

MASSACHUSETTS WATER RESOURCES AUTHORITY



Fiscal Year 2021 CURRENT EXPENSE BUDGET



GOVERNMENT FINANCE OFFICERS ASSOCIATION

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Budget Presentation
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Massachusetts Water Resources Authority

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July 1, 2019

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MASSACHUSETTS WATER RESOURCES AUTHORITY

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September 2020

Louis M. Taverna, Chairman
MWRA Advisory Board
100 First Avenue – 4th Floor
Boston, MA 02129

Dear Chairman Taverna:

This letter transmits to the Advisory Board MWRA's Current Expense Budget (CEB) for Fiscal Year 2021, which was approved by the MWRA Board of Directors on May 6, 2020.

The Final FY2021 Budget resulted in a combined assessment increase of 1.0%, which is lower than the 3.6% increase projected for FY2021 last year. In response to COVID-19, MWRA moved to ease the financial burden on its member communities by identifying \$25.3 million in expense reductions from the FY21 Proposed CEB to yield a 1.0% rate increase. Through the combination of expense reductions and the use of reserve funds, MWRA was able to provide rate relief to its member communities.

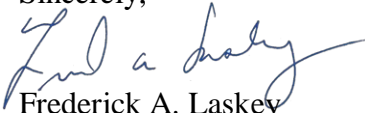
The FY2021 total expenses are \$791.4 million, of which 60.9% or \$481.9 million is for capital financing costs, \$252.2 million for direct expenses, and \$57.3 million for indirect expenses. The overall expenses decreased by \$0.9 million or 0.1% from the FY2020 budget.

When establishing expense projections, the main emphasis was on the FY2021 budget, but with the goal of continuing to utilize MWRA's multi-year rate management strategy to provide sustainable and predictable assessment increases to our member communities for the long term. To achieve this goal again this year, MWRA has continued to employ conservative budgeting and fiscal discipline which includes controlled spending, capital project prioritization, and use of historical variable rate assumptions. The combination of these measures results in assessment increase projections no greater than 3.6% for the next three years.

The FY2021 budget continues to address the smoothing of rate revenue changes at the water and sewer utility level.

Additional budget information and a copy of this document are available online at www.mwra.com. Questions or comments on this document should be directed to the MWRA Budget Department at (617) 788-2206. Thank you for your continued support.

Sincerely,


Frederick A. Laskey
Executive Director

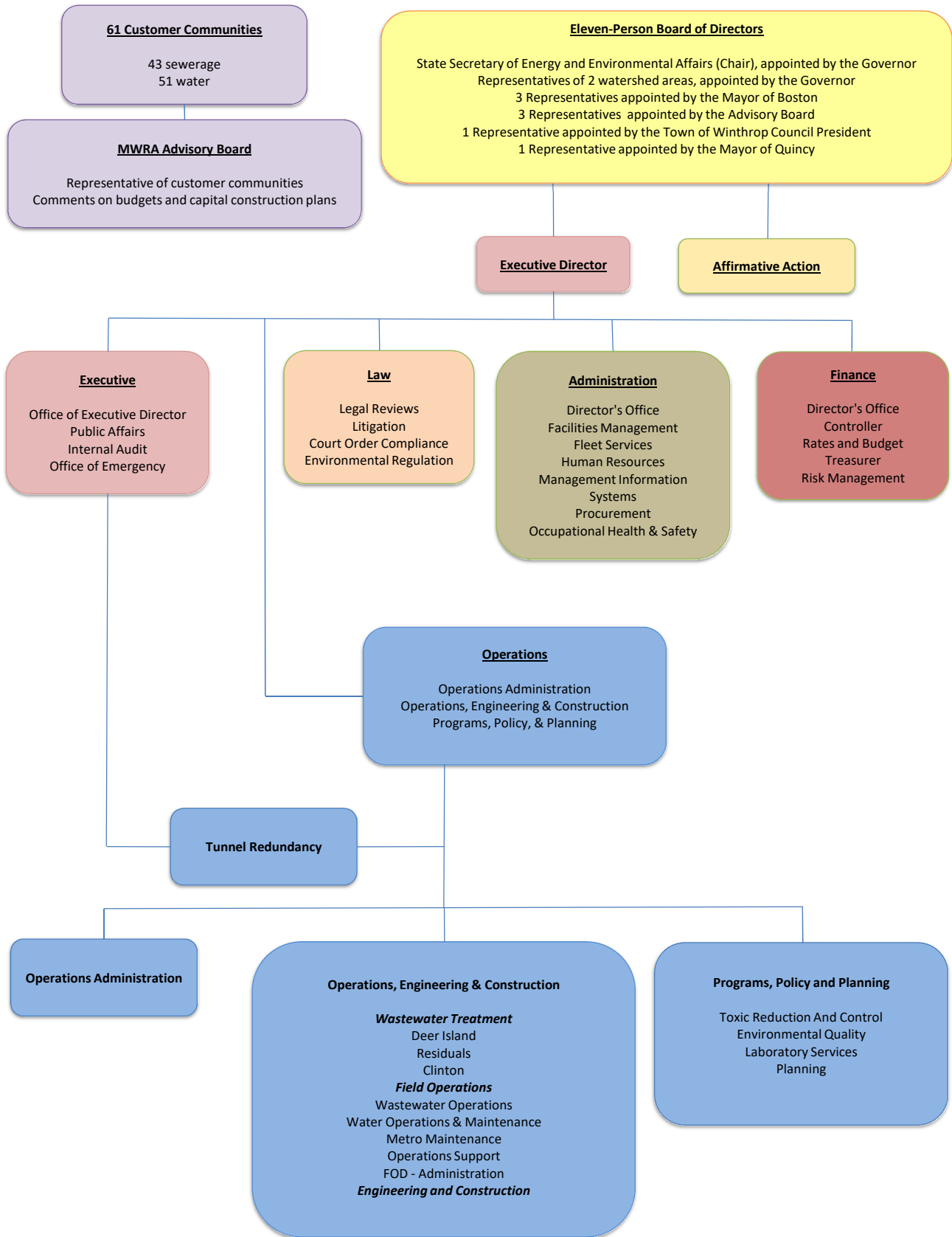


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MWRA AT A GLANCE

Purpose

Provide wholesale water and sewer services to customer communities, funded primarily through rates and charges

Legal Status

Massachusetts public authority established by an enabling act in 1984 – Chapter 372 of the Acts of 1984 as most recently amended January 2019

Management

- 11-member Board of Directors (3 Governor appointees, 3 Mayor of Boston appointees, 1 City of Quincy appointee, 1 Town of Winthrop appointee, and 3 Advisory Board appointees)
- 1 Executive Director (5 divisions: Office of the Executive Director, Operations, Finance, Administration, Law)

Advisory Board

Established by the enabling act to make recommendations to the MWRA on the MWRA budget and programs and to serve as liaison to the customer communities

Service Area

- 61 customer communities (43 sewerage, 54 water)
- 3.0 million people (44% of MA population)
- 5,500 businesses

FY21 Operating Budget (\$ in millions)

Direct Expenses	\$252.2
Indirect Expenses	\$57.3
<u>Capital Finance</u>	<u>\$481.9</u>
Total Operating Budget	\$791.4
Revenues*	\$791.4

**97.2% of Revenues raised from rate assessments*

Bond Ratings - General Revenue Bonds (senior/subordinate)

Moody's -	Aa1/Aa2
S&P -	AA+/AA
Fitch -	AA+/AA

Capital Improvement Program

- Total CIP spending: \$8.7 billion since 1984
- Total Current Indebtedness \$4.9 billion
- FY21 CIP Budget: \$266.2 million

Water System

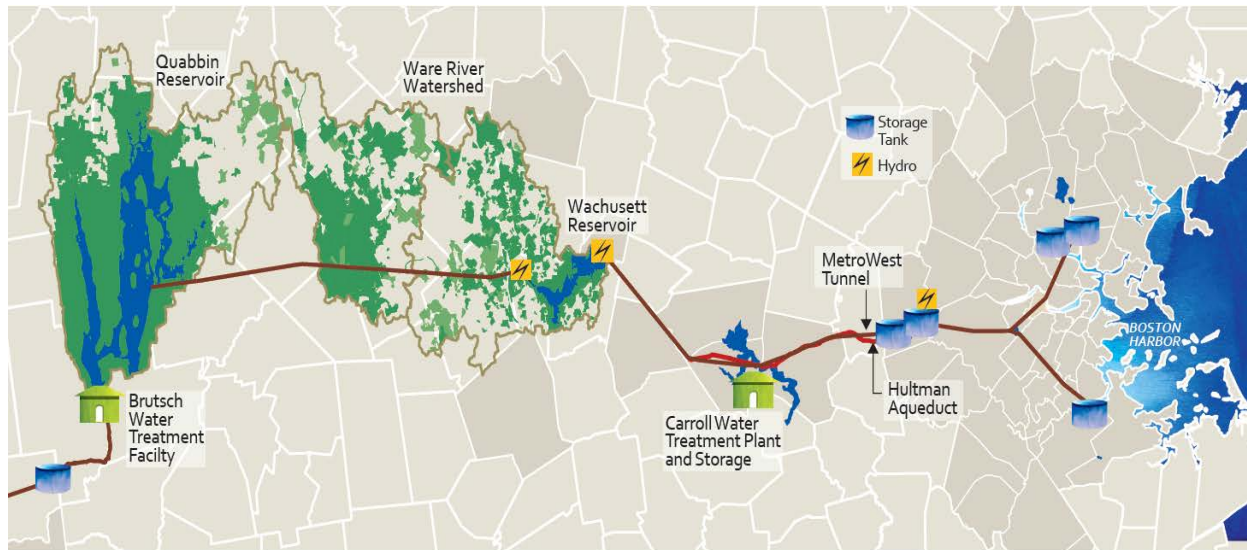
- 2 protected reservoirs
 - Quabbin
 - Wachusett
- 2 water treatment facilities
 - John J. Carroll
 - William A. Brutsch
- 350 miles of distribution infrastructure including aqueducts, deep rock tunnels, and pipeline
- 14 active storage reservoirs and standpipes
- 11 active pumping stations
- Average Daily flow: 200 mgd
- Safe yield: 300 mgd
- Treatment Capacity: 405 mgd
- Percentage of capacity utilized: 67%*
 - *based on safe yield*

Wastewater System

- 240 miles of sewer pipelines and cross-harbor tunnels
- 13 pump stations
- 1 screening facility
- 1 gate house
- 6 CSO treatment/storage facilities
- 2 wastewater treatment plants
 - Deer Island Treatment Plant
 - Clinton Wastewater Treatment Plant
- 4 remote headworks
- 1 Pellet Plant for residuals processing
- Average daily flow: 365 mgd
- Peak wet weather capacity: 1,270 mgd
- Percentage of capacity utilized on average: 30%

Renewable Energy

Approximately 27% of MWRA's energy requirement was self-generated from renewable sources (biomass, hydro, wind, & solar assets) in FY20.



MWRA's water comes from the Quabbin Reservoir, 65 miles west of Boston, and the Wachusett Reservoir, 35 miles west of Boston. The Quabbin alone holds a 4-year supply of water.

The reservoirs are filled naturally. Rain and snow fall onto watersheds (protected land around the reservoirs) and eventually turn into streams that flow into the reservoirs. This water comes into contact with soil, rock, plants and other material as it follows its path. This process helps to clean the water.

The Quabbin and Wachusett Reservoirs are protected. Over 85% of the watershed lands that surround the reservoirs are covered in forest and wetlands. About 75% of the total watershed land cannot be built on. The natural undeveloped watersheds help to keep MWRA water clean and clear. Because they are well-protected, the water in the Quabbin and Wachusett Reservoirs is of very high quality. The MWRA has won numerous awards for quality, taste, and sustainability.

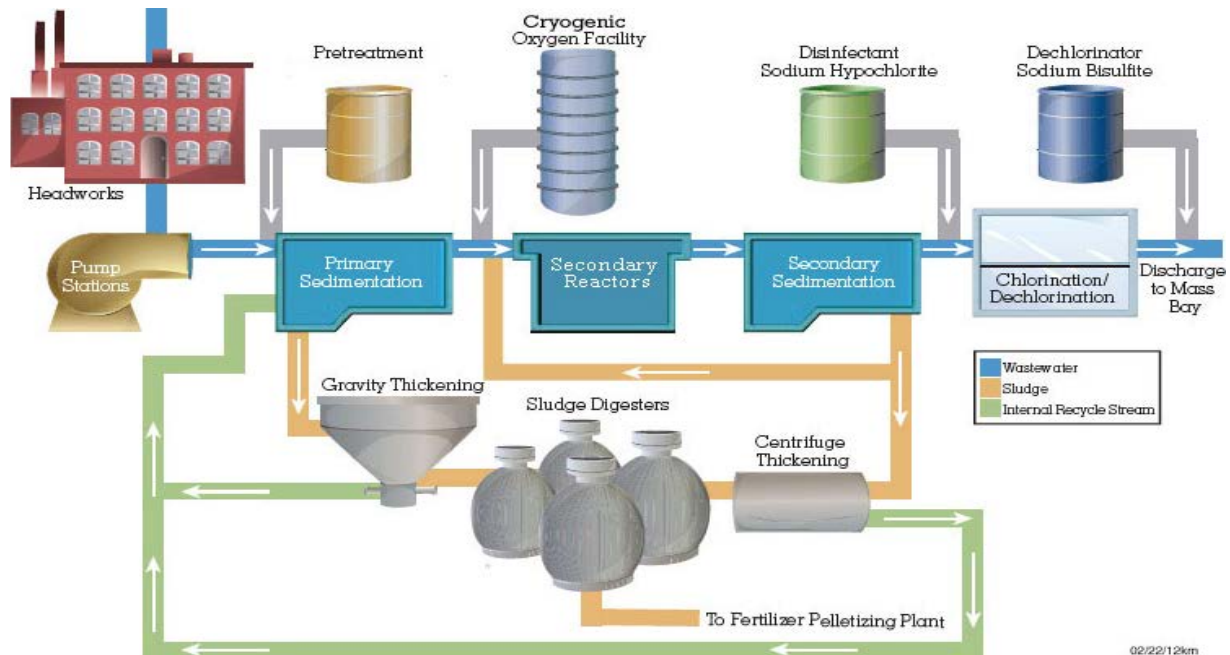
Water for most MWRA communities is treated at the Carroll Water Treatment Plant in Marlborough, Massachusetts. Water from the Quabbin and Wachusett Reservoirs enters the plant through the Cosgrove or Wachusett Aqueduct. The treated water leaves the plant through the MetroWest Water Supply Tunnel and the Hultman Aqueduct. Water from the Quabbin Reservoir for Chicopee, South Hadley Fire District #1 and Wilbraham is treated at the Brutsch Water Treatment Facility in Ware, Massachusetts, and leaves the plant through the Chicopee Valley Aqueduct.

For MetroWest and Metro Boston communities, treated water is sent through the MetroWest Water Supply Tunnel and the Hultman Aqueduct and is stored in covered tanks. From there it is drawn into distribution mains and many smaller community pipes. For Chicopee Valley Area Communities, treated water is sent through the Chicopee Valley Aqueduct to the local distribution mains and smaller community pipes. Water meters log the water entering each community.

Local pipes serve each street in the customer communities and eventually carry water into buildings. Meters installed by the local communities measure the amount of water delivered to each home or business.

To maintain and measure water quality, MWRA tests over 1,600 water samples per month, from the reservoirs all the way to household taps.

MWRA AT A GLANCE – Wastewater System



Water is flushed through a building's pipes into customer community sewers. These 5,100 miles of local sewers transport the wastewater into 227 miles of MWRA interceptor sewers. The interceptor sewers, ranging from 8 inches to 11 feet in diameter, carry the region's wastewater to two MWRA treatment plants. Most communities' wastewater flows to the Deer Island Treatment Plant with the Clinton Wastewater Treatment Plant serving the town of Clinton and the Lancaster Sewer District.

The following describes the Deer Island treatment process:

Collection and Pumping: Sewage is piped to headworks where bricks, logs and other large objects are screened out. Pumps draw the screened sewage through deep-rock tunnels under Boston Harbor to Deer Island.

Preliminary Treatment: Mud and sand settle in a tank called a grit chamber. This material, known as grit and screenings, is taken to a landfill for environmentally safe disposal.

Primary Treatment: The sewage then flows to primary settling tanks where up to 60% of the solids in the waste stream settle out as a mixture of sludge and water.

Secondary Treatment: Plant oxygen is added to the wastewater to speed up the growth of microorganisms. These microbes then consume the wastes and settle to the bottom of the secondary settling tanks. After secondary treatment, 80-90% of human waste and other solids have been removed.

The treated wastewater is disinfected before it is discharged to the Massachusetts Bay. The treated wastewater, known as effluent, travels through a 9.5-mile Outfall Tunnel bored through solid rock more than 250 feet below the ocean floor. The tunnel's last mile and a quarter include 55 separate release points known as "diffusers." With water depths up to 120 feet, this outfall provides a much higher rate of mixing and/or dilution than possible with discharges into the shallow waters of Boston Harbor.

Sludge from primary and secondary treatment is processed further in sludge digesters, where it is mixed and heated to reduce its volume and kill disease-causing bacteria. It is then transported through the Inter-Island Tunnel to the pelletizing plant in Quincy, Massachusetts where it is dewatered, heat-dried and converted to a pellet fertilizer for use in agriculture, forestry and land reclamation.



Executive Summary

Executive Summary

MISSION

The Massachusetts Water Resources Authority (MWRA) is an independent public authority of the Commonwealth of Massachusetts that provides wholesale water and sewer services to its member communities and funds its operations primarily through member community assessments and charges. MWRA's mission is to provide reliable, cost-effective, high-quality water and sewer services that protect public health, promote environmental stewardship, maintain customer confidence, and support a prosperous economy.

HISTORY

Created by the Massachusetts legislature in 1985 (Chapter 372 of the Acts of 1984), MWRA assumed possession and control of the water and sewer systems, including facilities, properties, and the right to utilize water withdrawn from system reservoirs that had formerly been the Sewerage and Waterworks Divisions of the Commonwealth of Massachusetts Metropolitan District Commission (MDC). The Commonwealth, under the management of the MDC Watershed Management Division (now the Department of Conservation and Recreation – Division of Watershed Management), retained ownership of real property, including the reservoirs and watersheds, the maintenance of which are included in MWRA's operating budget.

In 1985, responsibility for water distribution for 46 municipalities and sewage collection and treatment for 43 municipalities was transferred to the MWRA. In 1987, the legislature also transferred responsibility to operate and maintain the Clinton Wastewater Treatment Plant from the Commonwealth to the MWRA. New communities have the opportunity to join the MWRA water and sewer systems, and, over the years, the number of member communities has increased. Since 1985, the MWRA has invested over \$8.7 billion to modernize and improve the wastewater and waterworks systems serving its 61 member communities. MWRA's facilities span from the Quabbin Reservoir in western Massachusetts to the Deer Island Treatment Plant in Boston Harbor. In Fiscal Year 2020, the system served approximately 3.0 million people and more than 5,500 businesses.

The Enabling Act also established the MWRA Advisory Board to represent the cities and towns in the service area. The Advisory Board appoints three members of the MWRA Board of Directors, approves the extension of water and sewer services to additional communities, and reviews and makes recommendations on MWRA's annual Current Expense Budget and Capital Improvement Program.

MWRA ORGANIZATION

The MWRA has five separate divisions and the Affirmative Action and Compliance Unit Department (AACU). Each division provides operations or support services to carry out MWRA's activities under the direction of the Executive Office. MWRA's organizational structure is included in the document immediately preceding this page.

The **Executive Office** provides centralized MWRA management, direction, and policy development. The budget includes funds for the Office of the Executive Director, the Board of Directors, the Advisory Board, and other advisory committees. It includes the following departments: Office of Emergency Preparedness; Public Affairs; and Internal Audit.

The **Operations Division** operates the water and wastewater treatment systems; the water transmission and distribution system; the wastewater collection, transport, and combined sewer overflow (CSO) systems; and the residuals processing facility. It also provides laboratory and engineering and construction services; enforces sewer use regulations and seeks to limit the discharges of toxic materials; manages environmental studies of Boston Harbor and Massachusetts Bay; monitors water quality; and includes the Planning and Coordination Department.

The **Administration Division** is responsible for managing the support services functions of the Authority. The Administration is comprised of seven departments: Director's Office; Facilities; Fleet Services; Human Resources; Management Information Systems (MIS); Procurement; and Occupational Health and Safety (OHS). The Administration Division performs a multitude of functions that support the daily operations and ensure the implementation of the Authority's long-term goals and strategies.

The **Finance Division** is responsible for managing the finance functions of the Authority. Finance Division is comprised of five departments: Director's Office; Rates and Budget; Treasury; Controller; and Risk Management. The Finance Division ensures that a variety of fiscal management systems are in place to monitor and control the Current Expense Budget (CEB) and Capital Improvement Program (CIP).

The **Law Division** provides legal counsel to all divisions on compliance with federal and state law, real estate matters, labor and employment law, litigation, and construction issues. Division attorneys provide or supervise through outside counsel the representation of MWRA in all litigation.

The **Affirmative Action and Compliance Unit (AACU) Department** develops, administers and monitors compliance of Affirmative Action Plan programs and policies by ensuring equal opportunity and non-discrimination in employment and equitable access of Minority/Women Business Enterprises (MBE/WBE) in Authority procurement activities.

GOALS AND PERFORMANCE MEASURES

The MWRA Business Plan was first implemented in 1997 as a strategic road map to present specific steps for the organization to undertake to improve customer service, upgrade operations and maintenance and pursue aggressive rates management. In 2000, MWRA adopted a five-year Strategic Business Plan. Since then, some of the goals have been completed, and new ones have been added. MWRA's five-year Strategic Business Plan FY2016-2020 emphasized improvements in service and systems and included performance targets for operating the water and wastewater systems and maintaining new and existing facilities. The FY2016-2020 Business Plan can be found at <http://www.mwra.com/publications/businessplan/2016-2020mwrabp.pdf>. The MWRA Board of Directors will review the FY2021-2025 Business Plan during the fall of 2020. MWRA's Water System Master Plan and Wastewater System Master Plan present a long-term vision of the capital development needs of the water and wastewater systems and the actions planned to meet those needs. The Master Plan

can be found at <http://www.mwra.com/02org/html/masterplan.htm>, Both the Master Plan and the Business Plan are integral components to MWRA 's goal of carrying out its operating programs and capital projects while providing sustainable, predictable and reasonable assessments to its customer communities. To that end, the MWRA applies a multi-year rates management strategy to provide sustainable and predictable assessment increases to its member communities. The need to achieve and maintain a balance between these two goals is a critical issue in the development of both MWRA's operating and capital budgets.

During the year, MWRA measures actual performance on a monthly basis using various reporting tools. The monthly Financial Staff Summary reports on actual spending versus both the operating and capital budgets and provides summary explanations of the variances at the line item level. At least twice a year staff prepares projections for the fiscal year-end with a similar level of explanations. These reports are posted monthly with the Board of Directors' package at <http://www.mwra.com/02org/html/bodmtg.htm> - The performance indicator reports (published by MWRA as the Orange Notebook) captures a variety of parameters regarding performance of each major functional area of the Authority, on a quarterly basis. It can be found at <http://www.mwra.com/quarterly/orangenotebook/orangenotebook.htm>. Please see Appendix I.

BUDGET PROCESS OVERVIEW

Each year, MWRA prepares a Current Expense Budget (CEB) that reflects the best available information for anticipated expenditures and revenues. In parallel, MWRA prepares a Capital Improvement Program (CIP) Budget.

The MWRA operates on a fiscal year that runs from July 1 through June 30. The budget process for both budgets begins in the fall with formal kick-off meetings in September where MWRA staff are given guidelines and targets for their budget requests. After review by the Budget Department and MWRA senior staff, a Proposed CIP Budget is typically presented to the Board of Directors in December. The Capital Financing portion of the Current Expense Budget is determined based on existing debt service and projected borrowing needs. Typically in February, after further review with MWRA senior staff, the Budget Department presents the Proposed CEB to the Board of Directors, after which the Proposed CEB is then transmitted to the Advisory Board, with the projected assessment increase Authority-wide and for each customer community. The Advisory Board then has sixty days to review, comment, and provide recommendations on both budgets. MWRA also hosts a public hearing to solicit comments on the budgets and community assessments from citizens in its service area. Typically in May, the Advisory Board transmits its comments to the MWRA to which written responses are provided.

Typically at its May meeting, MWRA's Board of Directors holds hearings on the budget to review recommendations by the Advisory Board and new information available since the budget was developed. Staff incorporates Board decisions from the hearings and presents a final budget and final assessments for approval at the June Board of Directors meeting.

FY21 BUDGET SUMMARY

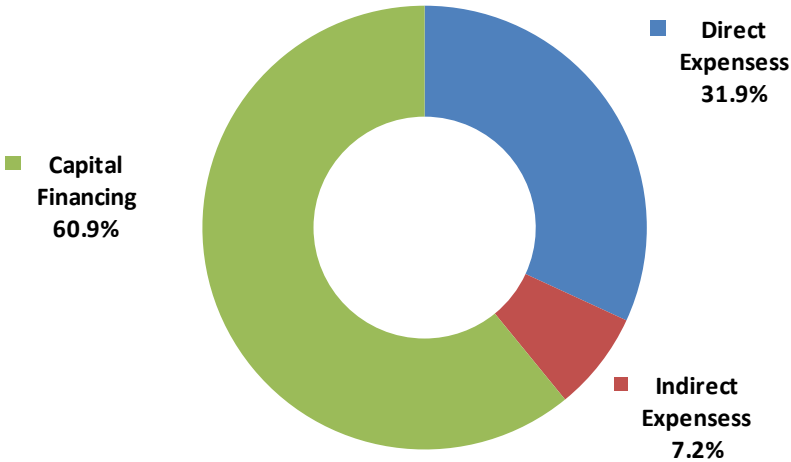
The Proposed FY21 Current Expense Budget (CEB) was submitted to the Advisory Board at the February 2020 Board meeting and included a 3.63% combined assessment increase. As a result of the economic impacts of the Coronavirus Pandemic, MWRA and Advisory Board staff have undertaken several initiatives to provide financial relief to MWRA's member communities. One of those initiatives has been to reduce the combined assessment increase of 3.63% in the FY21 Proposed Budget to 1.00% in the FY21 Final Budget. In order to achieve that, staff have identified \$25.3 million in expense reductions that have been incorporated into the FY21 Draft Final Budget. Of the \$25.3 million, \$2.8 million is from Direct Expenses, \$0.4 million is from Indirect Expenses, and \$22.1 is from Debt Service. In addition, \$1.5 million of Rate Stabilization will be used in FY21.

The Final FY21 Budget projects a combined increase in rates and charges of 1.0%. Total expenses are \$791.4 million, a reduction of \$0.9 million or 0.1% from the FY20 Budget. Capital Financing costs remain the largest component of the CEB and account for 60.9% of total expenses. The Final FY21 Budget assumes no offset for Debt Service Assistance (DSA), however, \$1.5 million in Rate Stabilization was utilized to yield the Rate Revenue increase of 1.0% to provide financial relief to its member communities during the pandemic. The Final FY21 Rate Revenue Requirement is \$769.4 million, an increase of \$7.6 million over the FY20 Budget.

Total expenses include \$481.9 million for Capital Financing costs and \$309.5 million for operating expenses, of which \$252.2 million is for Direct Expenses and \$57.3 million is for Indirect Expenses. The \$0.9 million reduction in total expenses is mainly due to lower Capital Financing costs of \$11.2 million, offset by higher Direct Expenses of \$3.9 million and higher Indirect Expenses of \$6.4. Higher Direct Expenses are driven by higher Wages & Salaries due to the addition of five positions for the Tunnel Redundancy Department. Higher Indirect Expenses are driven by increased payments associated with the new cross-harbor electrical cable (HEEC) as well as increased pension contributions.

The Final FY21 Budget revenues, excluding rate revenue, total \$22.0 million, a decrease of \$8.5 million or 27.9% from the FY20 Budget. The Final FY21 Budget for non-rate revenue includes \$15.3 million in Other User Charges and Other Revenue, \$5.2 million for Investment Income, and \$1.5 million of Rate Stabilization Reserves. Lower projected interest rates reduced investment income by \$10.3 million in FY21 vs. FY20.

Approved FY21 Budget



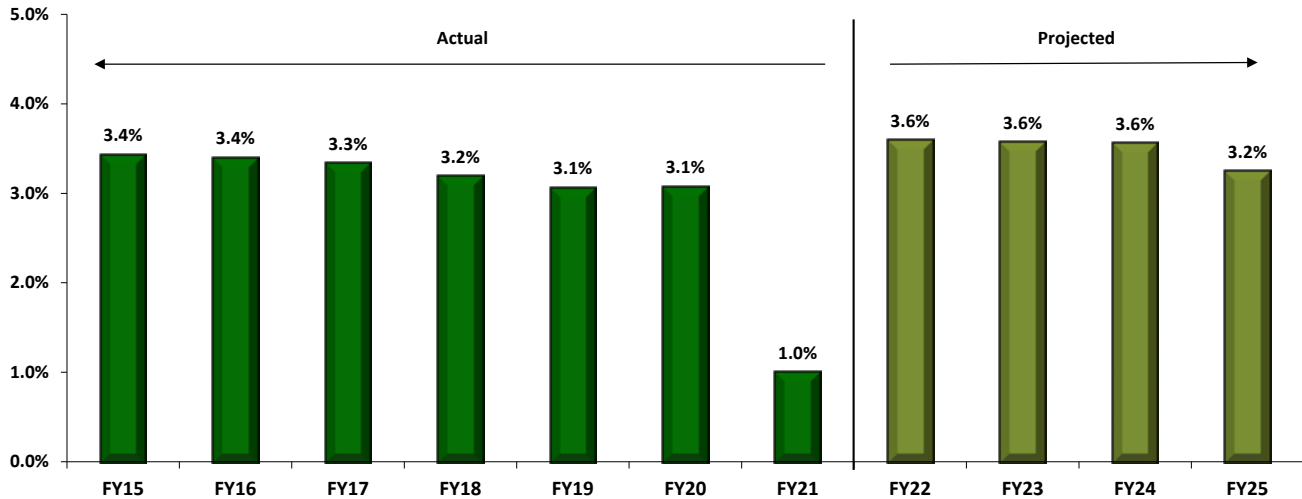
MWRA continues to pursue a rate management strategy which promotes sustainable and predictable assessments. The Final FY21 Budget has a combined utilities assessment increase of 1.0% with Rate Revenues totaling \$769.4 million. Rate Revenues account for 97.2% of projected FY21 revenues.

The table below shows MWRA’s Final FY21 Budget for revenue and expenses compared with the FY20 Budget and FY19 Actuals. Changes from FY20 to FY21 are described in the Revenue and Expense section of the Executive Summary.

TOTAL MWRA	FY18 Actuals	FY19 Actuals	FY20 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 Final vs. FY20 Final	
						\$	%
EXPENSES							
WAGES AND SALARIES	\$ 100,875,415	\$ 102,331,904	\$ 107,776,260	\$ 109,953,483	\$ 112,919,298	\$ 2,965,815	2.70%
OVERTIME	4,571,567	5,208,556	4,484,053	4,898,965	5,019,295	120,330	2.46%
FRINGE BENEFITS	20,068,927	19,982,221	20,846,345	21,717,533	22,402,224	684,691	3.15%
WORKERS' COMPENSATION	2,147,063	2,717,568	1,862,942	2,354,256	2,476,655	122,399	5.20%
CHEMICALS	9,659,734	10,891,948	10,998,340	11,811,222	12,091,255	280,033	2.37%
ENERGY AND UTILITIES	21,997,423	24,446,278	23,151,712	24,454,796	24,200,845	(253,951)	-1.04%
MAINTENANCE	29,067,175	30,650,570	29,737,299	32,726,954	32,618,571	(108,383)	-0.33%
TRAINING AND MEETINGS	314,745	499,836	288,046	504,394	405,264	(99,130)	-19.65%
PROFESSIONAL SERVICES	6,955,638	6,194,703	6,588,621	8,295,315	8,377,283	81,968	0.99%
OTHER MATERIALS	6,293,935	6,987,854	5,697,623	6,867,239	6,706,916	(160,323)	-2.33%
OTHER SERVICES	22,794,735	23,769,299	24,306,369	24,683,370	24,983,777	300,407	1.22%
TOTAL DIRECT EXPENSES	\$ 224,746,357	\$ 233,680,737	\$ 235,737,610	\$ 248,267,527	\$ 252,201,383	\$ 3,933,855	1.58%
INSURANCE	\$ 3,231,510	\$ 2,748,983	\$ 2,615,588	\$ 2,611,222	\$ 3,059,218	\$ 447,996	17.16%
WATERSHED/PILOT/DEBT	23,756,756	23,411,908	22,075,059	26,833,600	26,422,138	(411,462)	-1.53%
HEEC PAYMENT	782,135	1,191,990	4,429,316	4,429,316	7,215,200	2,785,884	62.90%
MITIGATION	1,574,890	1,614,263	1,651,068	1,654,618	1,692,344	37,726	2.28%
ADDITIONS TO RESERVES	821,116	1,881,797	2,094,284	2,094,284	1,815,077	(279,207)	-13.33%
RETIREMENT FUND	3,277,369	7,000,000	7,315,000	7,315,000	11,000,000	3,685,000	50.38%
POSTEMPLOYMENT BENEFITS	5,035,422	5,574,152	5,962,457	5,962,457	6,065,490	103,033	1.73%
TOTAL INDIRECT EXPENSES	\$ 38,479,198	\$ 43,423,093	\$ 46,142,772	\$ 50,900,497	\$ 57,269,467	\$ 6,368,970	12.51%
STATE REVOLVING FUND	\$ 80,637,871	\$ 84,227,800	\$ 88,126,851	\$ 92,797,295	\$ 97,811,162	\$ 5,013,867	5.40%
SENIOR DEBT	281,126,702	287,497,793	242,220,498	202,299,609	258,730,904	56,431,295	27.89%
SUBORDINATE DEBT	77,847,551	84,788,872	137,431,499	169,609,844	96,339,599	(73,270,245)	-43.20%
LOCAL WATER PIPELINE CP	1,482,833	2,540,172	2,117,483	5,846,827	5,686,864	(159,963)	-2.74%
CURRENT REVENUE/CAPITAL	13,200,000	14,200,000	15,200,000	15,200,000	16,200,000	1,000,000	6.58%
CAPITAL LEASE	3,217,060	3,217,060	3,217,060	3,217,060	3,217,060	-	0.00%
DEBT PREPAYMENT	10,900,000	7,100,000	5,000,000	5,000,000	3,900,000	(1,100,000)	-22.00%
DEBT SERVICE ASSISTANCE	(1,336,306)	(1,834,965)	(890,239)	(890,239)	-	890,239	-100.00%
HEEC CAPACITY RESERVE FUND	6,532,146	-	-	-	-	-	0.00%
TOTAL DEBT SERVICE	\$ 473,607,856	\$ 481,736,732	\$ 492,423,152	\$ 493,080,395	\$ 481,885,588	\$ (11,194,807)	-2.27%
TOTAL EXPENSES	\$ 736,833,410	\$ 758,840,562	\$ 774,303,534	\$ 792,248,420	\$ 791,356,438	\$ (891,982)	-0.11%
REVENUE & INCOME							
RATE REVENUE	\$ 717,054,000	\$ 739,042,200	\$ 761,767,000	\$ 761,767,000	\$ 769,385,000	\$ 7,618,000	1.00%
OTHER USER CHARGES	9,019,144	9,346,469	9,941,799	9,216,425	9,208,367	(8,058)	-0.09%
OTHER REVENUE	12,230,488	6,947,076	7,508,368	5,761,022	6,095,403	334,381	5.80%
RATE STABILIZATION/HEEC RESERVE	-	-	-	-	1,500,000	1,500,000	100.00%
INVESTMENT INCOME	12,755,559	16,985,523	12,985,470	15,503,973	5,167,668	(10,336,305)	-66.67%
TOTAL REVENUE & INCOME	\$ 751,059,191	\$ 772,321,268	\$ 792,202,637	\$ 792,248,420	\$ 791,356,438	\$ (891,982)	-0.11%

The graph below represents historical and projected assessment changes based on the Final FY21 Budget. The planning estimates project assessment increases at 1.0% in FY21 and 3.6% in years FY22 through FY24, before dropping to 3.2% in FY25. Rates at the combined utilities level are projected to increase at a slower pace beginning in FY25.

