendations

During FY22, 24 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)	-	16	16
Fleet Services Non-Plated Equipment Inspections (3/30/20)	1	14	15
Total Recommendations	*1*	*30*	*31*

Note: The Compliance Status of Employees' Mandatory Confined Space Entry Training report issued on 6/30/21 has been retracted. An amended report will be issued in the 1st quarter FY23.

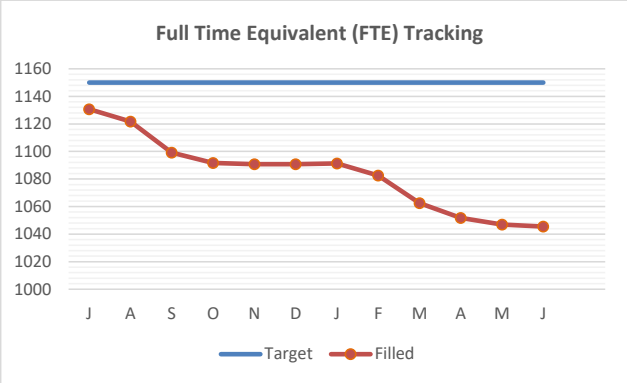
Cost Savings

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 Q4	TOTALS
Consultants	$118,782	$262,384	$643,845	$563,525	$39,938	$1,628,474
Contractors & Vendors	$1,323,156	$3,152,884	$2,097,729	$1,547,223	$1,714,614	$9,835,606
Internal Audits	$204,202	$210,063	$212,517	$214,458	$222,554	$1,063,794
Total	**$1,646,140**	**$3,625,331**	**$2,954,091**	**$2,325,206**	**$1,977,106**	**$12,527,875**

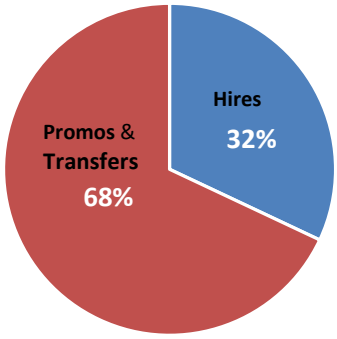
OTHER MANAGEMENT

Workforce Management
4th Quarter - FY22

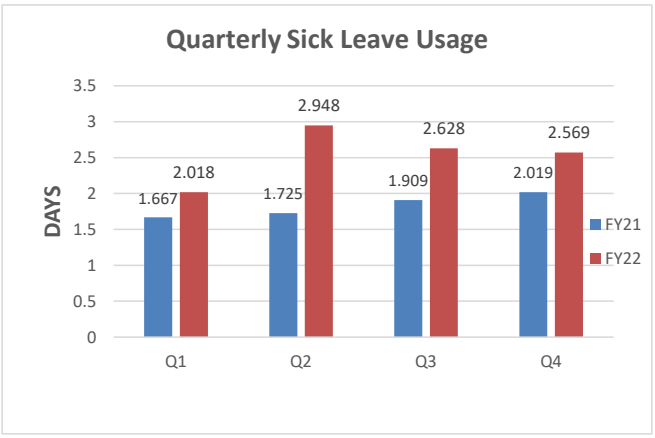


FY22 Target for FTE's = 1150
FTE's as of June 2022 = 1045.5
Tunnel Redundancy as of June 2022 = 10

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	138 (68%)	65 (32%)	203

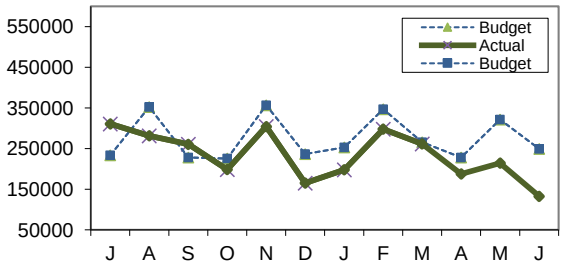


Average quarterly-sick leave for the 4th Quarter of FY22 has increased compared to the 4th Quarter of FY21 (2.569 from 2.019)

	Number of Employees	YTD (usage to date)	Annualized Total	Annual FMLA %	FY21
Admin	131	7.57	7.57	10.3%	5.87
Aff. Action	4	8.73	8.73	38.1%	3.14
Executive	3	3.11	3.11	0.0%	3.60
Finance	46	6.21	6.21	0.0%	3.17
Int. Audit	5	1.47	1.47	0.0%	0.89
Law	11	12.27	12.27	21.4%	5.83
OEP	4	5.56	5.56	0.0%	1.33
Operations	836	10.87	10.87	21.1%	7.95
Tunnel Red	10	3.94	3.94	27.3%	1.62
Pub. Affs.	9	10.17	10.17	57.5%	1.13
MWRA Avg	**1059**	**10.16**	**10.16**	**20.7%**	**7.32**

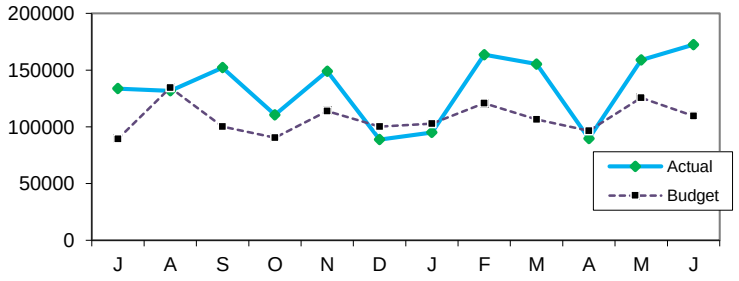
Percent of sick leave usage for FY22, attributable to Family and Medical Leave Act (FMLA) is 20.7%.

Field Operations
FY22 Thru Q4



Total Overtime for Field Operations for June was $133k which is ($116k) under budget. Emergency overtime was $46k, which is ($33k) under budget. Rain events were $26k and Emergency Maintenance was $26k. Coverage overtime was $48k, which is ($23k) under budget, reflecting the month's shift coverage requirements. Planned overtime was $34k or ($20k) under budget. Spending of $11k for Community Assistance, primarily the Water Fountain community events.

Deer Island Treatment Plant
FY22 Thru Q4

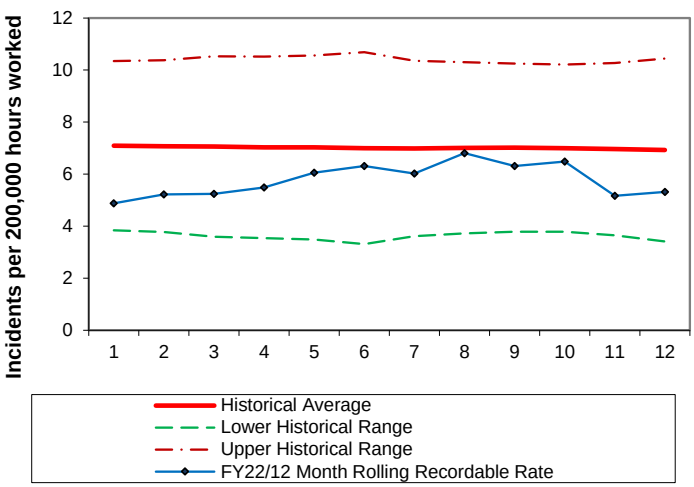


Deer Island's total overtime expenditure in the fourth quarter of FY22 was $421k, which was $89k or 26.9% over budget. In fourth quarter Deer Island experienced higher than anticipated shift coverage of $128k and planned/unplanned overtime of $7k This is offset by lower than anticipated storm coverage of ($46k). YTD Deer Island's overtime spending is $1.6M, which is $310k or 24.0% over budget due to higher than anticipated shift coverage of $403k. This is offset by lower than anticipated planned/unplanned overtime of ($78k) and storm coverage of ($15k).

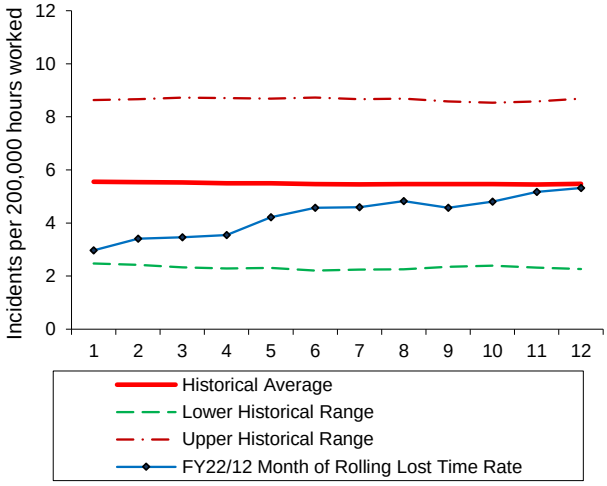
Workplace Safety

4th Quarter - FY22

Recordable Injury & Illness Rates



Lost Time Injury & Illness Rates



1 "Recordable" incidents are all work-related injuries and illnesses which result in death, loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid. Each month this rate is calculated using the previous 12 months of injury data.

2 "Lost-time" incidents, a subset of the recordable incidents, are only those incidents resulting in any days away from work, days of restricted work activity or both - beyond the first day of injury or onset of illness. Each month this rate is calculated using the previous 12 months of injury data.

3 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.

4 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

	4th Quarter Information		
	New	Closed	Open Claims
Lost Time	8	16	63
Medical Only	9	17	9
Report Only	11	21	
	QYTD		FYTD
Regular Duty Returns	6		27
Light Duty Returns	0		0
Indemnity payments as of June 2022 included in open claims listed			23

COMMENTS:

Regular Duty Returns

Apr	2	Employees returned to full duty/no restrictions
May	1	Employees returned to full duty/no restrictions
June	3	Employees returned to full duty/no restrictions

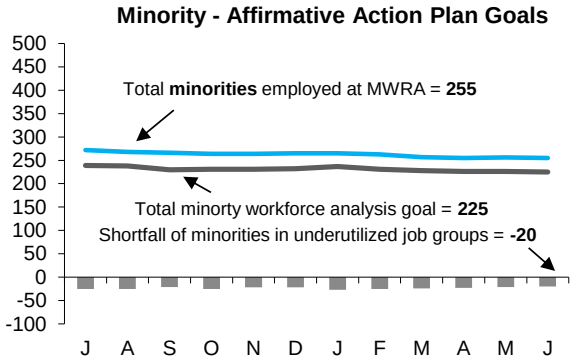
Light Duty Returns

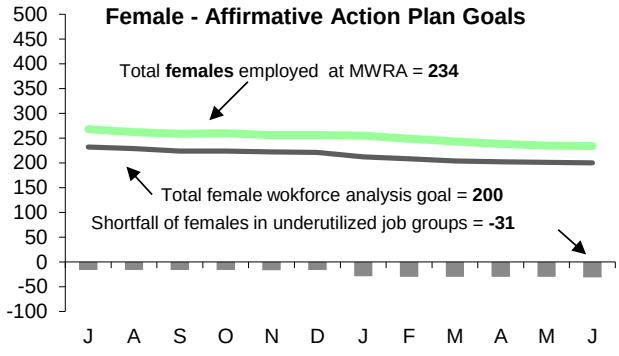
Apr N/A
May N/A
June N/A

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

4th Quarter - FY22





Highlights:

At the end of Q4 FY22, 5 job groups or a total of 21 positions are underutilized by minorities as compared to 5 job groups for a total of 24 positions at the end of Q4 FY21; for females 8 job groups or a total of 30 positions are underutilized by females as compared to 5 job groups or a total of 16 positions at the end of Q4 FY21. During Q4, 7 minorities and 7 females were hired. During this same period 4 minorities and 6 females were terminated.

Underutilized Job Groups - Workforce Representation

Job Group	Employees as of 6/30/2022	Minorities as of 6/30/2022	Achievement Level	Minority Over or Under Underutilized	Females As of 6/30/2022	Achievement Level	Female Over or Under Underutilized
Administrator A	26	4	3	1	13	7	6
Administrator B	25	3	6	-3	8	6	2
Clerical A	20	7	2	5	17	15	2
Clerical B	22	7	5	2	3	11	-8
Engineer A	80	20	19	1	20	14	6
Engineer B	58	19	15	4	12	14	-2
Craft A	109	16	20	-4	0	5	-5
Craft B	128	22	24	-2	1	6	-5
Laborer	59	19	13	6	4	2	2
Management A	87	18	18	0	32	24	8
Management B	37	10	7	3	5	9	-4
Operator A	60	4	14	-10	2	4	-2
Operator B	68	20	7	13	3	1	2
Professional A	29	6	7	-1	16	11	5
Professional B	147	46	44	2	68	37	31
Para Professional	46	16	10	6	22	24	-2
Technical A	52	16	10	6	6	9	-3
Technical B	6	2	1	1	2	1	1
Total	**1059**	**255**	**225**	**50/-20**	**234**	**200**	**65/-31**

AACU Candidate Referrals for Underutilized Positions

Job Group	Title	# of Vac	Requisition Int. / Ext.	Promotions/Transfers	AACU Ref. External	Position Status
Administrator A	Manager, Occup Health & Safety	1	Int./Ext.	0	0	NH = WM
Administrator A	Controller	1	Int./Ext.	0	0	NH = BM
Clerical B	Records Coordinator, TRAC	1	Int./Ext.	0	0	NH = WM
Clerical B	inventory Control Specialist	1	Int./Ext.	1	0	PROMO = WM
Engineer B	Staff Engineer	1	Int./Ext.	0	0	NH = WM
Engineer B	Project Manager	3	Int./Ext.	1	0	NH=2WF PROMO=BF
Engineer B	Project Manager, PICS	1	Int./Ext.	1	0	PROMO = BM
Engineer B	Project Manager, Meter Engin	1	Int./Ext.	1	0	PROMO = WM
Craft A	M & O Specialist	1	Int./Ext.	0	0	NH = WM
Craft A	Unit Supervisor	1	Int./Ext.	1	0	PROMO = WM
Craft B	Jr Instrument Technician	1	Int./Ext.	0	0	NH = WM
Craft B	Electrician	1	Int./Ext.	0	0	NH = HM
Craft B	Plumber/Pipefitter	1	Int./Ext.	0	0	NH = WM
Operator A	Area Supervisor	1	Int./Ext.	0	0	NH = WM
Operator A	Sr Trans/Treatment Operator	1	Int./Ext.	1	0	PROMO = WM
Para Professional	TIC Clerk	1	Int./Ext.	0	0	NH = BM
Para Professional	Administrative Systems Coord	3	Int./Ext.	1	0	NH=2WF PROMO=HF
Professional A	Sr Staff Counsel	1	Int./Ext.	0	0	NH = WF
Technical A	Sr Draftsperson	1	Int./Ext.	0	0	NH = HM
Technical A	Sr Field Service Technician	2	Int./Ext.	2	0	PROMO = 2WM
Technical A	Sr Instrument Tech	1	Int./Ext.	1	0	PROMO = HM
Technical A	Sr SCADA Maint Technician	1	Int./Ext.	1	0	PROMO = WM

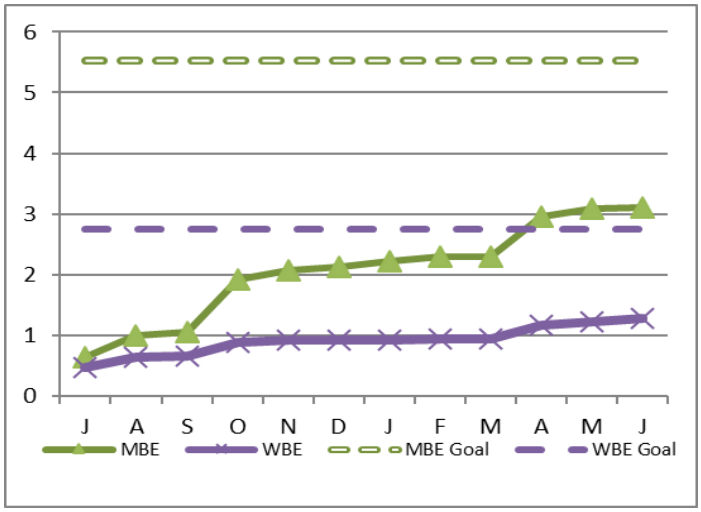
MBE/WBE Expenditures

4th Quarter - FY22

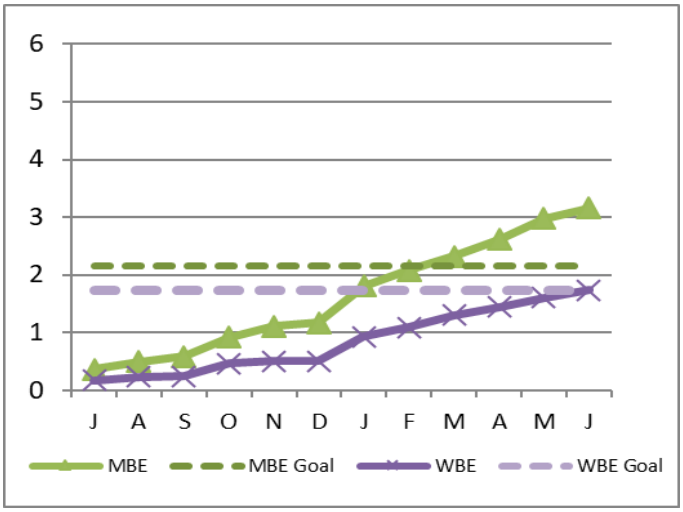
MBE/WBE targets are determined based on annual MWRA expenditure forecasts in the procurement categories noted below. The goals for FY22 are based on 85% of the total construction and 75% of the total professional projected spending for the year. Certain projects have been excluded from the goals as they have no MBE/WBE spending goals.

MBE/WBE percentages are the results from a 2002 Availability Analysis, and MassDEP's Availability Analysis. As a result of the Availability Analyses, the category of Non-Professional Services is included in Goods/Services. Consistent with contractor reporting requirements, MBE/WBE expenditure data is available through June.

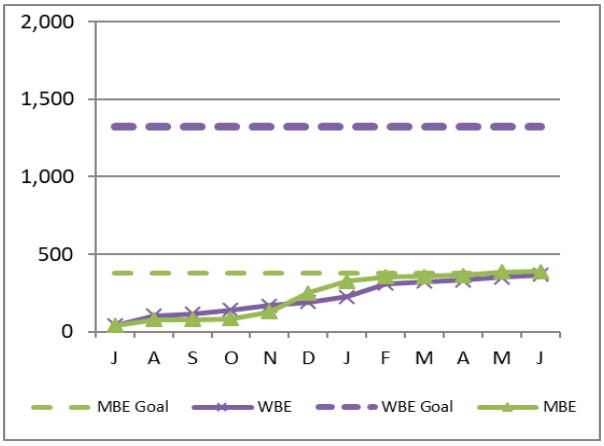
Construction



Professional Services



Goods/Services



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

MBE					WBE			
FY22 YTD		FY21			FY22 YTD		FY21	
Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent
3,102,188	56.2%	4,234,355	51.6%	Construction	1,276,049	46.5%	3,238,772	79.3%
3,156,867	147.1%	2,439,855	107.0%	Prof Svcs	1,737,850	100.8%	554,298	30.3%
387,120	102.7%	403,728	113.2%	Goods/Svcs	365,393	27.6%	528,645	40.9%
6,646,175	82.6%	7,077,938	65.3%	**Totals**	3,379,292	58.3%	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 4rd Quarter – FY22

As of June 2022, total expenses are $788.8 million, $24.2 million or 3.0% lower than budget, and total revenue is $819.7 million, $6.7 million or 0.8% over budget, for a net variance of $30.9 million.

Expenses –

Direct Expenses are $241.7 million, $18.2 million or 7.0% under budget.

- **Wages & Salaries** are $11.3 million under budget or 9.7%. Regular pay is $11.2 million under budget, due primarily to lower head count, and timing of backfilling positions. YTD through June, the average Full Time Equivalent (FTE) positions was 1,097, seventy fewer than the 1,167 FTE's budgeted.
- **Utilities** expenses are $4.6 million over budget or 18.6%, due over spending for Electricity of $3.6 million due to higher flows and rates at Deer Island which accounted for $2.3 million of the electricity variance. Field Operations accounted for overspending of $1.3 million in electricity over spending. Deer Island purchased 2.0% more kWh than planned as plant flows were 4.0% over budget due to wet weather events earlier in the year. On-site generation at DI was 3.6% under target. Higher electricity prices under new supply contracts and higher transmission charges contributed to the spending variance. Higher spending for diesel, $0.9 million over budget, reflects higher quantity purchased at a higher price.
- **Ongoing Maintenance** expenses are $3.6 million under budget or 11.1%, primarily due to the timing of projects.
- **Other Materials** expenses are $3.3 million under budget or 39.5%, reflecting the funding shift to the CIP for the CNY move project.
- **Fringe Benefits** expenses are $1.5 million under budget or 6.6%, primarily due to lower health insurance expense $1.2 million under budget, reflecting the lower headcount.
- **Professional Services** expenses are $1.4 million under budget or 16.0%, primarily due to under spending for Computer System Consultant of $1.3, Engineering of $363k, and Lab Testing and Analysis $339k,. Underspending was partially offset by higher spending on Other Professional Services and Security which were over budget by $405k and $308k, respectively.
- **Workers Compensation** expenses are $949k under budget or 36.3%, due to under spending for Compensation Payments of $576k and Medical Payments of $319k. This reflects the uncertainties of when spending will occur, the budget is spread evenly throughout the year.
- **Chemicals** expenses are $414k under budget or 3.4%, primarily due to under spending for Hydrogen Peroxide of $384k based on usage as excessive rainfall helped lower H2S levels at Deer Island, Soda Ash of $108k driven by Water Operations due to lower average flows at CWTP, Activated Carbon of $89k primarily due to timing of replacements at DITP, and Polymer of $76k. These are partially offset by higher spending for Ferric Chloride of $275k, Liquid Oxygen of $118k, and Sodium Bisulfite of $69k.

Indirect Expenses are $55.3 million, $1.3 million or 2.4% under budget. Lower Watershed Reimbursements of $769k due primarily to lower spending on Maintenance, Equipment, Telecommunications, and Operational Supplies, as well as under budget HEEC payments of $351k, and lower insurance expense of $230k.

Capital Finance Expenses totaled $491.9 million and was $4.7 million or 0.9% below budget after the impact of the spring defeasance. Surplus was a result of lower than budget variable interest expense of $10.1 million due to lower interest rates combined with lower SRF spending of $5.9 million due to bond issue timing, lower Water Pipeline CP of $4.8 million due to lower than budgeted interest rates, offset by higher Senior Debt of $16.1 million, as a result of defeasance expenditures of $25.4 million.

Revenue and Income –

Total Revenue and Income is $819.7 million, or $6.7 million or 0.7% over budget. Other Revenue was $3.5 million or 35.9% over budget due to a Payment from the Commonwealth of Massachusetts of $1.2 million for Debt Service Assistance, higher Miscellaneous Revenue of $1.2 million driven by $443k in reimbursement from the Commonwealth of Massachusetts for Biobot costs associated with FY21, Energy Revenue of $659k, Income from the Disposal of Equipment of $305k, and Energy Rebates of $264k. Other User Charges were over budget by $1.7 million or 18.9% primarily due to unplanned water use by the Town of Burlington. Investment Income was $1.5k over budget due to higher than budgeted interest rates.