**MWRA Combined Utilities
Historical and Projected Rate Revenue Changes**



FY21 GOALS AND MAJOR INITIATIVES

Ensuring a safe and reliable source of drinking water to MWRA customers, and wastewater discharges that meet all applicable regulations drives both capital and current expense budget costs. The MWRA has identified Authority-wide major initiatives to support the five strategic priorities integral to MWRA’s mission that were identified for action in MWRA’s Five-Year Strategic Business Plan FY2016-2020. The Five-Year Strategic Business Plan FY2016-2020 can be found at <http://www.mwra.com/publications/businessplan/2016-2020mwrabp.pdf>. At the Division and Department-level, additional and more specific goals and initiatives are identified. The FY21-25 Strategic Business Plan will be finalized shortly and will supplant the prior business plan.

I. Drinking Water Quality and System Performance

- Begin Metro Tunnels Redundancy project to ensure delivery of reliable and cost-effective water services to customer communities.
- Continue to support core operations to ensure compliance with regulatory requirements.

II. Wastewater Management and System Performance

- Implement new National Pollutant Discharge Elimination System (NPDES) Permits for the Clinton Wastewater Treatment Plant.
- Continue to meet or surpass environmental compliance standards for the Deer Island Treatment Plant as required by the National Pollutant Discharge Elimination System (NPDES) permit and air quality permits.

III. Infrastructure Management and Resilience

- Continue to invest in asset protection to ensure adequate availability of equipment and facilities to support core operations.

- Continue to prepare for severe weather and other critical events that could affect the water and wastewater delivery systems.

IV. Finance and Management

- Continue to plan and develop long-term strategies to ensure sustainable and predictable assessments to MWRA communities at both the combined and the utility level.
- Secure favorable financing terms to support both the capital and current expense budgets and preserve the Authority's credit rating.
- Invest in cyber security protection.
- Continue to focus on succession planning with emphasis on training for current employees.

V. Environmental Sustainability

- Continue to aggressively pursue renewable and sustainable energy resources to reduce the environmental impacts of daily operations, increase energy efficiencies, and reduce overall operating costs.
- Continue to identify, assess, and implement initiatives to reduce energy demand and increase energy self-generation in MWRA's system.
- Enter into a new Memorandum of Understanding with Eversource for payment of energy reduction incentives.
- Pursue grant-funding and cost-sharing arrangements to defray costs of implementing new energy reduction and energy self-generation projects.
- Continue to monitor climate change, research and move forward with plans to reduce impacts of sea level rise and storm surge events on MWRA infrastructure.

FY20 ACCOMPLISHMENTS

I. Drinking Water Quality and System Performance

- Met water quality and treatment standards in the drinking water system during FY20.
- Developed and trained community staff in preparation for EPA's Unregulated Contaminant Monitoring Rule 4 program which commenced in 2018 and continues into 2020. Also continued to participate in the Unregulated Contaminant Rule 4 sampling program.
- Distributed \$24.7 million in interest-free loans to member water communities plus an additional \$5.2 million for lead service line replacement

II. Wastewater Management and System Performance

- Deer Island received the Platinum Peak Performance Award for 2019 from the National Association of Clean Water Agencies (NACWA) for the 13th continuous year (anticipated late 2020). The award recognizes facilities for outstanding compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. DITP has had no permit violations for over 13 years.

- Deer Island met secondary permit limits at all times, treating on average 99% of flows with full secondary treatment. More detailed information about DITP's NPDES Permit compliance is available on the Transparency/Performance Indicator section of MWRA's website.
- Processed nearly 112 tons per day of sludge at the Pelletization Plant and disposed of 5,461 tons of grit and screenings.
- Distributed \$40.2 million in grants and interest-free loans to member sewer communities for Infiltration/Inflow reduction and sewer system rehabilitation projects.

III. Infrastructure Management and Resilience

Maintenance

- The Operations Division spent \$24.7 million on maintenance of which \$10.9 million was for materials and \$13.8 million was for services.
- In water system, exercised 838 and replaced 10 mainline valves; exercised 440 and replaced four blow-off valves.
- In the wastewater system, inspected 27 miles and cleaned 29 miles of MWRA pipeline. Inspected 747 structures and rehabilitated 51 manholes. Also inspected 41 and cleaned 70 inverted siphon barrels.
- Eversource completed the installation of a new 115 kVA cross-harbor marine power cable to Deer Island, which replaced the existing cable and added redundant fiber optic lines for network and phone communications during August 2019. DITP operated on CTG power-only for 18 days continuously without incident during the final phase of cable installation in August.

Capital Improvements

- FY20 spending totaled \$159.0 million broken out by category as follows: \$97.2 million for Water System projects, \$58.1 million for Wastewater System projects, and \$3.7 million for Business and Operations Support projects.

IV. Finance and Management

- Maintained MWRA's strong credit ratings, Aa1, AA+, AA+ from Moody's, Standard & Poor's and Fitch respectively. MWRA's credit ratings from all three major agencies are only one ratings step below the highest rating of AAA. These high credit ratings enable MWRA to borrow at very advantageous interest rates helping to minimize debt service expenses.
- Completed a \$620.6 million refunding and new money bond transaction on November 1, 2019. This transaction was the first time MWRA has sold taxable new money and refunding bonds. The transaction carried an All-in True Interest Cost of 2.66% with an average life of 9.7 years. This is the second lowest All-in True Interest Cost MWRA has observed and the lowest cost which is particularly notable since 96% of the bonds were federally taxable, which typically carries a higher interest cost. The \$50 million federally taxable new money portion was deposited into the Construction Fund to pay for capital projects. The federally taxable refunding totaled \$547.8 million and the tax-exempt refunding totaled \$22.8 million. The refunding resulted in \$73.3 million in present value savings and \$96.0 million in gross debt service savings between FY20 and FY42.

- Executed a \$10.6 million and a \$31.1 million defeasance of outstanding senior principal in September 2019 and June 2020 respectively. These defeasances reduced the debt service requirement between FY20 and FY24 by a total of \$42.5 million reducing the rate of increase to the Rate Revenue Requirement in those years. The transactions also resulted in \$1.3 million in interest savings by paying bonds on their call dates.
- Completed a \$52.5 million long-term borrowing and a \$40.1 million interim borrowing with the Massachusetts Clean Water Trust in September 2019 and April 2020 respectively. The long-term borrowings are for a term of 20 years at a 2.0% interest rate.
- Prepared submission of MWRA's Comprehensive Annual Financial Report (CAFR) to the Government Finance Officers Association

V. Environmental Sustainability

- Received a total of \$725,000 in revenue for energy generated at numerous facilities including hydroelectric from Oakdale Station and Cosgrove Station; wind from Charlestown Pump Station; and solar from Carroll Water Treatment Plant. This does not include avoided energy costs at other renewable energy sites where generated power is use on-site
- Continue to leverage MWRA's self-generation assets and participation in the competitive energy market to offset operating costs. The combined impact of participation in the Independent System Operators of New England (ISO-NE) load response program, non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits, and receipt of utility rebates for CEB-funded efficiency projects resulted in \$2.8 million in revenue for FY20. MWRA also avoided approximately \$714,000 in capacity charges through operation of self-generation assets during peak load events as called by the regional transmission organization (ISO New England).
- Deer Island self-generated 29% of the plant's total required power during FY20.

SOURCES AND USES OF FUNDS

Funds supporting the Current Expense Budget are not subject to appropriation (with the exception of State debt service assistance). The table to the right shows MWRA's sources and uses of funds for the Final FY21 Budget.

Revenue

MWRA is required by its enabling act to balance its budget each year by establishing user assessments for water and sewer services that provide funds sufficient to, among other things, recover the cost of operations (excluding depreciation), maintenance and improvements, and debt service, as well as meeting required reserve levels.

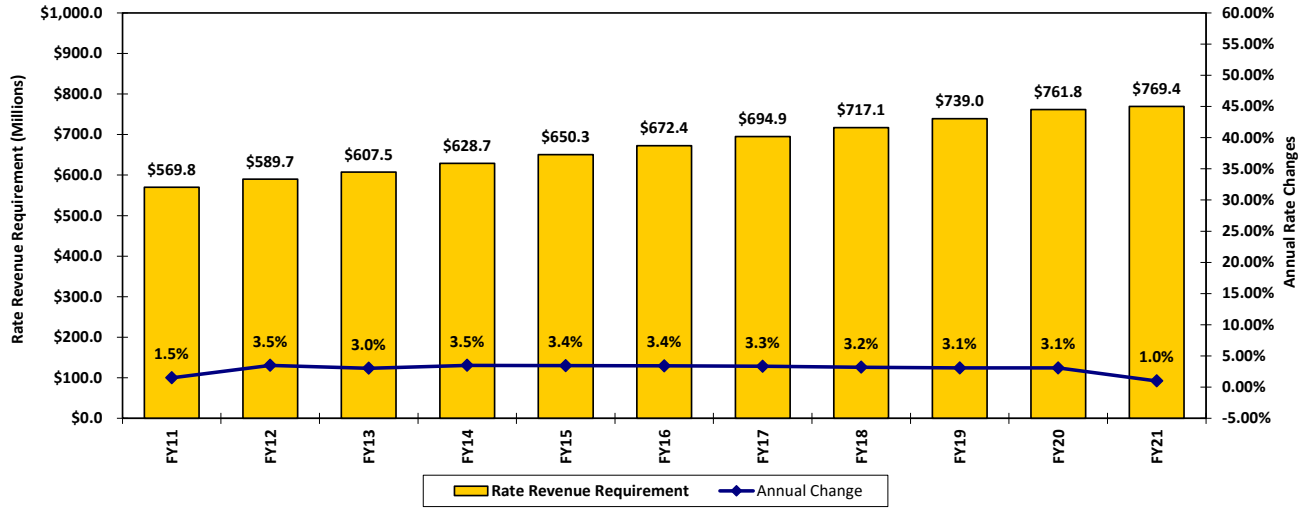
In the Final FY21 Budget, 97.2% of revenue is raised from rate revenue. The remaining 2.8% of revenue will come from interest on investments, Rate Stabilization reserve funds, charges to other water and sewer customers (including Chicopee Valley Aqueduct (CVA) communities), non-recurring revenue, annual charges to sewer system users with permits issued by MWRA's Toxic Reduction and Control Department (TRAC), penalties assessed to holders of sewer use permits, and other miscellaneous sources.

Rate Revenue

Under the Final FY21 Budget, the MWRA will raise \$769.4 million of its total revenue requirements from water and sewer assessments to member communities. Of the \$769.4 million, \$501.3 million will fund the sewerage system, a decrease of 0.3% as compared to FY20; and \$268.1 million will fund the water system, an increase of 3.6% as compared to FY20. The charts below show the historical rate revenue requirements at the combined utility level for the past eleven years.

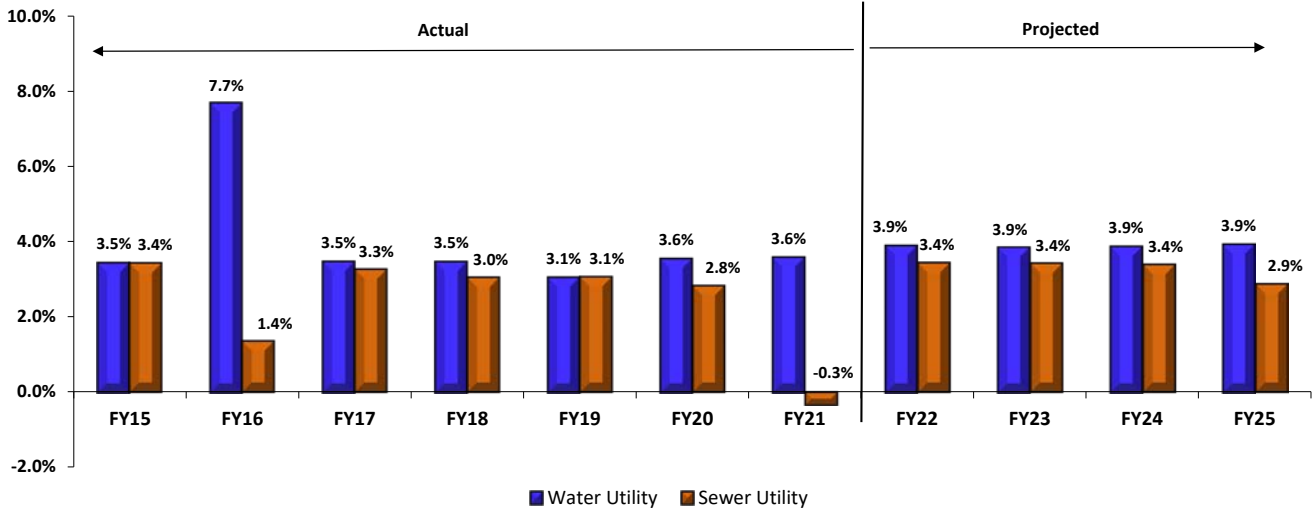
SOURCES & USES OF FUNDS*		
\$s in Millions		
<i>Sources of Funds</i>		
Other User Charges	\$9.2	1.2%
Other Revenue	6.1	0.8%
Investment Income	5.2	0.7%
Rate Revenue	769.4	97.2%
Rate Stabilization	1.5	0.2%
TOTAL REVENUE	\$791.4	100.0%
<i>Uses of Funds</i>		
Total Expenses before Debt		
Service Offsets	\$481.9	
Less:		
Debt Service Assistance	-	
Bond Redemption	-	
Sub-Total Net Expenses	\$481.9	
Capital Financing	\$481.9	60.9%
Direct Expenses	252.2	31.9%
Indirect Expenses	57.3	7.2%
TOTAL EXPENSES	\$791.4	100.0%
TOTAL EXPENSES Less Offsets	\$791.4	
<i>*may not add up due to rounding</i>		

MWRA: Combined Water & Sewer Assessments



Beginning in FY17, the MWRA successfully implemented a rate smoothing methodology that allows the rate revenue requirement to be smoothed at the utility level, eliminating annual volatility mostly driven by debt service payments for capital projects. The charts below show the historical percent increase for the last seven years and the projected increases for the next four years.

MWRA Water & Sewer Utilities
Historical and Projected Rate Revenue Changes



Non-Rate Revenue

Other User Charges

Other User Charges include revenues derived from the provision of water and sewer services to communities and other entities under special agreements. Other User Charges in the Final FY21 Budget total \$9.2 million and includes \$5.3 million for the Chicopee Valley Aqueduct (CVA) communities, \$2.0 million for Deer Island water usage, \$208,000 for entrance fees from member communities, and \$500,000 for the Commonwealth's partial reimbursement for Clinton Wastewater Treatment Plant expenses. Other User Charges are \$8,000 or 0.1% less than the FY20 Budget.

Other Revenue

Other Revenue is budgeted at \$6.1 million, an increase of \$334,000 or 5.8% from the FY20 Budget. Other Revenue includes \$2.6 million from the sale of the Authority's Renewable Portfolio Credits, revenue from participating in load response programs and sale of generated power to the grid as well as \$2.5 million in TRAC permits and fees. The balance of the Other Revenue is made up of various rebates and fees.

Investment Income

MWRA earns interest income by investing funds in both long and short-term investments vehicles governed by Section 522 and 523 of the General Bond Resolution. The FY21 Budget includes \$5.2 million in investment income, a \$10.3 reduction from FY20's level or 66.7%, reflecting a sharp drop in projected interest rates. The short-term interest rate assumption is 0.25% for FY21, 200 basis points below the FY20 Budget level as the Federal Reserve Open Market Committee reduced short- rates in response to current economic crisis.

Non-Recurring Revenue

Non-Recurring Revenue is one-time revenue used in a given fiscal year to reduce assessments to member communities. In any fiscal year when annual revenues exceed expenses, MWRA may transfer the unexpended amount to the Rate Stabilization Reserve Fund. Within certain limits, MWRA may use this money to reduce the Rate Revenue Requirement in any subsequent year. Consistent with the requirements of its enabling act and its General Bond Resolution, MWRA treats transfers from the Rate Stabilization Reserve as revenue in that fiscal year. For the Final FY21 Budget, \$1.5 million in Rate Stabilization Reserve usage is included as it relates to funds set aside in FY18 to be utilized when the HEEC cable came on line.

DIRECT EXPENSES

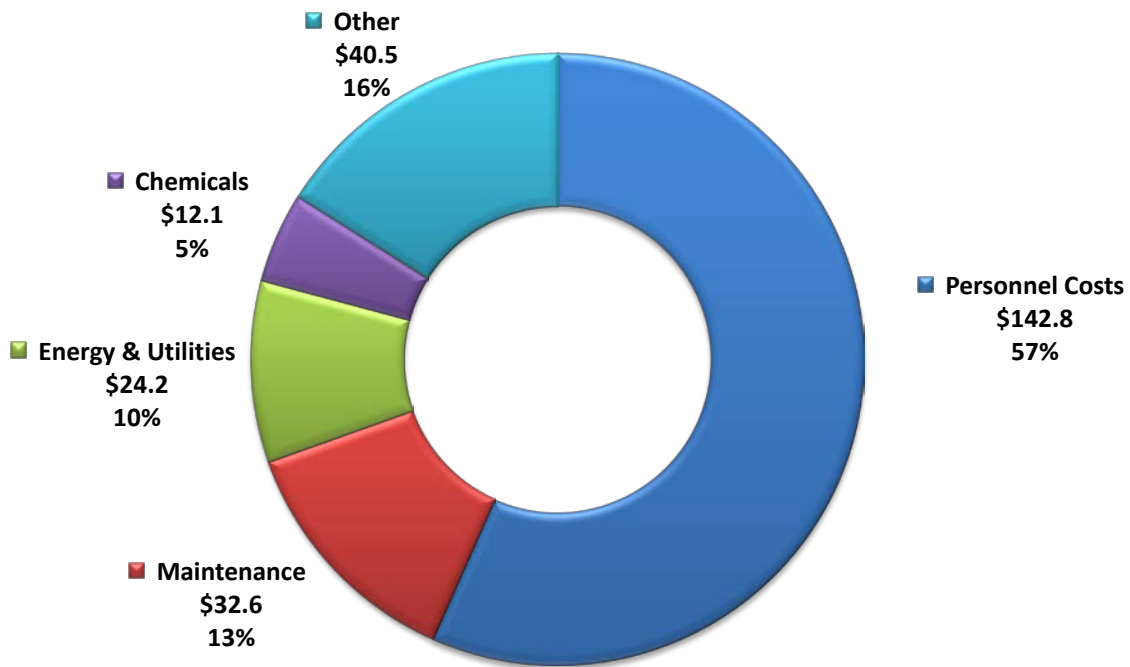
The Final FY21 Direct Expense Budget totals \$252.2 million, an increase of \$3.9 million, or 1.6%, over the FY20 Budget. The primary drivers of the Direct Expenses increases are Wages & Salary which includes five additional positions for the Tunnel Redundancy Department, and fringe benefits for projected healthcare cost increases.

The chart below combines related direct expense line items into general cost categories. Personnel costs (wages and salaries, overtime, fringe benefits, and workers' compensation) are the largest

component of the direct expense budget at 57%, followed by other expenses (training and meetings, professional services, other materials, and other services) at 16%, maintenance at 13%, energy & utilities at 10%, and chemicals at 5%.

Direct Expenses by Category

(\$s in millions)



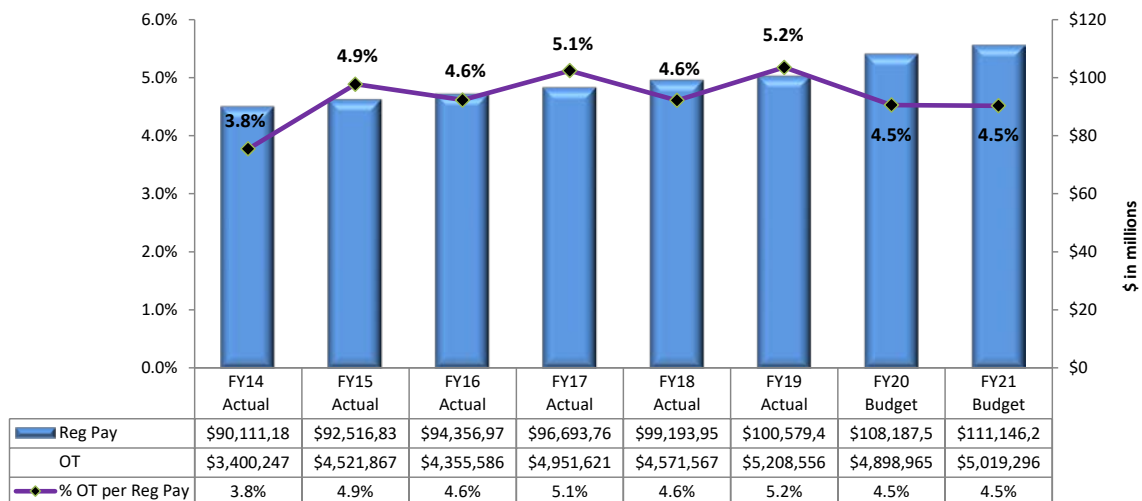
FY21 FINAL CURRENT EXPENSE BUDGET MWRA DIRECT EXPENSES BY LINE ITEM				
Line Item	FY20 Approved Budget	FY21 Approved Budget	Change FY21 vs FY20	
WAGES AND SALARIES	\$109,953,483	\$112,919,298	\$2,965,815	2.7%
OVERTIME	\$4,898,965	\$5,019,295	\$120,330	2.5%
FRINGE BENEFITS	\$21,717,533	\$22,402,224	\$684,691	3.2%
WORKERS' COMPENSATION	\$2,354,256	\$2,476,655	\$122,399	5.2%
CHEMICALS	\$11,811,222	\$12,091,255	\$280,033	2.4%
ENERGY AND UTILITIES	\$24,454,796	\$24,200,845	(\$253,951)	-1.0%
MAINTENANCE	\$32,726,954	\$32,618,571	(\$108,383)	-0.3%
TRAINING AND MEETINGS	\$504,394	\$405,264	(\$99,130)	-19.7%
PROFESSIONAL SERVICES	\$8,295,315	\$8,377,283	\$81,968	1.0%
OTHER MATERIALS	\$6,867,239	\$6,706,916	(\$160,323)	-2.3%
OTHER SERVICES	\$24,683,370	\$24,983,777	\$300,407	1.2%
TOTAL	\$248,267,527	\$252,201,383	\$3,933,855	1.6%

Wages and Salaries – The budget includes \$112.9 million for Wages and Salaries as compared to \$110.0 million in the FY20 Budget, an increase of \$2.9 million or 2.7%. Regular Pay makes up \$111.8 million or 99.0% of the total Wages and Salaries. The FY21 Budget funds 1,163 FTEs, five more than the FY20 Budget.

The five additional FTEs will support the Metropolitan Tunnel Redundancy Program. As always, new hires and backfilling of vacant positions will be managed at the agency level and addressed on a case-by-case basis by senior management. A vacancy adjustment of \$2.6 million is factored in to the FY21 Final Budget.

Division	FY18	FY19	FY20	FY21
Executive	5.0	5.0	5.0	5.0
Emergency Preparedness	7.8	8.0	7.0	4.0
Affirmative Action	6.0	6.0	7.0	7.0
Internal Audit	6.8	6.7	6.7	6.7
Public Affairs	13.0	12.9	11.9	11.9
Tunnel Redundancy	-	5.0	8.0	13.0
Operations	918.8	920.3	916.0	918.0
Law	15.5	13.5	13.6	13.6
Administration	142.0	140.6	145.7	146.7
Finance	35.5	37.0	37.0	37.0
Authority Total	1,150.4	1,155.0	1,158.0	1,163.0

MWRA: % Overtime vs. Regular

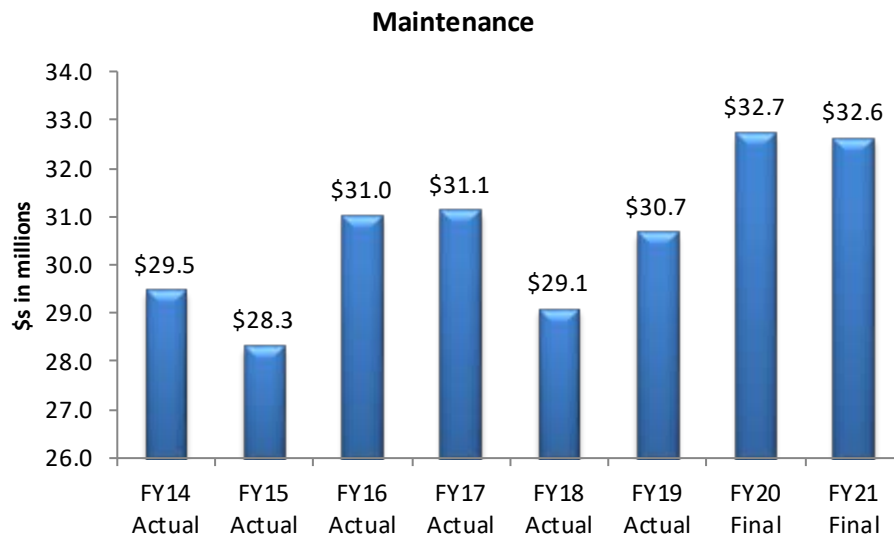


Overtime – The overtime line item is comprised of both emergency overtime and budgeted overtime for maintenance and capital projects. The budget includes \$5.0 million for Overtime, an increase of \$120,000 or 2.5% from the FY20 Budget mainly due to wage increases and resizing the planned and emergency OT based on trends.

Fringe Benefits – The budget includes \$22.4 million for Fringe Benefits, an increase of \$685,000 or 3.2% from the FY20 Budget. Health Insurance premiums total \$19.0 million, an increase of \$656,000 or 3.6% from the FY20 Budget largely due to an increase in the rates for the structure of the health plans offset by a change to the number and mix of plans based on FY21 enrollment changes.

Fringe Benefits			
Line Item	FY19 Actuals	FY20 Budget	FY21 Budget
Health Insurance	\$ 17,141,825	\$ 18,331,265	\$ 18,987,428
Dental Insurance	1,123,003	1,202,354	1,218,578
Unemployment Insurance	124,623	150,000	130,000
Paid Family Medical Leave	-	356,542	366,863
Medicare	1,425,973	1,492,011	1,533,770
Overtime Meals	125,968	115,361	115,585
Tuition Reimbursement	40,827	70,000	50,000
Total Fringe Benefits	\$19,982,219	\$21,717,533	\$22,402,224

Maintenance – The budget includes \$32.6 million for Maintenance projects, a decrease of \$108,000 or 0.3% from the FY20 Budget. The Operations Division had an increase of \$122,000 or 0.4% from FY20.



Utilities – The budget includes \$24.2 million for Utilities, which is a decrease of \$254,000 or 1.0% from the FY20 Budget. The budget funds \$18.3 million for Electricity; \$2.7 million for Diesel Fuel; \$2.5 million for Water; and \$630,000 for Natural Gas. The change to Utilities is driven by Electricity, which has decreased by \$453,000 or 2.4% from the FY20 Budget, and is due to a drop in the average price/kWh based on contracts and market conditions; partially offset by a net increase in purchased power based on actual usage. The reduction to Electricity is partially offset by an increase to Water of \$108,000 or 4.5%, and Diesel Fuel of \$83,000 or 3.2% driven by higher projected usage based on multi-year trends at Deer Island and partially offset by lower projected fuel prices. Deer Island assumes multiple days of emergency CTG use due to wet weather events.

Utilities



Chemicals – The budget includes \$12.1 million for Chemicals, an increase of \$280,000 or 2.4% over the FY20 Budget. Higher prices drove the budget increase, partially offset by lower volumes for some chemicals. Ferric Chloride increased by \$228,000 or 13.2% reflecting higher prices and dosing at Deer Island and Clinton. Sodium Hypochlorite increased by \$57,000 or 1.8% due to higher pricing and dosing at CWTP and BWTF based on multi-year trends, higher pricing at Deer Island, partially offset by elimination of wet scrubbers at Chelsea Creek Headworks. The FY21 Budget does not include any additional funding for the new Deer Island National Pollutant Discharge Elimination System (NPDES) permit, which is projected to have more stringent requirements for enterococcus treatment compliance but is not expected to be issued in FY21.

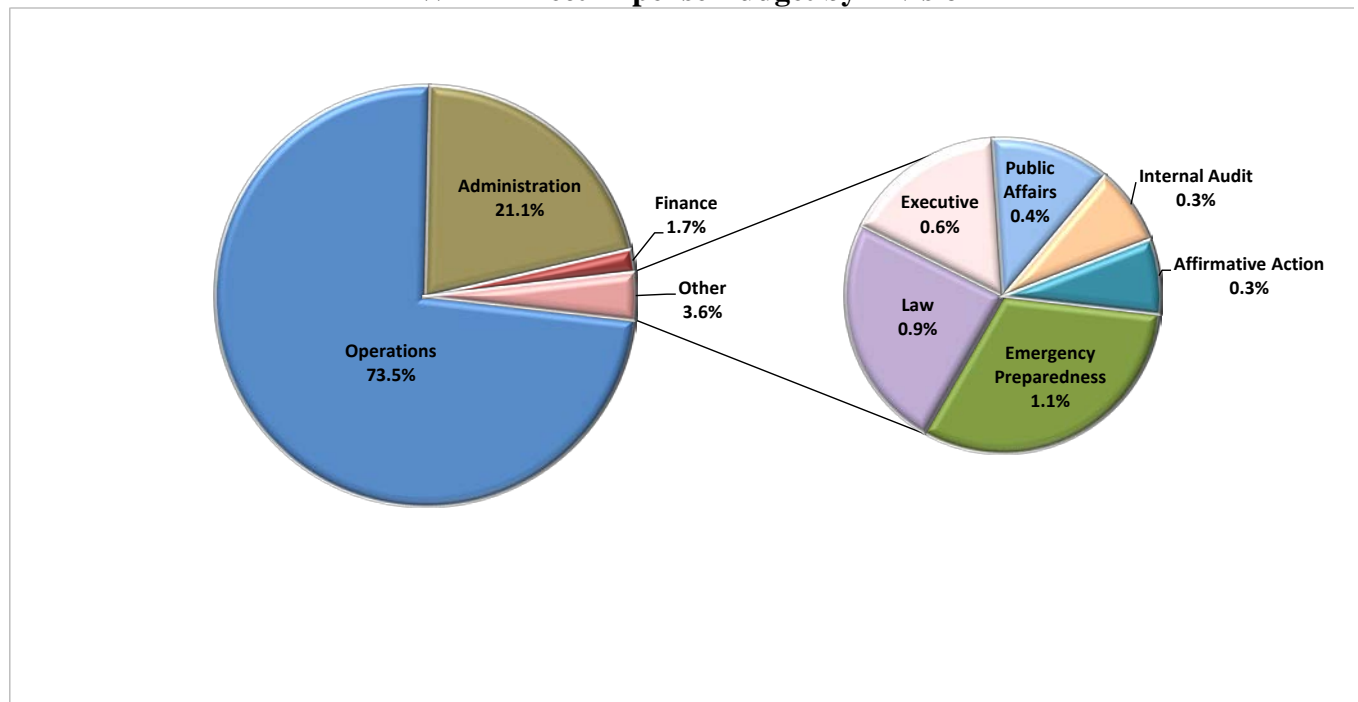
Other Services – The budget includes \$25.0 million for Other Services, an increase of \$300,000 or 1.2% from the FY20 Budget. The budget includes funding of \$14.5 million for Sludge Pelletization, \$4.2 million for Space/Lease Rentals and related lease cost for the Charlestown Navy Yard, and Chelsea Facility, \$1.9 million for Voice and Data costs, \$1.3 million for Grit and Screenings removal, and \$1.3 million for Other Services. The overall increase is driven by Grit and Screenings Removal which increased by \$185,000 or 17.2% from the FY20 Budget due to by price increases, and Space/Lease Rentals of \$160,000 or 4% due to expected increases and the new lease for the new Walpole Record Center.

Functional Area Budget Summary

The chart below shows the breakdown of the MWRA's direct expense budget by division.

FY21 Final Current Expense Budget MWRA Direct Expense by Division							
DIVISION	FY17 Actuals	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
EXECUTIVE	\$6,706,254	\$7,277,231	\$6,742,750	\$7,602,764	\$6,956,405	-\$646,359	-8.5%
OPERATIONS	162,910,111	165,682,000	174,228,444	181,938,442	185,429,023	3,490,581	1.9%
LAW	2,285,192	2,055,301	1,792,340	2,083,232	2,209,094	125,862	6.0%
ADMINISTRATION	44,967,226	45,760,273	47,123,033	52,222,113	53,221,569	999,456	1.9%
FINANCE	3,853,121	3,971,552	3,794,170	4,420,979	4,385,292	-35,687	-0.8%
TOTAL	\$220,721,904	\$224,746,357	\$233,680,737	\$248,267,530	\$252,201,383	\$3,933,853	1.6%

MWRA Direct Expense Budget by Division



Detailed summaries for each Division budget are provided following the Executive Summary.

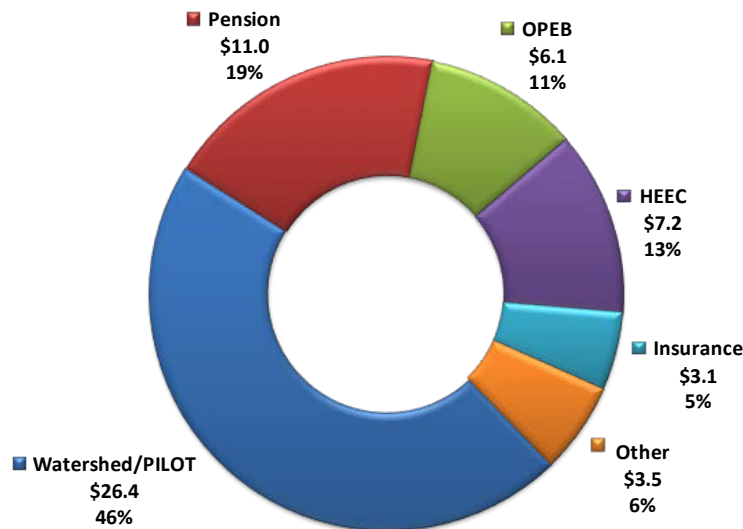
INDIRECT EXPENSES

The FY21 Indirect Expense Budget is \$57.3 million, an increase of \$6.4 million or 12.5% over the FY20 Budget.

The following graph combines related indirect expense line items into the general cost categories and shows that Water Supply Protection Program expenses are the largest component of the indirect expense budget at 46%, followed by Retirement Fund at 19%, HEEC at 13%, OPEB at 11%, Other (for items such as Mitigation and Additions to Reserves) at 6%, and Insurance at 5%.

Indirect Expenses by Category

(\$s in millions)



Insurance

MWRA purchases property and casualty insurance from external insurance carriers with a self-insured retention of \$2.5 million dollars and Worker's Compensation Excess insurance with a self-insured retention of \$500,000 per claim. The budget includes \$3.1 million for Insurance, an increase of \$448,000 or 17.2% from the FY20 Budget. The budget consists of two components, self-insured claim costs and insurance premiums. Self-insured claim cost are estimated based on actual average spending over the past 5 years (FY15-19). Premium costs are estimated based on current costs adjusted for inflation and potential increases due to insurance market conditions. MWRA mitigates the budgetary risk of self-insurance by maintaining an Insurance Reserve. The reserve, which was established as part of the Bond Resolution, requires that an independent insurance consultant review the funding level every three years and provide recommendations as to its adequacy. The Insurance Reserve Fund is currently funded at \$14.0 million which was within the acceptable range as identified in the triennial insurance consultant review as of February 2020.

Watershed Reimbursement/PILOT

The Enabling Act directs MWRA to pay the Commonwealth of Massachusetts for several statutory obligations: Payment in Lieu of Taxes (PILOT) for Commonwealth-owned land in the watersheds and operating expenses of the Division of Water Supply Protection. The budget includes \$26.4 million for the Watershed Management budget, a decrease of \$411,000 or 1.5% below the FY20 Budget. The budget includes \$17.9 million for reimbursement of operating expenses net of revenues, and \$8.5 million for Payment in Lieu of Taxes (PILOT). The budget reduction is driven by a vacancy adjustment to reflect the timing of hiring. The estimated PILOT payments remained flat at \$8.5 million.

	<u>FY20 Budget</u>	<u>FY21 Budget</u>	<u>\$ Change</u>	<u>% Change</u>
Operating Expenses	\$ 19,408,600	\$ 19,132,138	\$ (276,462)	-1.4%
Operating Revenues	\$ 1,075,000	\$ 1,210,000	\$ 135,000	12.6%
Net	\$ 18,333,600	\$ 17,922,138	\$ (411,462)	-2.2%
PILOT	\$ 8,500,000	\$ 8,500,000	\$ -	0.0%
Total	\$ 26,833,600	\$ 26,422,138	\$ (411,462)	-1.5%

Harbor Electric Energy Company (HEEC)

The budget includes \$7.2 million for the Harbor Energy Electric Company (HEEC), an increase of \$2.8 million or 62.9% over the FY20. This increase is due to the new cable placed into service in August 2019 (four months earlier than expected). The budget reflects the latest cost estimates, but the final costs will be determined by the Department of Public Utilities (DPU) once it has completed its review of the project. In FY18, \$6.5 million was set aside to mitigate the impact of the HEEC cost, and is projected to be used between FY21-25. In FY21, \$1.5 million of Rate Stabilization/HEEC Reserve will be used.

Mitigation

MWRA disburses mitigation funds to communities affected by MWRA projects or facilities pursuant to MWRA's Statement of Mitigation Principles and/or specific agreements with communities. MWRA mitigation may include relieving the direct impacts of construction, meeting environmental and regulatory requirements, long-term operating agreements, or community compensation for impacts over and above those addressed by other mitigation. In rare situations, where the extent and duration of the impact of a project or facility on a community is such that restoring the area to its pre-project state is insufficient to relieve the stress of MWRA's presence during the project, MWRA funds or contributes to improvements to affected areas. Mitigation expenses are funded in the capital budget and in the current expense budget. The budget includes \$1.7 million for Mitigation payments to the City of Quincy and Town of Winthrop in accordance with mitigation agreements, which expire in FY25.

Operating Reserves

Funding for the Operating Reserve for FY21 is \$1.8 million. The Operating Reserve fund balance is in compliance with MWRA General Bond Resolution which requires a balance of one-sixth of annual operating expenses. Based on the FY21 Final Budget, the required balance is \$45.9 million versus the \$44.0 million required in FY20.

Retirement System Contribution

The budget includes \$11.0 million for the Retirement Fund which is level to planning estimates, but an increase of \$3.7 million or 50.4% over the FY20 budget. The increase reflects the impact of lower than assumed investment returns in 2018 and the reduction of the projected rate of return of the Fund from 7.5% to 7.25%. MWRA's pension fund is at the 89.0% funding level and projected to be fully funded by June 30, 2030. Based on improved investment performance in 2019, staff expect a new approved funding

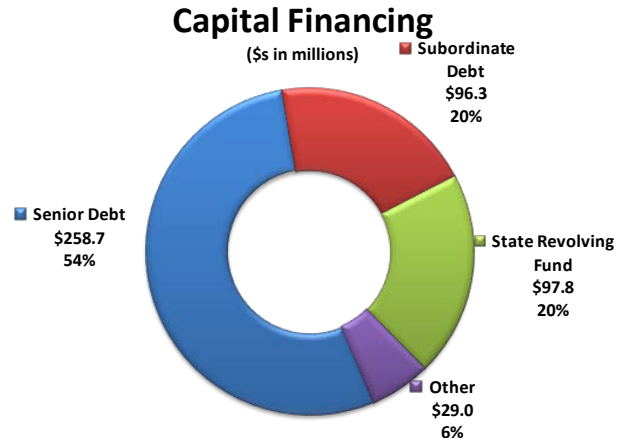
schedule in the coming months that will reflect a lower required amount for FY21. Only the minimum amount required will be paid to the Retirement System. If there is a budgetary surplus based on this lower required amount, it will remain unexpended.

GASB 45 – Accounting and Reporting by Employers for Postemployment Benefits Other than Pensions (OPEB)

In the Final FY21 Budget the Authority funds its OPEB liability at \$6.1 million, continuing the Authority's long-term commitment to address its liabilities. The Authority has complied with GASB 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other than Pensions (OPEB)*, by disclosing this liability in the year-end Financial Statements. As part of the multi-year strategy to address its unfunded liabilities for OPEB and pension holistically, the Board approved a plan to pay down the pension liability and upon reaching full funding, moved to address the OPEB obligation. Based on the latest actuarial evaluation, MWRA's pension fund is at an 89.0% funding level. To maximize the benefits in terms of returns and accounting treatment, an irrevocable OPEB Trust was established with Board approval and funding started on April 23, 2015. The OPEB Trust fund balance was \$43.7 million as of June 30, 2020. Starting in FY18, GASB 75 is the governing regulation for employer OPEB contributions. The \$6.1 million budget is based on 50% of the annual determined contribution in the January 1, 2018 actuarial report.

CAPITAL FINANCING

The FY21 Final Budget capital financing costs total \$481.9 million and remains the largest portion of the MWRA's budget, accounting for 60.9% of total expenses (before offsets). The FY21 capital cost decreased by \$11.2 million or 2.3% compared to the FY20 Budget. This decrease in the MWRA's debt service is the result of projected FY21 borrowings, the structure of the existing debt, and increased current revenue for capital partially offset by the impact of the defeasance and a reduction in debt prepayment levels as compared to FY20. The FY21 Final Budget includes a planned defeasance of \$30.6 million in late FY20 which will reduce debt service by approximately \$9.4 million in FY21, \$9.6 million in FY22, \$7.6 million in FY23, and \$4.6 million in FY24.



The FY21 Budget assumes a 3.5% interest rate for variable rate debt which is the same as the rate in FY20. The Authority's variable rate debt assumption is comprised of three separate elements: the interest rate for the daily and weekly series; liquidity fees for the Standby Bond Purchase Agreement, Letter of Credit, and Direct Purchase providers; and remarketing fees.

The FY21 capital financing budget includes:

- \$258.7 million in principal and interest payments on MWRA's senior fixed rate bonds. This amount includes \$12.4 million to support issuance of \$160 million in FY20-FY21. Also it includes a reduction of \$9.4 million for the effect of the FY20 defeasance;
- \$96.3 million in principal and interest payments on subordinate bonds;
- \$97.8 million in principal and interest payments on SRF loans. This amount includes \$10.6 million to support issuances of \$75.0 million of loans during 2020 and \$65 million in 2021;
- \$16.2 million to fund ongoing capital projects with current revenue;
- \$3.9 million in debt prepayment.
- \$5.7 million to fund the interest expense related to the Local Water Pipeline Assistance Program; and
- \$3.2 million for the Chelsea Lease.

Outstanding Debt and Debt Management

The \$8.7 billion spent on MWRA’s modernization efforts since the Authority was established in 1986, has relied heavily on debt financing. Total debt as of June 30, 2020 was \$4.9 billion consisting of senior and subordinated debt, Tax-Exempt Commercial Paper, and a Revolving Loan. The total debt was \$156.6 million lower than the MWRA’s total debt as of June 30, 2019. The MWRA enjoys strong unenhanced senior debt ratings of Aa1, AA+, and AA+ from Moody’s, Standard & Poor, and Fitch, respectively.

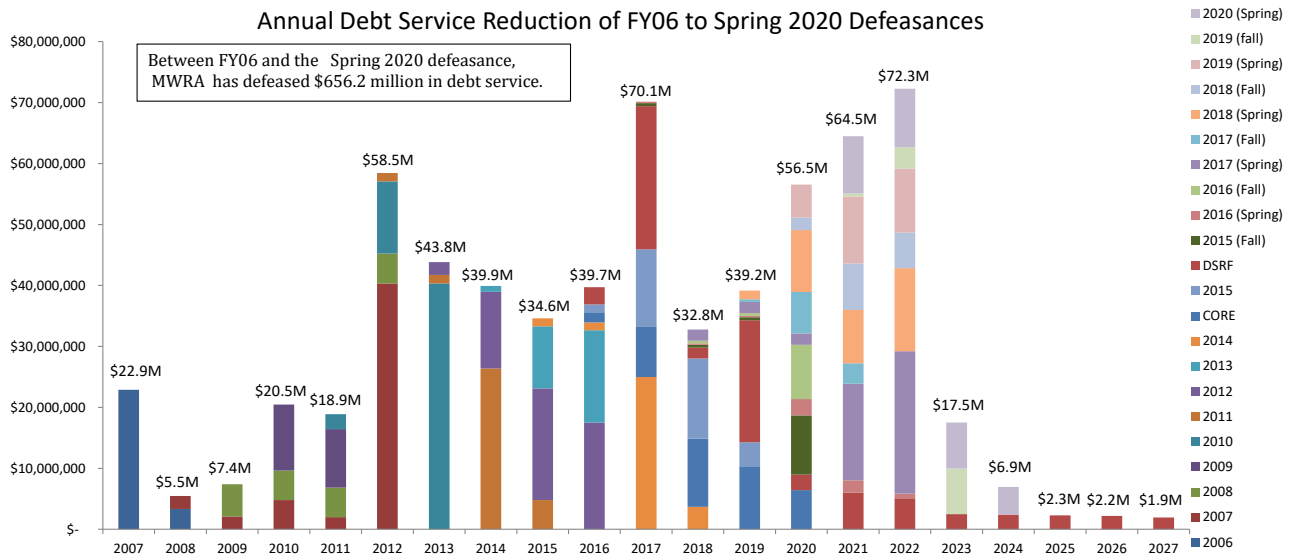
Type	Principal Outstanding June 30, 2020	% of Total
Senior General Revenue Bonds	\$ 3,098,385,000	63.0%
Massachusetts Clean Water Trust	\$ 952,950,055	19.4%
Subordinate General Revenue Bonds	\$ 691,085,000	14.1%
Tax Exempt Commercial Paper/Revolving Loan	\$ 175,000,000	3.6%
Total	\$ 4,917,420,055	100.0%

82.4% of MWRA's Debt is Fixed Rate

As a result of the Authority’s Capital Improvement Program, capital financing as a percent of total expenses (before offsets) has increased steadily from 36% in 1990 to 60.9% in the FY21 Current Expense Budget. Much of this debt service is for completed projects, primarily the Boston Harbor Project and the Integrated Water Supply Improvement Program. The MWRA’s capital spending, from its inception, had been dominated by projects mandated by court ordered or regulatory requirements, which in total have accounted for ~80% of capital spending to date. Going forward, and as the Combined Sewer Overflow (CSO) projects reached substantial completion in December 2015, the majority of spending will be focused on asset protection and water redundancy initiatives. MWRA anticipates its outstanding debt to continue to decline.

The Authority has actively managed its debt structure to take advantage of favorable interest rates. Tools used by the MWRA to lower borrowing costs and manage rates include current and advanced refunding of outstanding debt, maximizing the use of the subsidized State Revolving Fund (SRF) debt, issuance of variable rate debt, swap agreements, and the use of surplus revenues to defease debt. The MWRA also uses tax exempt commercial paper to minimize the financing cost of construction in process.

The FY21 Final Budget includes the benefit of the defeasance of \$30.6 million which will reduce debt service by approximately \$9.4 million in FY21, \$9.6 million in FY22, \$7.6 million in FY23, and \$4.6 million in FY24.



The FY21 Budget assumes a 3.5% interest rate for variable rate debt which is the same as the rate in FY20. The Authority’s variable rate debt assumption is comprised of three separate elements: the interest rate for the daily and weekly series; liquidity fees for the Standby Bond Purchase Agreement, Letter of Credit, and Direct Purchase providers; and remarketing fees. While MWRA continues to experience low interest rates, and MWRA projects that rates will increase in the future.

Grant Revenues

In the past, MWRA has been able to finance approximately 20 percent of its capital spending with grant receipts, totaling approximately \$1.1 billion through FY03. However, since FY03, the MWRA has only received \$4.9 million in capital grants. In addition to participating in federal and state grant programs, the MWRA benefitted from the American Recovery and Reinvestment Act of 2009 which forgave approximately \$33.0 million in State Revolving Fund loan principal. The Authority continues to pursue grant funding and take advantage of any possible program available to maximize grant funding opportunities.

MWRA expects to borrow the majority of funds necessary for future capital spending. Borrowing will include the issuance of fixed and variable rate revenue bonds; borrowing from the Massachusetts Clean Water Trust (also known as the State Revolving Loan Fund or SRF), and a Tax-Exempt Commercial Paper program. The table below details the FY21 budget capital financing line item. It also shows how upgrading the sewerage system has dominated the capital program to date. Current and future borrowings increasingly support improvements to the water system. A complete list of the Authority’s indebtedness by series is presented in Appendix E.

TABLE I-3
FY21 Current Expense Budget - Capital Financing Detail (as of 6/30/20)
\$ in Millions

	Amount Outstanding	Total Capital Finance Costs	Sewer	Water
Total SRF ¹ Debt	\$953.0	\$97.8	\$75.6	\$22.2
Total Senior Debt	\$3,098.4	258.7	165.6	93.1
Total Subordinate Debt	\$691.1	96.3	62.6	33.7
Total SRF and Debt Service²	\$4,742.4	\$452.9	\$303.8	\$149.1
Water Pipeline Commercial Paper	175.0	5.7	0.0	5.7
Current Revenue/Capital ³		16.2	15.4	0.8
Capital Lease		3.2	1.9	1.3
Debt Prepayment ⁴		3.9	0.7	3.2
	175.0	\$29.0	\$18.0	\$11.0
Total Capital Financing (before Debt Service Offsets)	4,917.4	\$481.9	\$321.8	\$160.0
Debt Service Offsets:				
Debt Service Assistance		0.0	0.0	0.0
Bond Redemption		0.0	0.0	0.0
Total Capital Financing	4,917.4	\$481.9	\$321.8	\$160.0

¹ SRF debt service payments reflect net MWRA obligations after state and federal subsidies.

² Numbers may not add due to rounding.

³ Current Revenue/Capital is revenue used to fund ongoing capital projects.

⁴ Debt Prepayment will be used defeasance of bonds at end of fiscal year.

CIP Impact on Current Expense Budget

In addition to the annual financing costs included in the Current Expense Budget, the Capital Improvement Program affects the annual operating budget when capital facilities come on-line and require adjustments to operating budgets. In prior years, completion of the Deer Island Treatment Plant, the Carroll Water Treatment Plant, and the residuals processing facility in Quincy resulted in significant increases in operating expenses.

The following table summarizes the projected CIP impact on the operating budget by project over the next ten years.

Fiscal Year	CEB Impacts (000)										
	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	Total
DI Treatment Plant Asset Protection (not including Co-Digestion or Combined Heat and Power Plant)	\$31	(\$11)	(\$55)	\$0	\$0	(\$48)	(\$98)	(\$114)	(\$65)	\$0	(\$360)
DI Treatment Plant Asset Protection - Hydroturbine Replacements	0	0	0	0	(116)	0	0	127	0	0	11
Wastewater Process Optimization	0	80	0	0	0	0	0	0	0	0	80
South Boston CSO Tunnel Inspection/Cleaning and Outfalls Inspection (previously named North Dorchester Bay project)	0	0	0	0	0	597	(615)	0	0	0	(18)
Total Wastewater (inflated)	\$31	\$69	(\$55)	\$0	(\$116)	\$549	(\$713)	\$13	(\$65)	\$0	(\$287)
Metro Tunnel Redundancy	\$462	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$462
Watershed Div CIP - Quabbin Admin Building Renovations	0	0	109	0	0	(119)	0	0	0	0	(10)
Wachusett Algae Treatment Facility	0	0	0	0	0	0	123	0	0	0	123
Total Water (inflated)	\$462	\$0	\$109	\$0	\$0	(\$119)	\$123	\$0	\$0	\$0	\$575
Total Business and Operations Support (inflated)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL MWRA	\$493	\$69	\$55	\$0	(\$116)	\$430	(\$590)	\$13	(\$65)	\$0	\$288

Operating costs are projected to increase in FY22 by \$493,000 primarily due additional staff for the Metropolitan Tunnel Redundancy project. This will be offset by Deer Island Treatment Plant Asset Protection initiatives resulting in a reduction of operating costs of \$349,000 through FY30.

The next South Boston CSO Tunnel inspection will be in FY27 and results in increased operating costs of approximately \$597,000.

Other increases to operating costs over the next ten years include charges to the Wachusett Algae Treatment Facility for \$123,000 in utilities in FY28. Overall, an increase in operating costs of \$288,000 is projected over the next 10 years.

RATE ASSESSMENT AND METHODOLOGY

Community Profile and Assessments

MWRA provides wholesale water and sewer services to 61 communities or local bodies. Fifty-one local bodies purchase water supply services, and 45 local bodies purchase wastewater transport and treatment services. Thirty-five local bodies purchase both. Approximately 3.0 million people, or 45% of the population of Massachusetts, live and work in the communities that purchase water and/or wastewater services from MWRA.

MWRA's largest single customer is the Boston Water and Sewer Commission (BWSC), which provides retail services in the City of Boston. In the FY21 Budget, rate revenue from BWSC will account for 32% of MWRA's total rate revenue. The table on page I-24, lists MWRA communities, the services received, and the MWRA assessments for FY21.

Typically, each year MWRA determines preliminary wholesale water and sewer assessments in February and final assessments in June before the beginning of the new fiscal year. These assessments must satisfy the statutory requirement that MWRA fully recover its budgeted water and sewer costs by apportioning net costs among its wholesale water and sewer customers. Due to the anticipated impact of the COVID-19 pandemic on MWRA member community budgets, final assessments for FY21 were approved by the MWRA Board of Directors and transmitted on May 6, 2020.

The following table presents the calculation of MWRA's FY21 Rate Revenue Requirement. The table shows that most of MWRA's current expenses are directly attributable to either water or sewer service

costs, or to investment in the water or sewer systems. Expenses that support both systems are allocated to water or sewer assessments based on generally accepted cost allocation principles. Investment Income and Other Revenues offset water and sewer expenses. The resulting net cost of water and sewer services is the amount MWRA recovers through water and sewer assessments.

**Calculation of the FY21 Rate Revenue Requirement
(000's)**

	Sewer	Water	Total
Allocated Direct Expenses	\$165,981	\$86,220	\$252,201
Allocated Indirect Expenses	\$22,853	\$34,416	\$57,269
PLUS			
Capital Expenses:			
Debt Service (less offsets)	\$303,806	\$149,075	\$452,882
Current Revenue for Capital	\$15,390	\$810	\$16,200
Other Capital Expenses	\$2,646	\$10,158	\$12,804
PLUS			
Non-Rate Revenue:			
Investment Income	-\$2,707	-\$2,461	-\$5,168
Fees and Other Revenue	-\$5,156	-\$10,148	-\$15,304
Rate Stabilization	-\$1,500	\$0	-\$1,500
EQUALS			
Rate Revenue Requirement	\$501,314	\$268,071	\$769,385

Wholesale Assessment Methodology

MWRA calculates separate user assessments for water and sewer services. Budgeted water operating and capital costs are allocated based on each community's share of total water use for the most recent calendar year. The sewer assessment methodology allocates budgeted operating and maintenance costs based on share of wastewater flow and strength parameters, and capital costs based on proportion of maximum flow, strength, and population. MWRA uses three-year averaging of wastewater flows to calculate the flow-related components of wholesale sewer assessments. Flow averaging moderates the short-term impact of year-to-year changes in community flow, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.

MWRA Fully Served Water and Sewer Customers	Final FY20 Water Assessment	Final FY21 Water Assessment	Percent Change from FY20	Final FY20 Sewer Assessment	Final FY21 Sewer Assessment	Percent Change from FY20	Final FY20 Combined Assessment	Final FY21 Combined Assessment	Dollar Change from FY20	Percent Change from FY20
ARLINGTON	5,428,333	5,627,090	3.7%	8,921,155	8,872,540	-0.5%	\$14,349,488	\$14,499,630	\$150,142	1.0%
BELMONT	3,001,852	3,040,437	1.3%	5,321,061	5,332,639	0.2%	8,322,913	8,373,076	50,163	0.6%
BOSTON (BWSC)	93,413,175	97,981,545	4.9%	145,875,583	145,976,286	0.1%	239,288,758	243,957,831	4,669,073	2.0%
BROOKLINE	7,300,560	7,543,434	3.3%	13,202,213	13,249,272	0.4%	20,502,773	20,792,706	289,933	1.4%
CHELSEA	4,939,423	5,158,804	4.4%	8,626,321	8,585,318	-0.5%	13,565,744	13,744,122	178,378	1.3%
EVERETT	5,543,676	5,958,067	7.5%	9,310,473	9,529,946	2.4%	14,854,149	15,488,013	633,864	4.3%
FRAMINGHAM	8,448,119	8,834,401	4.6%	13,569,073	13,209,393	-2.7%	22,017,192	22,043,794	26,602	0.1%
LEXINGTON	7,413,364	8,006,399	8.0%	7,851,947	7,922,359	0.9%	15,265,311	15,928,758	663,447	4.3%
MALDEN	7,552,824	7,980,333	5.7%	13,705,355	13,376,032	-2.4%	21,258,179	21,356,365	98,186	0.5%
MEDFORD	6,542,736	6,872,249	5.0%	12,493,747	12,312,099	-1.5%	19,036,483	19,184,348	147,865	0.8%
MILROSE	2,977,071	3,105,038	4.3%	6,723,984	6,642,072	-1.2%	9,701,055	9,747,110	46,055	0.5%
MILTON	3,508,765	3,524,251	0.4%	5,736,340	5,780,577	0.8%	9,245,105	9,304,828	59,723	0.6%
NEWTON	12,721,936	13,532,097	6.4%	22,443,151	21,895,848	-2.4%	35,165,087	35,427,945	262,858	0.7%
NORWOOD	3,963,726	4,246,016	7.1%	8,171,535	8,188,530	0.2%	12,135,261	12,434,546	299,285	2.5%
QUINCY	11,714,243	12,401,474	5.9%	21,091,455	20,972,691	-0.6%	32,805,698	33,374,165	568,467	1.7%
READING	2,370,637	2,399,752	1.2%	5,377,793	5,250,778	-2.4%	7,748,430	7,650,530	(97,900)	-1.3%
REVERE	5,262,364	5,591,863	6.3%	10,896,609	10,748,405	-1.4%	16,158,973	16,340,268	181,295	1.1%
SOMERVILLE	8,240,009	8,711,112	5.7%	17,492,310	16,822,763	-3.8%	25,732,319	25,533,875	(198,444)	-0.8%
STONEHAM	3,019,242	2,870,605	-4.9%	4,812,709	4,988,619	3.7%	7,831,951	7,859,224	27,273	0.3%
WALTHAM	9,621,955	10,046,663	4.4%	13,961,534	13,972,854	0.1%	23,583,489	24,019,517	436,028	1.8%
WATERTOWN	3,898,438	3,935,832	1.0%	6,729,234	6,648,177	-1.2%	10,627,672	10,584,009	(43,663)	-0.4%
WINTHROP	1,848,357	1,958,437	6.0%	3,718,688	3,714,891	-0.1%	5,567,045	5,673,328	106,283	1.9%
TOTAL	\$218,730,805	\$229,325,899	4.8%	\$366,032,270	\$363,992,089	-0.6%	\$584,763,075	\$593,317,988	\$8,554,913	1.5%

MWRA Sewer and Partial Water Customers	Final FY20 Water Assessment	Final FY21 Water Assessment	Percent Change from FY20	Final FY20 Sewer Assessment	Final FY21 Sewer Assessment	Percent Change from FY20	Final FY20 Combined Assessment	Final FY21 Combined Assessment	Dollar Change from FY20	Percent Change from FY20
CANTON	2,136,764	1,626,637	-23.9%	4,620,738	4,599,635	-0.5%	\$6,757,502	\$6,226,272	(\$531,230)	-7.9%
NEEDHAM	1,412,709	1,122,902	-20.5%	6,399,114	6,399,895	0.0%	7,811,823	7,522,797	(289,026)	-3.7%
STOUGHTON	146,695	141,002	-3.9%	5,240,340	5,226,978	-0.3%	5,387,035	5,367,980	(19,055)	-0.4%
WAKEFIELD	2,581,082	2,874,557	11.4%	6,585,727	6,577,289	-0.1%	9,166,809	9,451,856	285,047	3.1%
WELLESLEY	1,476,827	1,835,381	24.3%	5,933,569	5,955,781	0.4%	7,410,396	7,791,162	380,766	5.1%
WILMINGTON	732,142	599,456	-18.1%	2,987,771	2,953,524	-1.1%	3,719,913	3,552,980	(166,933)	-4.5%
WINCHESTER	1,732,283	1,835,487	6.0%	4,458,417	4,440,715	-0.4%	6,190,699	6,276,202	85,503	1.4%
WOBURN	4,119,106	4,199,480	2.0%	9,475,387	9,434,265	-0.4%	13,594,493	13,633,745	39,252	0.3%
TOTAL	\$14,337,608	\$14,234,902	-0.7%	\$45,701,062	45,588,092	-0.2%	\$60,038,670	\$59,822,994	(\$215,676)	-0.4%

MWRA Sewer-only Customers	Final FY20 Water Assessment	Final FY21 Water Assessment	Percent Change from FY20	Final FY20 Sewer Assessment	Final FY21 Sewer Assessment	Percent Change from FY20	Final FY20 Combined Assessment	Final FY21 Combined Assessment	Dollar Change from FY20	Percent Change from FY20
ASHLAND				2,747,924	2,675,100	-2.7%	\$2,747,924	\$2,675,100	(\$72,824)	-2.7%
BEDFORD				3,630,690	3,563,964	-1.8%	3,630,690	3,563,964	(66,726)	-1.8%
BRAINTREE				9,896,915	10,046,123	1.5%	9,896,915	10,046,123	149,208	1.5%
BURLINGTON				5,815,487	5,969,600	2.7%	5,815,487	5,969,600	154,113	2.7%
CAMBRIDGE				26,400,678	26,630,300	0.9%	26,400,678	26,630,300	229,622	0.9%
DEDHAM				5,860,551	5,877,037	0.3%	5,860,551	5,877,037	16,486	0.3%
HINGHAM SEWER DISTRICT				1,937,252	2,005,219	3.5%	1,937,252	2,005,219	67,967	3.5%
HOLBROOK				1,857,144	1,816,238	-2.2%	1,857,144	1,816,238	(40,906)	-2.2%
NATICK				6,044,147	5,916,657	-2.1%	6,044,147	5,916,657	(127,490)	-2.1%
RANDOLPH				6,747,779	6,743,289	-0.1%	6,747,779	6,743,289	(4,490)	-0.1%
WALPOLE				4,096,111	4,125,676	0.7%	4,096,111	4,125,676	29,565	0.7%
WESTWOOD				3,161,944	3,121,245	-1.3%	3,161,944	3,121,245	(40,699)	-1.3%
WEYMOUTH				13,085,354	13,242,974	1.2%	13,085,354	13,242,974	157,620	1.2%
TOTAL				\$91,281,976	\$91,733,422	0.5%	\$91,281,976	\$91,733,422	\$451,446	0.5%

MWRA Water-only Customers	Final FY20 Water Assessment	Final FY21 Water Assessment	Percent Change from FY20	Final FY20 Sewer Assessment	Final FY21 Sewer Assessment	Percent Change from FY20	Final FY20 Combined Assessment	Final FY21 Combined Assessment	Dollar Change from FY20	Percent Change from FY20
LYNNFIELD WATER DISTRICT	801,241	764,867	-4.5%				\$801,241	\$764,867	(\$36,374)	-4.5%
MARBLEHEAD	2,576,446	2,664,131	3.4%				2,576,446	2,664,131	87,685	3.4%
NAHANT	457,313	514,383	12.5%				457,313	514,383	57,070	12.5%
SAUGUS	4,221,536	4,465,635	5.8%				4,221,536	4,465,635	244,099	5.8%
SOUTHBOROUGH	927,672	1,003,016	8.1%				927,672	1,003,016	75,344	8.1%
SWAMPSCOTT	2,161,811	2,342,440	8.4%				2,161,811	2,342,440	180,629	8.4%
WESTON	2,413,951	2,395,031	-0.8%				2,413,951	2,395,031	(18,920)	-0.8%
TOTAL	\$13,559,970	\$14,149,503	4.3%				\$13,559,970	\$14,149,503	\$589,533	4.3%

MWRA Partial Water-only Customers	Final FY20 Water Assessment	Final FY21 Water Assessment	Percent Change from FY20	Final FY20 Sewer Assessment	Final FY21 Sewer Assessment	Percent Change from FY20	Final FY20 Combined Assessment	Final FY21 Combined Assessment	Dollar Change from FY20	Percent Change from FY20
DEDHAM-WESTWOOD WATER DISTRICT	181,946.00	1,037,861.00	470.4%				\$181,946	\$1,037,861	\$855,915	470.4%
LYNN (LWSC)	392,593	396,099	0.9%				392,593	396,099	3,506	0.9%
MARLBOROUGH	5,875,229	6,194,747	5.4%				5,875,229	6,194,747	319,518	5.4%
NORTHBOROUGH	1,312,711	1,422,346	8.4%				1,312,711	1,422,346	109,635	8.4%
PEABODY	4,360,830	1,310,040	-70.0%				4,360,830	1,310,040	(3,050,790)	-70.0%
TOTAL	\$12,123,309	\$10,361,093	-14.5%				\$12,123,309	\$10,361,093	(\$1,762,216)	-14.5%
SYSTEMS TOTAL	\$258,751,692	\$268,071,397	3.6%	\$503,015,308	\$501,313,603	-0.3%	\$761,767,000	\$769,385,000	\$7,618,000	1.0%

Retail Charges

As noted above, MWRA provides water and sewer services to communities on a wholesale basis. Each community then re-sells services on a retail basis. As a result, household water and sewer charges include each household's share of the community's MWRA water and sewer assessments, plus the community's own charges for the provision of local water and sewer services.

Each community independently establishes retail rates. When establishing local rates, community officials consider issues related to the pricing of services, level of cost recovery, and the local rate structure or methodology. Several factors contribute to a broad range of local rate structures in the MWRA service area:

- Differences in the extent to which water and sewer costs are supported through property taxes and other sources of revenue;
- Differences in the means by which communities finance investments in their own water and sewer systems; and
- Differences in communities' retail rate methodologies.

Some communities have flat unit rates, while others have inclining block rates. Local rates may also provide for differentials among classes of users, such as higher rates for commercial or industrial users, abatements to low-income or elderly residents, and adjusted sewer rates for customers with second meters used for lawn irrigation.

Additional information on rate structure within the member communities is available on the MWRA Advisory Board website as part of its annual retail rate survey.

Revenue and Expenditure Trends

Because MWRA is required by its enabling act to balance its budget and to establish annual assessments to cover all expenses, revenue must change as expenses are changing each year. The Rate Revenue Requirement in any year is the difference between MWRA expenses and other revenue sources, most notably non-rate revenue, investment income, and debt service assistance from the Commonwealth (which directly reduces debt service expense). For FY21, community assessments are projected to represent 97.2% of total revenue.

MWRA's planning estimates are projections based on a series of assumptions about future spending (operating and capital), interest rates, inflation, and other factors. MWRA uses the planning estimates to model and project what future rates and assessments might be based upon these assumptions, as well as to test the impact of changes to assumptions on future rates and assessments. The planning estimates are not predictions of what rates and assessments will be but rather they provide the context and framework for guiding MWRA financial policy and management decision making that ultimately determine the level of actual rate change on an annual basis. Conservative projections of future rates and assessments benefit the MWRA by providing assurance to the rating agencies that MWRA anticipates to raise revenues sufficient to pay for its operations and outstanding debt obligations now and over the long-term. Additionally, conservative forecasts of rates and assessments enable member communities to adequately plan and budget for future payments to MWRA.

MWRA also updates its estimates of anticipated revenues and expenses over a multi-year planning horizon. These estimates provide a context for budget discussions and allow MWRA to consider multiple-year rates management implications and strategies as it evaluates alternative capital and operating budget options, the ultimate goal being sustainable and predictable rate changes.

The table below and Appendix D (in more detail) present the combined estimated future rate revenue requirements for FY21 through FY25.

Rates & Budget Projections					
FY21 CEB	FY2021	FY2022	FY2023	FY2024	FY2025
Total Rate Revenue (\$000)	\$ 769,385	\$ 797,078	\$ 825,556	\$ 854,977	\$ 882,738
Rate Revenue Change from Prior Year (\$000)	\$ 7,618	\$ 27,693	\$ 28,478	\$ 29,422	\$ 27,760
Rate Revenue Increase	1.0%	3.6%	3.6%	3.6%	3.2%
Use of Reserves (\$000)	\$ 1,500	\$ 2,000	\$ 2,000	\$ -	\$ -
Estimated Household Bill					
Based on annual water usage of 61,000 gallons	\$1,218	\$1,272	\$1,328	\$1,386	\$1,446
Based on annual water usage of 90,000 gallons	\$1,797	\$1,876	\$1,959	\$2,046	\$2,134

Increasing debt service to pay down and finance the capital improvement program is the most important factor driving estimates of future budget increases. Over the past several years MWRA's Tax-Exempt Commercial Paper program, debt refinancing, federal grants, SRF loans, and Commonwealth debt service assistance have mitigated the impact on ratepayers of new capital spending. However, new water system improvements, for which there are fewer non-ratepayer sources of funding, and the impact of new financing will increase MWRA capital financing costs over the next several years.

MWRA employs rates management tools where available (e.g. refunding for savings, extended maturities on future borrowings, variable rate debt, and increased use of Tax-Exempt Commercial Paper) to help cushion and smooth the growth in capital financing expenses. Despite these initiatives, the size of the capital program will unavoidably continue to drive increases in community assessments.

The second largest budget factor is the projected growth of base operating costs. The estimated \$30.5 million increase in direct expenses from FY21 to FY25 is primarily the result of an assumed annual inflation rate.

MWRA's planning estimates are projections based on a series of assumptions about future spending (operating and capital), interest rates, inflation, and other factors. These assumptions include:

- Direct expense inflation rate of 2.7% for salaries and 3.0% for other direct expenses starting in FY22;
- CIP inflation rate of 2.5%;
- Capital spending based on the latest CIP expenditure forecast.
- Long-term fixed rate debt issues with a 25-year term and 5.0% interest rates in FY21, and 30 year terms 5.5% interest rates in FY22, and 6.0% rates from FY23 and beyond;
- Variable rate interest projected at 3.5% in FY21, and 4.0% starting in FY22.

The planning estimates generally use conservative assumptions to help communities plan for future payments to MWRA.

There are several areas where differences from planning estimate assumptions may alter projected increases:

- Changes in anticipated borrowing rates or expected investment income rates;
- The planning estimates do not factor in any positive year-end variances which may be used to defease debt or reserved to offset Rate Revenue Requirements in future years;
- Fewer opportunities for SRF borrowing than expected due to Federal Budget cuts; a dollar borrowed through the SRF at 2% replaces the need to borrow a dollar long-term at an assumed 5% rate;
- Overall inflationary pressures;
- Debt refinancing opportunities;
- Capital spending; and
- Growth in direct expenses, greater than current assumptions.

MWRA Rates Management

Planning estimates for 2021 through 2025 forecast rate revenue requirement increases of 1.0% in FY21, 3.6% in FY22, 3.6% in FY23, 3.6% in FY24, and 3.2% in FY25.