	Jun 2022 Year-to-Date			
	Period 12 YTD Budget	Period 12 YTD Actual	Period 12 YTD Variance	%
EXPENSES				
WAGES AND SALARIES	$ 116,680,341	$ 105,394,954	$ (11,285,387)	-9.7%
OVERTIME	5,156,681	5,010,758	(145,923)	-2.8%
FRINGE BENEFITS	23,253,137	21,714,918	(1,538,219)	-6.6%
WORKERS' COMPENSATION	2,614,159	1,665,017	(949,142)	-36.3%
CHEMICALS	12,202,286	11,788,437	(413,849)	-3.4%
ENERGY AND UTILITIES	24,749,865	29,352,756	4,602,891	18.6%
MAINTENANCE	32,442,382	28,842,198	(3,600,184)	-11.1%
TRAINING AND MEETINGS	473,994	232,056	(241,938)	-51.0%
PROFESSIONAL SERVICES	8,773,258	7,373,709	(1,399,549)	-16.0%
OTHER MATERIALS	8,334,774	5,039,040	(3,295,734)	-39.5%
OTHER SERVICES	25,129,234	25,243,013	113,779	0.5%
TOTAL DIRECT EXPENSES	**$ 259,810,111**	**$ 241,656,856**	**$ (18,153,254)**	**-7.0%**
INSURANCE	$ 3,943,600	$ 3,713,849	$ (229,751)	-5.8%
WATERSHED/PILOT	26,731,490	25,962,906	(768,584)	-2.9%
HEEC PAYMENT	6,991,953	6,640,820	(351,133)	-5.0%
MITIGATION	1,693,360	1,693,359	(1)	0.0%
ADDITIONS TO RESERVES	1,412,647	1,412,646	(1)	0.0%
RETIREMENT FUND	11,205,000	11,205,000	-	0.0%
POST EMPLOYEE BENEFITS	4,673,624	4,673,624	-	0.0%
TOTAL INDIRECT EXPENSES	**$ 56,651,674**	**$ 55,302,204**	**$ (1,349,471)**	**-2.4%**
STATE REVOLVING FUND	$ 95,673,399	$ 89,764,495	$ (5,908,904)	-6.2%
SENIOR DEBT	244,957,128	261,060,493	16,103,365	6.6%
DEBT SERVICE ASSISTANCE	(1,287,870)	(1,287,870)	-	0.0%
CURRENT REVENUE/CAPITAL	17,200,000	17,200,000	-	0.0%
SUBORDINATE MWRA DEBT	125,046,218	125,046,218	-	0.0%
LOCAL WATER PIPELINE CP	6,120,127	1,353,576	(4,766,551)	-77.9%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%
VARIABLE DEBT	-	(10,083,161)	(10,083,161)	---
DEFEASANCE ACCOUNT	-	-	-	---
DEBT PREPAYMENT	5,609,355	5,609,355	-	0.0%
TOTAL CAPITAL FINANCE EXPENSE	**$ 496,535,417**	**$ 491,880,165**	**$ (4,655,252)**	**-0.9%**
TOTAL EXPENSES	**$ 812,997,202**	**$ 788,839,225**	**$ (24,157,977)**	**-3.0%**
REVENUE & INCOME				
RATE REVENUE	$ 792,084,000	$ 792,084,000	$ -	0.0%
OTHER USER CHARGES	9,222,883	10,962,933	1,740,050	18.9%
OTHER REVENUE	6,479,203	9,989,560	3,510,357	54.2%
RATE STABILIZATION	1,250,000	1,250,000	-	0.0%
INVESTMENT INCOME	3,961,116	5,435,309	1,474,193	37.2%
TOTAL REVENUE & INCOME	**$ 812,997,202**	**$ 819,721,802**	**$ 6,724,600**	**0.8%**

Cost of Debt
4rd Quarter – FY22

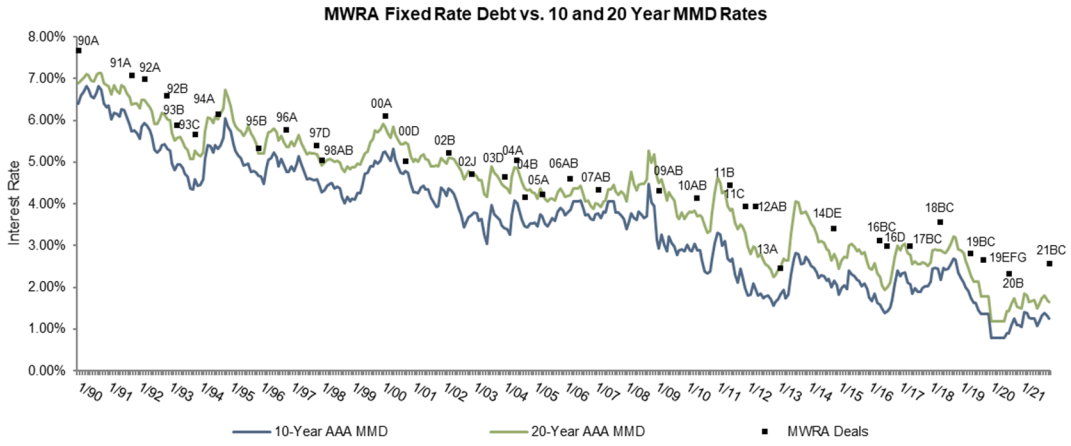
MWRA borrowing costs are a function of the fixed and variable tax exempt interest rate environment, the level of MWRA's variable interest rate exposure and the perceived creditworthiness of MWRA. Each of these factors has contributed to decreased MWRA borrowing costs since 1990.

Average Cost of MWRA Debt FYTD

Fixed Debt ($3.41 billion)	3.22%
Variable Debt ($299.1million)	0.58%
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%

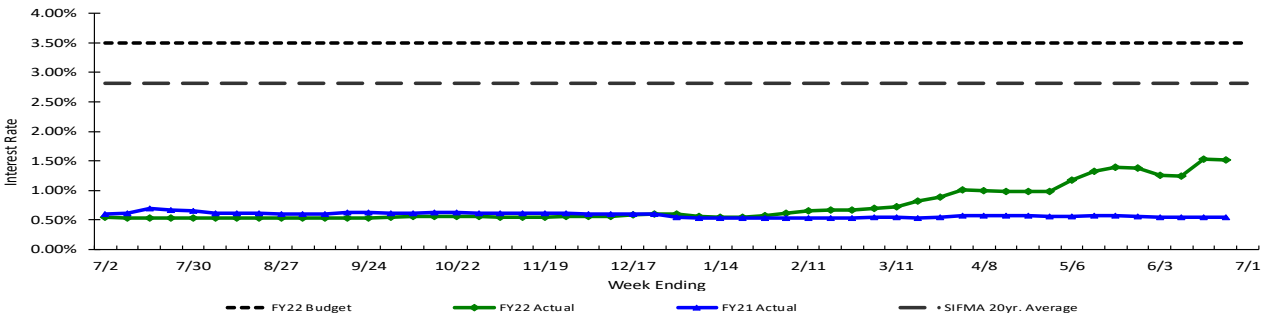


Bond Deal	1996A	1997D	1998AB	2000A	2000D	2002B	2002J	2003D	2004A	2004B	2005A	2006AB	2007AB	2009AB
Rate	5.78%	5.40%	5.04%	6.11%	5.03%	5.23%	4.71%	4.64%	5.05%	4.17%	4.22%	4.61%	4.34%	4.32%
Avg Life	19.5 yrs	21.6 yrs	24.4 yrs	26.3 yrs	9.8 yrs	19.9 yrs	19.6 yrs	18.4 yrs	19.6 yrs	13.5 yrs	18.4 yrs	25.9 yrs	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	18.8yrs	11.2 yrs	11.7yrs	11.9yrs	9.73 yrs.	15.6 yrs	12.2 yrs

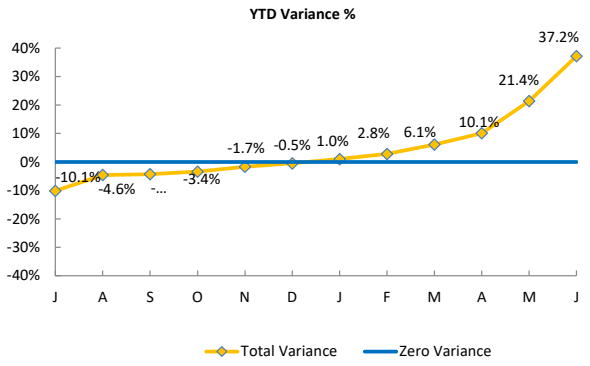
Weekly Average Variable Interest Rates vs. Budget

MWRA currently has ten 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 June, the SIFMA rate ranged from a high of 0.98% to a low of 0.62% 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.



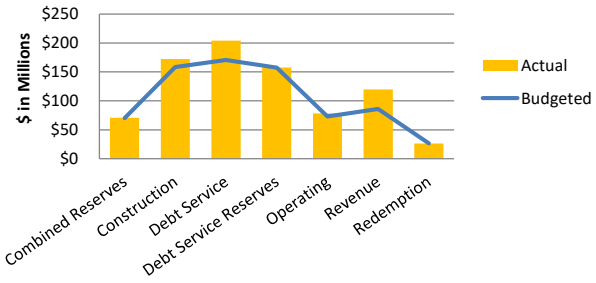
Investment Income
4rd Quarter – FY22

Year To Date



	YTD BUDGET VARIANCE			
	($000)			
	BALANCES IMPACT	RATES IMPACT	TOTAL	%
Combined Reserves	$4	$62	67	10.0%
Construction	$23	$200	223	93.5%
Debt Service	$50	$569	619	242.0%
Debt Service Reserves	$4	$126	130	7.0%
Operating	$40	$84	124	24.4%
Revenue	$79	$232	311	153.7%
Redemption	($1)	$1	1	0.2%
Total Variance	$201	$1,274	$1,474	37.2%

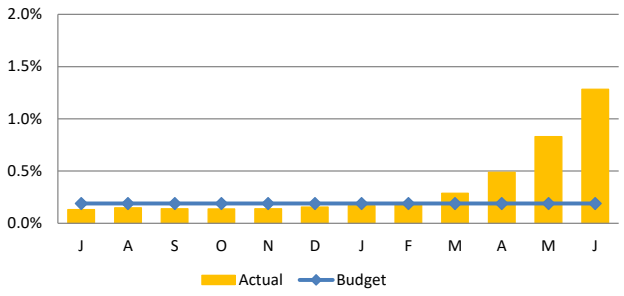
YTD Average Balances Budgeted vs. Actual



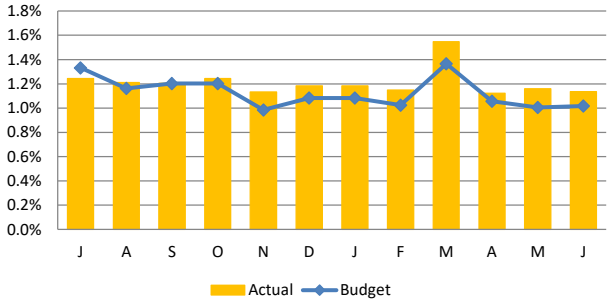
YTD Average Interest Rate Budgeted vs. Actual

Monthly

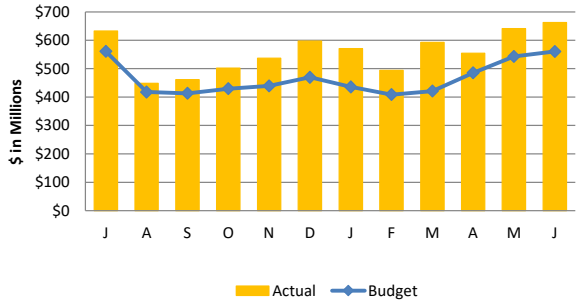
Short -Term Interest Rates



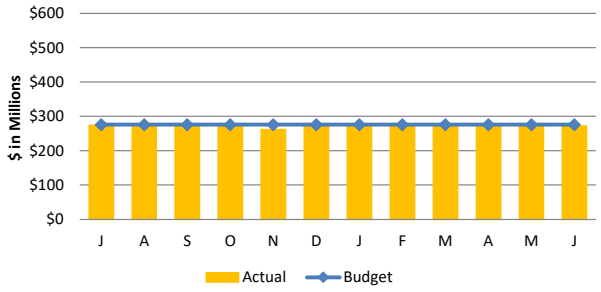
Long -Term Interest Rates



Short-Term Average Balances



Long-Term Average Balances



STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Fiscal Year 2022 Year-End Capital Improvement Program Spending Report

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COMMITTEE: Administration, Finance & Audit

____VOTE
_X_ INFORMATION

David W. Coppes
Chief Operating Officer

Michael J. Cole, Budget Director
James J. Coyne, Budget Manager
Preparer/Title

Thomas J. Durkin
Director, Finance

At the end of each fiscal year, staff present the Board with a recap of the Capital Improvement Program. FY22 was the fourth year of MWRA's five-year spending cap for FY19-23 established at $984.8 million. The FY22 capital budget was $207.3 million. The FY22 capital spending totaled $138.5 million, $68.8 million or 33.2% lower than budget.

In FY22, the Authority reached substantial completion of the Chelsea Creek Headworks Upgrades, Deer Island Gravity Thickener Rehabilitation, Dorchester Interceptor Sewer Construction, Wastewater Meter Equipment Replacement, CP-6 Tops of Shafts 6, 8, and 9A, Deer Island Chemical Tank and Digester Pipe Construction, and Shaft 2 Construction.

The Authority made significant progress on several major projects including Nut Island Odor Control and HVAC Improvements, Weston Aqueduct Supply Mains CP-1, Weston Aqueduct Pressure Reducing Valves Improvements, Northern Extra High Improvements CP-1, Carroll Treatment Plant SCADA Improvements, and NIH Section 89 Replacement Construction.

In FY22, MWRA managed 82 design and construction contracts and awarded 23 contracts valued at $163.9 million.

RECOMMENDATION:

For information only. The Fiscal Year 2022 Year-End Capital Program Spending Report highlights MWRA's major capital program accomplishments during FY22 and provides explanations for spending variances.

Please see Attachment A for the full Report.

DISCUSSION:

Projects that were completed or reached substantial completion in FY22 included:

- Chelsea Creek Headworks Upgrades - $82.5 million
- Deer Island Treatment Plant Gravity Thickener Rehab - $20.2 million
- Deer Island Chemical Tank and Digester Pipe Construction - $8.8 million
- Wastewater Metering Equipment Replacement - $3.9 million
- Dorchester Interceptor Sewer Construction - 4.2 million
- Tops of Shafts 6, 8, 9A Rehab - 2.2 million
- Weston Aqueduct Sluice Gates Construction - $2.2 million
- River Road Improvements at Wachusett - $1.9 million
- Shaft 2 Construction - $1.6 million
- Fuel Oil Tank Replacement Phase 1 - 1.5 million
- Deer Island Combined Heat & Power Alternatives Study - $1.1 million
- Clinton Valve and Pipe Replacement - $0.5 million
- As-Needed Construction Services/Resident Engineering/Inspection Contract 1 - $0.4 million
- Wachusett Dam Bridge Crane Removal - $0.3 million
- Harbor Outfall Monitoring and Loading System Upgrade - $0.2 million

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

- Nut Island Headworks Odor Control and HVAC Improvements Construction - 73% complete
- Weston Aqueduct Supply Mains (WASM) 3 Rehab CP-1 - 66%
- Tunnel Redundancy Preliminary Design & MEPA Review – 46%
- WASM/Spot Pond Supply Mains Pressure Reducing Valves Improvements - 27%
- Carroll Water Treatment Plant SCADA Upgrades - 23%
- Northern Extra High Improvements Construction - 19%
- Northern Intermediate High Section 89/29 Replacement - 13%
- Rehab of Sections 23,24,47 Rehab - 11%

MWRA pipelines rehabilitated or constructed in FY22 totaled 3.4 miles for water and wastewater projects.

Please see Attachment D for a detailed breakdown of the linear footage of pipeline rehabilitated or constructed by project for FY22.

Major contracts awarded by MWRA in FY22 with the following Notice to Proceed or Award dates include:

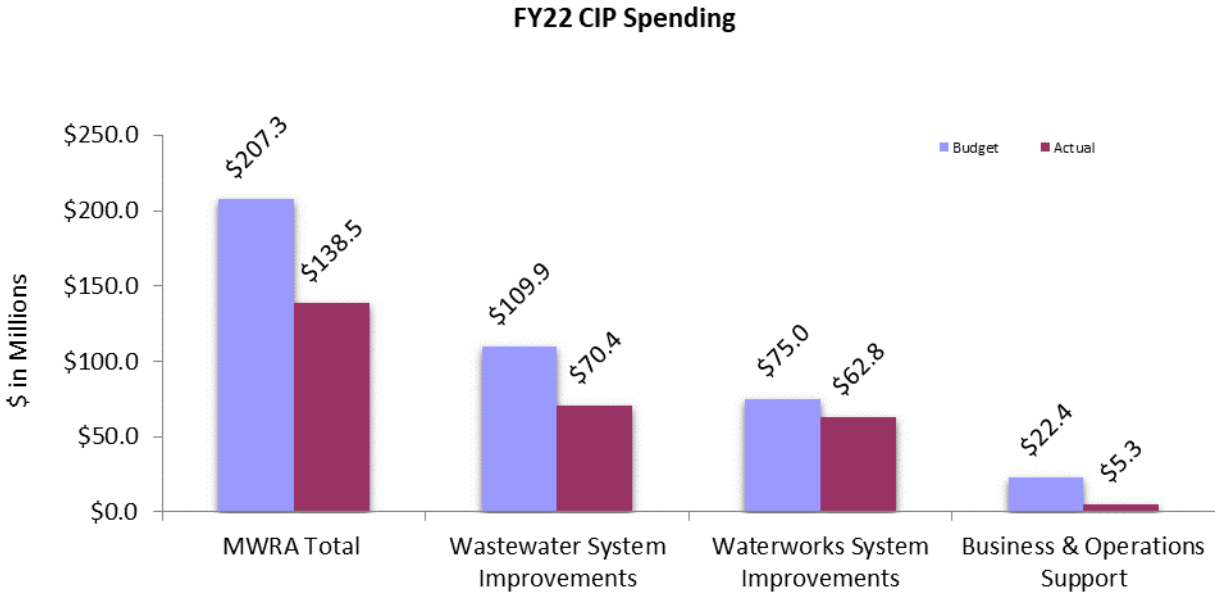
- Waltham Water Pipeline Construction – May 2022 - $31.9 million
- CP-3 Section 23,24, 47 Rehab – October 2021 - $26.8 million
- Office Space Modifications – June 2022 - $19.6 million
- Carroll Water Treatment Plant SCADA Upgrade – July 2021 - $12.9 million
- NEH Improvements, CP-1 – February 2022 - $11.7 million

- Wachusett Bastion Rehab Construction – December 2021 - $3.9 million
- Screw Pump Replacement – December 2021 - $3.5 million
- Electrical Distribution Upgrades at Southborough – May 2022 - $2.6 million
- Soda Ash & Ammonia Equipment Replacement – January 2022 - $2.5 million
- Remote Headworks Shaft Access Improvements Construction – June 2022 - $2.4 million
- Marlborough Pump Station Emergency Connection – September 2021 - $0.9 million
- Edge Switches – July 2021 - $0.9 million
- NEH Improvements REI – April 2022 - $0.9 million
- New Roofs at Water Pump Station Construction – October 2021 - $0.7 million
- Wachusett Lower Gatehouse Windows & Doors – August 2021 - $0.6 million
- Replacement of Odor Control Dampers – January 2022 - $0.5 million
- Quabbin Water Supply Construction – April 2022 - $0.5 million
- MSSP/SIEM – February 2022 - $0.4 million
- Wachusett Bastion Rehab REI – January 2022 - $0.4 million
- Soda Ash and Ammonia Equipment Replacement REI – January 2022 - $0.3 million
- Walnut Street Bridge Truss Construction – January 2022 - $0.3 million
- Information Technology Systems Management – December 2021 - $0.1 million

Please see Attachment C for FY22 Planned versus Actual/Revised CIP Notices to Proceed for a complete list of contracts awarded.

FY22 also included overall spending of $35.1 million for the community financial assistance programs on both the water and wastewater sides. Inflow and Infiltration (I/I) spending consisted of $21.1 million in grants and $10.2 million in loans offset by $5.9 million in prior period loan repayments for net spending of $25.4 million. The Local Water System Assistance Program spending was $38.4 million in loans, including CVA communities, offset by $28.6 million in prior period loan repayments for net spending of $9.7 million that includes Lead Service Line Replacement loans of $6.3 million.

Major Variances to FY22 Budget



For FY22, total Capital Improvement Program spending was budgeted at $207.3 million. Total spending was $138.5 million, which was $68.8 million or 33.2% below budget. Underspending

was reported in Wastewater of $39.5 million, $12.2 million in Waterworks Improvements, and $17.2 million in Business and Operations Support.

The table below reports the FY22 spending and variances by major program:

$ in Millions	Budget	Actuals	$ Var.	% Var.
Wastewater System Improvements				
Interception & Pumping	52.4	35.0	(17.5)	-33.3%
Treatment	28.0	5.3	(22.7)	-81.0%
Residuals	0.1	0.0	(0.1)	0.0%
CSO	4.3	4.7	0.4	9.7%
Other	25.1	25.4	0.3	1.2%
Total Wastewater System Improvements	**$109.9**	**$70.4**	**($39.5)**	**-35.9%**
Waterworks System Improvements				
Drinking Water Quality Improvements	3.2	4.3	1.1	34.5%
Transmission	29.2	30.1	0.9	2.9%
Distribution & Pumping	19.1	14.0	(5.1)	-26.9%
Other	23.4	14.4	(9.0)	-38.5%
Total Waterworks System Improvements	**$75.0**	**$62.8**	**($12.2)**	**-16.3%**
Business & Operations Support	**$22.4**	**$5.3**	**($17.2)**	**-76.6%**
Total MWRA	**$207.3**	**$138.5**	**($68.8)**	**-33.2%**

The $68.8 million variance is the net of $78.2 million in less than budgeted spending on 34 projects offset by $9.4 million in more than budgeted spending on 14 projects. The main reasons for the project spending variances in order of magnitude are:

Wastewater Treatment: Net underspending of $22.7 million

- $4.9 million for Motor Control Center and Switchgear Replacement - Design/ESDC/REI and Construction, $4.1 million for Clarifier Rehabilitation Phase 2 – Construction and ESDC, $3.1 million for Fire Alarm System Replacement - Design/CA and Construction, and $2.0 million for DI Dystor Membrane Replacements all due to updated construction schedules.
- $1.8 million for Winthrop Terminal Facility VFD and Motors Replacements, $0.7 million for Miscellaneous VFD Replacements, $0.7 million for Clinton Screw Pump Replacement, and $0.6 million for Gravity Thickener Rehabilitation due to timing of work.
- $0.9 million for As-Needed Technical Assistance due to lower than projected task order work.
- $0.5 million for Digester and Storage Tank Rehabilitation - Design/ESDC due to updated schedule.

Interception & Pumping: Net underspending of $17.5 million

- $10.3 million for Prison Point Design CA/RI and Construction due to project on hold.
- $1.8 million for Ward Street and Columbus Park Headworks - Design/CA due to completion of some design and inspection tasks later than anticipated.
- $1.4 million for Nut Island Odor Control and HVAC Improvements - Construction Phase 2 and CA/REI: $1.4 million (contractor behind schedule)
- $0.8 million for Interceptor Renewal No. 3, Dorchester Interceptor Sewer – Construction due to timing of contractor work. Contract is substantially complete.

- $0.7 million for Remote Headworks Shaft Access Improvements - Construction, $0.5 million for Fuel Oil Tank Replacement - Phase 2 Construction due to updated construction schedules.
- This underspending was partially offset by overspending of $1.5 million for Chelsea Creek Headworks Upgrades – Construction, CA and REI and $0.9 million for Wastewater Metering Construction due to work scheduled for FY21 performed in FY22.

Business and Operations Support: Net underspending of $17.2 million

- $2.5 million for As-Needed Technical Assistance and Resident Engineering and Inspection Services due to lower than projected task order work.
- Cabling: $2.7 million, Lawson Upgrade: $1.8 million, MSSP/SIEM: $1.4 million, Office Space Modifications: $1.2 million, Sans Storage: $694,000, MAXIMO Upgrade: $560,000 and MAXIMO Interface Enhancements: $304,000, Archiving and Data Management: $545,000, Information Security Plan Implementation: $360,000, SAP BO Migration: $315,000, and Instrumentation and Controls: $310,000 (updated schedules and timing of work)
- $1.7 million for Vehicle Purchases due to timing of purchases.

Other Waterworks: Net underspending of $9.0 million

- $8.2 million for Local Financial Assistance due to timing of community loan distributions.
- $0.4 million for New Roofs at Water Pumping Stations due to updated schedule.

Water Distribution and Pumping: Net underspending of $5.1 million

- $4.3 million for Section 89 and 29 Replacement Construction and REI due to updated schedules.
- $1.3 million for Sections 50 and 57 Water Rehabilitation - Design/ESDC due to contract scope reduction.
- $1.1 million for CP-3 Sections 23, 24, 47 Final Design/CA/RI due to less than anticipated Final Design and CA/RI work.
- $0.7 million for Cathodic Protection Shafts N and W due to schedule change.
- $0.4 million for Southern Extra High Redundancy Design CA/RI due to less than anticipated CA/RI services.
- This underspending was partially offset by overspending of $1.8 million for CP3-Sections 23, 24, 47 due to contract awarded higher than budgeted, and $1.8 million for CP-1 NEH Improvements due to contractor progress.