The FY21 Budget:

- Continues to refine planning estimates assumptions to provide greater predictability of future assessments;
- Judiciously uses reserves to lower rate increases, but maintain adequate balances;
- Continues the Authority's multi-year rates management strategy of providing sustainable and predictable assessment increases to our member communities; and
- Continues the smoothing strategy to even out the rate revenue requirement and rate changes caused by fluctuations in debt service at the utility level.

Net Position

The statement of net position (or net assets) provides the information on the assets and liabilities of the Authority, with net position being the difference between total assets and total liabilities. The Authority's net position for FY20 is \$1.5 billion based on the FY20 unaudited financials. The most recent four fiscal years can be seen in the following table:

\$s in 000

	2020			
	Unaudited	2019	2018	2017
Current Assets	\$ 113,227	\$ 100,271	\$ 95,963	\$ 93,210
Capital Assets (Net)	5,457,207	5,840,416	5,948,350	6,023,414
Other Assets	1,624,325	1,614,475	1,529,221	1,683,406
Total Assets	\$7,194,759	\$7,555,162	\$7,573,534	\$7,800,030
Current Liabilities	\$ 462,807	\$ 362,949	\$ 350,382	\$ 349,139
Non-Current Liabilities	5,205,973	5,626,126	5,617,753	5,784,594
Total Liabilities	\$5,668,780	\$5,989,075	\$5,968,135	\$6,133,733
Net Investment in Capital Assets	\$ 894,437	\$ 827,050	\$ 759,757	\$ 729,903
Restricted	420,009	368,532	357,767	339,073
Unrestricted	211,533	370,505	487,875	597,321
Total Net Position	\$1,525,979	\$1,566,087	\$1,605,399	\$1,666,297

When both restricted and unrestricted funds are available for use, it is the Authority's policy to use restricted funds first, then unrestricted funds as needed. Restricted funds include construction, debt service, and operating revenue.

General Bond Resolution Funds

The Authority's General Bond Resolution requires that it maintain certain funds related to its operations and as security for its bondholders. The General Bond Resolution establishes the required balances and allocation of all moneys controlled by the Authority. A copy of the General Bond Resolution can be found at <http://www.mwra.com/finance/documents/general-revenue-bond-resolution/amended-restated-general-resolution-MWRA-04-23-2015.pdf>.

Fund Balances

Revenue Fund – MWRA shall deposit all income, revenue, receipts, and other moneys derived by the Authority from its operation of the Systems and engaging in other activities authorized by the enabling act into the Revenue Fund. The Revenue Fund is the top in the flow of funds under the General Revenue Bond Resolution. Moneys in the Revenue Fund are transferred on a monthly basis for operating, debt service and other costs of the Authority as required by the General Bond Resolution. As of June 30, 2020, the Revenue Fund had \$40.0 million available.

Operating Fund – All of the Operating Expenses of the Authority as defined in the General Revenue Bond Resolution are paid out of the Operating Fund. The Authority is required to maintain the Operating Fund

at a balance equal to the next three months of Operating Expenses. On a monthly basis moneys are moved from the Revenue Fund to the Operating Fund to maintain the required balance. As of June 30, 2020, the Operating Fund had a balance of \$79 million.

Debt Service Fund – The principal and interest costs associated with MWRA’s outstanding senior lien debt is paid out of the Debt Service Fund. On a monthly basis funds are transferred from the Revenue Fund to the Debt Service Fund equal to 1/6th of the next interest payment or 1/12th of the next principal payment for each series of bonds. The schedule for principal and interest transfers is such that the payments are funded a month and one day ahead of the next payment date as required by the General Revenue Bond Resolution. The balance in the Debt Service Fund as of June 30, 2020 was \$151 million.

Subordinated Debt Service Fund – The principal and interest associated with MWRA’s outstanding subordinate lien debt. On a monthly basis funds are transferred from the Revenue Fund to the Subordinated Debt Service Fund equal to 1/6th of the next interest payment or 1/12th of the next principal payment for each series of bonds. The schedule for principal and interest transfers is such that the payments are funded a month and one day ahead of the next payment date as required by the General Revenue Bond Resolution. The balance in the Subordinated Debt Service Fund as of June 30, 2020 was \$93 million.

Water Pollution Abatement Fund – This fund is used for payments on the debt service due to the Massachusetts Clean Water Trust (formerly the Massachusetts Water Pollution Abatement Trust). The Water Pollution Abatement Fund is funded from the Revenue Fund. The Balance in the Water Pollution Abatement Fund was \$71.0 million on June 30, 2020.

Commonwealth Obligation Fund – This Fund is utilized to pay Commonwealth Obligations as defined under the General Revenue Bond Resolution. Primarily Commonwealth Obligations are amounts payable to the Commonwealth of Massachusetts including Watershed Trust expenses, Payments in Lieu of taxes and other state government charges. The Commonwealth Obligation Fund. The Commonwealth Obligation Fund balance is based of payments due to the Commonwealth and is funded on a regular basis from the Revenue Fund. The balance in the Commonwealth Obligation Fund on June 30, 2020 was \$0 million.

Construction Fund – The Construction Fund is primarily funded through the proceeds of debt issuances, and some current revenue. Moneys in the Construction Fund are utilized to pay the cost of the Authority’s capital projects and related costs as defined in the General Revenue Bond Resolution. The Construction Fund had a balance of \$141 million on June 30, 2020.

The following table shows a three-year history of fund balances as well as a projection for June 30, 2021. The FY21 year-end projection is based upon General Bond Resolution requirements, projected debt issuances, and projected interest rates. Year-end projected balances for FY21 are subject to change and may vary from the projection.

Fund Balances - \$s in Millions				
Funds	6/30/2018	6/19/2020	6/30/2020	Projected 6/30/2021
Revenue Fund	\$31.0	\$31.0	\$40.0	\$34.0
Operating Fund	\$73.0	\$76.0	\$79.0	\$79.0
Debt Service Fund	\$183.0	\$189.0	\$151.0	\$207.0
Subordinate Debt Service Fund	\$49.0	\$55.0	\$93.0	\$65.0
Water Pollution Abatement Fund	\$66.0	\$68.0	\$71.0	\$74.0
Commonwealth Obligation Fund	\$0.0	\$0.0	\$0.0	\$0.0
Construction Fund	\$106.0	\$189.0	\$141.0	\$126.8
Total	\$508.0	\$608.0	\$575.0	\$585.8

Reserves

Under the terms of its General Bond Resolution, MWRA maintains various reserve funds. Two of MWRA's reserves, Rate Stabilization and Bond Redemption, are used to smooth rate increases. Moneys in the funds are funded from year-end CEB budget surpluses. The amounts in the funds as of June 30, 2020, and the permitted and planned uses are discussed below:

Rate Stabilization - Under the terms of the General Bond Resolution, the annual use of Rate Stabilization monies cannot exceed 10% of the year's senior debt service. Rate stabilization is funded by CEB surpluses and is one of two funds available to smooth rate increases. This reserve balance was \$43.0 million as of 6/30/20. The FY15 through FY20 Final CEB did not include the use of Rate Stabilization Funds. The FY21 CEB includes the use of \$1.5 million in the HEEC reserve and a projected yearend balance of \$41.5 million. Planning estimates based on the FY21 Budget assumes use of Rate Stabilization monies between FY21 and FY23.

Bond Redemption - Monies in the Bond Redemption Fund can be used only to retire or prepay outstanding debt. Like Rate Stabilization, Bond Redemption is funded by CEB surpluses and is also available to smooth rate increases by reducing debt service. There is no annual limit on the amount of Bond Redemption funds used in a year. However, there are constraints based on bond maturity dates. The FY16, through FY20 CEB assumed no use of Bond Redemption. The balance as of June 30, 2020 was \$26.1 million and is projected to remain unchanged in FY21.

In addition to the Rate Stabilization and Bond Redemption funds, MWRA maintains four funded reserves required by the terms of the General Bond Resolution: Debt Service, Operating, Insurance, and Renewal and Replacement. The amount in each reserve, the basis for determining the funding requirement and when a reserve can be used to reduce rate revenue requirements are discussed below:

Debt Service Reserve - This is MWRA's largest reserve, and is funded from bond proceeds. The funding of this reserve is based on the lesser of four tests, and is currently funded at 50% of the maximum annual

debt service. The fund can be used to pay debt service when the amount in the reserve is greater than the remaining debt service. The balance of this reserve fund as of June 30, 2020, was \$156.6 million and projected to remain unchanged in FY21.

Operating Reserve - The required balance is one-sixth of operating expenses for a year, as defined in the Bond Resolution. The balance of this reserve fund as of June 30, 2020, was \$44.0 million and based on FY21 CEB the required balance by the end of FY21 will be \$45.9 million.

Insurance Reserve - MWRA mitigates the budgetary risk of self-insurance by maintaining an insurance reserve. The reserve which was established as part of the Bond Resolution requires that an independent insurance consultant review the adequacy of the funding level every three years. This reserve fund balance as of June 30, 2020, was \$14.0 million and is projected to remain unchanged in FY21. The \$14 million level has been determined to be acceptable and reasonable based on the last review completed in February of 2020.

Renewal and Replacement Reserve – The required balance is set at \$35 million with the difference between the \$10 million in cash and the required balance based on the triennial recommendation of a consulting engineer being available in short-term borrowing capacity. MWRA’s consulting engineer will complete its triennial review in October of 2020.

The following table shows a three-year history of reserve balances as well as projections for June 30, 2021. The FY21 year-end projections are based upon General Bond Resolution requirements and projected debt issuances. Year-end projected balances for FY21 are subject to change and may vary from the projection.

Reserve Balances - \$s in Millions				
Reserves	6/30/2018	6/19/2020	6/30/2020	6/30/2021 Projection
Rate Stabilization	\$43.0	\$43.0	\$43.0	\$41.5
Bond Redemption	\$26.1	\$26.1	\$26.1	\$26.1
Debt Service Reserve - 50% of max Debt Service	\$155.1	\$156.6	\$156.6	\$156.6
Operating Reserve - 1/6 of annual operating expenses	\$40.3	\$42.0	\$44.0	\$45.9
Insurance Reserve - Est. by independent consultant, as of 2020	\$14.0	\$14.0	\$14.0	\$14.0
Renewal & Replacement Reserve - \$10 million required balance	\$10.0	\$10.0	\$10.0	\$10.0
Total	\$288.5	\$291.7	\$293.7	\$294.1

STATEMENT OF FINANCIAL POSITION

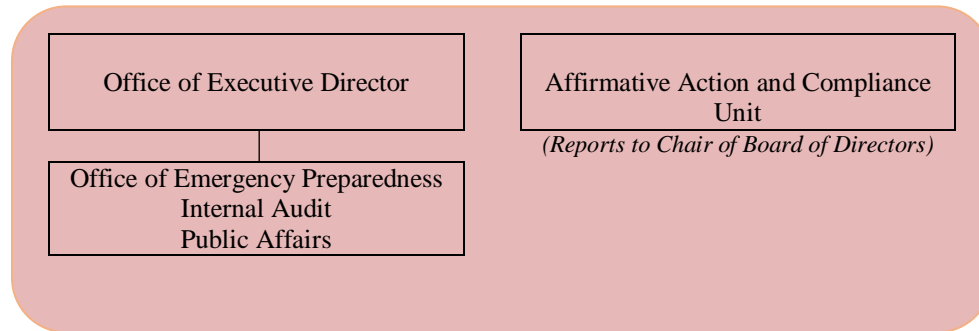
In accordance with its enabling act, each year MWRA submits annual reports to the Governor, the

President of the State Senate, the House of Representatives, the Advisory Board, and the Chairs of the State Senate and House Committees on Ways and Means containing financial statements relating to its operations maintained in accordance with Generally Accepted Accounting Principles in the United States of America (GAAP) and, commencing with the annual reports for 1986, audited by independent certified public accountants. MWRA's audited financial statements at June 30, 2019 are available online at www.mwra.com.



Executive Office
Budget

EXECUTIVE DIVISION



The **Executive Division** provides executive management and guides the implementation of MWRA policies established by the Board of Directors. It is responsible for developing and implementing specific goals and programs to achieve MWRA's primary mission of providing reliable and efficient water and sewer services, improving water quality, and for creating a framework within which all divisions can operate effectively. The Executive Division also oversees a centralized MWRA-wide security program to preserve and protect MWRA facilities, systems and employees.

The Executive Division includes the Office of Executive Director, Office of Emergency Preparedness, Internal Audit, Public Affairs, and the Affirmative Action and Compliance Unit (AACU). Each of these Departments is accounted for separately in the MWRA budget. In addition, the Director of the Tunnel Redundancy Program reports to the Executive Director. However, the Tunnel Redundancy Program is budgeted under the Operations Division budget.

The **Office of the Executive Director** includes the Board of Directors' cost center as well as the MWRA Advisory Board and Advisory Committees' cost centers. The Board of Directors formulates policies to guide MWRA actions and is responsible for major policy and fiscal decision-making. The MWRA Advisory Board was established by the Enabling Act to serve as "fiscal watchdog" for MWRA's customer communities. The Advisory Board makes recommendations to MWRA on annual expense budgets and capital improvement programs. In addition, the Advisory Board reviews and comments on MWRA reports, holds hearings on related matters, and makes recommendations to the Governor and the Legislature. The other advisory committees supported by this budget are the Water Supply Citizens' Advisory Committee (WSCAC) and the Wastewater Advisory Committee (WAC). (A description of the Advisory Board,

FY21 Final Current Expense Budget OFFICE OF THE EXECUTIVE DIRECTOR

DEPARTMENT	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
EXECUTIVE OFFICE	\$ 542,631	\$ 564,015	\$ 571,049	\$ 595,004	\$ 23,955	4.2%
BOARD OF DIRECTORS	61,964	4,775	82,454	101,948	19,494	23.6%
ADVISORY BOARD / OTHER COMMITTEES	710,746	750,854	787,108	817,662	30,554	3.9%
TOTAL	\$ 1,315,341	\$ 1,319,644	\$ 1,440,611	\$ 1,514,614	\$ 74,003	5.1%

WSCAC and WAC is set forth in Appendix E). The Executive Office budget accounts for less than 1% of the MWRA FY21 Direct Expense Budget.

FY21 Goals and Initiatives:

Ensuring a safe and reliable source of drinking water to MWRA customers, and wastewater discharges that meet all applicable regulations drives both capital and current expense budget costs. Five strategic priorities integral to MWRA’s mission were identified for action in MWRA’s FY2016-FY2020 Five-Year Strategic Business Plan.

- I. Drinking Water Quality and System Performance**
- II. Wastewater Management & System Performance**
- III. Infrastructure Management & Resilience**
- IV. Finance & Management**
- V. Environmental Sustainability**

Under each of these priorities, MWRA identified goals and initiatives to guide the Authority’s action. The Executive Department uses the Business Plan to provide the framework for MWRA staff to manage and measure performance. The Office of the Executive Director has also identified core initiatives that support MWRA’s mission and strategic priorities.

- Ensure delivery of reliable and cost-effective water and sewer services to customer communities.
- Ensure that water supply and wastewater collection and treatment preserve public health and protect natural resources.
- Provide overall management of the agency and ensure adherence to all applicable policies and regulations.
- Continue to aggressively pursue renewable and sustainable energy resources to reduce the environmental impacts of daily operations, increase energy efficiencies, and reduce overall operating costs.
- Manage communication and garner support from key constituents for MWRA programs.

**FY21 Final Current Expense Budget
OFFICE OF THE EXECUTIVE DIRECTOR**

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 598,671	\$ 561,100	\$ 645,827	\$ 688,216	\$ 42,389	6.6%
OVERTIME	-	-	-	-	-	-
TRAINING & MEETINGS	-	-	850	850	-	0.0%
PROFESSIONAL SERVICES	165,905	169,188	185,108	190,662	5,554	3.0%
OTHER MATERIALS	2,594	3,404	3,200	3,550	350	10.9%
OTHER SERVICES	548,171	585,952	605,626	631,336	25,710	4.2%
TOTAL	\$ 1,315,341	\$ 1,319,644	\$ 1,440,611	\$ 1,514,614	\$ 74,003	5.1%

Budget Highlights:

The FY21 Final Budget is \$1.5 million, an increase of \$74,000 or 5.1%, as compared to the FY20 Budget.

- \$688,000 for **Wages and Salaries**, an increase of \$42,000 or 6.6%, as compared to the FY20 Budget. The FY21 Final Budget includes funding for five FTEs, the same as the FY20 Budget.

OFFICE OF THE EXECUTIVE DIRECTOR	FY20 FTEs	FY21 FTEs
EXECUTIVE OFFICE	5.0	5.0
TOTAL	5.0	5.0

- \$191,000 for **Professional Services**, an increase of \$6,000 or 3.0%, as compared to the FY20 Budget, mainly due to increases in the Advisory Committees’ operating expenses. This budget funds the Water Supply Citizens’ Advisory Committee (WSCAC) and the Wastewater Advisory Committee (WAC) budgets and includes a 3.0% increase in health insurances with no increase in hourly salary and other reimbursable expenses.
- \$631,000 for **Other Services**, an increase of \$26,000 or 4.2%, as compared to the FY20 Budget. The primary component of this line item is MWRA Advisory Board operating expenses, which is increased mainly in wages and salaries, as well as the installation of cloud-based system.



Fells Reservoir

OFFICE OF EMERGENCY PREPAREDNESS

The **Office of Emergency Preparedness (OEP)** was created in November 2005 to consolidate Authority-wide security and emergency response functions. It is responsible for oversight of the MWRA’s security and emergency response plans, policies, and procedures; implementation and training for the Emergency Response Plan; and management, training, and outfitting of the Emergency Service Unit (ESU), which will respond to any intentional or accidental contamination of the water supply.

FY21 Final Current Expense Budget OFFICE OF EMERGENCY PREPAREDNESS

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 839,048	\$ 722,747	\$ 808,515	\$ 281,574	\$ (526,941)	-65.2%
OVERTIME	128	467	-	-	-	-
MAINTENANCE	638,663	494,304	659,900	495,000	(164,900)	-25.0%
TRAINING & MEETINGS	9,890	12,023	14,500	7,000	(7,500)	-51.7%
PROFESSIONAL SERVICES	2,023,845	1,956,706	2,008,700	1,998,700	(10,000)	-0.5%
OTHER MATERIALS	53,604	19,377	18,042	2,350	(15,692)	-87.0%
OTHER SERVICES	108,807	106,661	109,272	102,152	(7,120)	-6.5%
TOTAL	\$ 3,673,985	\$ 3,312,285	\$ 3,618,929	\$ 2,886,776	\$ (732,153)	-20.2%

FY21 Goals and Initiatives:

I. Drinking Water Quality and System Performance

- **Goal#1 – Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations**
 - Develop and implement policies and programs to provide security, critical infrastructure protection, and emergency planning for the MWRA’s water systems.
 - Continue to enhance Emergency Response Plans for all water and wastewater facilities. Update Emergency Action Plans (EAPs) as needed, including the Western Section Dam EAPs and spill control EAPs.
 - Continue ensuring that new construction and rehabilitation of facilities include an integrated security and surveillance system improvement component. Continue task order security enhancement designs for selected water and wastewater critical sites, fencing installation, and other facility hardening initiatives.
 - Establish a backup security monitoring center and communications head end at Norumbega.
 - Complete facility security audits and implement the resulting enhancement and remedial work recommendations.
 - Improve the cyber security of the MWRA’s physical Security System.

II. Wastewater Management & System Performance

- Develop and implement policies and programs to provide security, critical infrastructure protection, and emergency planning for the MWRA's wastewater systems. While this initiative is not specifically addressed under the goals of the Wastewater Management & System Performance Strategic Priority, security of the system is a key objective of the Office of Emergency Preparedness. All initiatives set forth in Section I above for MWRA's water systems apply to MWRA's wastewater systems as well, unless they address a specific water system location.

III. Infrastructure Management & Resilience

- ***Goal #10 – Prepare for catastrophic events that could affect the water and wastewater delivery systems***
 - Expand, equip, train, and lead the Emergency Service Unit (ESU).
 - Develop and exercise emergency plans and procedures.
 - Manage and direct security guard, security monitoring, and security maintenance contracts.
 - Hold a major Inter-Agency Consequence Management drill.

V. Environmental Sustainability

- ***Goal #16 – Continue to monitor climate change research and move forward with plans to reduce impacts of projected sea level rise and storm surge events on MWRA infrastructure***
 - Plan and install flood protection barriers at water and wastewater sites which fall below expected elevations of flood waters under condition of a FEMA 100-year storm plus 2 ½ feet to minimize damage and still provide service.

FY20 Year-End Accomplishments:

- Completed the Risk and Resiliency Assessments of the water system, through the combined efforts of a team of staff members and a consultant. This work was done in compliance with America's Water Infrastructure Act (AWIA).
- Began work on updating Emergency Response Plans, which is the second phase of AWIA.
- Completed more than 112 training events or drills.
- Continued to provide emergency response training for MWRA staff and community water system staff. Held four Community ERP classes in the fall.
- Completed fencing repairs and upgrade work at 14 sites including, Norumbega Tower, Shaft 9A, Brutsch WTF, and .South Boston CSO.
- Began work on procuring a Visitor Management System.
- Began work on formalizing Security policies and metrics as an outcome of AWIA.

Budget Highlights:

The FY21 Final Budget is \$2.9 million, a decrease of \$732,000 or 20.0% as compared to the FY20 Budget.

- \$282,000 for **Wages and Salaries**, a decrease of \$527,000 or 65.2% as compared to the FY20 Budget, due to the transfer of three positions, two to Planning and one to OH&S. The FY21 Final Budget includes funding for four FTEs, three less than the FY20 Budget.

OFFICE OF EMERGENCY PREPAREDNESS	FY20 FTEs	FY21 FTEs
EMERGENCY PREPAREDNESS	7.0	4.0
TOTAL	7.0	4.0

- \$495,000 for **Ongoing Maintenance**, a decrease of \$165,000 or 25.0% from the FY20 Budget. This budget includes funding of \$125,000 to cover the MWRA-wide security systems preventative maintenance materials and equipment, including cameras, intrusion detection and card readers; \$125,000 for MWRA-wide security systems repair services, and \$20,000 for the intrusion alarm annual and semi-annual monitoring services contracts, which was level funded.
- \$2.0 million for **Professional Services**, a decrease of \$10,000 or 0.5% as compared to the FY20 Budget. The budget includes \$1,998,700 for the Security Guard Services contract for all MWRA facilities: Chelsea, Charlestown Navy Yard (CNY), Deer Island Wastewater Treatment Plant (DITP) and Carroll Water Treatment Plant (CWTP). Also included under Professional Services is \$10,000 for maintaining the Dam Emergency Action Plans (EAPs) to keep the contact information current and distributed.
- \$2,000 for **Other Materials**, a decrease of \$16,000 or 87.0% from FY20 Budget, mainly due to transfer of Health and Safety materials funds for the ESU Team to the Health and Safety dept..
- \$102,000 for **Other Services**, a decrease of \$7,000 or 6.5% from the FY20 Budget. This budget includes funding for licensing cost for two-way radios with Department of Conservation and Recreation (DCR).



Nut Island Headworks

AFFIRMATIVE ACTION AND COMPLIANCE UNIT

Under section 7(g) of MWRA’s enabling act, the **Affirmative Action and Compliance Unit (AACU)** is established to “report directly to the chairman of the Authority and provide for the enforcement of affirmative action plans for employment, procurement and contracting activities of the Authority.” The AACU develops, administers, and monitors compliance of Affirmative Action Plan programs and policies by ensuring equal opportunity and non-discrimination in employment and equitable access of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Disadvantaged Business Enterprises (DBE) in Authority procurement activities.

FY21 Final Current Expense Budget AFFIRMATIVE ACTION & COMPLIANCE UNIT

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 502,922	\$ 500,891	\$ 673,498	\$ 694,642	\$ 21,144	3.1%
OVERTIME	-	-	-	-	-	-
TRAINING & MEETINGS	4,830	5,954	6,600	6,600	-	0.0%
OTHER MATERIALS	2,643	2,406	1,950	1,950	-	0.0%
OTHER SERVICES	806	1,666	1,012	1,636	624	61.7%
TOTAL	\$ 511,201	\$ 510,917	\$ 683,060	\$ 704,828	\$ 21,768	3.2%

FY21 Goals and Initiatives:

In performing its core goals, the AACU undertakes the following initiatives on an on-going basis:

- Assist divisions and departments in the implementation of MWRA’s affirmative action program and promote MWRA’s policy of non-discrimination for all persons in or recruited into its workforce.
- Maintain adequate internal audit and reporting systems to monitor MWRA’s accomplishments of goal attainment in identified underutilized job groups for female and minority representation.
- Communicate to managers and supervisors MWRA's commitment to its equal opportunity policies and affirmative action programs.
- Assist the Human Resources Department in the coordination and oversight of all external/internal recruitment and selection activities including interviewing, hiring, transfers, and promotions of all candidates, including those who are members of a protected class.
- Provide for the equitable participation of minority/women and disadvantaged-owned businesses in procurement opportunities, ensure that minorities and women are represented in the labor force on construction contracts, and coordinate with other public entities regarding state and federal requirements.
- Assist divisions and departments in the understanding and implementation of MBE/WBE/DBE program policies and practices as well as monitor and report on contractor compliance and expenditures.

FY20 Year-End Accomplishments:

- Provided management assistance to the Human Resources Department in the overall recruitment and selection process for qualified candidates for eighty-four (84) new hires and ninety-nine (99) promotions.
- Conducted oversight of 121 construction and professional projects, including 16 site visits monitoring the minority and women workforce as well as MBE/WBE/DBE compliance. At this time, all procurements remain the same.

Budget Highlights:

The FY21 Final Budget is \$705,000, an increase of \$22,000 or 3.2% over the FY20 Budget.

- \$695,000 for **Wages and Salaries**, an increase of \$21,000 or 3.1% over the FY20 Budget. The increase is primarily for wage increases associated with collective bargaining agreements. The FY21 Final Budget includes funding for seven FTEs, matching the FY20 Budget.

AFFIRMATIVE ACTION & COMPLIANCE UNIT	FY20 FTEs	FY21 FTEs
AACU	7.0	7.0
TOTAL	7.0	7.0



Baffle Dams Quabbin Reservoir

INTERNAL AUDIT

The **Internal Audit Department** is prescribed under section 7(h) of the MWRA’s enabling act to “monitor the quality, efficiency and integrity of the Authority’s operating and capital programs and make periodic recommendations and reports to the Executive Director and the Board of Directors.” **The Internal Audit Department** monitors the efficiency and integrity of MWRA operations by auditing financial and program operations; reviewing compliance with accounting and management control systems, laws and regulations, and coordinating the formulation and revisions to MWRA policies and procedures. Internal Audit also monitors MWRA contracts through its contract audit program, including approval of provisional consultant indirect cost rates and subsequent audit of consultant billings, performs construction labor burden reviews, construction change orders and claim audits, and vendor and other contract audits.

FY21 Final Current Expense Budget INTERNAL AUDIT

LINE ITEM	FY18	FY19	FY20	FY21	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY21 to FY20	
WAGES & SALARIES	\$ 652,002	\$ 648,519	\$ 705,062	\$ 719,780	\$ 14,718	2.1%
MAINTENANCE	11	9	-	-	-	-
TRAINING & MEETINGS	4,120	3,124	6,517	6,517	-	0.0%
OTHER MATERIALS	1,159	959	2,168	2,168	-	0.0%
OTHER SERVICES	2,041	1,285	2,100	2,100	-	0.0%
TOTAL	\$ 659,333	\$ 653,896	\$ 715,847	\$ 730,565	\$ 14,718	2.1%

FY21 Goals and Initiatives:

In addition to its statutory core functions, the Department has set the following goals for FY21:

- Encourage more economical and efficient operations, adhere to sound management procedures, and use controls designed to safeguard MWRA assets.
- Assure that automated and supporting manual management information systems provide accurate and useful management information.
- Assure that contractors, consultants and vendors doing business with MWRA have adequate accounting and billing systems to provide current, complete and accurate cost and price information and project invoicing.

FY20 Year-End Accomplishments:

- Identified \$2,532,735 in savings through the third quarter related to: internal audits, management advisory services, consultant audits, preliminary consultant reviews, construction labor burden reviews, vendor reviews, facility lease agreements; the HEEC agreement for the new cable, the true-up of the capacity charge and O&M costs for 2018 for the old cable, and on-going savings from the lease of the engine house by the Fore River Railroad Corporation.

- Issued final audit reports on Chelsea and Navy Yard leases and the Cambridge financial assistance agreement. Issued five incurred cost audits, five preliminary consultant and eight preliminary construction reviews.
- Issued audit reports on Fleet Data Asset Tracking Verification, Fleet Services Non-Plated Equipment Inspections and a follow-up of the Inventory Control Task Force report.
- Provided management advisory analysis services dealing with MWRA overhead rates, unemployment compensation, HEEC tariff filings, CORI and background checks, purchase card activity, Bay State Fertilizer financial results, lease proposals, DITP WR electricity rate, and various contract, amendment and change order negotiations.
- Provided support to the Law Division in the matter of HEEC filings of the tariff with the Department of Public Utilities on the proposed new cross-harbor electrical cable and for the existing cable.
- Thirty-three audit recommendations have been closed during the period.

Budget Highlights:

The FY21 Final Budget is \$731,000, an increase of \$15,000 or 2.1% as compared to the FY20 Budget.

- \$720,000 for **Wages and Salaries**, an increase of \$15,000 or 2.1% as compared to the FY20 Budget, primarily for wage increases associated with collective bargaining agreements. The FY21 Final Budget includes funding for 6.7 FTEs, the same as the FY20 Budget.

INTERNAL AUDIT DEPARTMENT	FY20 FTEs	FY21 FTEs
INTERNAL AUDIT	6.7	6.7
TOTAL	6.7	6.7



Alewife Brook Wastewater Pump Station

PUBLIC AFFAIRS

The **Public Affairs Department** is the institutional link to the public and government. The Department’s responsibilities are spread over five separate sections.

The **Legislative Section** of the Department works for passage of legislation necessary to carry out MWRA’s mission, monitors legislation, responds to inquiries by elected and appointed officials, and pursues funding from the state legislature for MWRA projects. MWRA’s highest legislative priority continues to focus on the need for a robust “Commonwealth Rate Relief Package” to help offset anticipated rate increases over the next several years.

The **Community Relations Section** deals directly with cities and towns in the MWRA service area, responds to inquiries about MWRA, proactively incorporates community concerns into MWRA project work, coordinates outreach and education initiatives to highlight MWRA programs, and provides technical expertise for specific projects and initiatives. Community Relations staff also work in conjunction with Planning Department staff to ensure compliance with state and local regulations and restrictions.

The **Communications Section** manages media relations, issues press releases and responds to information requests, oversees the design and distribution of MWRA publications, manages the internal and external web sites and social media platforms, and provides design, editorial, and graphics services for other sections of MWRA.

The **Education Section** is responsible for curriculum development, teacher training workshops, as well as providing school education materials on water quality, water conservation, wastewater topics, and environmental issues.

The Communications and Education Sections are led by the Special Assistant to the Executive Director, located in the Executive Office.

FY21 Final Current Expense Budget							
PUBLIC AFFAIRS							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 1,060,989	\$ 882,077	\$ 1,063,214	\$ 1,033,447	\$ (29,767)	-2.8%	
OVERTIME	-	279	500	500	-	0.0%	
FRINGE BENEFITS	6	10	-	-	-	-	
MAINTENANCE	65	33	-	-	-	-	
TRAINING & MEETINGS	5,230	7,491	4,586	8,956	4,370	95.3%	
PROFESSIONAL SERVICES	-	-	1,300	1,300	-	0.0%	
OTHER MATERIALS	21,548	27,306	25,896	25,896	-	0.0%	
OTHER SERVICES	29,534	28,805	48,821	49,522	701	1.4%	
TOTAL	\$ 1,117,372	\$ 946,001	\$ 1,144,317	\$ 1,119,621	\$ (24,696)	-2.2%	

FY21 Goals and Initiatives:

The core function of the Public Affairs Department is to support the MWRA's achievement of all five key strategic priorities set forth in the FY16-FY20 Five-Year Strategic Business Plan. To that end, the Department has set the following initiatives:

- Work with the Massachusetts Legislature to advocate on behalf of member communities regarding issues that are crucial to the Authority's core mission. The Executive Director and Director of Intergovernmental Affairs routinely meet with House and Senate leaders to discuss issues that are crucial to the Authority and its customers. All newly filed legislation and regulations that could impact the Authority from an operational and administrative perspective are analyzed and monitored, and appropriate responses are formulated in concert with the Office of the Executive Director (OED).
- Enhance overall public understanding of MWRA's mission, goals, and benefits to the public through extensive outreach and effective communication.
 - Develop and implement proactive strategies for educating and informing key MWRA constituencies and the public at large about MWRA's mission, projects and progress, and promote understanding for associated costs.
 - Gain public support for MWRA programs and projects while responding to the needs and concerns of elected, appointed public officials, and the public.
 - Continue to grow the user population of MWRA's Everbridge communication platform in order to reach as many residents as possible, keeping them up to date on meetings, reports, infrastructure projects, and CSO Notifications
 - Continue to expand the presence of MWRA's portable water fountain at public events in service communities, once the COVID-19 pandemic has subsided.
- Maintain and update MWRA's Community Contact Database. This Community Contacts tracking application is used to notify MWRA's communities of any operational issues or emergencies affecting them or surrounding communities.
- Continue to provide accurate and timely information to the public through the MWRA's website and social media accounts, e.g., Twitter, Flickr and Instagram.
- A major initiative for FY21 will be a refresh of the MWRA's website.
- A Five-Year Progress Report will be produced in FY21.
- Continue to respond to media requests in a timely and accurate fashion.
- Continue to develop presentations and graphics for use in a wide range of MWRA programs.
- Communications staff now has responsibility for the MWRA's drone program and will continue to take baseline photos of MWRA facilities and infrastructure, in addition to other requests for drone footage, in compliance with FAA regulations.

- In FY21, Communications staff will work with Advisory Board staff to develop a “virtual tour” in lieu of the annual field trip.
- Continue to design and produce Annual Water Quality Report for every household within the MWRA service area.
- Continue to provide educational support through classroom visits, teacher training, educational material development, and facility tours. With classroom visits uncertain for the coming school year, School Program staff will be working to provide remote presentations and additional materials on the website.
- Provide technical support to 14 cities and towns that host MWRA’s emergency back-up aqueducts as part of the Public Access Aqueduct Program.
- Continue to work with cities and towns to implement the Public Access Initiative on the Wachusett, Weston, Sudbury, and Cochituate Aqueducts.
- Provide support to MWRA staff to ensure that MWRA projects meet regulatory requirements, and provide input to regulatory agencies in order to ensure MWRA interests are recognized during the development of regulations.

FY20 Year-End Accomplishments:

- Governor Baker’s House 2 Budget included a statewide appropriation for the Sewer Rate Relief Fund of \$1,100,000. MWRA has historically received approximately 75% of that total appropriation. However, due to the COVID-19 Pandemic, the House and Senate have delayed passing the final budget until there is a better understanding of anticipated revenue. Staff will continue to monitor budget developments.
- Successfully grew the Everbridge communication platform to over 900 public opt-in subscription in an effort to keep community members informed of construction project updates, service notices, and public meetings. Sent out daily traffic alerts related to Northern Intermediate High and Southern Extra High Construction projects as well as Monthly Water Quality Updates and Board Meeting notifications. Continued efforts will be made to increase public opt-in subscriptions and expand MWRA utilization of this platform, including the newly developed CSO Public Notification effort. Also utilized the Everbridge Employee Notification function to provide important and timely updates to all staff during the COVID-19 pandemic.
- Conducted several public meetings to update public officials and residents of MWRA’s upcoming and ongoing infrastructure investments and their potential impacts on local communities. These included, among others, several meetings with Stoneham residents and the Board of Selectman regarding the Northern Intermediate High Water Transmission Redundancy and Storage Project as well as meeting with Dedham officials and residents regarding the Southern Extra High Redundancy.
- Aqueduct Trails: To date, MWRA staff has issued Section 8 (m) Permits to most communities hosting the Wachusett, Wachusett Open Channel, Weston, Sudbury, and Cochituate Aqueducts as part of the Public Access Aqueducts Program. To date, MWRA has authorized approximately 27 miles of

Aqueduct Trails. MWRA estimates that approximately 20 miles are currently open including new sections in the Town of Wayland, Northborough and small sections as part of the Bay Circuit Trail in Southborough and Framingham.

Wachusett Aqueduct and Open Channel

Northborough: 4.7 miles permitted, of which 4.2 miles opened to the public
Southborough: 2.2 miles opened to the public along the Open Channel

Bay Circuit Trail Connector

Framingham: 0.1 miles open to the public
Southborough: 0.4 miles open to the public

Weston Aqueduct

Framingham: 4.3 miles permitted, of which 3.0 miles opened to the public
Weston^[1]: 1.5 miles opened to the public and 500' alternative trail opened on private Pine Brook Country Club property to link public trail
Wayland: 4.3 miles opened to the public

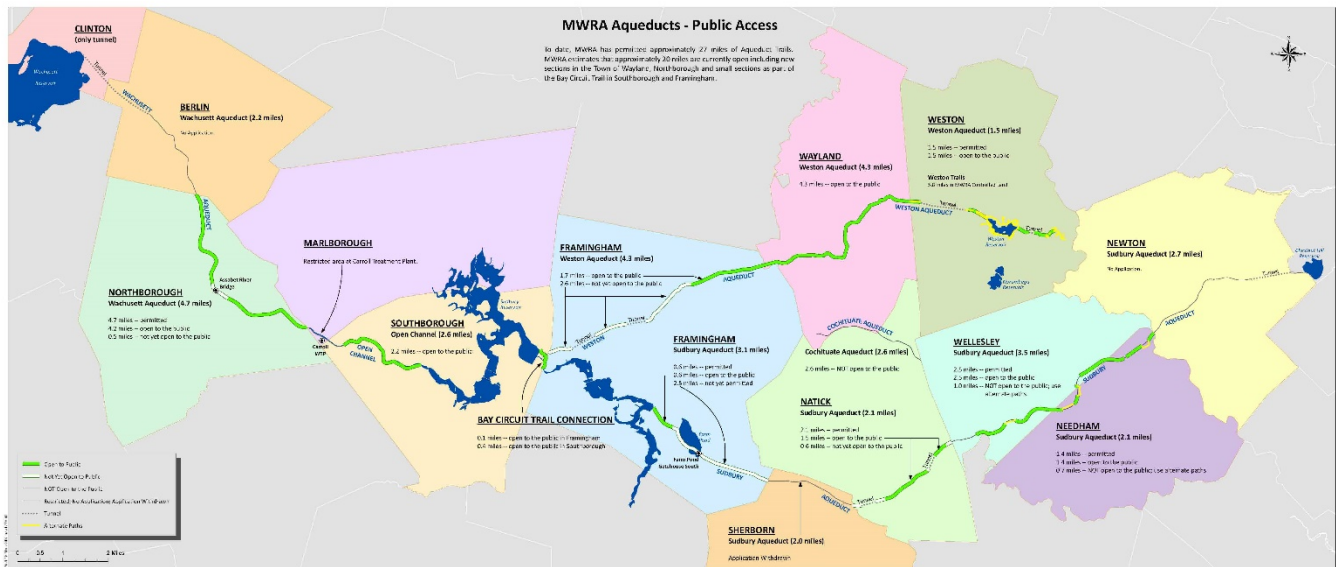
Sudbury Aqueduct

Framingham: .6 miles open to the public
Natick: 2.1 miles permitted, of which 1.5 miles opened to the public
Wellesley: 2.5 miles opened to the public
Needham: 1.4 opened to the public and an additional .5-mile trail opened on private Olin/Babson College property to link public trail

Cochituate Aqueduct

Natick: 2.6 miles permitted (0 miles opened to the public)

^[1] Approximately 3.3 miles of additional trails were authorized surrounding the Loring Road Storage Tank and Weston Reservoir as part of previous MWRA commitments included in Memorandum of Agreements with the Town of Weston.



- Continued to grow partnerships and expand public outreach in member communities at over 50 public events across the service area by providing educational materials as well as access to free drinking water with MWRA’s Water Fountain. The total number of events would have been higher than last year had it not been for the pandemic. The program continues to grow in popularity.
- The Annual Water Quality Report was mailed out to all households in MWRA water service communities in June in accordance with the EPA mandate.
- Staff have continued to provide monthly updates on construction projects on MWRA’s website.
- The School Education staff continues to conduct daily classroom visits within the MWRA service area to educate elementary school children on the importance of water and sewer infrastructure on their daily lives. The annual poster and essay contest for FY2020 focused on the issues around wipes and other non-flushable items and their effects on sewer infrastructure. This program provides an important opportunity for the students, teachers and parents to learn together about MWRA’s mission. Unfortunately, the contest judging and ceremony were put on hold due to the COVID-19 pandemic.

Budget Highlights:

The FY21 Final Budget is \$1.1 million, a decrease of \$25,000 or 2.2%, as compared to the FY20 Budget.

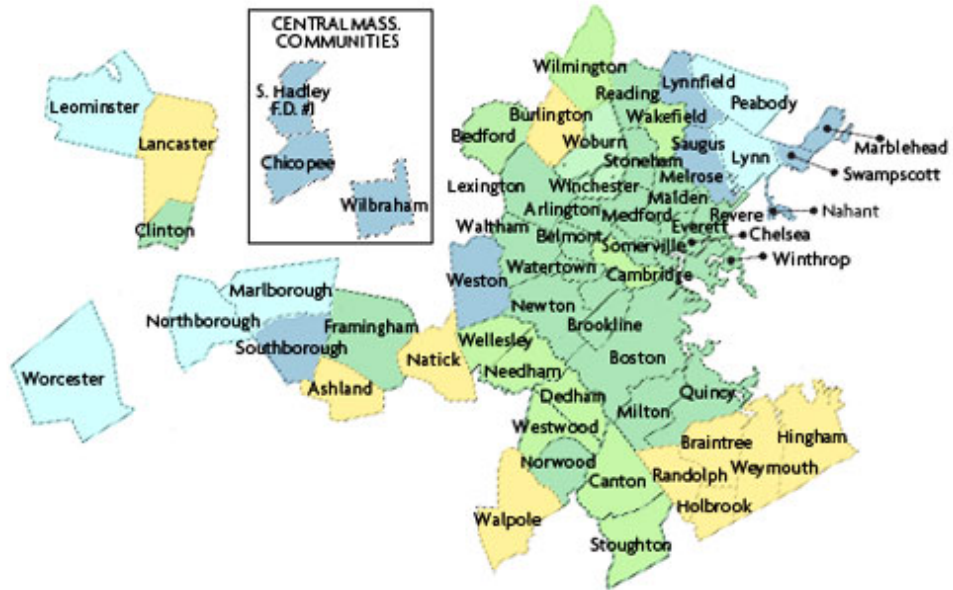
- \$1.0 million for **Wages and Salaries**, a decrease of \$30,000 or 2.8%, as compared to the FY20 Budget reflecting salary savings due to staff replacements at lower salaries partially offset by wage increases associated with collective bargaining agreements. The FY21 Final Budget includes funding for 11.9 FTEs.

PUBLIC AFFAIRS DEPARTMENT	FY20 FTEs	FY21 FTEs
PUBLIC AFFAIRS	11.9	11.9
TOTAL	11.9	11.9



MWRA SERVICE AREA

- Water only
- Sewer only
- Water and sewer
- Partial/emergency water only
- Full sewer, partial/emergency water only





Operations Division
Budget

OPERATIONS DIVISION

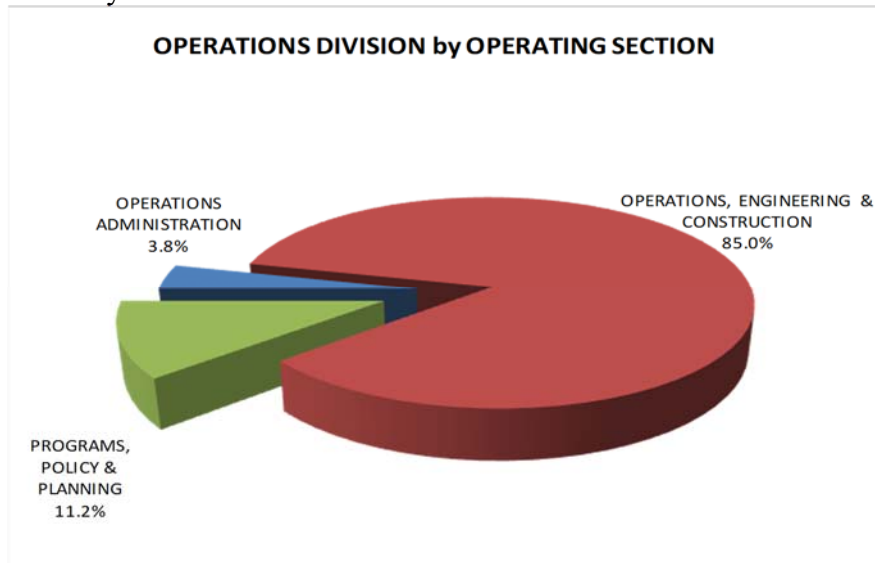


The **Operations Division** provides MWRA’s wastewater and water system services including operations, maintenance, and treatment; environmental monitoring and laboratory testing and analyses; and engineering, construction, planning, and administration. MWRA’s Chief Operating Officer (COO) leads this division.

FY21 Final Current Expense Budget OPERATIONS DIVISION

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 79,087,128	\$ 80,832,503	\$ 85,576,381	\$ 88,609,849	\$ 3,033,468	3.5%
OVERTIME	4,524,031	5,111,941	4,765,782	4,886,114	120,332	2.5%
FRINGE BENEFITS	109,288	124,755	114,336	114,560	224	0.2%
CHEMICALS	9,659,734	10,891,948	11,811,221	12,091,255	280,034	2.4%
UTILITIES	21,894,330	24,344,315	24,343,687	24,093,540	(250,147)	-1.0%
MAINTENANCE	24,363,903	25,656,188	27,214,006	27,335,720	121,714	0.4%
TRAINING & MEETINGS	142,101	325,115	297,600	200,600	(97,000)	-32.6%
PROFESSIONAL SERVICES	2,451,456	2,545,665	2,648,914	2,584,682	(64,232)	-2.4%
OTHER MATERIALS	4,792,529	4,628,181	4,811,000	5,095,950	284,950	5.9%
OTHER SERVICES	18,657,499	19,767,832	20,355,514	20,416,753	61,239	0.3%
TOTAL	\$ 165,681,999	\$ 174,228,443	\$ 181,938,441	\$ 185,429,023	\$ 3,490,582	1.9%

The Operations Division is composed of the Operations Administration Department and four operating sections, led by the Deputy Chief Operating Officer (DCOO), Chief Engineer, Director of Wastewater and Director of Water. In addition to managing the operating sections, the managers provide support to the Chief Operating Officer on key MWRA operations, technical, policy, community coordination, permitting and public constituency matters.



The **Operations Administration Department** provides division-level oversight and general management support in the following areas: administration, personnel, finance, contract administration, comprehensive energy planning and management, regulatory affairs and environmental management, and general management. The Operations Administration Department budget represents 3.8% of the Operations Division budget and includes funds for MWRA vehicle purchases and division-wide professional memberships.

The Department’s budget also covers the Tunnel Redundancy Program that oversees and manages the upcoming multi-decade \$1.4 billion water system Tunnel Redundancy Program, expected to be active from FY18 through FY42. Given the complexity of the project, the group is independent of existing engineering and construction departments and reports directly to the Executive Director. However, the department’s CEB is included within the Operations Division budget to allow for sufficient administrative support.

The **Programs, Policy & Planning Section** is composed of the Toxic Reduction and Control, Environmental Quality, Laboratory Services, and Planning departments. In total, the budgets for these departments represent 11.2% of the Operations Division’s budget. Brief descriptions of the departments in this section are as follows:

- The **Toxic Reduction and Control (TRAC) Department** operates a multi-faceted program to minimize and control the inflow of hazardous or toxic materials into the MWRA sewer system. TRAC operates MWRA’s Environmental Protection Agency (EPA-approved) Industrial Pretreatment Program and oversees implementation of MWRA’s 8-M Permits processes.
- The **Environmental Quality Department (EnQual)** has two units: EnQual-Water and EnQual-Wastewater. EnQual-Water manages compliance with the reporting requirements of the MassDEP

Drinking Water Regulations, as well as conducts and oversees the drinking water quality-monitoring program. EnQual-Wastewater manages compliance with the reporting requirements of MWRA's National Pollutant Discharge Elimination System (NPDES) permits. This unit analyzes environmental data and prepares reports on the quality of sewage influent and effluent and the water quality of Boston Harbor and its tributary rivers and Massachusetts Bay.

- The **Laboratory Services Department** supports various client groups in the Operations Division, the Massachusetts Department of Conservation and Recreation (DCR), and the MWRA member communities; providing field sampling, laboratory testing, and reporting services. Most of the testing is required to meet the strict guidelines of regulatory programs and permits including the Safe Drinking Water Act (SDWA) and MWRA's NPDES permits.
- The **Planning Department** provides planning, advocacy, and decision support services on policy, public health, regulatory, and operations matters regarding MWRA's potable water and wastewater systems.

The **Operations, Engineering & Construction Section** is composed of the Wastewater Treatment, Field Operations, and Engineering & Construction departments. In total, the budgets for these departments represent 85% of the Operations Division's budget. Brief descriptions of the departments in this section are as follows:

- The **Wastewater Treatment Department** operates and maintains the Deer Island Treatment Plant (DITP), Clinton Wastewater Treatment Plant, and Residuals Processing Facility (pelletization plant) in Quincy.
- The **Field Operations Department (FOD)** manages the following functions: wastewater pretreatment, wastewater collection and transport, water distribution, and water treatment including the Carroll Water Treatment Plant (CWTP). This department is responsible for operating, maintaining, and metering both the water and wastewater systems.
- The **Engineering and Construction Department** supports the maintenance, repair, and rehabilitation of the wastewater and water systems by providing in-house engineering, drafting, surveying, consultant management, construction management, and other technical assistance. The department is also responsible for implementation and monitoring of the Combined Sewer Overflow (CSO) plan.

FY21 Final Current Expense Budget						
OPERATIONS DIVISION by OPERATING SECTION						
OPERATING SECTION	FY18	FY19	FY20	FY21	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY21 to FY20	
OPERATIONS ADMINISTRATION	\$ 4,902,826	\$ 5,759,957	\$ 6,643,355	\$ 6,998,312	\$ 354,957	5.3%
OPERATIONS, ENGINEERING & CONSTRUCTION	141,081,379	148,586,134	154,162,499	157,608,224	3,445,725	2.2%
PROGRAMS, POLICY & PLANNING	19,697,794	19,882,352	21,132,587	20,822,487	(310,100)	-1.5%
TOTAL	\$ 165,681,999	\$ 174,228,443	\$ 181,938,441	\$ 185,429,023	\$ 3,490,582	1.9%

FY21 Goals and Initiatives:

The Operations Division core function is to plan, develop, implement, and operate efficient, reliable, and economical water treatment/delivery and wastewater transport/treatment systems in an environmentally sound manner. Accordingly, the Division takes the lead on the following MWRA goals included in the draft FY21-FY25 Five-Year Strategic Business Plan (pending Board approval; delayed due to pandemic):

I. Drinking Water Quality and System Performance

- **Goal #1- Compliance with Regulatory Requirements and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations. Special initiatives include:
 - Identify and evaluate the impact of different treatment strategies and scenarios on the mitigation of transportation related contaminants into the source water.
 - Evaluate new water quality monitoring equipment and testing techniques to monitor and maintain high quality water all the way to the ends of the community systems.
 - Participate with other nationwide water utilities in Water Research Foundation studies, specifically research opportunities pertaining to algae monitoring and mitigation strategies in source water.
 - Collaborate with CVA communities to modify chlorine-dosing strategy to minimize the formation of disinfection byproducts.
 - Increase water quality monitoring at the Quabbin Reservoir by the installation of a seasonal water quality-profiling buoy. Implement routine and automatic data transfers to ensure data is proactively reviewed and managed.
 - Evaluate data from UCMR4 2018-2020 monitoring and compare against nationwide occurrence data.
- **Goal #2 – Water Quality Public Communications:** Continue to effectively report and communicate water quality information to our customers and public officials. Special initiatives include:
 - Regulatory communicate routine TCR monitoring data to Water Departments and assist with water quality sampling or training, as needed.
 - Continue to strengthen planning and emergency response documents for Boil Water Order (BWO) events. Work with departments to create, disseminate and train staff on materials that can be used during a BWO event or at a public information call center.
- **Goal #3 – Technical Assistance for Water Communities:** Assist member communities to improve local water distribution systems through ongoing financial, technical and operational support programs to maximize long-term water quality benefits. Special initiatives include:
 - Enhance outreach and technical assistance within the existing Lead Service Line Replacement program to support communities in response to EPA’s revisions to the Lead and Copper Rule.

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system. Initiatives include:
 - Continue to carry out the Pretreatment Program to protect receiving water quality, maximize the beneficial reuse of wastewater residuals, and protect workers and MWRA’s wastewater treatment plants.

- Continue to monitor DITP processes to ensure high quality treated effluent, optimizing plant performance to ensure all applicable NPDES permit limits continue to be attained.
 - Operate the newly installed enhanced phosphorus control systems at the Clinton Wastewater Treatment Plant to ensure compliance with its new NPDES permit.
- **Goal #5 – Regulatory Changes:** Continue to initiate plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality. Special initiatives include:
 - Develop a plan to respond to emerging contaminants, such as PFAS, micro plastics, etc. as they are identified, and frame an approach to respond to the public’s concerns about these contaminants.
 - Assess thresholds for annual nitrogen loading, including evaluating the existing thresholds and the environmental impact of nitrogen, as well as whether these thresholds developed over 20 years ago are valid or should be modified.
 - Review new waste treatment technologies as they arise to continuously improve treatment performance and efficiency.
 - Continue to work with researchers investigating the use of wastewater as an indicator of the presence of the Covid-19 virus.
- **Goal #6 – Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects. Initiatives include:
 - Continue to design and implement facility rehabilitation projects for various pump stations, headworks, CSO facilities and the Deer Island Treatment Plant.
 - Continue to implement an ongoing program to review, prioritize and accelerate interceptor renewal projects.
- **Goal #7 – CSO Plan Compliance:** Complete all CSO milestones by 2021 and demonstrate that the CSO Plan meets its performance objectives. Special initiatives include:
 - Conduct an evaluation of the CSO treatment processes to determine potential opportunities to better meet permit limits. Confirm or reassess treatment processes as part of CSO facility rehabilitation projects.
 - Implement a subscriber-based CSO Public Notification Program. Provide notification of a CSO overflow within 4 hours of start of the discharge.
 - Implement near real-time SSO reporting system to provide public information and ensure reporting timeframes meet regulatory requirements.
- **Goal #8 – Technical Assistance for Wastewater Communities:** Assist member communities to improve their wastewater collection systems through ongoing technical, financial, and operational support programs. Initiatives include:
 - Provide technical and operational support including TV inspections, fieldwork assistance, or other targeted assistance, as needed.
 - Promote and manage MWRA’s Inflow/Infiltration Local Financial Assistance Program to facilitate reduced I/I in local community infrastructure.
 - Participate in Lower Mystic Resiliency Planning as an abutter to the Lower Mystic.

III. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support levels.
 - The FY21 Capital Improvement Program forecasts \$266 million in spending in FY21, of which \$153.5 million supports Wastewater System Improvements and \$90 million supports Waterworks System Improvements.
 - There are 196 active contracts in FY21 of which 68 are for design of Wastewater and Waterworks Systems Improvements and 48 are for construction, with projected spending of \$41.4 million for design and \$136.2 million for construction. In addition, there are 80 active other contracts with total spending of \$88.5 million.

Special initiatives include:

- Continue use of Condition Monitoring for all Water and Wastewater sites. Expand Condition Monitoring techniques to provide earlier indication of asset degradation.
 - Conduct an updated benchmarking analysis in order to identify gaps and sustain the goal of maximizing asset protection while potentially identifying new best practices in the industry.
 - Update the wastewater metering system and evaluate new technologies to ensure continued accurate flow accounting and to enhance its usefulness for operational and evaluation purposes by adding additional monitoring locations.
 - Continue to research and develop Key Performance Indicators (KPI) to compare our performance internally and against the industry.
 - Enhance and monitor water pipeline protection to maximize pipeline lifetime.
 - Expand integration between the MWRA's Authority-wide Enterprise Asset Management (EAM) system Maximo with Lawson (Infor), Process Information (PI) and Automated Vehicle Location (AVL) systems to expand the use of Predictive Management (PdM) tasks, increasing functionality, asset tracking and improved workflow to reduce equipment downtime and control budget spikes. Utilize updated MAXIMO to increase opportunities for paperless work.
 - Continue to upgrade and improve upon the Supervisory Control and Data Acquisition (SCADA) and Process Information and Controls System (PICS) hardware and software to meet the current industry standard and to address cyber security concerns.
- **Goal #10 – Emergency Preparedness:** Prepare for catastrophic events and malicious acts that could affect the water and wastewater systems. Operations Division initiatives include:
 - Continue to improve and incorporate redundancy and operational flexibility within the water system to ensure uninterrupted service.
 - Continue to train staff on various potential emergency scenarios and participate in broader Massachusetts Emergency Management Agency (MEMA) and other training exercises.
 - Complete the Preliminary Design and Environmental Impact Report for the Metropolitan Tunnel Redundancy Program and initiate final design.
 - Update MWRA's earthquake preparedness to bring our facilities up to current standards.
 - Move forward with a Wastewater Facility Emergency Response Planning project that will identify potential measures to minimize disruptions at selected wastewater assets/facilities that have periodically failed, resulting in a loss of flow conveyance.

IV. Environmental Sustainability

- **Goal #15 – Energy Optimization:** Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA's energy assets.

- Self-generate ~ 29.5% of the Deer Island Treatment Plant's (DITP) required power through optimization of power generation assets, including the wind turbines, Steam Turbine Generation (STG) back pressure system, photovoltaic panels, and Combustion Turbine Generators (CTGs).
- Contribute ~ \$2.6 million in energy revenue to MWRA's ratepayers through optimization of power generation assets and participation in energy revenue programs such as demand response, energy credits, power sales, and utility rebates. Also, avoid at least \$850,000 in capacity charges through use of self-generation assets during peak load events.

Special initiatives include:

- Move forward with the design of new gas turbine combined heat and power equipment to take advantage of the higher power and thermal efficiencies of new equipment, maximizing the production of additional electric power for on-site use at Deer Island as well as cost savings while reducing maintenance spending on aging equipment.
- Evaluate and implement where feasible combined heat and power technology in plant operations to improve energy efficiency. (pellet plant, other)
- Continue to develop the battery storage projects and work with the utility and its contractor to optimize demand savings. Explore community solar opportunities that will stimulate large-scale remote solar installations and save money on our electric bills.
- Explore a new MWRA-wide building/plant information management system that includes a comprehensive energy management system.



- **Goal #16 – Climate Change Adaptation:** Continue to monitor climate change research and move forward with plans to reduce impacts of projected sea level rise and storm surge events on MWRA infrastructure. Initiatives include:
 - Incorporate design modifications into facility renovations and maintenance activities to address sea level rise and storm surge.
 - Plan and install flood protection barriers at water and wastewater sites which fall below expected elevations of flood waters under condition of a FEMA 100 year storm plus 2 ½ feet to minimize damage and still provide service.
- **Goal #17 – Water System Expansion:** Advance reasonable water system expansion. Initiatives include:
 - Continue to provide assistance to communities seeking admission to the MWRA's water system or seeking emergency withdrawals.
 - Work with prospective communities to inform them of the benefits of admission.

The strategic priorities and goals that apply to each department within the Operations Division are presented in departmental budget sections. For more information about MWRA's Business Plan, please refer to the Business Plan section of the Transparency page on MWRA's website at mwra.com

FY20 Year-End Accomplishments:

For more information about this topic, please refer to the Performance Indicator section of the Transparency page on MWRA's website at mwra.com. Also, COVID19 pandemic restrictions during mid-March through mid-June resulted in reduced staffing and reprioritization of work during that period.

I. Drinking Water Quality and System Performance

- Met water quality and treatment standards in the drinking water system during FY20.
- Developed and trained community staff in preparation for EPA's Unregulated Contaminant Monitoring Rule 4 program which commenced in 2018 and continues into 2020. Also continued to participate in the Unregulated Contaminant Rule 4 sampling program.
- Continued to develop and refine equipment maintenance plans and life cycle projection for newly expanded monitoring equipment inventory with a total estimated value of over \$2 million.
- Performed reservoir level management control at all metropolitan reservoirs to maintain normal operating levels.
- The Laboratory Services Department performed 125,589 tests (including data entry of field tests) related to drinking water quality including the annual Lead and Copper Rule testing.
- The Laboratory Services Department performed 901 tests in support of community efforts to identify and reduce lead service lines in schools.
- Distributed \$24.7 million in interest-free loans to member water communities plus an additional \$5.2 million for lead service line replacement

II. Wastewater Quality and System Performance

- Deer Island received the Platinum Peak Performance Award for 2019 from the National Association of Clean Water Agencies (NACWA) for the 13th continuous year. The award recognizes facilities for outstanding compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. DITP has had no permit violations for over 13 years.
- DITP met secondary permit limits at all times, treating on average more than 99.6% of flows with full secondary treatment.
- Eversource completed the installation of a new 115 kVA cross-harbor marine power cable to Deer Island, which replaced the existing cable and added redundant fiber optic lines for network and phone communications during August 2019. DITP operated on CTG power-only for 18 days continuously without incident during the final phase of cable installation in August.
- Processed 111.7 average tons per day of sludge at the Pelletization Plant and disposed of 5,460 tons of grit and screenings through a contracted vendor.
- The TRAC Department completed the following Environmental Protection Agency (EPA)-required work for significant industrial users (SIUs): 195 inspections, 172 monitoring events, and 388 sampling of connections. TRAC also issued or renewed 325 permits to SIUs and non-SIUs.
- TRAC promulgated revisions to the following regulations on September 6, 2019: Adjudicatory Proceedings (360 CMR 1.00), Enforcement and Administrative Penalties (360 CMR 2.00), and the Sewer Use Regulations (360 CMR 10.000). The regulations had not been revised since 2009. The recent revisions established the Dental Discharges group permit (new) for eligible dental practices. Concurrently, TRAC mailed a one-time compliance report to all dental facilities in MWRA's service area to assist with determining whether a dental facility would receive a Dental Discharges group permit from TRAC. Starting in March, MWRA issued permits to more than 700 dental facilities
- The Department of Laboratory Services performed 210,224 tests (including data entry of field tests) for wastewater quality including the MA Bay water column testing for the Harbor and Outfall Monitoring program.
- EnQual carried out permit-required environmental monitoring of Boston Harbor and Massachusetts Bay water column, sediments, fish and shellfish and CSO receiving water quality. The department

finalized 13 technical reports, put monitoring results on its website, and sent reports to government regulators, the Outfall Monitoring Science Advisory Panel and interested members of the public.

- Distributed \$40.2 million in grants and interest-free loans to member sewer communities to rehabilitate their collection systems with the goal of structurally reducing infiltration and inflow.

III. Infrastructure Management and Résilience

Maintenance

- The Operations Division spent \$24.7 million on maintenance of which \$10.9 million was for materials and \$13.8 million was for services.
- Procured and implemented numerous contracts for maintenance services, including the following:
 - Groundskeeping services for 31 metro Boston facilities and DITP
 - Combustion Turbine Generator Maintenance at DITP
 - Electrical equipment testing at DITP
 - Instrumentation maintenance and calibration
 - Boiler and water heater maintenance
 - Invasives plant control services at water system reservoirs
 - Lab equipment maintenance
 - Fire alarm and fire protection sprinkler system maintenance
- Procured and implemented numerous contracts for maintenance projects including:
 - Manhole rehabilitation
 - Prison Point CSO Facility tide gate replacement
 - Replacement parts for DITP activated sludge pumps
 - Rebuilding Muffin Monster grinders at DITP
 - Purchase of pontoon style vertical water quality profiling buoy for the Quabbin Reservoir
 - Purchase of five sondes and inspection and maintenance services for the Quabbin Reservoir
- Completed numerous maintenance projects including the following representative work:
 - **DITP:** Replaced 13 in-line grinders and four air handling units in Residuals. Rebuilt one of the three Norwalk custom horizontal straight-line gas compressor that pressurizes the digester gas prior to the boilers. Replaced five sluice gates in the Primary section of the treatment plant; refurbished pump #9 at the North Main Pump Station (NMPS).
 - **Clinton Wastewater Treatment Plant:** Replaced 40 damaged filter cartridges and reinstalled five bands on each disc filter to improve efficiency of filter cleaning in the new phosphorous reduction facility; replaced #1 digester boiler burner; replaced #3 RAS pump.
 - **Wastewater System:** Installed new VFD at Framingham Pump Station and new boiler at Delauri Pump Station; replaced grinder and Water Pump #1 at Prison Point CSO and motor for #1 fine screen at Cottage Farm CSO. Re-piped odor control chemical feed systems at Columbus Park and Ward Street Headworks.
 - **Metering and SCADA:** Installed new wastewater data loggers in preparation for the metering upgrade. Installed new modems for the water and wastewater meters in preparation for a

cybersecurity upgrade and Verizon system change. Installed new control cabinet and replacement PLC for the Brutsch Water Treatment Plant.

- **Carroll Water Treatment Plant:** Staff coordinated the annual half plant shutdown of the treatment process. Annual tank cleaning resumed along with half plant shutdown tasks including replacing chemical feed check valves, inspecting hatches and UV Reactor maintenance. Successfully tested three emergency generators under load bank conditions for EPA compliance purposes.
 - **Water System:** Identified and repaired more than 25 leaks, many while the pipelines remained in service. Repaired the High Density Polyethylene pipe on part of the Watertown Section pipeline. Provided leak detection assistance to 26 communities.
 - **Dam Maintenance:** Constructed seepage weir on Dam 8 at Fells Open Reservoir. Completed drainage and road repairs at the Wachusett Dam in Clinton.
- In water system, exercised 838 and replaced 10 mainline valves; exercised 440 and replaced four blow-off valves.
 - In the wastewater system, inspected 27 miles and cleaned 29 miles of MWRA pipeline. Inspected 747 structures and rehabilitated 51 manholes. Also inspected 41 and cleaned 70 inverted siphon barrels.

Capital Improvements

- FY20 spending totaled \$159 million broken out by category as follows: \$58 million for Water System projects, \$97 million for Wastewater System projects, and \$3.7 million for Business and Operations Support projects.
- Major contracts awarded by MWRA during FY20 include:
 - Wastewater System:
 - Corrosion and Odor Control NI HVAC Improvements Construction Phase 2
 - Facility Asset Protection Inter Ren 3, Dorchester Inter Sewer – Construction
 - Dorchester Bay Sewer Separation DOR Int Inflow Remo Construction
 - Siphon Structure Rehabilitation Design/CS/RI
 - Water System:
 - NHS Revere and Malden Pipe Sec 53 and 99 Conn-Des CA
 - NHS Revere and Malden Pipe Sect 56 Replacement/Saugus Des CA
 - Southern Spine Distribution Mains Sect 22 Rehab Alt Analysis and Env Permit
- Projects that were completed or reached substantial completion during FY20 include:
 - Wastewater System:
 - Facility Asset Protection Alewife Brook PS Final Design/CA/REI
 - Facility Asset Protection Remote Headworks and DI Shaft Study
 - Water System:
 - SEH Redundancy & Storage Redundancy Pipeline Sect 111 – Construction 2
 - Cosgrove Tunnel Redundancy Wachusett Aqueduct PS – Design/ESDC/RI
 - Waterworks Facility Asset Paint Bellevue II TH Tanks and Paint DI Water Tank

- Waterworks Facility Asset Generator Docking Station
- Waterworks Facility Asset Cosgrove Intake Roof Replacement

For more information about projects in the Capital Improvement Program, please refer to the Fiscal Year 2021 Capital Improvement Program document located on the Budget page of the MWRA’s website at mwra.com.

Emergency Preparedness

- MWRA completed Risk and Resiliency Assessments of the drinking water system as required by the America’s Water Infrastructure Act (AWIA) and certified their completion in March. Work has begun on the updates to MWRA’s Emergency Response Plans as required by AWIA.

V. Environmental Sustainability

- Received a total of \$725,000 in revenue for energy generated at numerous facilities including hydroelectric from Oakdale Station and Cosgrove Station; wind from Charlestown Pump Station; and solar from Carroll Water Treatment Plant.
- Continue to leverage MWRA’s self-generation assets and participation in the competitive energy market to offset operating costs. The combined impact of participation in the Independent System Operators of New England (ISO-NE) load response program, non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits, and receipt of utility rebates for CEB-funded efficiency projects resulted in \$2.2 million in revenue for FY20. MWRA also avoided more than \$750,000 in capacity charges through operation of self-generation assets during peak load events as called by the regional transmission organization (ISO New England).
- Deer Island self-generated 30% of the plant’s total required power during FY20.
- Continued to operate and optimize the phosphorous treatment system and natural gas lines at the Clinton Wastewater Treatment Plant; second full year of operation for both.

Budget Highlights:

The FY21 Final Budget is \$185.4 million, which is \$3.5 million or 1.9%, more than the FY20 Budget.

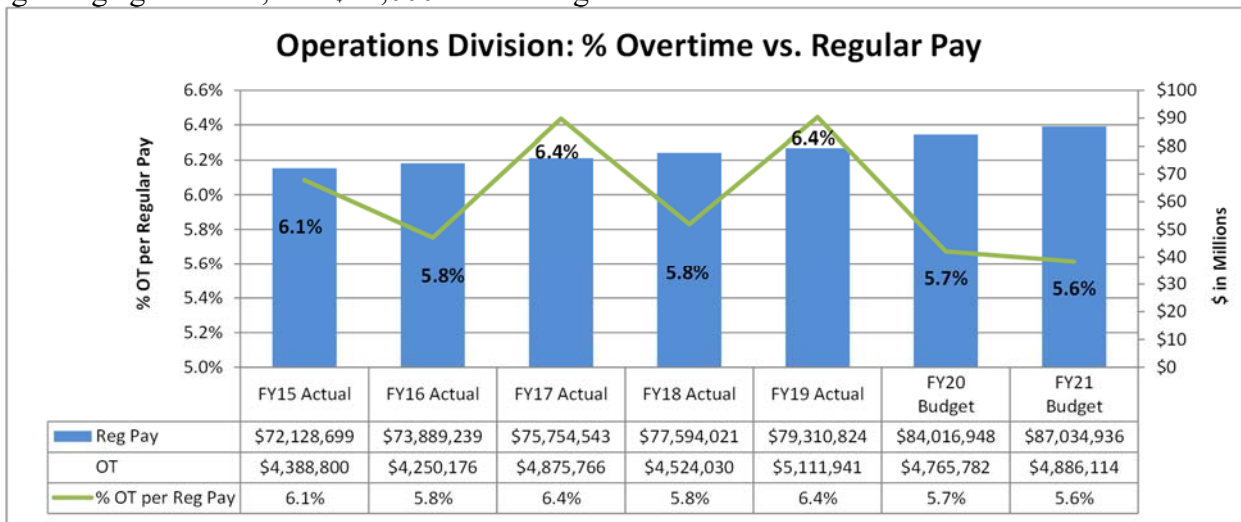
- The FY21 Final Budget of \$88.6 million for **Wages and Salaries** is an increase of \$3.0 million or 3.5% from the FY20 Budget primarily due to wage increases associated with collective bargaining agreements and five additional positions in the Tunnel Redundancy Program. The FY21 Final Budget funds 918 full-time equivalent positions for the Operations Division departments; the same as in FY20.