Drinking Water Quality Improvements: Net overspending of $1.1 million

- $0.8 million for Marlborough Pumping Station Construction due to award greater than budgeted and additional scope of work.
- $0.6 million for Ancillary Modifications – Construction due to contractor progress.
- $0.4 million for As-Needed Technical Assistance due to greater than projected task order work.
- This overspending was partially offset by underspending of $0.5 million for Carroll Water Treatment Plant Parapet Wall Repairs due to updated schedule.

Waterworks Transmission: Net overspending of $0.9 million

- $2.5 million for WASM 3 Rehabilitation, CP-1, and $1.5 million for WASM/Spot Pond Supply Mains Pressure Reducing Valves Improvements due to contractor progress.

- $1.9 million for Metropolitan Tunnel Redundancy Administration, Legal and Public Outreach due to earlier than anticipated land purchase.
- $0.4 million for Program Support Services due to timing of consultant work.
- This overspending was partially offset by underspending of $1.5 million for Wachusett Lower Gatehouse Pipe and Boiler Replacement, $1.1 million for Chestnut Hill Emergency Pumping Station Improvements, and $0.8 million for CP2 Shaft 5 due to updated construction schedules, and $0.7 million for Tunnel Redundancy Preliminary Design and MEPA Review due to timing of consultant work.

Combined Sewer Overflow: Net overspending of $0.4 million

- $0.7 million for East Boston CSO Control - BOS014 due to work completed earlier than anticipated.
- $0.6 million for Dorchester Inflow Removal Construction due to timing of payment.
- This overspending was partially offset by underspending of $0.5 million for Chelsea 008 Pipe Replacement due to schedule change, and $0.3 million for CSO Performance Assessment due to time extension.

Other Wastewater: Net overspending of $0.3 million

- $0.3 million for Infiltration/Inflow Financial Assistance due to timing of grant and loan distributions**.**

Please see Attachment B for detailed FY22 CIP variance explanations of all FY22 projects.

FY23 Outlook

Looking ahead to FY23, the projected capital spending is $293.0 million including contingency of $14.6 million. Projects with the largest budgeted spending in FY23 include Deer Island Asset Protection of $38.1 million, Metropolitan Redundancy Interim Improvements of $35.2 million Metropolitan Tunnel Redundancy of $25.7 million, Infiltration/Inflow Local Financial Assistance of $25.1 million, Local Water System Assistance Program of $23.4 million, Corrosion and Odor Control of $17.6 million, Facility Asset Protection of $14.0 million, and New Connecting Mains – Shaft 7 to WASM 3 of $14.0 million.

In FY23, 69 contracts or phases of projects with a total budget of $503.6 million are expected to be awarded. Staff will be completing the design and progressing to the bid and award stage on several major projects such as the Deer Island Clarifier Rehabilitation Phase 2 Construction, WASM 3 Rehab CP-2, Deer Island Fire Alarm System Construction, Deer Island Motor Control Center and Switchgear Replacement Construction, Combined Heat and Power Design/ESDC/ REI, New Connecting Mains Sections 25 and 24 CP-2, Metropolitan Tunnel Redundancy Geotechnical Support Services, and Section 75 Extension CP-1.

Please see Attachment E for FY23 Planned Contract Awards.

ATTACHMENTS:

A. Fiscal Year 2022 Year-End Capital Program Spending Report
B. FY22 CIP Year-End Variance Report
C. FY22 Planned versus Actual/Revised Contract Awards
D. Linear Footage of Rehabilitated or New Pipelines in FY22
E. FY23 Planned Capital Contract Awards

MASSACHUSETTS **W**ATER **R**ESOURCES **A**UTHORITY

Capital Program Spending Report

for

Fiscal Year 2022

September 14, 2022

Fiscal Year 2022 Year-End Capital Program Spending Report

Table of Contents –

Introduction

Since its inception in 1986, MWRA has expended $9.0 billion on capital initiatives. Of this spending 70% has supported improvements to Wastewater treatment, interception, pumping and combined sewer overflow (CSO) systems, 27% has supported Waterworks treatment, transmission, distribution and water protection improvements, and 2% has supported Business and Operations Support initiatives. Through FY22, nearly 70% of the capital spending has been for court mandated projects. The long-term strategy for capital work is identified in the Authority's Master Plan which was first published in 2006, updated in 2013 and 2019, and serves as a road map for inclusion of projects in the Capital Improvement Program (CIP) in every budget cycle. Going forward, MWRA expects to spend $4.2 billion on system improvements between FY23-FY32 with main emphasis on Asset Protection and Water System Redundancy initiatives including the Metropolitan Tunnels Long-Term Redundancy Project.

MWRA Capital Spending FY1986 - FY2032 (in millions)

	Expenditures FY86 - FY22		Planned Expenditures FY23 - FY32	
Program	Amount	% of Total	Amount	% of Total
Wastewater	$6,312	70%	$1,741	42%
Waterworks	$2,496	27%	$2,355	56%
Business & Operations Support	$161	2%	$79	2%
Total MWRA	**$8,970**	**100%**	**$4,174**	**100%**

To date, MWRA has spent $912.2 million on the Wastewater CSO program and plans to spend an additional $4.6 million through FY25.

To date, MWRA has distributed $274.3 million in grants and $235.3 million in no-interest loans to fund 646 separate projects in 43 communities under the I/I Local Financial Assistance Program. Additionally, $530.0 million in Local Water Pipeline Assistance Program loans has been distributed to member communities.

FY22 Spending

Total CIP spending in FY22 was $138.5 million which was $68.8 million or 33.2% less than the $207.3 million budgeted.

Spending by program in FY22 was:

Program	FY22 Budget (in millions)	FY22 Actuals (in millions)	Variance	% Variance
Wastewater	$109.9	$70.4	($39.5)	-35.9%
Waterworks	$75.0	$62.8	($12.2)	-16.3%
Business & Operations Support	$22.4	$5.3	($17.2)	-76.6%
Total	**$207.3**	**$138.5**	**($68.8)**	**-33.2%**

FY22 included spending of $37.9 million not directly under MWRA's control, most notably the Inflow and Infiltration (I/I) program, the Local Water Pipeline programs, and CSO Community Managed projects. The community assistance programs are either loan or grant programs to support the MWRA's member communities' local water and sewer infrastructure. In FY22, MWRA expended $48.6 million in water and I/I loans and $21.1 million in I/I grants offset by $34.6 million in prior period loan repayments for net spending of $35.1 million. An additional $2.8 million was expended on the CSO Community Managed projects. After accounting for these programs which are not directly under MWRA's control, the FY22 CIP underspending is $62.3 million or 38.2%.

FY22 Capital Program Highlights

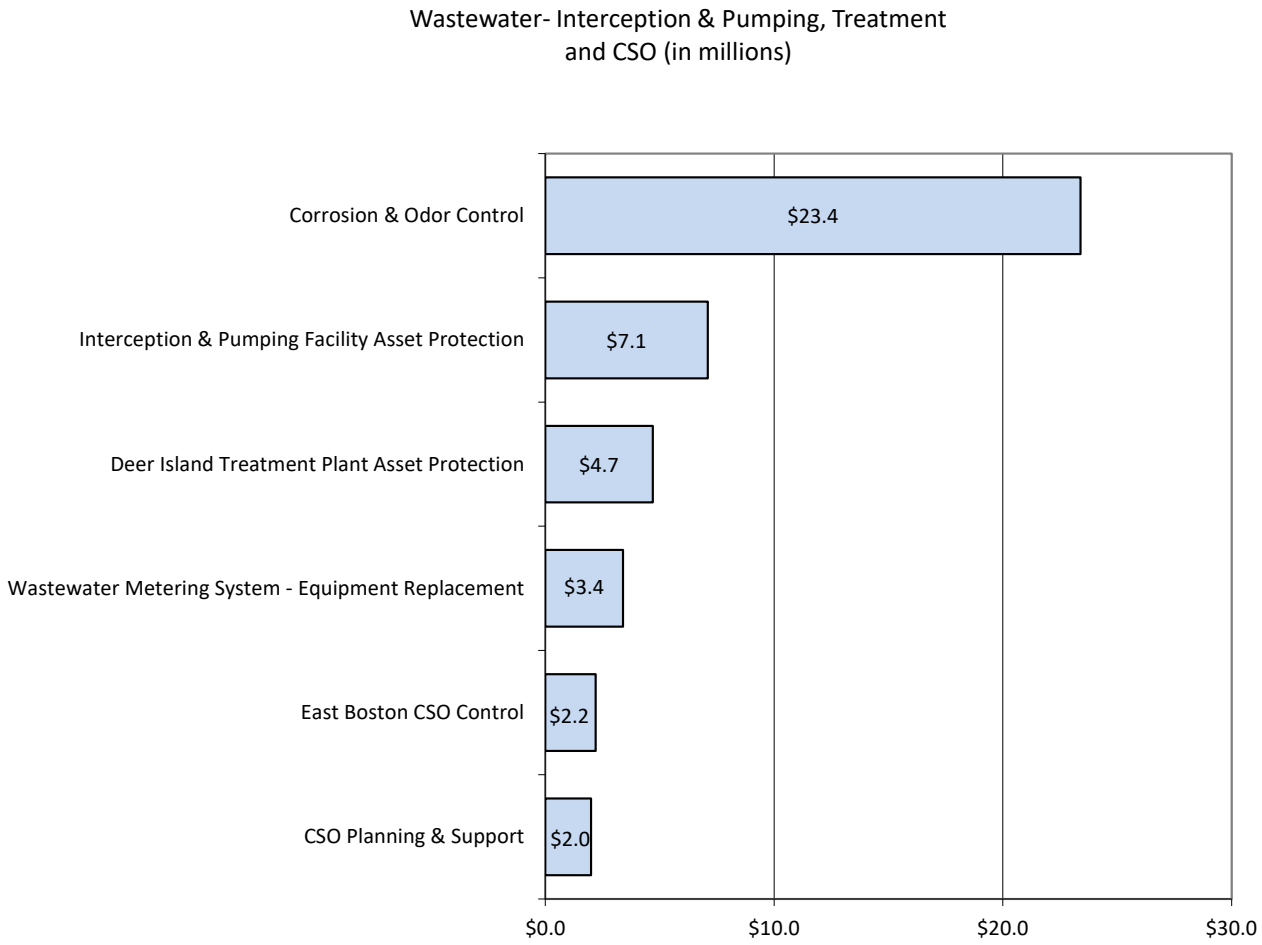
This section highlights the spending and key accomplishments by major program categories and projects.

Wastewater System

During FY22, the MWRA spent $70.4 million on Wastewater system projects: $35.0 million for Interception & Pumping projects, $5.3 million for Treatment projects, $4.7 million for CSO projects, and $25.4 million for Other Wastewater projects.

Wastewater Interception & Pumping, Treatment, and CSO Projects

Total FY22 spending for Interception & Pumping was $35.0 million, Treatment was $5.3 million, and CSO was $4.7 million. The largest spending occurred on the following:



Key Accomplishments in Wastewater - Interception and Pumping:

- Chelsea Creek Headworks Upgrades
    - Substantially complete in August 2021

- Dorchester Interceptor Sewer Construction
    - Substantially complete in December 2021

- Fuel Oil Tank Replacement Phase 1
    - Substantially complete in December 2021

- Wastewater Meter Equipment Replacement
    - Substantially complete in February 2022

- Remote Headworks Shaft Access Improvements
    - Contract awarded in June 2022

***Key Accomplishments in Wastewater – Treatment*:**

- DITP Gravity Thickener Rehab
    - Substantially completed in September 2021

- DITP Chemical Tank and Digester Pipe Construction
    - Substantially completed in December 2021

- Combined Heat & Power Alternatives Study
    - Substantially completed in January 2022

- DITP Replacement of Odor Control Dampers
    - NTP issued in February 2022

- Clinton Valves and Pipe Replacement
    - Substantially complete in January 2022

- Clinton Screw Pump Replacement
    - NTP issued in January 2022

Wastewater System – Combined Sewer Overflow (CSO) Projects

Total FY22 spending for CSO projects was $4.7 million which was primarily for the Somerville Marginal In-System Storage, CSO Performance Assessment, East Boston CSO Control and Dorchester Infiltration/Inflow work.

Key Accomplishments in CSO:

- East Boston Sewer Separation CSO Control – BOS014 improvements began in July 2021.

Wastewater - Other

This category includes spending only for the community managed Infiltration/Inflow (I/I) Local Financial Assistance Program.

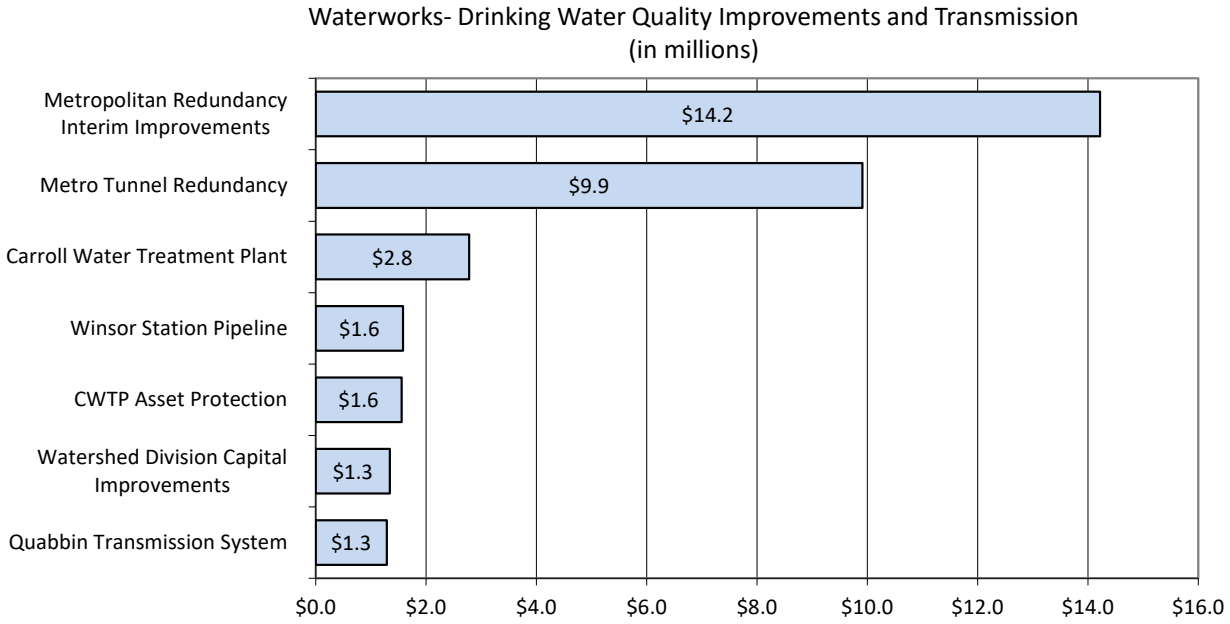
In FY22, MWRA distributed $21.1 million in grants and $10.2 million in no-interest loans which is offset by repayment of prior-period loans of $5.9 million resulting in net spending of $25.4 million.

Waterworks System

During FY22, the MWRA spent $62.8 million on Waterworks system projects: $4.3 million for Drinking Water Quality Improvement projects, $30.1 million for Transmission projects, $14.0 million for Distribution and Pumping projects, and $14.4 million for Other Waterworks projects.

Waterworks System – Drinking Water Quality Improvements and Transmission

Total FY22 spending for Drinking Water Quality Improvements and Transmission projects was $4.3 million and $30.1 million, respectively. Projects with the largest spending are listed below:



Key Accomplishments in Drinking Water Quality Improvements:

- Marlborough Emergency Pump Station Connection
    - NTP issued in November 2021

- Carroll Water Treatment Chemical Feed System Improvements
    - NTP issued in March 2022

- Carroll Water Treatment Chemical Feed System Improvements Resident Engineering/Inspection
    - NTP issued in March 2022

Key Accomplishments in Transmission:

- Weston Aqueduct Sluice Gates Construction
    - Substantially completed in September 2021
- Wachusett Dam Bridge Crane Removal
    - Substantially completed in September 2021

- Wachusett Lower Gate House Windows and Doors
    - NTP issued in October 2021

- River Road Improvements Construction
    - Substantially completed in November 2021

- Wachusett Bastion Building Rehabilitation
    - NTP issued in January 2022

- Wachusett Bastion Building Rehabilitation Resident Engineering/Inspection
    - NTP issued in January 2022

- CP-6 Tops of Shafts 6, 8, and 9A Rehab
    - Substantially completed in April 2022

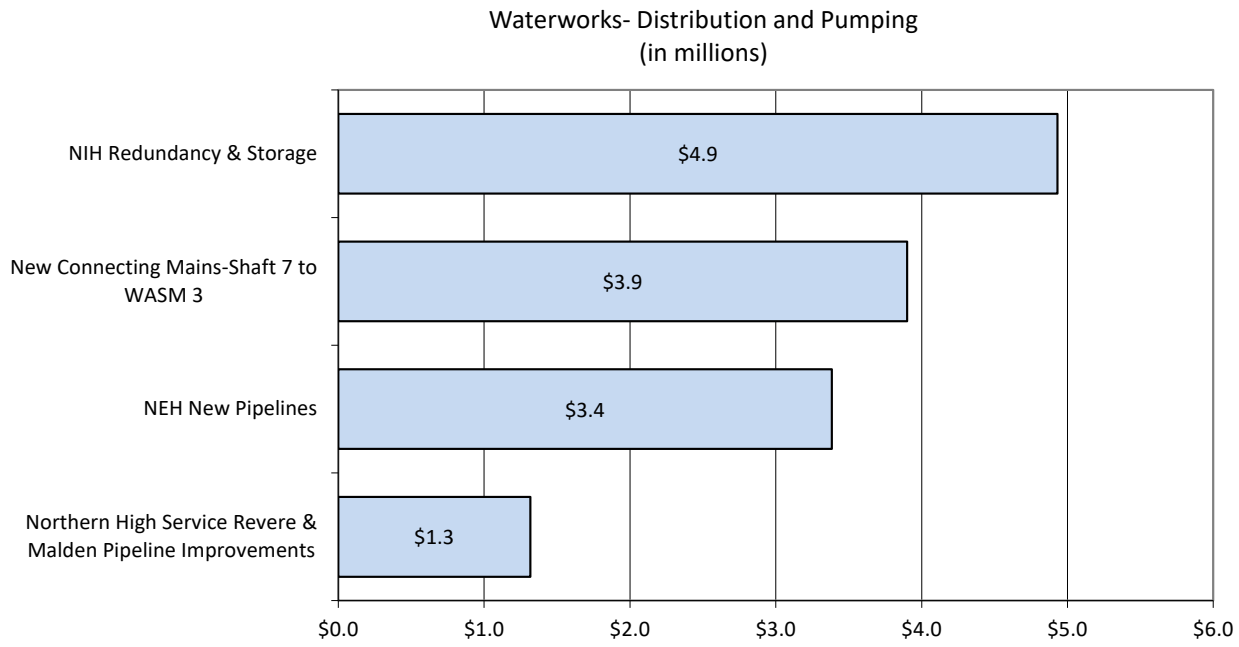
- Waltham Water Pipeline Construction
    - Contract awarded in May 2022

- Quabbin Water Supply Construction
    - Contract awarded in June 2022

- Shaft 2 Construction
    - Substantially completed in June 2022

Waterworks System - Distribution and Pumping

Total FY22 spending for Distribution and Pumping projects totaled $14.0 million. Projects with the largest spending are listed below:



Key Accomplishments in Distribution and Pumping:

- CP-3 Section 23, 24, 47 Rehab
    - NTP Issued in November 2021

- Walnut Street Bridge Truss Construction
    - NTP Issued in February 2022

- CP-1 Northern Extra High Improvements Construction
    - NTP Issued in March 2022

- Northern Extra High Improvements Resident Engineering/Inspection
    - NTP Issued in April 2022

Waterworks – Other

Total FY22 spending for Waterworks Other totaled $14.4 million.

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

In FY22, MWRA distributed $38.4 million in Local Water Pipeline Assistance Program loans to member communities offset by repayment of prior-period loans of $28.7 million which resulted in total net receipts of $9.7 million.

- Carroll Water Treatment Plant SCADA Upgrades Construction
  NTP issued in September 2021

- New Roofs at Belmont, Spring Street, and Lexington Street Pumping Stations
  NTP issued in November 2021

- Electrical Distribution Upgrades at Southborough
  - NTP issued in June 2022

Business & Operations Support

Total FY22 spending for Business and Operations Support totaled $5.3 million.

Key Accomplishments in Business & Operations Support:

- Edge Switches
  - Awarded Phase 1 in July 2021 and Phase 2 in January 2022

- ITSM Access Management
  - NTP issued in December 2021

- As-Needed Design Contract 17
  - Substantially completed in December 2021

- Harbor Outfall Monitoring and Loading System Upgrade (HOML)
  - Substantially completed in May 2022

- MSSP/SIEM
  - NTP issued in May 2022

- As-Needed Construction Services/Resident Engineering Inspection Contract 1
  - Substantially completed in May 2022

Total New or Rehabilitated Pipeline

In addition to measuring spending on CIP projects, MWRA tracks the mileage of pipeline that is rehabilitated or added to its infrastructure. During FY22, the MWRA rehabilitated or constructed 3.4 miles of water and wastewater pipeline. These numbers do not include the rehabilitated or replaced pipelines of our member communities which are funded through our Inflow/Infiltration (I/I) and Water Loan programs as referenced above.

Refer to Attachment D for the specific linear footage of rehabilitated or new pipelines by project in FY22.

FY22 Spending Variances

Total FY22 capital spending was $138.5 million which was $68.8 million or 33.2% less than the $207.3 million budget. The variance is primarily due to underspending for the Deer Island Treatment Plant Asset Protection, Interception & Pumping Facility Asset Protection, Local Water System Assistance Program, IT Application Improvement Program, IT Infrastructure Program, and NIH Redundancy & Storage.