Staffing for the water system Tunnel Redundancy Program increases from eight positions in the FY20 Budget to 13 in the FY21 Final Budget. The MWRA currently envisions that FTEs will be added each year over the next few fiscal years to support this project, eventually resulting in a staffing level of 15 to 20 positions.

FTEs		
Operations by Department		
DEPARTMENT	FY20 FTEs	FY21 FTEs
OPERATIONS ADMINISTRATION	28.6	31.0
OPERATIONS, ENGINEERING & CONSTRUCTION	731.2	719.9
PROGRAMS, POLICY & PLANNING	165.5	173.1
TOTAL	925.3	924.0

The Wages and Salaries line also includes \$827,000 for Stand-by Pay to ensure staffing availability and response during emergencies, \$239,000 for Interns, and \$62,000 for Temporary Employees to assist with lead testing in schools.

- The FY21 Final Budget of \$4.9 million for **Overtime** is a net increase of \$120,000 or 2.5% from the FY20 Budget primarily due to collective-bargaining wage increases. The budget includes \$2.2 million for emergencies and storms; \$1.6 million for planned work primarily required on off-shifts and during periods of lower flows; \$1.1 million for routine coverage of operations per prevailing collective bargaining agreements; and \$21,000 for training.



- The FY21 Final Budget of \$12.1 million for Chemicals, is an increase of \$280,000 or 2.4% over the FY20 Budget, due to the net effect of price and usage adjustments based on recent usage trends, contractual price changes, and market projections. Of this change, \$230,000 is for ferric chloride primarily due to price increases.

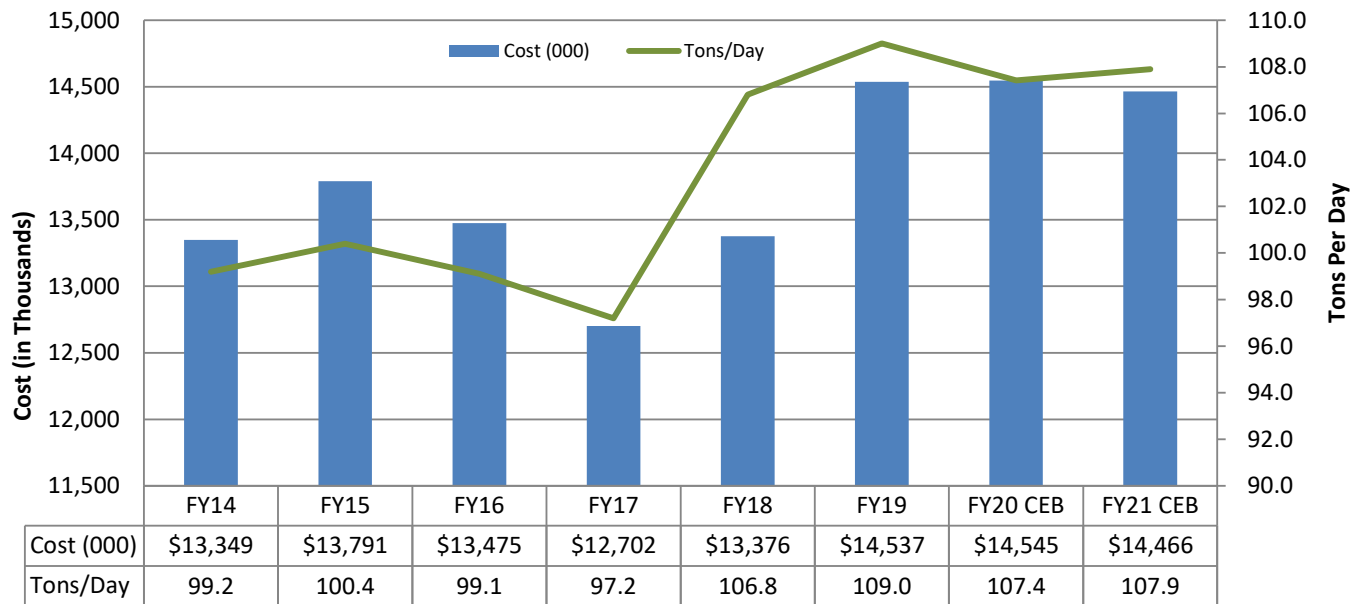
The FY21 Final Budget includes \$5.9 million for disinfection and treatment in the water system and \$6.2 million for disinfection, treatment, and odor control in the wastewater system. The budget includes \$3.4 million for soda ash, \$3.1 million for sodium hypochlorite, \$2.0 million for ferric chloride, \$682,000 for hydrogen peroxide, \$497,000 for activated carbon, \$520,000 for polymer, \$447,000 for liquid oxygen, \$223,000 for carbon dioxide, \$335,000 for sodium bisulfite, \$319,000 for hydrofluosilicic acid, \$188,000 for aqua ammonia, and \$150,000 for sodium hydroxide.

- The FY21 Final Budget of \$24.1 million for **Utilities** includes \$18.2 million for electricity, \$2.7 million for diesel fuel, \$2.5 million for water, \$630,000 for natural gas, and \$151,000 for propane and other utilities. The utility budget is \$13.4 million for the Deer Island Treatment Plant, \$4.7 million for Wastewater Operations, \$5.0 million for Water Operations, \$525,000 for the Chelsea office and maintenance facilities, and \$326,000 for the Clinton Wastewater Treatment Plant. The utilities budget is -\$250,000 or 1% less than the FY20 budget, primarily due to electricity price decreases.

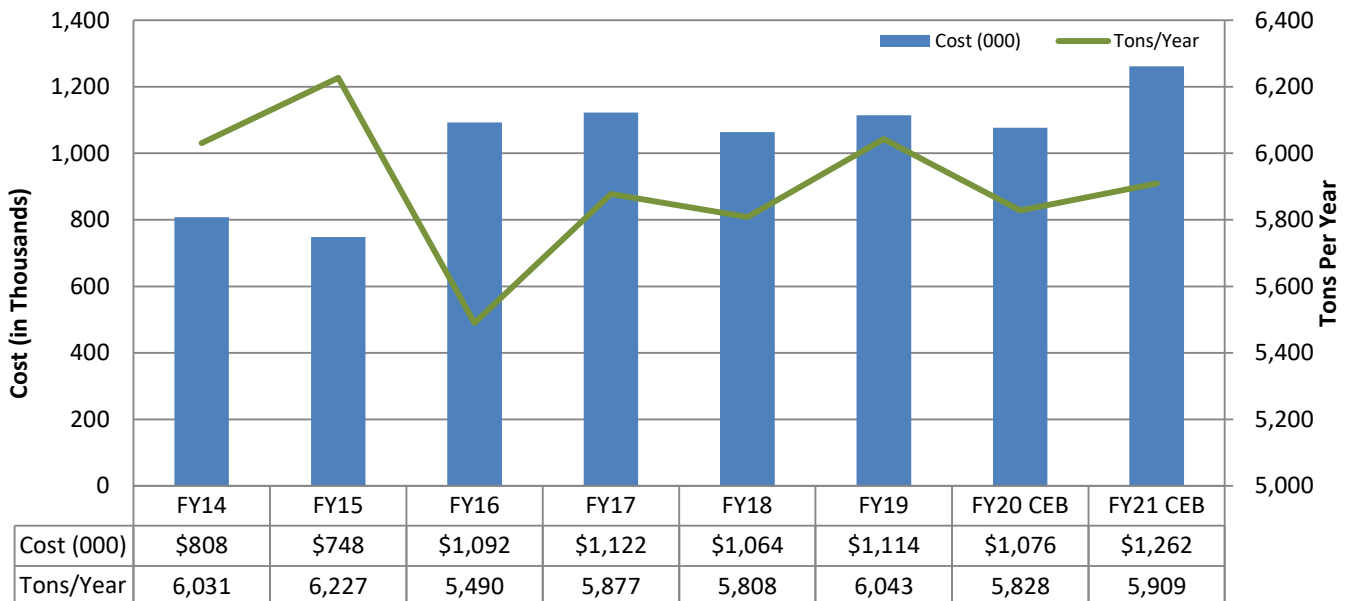


- The FY21 Final Budget of \$201,000 for **Training and Meetings** covers specialized training, attendance at industry conferences, and site visits as required to vendors and other plants. It specifically funds training for topics such as spill response and boom deployment; spill control and prevention; trenchless technology; cyber security; and electrical voltage. The budget also continues to include funds to support workforce development efforts as part of MWRA's succession planning initiative. The FY21 Final Budget is -\$97,000 or 32.6% less than the FY20 Budget due to curtailment in travel during 2020 in compliance with COVID19 pandemic safety protocols.
- The FY21 Final Budget for **Professional Services** is \$2.6 million, including \$1.7 million for lab and testing services, \$707,000 for engineering services, and \$224,000 for other services. Major items in the budget include \$1.3 million for Harbor and Outfall Monitoring; \$307,000 for as-needed engineering services to support CEB-funded projects; \$274,000 for outsourced testing by the Central Laboratory; \$245,000 for Dam Asset Maintenance Plan development; \$140,000 for hardware and software security services to protect MWRA's SCADA system; \$100,000 for continuation of a research study on potential railroad contaminants in the Wachusett Reservoir; \$86,000 for a comprehensive reservoir-wide plant survey in the water system; and \$55,000 for invasive species control services in the reservoirs. The FY21 Final Budget is -\$64,000 or -2.4% less than the FY20 Budget primarily due to the reassessment of needs for various services.
- The FY21 Final Budget of \$5.1 million for **Other Materials** includes \$1.6 million for Vehicle Replacements; \$1.1 million for Lab and Testing Supplies; \$240,000 for Vehicle Expenses (gas, mileage reimbursement); \$408,000 for Health and Safety Supplies; \$625,000 for Equipment and Furniture; \$417,000 for Work Clothes; and \$351,000 for gravel for the Clinton landfill. The increase of \$285,000 or 5.9% from the FY20 Budget is primarily due a price and quantity increase for gravel at the Clinton landfill. More gravel is required due to updated operating plans per regulatory review. Also, the Tunnel Redundancy Program's budget includes a one-time \$75,000 expense for shelving for rock core storage.
- The FY21 Final Budget for **Other Services** is \$20.4 million, including \$14.5 million for sludge pelletization; \$2.1 million for building space leases and rentals (including the Chelsea office facility); \$1.3 million for grit and screenings removal and disposal; \$661,000 for telecommunications services; \$597,000 for dues, memberships, and subscriptions; \$491,000 for police details; and \$386,000 for other services. The FY21 Final Budget increase of \$61,000 or .3% from the FY20 Budget is primarily due to the net effect of increases for grit and screenings removal (prices), memberships and dues (methodology change for Water Research Foundation), and other services based on needs. These increases are partially offset by a decrease to sludge pelletization services due to contractual inflation.

Sludge

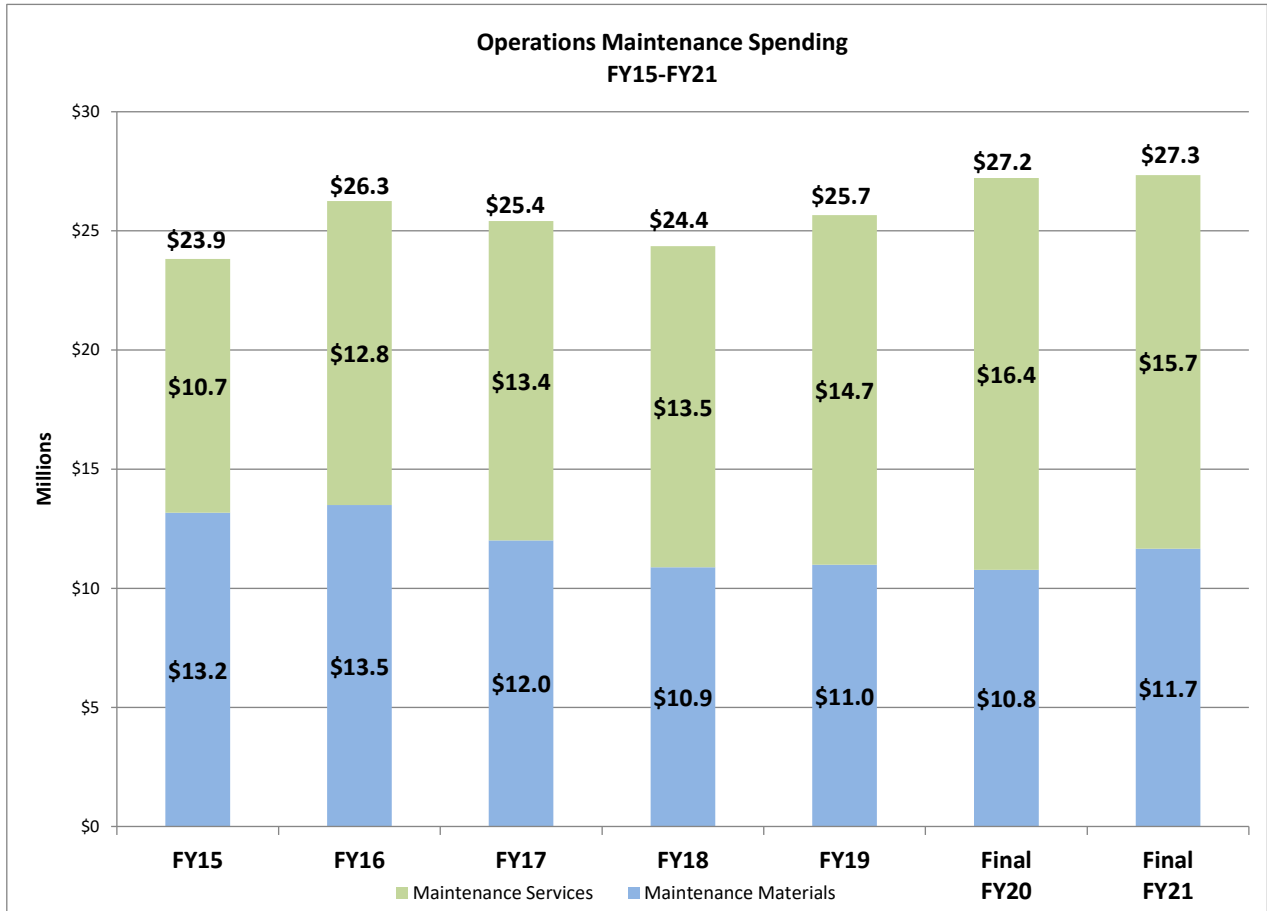


Grit & Screenings



- The FY21 Final Budget for **Maintenance** is \$27.3 million, a net increase of \$122,000 or 0.45% from the FY20 Budget primarily due to changes in project priorities from year to year. The FY21 Final Budget includes \$15.6million for services and \$11.7 million for materials. By maintenance area, the largest categories of spending for materials and services include \$12.4 million for plant and machinery; \$5.3 million for building and grounds; \$3.2 million for specialized equipment; \$2.9 million for electrical; \$1.8 million for pipeline; and \$1.3 million for HVAC systems. The budget also funds special initiatives

such as energy conservation projects at DITP and in the Field Operations Department facilities; invasive plant control in the water reservoirs; painting and coating upkeep at DITP and the Clinton Wastewater Treatment Plant; easement clearing on MWRA’s aqueducts; periodic STG overhaul at DITP; and inspection and cleaning of MWRA’s South Boston CSO outfall. As shown below, maintenance spending has been fairly consistent over the last few fiscal years.





Alewife Brook Wastewater Pump Station

OPERATIONS ADMINISTRATION

Operations Administration funds the CEBs for two departments including Operations Administration and Tunnel Redundancy Program Management.

The **Operations Administration Department** includes the Office of the Chief Operating Officer (COO); the Office of the Deputy Chief Operating Officer (DCOO); and division-level support staff. The department's primary goal is to oversee, manage, and implement MWRA policies and procedures pertaining to the following functions: administration, labor relations, finance, contract administration, comprehensive energy planning and management, regulatory affairs, environmental management, and general management.

The **Tunnel Redundancy Program Management Department** was created by MWRA's Board of Directors on February 15, 2017 to oversee the planning, design, and construction of a northern and a southern deep rock tunnel that will provide redundancy for the Metropolitan Tunnel system (waterworks). This \$1.4 billion CIP-funded project will take more than a decade to complete. Also, given the complexity of the project, the group is independent of existing engineering and construction departments and reports directly to the Executive Director. However, the department's CEB is included within the Operations Division budget to allow for sufficient administrative support.

FY21 Final Current Expense Budget OPERATIONS ADMINISTRATION

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 2,648,192	\$ 3,653,234	\$ 4,311,890	\$ 4,540,450	\$ 228,560	5.3%
OVERTIME	1,150	2,770	5,000	5,000	-	0.0%
FRINGE BENEFITS	-	70	360	360	-	0.0%
MAINTENANCE	-	-	-	-	-	-
TRAINING & MEETINGS	38,764	69,786	90,000	51,000	(39,000)	-43.3%
PROFESSIONAL SERVICES	12,500	-	1,002	1,002	-	0.0%
OTHER MATERIALS	1,795,675	1,623,392	1,565,000	1,670,000	105,000	6.7%
OTHER SERVICES	406,545	410,705	670,103	730,500	60,397	9.0%
TOTAL	\$ 4,902,826	\$ 5,759,957	\$ 6,643,355	\$ 6,998,312	\$ 354,957	5.3%

FY21 Final Current Expense Budget OPERATIONS ADMINISTRATION by Programs

PROGRAM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
OPERATIONS ADMINISTRATION	\$ 4,887,023	\$ 5,153,428	\$ 5,613,597	\$ 5,531,206	\$ (82,391)	-1.5%
WATER REDUNDANCY PGR MGMT	15,803	606,529	1,029,758	1,467,106	437,348	42.5%
TOTAL	\$ 4,902,826	\$ 5,759,957	\$ 6,643,355	\$ 6,998,312	\$ 354,957	5.3%

FY21 Goals and Initiatives:

The Operations Administration Department's purview and function supports all the goals of the Operations Division set forth in the department budgets in the Operations, Engineering & Construction section and the Program, Policy and Planning section.

Key FY21 initiatives include:

- **Tunnel Redundancy Program** – Plans for FY21 include hiring additional staff, raising awareness of the project in the engineering and construction communities, and developing detailed plans for all phases of implementation including procurement, design, engineering, and construction.
- **Energy** – Continue to refine and implement MWRA's comprehensive energy management strategy, primarily with a focus on expanding solar energy sites and securing grant funding from relevant programs; increasing the use of electric vehicles in MWRA's fleet; optimizing energy generation assets for 'behind the meter' use and revenue from power sales and market-based incentive programs; implementing MOUs with two utility companies for energy conservation projects at numerous facilities; and consolidating energy data management to support decision-making.
- **Regulatory** – Continue to advocate for MWRA during the regulatory review processes for key issues including implementation of the CSO Program assessment phase and development of the requirements for the new NPDES permit for the Deer Island Treatment Plant.
- **Organizational succession** – Continue to develop and implement succession plans to ensure efficient and effective organizational continuity as a significant portion of MWRA's workforce retires in the next few years. Key aspects of this initiative include documenting institutional policies and practices; identifying and developing employees qualified for promotion into key positions; hiring additional qualified employees to ensure 'depth of bench' in staffing in critical functions; and in general, providing programs to the overall MWRA workforce for learning and development.

Budget Highlights:

The FY21 Final Budget is \$7 million, an increase of \$355,000 million or 5.3%, compared to the FY20 Budget.

- \$4.5 million for **Wages and Salaries**, an increase of \$229,000 or 5.3%, as compared to the FY20 Budget. The FY21 Final Budget supports 41.8 full-time equivalents (FTEs), an increase of 3.8 FTEs as compared to 38 FTEs in the FY20 Budget. The increase is due to the addition of five positions for the Tunnel Redundancy Management Unit as the program ramps up, offset by the shift an energy position and duties to DITP. The FY21 Final Budget also funds wage increases associated with collective bargaining agreements.
- \$51,000 for **Training & Meetings**, a decrease of -\$39,000 due to expected travel restrictions in CY2020 during the continuing COVID19 pandemic. This line item funds attendance at conferences for the COO, DCOO, and department staff as well as division-wide attendance at major industry professional conferences held annually. The budget also funds attendance by tunnel redundancy program staff at industry conferences to stay current on relevant technical topics and to educate potential engineering and construction vendors about the upcoming projects.
- \$1.7 million for **Other Materials**, which is \$105,000 more than the FY20 Budget due to an increase for vehicle replacements and core boring shelving. The major item in this budget line is \$1.55 million for

fleet vehicle replacements, which is \$50,000 more than the FY20 Budget based on an assessment of need. Each of these vehicles are valued at less than \$100,000, the minimum value to be included in the Capital Improvement Program (CIP). The FY21 Budget supports replacement of up to 45 vehicles which is approximately 7.5% of the active fleet. This line item also includes \$75,000 for shelving for storing rock core borings and \$25,000 for purchase of geotech software for the Tunnel Redundancy Program.

- \$731,000 for **Other Services**, an increase of \$60,000 or 9% as compared to FY20 Budget, primarily due to a change in methodology for calculating Water Research Foundation membership dues. The budget for this line item includes \$204,000 for the fuel storage tank maintenance contract and \$505,000 for memberships in industry associations for MWRA and departmental staff. MWRA continues to fund annual memberships in organizations such as the National Association of Clean Water Agencies (NACWA), Association of Metropolitan Water Agencies (AMWA), American Water Works Association (AWWA), and Boston NOW (focused on Boston Harbor).



Aerial view of Boston Harbor

OPERATIONS, ENGINEERING & CONSTRUCTION

Operations, Engineering & Construction

Wastewater Treatment

Deer Island
Residuals
Clinton

Field Operations

Wastewater Operations
Water Operations & Maintenance
Metro Maintenance
Operations Support
FOD - Administration

Engineering & Construction

The work of this section is directed by a team of three senior managers including the Director of Wastewater, Director of Waterworks, and Chief Engineer; each of whom report to the Chief Operating Officer (COO). The purview of this section is as follows:

- operations and maintenance of MWRA's wastewater treatment facilities including Deer Island Wastewater Treatment Plant, Clinton Wastewater Treatment Plant, Residuals Pelletizing Facility, Combined Sewer Overflow facilities, and screenhouses;
- operations and maintenance of MWRA's wastewater distribution system including pipelines, pump stations, and other appurtenances;
- operations and maintenance of MWRA's water treatment facilities including the Carroll Water Treatment Plant serving communities in the Boston metropolitan area and the Brutsch Water Treatment Plant serving communities in the Chicopee Valley Aqueduct (CVA) Water System communities;
- operations and maintenance of the water distribution system including pipelines, pump stations, and valves;
- operations and maintenance of the wastewater and water metering system, Operations Control Centers, and Supervisory Control and Data Acquisition (SCADA) system;
- engineering and construction functions for the Operations Division; and
- energy conservation, capacity, and efficiency maintenance and capital projects.

**FY21 Final Current Expense Budget
OPERATIONS, ENGINEERING & CONSTRUCTION**

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 61,438,861	\$ 61,859,242	\$ 64,978,532	\$ 67,774,040	\$ 2,795,508	4.3%
OVERTIME	4,324,056	4,865,030	4,521,115	4,634,640	113,525	2.5%
FRINGE BENEFITS	106,664	121,225	110,876	111,051	175	0.2%
CHEMICALS	9,659,735	10,891,947	11,811,221	12,091,255	280,034	2.4%
UTILITIES	21,889,565	24,310,848	24,315,992	24,065,844	(250,148)	-1.0%
MAINTENANCE	23,852,448	25,002,630	26,565,481	26,884,576	319,095	1.2%
TRAINING & MEETINGS	85,676	196,396	163,100	113,600	(49,500)	-30.3%
PROFESSIONAL SERVICES	717,254	937,472	930,014	878,351	(51,663)	-5.6%
OTHER MATERIALS	1,198,580	1,372,549	1,527,437	1,714,739	187,302	12.3%
OTHER SERVICES	17,808,540	19,028,795	19,238,731	19,340,128	101,397	0.5%
TOTAL	\$ 141,081,379	\$ 148,586,134	\$ 154,162,499	\$ 157,608,224	\$ 3,445,725	2.2%

The Operations, Engineering & Construction Section is composed of the Wastewater Treatment, Field Operations, and Engineering and Construction departments, which report directly to the Chief Operating Officer. In total, the budgets for these programs represent 85% of the Operations Division's FY21 Final Budget.

**FY21 Final Current Expense Budget
OPERATIONS, ENGINEERING & CONSTRUCTION by Programs**

PROGRAM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WASTEWATER TREATMENT	\$ 65,819,757	\$ 71,318,087	\$ 72,782,529	\$ 73,794,789	\$ 1,012,260	1.4%
FIELD OPERATIONS	67,275,901	69,190,414	72,886,703	75,021,214	2,134,511	2.9%
ENGINEERING & CONSTRUCTION	7,985,721	8,077,633	8,493,267	8,792,221	298,954	3.5%
TOTAL	\$ 141,081,379	\$ 148,586,134	\$ 154,162,499	\$ 157,608,224	\$ 3,445,725	2.2%



Cosgrove Intake

WASTEWATER TREATMENT

The primary function of the Wastewater Treatment Department is to collect and treat community wastewater so that it can be discharged either into the Massachusetts Bay or the South Nashua River in compliance with federal and state environmental standards. The second function of the Department is to recycle sludge to produce fertilizer and provide for the proper disposal of any materials not suitable for treatment or fertilizer.

FY21 Final Current Expense Budget WASTEWATER TREATMENT

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 20,349,177	\$ 20,519,040	\$ 21,345,829	\$ 22,153,476	\$ 807,647	3.8%
OVERTIME	1,220,100	1,315,157	1,228,823	1,276,302	47,479	3.9%
FRINGE BENEFITS	33,305	36,433	29,355	29,480	125	0.4%
CHEMICALS	4,002,527	4,608,156	5,233,077	5,575,169	342,092	6.5%
UTILITIES	12,447,962	13,994,528	14,069,027	13,745,509	(323,518)	-2.3%
MAINTENANCE	12,503,632	14,193,038	13,894,471	14,005,472	111,001	0.8%
TRAINING & MEETINGS	14,741	19,747	46,100	32,100	(14,000)	-30.4%
PROFESSIONAL SERVICES	47,416	117,679	183,702	91,501	(92,201)	-50.2%
OTHER MATERIALS	524,613	612,263	756,615	914,010	157,395	20.8%
OTHER SERVICES	14,676,284	15,902,046	15,995,530	15,971,770	(23,760)	-0.1%
TOTAL	\$ 65,819,757	\$ 71,318,087	\$ 72,782,529	\$ 73,794,789	\$ 1,012,260	1.4%

The **Deer Island Treatment Plant**, the **Residuals Management Program**, and the **Clinton Treatment Plant** comprise the Wastewater Treatment Department. Together, the budgets for these programs represent 40% of the Operations Division's FY21 Final Budget.

FY21 Final Current Expense Budget WASTEWATER TREATMENT by Program

PROGRAM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
DEER ISLAND	\$ 49,146,133	\$ 52,898,750	\$ 54,182,874	\$ 55,137,608	\$ 954,734	1.8%
RESIDUALS	14,611,983	15,840,845	15,963,958	15,943,098	(20,860)	-0.1%
CLINTON	2,061,641	2,578,492	2,635,697	2,714,083	78,386	3.0%
TOTAL	\$ 65,819,757	\$ 71,318,087	\$ 72,782,529	\$ 73,794,789	\$ 1,012,260	1.4%

The **Deer Island Wastewater Treatment Plant** (Deer Island or DITP) budget accounts for 29.7% of the Operations Division's FY21 Budget. DITP has a peak capacity of 1.27 billion gallons per day (bgd) and peak secondary treatment capacity of 700 million gallons per day (mgd).

Wastewater influent from MWRA customer communities arrives at the plant through four underground tunnels. Pumps then lift the influent 80 to 150 feet, depending on the tunnel, to the head of the plant.

North system flows pass through grit channels and bar screens at the headworks that remove grit and screenings for disposal in an off-island landfill. South system flows are pre-treated for grit at Nut Island and the Braintree-Weymouth Intermediate Pump Station. Flow is routed to primary treatment clarifiers, which remove about half of the pollutants brought to the plant in typical wastewater (removes 50% of total suspended solids and up to 50% of pathogens and toxic contaminants). In the clarifiers, gravity separates sludge and scum from the wastewater.



In secondary treatment, reactors and clarifiers remove non-settleable solids through biological and gravity treatment. The biological process is a pure oxygen-activated sludge system, using aerobic microorganisms to consume organic matter that remain in the primary effluent flow. Secondary treatment raises the level of pollution removal to over 85%. More than 100 tons of pure oxygen is manufactured each day at Deer Island's cryogenic oxygen facility to support the aerobic biological treatment process.

Sludge from primary and scum from both primary and secondary treatment is thickened in gravity thickeners. Sludge from secondary treatment is thickened in centrifuges. Polymer is used in the secondary sludge thickening process to increase its efficiency. Digestion occurs in the egg-shaped anaerobic digesters at the Deer Island Treatment Plant. There are a total of 12 digesters, each 90 feet in diameter at their widest point and approximately 140 feet tall (128 ft. liquid level). Microorganisms naturally present in the sludge work to break sludge and scum down into methane gas, carbon dioxide, solid organic byproducts, and water. Digestion significantly reduces sludge quantity for later recycling. The methane gas produced in the digesters is used in the plant's on-site power generating facility to save operating costs by reducing consumption of fuel oil for heating and purchased electricity. The remaining digested sludge is pumped through pipes embedded in the sidewall of the Nut Island inter-island tunnel and Braintree-Weymouth extension tunnel directly to the MWRA's Pelletizing Facility at Fore River, where it is further processed into a fertilizer product.

DEER ISLAND WASTEWATER TREATMENT PLANT

FY21 Final Current Expense Budget DEER ISLAND TREATMENT PLANT

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 19,344,679	\$ 19,479,231	\$ 20,301,214	\$ 21,093,475	\$ 792,261	3.9%
OVERTIME	1,184,091	1,213,319	1,198,823	1,231,302	32,479	2.7%
FRINGE BENEFITS	32,430	33,806	28,355	28,480	125	0.4%
CHEMICALS	3,671,736	4,194,138	4,761,079	5,110,920	349,841	7.3%
UTILITIES	12,209,993	13,677,846	13,659,056	13,419,258	(239,798)	-1.8%
MAINTENANCE	12,089,259	13,580,763	13,330,016	13,446,927	116,911	0.9%
TRAINING & MEETINGS	14,741	19,747	42,600	28,600	(14,000)	-32.9%
PROFESSIONAL SERVICES	38,006	84,484	142,000	42,000	(100,000)	-70.4%
OTHER MATERIALS	358,700	391,764	544,600	536,200	(8,400)	-1.5%
OTHER SERVICES	202,498	223,652	175,131	200,446	25,315	14.5%
TOTAL	\$ 49,146,133	\$ 52,898,750	\$ 54,182,874	\$ 55,137,608	\$ 954,734	1.8%

Organizational Structure:

The Deer Island Treatment Plant has six major functional areas: Operations, Thermal Power Plant, Process Control, Maintenance, Capital Engineering, and Operations and Maintenance (O&M) Support.

- Operations manages the day-to-day treatment operation of plant processing units, performs minor preventative maintenance activities, and oversees plant functions 24 hours per day, seven days per week.
- Thermal Power Plant manages and operates the Deer Island generation and thermal systems. Power Plant personnel provide 24-hour operation of the high-pressure, high temperature steam power plant. This facility is capable of producing up to 75 megawatts of electrical power including green energy assets with hydro-electric power, wind and solar.
- Process Control manages and maintains the following programs in support of plant operations; real-time process instrumentation and control system (PICS), operational data system (OMS), plant performance monitoring and reporting programs, and regulatory compliance programs including all plant permits, water quality, and air quality. Process Control provides the technical expertise for plant unit operations and routinely performs process optimization studies to help increase performance and reduce operating costs.
- Maintenance performs preventive, predictive, and corrective maintenance repairs on all equipment, utilizing a computerized maintenance management system (CMMS) to coordinate scheduling and document all work completed. Staff has developed the Reliability Centered Maintenance (RCM) program, which has improved plant performance by applying maintenance resources where they are most effective. RCM analyzes the operating systems with the objective of ensuring critical functions perform as required. Implementation of a preventive maintenance program using RCM helps reduce the cost of maintaining the plant and improves the efficiency by anticipating when maintenance will be

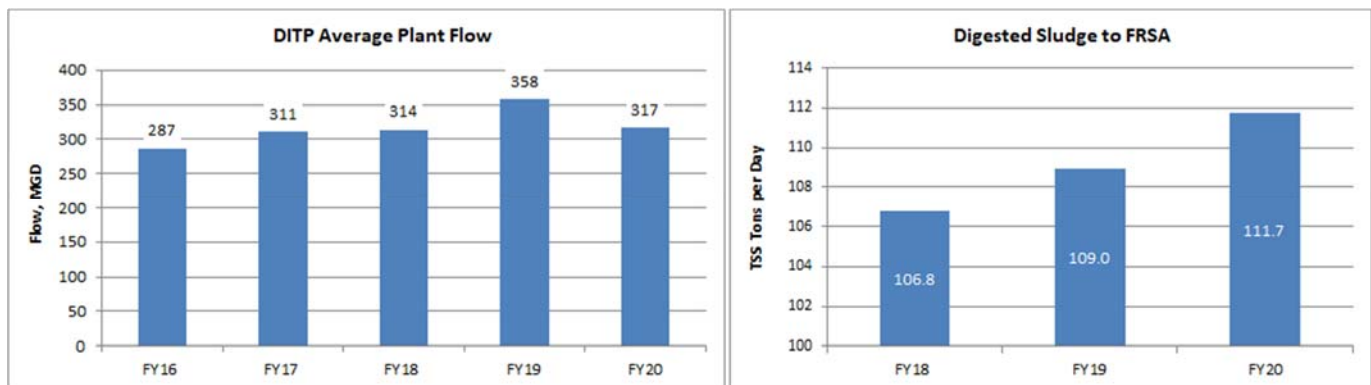
required. An on-island warehouse, managed by Procurement Department staff, ensures there is adequate stock for maintenance repairs and plant operations.

- **Capital Engineering** provides technical support services for both Operations and Maintenance. Staff is responsible for all aspects of plant engineering including developing, procuring, and implementing all service contracts, consultant designs, and capital improvement projects at Deer Island. This group also manages the on-island Technical Information Center, which provides services to the DITP community and external clients, and ensures quick access to plant drawings and technical information for operational and maintenance needs.
- **O&M Support** is responsible for supporting the business needs of the plant. The Administration and Finance Unit provides financial and administrative support to meet daily operational needs of the plant.

The Deer Island Director’s Office provides overall management for the plant plus policy direction and support in the areas of public access and community relations.

Operating Assumptions:

Deer Island’s FY21 Final Budget assumes treatment of an average flow of 317 mgd based on four years (FY16-19) of historical data. The projected quantity of digested sludge to be pumped to FRSA (TSS basis) is 107.9 TPD. This is based on two years of recent operating data for FY18-19.



Deer Island’s FY21 Final Budget accounts for the impact of self-generation of electricity from the steam turbine generators (STG), combustion turbine generators (CTG), hydroelectric generators, wind turbine generators, and photovoltaic panels. These assets will provide approximately 29.5% of the total energy needs of the plant.

Deer Island continues to comply with the conditions of the National Pollutant Discharge Elimination System (NPDES) Permit issued in 1999, which has been administratively continued since FY05. Given the uncertainty regarding the timing of the permit renewal from the Environmental Protection Agency (EPA), Deer Island’s FY21 Final Budget assumes that the plant will continue to operate under the guidelines of the 1999 NPDES permit. When the new permit is issued, it is anticipated that Deer Island’s treatment process will be required to kill enterococcus in addition to fecal coliform to comply with the new regulations at a substantial increase in chemical quantities and cost.

FY21 Goals and Initiatives:

I. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system. Through FY20, Deer Island has met all of its compliance goals.

- **Key Regulatory Performance Measurements:**

NPDES Permit Compliance					
Effluent Characteristic	Permit Limits	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal
Dry Day Flow (mgd)	436	272.7	316.4	282.9	100%
cBOD (mg/L)	25	6.5	6.8	6.1	100%
TSS (mg/L)	45	11.3	12.0	10.1	100%
TCR (ug/L)	631	<40	<40	<40	100%
Fecal Coliform	14,000	6	7	6	100%
pH (S.U.)	6 to 9	6.7	6.7	6.7	100%
Acute Toxicity	Pass	Pass	Pass	Pass	100%
Chronic Toxicity	Pass	Pass	Pass	Pass	100%

- **Goal #6 – Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects.
 - Issue Notice to Proceed for numerous contracts including the following major DITP asset protection projects including:
 - Construction: Clarifier Rehab Phase 2, Fire Alarm System Replacement, MCC & Switchgear Replacement
 - Replacement: VFD, Dystor Membrane, Gas Protection Phase 2, Roof
 - Design: Odor Control Rehab, South System Pump Station VFD Replacement, Digester & Storage Tank Rehab, Cryogenics Plant Equipment Replacement, HVAC
 - Make substantial progress according to FY21 CIP schedule for other near-term major DITP projects including:
 - Construction: Chemical Tank & Digester Pipe, Winthrop Terminal Facility VFD Replacement Construction, Gas Protection System Replacement Phase 1
 - Design: Eastern Seawall and Shoreline Protection Remediation, MCC Switchgear Replacement, Fire Alarm System Replacement, Clarifier Rehab Phase 2
 - Substantially complete CIP phases for DITP asset protection including the:
 - Construction: Gravity Thickener Rehab, Dystor Membrane Replacements (Mar-21), Radio Repeater System Upgrade Phase 1 (Jul-20)
 - Other: Combined Heat and Power Alternatives Study (Nov-20)

II. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support services levels. Through FY20, Deer Island has met all of its goals in this area.

○ **Key Maintenance Measurements:**

Indicator	FY18 Actual	FY19 Actual	FY20 Actual *	FY21 Goal
Critical Equipment Availability	99.7%	100%	99.8%	100%
Predictive Maintenance Completion	99.9%	100%	96%	100%
Predictive Maintenance - % of work orders	25%	23.5%	24%	25%
Maintenance Backlog (hours)	16,052 Standard	16,480 Standard	17,194 Standard	Within industry standard
Preventive Maintenance Completion	99.9%	100%	92%	100%
Maintenance Kitting - % of work orders	55%	54%	56%	57%

*FY20 actuals were impacted by COVID 19 shutdown during Q4.

V. Environmental Sustainability

- **Goal #15 – Energy Optimization:** Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA’s energy assets.

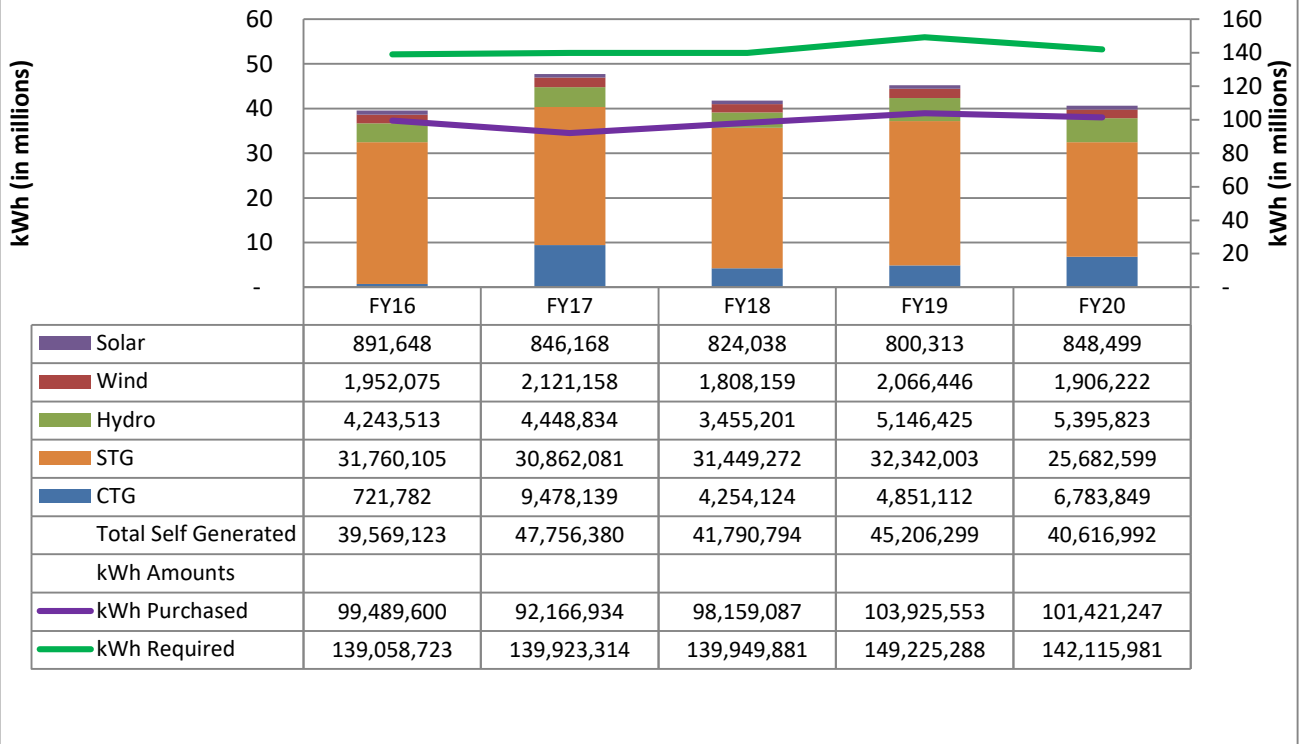
○ **Key Performance Measurements and Accomplishments:**

Indicator	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal
% Required Power Self-Generated - Total	29.1%	30.3%	28.6%	29.5%
% Required Power Self-Generated – Renewables	26.1%	27.0%	23.8%	27.2%
Thermal/Power Plant Digester Gas Utilization	98.7%	98.2%	98.1%	98.3%
Avoided capacity costs	\$2,000,000	\$1,300,000	\$714,000	\$867,000
Generate revenue from energy programs (RPS credits, demand response)*	\$2,938,776	\$1,522,149	\$1,451,000	\$1,480,010

*The change of -\$1.4 million in FY19 is attributable to a decrease in the price for demand response and for Renewable Portfolio Credits which continues into FY20.

- Continue to implement projects to reduce energy use, increase energy revenue, decrease greenhouse gas emissions, and increase self-generation capacity, particularly via renewable energy.

DITP Electricity (Actuals)



FY20 Year-End Accomplishments:

- Deer Island received the Platinum Peak Performance Award for 2019 from the National Association of Clean Water Agencies (NACWA) for the 13th continuous year (anticipated late 2020). The award recognizes facilities for outstanding compliance of their National Pollutant Discharge Elimination System (NPDES) permit limits. DITP has had no permit violations for over 13 years.
- Deer Island met secondary permit limits at all times, treating on average 99% of flows with full secondary treatment. More detailed information about DITP's NPDES Permit compliance is available on the Transparency/Performance Indicator section of MWRA's website.
- Eversource completed the installation of a new 115 kVA cross-harbor marine power cable to Deer Island, which replaced the existing cable and added redundant fiber optic lines for network and phone communications during August 2019. DITP operated on CTG power-only for 18 days continuously without incident during the final phase of cable installation in August.
- Completed numerous major maintenance projects including replacement of 13 in-line grinders and four air handling units in Residuals; rebuilt one of the three Norwalk custom horizontal straight-line gas compressor that pressurizes the digester gas prior to the boilers; replaced five sluice gates in the Primary section of the treatment plant; refurbished pump #9 at the North Main Pump Station (NMPS); and rehabilitated the Work Coordination/Stockroom office area, consisting of lunchroom, eighteen cubicles, two conference rooms, printer/copier room, entranceway to stockroom, and nine offices.

- Issued Notice to Proceeds for Asset Protection Program contracts including the following:
 - Deer Island Chemical Tank and Digester Pipe
 - Deer Island As-Needed Design 9-1
 - Deer Island As-Needed Design 9-2
 - Deer Island As-Needed Design 9-3
 - Deer Island Gas Protection Equipment Replacement
- Substantially completed Deer Island Water Tank Painting, Deer Island As-Needed Design 8-1 and Deer Island As-Needed Design 8-2.

Budget Highlights:

The FY21 Final Budget is \$55.1 million, an increase of \$955,000 or 1.8% compared to the FY20 Budget.

- \$21.1 million for **Wages and Salaries**, an increase of \$792,000 or 3.9%, compared to the FY20 Budget, primarily due to plans for backfilling vacant positions and wage increases associated with collective bargaining agreements. The FY21 Final Budget also includes \$171,000 for stand-by pay to support operational and maintenance needs primarily during storms and emergencies.
- \$1.2 million for **Overtime**, an increase of \$32,000 or 2.7% compared to the FY20 Budget primarily due to wage increases associated with collective bargaining agreements. The FY21 Final Budget is based on multi-year historical trends and supports overtime required for operational coverage, critical maintenance projects, and regulatory requirements (i.e. inspections).
- \$5.1 million for **Chemicals**, an increase of \$350,000 or 7.4% compared to the FY20 Budget. The increase is due to the net effect of usage and price adjustments. The FY21 Final Budget, which is based on multi-year historical usage trends and projected market prices, includes \$1.9 million for ferrous/ferric chloride, an increase of \$222,000 primarily due to price; \$1.5 million for sodium hypochlorite, an increase of \$89,000 primarily due to price; \$674,000 for hydrogen peroxide, an increase of \$18,000 due to price; \$463,000 for polymer and increase of \$76,000; \$303,000 for activated carbon; \$133,000 for sodium hydroxide and \$121,000 for sodium bisulfite.
- \$13.4 million for **Utilities**, a decrease of \$240,000 primarily due to a \$494,000 decrease in electricity for lower pricing from the electricity utility company. This is offset by an increase for water of \$188,000 based on historical usage and current water rates and diesel fuel of \$67,000 based on historical usage.
- \$13.4 million for **Maintenance**, an increase of \$117,000 or 0.9% compared to the FY20 Budget. The FY21 Final Budget includes \$5.7 million for materials and \$7.4 million for services. Of the total, \$8.3 million or 63% is for plant and machinery materials and services, \$2.1 million is for electrical system maintenance, and \$1.5 million is for building and grounds work. The budget reflects project priorities with a particular emphasis on maintenance of critical equipment.
- \$42,000 for **Professional Services**, a decrease of \$100,000 from the FY20 Budget primarily due to removal of the phosphorus study. The FY21 Budget includes \$42,000 for as-needed engineering services.

- \$536,000 for **Other Materials**, a decrease of \$8,000 or 1.5% from the FY20 Budget primarily due to decrease in lab & testing supplies and other materials based on projected needs. The FY21 Budget includes \$161,000 for health and safety materials, \$141,000 for equipment and furniture, \$111,000 for work clothes, \$58,000 for vehicles expenses (bulk fuel and mileage reimbursements), and \$44,000 for office supplies.
- \$200,000 for **Other Services**, an increase of \$25,000 or 14.5%, from the FY20 Budget. The FY21 Budget includes \$69,000 for health and safety services, \$37,000 for telephones, \$34,000 for permit fees, \$29,000 for membership dues and subscriptions, \$15,000 for freight charges, and \$5,000 for printing services. The budget is based on historical averages for most items in this category.



Whale breaching in waters off of Deer Island Wastewater Treatment Plant

RESIDUALS

The **Residuals Management Program** manages the processing and disposal of approximately 99-110 dry tons per day (on average per year) total suspended solids (TSS) of sludge from the anaerobic digestion process at the Deer Island Wastewater Treatment Plant, as well as the disposal of grit and screenings from all MWRA facilities. MWRA pumps liquid sludge from Deer Island through the inter-island tunnel to the Fore River Pelletizing Plant where the sludge is dewatered, dried, and shipped by either rail or truck for use as fertilizer or to other appropriate disposal. MWRA is committed to the beneficial use of biosolids to the greatest extent practicable. MWRA seeks to dispose of all sludge and grit and screenings in a reliable, economical, and environmentally sensitive manner.

- MWRA contracts with the New England Fertilizer Company (NEFCo) to operate the sludge pelletizing plant, and to market and distribute biosolids products. A 15-year contract with NEFCo became effective March 1, 2001 and continued to December 31, 2015. After negotiations with NEFCo, MWRA approved a revised, five-year contract extension that commenced in January 2016 ending December 31, 2020. MWRA is currently in the process of developing and procuring the next contract which will commence in FY21.
- The FY21 Final Budget is based on the assumption of 107.9 average tons per day (TPD; TSS basis), consistent with historical averages from recent years.
- Grit and screenings (minor residuals) from MWRA's headworks and certain pump stations are collected and disposed of in landfills. MWRA contracts with a third party operator for this service. Minor residuals are by-products of wastewater pre-treatment and primary/secondary treatment processes and include grit, screenings, and scum screenings.

FY21 Final Current Expense Budget RESIDUALS MANAGEMENT PROGRAM

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 146,844	\$ 150,139	\$ 152,687	\$ 156,028	\$ 3,341	2.2%
MAINTENANCE	-	-	-	-	-	-
TRAINING & MEETINGS	-	-	3,200	3,200	-	0.0%
PROFESSIONAL SERVICES	(1,462)	19,573	2	25,001	24,999	1249950.0%
OTHER MATERIALS	18,761	15,508	15,125	15,000	(125)	-0.8%
OTHER SERVICES	14,447,840	15,655,625	15,792,944	15,743,869	(49,075)	-0.3%
TOTAL	\$ 14,611,983	\$ 15,840,845	\$ 15,963,958	\$ 15,943,098	\$ (20,860)	-0.1%

FY21 Goals and Initiatives:

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.

- Continue marketing efforts for Bay State Fertilizer.
- Maintain and expand local (within MA) beneficial use of MWRA’s processed pellets.
- Procure and implement the next O&M contract of the Pelletizing Facility, to commence on January 1, 2021.
- **Key Performance Measurements:**

Indicator	FY18 Actual	FY19 Actual	FY20 Goal	FY21 Goal
Pelletize all sludge received from DITP	100%	100%	100%	100%
Average Tons Per Day Sludge (TSS basis)	106.8	109.0	107.42	107.9
Monthly Ave % Capture – Processed Sludge (goal per contract with NEFCo)	91.3%	91.1%	90%	90%
Properly dispose of grit & screenings	100%	100%	100%	100%
Annual grit and screenings tonnage	5,808	6,043	5,828	5,909

- **Goal #6 – Capital Improvements:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects.
- Continue work on the following Residuals Asset Protection Program contracts active in FY21:
 - Electrical Improvements
 - Mechanical Improvements
 - Conveyance Piping Relocation

FY20 Year-End Accomplishments:

- Through NEFCo, processed and pelletized 111.7 tons per day of sludge on average from DITP.
- Through contracted operator, collected and properly disposed of 5,451 tons of grit and screenings.
- With support from DITP engineering staff, procured and commenced several Residual Asset Protection Program renovation projects funded in the FY20 Capital Improvement Program.
- Bay State Fertilizer sales of \$53,000.

Budget Highlights:

The FY21 Final Budget is \$15.9 million, essentially level-funded with the FY20 Budget.

- \$156,000 for **Wages and Salaries**, an increase of \$3,000 or 2%, funds one permanent position and stand-by pay to provide coverage for emergencies during off-shifts. This department also receives on-going management oversight and staff support from other departments of the MWRA including Deer Island, Treasury, and Operations Administration.
- \$25,000 for **Professional Services**, an increase of \$25,000 from FY20 due to the inclusion of funding for bi-annual stack testing required again in FY21.
- \$15.7 million for **Other Services**, a decrease of -\$49,000 or .3% from the FY20 budget primarily due to the addition of .5 tons per day on average for sludge processing trends, offset by lower inflation estimates for natural gas based on market indices included in the sludge processing contract. The two

major items funded in the FY21 Final Budget include \$1.3 million for grit and screenings disposal and \$14.5 million for sludge pelletization services, both provided through contracts with private vendors. Projected FY21 budget quantities, which are based on multi-year historical averages, include sludge tonnage of 107.9 average tons per day (TPD) and 5,909 tons for grit and screenings.



MWRA Sludge Pelletizing Facility

CLINTON

The Clinton Wastewater Treatment Plant provides advanced wastewater treatment services to the Town of Clinton and the Lancaster Sewer District. MWRA assumed formal operational responsibility for the Clinton plant in 1987. Since then MWRA has designed and constructed new primary, secondary, and advanced treatment facilities, which incorporated rehabilitated portions of the existing plant with new construction. The new facilities, designed to meet all current and projected National Pollutant Discharge Elimination System (NPDES) discharge standards, were completed in 1992.

A new NPDES permit issued March 1, 2017 imposes additional requirements on phosphorus removal. As such, MWRA commenced operations of a new Phosphorous building as of May 2018 to meet more stringent phosphorus removal requirements and lower discharge limit. The Clinton Plant complies with the new phosphorous limits established under the NPDES permit that took effect as of April 2019.

The plant provides secondary treatment using an activated sludge process in combination with advanced nutrient removal, chlorination and dechlorination. The major facilities include headworks, primary settling tanks, digesters, sludge processes, trickling filters, aeration tanks, secondary tanks, phosphorus removal via filtration and a chemical addition building. The plant discharges its effluent into the South Nashua River in accordance with the discharge limits of the facility's NPDES permit, which limits annual effluent flow to 3.01 mgd. The plant has a potential peak flow rate of 12 mgd. Residual materials are pressed and transported to an MWRA-owned landfill for final disposal. Staff regularly monitors the landfill site.

FY21 Final Current Expense Budget CLINTON WASTEWATER TREATMENT PROGRAM

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 857,654	\$ 889,670	\$ 891,928	\$ 903,973	\$ 12,045	1.4%
OVERTIME	36,009	101,838	30,000	45,000	15,000	50.0%
FRINGE BENEFITS	875	2,627	1,000	1,000	-	0.0%
CHEMICALS	330,791	414,018	471,998	464,249	(7,749)	-1.6%
UTILITIES	237,969	316,682	409,971	326,251	(83,720)	-20.4%
MAINTENANCE	414,373	612,275	564,455	558,545	(5,910)	-1.0%
TRAINING & MEETINGS	-	-	300	300	-	0.0%
PROFESSIONAL SERVICES	10,872	13,622	41,700	24,500	(17,200)	-41.2%
OTHER MATERIALS	147,152	204,991	196,890	362,810	165,920	84.3%
OTHER SERVICES	25,946	22,769	27,455	27,455	-	0.0%
TOTAL	\$ 2,061,641	\$ 2,578,492	\$ 2,635,697	\$ 2,714,083	\$ 78,386	3.0%

FY21 Goals and Initiatives:

This department contributes significantly to the following MWRA goals included in the draft FY21-FY25 Five-Year Strategic Business Plan (pending Board approval);

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - Fully comply with new phosphorous removal requirements.
 - Comply with Department of Environmental Protection (DEP) finding for landfill height levels and sloping that require ongoing remediation efforts.
 - **Key Regulatory Performance Measurements:**

Effluent Characteristic	Permit Limit	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal % compliance
Daily Average Flow (mgd) – 12 month rolling average	3.01 mgd	2.50 mgd	#3.23 mgd	2.38 mgd	100%
BOD (mg/L)	20 mg/L	2.28 mg/L	2.80 mg/L	1.95 mg/L	100%
TSS (mg/L)	20 mg/L	4.95 mg/L	5.10 mg/L	2.82 mg/L	100%
TCR (mg/L)	17.6 mg/L	<0.02 mg/L	<0.02 mg/L	<0.02 mg/L	100%
E.coli (cfu/100mL)	126/100mL	5.65/100mL	16.2/100mL	6.97/100mL	100%
pH (S.U.)	6.5-8.3	7.37	7.33	7.38	100%
Acute Toxicity	>100%	>100%	>100%	>100%	100%
Chronic Toxicity	≥62.5%	≥62.5%	(*)<62.5%	≥62.5%	100%
Total Phosphorus (mg/L) annual avg	0.15 mg/L Apr-Oct 1.0 mg/L Nov-Mar	0.33 mg/L	0.12 mg/L	0.11 mg/L	100%
Total Ammonia as Nitrogen (mg/L)	2 mg/L Jun-Oct 5 mg/L May 10 mg/L Nov-Apr	0.101 mg/L	0.15 mg/L	0.105 mg/L	100%

(#) This 3.23 mgd level is attributable to unusually high rainfall/wet weather events during the FY19 months of Oct & Nov 2018.

(*) FY19 Chronic Toxicity levels below target due to Q4 Chronic WET Test failure. MWRA addressed the issue.

- **Goal #6 – Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects included in the FY21 CIP.

III. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support levels.
 - Make substantial progress or complete major maintenance projects.

V. Environmental Sustainability

- **Goal #15 – Energy Optimization:** Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA’s energy assets.
 - Continue operations of recently installed natural gas line to replace use of fuel oil in the facility.
 - Continue to evaluate and implement energy audit recommendations.

FY20 Year-End Accomplishments:

- Staff performed process operation and maintenance of the new phosphorus removal facility (PRF). Staff shut down the PRF for the winter and restarted it in March in order to meet NPDES permit limits for phosphorus effective April 1, 2020. During the winter downtime, staff implemented a number of minor system modifications and improvements to improve the reliability of the system including replacement

of 40 damaged filter cartridges and reinstallation of five bands on each disc filter to allow easier cleaning of disk filter internals. Also installed an additional row of filter cartridges on each disk filter. Upon restart, operation of PRF stabilized quickly and has continued to provide effluent quality meeting the new phosphorus limits. The lower seasonal effluent phosphorus limit of 150 ug/L and 3.8 pounds per day loading limit were in effect starting April 1, 2019. The effluent through June 30th, 2020 has met these new lower limits and process testing performed daily by plant operations staff have shown phosphorus results consistently below 50 ug/L, well within the compliance limit.

- Completed numerous maintenance projects including the following:
 - Contractor replaced #1 digester boiler burner. State plumbing inspector signed off on boiler #1 for dual fuel, natural gas and methane.
 - Maintenance staff replaced #3 RAS pump.
 - Implemented Maximo maintenance software version 7.6; used for generating preventative maintenance schedules. Clinton is in the process of transitioning from a paper-based maintenance management system to Maximo.
- Completed Phase 2 of the paintings and coatings contract.
- Reached substantial completion on the Roofing Rehabilitation project.
- Awarded one CIP Contract for the Valve & Pipeline Replacement project.
- Inspected Sodium Bisulfite feed system and cleaned clogged nozzles in order to return the system to service. With assistance from Brown & Caldwell Engineers, performed a dye test to recertify the operation of the system.

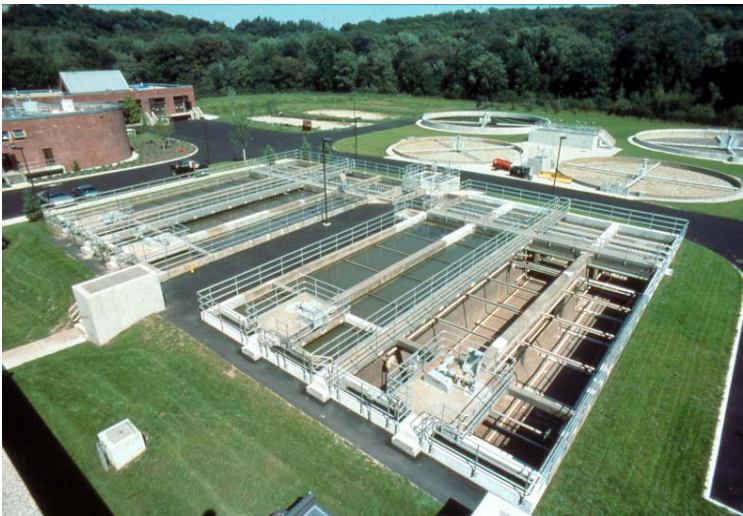
Budget Highlights:

The FY21 Budget for Clinton is \$2.7 million, an increase of \$78,000 or 3.0% from the FY20 Budget.

- \$904,000 for **Wages and Salaries**, a change of \$12,000 or 1.4%, from the FY20 Budget due to wage increases associated with collective bargaining agreements, partially offset by a vacancy rate reduction to reflect timing of backfilling positions.
- \$45,000 for **Overtime**, an increase of \$15,000 or 50% compared to the FY20 Budget. Overtime is used for critical maintenance work and to meet the 24 hour, 7 days per week emergency coverage requirement. The increase reflects expected needs for the closing of cell 1 of the Clinton Landfill.
- \$464,000 for **Chemicals**, a decrease of \$8,000 or 1.6% from the FY20 Budget. The FY21 Budget assumes the requirements of the new NPDES permit will be in effect for the entire year. The new permit requires year around limits for phosphorus discharge, which primarily impact the use of Ferric Chloride and Polymer. Ferric Chloride and Polymer are used along with a disc filter operation as part of the new phosphorus reduction facility currently in operation.
- \$326,000 for **Utilities**, a decrease of \$84,000 or 20.4% from the FY20 Budget due to the lower pricing for electricity, offset by higher usage. The budget includes \$291,000 for electricity, \$25,000 for natural gas, and \$3,000 for water.
- \$559,000 for **Maintenance**, a decrease of \$6,000 or 1.1% from the FY20 Budget due to project priorities. The decrease is mainly due to the level of planned work in the three year painting and coating project

which ends in FY21. This is offset by the new addition of replacement filters for the new phosphorus reduction facility currently in operation.

- \$25,000 for **Professional Services**, a decrease of \$17,000 or 41.3% based on historical spending. This funds consultant engineering and resident inspection services to support maintenance projects.
- \$363,000 for **Other Materials**, an increase of \$166,000, or 84.3% from the FY20 Budget due to the increase of quantity of gravel for the closure of cell one of the landfill, plus a slight increase in the cost of the gravel. This line item includes \$351,000 for clean fill for the landfill operation.
- \$27,000 for **Other Services**, level funded from the FY20 Budget, which includes \$13,000 for permit fees, \$6,000 for telephones, and \$3,300 for railroad easement expenses.



FIELD OPERATIONS

The primary function of the **Field Operations Department (FOD)** is to provide high quality, uninterrupted water delivery and wastewater collection services to MWRA communities. The Department is responsible for the treatment, transmission, and distribution of water from the Quabbin and Wachusett reservoirs to community water systems. It also manages the collection, transport, and screening of wastewater flow from MWRA communities to the Deer Island Wastewater Treatment Plant.

FY21 Final Current Expense Budget FIELD OPERATIONS

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 33,265,932	\$ 33,436,688	\$ 35,304,861	\$ 37,059,719	\$ 1,754,858	5.0%
OVERTIME	3,008,252	3,454,804	3,195,342	3,209,270	13,928	0.4%
FRINGE BENEFITS	72,828	84,669	81,021	81,071	50	0.1%
CHEMICALS	5,657,208	6,283,791	6,578,144	6,516,086	(62,058)	-0.9%
UTILITIES	9,441,603	10,316,320	10,246,965	10,320,335	73,370	0.7%
MAINTENANCE	11,348,146	10,809,501	12,671,010	12,879,104	208,094	1.6%
TRAINING & MEETINGS	63,715	136,993	104,000	65,000	(39,000)	-37.5%
PROFESSIONAL SERVICES	669,838	819,793	746,312	786,850	40,538	5.4%
OTHER MATERIALS	643,472	740,307	744,397	777,804	33,407	4.5%
OTHER SERVICES	3,104,907	3,107,548	3,214,651	3,342,108	127,457	4.0%
TOTAL	\$ 67,275,901	\$ 69,190,414	\$ 72,886,703	\$ 75,037,347	\$ 2,150,644	3.0%

FOD consists of five operating units: Wastewater Operations, Water Operations and Maintenance, Metropolitan Maintenance, Operations Support, and Administration

FY21 Final Current Expense Budget FIELD OPERATIONS by Programs

Program	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WASTEWATER OPERATIONS	\$ 11,813,537	\$ 13,113,920	\$ 12,802,062	\$ 12,607,799	\$ (194,263)	-1.5%
WATER OPERATIONS & MAINT	28,513,261	30,218,566	31,505,495	32,608,094	1,102,599	3.5%
METRO MAINTENANCE	17,075,418	15,858,382	17,660,393	16,048,439	(1,611,954)	-9.1%
OPERATIONS SUPPORT	4,888,107	5,336,835	5,643,702	8,840,538	3,196,836	56.6%
FOD ADMIN	4,985,578	4,662,711	5,275,051	4,932,477	(342,574)	-6.5%
TOTAL	\$ 67,275,901	\$ 69,190,414	\$ 72,886,703	\$ 75,037,347	\$ 2,150,644	3.0%

Wastewater Operations operates MWRA's wastewater transport facilities, including four continuously staffed headworks facilities; twelve fully automated pumping stations; and six Combined Sewer Overflow

(CSO) facilities which are similarly unstaffed. The wastewater system is monitored and controlled from the operations control center (OCC) in MWRA’s Chelsea facility. Wastewater Operations aims to meets all operational and regulatory performance standards and requirements efficiently and cost-effectively.

**FY21 Final Current Expense Budget
WASTEWATER OPERATIONS**

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 5,896,213	\$ 5,849,401	\$ 5,973,474	\$ 6,038,301	\$ 64,827	1.1%
OVERTIME	943,073	1,504,067	1,012,030	1,032,270	20,240	2.0%
FRINGE BENEFITS	22,179	37,508	27,249	34,140	6,891	25.3%
CHEMICALS	273,209	628,106	737,035	584,932	(152,103)	-20.6%
UTILITIES	4,398,716	4,905,744	4,874,514	4,743,720	(130,794)	-2.7%
MAINTENANCE	110,212	63,527	-	-	-	-
PROFESSIONAL SERVICES	-	-	-	-	-	-
OTHER MATERIALS	40,633	41,353	46,390	46,995	605	1.3%
OTHER SERVICES	129,302	84,214	131,370	127,441	(3,929)	-3.0%
TOTAL	\$ 11,813,537	\$ 13,113,920	\$ 12,802,062	\$ 12,607,799	\$ (194,263)	-1.5%

Water Operations and Maintenance operates and maintains the water supply and treatment facilities to provide an adequate supply of properly treated drinking water to meet all operational and regulatory performance requirements. The Unit is responsible for the treatment and delivery of approximately 200 million gallons per day (average mgd) of water from the Quabbin and Wachusett reservoirs to the community water systems. Water must be supplied to customer



communities at the expected pressure. This unit is also responsible for the maintenance of 300 miles of distribution pipeline and 6,000 valves in a water system that encompasses a service area from Chicopee in the western part of the state to Lynnfield, Wakefield, Marblehead, Norwood and Canton in the metropolitan area. This unit operates twelve pumping stations in the Metropolitan area and operates and maintains MWRA’s western waterworks facilities, including the Carroll Water Treatment Plant, the Metro West Tunnel, the Brutsch Water Treatment Plant, the Cosgrove Intake Facility, the Norumbega Reservoir, and the covered storage facilities. There are two operations centers providing monitoring and control of the

water system on a 24-hour per day basis. The Metropolitan Operations and Control Center (OCC) is located at MWRA's Chelsea office Facility and the Western Operations Center is located at the Carroll Water Treatment Plant.

FY21 Final Current Expense Budget WATER OPERATIONS & MAINTENANCE							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 12,511,933	\$ 12,816,830	\$ 13,584,300	\$ 13,978,822	\$ 394,522	2.9%	
OVERTIME	1,214,230	1,154,721	1,220,132	1,194,557	(25,575)	-2.1%	
FRINGE BENEFITS	31,713	28,824	31,939	28,557	(3,382)	-10.6%	
CHEMICALS	5,380,399	5,655,685	5,841,109	5,931,154	90,045	1.5%	
UTILITIES	4,468,887	4,821,181	4,777,094	4,996,002	218,908	4.6%	
MAINTENANCE	4,048,930	4,487,159	4,934,743	5,280,820	346,077	7.0%	
PROFESSIONAL SERVICES	258,781	492,698	449,312	489,850	40,538	9.0%	
OTHER MATERIALS	231,071	255,767	248,227	255,934	7,707	3.1%	
OTHER SERVICES	367,317	505,701	418,639	452,398	33,759	8.1%	
TOTAL	\$ 28,513,261	\$ 30,218,566	\$ 31,505,495	\$ 32,608,094	\$ 1,102,599	3.5%	

Metro Maintenance is responsible for the maintenance of MWRA's wastewater and water facilities within the Route 128 area. Staff maintain interceptors, pumps, facility equipment, and buildings and grounds.

FY21 Final Current Expense Budget METRO MAINTENANCE							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 9,442,970	\$ 9,578,996	\$ 10,272,894	\$ 9,291,652	\$ (981,242)	-9.6%	
OVERTIME	743,245	677,547	822,602	792,309	(30,293)	-3.7%	
FRINGE BENEFITS	17,864	17,055	20,362	16,701	(3,661)	-18.0%	
CHEMICALS	3,600	-	-	-	-	-	
UTILITIES	43,511	51,815	43,446	-	(43,446)	-100.0%	
MAINTENANCE	6,158,677	4,847,617	5,838,110	5,440,393	(397,717)	-6.8%	
PROFESSIONAL SERVICES	225,182	222,739	150,000	150,000	-	0.0%	
OTHER MATERIALS	256,359	278,409	309,565	246,346	(63,219)	-20.4%	
OTHER SERVICES	184,010	184,204	203,414	111,038	(92,376)	-45.4%	
TOTAL	\$ 17,075,418	\$ 15,858,382	\$ 17,660,393	\$ 16,048,439	\$ (1,611,954)	-9.1%	

Operations Support provides technical support to the FOD in three key areas. Engineering staff coordinate all engineering issues related to the operation of the water and wastewater systems. The SCADA unit is responsible for the maintenance of the water and wastewater Supervisory Control and Data Acquisition (SCADA) systems. Meter Data and Meter Maintenance staff maintain revenue meters and provide flow data. Staff collect meter data for operational and revenue generating purposes from the water and

wastewater systems. They maintain 179 revenue water meters, 26 master water meters, 187 revenue wastewater meters and 35 other wastewater-monitoring sites. The data collection and analysis supports Rates and Budget Department's allocation of MWRA rate revenue requirements.

FY21 Final Current Expense Budget OPERATIONS SUPPORT						
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 3,498,290	\$ 3,699,773	\$ 3,974,694	\$ 6,242,900	\$ 2,268,206	57.1%
OVERTIME	63,163	73,256	88,174	136,682	48,508	55.0%
FRINGE BENEFITS	1,012	1,255	1,147	1,644	497	43.3%
CHEMICALS	-	-	-	-	-	-
UTILITIES	9,154	17,041	9,056	55,899	46,843	517.3%
MAINTENANCE	722,981	1,006,207	1,024,800	1,641,874	617,074	60.2%
PROFESSIONAL SERVICES	160,282	90,492	140,000	140,000	-	0.0%
OTHER MATERIALS	60,213	67,683	34,563	106,536	71,973	208.2%
OTHER SERVICES	373,012	381,128	371,268	515,003	143,735	38.7%
TOTAL	\$ 4,888,107	\$ 5,336,835	\$ 5,643,702	\$ 8,840,538	\$ 3,196,836	56.6%

FOD Administration provides financial, administrative, planning, and policy oversight functions for the entire Department.