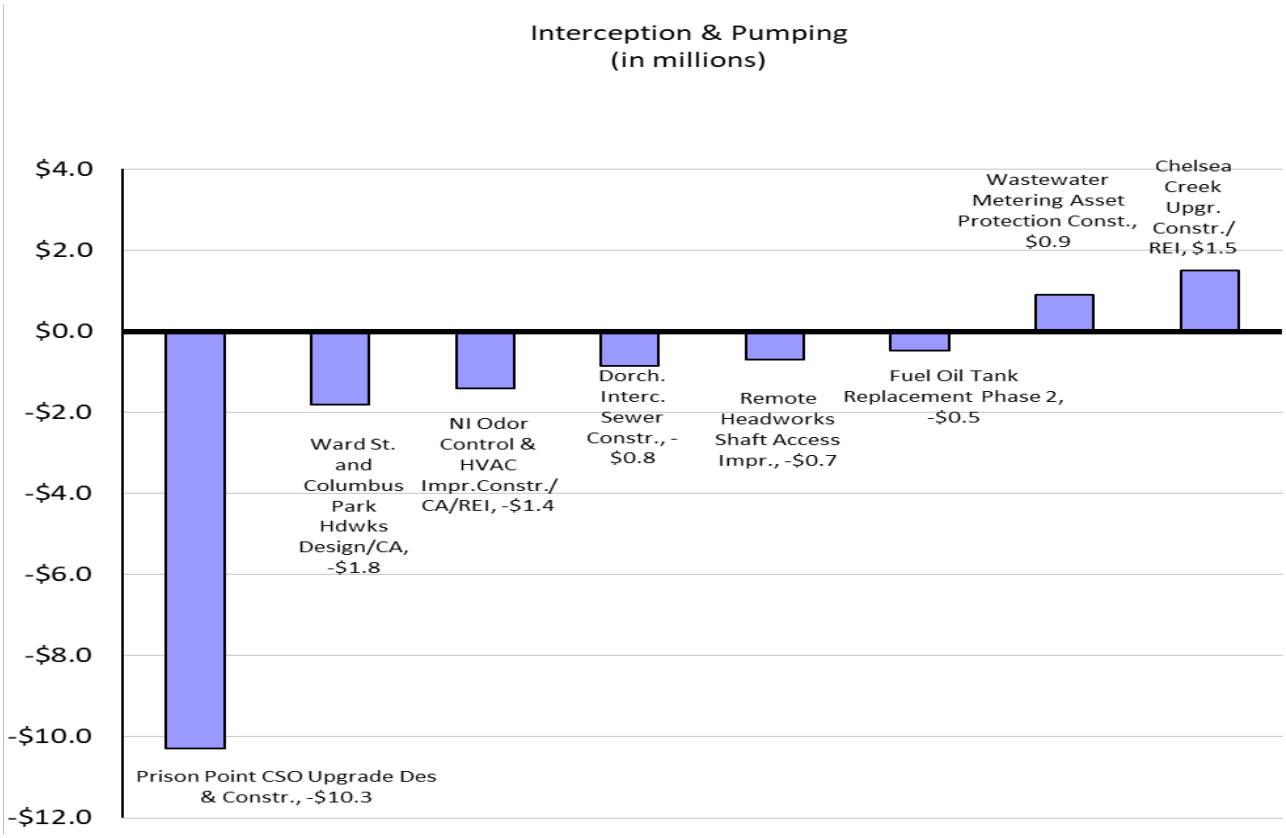
FY22 Spending Variances ($000s)

Program	Budgeted Spending	Actual Spending	Variance to Budget		% Actual Spending to Total Spending
			$	%	
Total Wastewater System	**$109,856,079**	**$70,399,720**	**($39,456,359)**	**-35.9%**	**51%**
Interception & Pumping	$52,404,058	$34,951,978	($17,452,080)	-33.3%	25%
Treatment	$27,985,618	$5,307,238	($22,678,380)	-81.0%	4%
Residuals	$55,556	$1,499	($54,057)	-97.3%	0%
Combined Sewer Overflow	$4,297,145	$4,715,910	$418,765	9.7%	3%
Other Wastewater Programs	$25,113,702	$25,423,092	$309,390	1.2%	18%
Total Waterworks System	**$75,011,613**	**$62,800,564**	**($12,211,049)**	**-16.3%**	**45%**
Drinking Water Quality Improvements	$3,222,038	$4,332,698	$1,110,660	34.5%	3%
Transmission	$29,221,983	$30,074,875	$852,892	2.9%	22%
Distribution and Pumping	$19,117,648	$13,970,533	($5,147,115)	-26.9%	10%
Other Waterworks Programs	$23,449,944	$14,422,458	($9,027,486)	-38.5%	10%
Business & Operations Support	**$22,444,681**	**$5,262,180**	**($17,182,501)**	**-76.6%**	**4%**
Total MWRA	**$207,312,373**	**$138,462,467**	**($68,849,905)**	**-33.2%**	**100%**

FY22 Variances for Major Projects

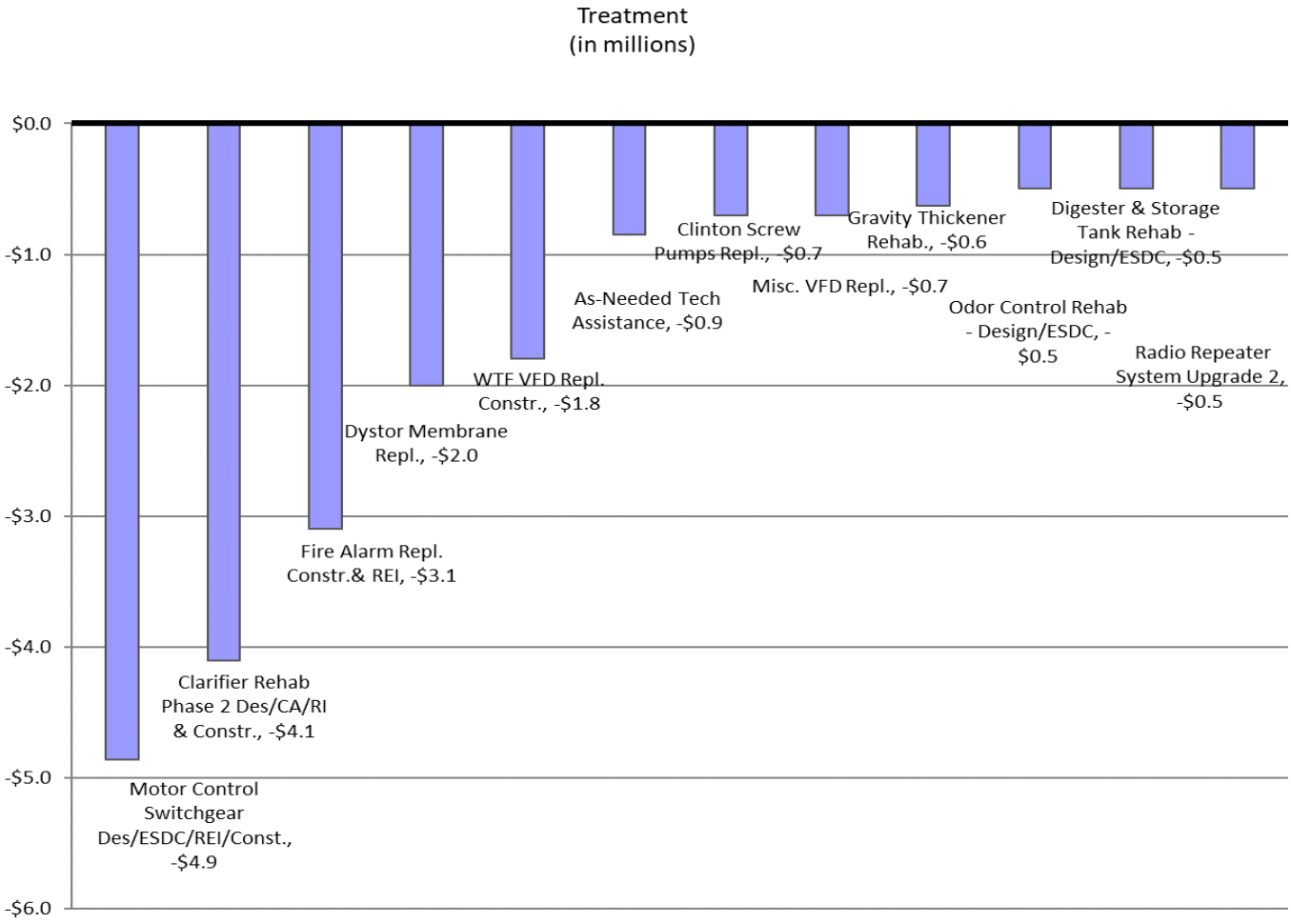
Please see Attachment B for the full FY22 CIP variance explanations by project.

Wastewater - Interception & Pumping



- Total FY22 Budget: $52.4 million
- Total FY22 Expended: $35.0 million
- $17.5 million less than budgeted spending
  - Underspending in Interception & Pumping Facility Asset Protection totaling $13.6 million, including
    - $10.3 million for Prison Point Design CA/RI and Construction due to project on hold.
    - $1.8 million for Ward Street and Columbus Park Headworks Upgrades Design/CA due to completion of some design and inspection tasks later than anticipated.
    - $1.4 million for Nut Island Odor Control & HVAC Improvements Phase 2 Construction and CA/REI due to contractor being behind schedule.
    - $0.8 million for the Dorchester Interceptor Sewer Construction due to timing of contractor work.
    - $0.7 million for Remote Headworks Shaft Access Improvements Construction due to updated schedule.
    - This underspending was partially offset by overspending of $1.5 million for Chelsea Creek Headworks Upgrades - Construction, CA and REI due to work scheduled for FY21 performed in FY22, and $0.9 million for Wastewater Metering Construction due to work scheduled for FY21 completed in FY22.

Wastewater – Treatment and CSO



Deer Island Treatment Plant Asset Protection:

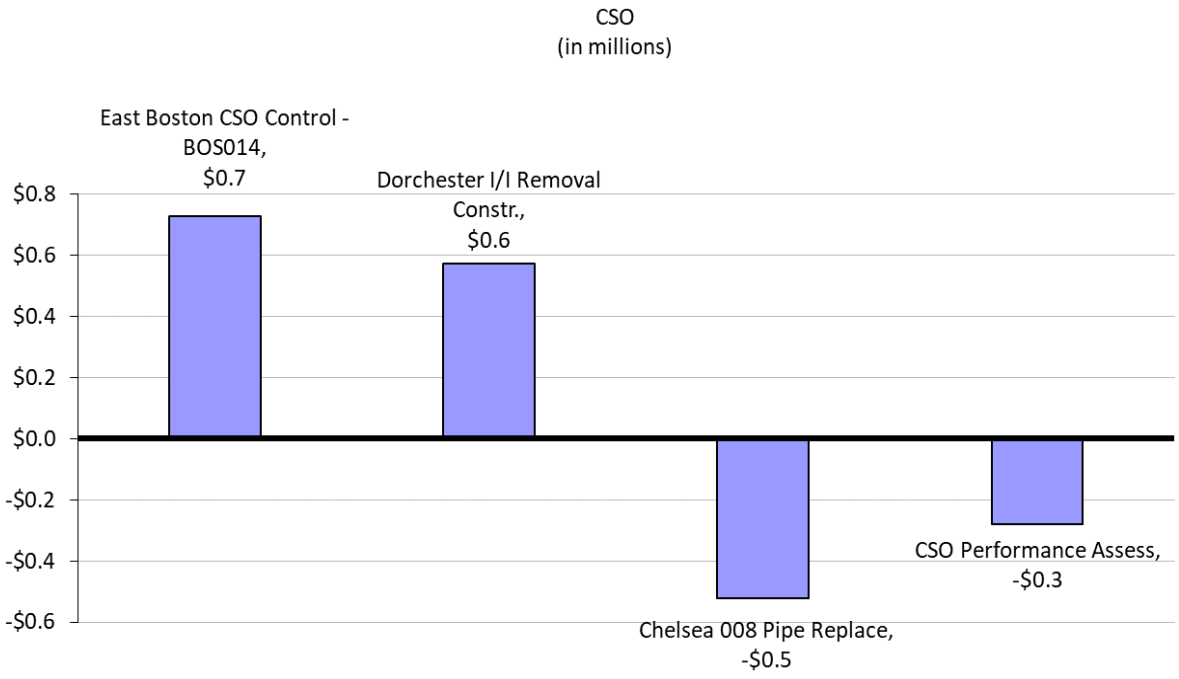
- Total FY22 Budget: $25.8 million
- Total FY22 Expended: $4.7 million
- $21.0 million less than budgeted spending
  - Underspending on various projects, including
    - $4.9 million for DI Motor Control Center Switchgear Replacement Design/ESDC/REI and Construction due to updated construction schedule.
    - $4.1 million for Clarifier Rehabilitation Phase 2 Construction and ESDC due to updated construction schedule.
    - $3.1 million for Fire Alarm Replacement Design/CA and Construction due to updated schedules and $2.0 million for Dystor Membrane Replacement, Odor Control Rehab - Design/ESDC for $0.5 million, Digester & Storage Tank Rehabilitation - Design/ESDC for $0.5 million, and Radio Repeater System Upgrade 2 for $0.5 million due to updated schedules.

- $1.8 million for Winthrop Terminal Facility VFD Replacements, $0.7 million for Miscellaneous VFD Replacements, and $0.6 million for Gravity Thickener Rehabilitation due to timing of work.
- $0.9 million for As-Needed Technical Assistance due to lower than projected task order work.

Clinton Wastewater Treatment Plant:

- Total FY22 Budget: $2.2 million
- Total FY22 Expended: $0.6 million
    - Less than budgeted spending primarily due to $0.7 million for Clinton Screw Pump Replacements due to due to timing of work.

Wastewater - Combined Sewer Overflows (CSO's)

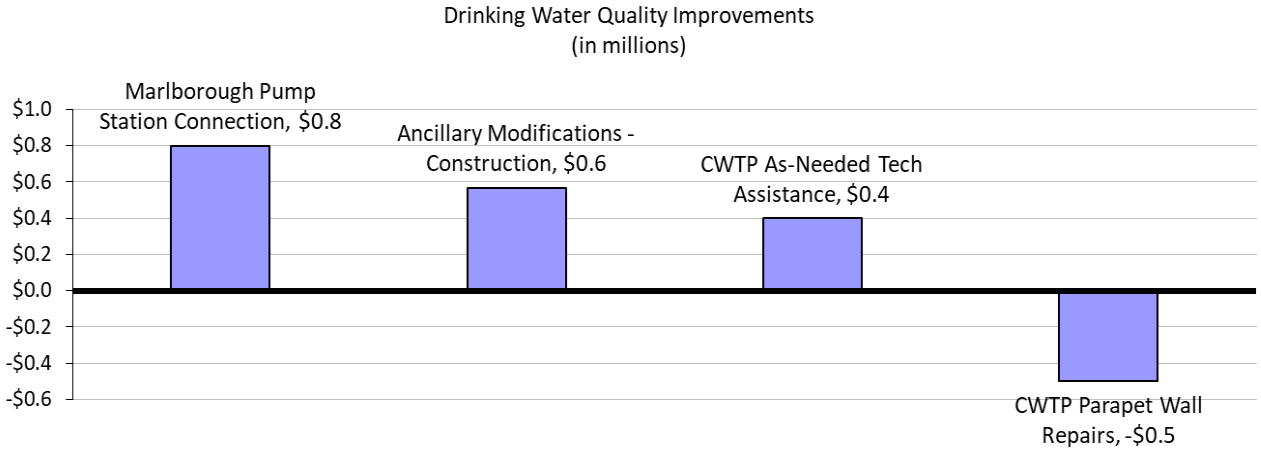


- Total FY22 Budget: $4.3 million
- Total FY22 Expended: $4.7 million
- $0.7 million more than budgeted spending for East Boston CSO Control - BOS014 due to work completed earlier than anticipated, and $0.6 million for Dorchester Inflow Removal Construction due to timing of payment.
- This overspending was partially offset by underspending of $0.5 million for Chelsea 008 Pipe Replacement due to schedule change, and $0.3 million for CSO Performance Assessment due to time extension.

Wastewater - Other

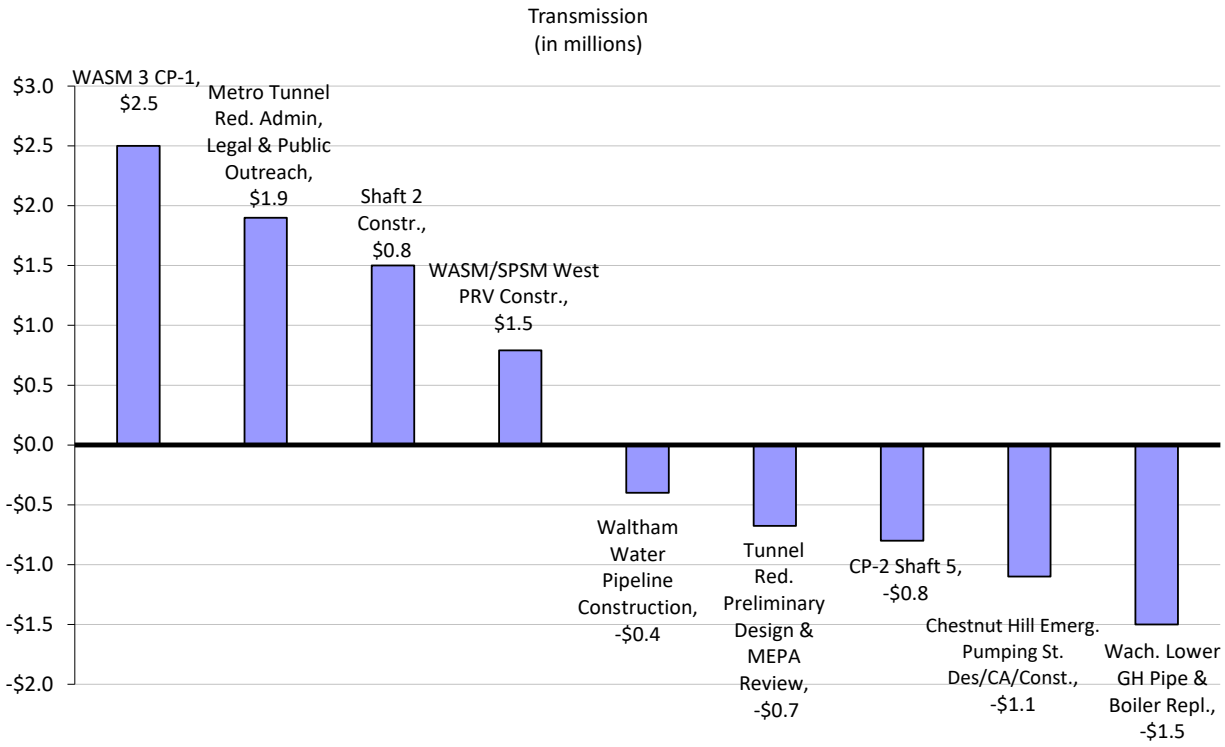
- $0.3 million less than budgeted spending for I/I Local Financial Assistance resulting from $1.9 million in greater than budgeted no-interest loans, $1.5 million in less than budgeted grant distributions and $0.1 million for repayments for previous loan distributions.

Waterworks - Drinking Water Quality Improvements



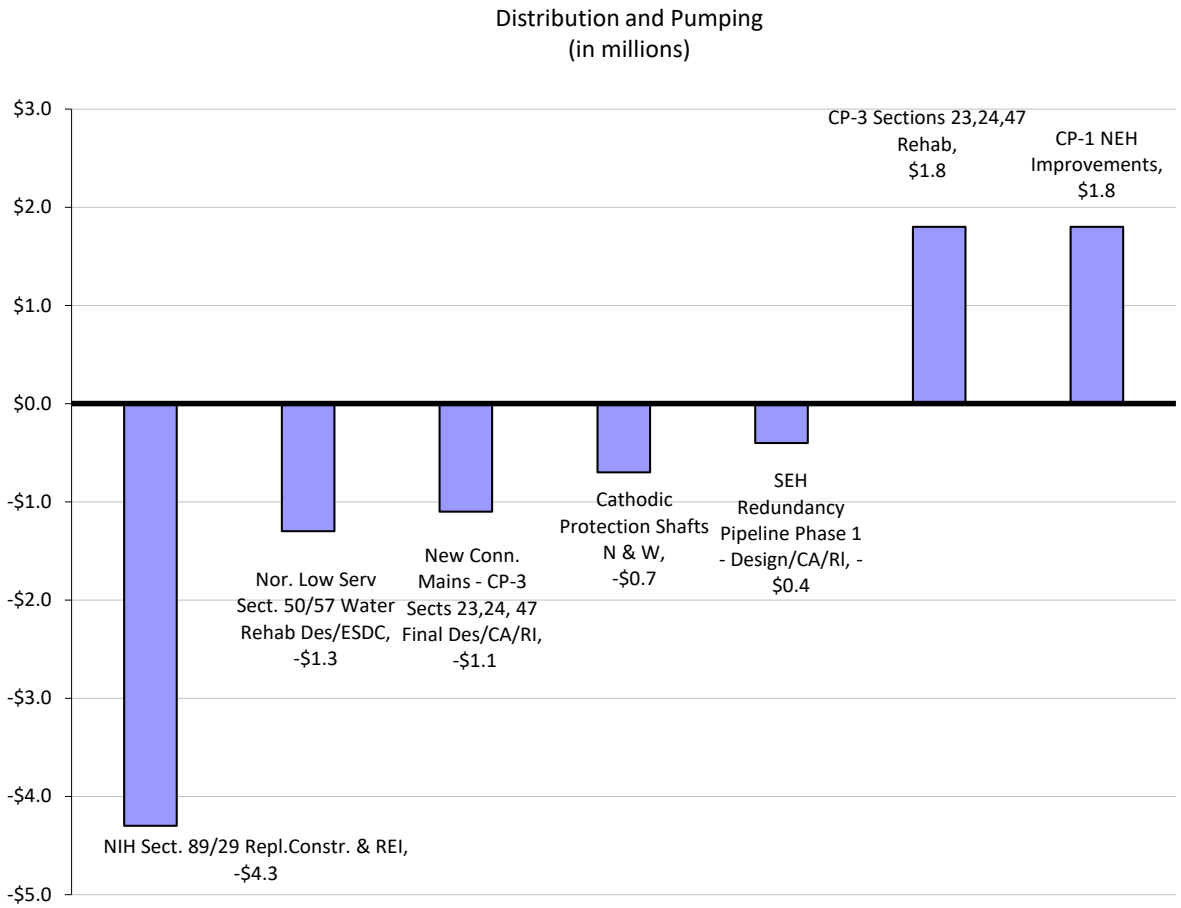
- Total FY22 Budget: $3.2 million
- Total FY22 Expended: $4.3 million
- $1.1 million greater than budgeted spending
  - $0.8 million for Marlboro Pump Station Construction due to contract award greater than budgeted and additional scope of work.
  - $0.6 million for Ancillary Modifications – Construction due to contractor progress.
  - $0.4 million for As-Needed Technical Assistance due to greater than projected task order work.
  - This overspending was partially offset by underspending of $0.5 million for Carroll Water Treatment Plant Parapet Wall Repairs due to updated schedule.

Waterworks – Transmission



- Total FY22 Budget: $29.2 million
- Total FY22 Expended: $30.1 million
- $0.9 million greater than budgeted spending
  - Overspending on various projects, including
    - $2.5 million for WASM 3 Rehabilitation, CP-1, and $1.5 million for WASM/Spot Pond Supply Mains West Pressure Reducing Valves – Construction due to contractor's progress.
    - $1.9 million for Metropolitan Tunnel Redundancy Administration, Legal & Public Outreach due to timing of land purchase.
    - $0.8 million for Shaft 2 – Construction due to timing of work.
  - This overspending was partially offset by underspending on various projects, including $1.5 million for Wachusett Lower Gatehouse Pipe and Boiler Replacement – Construction, $1.1 million for Chestnut Hill Emergency Pump Station Improvements - Design/CA and Construction, $0.8 million for CP2 Shaft 5, and Waltham Water Pipeline due to updated construction schedules. Also, $0.7 million for Metropolitan Tunnel Redundancy Preliminary Design & MEPA Review due to timing of consultant work.

Waterworks - Distribution and Pumping



- Total FY22 Budget: $19.1 million
- Total FY22 Expended: $14.0 million
- $5.1 million less than budgeted spending
  - Underspending on various projects, including
    - $4.3 million for NIH Section 89/29 Replacement Construction/REI due to updated schedules.
    - $1.3 million for Sections 50 & 57 Water Rehabilitation due to reduced scope.
    - $1.1 million for CP-3 Sections 23, 24, 47 Final Design/CA/RI due to less than anticipated Final Design and CA/RI work.
    - $0.7 million for Cathodic Protection Shafts N & W due to schedule change.
    - $0.4 million for Southern Extra High Redundancy Design CA/RI due to less than anticipated budgeted spending for CA/RI services.
    - This underspending was partially offset by overspending of $1.8 million for CP3-Sections 23, 24, 47 due to contract awarded higher than budgeted, and $1.8 million for CP-1 NEH Improvements due to contractor progress.

Waterworks - Other

- Total FY22 Budget: $23.4 million
- Total FY22 Expended: $14.4 million
- $9.0 million less than budgeted spending
  - $8.2 million for the Local Water System Assistance Program due to timing of community loan requests.
  - $0.4 million for New Roofs at Water Pumping Stations due to updated schedule.

Business & Operations Support

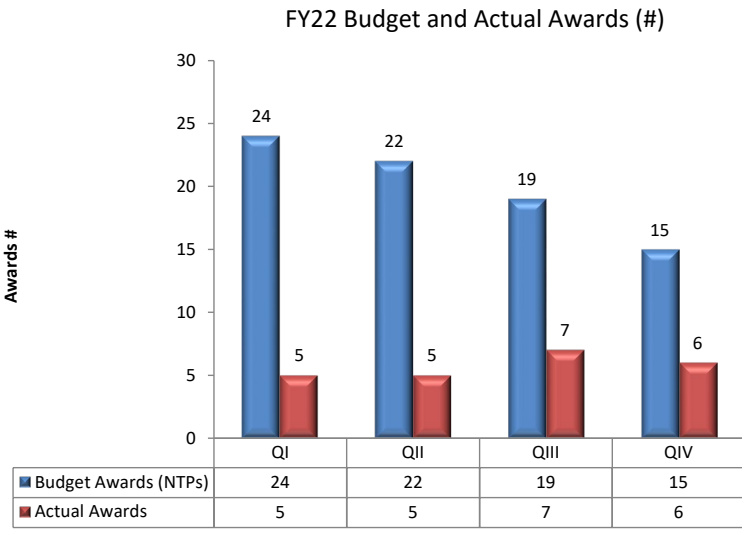
- Total FY22 Budget: $22.4 million
- Total FY22 Expended: $5.3 million
- $17.2 million less than budgeted spending
  - $2.5 million for As-Needed Technical Assistance and Resident Engineering and Inspection Services due to lower than projected task order work.
  - Cabling: $2.7M, Lawson Upgrade: $1.8M, MSSP/SIEM: $1.4M, Office Space Modifications: $1.2M, Sans Storage: $0.7 million, MAXIMO Upgrade: $0.6 million and MAXIMO Interface Enhancements: $0.3 million, Archiving & Data Management: $0.5 million, Information Security Plan Implementation: $0.4 million, SAP BO Migration: $0.3 million, and Instrumentation & Controls: $0.3 million (updated schedules and timing of work)
  - $1.7 million for Vehicle Purchases due to timing of purchases.

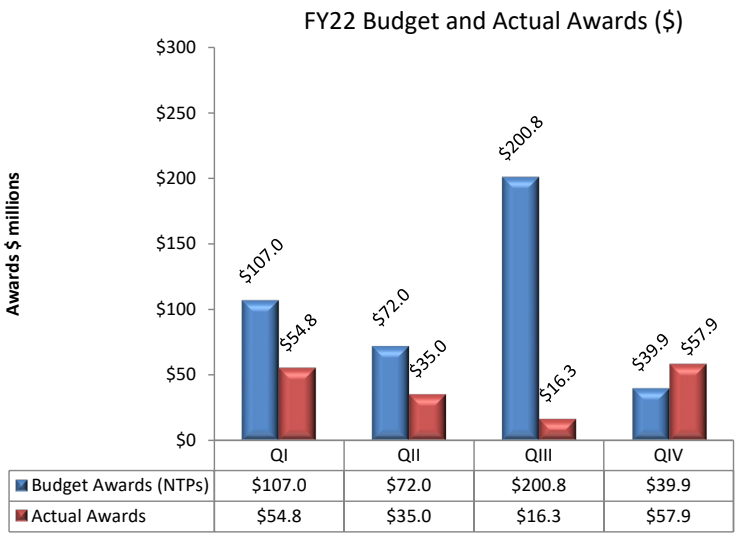
FY22 CIP Contract Awards

The FY22 CIP planned the award of 80 contracts with a value of $420.0 million. During FY22, the MWRA awarded 23 contracts valued at $163.9 million, representing 29% of contracts and 39% of contract funding. Of the 80 planned awards, 23 contracts were awarded, 40 are expected to be awarded in FY23, 11 have been rescheduled beyond FY23, and 10 are being done in-house, were deleted, renamed, or scope moved to another contract. Of the 40 contracts that shifted to FY23: 6 were due to permitting issues, 17 due to scope changes, 13 due to changes in priorities, and 4 due to bidder issues/outside consultant/contractor delays/additional specification review.

A comparison of the FY22 budgeted contracts and the FY22 actual contract awards are detailed below:

FY22 Contracts ($ in Millions)				
Program	Budget		Actual	
	#	$	#	$
Total MWRA	80	420.0	23	163.9
Wastewater	33	308.2	4	45.9
Waterworks	36	92.8	15	97.0
Business Operations & Support	11	19.0	4	21.0





Please refer to Attachment C for a full listing of contracts planned to be awarded in FY22 and actual awards.

Change Orders Review

Management of change orders remains a top priority. Total change orders for MWRA-managed active capital projects were 5.5% of award value through June 2022. This percentage is within the target of 10% for change orders as a percentage of awards.

Master Plan and the FY22 CIP Process

To arrive at the FY22 Final CIP, the Authority identified the needs of the programs taking into account the recommendations of the Master Plan. The long-term strategy for capital work is

identified in the Authority's Master Plan which was published in 2006 and updated in 2013 and 2019. The Master Plan serves as a road map for inclusion of projects in the CIP in every budget cycle.

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

FY19-23 Spending Cap

MWRA spending during the FY19-23 timeframe is planned to be $672.6 million, with additional net spending of $160.3 million for the community I/I (Infiltration and Inflow) loan and grant program and $68.4 million for the community water pipeline loan program. Annual cash flows for the Cap period are shown below in millions:

		FY19	FY20	FY21	FY22	FY23	Total FY19-23
FY23 Final	Projected Expenditures	$142.9	$150.4	$148.4	$164.4	$278.5	$884.5
	I/I Program	(39.6)	(33.7)	(31.3)	(30.6)	(25.1)	(160.3)
	Water Loan Program	(13.8)	(4.3)	(14.9)	(12.0)	(23.4)	(68.4)
	MWRA Spending	**$89.4**	**$112.3**	**$102.2**	**$121.8**	**$230.0**	**$655.8**
	Contingency	0.0	0.0	0.0	0.0	14.6	14.6
	Inflation on Unawarded Construction	0.0	0.0	0.0	0.0	2.2	2.2
	Chicopee Valley Aqueduct Projects	(0.0)	0.0	0.0	0.0	0.0	(0.0)
	FY23 Proposed FY19-23 Spending	**$89.4**	**$112.3**	**$102.2**	**$121.8**	**$246.8**	**$672.6**

The format of the Cap table has changed from prior cap periods to account separately for MWRA spending, which excludes the local I/I grant and loan program and the local water pipeline loan spending which are both outside of MWRA's control. As in past Caps, contingency for each fiscal year is incorporated into the CIP to fund the uncertainties inherent to construction. The contingency budget is calculated as a percentage of budgeted expenditure outlays. Specifically, contingency is 7% for non-tunnel projects and 15% for tunnel projects. Inflation is added for unawarded construction contracts. Finally, the Cap excludes Chicopee Valley Aqueduct system projects.

FY23 Outlook Based on FY23 CIP

Looking ahead to FY23, the projected capital spending is $278.5 million. Projects with the largest budgeted spending in FY23 include Deer Island Asset Protection of $38.1 million, Metropolitan Redundancy Interim Improvements of $35.2 million Metropolitan Tunnel Redundancy of $25.7 million, Infiltration/Inflow Local Financial Assistance of $25.1 million, Local Water System

Assistance Program of $23.4 million, Corrosion and Odor Control of $17.6 million, Facility Asset Protection of $14.0 million, and New Connecting Mains – Shaft 7 to WASM 3 of $14.0 million.

In FY23, 69 contracts or phases of projects with a total budget of $503.6 million are expected to be awarded. Staff will be completing the design and progressing to the bid and award stage on several major projects such as the Deer Island Treatment Plant (DITP) Clarifier Rehabilitation Phase 2 Construction, WASM 3 Rehab CP-2, Deer Island Fire Alarm System Construction, Deer Island Motor Control Center and Switchgear Replacement Construction, Combined Heat & Power Design/ESDC/REI, New Connecting Mains Sections 25 & 24 CP-2, Metropolitan Tunnel Redundancy Geotechnical Support Services, and Section 75 Extension CP-1.

Please see Attachment E for FY23 Planned Contract Awards.

ATTACHMENT B
FY22 CIP Year-End Variance Report ($000's)

	FY22 Budget	FY22 Actuals	Actuals vs. Budget		Explanations
			$	%	
Wastewater					
Interception & Pumping (I&P)	$52,404	$34,952	($17,452)	-33.3%	Underspending Prison Point Design CA/RI and Construction: $10.3M (project on hold) Ward Street & Columbus Park Headworks - Design/CA: $1.8M (completed some design and inspection tasks later than anticipated) Nut Island Odor Control & HVAC Improvements - Construction Phase 2 and CA/REI: $1.4M (contractor behind schedule) Interceptor Renewal No. 3, Dorchester Interceptor Sewer - Construction: $846k (timing of contractor work. Contract is substantially complete.) Remote Headworks Shaft Access Improvements - Construction: $700k, Fuel Oil Tank Replacement - Phase 2 Construction: $482k, and Somerville Marginal CSO Facility Rehabilitation - Design/CA/REI: $300k, (updated construction schedules) Siphon Structure Rehabilitation Design/CS/RI: $302k (permitting delays) Interceptor Renewal 7, Malden & Melrose - Study/Design/CA: $298k (some Design tasks delayed) Offset Overspending Chelsea Creek Headworks Upgrades - Construction, CA and REI: $1.5M (work scheduled for FY21 performed in FY22) Wastewater Metering Construction: $912k (work scheduled for FY21 completed in FY22. Contract is substantially complete.)
Treatment	$27,986	$5,307	($22,678)	-81.0%	Underspending Motor Control Center and Switchgear Replacement - Design/ESDC/REI and Construction: $4.9M, Clarifier Rehabilitation Phase 2 - Construction and ESDC: $4.1M, Fire Alarm System Replacement - Design/CA and Construction: $3.1M, DI Dystor Membrane Replacements: $2.0M, and Eastern Seawall Design/ESDC/REI: $438k (updated construction schedules) Winthrop Terminal Facility (WTF) VFD Replacement - Construction: $1.8M, Clinton Screw Pump Replacement: $746k, Miscellaneous VFD Replacements FY19-FY23: $700k, and Gravity Thickener Rehabilitation: $628k (timing of work) As-Needed Technical Assistance: $851k (lower than projected task order work) Odor Control Rehab - Design/ESDC: $533k, Digester & Storage Tank Rehabilitation - Design/ESDC: $514k, Radio Repeater System Upgrade 2: $500k, and Cryogenics Plant Equipment Replacement - Design: $495k, and Clinton Landfill Cell No. 1 Closure: $300k (updated schedules)
Residuals	$56	$1	($54)	-97.3%	

ATTACHMENT B
FY22 CIP Year-End Variance Report ($000's)

	FY22 Budget	FY22 Actuals	Actuals vs. Budget		Explanations
			$	%	
CSO	$4,297	$4,716	$419	9.7%	Overspending East Boston CSO Control - BOS014: $727k (work completed earlier than anticipated) Dorchester Inflow Removal Construction: $572k (timing of payment) Offset Underspending Chelsea 008 Pipe Replacement: $523k (schedule change) CSO Performance Assessment: $281k (time extension)
Other Wastewater	$25,114	$25,423	$309	1.2%	Overspending I/I Local Financial Assistance: $309k (timing of community distributions of grants and loans)
Total Wastewater	**$109,856**	**$70,400**	**($39,456)**	**-35.9%**	

ATTACHMENT B
FY22 CIP Year-End Variance Report ($000's)

	FY22 Budget	FY22 Actuals	Actuals vs. Budget		Explanations
			$	%	
Waterworks					
Drinking Water Quality Improvements	$3,222	$4,333	$1,111	34.5%	Overspending Marlboro Pump Station Construction: $814k (contract award greater than budgeted and additional scope of work) Ancillary Modifications - Construction: $567k (contractor progress) CWTP As-Needed Technical Assistance: $421k (greater than projected task order work) Offset Underspending CWTP Parapet Wall Repairs: $522k (updated schedule)
Transmission	$29,222	$30,075	$853	2.9%	Overspending WASM 3 Rehabilitation, CP-1: $2.5M, and WASM/Spot Pond Supply Mains West Pressure Reducing Valves - Construction: $1.5M (contractors progress) Metropolitan Tunnel Redundancy Administration, Legal & Public Outreach: $1.9M (timing of land purchase), and Program Support Services: $392k (timing of consultant work) Shaft 2 - Construction: $791k (timing of work) Wachusett Dam Bridge Crane Removal: $291k (FY21 planned work completed in FY22) Offset Underspending Wachusett Lower Gatehouse Pipe and Boiler Replacement - Construction: $1.5M, Chestnut Hill Emergency Pump Station Improvements - Design/CA and Construction: $1.1M, and CP2 Shafts 5, 9: $833k (updated construction schedules) Tunnel Redundancy Preliminary Design & MEPA Review: $676k (timing of consultant work) Waltham Water Pipeline - Construction: $444K (award later than anticipated) WASM/Spot Pond Supply Mains West Pressure Reducing Valves - Design/CA: $303k (schedule change)

ATTACHMENT B
FY22 CIP Year-End Variance Report ($000's)

	FY22 Budget	FY22 Actuals	Actuals vs. Budget		Explanations
			$	%	
Distribution & Pumping	$19,118	$13,971	($5,147)	-26.9%	Underspending Section 89/29 Replacement - Construction and RE/RI Services: $4.3M (updated schedules) Sections 50 & 57 Water Rehabilitation - Design/ESDC; $1.3M (contract scope reduction) New Connecting Mains CP3-Sections 23, 24, 47 Final Design/CA/RI: $1.1M (less than anticipated Final Design and CA/RI work) Cathodic Protection Shafts N & W: $700k, and Cathodic Protection Metro South - Design/CA: $324k (schedule changes) SEH Redundancy Pipeline Phase 1 - Design/CA/Rl: $365k (Construction Administration and Resident Inspection services less than anticipated budgeted spending) Offset Overspending CP3-Sections 23, 24, 47 Rehabilitation: $1.8M (awarded higher than budgeted) CP-1 NEH Improvements: $1.8M (contractor progress)
Other Waterworks	$23,450	$14,422	($9,027)	-38.5%	Underspending Local Water Pipeline Financial Assistance Program: $8.2M (timing of community distributions) New Roofs at Water Pumping Stations - Construction: $410k (updated schedule) and REI:$225k (work being done in-house)
Total Waterworks	**$75,012**	**$62,801**	**($12,211)**	**-16.3%**	

ATTACHMENT B
FY22 CIP Year-End Variance Report ($000's)

	FY22 Budget	FY22 Actuals	Actuals vs. Budget		Explanations
			$	%	
Business & Operations Support					
Total Business & Operations Support	**$22,445**	**$5,262**	**($17,183)**	**-76.6%**	Underspending As-Needed Technical Assistance and CS/REI Services: $2.5M (lower than projected task order work) FY19-23 Vehicle Purchases: $1.7M (due to timing) Security Equipment & Installation: $316k (updated schedules and timing of work) Cabling: $2.7M, Lawson Upgrade: $1.8M, MSSP/SIEM: $1.4M, Office Space Modifications: $1.2M, Sans Storage: $694k, MAXIMO Upgrade: $560k and MAXIMO Interface Enhancements: $304k, Archiving & Data Management: $545k, Information Security Plan Implementation: $360k, SAP BO Migration: $315k, and Instrumentation & Controls: $310k (updated schedules and timing of work)
Total MWRA	**$207,312**	**$138,462**	**($68,850)**	**-33.2%**	

ATTACHMENT C
FY22 Planned Contract Awards

Program/Project	Contract No.	Subphase	NTP	Revised NTP FY23 Final	FY22 Budget	Award Amount $s in Millions	Vendor	Schedule Change Reason Code *	Secondary Codes*
IT Infrastructure Program	7802	Future Workplace	Jul-21	Jul-22	$0.5			3	6
Facility Asset Protection	**7462**	**Prison Point Rehab - Construction**	**Jul-21**		**$42.5**	**$39.5**	**Barletta Heavy Division**	1	
Waterworks Facility Asset Protection	**7626**	**New Roofs at Water PS Construction**	**Jul-21**	**Dec-21**	**$0.5**	**$0.7**	**MDM Engineering**	1	
Waterworks Facility Asset Protection	7628	New Roofs at Water PS REI	Jul-21		$0.3			2	
Quabbin Transmission System	**7788**	**Wachusett Lower Gate House Windows & Doors**	**Jul-21**	**Oct-21**	**$0.3**	**$0.6**	**J J Cardosi**	1	
Facility Asset Protection	7785	Chelsea Creek Hdwks Radio Equip	Aug-21	Jul-22	$0.1			3	7
DI Treatment Plant Asset Protection	7420	MCC & Switchgear Replace Construction	Aug-21	Oct-22	$11.2			3	7
DI Treatment Plant Asset Protection	**7913**	**Replacement of Odor Control Dampers**	**Aug-21**	**Jan-22**	**$0.5**	**$0.5**	**Harding & Smith**	1	
Quabbin Transmission System	**7697**	**Wachusett Bastion Rehabilitation Construction**	**Aug-21**	**Feb-22**	**$2.0**	**$3.9**	**MAS Building & Bridge**	1	
Application Improvement Program	7652	Hyperion	Sep-21	Mar-23	$0.4			3	6
IT Infrastructure Program	7664	Instrumentation & Controls IT	Sep-21	Dec-22	$0.3			3	6
Braintree-Weymouth Relief Facilities	7366	B/W Improvements - Construction	Sep-21	Aug-22	$8.8			3	5
Braintree-Weymouth Relief Facilities	7683	B/W Improvements - REI	Sep-21	Aug-22	$0.7			3	5
Facility Asset Protection	7689	Somerville-Marginal CSO Facility Rehab Des/CA	Sep-21	Nov-22	$2.4			3	5
DI Treatment Plant Asset Protection	7052	Digester & Storage Tank Rehab Design/ESD	Sep-21	Oct-22	$4.1			3	5
DI Treatment Plant Asset Protection	7088	Odor Control Rehabilitation - Design/ESDC	Sep-21	Mar-23	$5.3			3	5
DI Treatment Plant Asset Protection	7169	Gas Protect System Replacement Phase 2	Sep-21	Jul-23	$3.5			6	
Clinton Wastewater Treatment Plant	**7704**	**Screw Pump Replacement**	**Sep-21**	**Jan-22**	**$3.5**	**$3.5**	**IPC Lydon, LLC**	1	
Cathodic Protection Of Distribution Mains	7610	Cathodic Protection Shafts N&W	Sep-21	Jun-22	$2.5			3	5
Spot Pond Supply Mains Rehabilitation	**7483**	**Walnut St Bridge Truss-Construction**	**Sep-21**	**Feb-22**	**$0.2**	**$0.3**	**R Zoppo Corp**	1	
Central Monitoring System	**7582**	**CWTP SCADA Upgrade Construction**	**Sep-21**	**Sep-21**	**$14.0**	**$12.9**	**LeVangie Electric Company**	1	
Waterworks Facility Asset	7711	Masonry/Structure Repair Des/ESDC	Sep-21	Jul-22	$1.3			3	6
Watershed Div Cap Impr.	7569	QAB Concept Des Report	Sep-21	Dec-22	$0.3			3	5
MWRA Facilities Management	**7980**	**Office Space Modifications**	**Sep-21**	**Aug-22**	**$2.0**	**$19.6**	**WES Construction**	1	
Application Improvement Program	7286	Lawson Upgrade	Oct-21	Dec-22	$7.6			3	6
Information Security Program ISP	7440	Inform Security Plan Implementation	Oct-21	Oct-23	$0.4			2	
Facility Asset Protection	7555	Fuel Oil Tank Replacement Construction Phase 2	Oct-21	Jul-22	$1.5			3	6
DI Treatment Plant Asset Protection	7051	Fire Alarm System Replacement - Construction	Oct-21	Mar-23	$28.8			3	4
Section 80 Rehabilitation	6892	Section 80 Rehabilitation Design/CA	Oct-21	Jul-23	$2.5			2	
Quabbin Transmission System	7380	Wachusett Lower Gate House Pipe Replacement Construction	Oct-21	Oct-22	$4.1			3	5
Quabbin Transmission System	7717	Wachusett Lower Gate House Pipe Replacement REI	Oct-21	Oct-22	$0.5			3	5
CWTP Asset Protection	7737	Corrosion Control Pipe Loop Study	Nov-21	Mar-23	$0.5			3	6
CWTP Asset Protection	7755	CWTP Parapet Wall Repairs	Nov-21	Jan-24	$0.5			2	
Information Security Program ISP	**7657**	**ITSM Access Management**	**Dec-21**	**Jan-24**	**$0.3**	**$0.07**	**Carahsoft**	1	
Information Security Program ISP	**7658**	**MSSP/SIEM**	**Dec-21**	**Jun-22**	**$5.2**	**$0.4**	**ePlus Technology**	1	
Facility Asset Protection	7508	Cottage Farm Chemical Build Improvement-Design	Dec-21	Sep-22	$1.0			3	4
DI Treatment Plant Asset Protection	7134	Radio Repeater System Upgrade 2	Dec-21	Sep-22	$2.5			3	4
DI Treatment Plant Asset Protection	7135	DI Dystor Membrane Replacements	Dec-21	Aug-22	$4.0			3	5
DI Treatment Plant Asset Protection	7139	Cryogenics Plant Equipment Replace-Design	Dec-21	Sep-22	$5.3			3	6
DI Treatment Plant Asset Protection	7426	Fire System Replacement - REI	Dec-21	Mar-23	$2.1			3	4
Clinton Wastewater Treatment Plant	7371	Clinton WWTP Rehabilitation Des/ESDC/RE	Dec-21	Dec-25	$1.5			5	
Clinton Wastewater Treatment Plant	7648	Digester Cover Replacement	Dec-21	Aug-22	$0.8			3	7
Clinton Wastewater Treatment Plant	7735	Clinton Fire Alarm Replacement	Dec-21	Aug-23	$0.9			5	
Clinton Wastewater Treatment Plant	7754	Landfill Cell #1 Closure	Dec-21	Oct-22	$1.0			3	4
Waterworks Facility Asset	7729	Beacon St Line Des/ESDC	Dec-21	Oct-22	$0.9			3	5
Quabbin Transmission System	**7716**	**Wachusett Bastion Rehabilitation REI**	**Dec-21**	**Feb-22**	**$0.4**	**$0.4**	**Kleinfelder Northeast**	1	
Application Improvement Program	7666	PI (OSI)	Jan-22	Jan-23	$0.3			3	6
Facility Asset Protection	**7550**	**Remote HW Shaft Access Improvement-Construction**	**Jan-22**	**Jun-22**	**$2.8**	**$2.4**	**WES Construction**	1	

ATTACHMENT C
FY22 Planned Contract Awards

Program/Project	Contract No.	Subphase	NTP	Revised NTP FY23 Final	FY22 Budget	Award Amount $s in Millions	Vendor	Schedule Change Reason Code *	Secondary Codes*
Facility Asset Protection	7781	Remote HW Shaft Access Improvement ESDC/REI	Jan-22	Jun-22	$0.3			3	7
Residuals Asset Protection	7143	Residuals Facility Plan / EIR	Jan-22		$1.0			2	
Quabbin Transmission System	7726	Wachusett Lower Gate House Building Rehabilitation REI	Jan-22		$0.3			2	
Metro Redundancy Interim Improvements	7562	CHEPS Improvements Construction	Jan-22	Aug-23	$3.0			4	
Metro Redundancy Interim Improvements	7669	CHEPS Improvements REI	Jan-22	Aug-23	$0.6			4	
Metro Redundancy Interim Improvements	7671	CP2 Shaft 5	Jan-22	Oct-22	$2.5			3	5
Metro Redundancy Interim Improvements	7702	CP2 Tops of Shafts REI	Jan-22	Dec-22	$0.3			3	6
Chelsea Trunk Sewer	7915	Chelsea 008 Connection Relief	Feb-22	Aug-22	$0.6			3	5
New Connect Mains-Shaft 7 to WASM 3	**6392**	**CP3-Sect 23,24,47, Rehabilitation**	**Feb-22**	**Nov-21**	**$14.7**	**$26.8**	**Albanese D & S**	1	
Quabbin Transmission System	7789	Wachusett Lower Gate House Roof & Repointing	Feb-22	Feb-24	$0.4			5	
Metro Redundancy Interim Improvements	7672	Waltham Water Pipeline REI	Feb-22	Jun-22	$1.0			3	6
Metro Redundancy Interim Improvements	**7457**	**Waltham Water Pipeline Construction**	**Feb-22**	**May-22**	**$13.8**	**$31.9**	**Baltazar Construction**	1	
Metro Redundancy Interim Improvements	7547	Waltham Water Pipeline CA	Feb-22		$1.5			2	
IT Infrastructure Program	**7662**	**Edge Switches**	**Mar-22**	**Mar-22**	**$1.4**	**$0.9**	**ePlus Technology, Inc.**	1	
DI Treatment Plant Asset Protection	7395	Clarifier Rehabilitation Phase 2 - Construction	Mar-22	Oct-22	$149.0			3	5
DI Treatment Plant Asset Protection	7397	Clarifier Rehabilitation Phase 2 - REI	Mar-22	Dec-22	$3.0			3	5
Cathodic Protection Of Distribution Mains	7950	Cathodic Protection Metro South DES/CA	Mar-22	Jul-23	$4.6			5	
Facility Asset Protection	7827	Hingham Pump Station Rehabilitation Design	Apr-22	Oct-22	$0.9			3	6
Northern Extra High Service New Pipeline	**6522**	**CP-1 NEH Improvements**	**Apr-22**	**Apr-22**	**$4.4**	**$11.7**	**Albanese D & S**	1	
Northern Extra High Service New Pipeline	**7724**	**NEH Improvements REI**	**Apr-22**	**Apr-22**	**$2.6**	**$0.9**	**CDM Smith**	1	
CWTP Asset Protection	**7598**	**Soda Ash & Ammonia Equipment Replacement**	**Apr-22**	**Mar-22**	**$3.0**	**$2.5**	**Walsh Construction, LLC**	1	
Quabbin Transmission System	7698	Wachusett Lower Gate House Building Boiler & Lead Rehabilitation	Apr-22		$0.7			2	
Dam Projects	7615	Sudbury/Foss Dam Construction	Apr-22	Jul-23	$1.8			5	
Metro Redundancy Interim Improvements	7670	CP3 Shafts 7, 7B, 7C, 7D	Apr-22	Apr-24	$2.5			6	
Metro Redundancy Interim Improvements	7703	CP3 Tops of Shafts REI	Apr-22	Jun-24	$0.3			6	
MWRA Facilities Management	6983	Design/Engineering Services Demolition of DI Old Admin Building	May-22		$0.7			2	
Siphon Structure Rehabilitation	6225	Construction	May-22	Sep-22	$8.3			3	4
Residuals Asset Protection	7145	Residuals Facility Upgrades - Design	May-22	Aug-23	$2.0			5	
Rehab of Other Pump Station	7526	PS Rehabilitation-Des/CA	May-22	May-23	$3.9			3	6
DI Treatment Plant Asset Protection	6730	CHP Des/ESDC/REI	Jun-22	Jan-23	$5.6			3	5
DI Treatment Plant Asset Protection	7734	DITP Roofing Replacement	Jun-22	Sep-22	$3.0			3	5
Watershed Divsion Capital Improvements	7752	Quabbin Water Supply Des/CA/RI	Jun-22	Jun-22	$0.3			2	
80 Anticipated Contract Awards Planned Contracts Awards in FY22					**$420.0**				
19 Planned Awards Awarded in FY22						**$159.6**			

Unplanned Awards

Carroll Water Treatment Asset Protection	**7791**	**Marlborough Pump Station Emergency Connection**	**Sep-21**	**Nov-21**	**$0.5**	**$0.9**	**GVC Construction & Engineering, Inc.**		
Carroll Water Treatment Asset Protection	**7972**	**Soda Ash & Ammonia Equipment Replacement REI**		**Jul-22**	**-**	**$0.3**	**CDM Smith**		
Watershed Division Capital Improvements	**7753**	**Quabbin Water Supply Construction**	**May-22**	**May-22**	**$0.9**	**$0.5**	**Mass-West Construction, Inc.**		
Waterworks Facility Asset	**7425**	**Electrical Distribution Upgrades at Southborough**	**Jul-22**	**Jul-22**	**$1.2**	**$2.6**	**Dagle Electrical Construction**		
4 Unplanned Awards in FY22						**$4.3**			
23 Total Awards FY22						**$163.9**			

*** Reason Codes:**

1. NTP issued in FY22
2. Project/Phase eliminated or being performed in-house; combined with another project, or phase completed but on hold.
3. NTP expected in FY23
4. Schedule change due to permitting.
5. Scope changes.
6. Changes in priorities.
7. Bidder Issue/Outside Design Delay/Contractor issue/Additional specifications review

ATTACHMENT D

Linear Footage of Rehabilitated or New Pipelines

FY22 (July 2021 - June 2022)

	Contract #	Type	Linear Feet
WASTEWATER PROJECTS			
Dorchester Interceptor Sewer	7279	Rehab	15
WATERWORKS PROJECTS			
WASM 3 CP-1	7067	Rehab	4,952
		New	836
Northern Extra High CP-1	6522	New	1,178
NIH Sections 89 & 29 Replacement	7117	New	1,051
		Rehab	1,000
CP-3 Sections 23,24,47 Rehab	6392	Rehab	4,248
		New	788
River Road Rehab, Clinton	7701	New	682
Cosgrove Storage Facility	6650C	Rehab	441
		New	15
Tops of Shafts 6,8, and 9A	7561	Rehab	30
CWTP Sodium Hypochlorite Piping & Pumps	7085H	New	2,751
Marlborough Emergency Pumping Station Connection	7791	New	38

TOTAL PIPELINE REHABILITATED OR CONSTRUCTED IN FY22

	Linear Feet	Miles
Wastewater Projects	15	0.0
Water Projects	18,010	3.4
Total	**18,025**	**3.4**

ATTACHMENT E
FY23 CIP Planned Awards

Project	Contract No.	Subphase	Notice to Proceed	FY23 Budget ($ in Millions)
IT Infrastructure Program	7802	Future Workplace	Jul-22	$0.5
Braintree-Weymouth Relief	7995	Intermediate Pump Station Transformer Replacement	Jul-22	$0.3
Facility Asset Protection	7555	Fuel Oil Tank Replement Constr Phase 2	Jul-22	$1.5
Facility Asset Protection	7785	Chelsea Creek Hdwks Radio Equipment	Jul-22	$0.4
Waterworks Facility Asset Protection	**7425**	**Electrical Distrib. Upgrades at Southborough**	**Jul-22**	**$2.6**
Waterworks Facility Asset	7711	Masonry/Structural Repairs Design/Engineering Services During Construction	Jul-22	$1.6
MWRA Facilities Management	**7980**	**Office Space Mods**	**Aug-22**	**$15.3**
Chelsea Trunk Sewer	7915	CHE008 Pipe Replacement	Aug-22	$1.4
Braintree-Weymouth Relief	**7366**	**B/W Improvements - Construction**	**Aug-22**	**$10.0**
Braintree-Weymouth Relief	7683	B/W Improvements - Resident Engineering Inspection	Aug-22	$0.8
Treatment Plant Asset Protection	7135	DI Dystor Membrane Replacements	Aug-22	$4.0
Clinton Wastewater Treatment Plant	7648	Digester Cover Replacement	Aug-22	$2.1
Cathodic Protection Of Distribution Mains	6439	Cathodic Protection Shaft E Impr.	Aug-22	$0.8
Carroll Water Treatment Plant	7973	Technical Assistance 13	Aug-22	$1.2
Carroll Water Treatment Plant	7974	Technical Assistance 14	Aug-22	$1.2
Applicat Improv Program	7656	Archiving & Data Mgmt	Sep-22	$0.5
Siphon Structure Rehabilitation	6225	Construction	Sep-22	$8.3
Siphon Structure Rehabilitation	7996	Siphon Structure Phase 1 Resident Engineering Inspection	Sep-22	$0.2
Facility Asset Protection	7508	Cottage Farm Chemical Building & Diesel Engine Design	Sep-22	$1.8
DI Treatment Plant Asset Protection	7134	Radio Repeater System Upgrade 2	Sep-22	$3.0
DI Treatment Plant Asset Protection	7139	Cryogencics Plant Equipment Replacement Design-ESDC-REI	Sep-22	$6.3
DI Treatment Plant Asset Protection	7734	DITP Roofing Replacement	Sep-22	$6.0
IT Infrastructure Program	7654	NetScalers	Oct-22	$0.1
Facility Asset Protection	7827	Hingham Pump Station Rehab Design	Oct-22	$1.9

ATTACHMENT E
FY23 CIP Planned Awards

Project	Contract No.	Subphase	Notice to Proceed	FY23 Budget ($ in Millions)
DI Treatment Plant Asset Protection	7052	Digester & Storage Tank Rehab Design/ESDC	Oct-22	$6.0
DI Treatment Plant Asset Protection	7110	HVAC Design/ESDC	Oct-22	$2.4
DI Treatment Plant Asset Protection	7395	Clarifier Rehab Phase 2 - Construction	Oct-22	$180.0
DI Treatment Plant Asset Protection	7420	Motor Control Center & Switchgear Replace Construction	Oct-22	$19.5
Clinton Wastewatr Treat Plant	7754	Landfill Cell #1 Closure	Oct-22	$1.0
Waterworks Facility Asset Protection	7729	Beacon St Line Design/ESDC	Oct-22	$1.2
Quabbin Transmission Syst.	7380	Wachusett Lower Gatehouse Pipe & Boiler Replacement Construction	Oct-22	$5.1
Quabbin Transmission Syst.	7717	Wachusett Lower Gatehouse Pipe Replaceemnt REI	Oct-22	$0.6
Metro Redundancy Interim Improvements	7671	CP2 Shafts 5	Oct-22	$2.5
Capital Maintenance Planning	7990	As-Needed Design Contract 20	Nov-22	$2.0
Facility Asset Protection	7689	Somerville-Marginal CSO Facility Rehab Design/Construction Administration	Nov-22	$2.4
Facility Asset Protection	7989	Belle Isle Rehab Design/ESDC/REI	Nov-22	$1.0
Watershed Division Capital Improvements	7577	Maintenance Garage/Wash Bay/Storage Building Construction	Nov-22	$3.9
Capital Maintenance Planning	7991	As-Needed Design Contract 21	Dec-22	$2.0
Applications Improvements Program	7286	Lawson Upgrade	Dec-22	$7.6
IT Infrastructure Program	7664	Instrumentation & Controls IT	Dec-22	$0.3
DI Treatment Plant Asset Protection	7397	Clarifier Rehab Phase 2 - REI	Dec-22	$7.3
DI Treatment Plant Asset Protection	8018	As-Needed Design 10-1	Dec-22	$1.8
DI Treatment Plant Asset Protection	7981	As-Needed Design 10-2	Dec-22	$1.8
DI Treatment Plant Asset Protection	7982	As-Needed Design 10-3	Dec-22	$1.8
Metro Tunnel Redundancy	7557	Geotechnical Support Services	Dec-22	$13.5
Metro Redundancy Interim Improvements	7702	CP2 Tops of Shafts REI	Dec-22	$0.3
Watershed Division Capital Impr.	7569	QAB Concept Des Report	Dec-22	$0.3
Application Improvements Program	7666	PI (OSI)	Jan-23	$0.3

ATTACHMENT E
FY23 CIP Planned Awards

Project	Contract No.	Subphase	Notice to Proceed	FY23 Budget ($ in Millions)
Facility Asset Protection	7217	Interceptor Renewal 7-Malden & Melrose-Construction	Jan-23	$8.1
Facility Asset Protection	7751	Intercept Renewal 7 REI	Jan-23	$1.3
DI Treatment Plant Asset Protection	6730	Combined Heat & Poweer Design/ESDC/REI	Jan-23	$14.5
Metro Redundancy Interim Improvements	6543	WASM 3 Rehab CP-2	Jan-23	$49.8
New Connect Mains-Shaft 7 to WASM 3	7680	Sect 24, 25, 47, 75, 59, & 60 REI	Feb-23	$4.3
Application Improvements Program	7652	Hyperion	Mar-23	$0.4
IT Infrastructure Program	7661	Core Switches	Mar-23	$0.5
DI Treatment Plant Asset Protection	7051	Fire Alarm System Replacement - Construction	Mar-23	$31.0
DI Treatment Plant Asset Protection	7088	Odor Control Rehab - Design/ESDC	Mar-23	$8.5
DI Treatment Plant Asset Protection	7094	HVAC Equipment Replac REI	Mar-23	$6.2
DI Treatment Plant Asset Protection	7426	Fire System Replacement - REI	Mar-23	$3.5
Southern Spine Distribution Mains	7120	Section 22 - Design/ESDC	Mar-23	$2.7
555 CWTP Asset Protection	7737	Corr Control Pipe Loop Study	Mar-23	$0.5
Quabbin Transmission Syst.	6940	Oakdale High Line Repl. Constr	Mar-23	$0.5
New Connect Mains-Shaft 7 to WASM 3	6956	Sect 25 & 24 - Construction CP-2	Apr-23	$14.2
Waterworks Facility Asset Protection	7676	Steel Tanks Improvements REI	Apr-23	$1.1
New Connecting Mains-Shaft 7 to WASM 3	7484	Section 75 Extension - Construction CP-1	May-23	$12.1
Rehab of Other Pump Stations	7526	Pumping Stations Rehab-Design/CA	May-23	$4.0
Spot Pond Supply Mains Rehab	7787	Walnut St Bridge Truss Repair	May-23	$0.8
Metro Redundancy Interim Improvements	7600	Shaft 5 Impr. Constr.	May-23	$3.0
Applicat Improvements Program	7650	MAXIMO Upgrade	Jun-23	$0.6

69 Total Planned Contracts **$503.6**

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Fiscal Year 2022 Year-End Financial Update and Summary

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COMMITTEE: Administration, Finance & Audit

X INFORMATION
___ VOTE

Michael J. Cole, Budget Director
James J. Coyne, Budget Manager
Preparer/Title

Thomas J. Durkin
Director, Finance

RECOMMENDATION:

For information only. This staff summary provides the financial results and variance highlights for Fiscal Year 2022, based on the audited fiscal-year financial close.

DISCUSSION:

The total FY22 year-end variance is $30.9 million (after $25.4 million defeasance), due to lower direct expenses of $18.2 million, indirect expenses of $1.3 million, lower debt service costs of $4.7 million, and higher revenue of $6.7 million.

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

Direct expenses were $18.2 million below budget, driven by lower spending for Wages and Salaries, Maintenance, Other Materials, Fringe Benefits, Professional Services, and Workers Compensation, partially offset by higher spending on Utilities.

Indirect expenses were $1.3 million below budget due to lower spending on Watershed Reimbursement associated with lower costs for maintenance, equipment, and telecommunications, lower HEEC Revenue Requirement, and lower Insurance Payments/Claims.

Debt Service expenses were $4.7 million below budget driven by lower than anticipated interest rates, lower than anticipated SRF spending due to bond issue timing, and lower Local Water Pipeline CP interest rates, partially offset by higher than anticipated senior debt, as a result of defeasance expenditures.

Revenue was $6.7 million greater than budget, driven by Other Revenue of $3.5 million, and Other User Charges of $1.7 million, and Investment Income of $1.5 million.

Of the $30.9 million surplus, $1.2 million in Debt Service Assistance, as in prior years, was applied against the FY23 budget.

Staff are recommending that the remaining approximately $29.7 million of the FY22 surplus be used to defease debt to provide targeted rate relief for communities between FY24-27. This rate management strategy has proven to be very effective in the past few years in managing assessment increases over time. The proposed defeasance scenario is being presented to the Board at this meeting in a separate staff summary.

FY22 Current Expense Budget

The CEB expense variances for FY22 by major budget category were:

- Lower Direct Expenses of $18.2 million or 7.0% under budget. Spending was lower for Wages and Salaries, Maintenance, Other Materials, Fringe Benefits, Professional Services, Workers's Compensation, Chemicals, Training & Meetings, and Overtime. Spending was higher than budget for Utilities and Other Services.

- Lower Indirect Expenses of $1.3 million or 2.4% under budget primarily due to lower Watershed Reimbursements, HEEC expenses, and insurance payments/claims.

- Debt Service expenses were $4.7 million or 0.9% below budget driven by lower than anticipated interest rates, lower than anticipated SRF spending due to bond issue timing, and lower Local Water Pipeline CP interest rates, partially offset by higher than anticipated senior debt, as a result of defeasance expenditures.

FY22 Budget and FY22 Actual Variance by Expenditure Category
(in millions)

	FY22 Budget	FY22 Actual	$ Variance	% Variance
Direct Expenses	$259.8	$241.7	-$18.2	-7.0%
Indirect Expenses	$56.7	$55.3	-$1.3	-2.4%
Capital Financing	$496.5	$491.9	-$4.7	-0.9%
Total	**$813.0**	**$788.8**	**-$24.2**	**-3.0%**

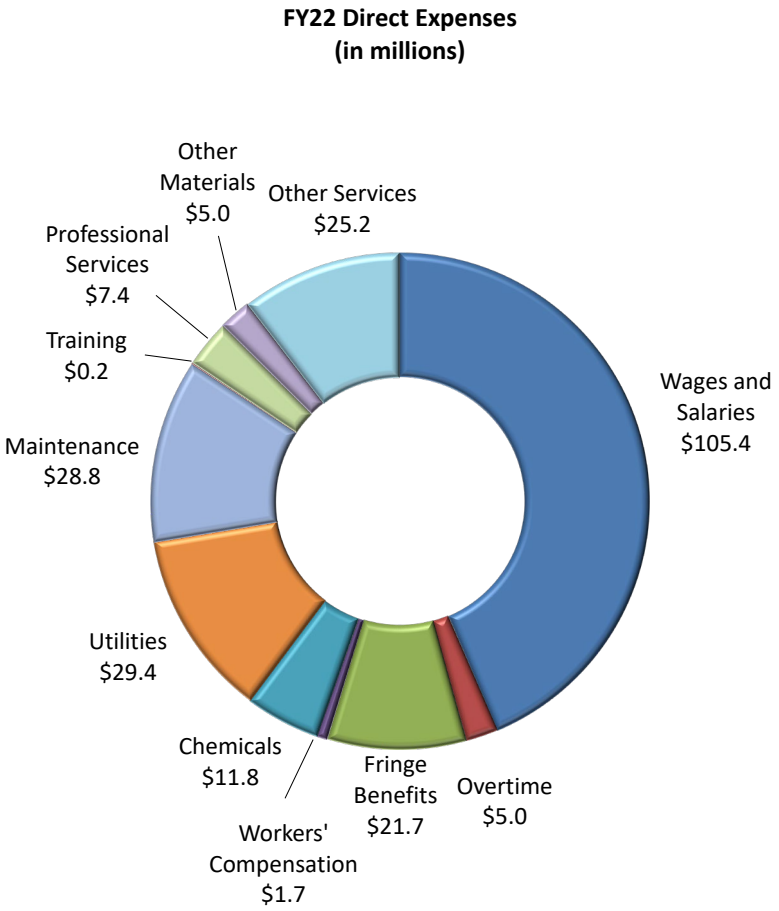
Totals may not add due to rounding

Total Revenues of $819.7 million were $6.7 million or 0.8% over budget driven by higher Other Revenue, Other User Charges, the receipt of Debt Service Assistance from the Commonwealth, and Investment Income.

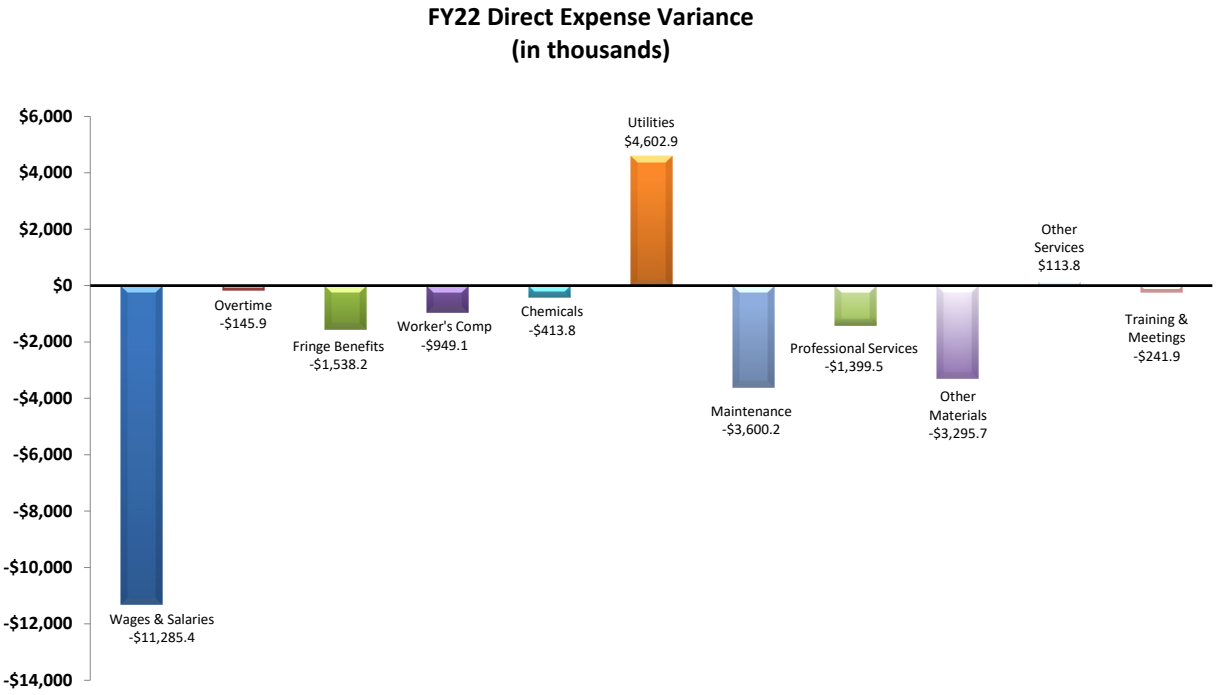
Please refer to Attachment 1 for a more detailed comparison by line item of the budget variances for FY22.

Direct Expenses

FY22 direct expenses totaled $241.7 million, which was $18.2 million or 7.0% less than budgeted.

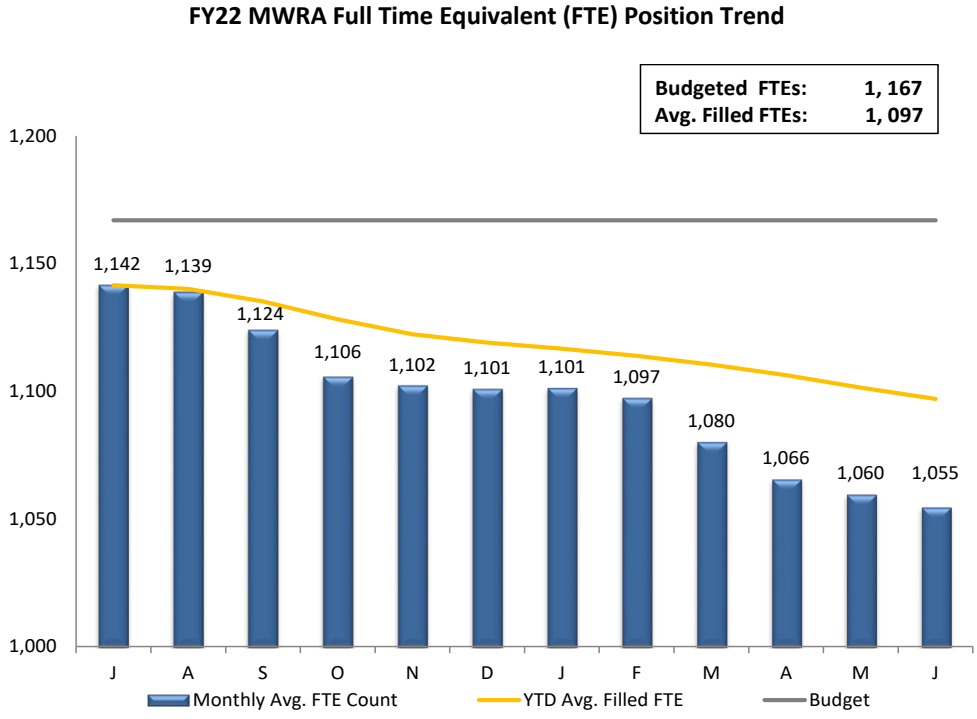


Lower spending for Wages and Salaries, Maintenance, Other Materials, Fringe Benefits, Professional Services, Worker's Compensation, Chemicals, Training and Meetings, and Overtime. Spending was higher than budget for Utilities and Other Services.



Wages and Salaries

Wages and Salaries are under budget by $11.3 million or 9.7%. There were 70 fewer average FTEs (1,097 versus 1,167 budget) or 6.0% and lower average salaries for new hires versus retirees. The timing of backfilling vacant positions also contributed to Regular Pay being under budget.



Maintenance

Maintenance was less than budget by $3.6 million or 11.1%, largely driven by the timing of projects. Maintenance Materials are under budget by $1.3 million, driven by Plant and Machine Materials of $523,000, Special Equipment Materials of $436,000, and HVAC Materials of $350,000. Maintenance Services are under budget by $2.3 million driven by Building and Grounds Services of $956,000 due to timing of service contracts, Computer Software/License Upgrades of $675,000 due to the timing of the Windows Enterprise Assurance Renewal and the AutoCad upgrade, Special Equipment Services of $464,000 primarily due to timing of service contracts and a lower award than budgeted for the telephone system maintenance contract, Electrical Services of $299,000, and Computer Services of $207,000 due to HP and Cisco Smartnet renewal contracts being less than budgeted and the Distributed Antenna System Support agreement at Deer Island being delayed. This is partially offset by higher Plant and Machinery Services of $337,000 primarily due to timing.

Other Materials

Other Materials were lower than budget by $3.3 million or 39.5%, driven by less than budgeted spending for Other Materials of $2.2 million primarily due to funding for the office space modifications now coming from the CIP, Vehicle Purchases/Replacements of $875,000, Equipment/Furniture of $337,000, and Computer Software of $103,000, all largely due to the timing of purchasing. This underspending was partially offset by higher Computer Hardware of $324,000 in MIS due to additional hardware purchased for teleworking.

Fringe Benefits

Fringe Benefit spending was lower than budget by $1.5 million or 6.6%. This is primarily driven by lower Health Insurance costs of $1.2 million due to fewer than budgeted participants in health insurance plans, increased contribution by new hires vs. lower contribution rates of staff retiring, and the shift from family to individual plans, which are less expensive.

Professional Services

Professional Services were lower than budget by $1.4 million or 16.0%. The overall underspending is driven by lower spending in Computer Systems Consultant of $1.3 million in MIS primarily due to a reduction in scope of Managed Security Services Provider (MSSP) Year 5 monitoring extension and a delay in Internet/Intranet Pipeline Upgrade project, Engineering of $363,000 primarily in Field Operations, and Lab & Testing Analysis of $339,000. This is partially offset by higher Other Services of $405,000 primarily for design work for the move from CNY to Deer Island and Chelsea and Security Services of $308,000 due to new contract pricing.

Worker's Compensation

Worker's Compensation expenses were lower than budget by $0.9 million or 36.3%. The lower expenses were due to favorable variances in Compensation Payments of $576,000, Medical Payments of $319,000, and Administrative Expenses of $55,000.

Chemicals

Chemicals were lower than budget by $0.4 million or 3.4%. Lower than budget spending on Hydrogen Peroxide of $384,000 driven by Deer Island based on usage as excessive rainfall early in the fiscal year helped lower H2S levels, Soda Ash of $109,000 driven by Water Operations due to slightly lower average flows at Carroll, Activated Carbon of $89,000 primarily driven by Deer Island due to timing of replacements, Polymer of $76,000 driven by Deer Island due to less usage for centrifuge operations, and Carbon Dioxide of $64,000 driven by Water Operations due to lower dosing combined with slightly lower flows through the year. This is partially offset by Ferric Chloride of $275,000 driven by Deer Island to keep the orthophosphate levels in the digesters at the desired target level, and Liquid Oxygen of $118,000 due to higher dosing. Deer Island flows are 5.6% higher than the budget and Carroll flows are 0.16% higher than the budget for FY22. It is important to note that Chemical variances are also based on deliveries, which in general reflect the usage patterns. However, the timing of deliveries is an important factor.

Training and Meetings

Training and Meetings expenses were lower than budget by $0.2 million or 51.0% driven by reduced spending during the pandemic, as well as the timing of spending.

Overtime

Overtime expenses were less than budget by $0.1 million or 2.8%. Lower spending mainly in Field Operations of $391,000 primarily for planned and emergency overtime being under budget, and Engineering & Construction of $101,000, are partially offset by higher spending at Deer Island of $310,000 and Clinton of $42,000 for storm and shift coverage. Rainfall was a major contributor for the increased overtime at Deer Island and Clinton. In addition, vacancies at the Thermal Power Plant and Deer Island Operations continue to drive higher overtime costs than anticipated.

Other Services

Other Services were higher than budget by $0.1 million or 0.5%. Higher than anticipated sludge palletization costs of $469,000 were due to a higher inflation adjustment per the terms of the contract for the second half of FY22. This was partially offset by lower than budgeted spending for Telecommunication costs of $111,000, Health/Safety of $99,000, and Grit and Screenings of $89,000 due to lower quantities.

Utilities

Utilities were greater than budget by $4.6 million or 18.6%. Overspending in Electricity of $3.6 million due to higher costs at Deer Island of $2.3 million driven by power demand charges being more than budgeted based on flows, T&D rates from Eversource, and higher real time market prices for the non-block purchases under the Direct Energy contract. Higher electricity costs of $1.3 million in Field Operations is primarily due to new T&D rates and quantity. Diesel Fuel is overspent by $946,000 due to higher quantity purchased for Deer Island at a higher price.

Indirect Expense

Indirect Expenses totaled $55.3 million, which is $1.3 million or 2.4% under budget. The variance is driven by lower Watershed Reimbursements of $0.8 million, lower HEEC costs of $0.4 million, and lower insurance payments/claims of $0.2 million.

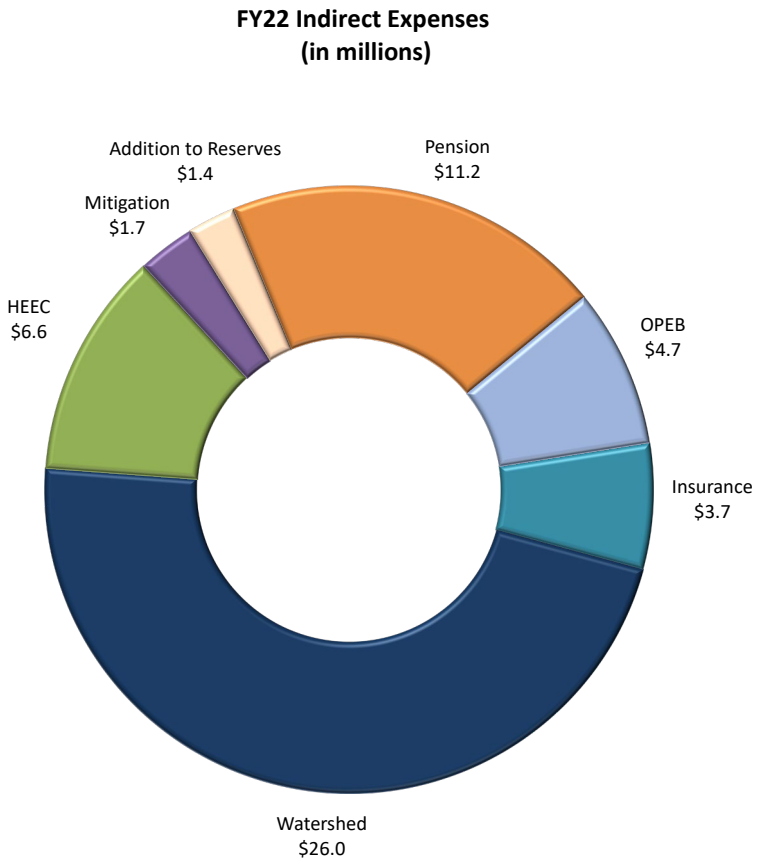
Based on FY22 operating activity only, the Watershed Division is $501,000 or 2.8% under budget. When factoring in the FY21 balance forward ($69,000) which was paid during Q1 of FY22, Watershed Reimbursement is $433,000 or 2.4% below budget in FY22. In addition, the PILOT payment is $336,000 or 3.8% below budget.

FY22 Watershed Variance

$ in millions	YTD Budget	YTD Actual	YTD $ Variance	YTD % Variance
Operating Expenses	18.9	18.6	-0.3	-1.7%
Operating Revenues - Offset	1.0	1.2	0.2	17.6%
FY22 Operating Totals	**17.9**	**17.4**	**-0.5**	**-2.8%**
DCR Balance Forward (FY21 4th quarter accrual true-up)	0.0	0.1	0.1	
FY22 Adjusted Operating Totals	**17.9**	**17.5**	**-0.4**	**-2.4%**
PILOT	8.8	8.5	-0.3	-3.8%
Total Watershed Reimbursement	**26.7**	**26.0**	**-0.8**	**-2.9%**

Totals may not add due to rounding

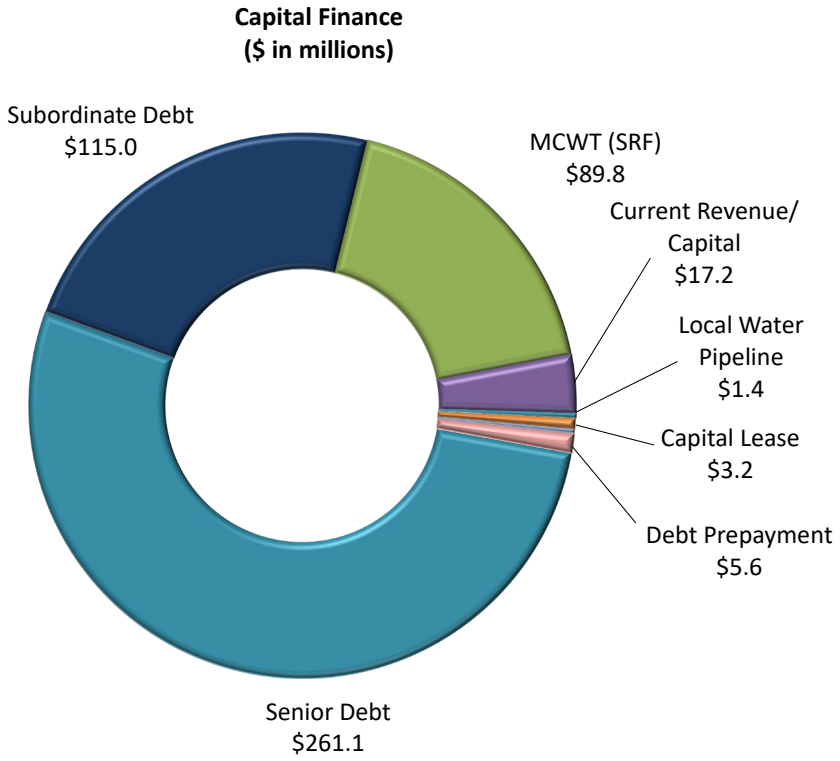
MWRA reimburses the Commonwealth of Massachusetts Department of Conservation (DCR) and Recreation - Division of Water Supply Protection – Office of Watershed Management for expenses. The reimbursements are presented for payment monthly in arears. Accruals are being made monthly based on estimated expenses provided by DCR and trued-up monthly based on the monthly invoice. MWRA's budget is based on the annual Fiscal Year Work Plan approved by the Massachusetts Water Supply Protection Trust. The FTE count at the end of June was 138 (and 135.8 average for FY22) vs. a budget of 150.



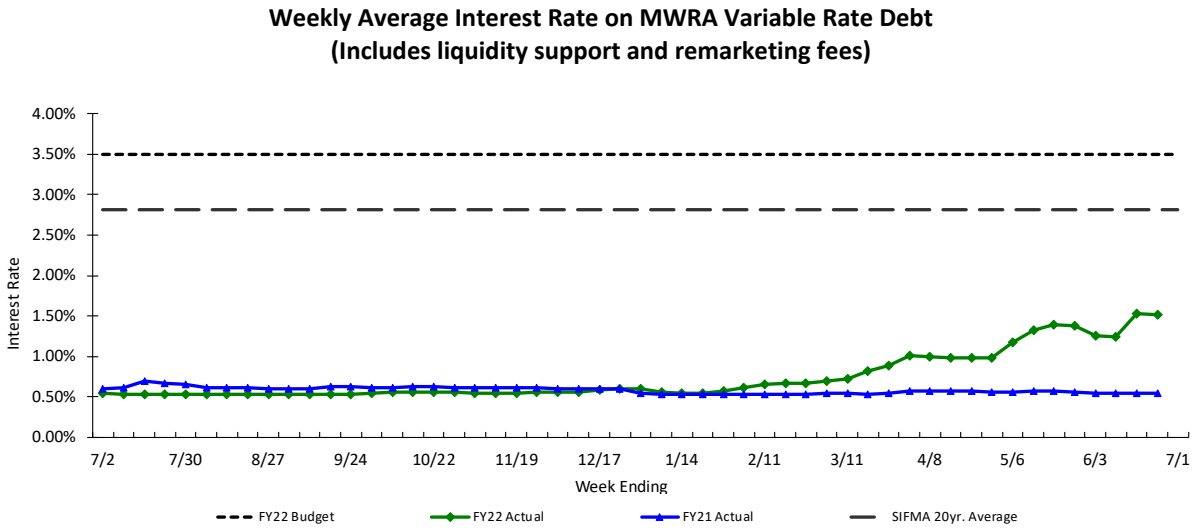
Capital Financing

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

Capital Finance totaled $491.9 million and was $4.7 million or 0.9% below budget after the impact of the spring defeasance. Surplus was a result of lower than budget variable interest expense of $10.1 million due to lower interest rates combined with lower SRF spending of $5.9 million due to bond issue timing, lower Water Pipeline Commercial Paper of $4.8 million due to lower than budgeted interest rates, offset by higher Senior Debt of $16.1 million, as a result of defeasance expenditures of $25.4 million.



The graph below reflects the FY22 actual variable rate trend by week against the FY22 Budget.



Revenue and Income

Revenues of $819.7 million were $6.7 million or 0.7% over budget. Other Revenue was $3.5 million or 54.2% over budget due to Payments from the Commonwealth of Massachusetts of $1.2 million for Debt Service Assistance, higher Miscellaneous Revenue of $1.2 million driven by $443,000 in reimbursement from the Commonwealth of Massachusetts for Biobot costs associated with FY21, Energy Revenue of $661,000, Income from the Disposal of Equipment of $305,000, and Energy Rebates of $264,000. Other User Charges were over budget by $1.7 million or 18.9% primarily for unplanned water use by the Town of Burlington. Investment Income was $1.5 million or 37.2% over budget due to higher than budgeted interest rates.

ATTACHMENTS:

Attachment 1 – FY22 Variance Summary
Attachment 2 – Current Expense Variance Explanations
Attachment 3 – FY22 Actual vs. FY22 Projection

ATTACHMENT 1
FY22 Actuals vs. FY22 Budget

	FY22 Year-End				
	FY22 Budget	FY22 Actual	FY22 Variance	%	FY22 Approved
EXPENSES					
WAGES AND SALARIES	$ 116,680,341	$ 105,394,954	$ (11,285,387)	-9.7%	$ 116,680,341
OVERTIME	5,156,681	5,010,758	(145,923)	-2.8%	5,156,681
FRINGE BENEFITS	23,253,137	21,714,918	(1,538,219)	-6.6%	23,253,137
WORKERS' COMPENSATION	2,614,159	1,665,017	(949,142)	-36.3%	2,614,159
CHEMICALS	12,202,286	11,788,437	(413,849)	-3.4%	12,202,286
ENERGY AND UTILITIES	24,749,865	29,352,756	4,602,891	18.6%	24,749,865
MAINTENANCE	32,442,382	28,842,198	(3,600,184)	-11.1%	32,442,382
TRAINING AND MEETINGS	473,994	232,056	(241,938)	-51.0%	473,994
PROFESSIONAL SERVICES	8,773,258	7,373,709	(1,399,549)	-16.0%	8,773,258
OTHER MATERIALS	8,334,774	5,039,040	(3,295,734)	-39.5%	8,334,774
OTHER SERVICES	25,129,234	25,243,013	113,779	0.5%	25,129,234
TOTAL DIRECT EXPENSES	**$ 259,810,111**	**$ 241,656,856**	**$ (18,153,254)**	**-7.0%**	**$ 259,810,111**
INSURANCE	$ 3,943,600	$ 3,713,849	$ (229,751)	-5.8%	$ 3,943,600
WATERSHED/PILOT	26,731,490	25,962,906	(768,584)	-2.9%	26,731,490
HEEC PAYMENT	6,991,953	6,640,820	(351,133)	-5.0%	6,991,953
MITIGATION	1,693,360	1,693,360	-	0.0%	1,693,360
ADDITIONS TO RESERVES	1,412,647	1,412,647	-	0.0%	1,412,647
RETIREMENT FUND	11,205,000	11,205,000	-	0.0%	11,205,000
POST EMPLOYEE BENEFITS	4,673,624	4,673,624	-	0.0%	4,673,624
TOTAL INDIRECT EXPENSES	**$ 56,651,674**	**$ 55,302,206**	**$ (1,349,469)**	**-2.4%**	**$ 56,651,674**
STATE REVOLVING FUND	$ 95,673,399	$ 89,764,495	$ (5,908,904)	-6.2%	$ 95,673,399
SENIOR DEBT	244,957,128	261,060,493	16,103,365	6.6%	244,957,128
DEBT SERVICE ASSISTANCE	(1,287,870)	(1,287,870)	-	0.0%	(1,287,870)
CURRENT REVENUE/CAPITAL	17,200,000	17,200,000	-	0.0%	17,200,000
SUBORDINATE MWRA DEBT	125,046,218	125,046,218	-	0.0%	125,046,218
LOCAL WATER PIPELINE CP	6,120,127	1,353,576	(4,766,551)	-77.9%	6,120,127
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%	3,217,060
VARIABLE DEBT	-	(10,083,161)	(10,083,161)	---	-
DEFEASANCE ACCOUNT	-	-	-	---	-
DEBT PREPAYMENT	5,609,355	5,609,355	-	0.0%	5,609,355
TOTAL CAPITAL FINANCE EXPENSE	**$ 496,535,417**	**$ 491,880,165**	**$ (4,655,252)**	**-0.9%**	**$ 496,535,417**
TOTAL EXPENSES	**$ 812,997,202**	**$ 788,839,227**	**$ (24,157,975)**	**-3.0%**	**$ 812,997,202**
REVENUE & INCOME					
RATE REVENUE	$ 792,084,000	$ 792,084,000	$ -	0.0%	$ 792,084,000
OTHER USER CHARGES	9,222,883	10,962,933	1,740,050	18.9%	9,222,883
OTHER REVENUE	6,479,203	9,989,560	3,510,357	54.2%	6,479,203
RATE STABILIZATION	1,250,000	1,250,000	-	0.0%	1,250,000
INVESTMENT INCOME	3,961,116	5,435,309	1,474,193	37.2%	3,961,116
TOTAL REVENUE & INCOME	**$ 812,997,202**	**$ 819,721,802**	**$ 6,724,600**	**0.8%**	**$ 812,997,202**

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY22 Budget	FY22 Actuals	FY22 Actual vs. FY22 Budget		Explanations
			$	%	
Direct Expenses					
Wages & Salaries	116,680,341	105,394,954	(11,285,387)	-9.7%	Wages and Salaries are under budget by $11.3 million. Year to date, there have been 70 fewer average FTEs (1,097 versus 1,167 budget), lower average new hire salaries versus retirees, the timing of backfilling vacant positions.
Overtime	5,156,681	5,010,758	(145,923)	-2.8%	Overtime expenses were less than budget by $146,000 or 2.8%. Lower spending mainly in Field Operations of $391,000 primarily for planned and emergency overtime being under budget, Engineering & Construction of $101,000, are partially offset by higher spending at Deer Island of $310,000 and Clinton of $42,000 for storm and shift coverage. Year-to-date rainfall was a major contributor for the increased overtime. In addition, vacancies at the Thermal Power Plant and DITP Operations continue to drive higher overtime costs than anticipated.
Fringe Benefits	23,253,137	21,714,918	(1,538,219)	-6.6%	Lower than budget in **Health Insurance** of $1.2 million, due to fewer than budgeted participants in health insurance plans, increased contribution by external new hires vs. lower contribution rates of staff retiring, and the shift from family to individual plans which are less expensive. Also, **Dental Insurance** of $102,000 and **Unemployment Insurance** of $71,000 were lower than budget.
Worker's Compensation	2,614,159	1,665,017	(949,142)	-36.3%	The lower expenses were due to favorable variances in **Compensation Payments** of $576,000, **Medical Payments** of $319,000, and **Administrative Expenses** of $55,000. Due to uncertainties of when spending will happen, the budget is spread evenly throughout the year.
Chemicals	12,202,286	11,788,437	(413,849)	-3.4%	Chemicals were lower than budget by $0.4 million or 3.4%. Lower than budget spending on **Hydrogen Peroxide** of $384,000 driven by DITP based on usage as excessive rainfall helped lower H2S levels, **Soda Ash** of $109,000 driven by Water Operations due to slightly lower average flows at CWTP**, Activated Carbon** of $89,000 primarily driven by Deer Island due to timing of replacements, **Polymer** of $76,000 driven by DITP due to less usage for centrifuge operations, and **Carbon Dioxide** of $64,000 driven by Water Operations due to lower dosing combined with slightly lower flows through the year. This is partially offset by **Ferric Chloride** of $275,000 driven by DITP to keep the orthophosphate levels in the digesters at the desired target level, and **Liquid Oxygen** of $118,000 due to higher dosing. DITP flows are 5.6% higher than the budget and CWTP flows are 0.16% higher than the budget through June. It is important to note that Chemical variances are also based on deliveries which in general reflect the usage patterns. However, the timing of deliveries is an important factor.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY22 Budget	FY22 Actuals	FY22 Actual vs. FY22 Budget		Explanations
			$	%	
Utilities	24,749,865	29,352,756	4,602,891	18.6%	Utilities were greater than budget by $4.6 million or 18.6%. Overspending in **Electricity** of $3.6 million primarily at DITP of $2.3 million driven by power demand charges being more than budgeted based on flows, T&D rates from Eversource, and higher real time market prices for the non-block purchases under the Direct Energy contract. Also, Field Operations of $1.3 million is over budget primarily due to new T&D rates and quantity. **Diesel Fuel** is overspent by $946,000 driven by Deer Island Treatment Plant due to higher quantity purchase at a higher price. Also, Field Operations is overspent by $199,000 due to lower quantity purchased at a higher price.
Maintenance	32,442,382	28,842,198	(3,600,184)	-11.1%	Maintenance was less than budget by $3.6 million or 11.1%, largely driven by the timing of projects. *Maintenance Materials* are under budget by $1.3 million, driven by **Plant and Machine Materials o**f $523,000, **Special Equipment Materials** of $436,000, **HVAC Materials** of $350,000, and **Pipe Materials** of $262,000, all largely due to timing, partially offset by **Warehouse Inventory** of $279,000. *Maintenance Services* are under budget by $2.3 million driven by **Building & Grounds Services** of $956,000 due to timing of service contracts, **Special Equipment Services** of $464,000 primarily due to timing of service contracts and a lower award than budgeted for the telephone system maintenance contract, and **Computer Services** of $207,000 due to HP and Cisco Smartnet renewal contracts being less than budgeted and the Distributed Antenna System Support agreement at DITP being delayed. Also, **Computer Software Licenses** of $675,000 and **Electrical Services** of $299,000 primarily due to timing.
Training & Meetings	473,994	232,056	(241,938)	-51.0%	Lower than budget spending on **Training & Meetings** by $242,000 is driven by MIS of $103,000, Tunnel Redundancy of $20,000, Field Operations of $19,000, DITP of $15,000, and Procurement of $11,000, partially offset by higher spending in Engineering & Construction of $7,000.
Professional Services	8,773,258	7,373,709	(1,399,549)	-16.0%	Lower than budget spending primarily for **Computer Systems Consultant** of $1.3 million in MIS primarily due to a reduction in scope of Managed Security Services Provider (MSSP) Year 5 monitoring extension and delay in Internet/Intranet Pipeline Upgrade project, **Engineering** of $363,000 primarily in Field Operations, **Lab & Testing Analysis** of $339,000, partially offset by **Other Services** of $405,000 primarily for design work for the move from CNY to DI and Chelsea.
Other Materials	8,334,774	5,039,040	(3,295,734)	-39.5%	Other Materials were lower than budget by $3.3 million or 39.5%, driven by less than budgeted spending for **Other Materials** of $2.2 million primarily due to funding for the office space modifications now coming from the CIP, **Vehicle Purchases/Replacements** of $875,000, **Equipment/Furniture** of $337,000, **Computer Software** of $103,000, and **Office Supplies** of $98,000, all largely due to the timing of purchasing. This underspending was partially offset by **Computer Hardware** of $324,000 in MIS due to additional hardware purchased for teleworking.

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY22 Budget	FY22 Actuals	FY22 Actual vs. FY22 Budget		Explanations
			$	%	
Other Services	25,129,234	25,243,013	113,779	0.5%	Other Services were higher than budget by $0.1 million or 0.5%. Higher than anticipated sludge palletization costs of $469,000 were due to a higher inflation adjustment per the terms of the contract for the second half of FY22. This was partially offset by lower than budgeted spending for Telecommunication costs of $111,000, Health/Safety of $99,000, and Grit and Screenings of $89,000 due to lower quantities.
Total Direct Expenses	**259,810,111**	**241,656,856**	**(18,153,255)**	**-7.0%**	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY22 Budget	FY22 Actuals	FY22 Actual vs. FY22 Budget		Explanations
			$	%	
Indirect Expenses					
Insurance	3,943,600	3,713,849	(229,751)	-5.8%	Lower Payments/Claims of $206,000 and lower Premiums of $22,000 than budgeted.
Watershed/PILOT	26,731,490	25,962,906	(768,584)	-2.9%	Lower Watershed Reimbursement of $0.8 million favorable variance to budget driven by lower spending on (1) Maintenance (2) Equipment (3) Telecommunications (4) and Operational Supplies. Also, PILOT is $336,000 below budget.
HEEC Payment	6,991,953	6,640,820	(351,133)	-5.0%	Decrease is due to HEEC Revenue Requirement ($486,000), partially offset by and HEEC O&M charge $135,000.
Mitigation	1,693,360	1,693,359	(1)	0.0%	
Addition to Reserves	1,412,647	1,412,646	(1)	0.0%	
Pension Expense	11,205,000	11,205,000	-	0.0%	
Post Employee Benefits	4,673,624	4,673,624	-	0.0%	
Total Indirect Expenses	**56,651,674**	**55,302,204**	**(1,349,470)**	**-2.4%**	
Debt Service					
Debt Service	497,823,287	493,168,036	(4,655,251)	-0.9%	Capital Finance totaled $491.9 million and was $4.7 million or 0.9% below budget after the impact of the spring defeasance. Surplus was a result of lower than budget variable interest expense of $10.1 million due to lower interest rates combined with lower SRF spending of $5.9 million due to bond issue timing, lower Water Pipeline CP of $4.8 million due to lower than budgeted interest rates, offset by higher Senior Debt of $16.1 million, as a result of defeasance expenditures of $25.4 million.
Debt Service Assistance	(1,287,870)	(1,287,870)	-	0.0%	
Total Debt Service Expenses	**496,535,417**	**491,880,166**	**(4,655,251)**	**-0.9%**	
Total Expenses	**812,997,202**	**788,839,226**	**(24,157,976)**	**-3.0%**	

ATTACHMENT 2
Current Expense Variance Explanations

Total MWRA	FY22 Budget	FY22 Actuals	FY22 Actual vs. FY22 Budget		Explanations
			$	%	
Revenue & Income					
Rate Revenue	792,084,000	792,084,000	-	0.0%	
Other User Charges	9,222,883	10,962,933	1,740,050	18.9%	Unplanned water use by the town of Burlington.
Other Revenue	6,479,203	9,989,560	3,510,357	54.2%	Other Revenue was $3.5 million or 35.9% over budget due to **Payment From the Commonwealth of Massachusetts** of $1.2 million for debt service assistance, **Miscellaneous Revenue** of $1.2 million driven by $443,000 for the reimbursement from the Commonwealth of Massachusetts for Biobot costs associated with FY21, **Energy Revenue** of $661,000, **Income from the Disposal of Equipment** of $305,000, and **Energy Rebates** of $264,000.
Rate Stabilization	1,250,000	1,250,000	-	0.0%	HEEC Reserve.
Investment Income	3,961,116	5,435,309	1,474,193	37.2%	Investment Income is over budget is due to higher than budgeted interest rates.
Total Revenue	**812,997,202**	**819,721,802**	**6,724,600**	**0.8%**	
Net Revenue in Excess of Expenses	**-**	**30,882,576**	**30,882,576**		

Attachment 3
FY22 Actual vs. FY22 Projection

TOTAL MWRA	FY22 Projection	FY22 Actual	Change FY22 Actual vs FY22 Projection	
			$	%
EXPENSES				
WAGES AND SALARIES	$ 107,378,367	$ 105,394,954	$ (1,983,413)	-1.8%
OVERTIME	5,030,378	5,010,758	(19,620)	-0.4%
FRINGE BENEFITS	22,209,351	21,714,918	(494,433)	-2.2%
WORKERS' COMPENSATION	1,960,619	1,665,017	(295,602)	-15.1%
CHEMICALS	12,255,355	11,788,437	(466,918)	-3.8%
ENERGY AND UTILITIES	28,684,687	29,352,756	668,069	2.3%
MAINTENANCE	30,066,732	28,842,198	(1,224,534)	-4.1%
TRAINING AND MEETINGS	314,875	232,056	(82,819)	-26.3%
PROFESSIONAL SERVICES	7,895,932	7,373,709	(522,223)	-6.6%
OTHER MATERIALS	7,501,297	5,039,040	(2,462,257)	-32.8%
OTHER SERVICES	24,877,944	25,243,013	365,069	1.5%
TOTAL DIRECT EXPENSES	**$ 248,175,536**	**$ 241,656,856**	**$ (6,518,680)**	**-2.6%**
INSURANCE	$ 3,943,600	$ 3,713,849	(229,751)	-5.8%
WATERSHED/PILOT	25,450,160	25,962,906	512,746	2.0%
HEEC PAYMENT	6,640,820	6,640,820	-	0.0%
MITIGATION	1,693,359	1,693,359	-	0.0%
ADDITIONS TO RESERVES	1,412,646	1,412,646	-	0.0%
RETIREMENT FUND	11,205,000	11,205,000	-	0.0%
POSTEMPLOYMENT BENEFITS	4,673,624	4,673,624	-	0.0%
TOTAL INDIRECT EXPENSES	**$ 55,019,209**	**$ 55,302,204**	**$ 282,995**	**0.5%**
STATE REVOLVING FUND	$ 89,764,498	$ 89,764,495	(3)	0.0%
SENIOR DEBT	238,650,582	261,060,493	22,409,911	9.4%
SUBORDINATE DEBT	114,008,631	114,963,057	954,426	0.8%
LOCAL WATER PIPELINE CP	1,431,079	1,353,576	(77,503)	-5.4%
CURRENT REVENUE/CAPITAL	17,200,000	17,200,000	-	0.0%
CAPITAL LEASE	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	5,609,355	5,609,355	-	0.0%
DEBT SERVICE ASSISTANCE	(1,287,870)	(1,287,870)	-	0.0%
TOTAL DEBT SERVICE	**$ 468,593,335**	**$ 491,880,166**	**$ 23,286,831**	**5.0%**
TOTAL EXPENSES	**$ 771,788,080**	**$ 788,839,226**	**$ 17,051,146**	**2.2%**
REVENUE & INCOME				
RATE REVENUE	$ 792,084,000	$ 792,084,000	(0)	0.00%
OTHER USER CHARGES	10,693,360	10,962,933	269,573	2.5%
OTHER REVENUE	8,739,663	9,989,560	1,249,897	14.3%
RATE STABILIZATION	1,250,000	1,250,000	-	0.0%
INVESTMENT INCOME	4,100,116	5,435,309	1,335,193	32.6%
TOTAL REVENUE & INCOME	**$ 816,867,140**	**$ 819,721,802**	**$ 2,854,662**	**0.3%**
VARIANCE:		**$ (30,882,576)**	**$ 14,196,484**	**1.7%**

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Bond Defeasance of Future Debt Service

COMMITTEE: Administration, Finance & Audit

X VOTE
INFORMATION

Matthew R. Horan, Deputy Director, Finance/Treasurer
Preparer/Title

Thomas J. Durkin
Director of Finance

Consistent with MWRA's multi-year rates management strategy, MWRA staff are recommending the execution of an approximately $29.7 million defeasance to reduce future year rate increases. The $29.7 million in available funds is derived from the FY22 surplus after $25.4 million was utilized to execute a defeasance in June 2022. These funds will be used to prepay debt service coming due in FY24 through FY27 ($27.1 million in principal and $2.6 million in interest). The defeasance of debt, coupled with diligent management of operational expenses, have been the keys to MWRA's ability to keep assessment increases sustainable and predictable.

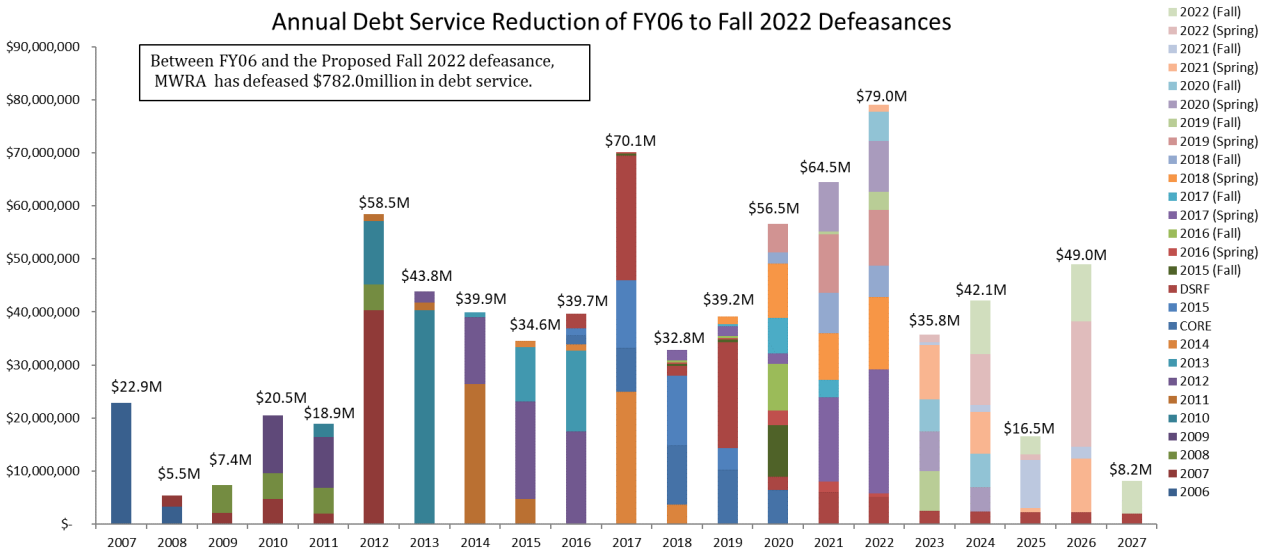
RECOMMENDATION:

To authorize the Executive Director or his designee, on behalf of the Authority, to enter into, execute and deliver all necessary agreements and other instruments and to take such other actions necessary to effectuate the redemption and defeasance of an aggregate principal amount of $27,150,000 of outstanding MWRA senior bonds including to cause the escrow of cash and/or securities in an amount necessary to fund such redemption and defeasance, in order to reduce the debt service requirement by $30.5 million in the FY24 through FY27 timeframe.

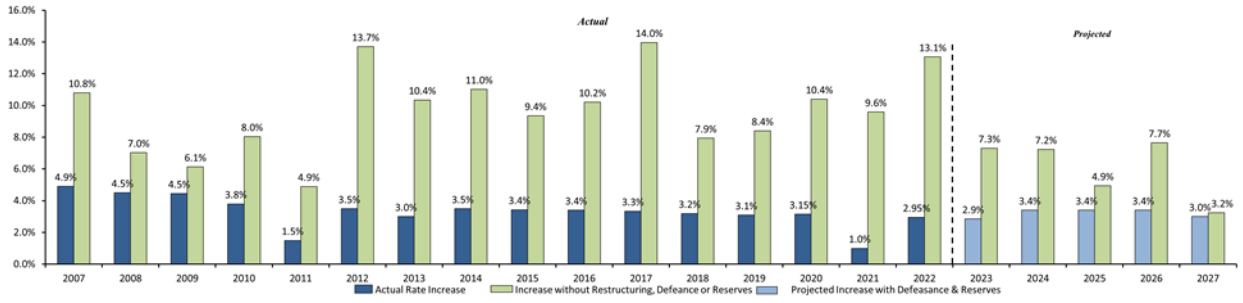
DISCUSSION:

As described in more detail in the FY22 Year-end Financial Update and Summary presented at this meeting, MWRA has approximately $29.7 million available from the FY22 budget to execute a defeasance of outstanding debt. These funds are available after the use of approximately $5.6 million from the budgeted FY22 Debt Prepayment and approximately $25.4 million from the FY22 surplus to defease $30.7 million in outstanding principal executed in June 2022.

MWRA's ongoing use of defeasances has had a significant impact in lowering future debt service payments and limiting annual rate revenue increases. From 2006 through this proposed transaction, MWRA has defeased $782.0 million in debt service to reduce future year rate revenue requirements. The following chart details the multi-year impact of those defeasances.



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



Staff reviewed all bonds available to be defeased, and have identified the maturities of the bonds in the following table as the most advantageous defeasance candidates.

Series	Maturity	Call Date	Principal	Defeasance Cost[1]
2014F	August 1, 2024	August 1, 2024	$ 8,750,000	$ 9,187,500
2014F	August 1, 2027	August 1, 2024	$ 4,270,000	$ 4,483,500
2016B	August 1, 2027	August 1, 2026	$ 1,665,000	$ 1,914,750
2016C	August 1, 2025	August 1, 2025	$ 2,500,000	$ 2,750,000
2016C	August 1, 2026	August 1, 2026	$ 2,315,000	$ 2,662,250
2018C	August 1, 2026	August 1, 2026	$ 4,400,000	$ 5,060,000
2019B	August 1, 2026	August 1, 2026	$ 1,500,000	$ 1,725,000
2020B	August 1, 2026	August 1, 2026	$ 1,750,000	$ 2,012,500
		Total	**$ 27,150,000**	**$ 29,795,500**

(1) Defeasance costs is only anticipated funds from surplus and does not included current year deposits. Assumes no interest earned on escrow

The following table details the annual budget savings by fiscal year for the proposed FY22 fall defeasance.

Budget Reduction by Fiscal Year				Total CEB
2024	2025	2026	2027	Savings
$ 10,107,500	$ 3,420,000	$ 10,760,000	$ 6,231,750	$ 30,519,250

The proposed defeasance reduces debt service by a total of $30.5 million between FY24 and FY27. The total debt service reduction attributable to the defeasance is approximately $723,750 higher than the defeasance cost because the 2027 maturities of the 2014 Series F and the 2016 Series B bonds are callable prior to its maturity date. The payment of these bonds on the call date will yield interest savings, as a result of paying off the bonds prior to maturity without interest accruing. Since 2006, MWRA has avoided $37.7 million in interest by defeasing callable bonds. In addition to the interest rate savings, the defeasance also directly targets water utility principal coming due in FY24 and FY25 to continue to manage the assessment increase pressure on MWRA's water communities.

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

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

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

BUDGET/FISCAL IMPACT:

The defeasance of these bonds will decrease the FY24 through FY27 debt service requirement by $30.5 million. The cost associated with bond counsel and financial advisory services will be paid out of the Treasury Department's professional services budget.

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: September 14, 2022
SUBJECT: Managed Cyber Security Services
NWN Corporation
Contract 7658

COMMITTEE: Administration, Finance & Audit

____ INFORMATION
__X__ VOTE

David Stokes, Sr. Program Manager, IS Security
Paula Weadick, MIS Director
Preparer/Title

Michele S. Gillen
Director of Administration

RECOMMENDATION:

To approve the recommendation of the Selection Committee to award Contract 7658, Managed Cyber Security Services, to NWN Corporation to provide cyber security services for the Authority, and to authorize the Executive Director, on behalf of the Authority, to execute said contract in an amount not to exceed $2,691,092.00, for a contract term from the Notice to Proceed to June 30, 2028.

DISCUSSION:

Since 2004, a key element of MWRA's cyber security program has been the 24/7 managed security services contract, which provides for a third-party consultant's Security Operations Center to watch MWRA's primary firewalls and intrusion prevention system devices for cyber attacks and breaches around the clock. The current contract for these services, Contract 7499, was awarded to NWN Corporation on March 16, 2016, for an initial term of 39 months, and included two 12-month options to extend. On December 19, 2018, the Board approved Amendment 1, exercising both options, for a total extension of 24 months. On September 16, 2020, the Board approved Amendment 2 to the contract for an additional 12-month extension. On May 6, 2022, the Executive Director, on behalf of the Authority, approved Amendment 3 to extent the term by six months with a contract end date of January 4, 2023. Amendments 2 and 3 provided staff additional time to respond to the significant increase in call log volume and to continue to research cyber security improvements and to procure a third party analysis as described in the next paragraph.

In advance of procuring a new Managed Security Services consultant, due to MWRA's cyber security equipment aging beyond its servicable life, a new cyber security infrastructure that would be better able to protect MWRA against current cyber security threats and technologies needed to be designed. Accordingly, in May 2021, a purchase order contract was awarded to Rutter Networking Technologies to: (1) perform a gap analysis of MWRA's current and recommended

future cyber security posture; (2) provide recommendations on technologies that MWRA should consider implementing to fortify its stance on cyber security for the next 5 years; and (3) identify cyber security service providers that could manage and support those technologies. A cyber security ecosystem centered on either Fortinet or Palo Alto technologies was determined to best meet MWRA's future needs. Subsequently, a purchase order contract (WRA-5073Q) was awarded to ePlus Technology, Inc., who is currrently implementing the Fortinet ecosystem.

The current cyber security threats, against which MWRA needs to protect itself, are ever increasing and changing. For example, in 2021, CrowdStrike, MWRA's current endpoint protection platform and service provider, tracked over 170 named threat actors, including 21 new ones (a 14% increase over the total named threat actors tracked during 2020). In October 2021, the FBI, CISA, EPA, and NSA posted a Joint Cybersecurity Advisory regarding ongoing cyber threats to U.S. Water and Wastewater Systems, and identified three specific threats:

- spearphishing personnel to deliver malicious payloads, including ransomware;
- exploitation of unsupported or outdated operating systems and software; and
- exploitation of control system devices with vulnerable firmware versions.

With respect to ransomware, CrowdStrike identified an 82% increase in ransomware-related data leaks in 2021. Ransomware attack volume rose to 623.3 million in 2021, 105% higher than 2020's total, according to another cyber security research firm – and that was before the geopolitical unrest in the Ukraine began, which significantly increased cyber attacks across the globe, especially in Europe. In June 2021, when the Internet Crime Complaint Center began tracking reported ransomware incidents in which the victim was a member of a U.S. critical infrastructure sector, four specific ransomware victims were identified in the Water and Wastewater Systems sector.

Patching vulnerable software, which made mainstream media headlines in December 2021 with the disclosed vulnerability found in the open source Log4j software, is an ever-present part of cyber security operations; during FY2022, 923 vulnerabilities were patched by Microsoft across its portfolio of software and operating systems.

During FY2022, primarily due to the change to new IP-based phones and the Fortinet firewalls, which now include additional inspection and filtering of MWRA traffic to and from the Internet, MWRA sent more than 12 billion logs to NWN for analysis, a 15% increase over FY2021. Those logs were then filtered by computer algorithm, and further validated by humans. The result of NWN's analysis was a 106% increase over FY2021 for the number of security alerts that MWRA received (240 total).

Under Contract 7658, the Fortinet ecosystem that is being implemented, along with the current CrowdStrike endpoint detection and response (EDR) protection, will be co-managed by both MWRA and NWN. The same arrangement exists under Contract 7499, and has worked well for the past six years. NWN will also continue to meet bi-weekly to update the status of open tickets and work orders, as well as review monthly service and security statistics. The firm will hunt for threats retroactively, once indicators of compromise are known. NWN will also annually recommend larger improvements to strengthen MWRA's cyber security posture.

Over the next five years, as recommended by CISA, MWRA's IT network will continue to stretch and change, moving toward a Zero Trust architecture for better cyber security. Zero Trust architecture is a cyber security framework requiring all users, whether in or outside the organization's network, to be authenticated, authorized, and continuously validated for security configuration and posture before being granted or keeping access to applications and data. More resiliency will be added so that staff can access all of MWRA's IT environment from any authorized location on any MWRA-issued device. A new work model with shared spaces, computing equipment, and phones, as well as some teleworking, will require a change in cyber security practices. Contract 7658 will provide the foundation for ensuring that MWRA maintains its cyber security protections throughout the upcoming changes, given the increasing threats and cyber attacks, especially against U.S. critical infrastructure including Water and Wastewater Systems, like MWRA.

Procurement Process

On May 11, 2022, MWRA issued a one-step Request for Qualifications Statements/Proposals (RFQ/P) that was publicly advertised in the Central Register, the Boston Herald, Banner Publications, El Mundo, and on the MWRA Supplier Portal. In addition, notice of the RFQ/P was sent directly to 12 firms.

On June 28, 2022, MWRA received six proposals. Two firms were rejected for being non-responsive. The four remaining proposals were from: (1) Digital Lantern, LLC with ForeSite ("Digital Lantern"); (2) Cyderes (f/k/a The Herjavec Group); (3) NWN Corporation with Accenture ("NWN"); and (4) Presidio Networked Solutions LLC ("Presidio").

After a preliminary review of the cost proposals, it was discovered that each Proposer presented an incomplete Price Submission Form. As a result, the Authority issued a request for a "best and final offer" from Proposers, which was due July 19, 2022.

On July 19, 2022, the best and final offer prices were received from the following Proposers:

Proposer	**Price**
Digital Lantern	$ 947,350
Cyderes	$ 2,170,000
Presidio	$ 2,289,933
NWN	$ 2,691,092

All four proposals were initially evaluated to determine which proposers would be selected for an interview with a product demonstration for the Selection Committee. The Selection Committee reviewed and scored the proposals based on the following criteria: Cost (30 points); Capacity, Qualifications and Key Personnel (25 points); Technical Approach, Organization and Management Approach (25 points); and Relevant Experience/Past Performance (20 points). The Selection Committee evaluated the proposals and determined that Presidio's proposal specifically excluded required components and services requested in the scope of work. As a result, Presidio was not selected for an interview with the Selection Committee.

The pre-interview rank and points were as follows:

Rank	Proposer	Total Points
1	Digital Lantern	435
2	NWN	429
3	Cyderes	404
4	Presidio	379

Interviews with a demonstration were held with the top three firms between August 15, 2022 and August 25, 2022. The Selection Committee sent preliminary questions seeking additional information from the three remaining firms in order to ensure the interviews with the demonstrations were streamlined. After completion of the interviews, the Selection Committee reconvened on August 26, 2022 to review the proposals, and readjust preliminary scores based on the proposers' interviews and demonstrations. The final results are summarized below.

Rank	Proposer	Total Points
1	NWN	427
2	Cyderes	406
3	Digital Lantern	387.5
4	Presidio	368.5

NWN submitted the highest cost proposal and is also the incumbent. NWN submitted an excellent proposal with a highly qualified team, proven relevant experience, and a detailed technical approach. Although the annualized cost of managed services in the proposal was 57.5% higher than the current contract, NWN's proposal includes the management of 49 devices, an increase of 51% compared to the 24 devices on the current contract. Among them is the management of the CrowdStrike endpoint detection and response solution, which will give the Managed Security Service Provider a more holistic view of network traffic. NWN's recent merger with Carousel also brings a deep bench of high-level certifications for the support of our Fortinet infrastructure.

Second-ranked Cyderes also proposed a thoughtful and competitive proposal with a well-developed project approach, which included the management of our CrowdStrike endpoint detection and response solution. However, Cyderes did not provide any past experience in the implementation of Fortinet systems during the demonstration, nor through its reference checks, and did not have the depth of expertise with Fortinet in comparison to other proposers. Further, Cyderes requested certain changes to the terms and conditions of the contract.

Digital Lantern partnered with ForeSite on its proposal. Digital Lantern presented the lowest cost proposal; however, its proposal would have required that MWRA continue its managed services contract with CrowdStrike. Additionally, Digital Lantern's demonstration was not as strong as NWN's, including during the demonstration the firm was not able to clearly articulate how the managed services would be delivered through its partnership with ForeSite.

Presidio's proposal took exception to the management of some of the devices outlined in the scope of work, and took exception to all of the terms and conditions of the contract. Consequently, these exceptions were reflected in its score.

Based on final rankings and the reasons set forth above, the Selection Committee recommends the award of this contract to NWN Corporation in the amount not to exceed of $2,691,092. If award is approved by the Board, Staff expect to issue a Notice to Proceed in October, 2022.

BUDGET/FISCAL IMPACT:

The FY23 CIP includes a budget of $5,200,000 for Contract 7658.

MBE/WBE PARTICIPATION:

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