FY21 Final Current Expense Budget FOD ADMIN						
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 1,916,526	\$ 1,491,688	\$ 1,499,499	\$ 1,508,044	\$ 8,545	0.6%
OVERTIME	44,541	45,213	52,404	53,452	1,048	2.0%
FRINGE BENEFITS	60	27	324	29	(295)	-91.0%
UTILITIES	521,335	520,539	542,855	524,714	(18,141)	-3.3%
MAINTENANCE	307,346	404,991	873,357	516,017	(357,340)	-40.9%
TRAINING & MEETINGS	63,715	136,993	104,000	65,000	(39,000)	-37.5%
PROFESSIONAL SERVICES	25,593	13,864	7,000	7,000	-	0.0%
OTHER MATERIALS	55,196	97,095	105,652	121,993	16,341	15.5%
OTHER SERVICES	2,051,266	1,952,301	2,089,960	2,136,228	46,268	2.2%
TOTAL	\$ 4,985,578	\$ 4,662,711	\$ 5,275,051	\$ 4,932,477	\$ (342,574)	-6.5%

FY21 Goals and Initiatives:

I. Drinking Water Quality and System Performance

- **Goal #1 – Compliance with Regulatory Requirement and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations.

- Operate and maintain the water supply and treatment facilities to provide an adequate supply of properly treated drinking water to meet all operational and regulatory performance requirements.
 - Supply water to customer communities at the expected pressure.
- **Key Regulatory Performance Measurements:**

Compliance with Source and Treated Water Parameters				
Indicator	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal
Turbidity < 5NTU	100%	100%	100%	100%
pH >9.1 & Alkalinity >37 mg/l	100%	100%	100%	100%
Disinfection Effectiveness	100%	100%	100%	100%

- Complete the 2020/2021 Carroll Water Treatment Plant half plant maintenance.
- Inspect, clean, and/or paint water storage tanks according to the prevailing maintenance plan.
- Continue valve replacement and exercising annual goals.

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
- **Key Regulatory Performance Measurements:**

Regulatory Compliance and Operational Capacity				
Indicator	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal
Total annual flow (billion gallons based on DITP mgd) – Process all flow at headworks within system parameters	114.7k	115.5k	116.1k	122.5k
Minimize choking at headworks (# of hours/highly dependent on weather):				
Nut Island	0	0	1.5	0
Columbus Park	60.61	46.6	109.62	0
Ward Street	37.11	26.9	86.76	0
Chelsea Creek	10.53	3.6	30.10	0

III. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support levels.
- Complete or make substantial progress on numerous major maintenance projects including:
 - Duct Cleaning at South System Pump Stations
 - Replace five rooftop units at Chelsea Administration Building
 - Remove red pine trees at water reservoirs

- Install piezometers at the Weston and Chestnut Hill dams
- New spare gearbox at New Neponset pump station

○ **Key Maintenance Measurements:**

Indicator	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal
% Total Revenue Calculated Using Meters				
Water	100%	99.17%	99.65%	100%
**Wastewater	95%	94.69%	91.7%	95%
Water System:				
Leak Detection – miles surveyed)	126	144.17	101.71	140
Main Line Valves – # exercised	844	1,433	838	1,100
Main Line Valves – # replaced	7	20	10	20
Blow-off Valves – # exercised	511	938	440	600
Blow-off Valves – # maintained	12	14	4	10
Wastewater System:				
Pipeline Inspections – miles	32.81	35.04	27.18	32
Pipeline Cleaning – miles	36.35	36.17	28.85	36
Structure Inspections – # structures	750	665	747	650
Manhole Rehabilitation – # manholes	175	109	51	105
Inverted Siphon Inspections – # siphons	50	48	41	48
Inverted Siphon Cleaning – # siphons	72	123	70	36
Metro Maintenance – Equipment and Facilities:				
Ops Light Preventive Maint (PM) - % maint hours	14%	14%	11%	10%-15%
Preventive Maintenance Completion	100%	100%	100%	100%
*Maint Kitting – % work orders kitted	24%	31%	50%	30%
Ops Light Maint % PM Completion	100%	100%	100%	100%
Maintenance Backlog – crew hours	12,586	13,275	14,112	9-13.5k

* Maintenance Kitting: FY17 based on items kitted, FY18–FY20 based on % of work orders kitted

** For FY20, the value is for July 2019 through March 2020 and June 2020. April & May 2020 were calculated using historical averages due to COVID related data gaps and thus are not considered in the calculation.

V. Environmental Sustainability

- **Goal #15 – Energy Optimization:** Continue to examine energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA’s energy assets.
 - Continue to implement projects to reduce energy use, increase energy revenue, decrease greenhouse gas emissions, and increase self-generation capacity, particularly via renewable energy.
 - Complete a review of previously audited facilities to identify and reassess potential energy efficiency projects.

○ **Key Performance Measurements:**

Indicator	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal
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Energy programs - Generate revenue from FOD-managed facilities:				
Power Sales	\$557,000	\$626,631	\$725,273	\$572,593
Demand Response	\$34,216	\$128,825*	\$138,297	\$163,127
Renewable Portfolio Standard Credits	\$155,997	\$220,855	\$320,443	\$193,605

*Including Cosgrove hydro-turbine as of FY19

FY20 Year-End Accomplishments:

Water System

- Successfully tested three emergency generators at Carroll Water Treatment Plant (CWTP) under load bank conditions for EPA compliance purposes.
- Supported overhaul of 48-inch water operated pressure relief valve at Oakdale Power Station and restored normal operations.
- Completed the 2019/2020 CWTP half plant maintenance.
- Successfully started up the Sudbury Aqueduct to refill the Chestnut Hill Reservoir after the winter drawdown. The Sudbury Aqueduct was last in service during the Shaft 5 Break in 2010.
- Performed reservoir level management control at all Western and Metropolitan reservoirs to maintain normal operating levels.
- Overall valve operability is 97.5% as result of continued valve exercising, repair, and replacement.
- Identified and repaired over 20 leaks, many while the pipelines remained in service.
- Provided leak detection assistance to Arlington, Bedford, Belmont, Boston, Brookline, Cambridge, Dedham/Westwood, Framingham, Lexington, Lynn, Malden, Marblehead, Medford, Milton, Milton Boy Scout Camp, Newton, Revere, Saugus, Somerville, Swampscott, Wakefield, and Wellesley
- Successfully operated the Chestnut Hill Emergency pump station during scheduled testing.
- Constructed seepage weir on Dam 8 at Fells Open Reservoir.

Wastewater System

- Installed new VFD at Framingham Pump Station and new boiler at Delauri Pump Station
- Replaced grinder and Water Pump #1 at Prison Point CSO.
- Replaced motor for #1 fine screen at Cottage Farm CSO.
- Re-piped odor control chemical feed systems at Columbus Park and Ward Street Headworks.

Chelsea Administration and Maintenance Facilities

- Poured concrete pad and installed electrical conduit for Battery Storage unit behind Chelsea Administration Building
- Installed five rooftop HVAC units at the Chelsea Administration Building.
- Replaced main electrical conduit in the Chelsea Administration Building
- Installed new shower stalls in Chelsea Administration and Maintenance Buildings as part of COVID-19 protective measures.

Energy Conservation

- Completed energy efficient LED lighting replacement at the Southborough Facility for a total savings of 46,725 kWh.

- Implementation of battery storage units at Chelsea and Brattle Court PS neared completion. Batteries will store excess energy when power is less expensive and release it during daily peaks. Expected total cost savings over 10 years is \$330,000.

Budget Highlights:

The FY21 Final Budget is \$75 million, an increase of \$2.15 million or 3% from the FY20 Budget.

- \$37.1 million for **Wages and Salaries**, an increase of \$1.75 million or 5%, from the FY20 Budget, mainly due to the transfer of staff from the Planning Department Meter Data Unit and to reflect increases from collective bargaining agreements. The FY21 Final Budget includes \$474,000 for stand-by pay to ensure support for operational and maintenance needs during wet weather and emergencies and \$26,000 for interns to provide support in several areas including Operations Engineering and SCADA.
- \$3.2 million for **Overtime**, which is level funded from the FY20 Budget. The FY21 Budget for overtime, which incorporates collective bargaining increases, includes \$1.6 million for emergency related overtime; \$846,000 for planned overtime; and \$641,000 for operational coverage needs. The budget for planned overtime associated with the Quench Buggies (MWRA water fountains at public events) has been eliminated for FY21 due to the pandemic.
- \$6.5 million for **Chemicals**, a decrease of -\$62,000 or -1% from the FY20 Budget. The FY21 budget includes \$5.9 million for water treatment chemicals and \$585,000 for wastewater treatment chemicals and is based on multi-year historical usage trends and projected market prices. The budget includes \$3.2 million for soda ash, \$1.6 million for sodium hypochlorite, \$447,000 for liquid oxygen, \$223,000 for carbon dioxide, \$319,000 for hydrofluosilicic acid, \$194,000 for activated carbon, \$188,000 for aqua ammonia, \$138,000 for other oxidizers, \$157,000 for sodium bisulfite, and \$16,000 for sodium hydroxide.
- \$10.3 million is included for **Utilities**, which is \$73,000 or 0.72% more than the FY20 Budget. The FY21 Budget includes \$8 million for electricity, \$1.2 million for diesel fuel, \$605,000 for natural gas, \$450,000 for water and \$74,000 for propane. The largest change is in Electricity, which reflects rate increases for local distribution companies and the net effect of rate changes (increases partially offset by decreases) for MWRA’s two main energy supply contracts.
- \$12.9 million for **Maintenance**, an increase of \$208,000 or 1.6% from the FY20 Budget due to project priorities and projected needs. The FY21 Final Budget includes \$5.1 million in day-to-day needs, \$4.9 million for services, \$2.6 million in major projects, and \$330,000 for energy initiatives. Some of the major projects included for the FY20 Budget are:

Invasives Control – water reservoirs	\$550,000
Duct Cleaning at South System Pump Stations	\$397,500
Manhole Rehabilitation Contract	\$330,000
Annual tank cleaning	\$200,000
Spare Gear Box for New Neponset	\$150,000
Replace 5 Rooftop Units at Chelsea facility	\$120,000

- \$65,000 for **Training and Meetings**, a decrease of \$39,000 or 37.5% from the FY20 Budget due to expected travel restrictions in CY2020 during the continuing COVID19 pandemic. The budget covers training required for work duties, health and safety compliance, job-related licensures and certifications, cyber-security and SCADA technical training.
- \$787,000 for **Professional Services**, an increase of \$40,500 or 5.4% from the FY20 Budget primarily due to an increase in use of engineering services to support several projects. The FY21 Final Budget includes \$640,000 for engineering services comprised of \$250,000 for as-needed engineering services to support CEB-funded maintenance projects; \$245,000 for an asset maintenance plan for MWRA dams; \$140,000 for a consultant to configure SCADA firewalls, software, data modules; and \$7,000 for evaluation of spill prevention, control and countermeasure plans. Additionally, the professional Services budget includes \$86,000 for an annual Macrophyte (invasive species) survey at the reservoirs; and \$55,000 for quality assurance services for Macrophyte harvesting and \$3,500 for Digsafe Membership.
- \$778,000 for **Other Materials**, an increase of \$33,000 or 4.5% from the FY20 Budget primarily due to periodic replacement of office furniture. The FY21 Final Budget includes \$147,000 for vehicle expenses for gas, mileage reimbursements, and tolls; \$269,000 for work clothes; \$218,000 for health and safety supplies; and \$77,000 for equipment and furniture.
- \$3.3 million for **Other Services**, an increase of \$127,000 or 4%, from the FY20 Budget primarily due to increases for the Chelsea office building lease and one-time costs for MWRA's portion of the rehabilitation of the Howard Street Pump Station. The FY20 Final Budget includes \$2.0 million for annual lease payments for the Chelsea office building; \$582,000 for telephones, and \$447,000 for police details.



Wachusett Aqueduct Water Pump Station Forebay

ENGINEERING AND CONSTRUCTION

The **Engineering and Construction Department (ECD)** manages and coordinates the planning, design, and construction of system improvements that ensure a safe and adequate water supply and reliable wastewater collection and treatment. Staff is organized into three units: Wastewater Engineering, Water Engineering, and Construction.

The Department provides in-house engineering, consultant management (during the facilities planning, environmental review, design, and engineering services during construction stages of capital projects), drafting, surveying, construction management, and other technical assistance. This work supports projects necessary for the maintenance, repair, and rehabilitation of wastewater and waterworks systems. In accordance with the CIP, the Department plans and implements the rehabilitation of existing facilities and construction of new facilities. This includes pipelines, pump stations, storage facilities, and treatment facilities on schedules that allow for sufficient system capacity and performance.

The **Wastewater Engineering Unit** manages all wastewater design and engineering projects including Combined Sewer Overflow (CSO) engineering activities as well as specialized technical services in electrical, structural, mechanical, and civil engineering disciplines.

The **Water Engineering Unit** manages all water design and engineering projects. The unit also maintains the Design Information Services Center (DISC), which provides computer-aided design and drafting (CADD) services.

The **Construction Unit** provides contract management and resident inspection on all MWRA water and wastewater construction and rehabilitation projects, with the exception of Deer Island Treatment Plant.

FY21 Final Current Expense Budget ENGINEERING AND CONSTRUCTION

LINE ITEM	FY18	FY19	FY20	FY21	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY21 to FY20	
WAGES & SALARIES	\$ 7,823,752	\$ 7,903,514	\$ 8,327,842	\$ 8,576,978	\$ 249,136	3.0%
OVERTIME	95,704	95,069	96,950	149,068	52,118	53.8%
FRINGE BENEFITS	531	123	500	500	-	0.0%
MAINTENANCE	670	91	-	-	-	-
TRAINING & MEETINGS	7,220	39,656	13,000	16,500	3,500	26.9%
OTHER MATERIALS	30,495	19,979	26,425	22,925	(3,500)	-13.2%
OTHER SERVICES	27,349	19,201	28,550	26,250	(2,300)	-8.1%
TOTAL	\$ 7,985,721	\$ 8,077,633	\$ 8,493,267	\$ 8,792,221	\$ 298,954	3.5%

FY21 Goals and Initiatives:

The Engineering and Construction Department has significant responsibility for the following MWRA goals included in the draft FY21-FY25 Five-Year Strategic Business Plan (pending Board approval);

I. Wastewater Quality and System Performance

- **Goal #6 – Wastewater Infrastructure:** Move forward with design and construction of major wastewater infrastructure rehabilitation and renewal projects. Initiatives include:
 - Continue to design and implement facility rehabilitation projects for various pump stations, headworks, and CSO facilities.
 - Continue to implement an ongoing program to review, prioritize, and accelerate interceptor renewal projects.
- **Goal #7 – CSO Plan Compliance:** Complete all CSO milestones by 2021 and demonstrate that the CSO Plan meets its performance objectives. Ensure compliance with CSO NPDES permit requirements.
 - Implement CSO performance assessment through ongoing contract with AECOM, which will include a report for submission to DEP/EPA by December 2021, and contains assessing attainment of the performance objectives in the approved CSO Control Plan.
 - Comply with the CSO Variances for the Alewife Brook/Upper Mystic River Basin and Lower Charles River/Charles Basin issued to MWRA and CSO communities for the period Sept 1, 2019 through Aug. 31, 2024.

III. Infrastructure Management and Resilience

- **Goal #9 – System Maintenance and Enhancement:** Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk consistent with customer, community, and regulatory support levels.
 - Issue Notices to Proceed for numerous contracts in accordance with the FY21 CIP.
 - Substantially complete numerous project phases in accordance with the FY21 CIP.

For more information about Capital Improvement Program projects, please refer to the Fiscal Year 2021 Capital Improvement Program document located on the Budget page of the MWRA's website at mwra.com.

FY20 Year-End Accomplishments:

- Issued Notices to Proceed for numerous contracts including the following:
 - Wastewater System:
 - Corrosion and Odor Control NI HVAC Improvements Contraction Phase 2
 - Facility Asset Protection Inter Ren 3, Dorchester Inter Sewer – Construction
 - Dorchester Bay Sewer Separation DOR Int Inflow Remo Construction
 - Siphon Structure Rehabilitation Design/CS/RI
 - Water System:
 - NHS Revere and Malden Pipe Sec 53 and 99 Conn-Des CA
 - NHS Revere and Malden Pipe Sect 56 Replacement/Saugus Des CA
 - Southern Spine Distribution Mains Sect 22 Rehab Alt Analysis and Env Permit

- Substantially completed numerous design and construction phases including the following:
 - Wastewater System:
 - Facility Asset Protection Alewife Brook PS Final Design/CA/REI
 - Facility Asset Protection Remote Headworks and DI Shaft Study

 - Water System:
 - SEH Redundancy & Storage Redundancy Pipeline Sect 111 – Construction 2
 - Cosgrove Tunnel Redundancy Wachusett Aqueduct PS – Design/ESDC/RI
 - Waterworks Facility Asset Paint Bellevue II TH Tanks and Paint DI Water Tank
 - Waterworks Facility Asset Generator Docking Station
 - Waterworks Facility Asset Cosgrove Intake Roof Replacement

Budget Highlights:

The FY21 Final Budget is \$8.8 million, an increase of \$299,000 or 3.5%, as compared to the FY20 Budget.

- \$8.6 million for **Wages and Salaries**, an increase of \$249,000 or 3% compared to the FY20 Budget primarily for wage increases associated with the addition of one position and collective bargaining agreements. The Final FY21 CEB has 78 approved positions and funds 76 positions net of the vacancy rate. There were 77 approved positions in the FY20 CEB; an increase due to the addition of an engineering position based on needs assessment.

- \$149,000 for **Overtime**, which includes wage increases and additional overtime associated with five construction projects scheduled for FY21. Overtime covers resident inspection at construction sites after regular work hours to ensure monitoring of construction projects. Overtime also covers unplanned design or survey needs, evening attendance at public meetings, and achieving project deadlines.

- \$17,000 for **Training & Meetings** to cover attendance at conferences and technical seminars. This increases due to more staff attendance at conferences as part of MWRA’s workforce development and succession planning strategies.

- \$23,000 for **Other Materials**, a decrease of \$4,000 from the FY20 Budget based on historical spending. The FY21 Final Budget covers office supplies, work clothes, health and safety supplies, and survey equipment.

- \$26,000 for **Other Services**, a decrease of \$2,000 from the FY20 Budget based on historical spending. The FY21 Final Budget supports printing/duplicating, telephone expenses, memberships and dues, and police details.



Bellevue Storage Tanks

PROGRAMS, POLICY AND PLANNING

Programs, Policy & Planning

Toxic Reduction and Control
Environmental Quality
Laboratory Services
Planning

The Deputy Chief Operating Officer oversees this section, which focuses on the following:

- Master planning, business planning, and strategic initiatives (such as system expansion);
- Environmental programs and regulatory coordination;
- Water and wastewater quality testing and reporting;
- Divisional budget preparation and monitoring;
- Financial planning and analysis;
- Accounts payable and contract administration;
- Human resources management functions; and
- Energy program planning, evaluation, analysis, reporting and audits.

The Deputy Chief Operating Officer also provides support to the Chief Operating Officer on key MWRA operations, technical, policy, community coordination, permitting, and public constituency matters.

FY21 Final Current Expense Budget PROGRAMS, POLICY & PLANNING

LINE ITEM	FY18	FY19	FY20	FY21	Change	
	Actuals	Actuals	Final Budget	Final Budget	FY21 to FY20	
WAGES & SALARIES	\$ 15,000,073	\$ 15,320,027	\$ 16,285,958	\$ 16,279,226	\$ (6,732)	0.0%
OVERTIME	198,825	244,142	239,668	246,474	6,806	2.8%
FRINGE BENEFITS	2,624	3,460	3,100	3,149	49	1.6%
UTILITIES	4,764	33,468	27,695	27,695	-	0.0%
MAINTENANCE	511,453	653,556	648,526	451,145	(197,381)	-30.4%
TRAINING & MEETINGS	17,661	58,933	44,500	36,000	(8,500)	-19.1%
PROFESSIONAL SERVICES	1,721,703	1,608,194	1,717,897	1,705,329	(12,568)	-0.7%
OTHER MATERIALS	1,798,274	1,632,240	1,718,563	1,711,211	(7,352)	-0.4%
OTHER SERVICES	442,417	328,332	446,680	346,125	(100,555)	-22.5%
TOTAL	\$ 19,697,794	\$ 19,882,352	\$ 21,132,587	\$ 20,806,354	\$ (326,233)	-1.5%

The Programs, Policy & Planning Section is composed of the Toxic Reduction and Control, Environmental Quality (EnQual), Laboratory Services, and Planning departments. The Environmental Quality Department has two units; EnQual-Wastewater and EnQual-Water Quality Assurance. In total, the budgets for these programs represent 11% of the Operations Division's FY21 Final Budget.

**FY21 Final Current Expense Budget
PROGRAMS, POLICY & PLANNING by Program**

PROGRAM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
TOXIC REDUCTION & CONTROL	\$ 4,459,614	\$ 4,765,352	\$ 4,855,995	\$ 5,023,801	\$ 167,806	3.5%
ENVIRONMENTAL QUALITY	5,140,680	4,968,587	5,526,794	5,451,955	(74,839)	-1.4%
LABORATORY SERVICES	6,568,169	6,863,811	7,051,516	7,440,085	388,569	5.5%
PLANNING	3,529,331	3,284,602	3,698,282	2,890,513	(807,769)	-21.8%
TOTAL	\$ 19,697,794	\$ 19,882,352	\$ 21,132,587	\$ 20,806,354	\$ (326,233)	-1.5%



Nut Island Headworks

TOXIC REDUCTION AND CONTROL

The Toxic Reduction and Control (TRAC) Department operates a multi-faceted program to minimize and control the inflow of hazardous or toxic materials into the MWRA sewer system. TRAC operates MWRA’s Environmental Protection Agency (EPA) approved Industrial Pretreatment Program and is responsible for all associated activities which include conducting inspections (approximately 1,250 annually), issuing permits (approximately 300 annually), conducting sampling (more than 2,000 events annually), and carrying out enforcement activities (approximately 300 annually). The program tracks more than 1,250 permitted facilities and 4,000 gas/oil separators. TRAC uses a software application to manage an extensive amount of industrial data on analytical test results, compliance status, and facility sampling and permitting requirements.

FY21 Final Current Expense Budget TOXIC REDUCTION AND CONTROL

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 4,198,577	\$ 4,466,790	\$ 4,568,411	\$ 4,719,009	\$ 150,598	3.3%
OVERTIME	103,223	123,855	124,668	127,474	2,806	2.3%
FRINGE BENEFITS	1,748	1,849	1,750	1,849	99	5.7%
MAINTENANCE	13,853	2,593	12,000	12,000	-	0.0%
TRAINING & MEETINGS	1,610	8,060	1,500	5,300	3,800	253.3%
OTHER MATERIALS	124,711	139,857	128,059	133,189	5,130	4.0%
OTHER SERVICES	15,892	22,348	19,607	24,980	5,373	27.4%
TOTAL	\$ 4,459,614	\$ 4,765,352	\$ 4,855,995	\$ 5,023,801	\$ 167,806	3.5%

FY21 Goals and Initiatives:

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - Continue to carry out the Pretreatment Program to protect receiving water quality, maximize the beneficial reuse of wastewater residuals, and protect workers and MWRA’s wastewater treatment plants.
 - Ensure compliance with MWRA and Federal regulations by issuing appropriate enforcement actions as outlined in the Enforcement Response Plan.
 - Staff will continue to transition the 8M permitting (permit to construct on MWRA easement) process into TRAC’s Pretreatment Information Management System (PIMS) software.
 - TRAC staff will utilize the Pretreatment Information Management System (PIMS) software to schedule and track work, as well as to draft permits and track permit requirements. Sampling required by permits is entered into the PIMS system by permittees’ contract laboratories. This electronic reporting system is subject to EPA’s Cross Media Electronic Reporting Rule (CROMERR) and as such, needs to be upgraded to meet the requirements of the rule. TRAC

staff are working with MWRA’s MIS staff to ensure that the PIMS system meets these requirements.

- **Goal #5 – Regulatory Changes:** Continue to initiate plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality.
 - **Local Limits:**
 - Continue to collect samples for use in the update of DITP local limits when new DITP NPDES permit is issued in future.

FY20 Year-End Accomplishments:

- MWRA submitted the Annual Industrial Waste report detailing its pretreatment program activities to US EPA and Mass DEP as required by our NPDES Permits for the Clinton and Deer Island Wastewater Treatment Plants by its October 31, 2019 due date.
- In October 2019, TRAC Staff sent letters to its Significant Industrial Users (SIUs) to transmit their FY19 compliance status and preliminary annual charges. The letters provide an opportunity for each SIU to review the data upon which the charges are based and submit any changes. They also inform the SIUs if they are in Significant Noncompliance with MWRA/EPA standards or requirements.
- In September 2019 TRAC promulgated revisions to the three regulations (360 CMR 1.00: Adjudicatory Proceedings, 360 CMR 2.00: Enforcement and Administrative Penalties, and 360 CMR 10.000: Sewer Use) that are utilized to implement MWRA’s Industrial Pretreatment Program. The revisions incorporate new local limits for the Clinton Wastewater Treatment Plant and the new federal dental effluent regulations, among other changes.
- As part of the revisions to 360 MCR 10.000 (Sewer Use) regulations, MWRA created a new group permit for Dental Discharges. In FY20, TRAC issued Dental Discharges permits to 714 facilities.
- Key performance indicators includes;

Indicators	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal
EPA Required SIU Monitoring Events	176	172	172	171
Non-SIU Monitoring Events	114	83	76	79
SIU Connections to be Sampled	415	398	388	404
EPA Required SIU Inspections	204	201	195	188
SIU Permits due to Expire	88	71	83	56
Non-SIU Permits due to Expire	257	371	242	211
Issue Annual Industrial Pretreatment Program Report	Oct 2018	Oct 2019	Oct 2020	Oct 2021

Budget Highlights:

The FY21 Final Budget is \$5 million, an increase of \$168,000 or 3.5%, from the FY20 Budget.

- \$4.7 million for **Wages & Salaries**, an increase of \$151,000 or 3.3% from the FY20 Budget primarily for wage increases associated with collective bargaining agreements. The budget includes \$79,000 for stand-by pay for wet weather sampling events.
- \$127,000 for **Overtime**, an increase of \$3,000 or 2.3% from the FY20 Budget primarily due to increases associated with collective bargaining agreements. Overtime covers sampling, monitoring, and inspections during off-hours as well as emergencies and wet weather events.
- \$12,000 for **Ongoing Maintenance**, level funded with the FY20 Budget. This funds sampling equipment, materials, and maintenance of equipment used in sampling industrial discharges at permitted industries.
- \$133,000 for **Other Materials**, an increase of \$5,000 or 4% from the FY20 Budget. Funding in this line item mainly supports lab and testing supplies, health and safety materials, and work clothes.
- \$25,000 for **Other Services**, an increase of \$5,000 or 27.4% from the FY19 Budget. This line item also funds printing costs for regulations, public advertising of industrial users in Significant Noncompliance, and police details for sampling work done in public streets.



Sampling of Clinton Effluent Channel

ENVIRONMENTAL QUALITY

The core functions of the Environmental Quality Department are to monitor and report on the quality of drinking water and to ensure compliance with regulatory reporting requirements governing drinking water; to monitor wastewater and the receiving water environment as laid out in the Ambient Monitoring Plan; and to ensure compliance with regulatory reporting requirements governing wastewater treatment and discharges.

FY21 Final Current Expense Budget ENVIRONMENTAL QUALITY

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 3,191,952	\$ 3,154,668	\$ 3,539,416	\$ 3,646,547	\$ 107,131	3.0%
OVERTIME	15,467	20,454	16,000	20,000	4,000	25.0%
FRINGE BENEFITS	121	76	200	200	-	0.0%
MAINTENANCE	90,629	95,762	84,200	100,520	16,320	19.4%
TRAINING & MEETINGS	8,451	30,330	22,000	17,000	(5,000)	-22.7%
PROFESSIONAL SERVICES	1,515,785	1,369,665	1,476,084	1,430,148	(45,936)	-3.1%
OTHER MATERIALS	162,573	229,701	256,800	150,000	(106,800)	-41.6%
OTHER SERVICES	155,702	67,931	132,094	87,540	(44,554)	-33.7%
TOTAL	\$ 5,140,680	\$ 4,968,587	\$ 5,526,794	\$ 5,451,955	\$ (74,839)	-1.4%

The **Environmental Quality Department** (EnQual) has two units: EnQual-Water (WA) and EnQual-Wastewater (WW). EnQual-WA manages compliance with the reporting requirements of the Massachusetts Department of Environmental Protection (MADEP) Drinking Water Regulations, as well as conducts and oversees the drinking water quality-monitoring program. Activities include maintaining the Contaminant Monitoring System (CMS) and a mobile CMS unit for as-needed sampling including emergency response situations. The group also conducts an algae monitoring program, responds to customer complaints, conducts community sampler training, and reviews system water quality data.

FY21 Final Current Expense Budget ENVIRONMENTAL QUALITY by Program

PROGRAM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
ENQUAL	\$ 2,999,239	\$ 2,883,434	\$ 3,024,327	\$ 3,096,144	\$ 71,817	2.4%
WATER QUALITY ASSURANCE	2,141,441	2,085,153	2,502,467	2,355,811	(146,656)	-5.9%
TOTAL	\$ 5,140,680	\$ 4,968,587	\$ 5,526,794	\$ 5,451,955	\$ (74,839)	-1.4%

EnQual-WW manages compliance with the reporting requirements of MWRA's National Pollutant Discharge Elimination System (NPDES) permits. The group must submit permit reports to state and federal regulators, the science advisory panel and its subcommittees, and post many of these reports on its Harbor and Bay web pages. EnQual-WW manages environmental data and monitors and reports on the environmental quality of Massachusetts Bay, sewage influent and effluent, Boston Harbor and its tributary

rivers, and Harbor beaches. EnQual-WW uses the monitoring data to demonstrate benefits of CSO control and support future decision-making. EnQual-WW also keeps current with upcoming and draft regulations, providing comments and evaluating potential impacts on MWRA operations.

The Environmental Quality Department has significant responsibility for the following MWRA goals included in the draft FY21-FY25 Five-Year Strategic Business Plan (pending Board approval):

FY21 Goals and Initiatives:

I. Drinking Water Quality and System Performance

- **Goal #1 – Compliance with Regulatory Requirement and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations and reporting requirements.
 - Continue to work with UMass Amherst, under an Interdepartmental Service Agreement, to investigate multiple treatment scenarios that can be implemented at the Carroll Water treatment plant to reduce cyanotoxins in Wachusett water. Develop strategies for the control of disinfection by-products (DBPs), DBP precursors, and treatment of algae-related constituents in the Chicopee Valley Aqueduct (CVA) system.
 - Respond to MADEP and the U.S. Environmental Protection Agency (EPA) regarding regulatory changes for drinking water quality monitoring.
 - Continue to monitor algal toxins and taste and odor compounds in source and drinking water and adapt the program to the rapidly changing regulatory landscape of this issue. Develop a monitoring and response plan for reservoir cyanobacteria blooms and algal toxin detection.
 - In coordination with the MA Department of Conservation & Recreation (DCR), develop operational emergency response plans for nuisance and harmful algal blooms, detection of taste and odor compounds, and algal toxins. Communicate goals with MADEP.
 - Develop and establish means and methods to transition water quality reporting from traditional spreadsheet formats to automated platforms from an EnQual-Water database.
- **Goal #2 –Water Quality Public Communications:** Continue to effectively report and communicate water quality information to our customers and public officials.
 - As part of an Authority Consequence Management Plan, operate a comprehensive network of water quality monitoring stations; maintain a mobile water quality trailer to provide field-monitoring capabilities; and oversee a quality-monitoring program for emergency standby reservoirs. Develop and train staff on emergency response procedures and contaminant response procedures for reservoir or distribution system events.



Norumbega Covered Storage Tank and Norumbega Open Reservoir (now a back up supply)

- Collect samples and evaluate data to develop a program for the emergency standby reservoirs, including management goals to ensure they are ready for use in the event of a drinking water shortage. The data management group will annually report on reservoir data.
- Train community water department staff in drinking water sampling and chlorine residual testing, drinking water quality complaints, emergency response, and regulatory compliance assistance. Disseminate quarterly community chlorine residual reports to communities.
- Continue to strengthen planning and emergency response documents for Boil Water Order Events. Work with the Planning Department to create, disseminate and train on materials that can be used at a Public Information Call Center during a Boil Water Order Event.

II. Wastewater Quality and System Performance

- **Goal #4– Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - Respond to public interest and improve timeliness of accurate reporting, finish development of systems to more quickly gather and report accurate combined sewer overflow (CSO) and sanitary sewer overflow location and volume data.
 - Continue to implement the water quality modeling requirements of the Deer Island Treatment Plant (DITP) NPDES permit.
 - Continue to develop and manage a monitoring program for Boston Harbor and its tributary rivers, and Massachusetts Bay, reflecting permit and variance requirements, relevant current concerns, and long-term interests of the area.
 - Continue to implement the reporting requirements of DITP and Clinton Treatment Plant NPDES permits. Respond to regulatory changes and program initiatives, including any new permits.
 - Continue to produce scientific reports and manage environmental monitoring data; make data and analysis available in-house, in public presentations, online, and in designed print products; keep up-to-date data available for presentations to regulators and other interested parties.
 - Manage water facility NPDES permits, and provide monthly and quarterly reports to regulators.

- **Goal #5 – Regulatory Changes:** Continue to initiate plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality.
 - Prepare for and meet with regulators regarding the updated NPDES Permit for DITP.
 - Propose permanent modifications to the Ambient Monitoring Plan that have been endorsed by the Outfall Monitoring Science Advisory Panel (OMSAP). Explore additional modifications to better address issues of emerging concern by working with regulators and OMSAP to review the goals and monitoring questions underlying the permit-required Plan.
 - Review draft permits, including general permits that affect MWRA facilities, and regulatory changes, e.g., water quality standards and criteria.

- **Goal #8 – Combined Sewer Overflow Plan Compliance:** Complete all CSO milestones by 2021 and demonstrate that the CSO Plan meets its performance objectives.
 - Provide technical and scientific support for the development of the EPA-required CSO Program performance assessment.
 - Working with staff from Planning, Engineering and Construction, and Operations, continue work on the CSO performance assessment, including ongoing water quality monitoring.
 - Update receiving water models for the Charles and Alewife/Mystic Rivers as part of the four-year performance assessment.
 - To meet future water quality assessments expected in the CSO variance areas of the Mystic and Charles Rivers, intensify data analysis bringing together disparate datasets such as localized rainfall data, metered and modeled CSO discharges, and receiving water quality.

FY20 Year-End Accomplishments:

EnQual-Water

- Met all drinking water compliance-sampling requirements. Submitted all weekly, monthly, and quarterly reports, even during the COVID-19 restrictions. Participated in non-regulatory sampling events including those requested by MADEP for perfluorinated compounds and pesticide monitoring during statewide aerial spraying for Eastern Equine Encephalitis.
- Assessed water quality and impacts on Disinfection Byproduct formation in the Quabbin system. Implemented a new chlorine dosing strategy to control DBPs.
- Developed a plan to deploy a water quality monitoring profiling buoy in Quabbin Reservoir to monitor algal growth and other parameters to improve detection and response relating to algae and DBP precursors. Coordinated planning with DCR-Quabbin.
- Reviewed and modified water quality sampling, testing and data reporting in the Quabbin system. Increased monitoring including taste and odor compounds, heterotrophic plate count, adenosine triphosphate, total organic carbon, and disinfection byproducts. Altered weekly reports to reflect changes in testing.
- Quickly adjusted sampling schedules to adhere to state and federal requirements related to COVID-19 while utilizing limited staff. Routinely communicated with EPA and MADEP since the start of the pandemic. Continued to conduct significant community outreach pertaining to low chlorine residual tracking, Total Coliform Rule level assessment assistance, storage tank/standpipe operations and sampling for emergency contaminants such as perfluorinated compounds. Provided visual sampling and testing guides to communities during COVID-19 restrictions. MADEP highlighted the guides as a “Best Management Practice” in their statewide Drinking Water Program routine update.

- Assisted two communities in responding to an actual or potential Boil Water Order because of an *E. coli* positive drinking water sample. Assisted with planning in Framingham and an actual Boil Water Order event in Reading. Provided ongoing training to reinforce proper sampling techniques.
- Developed and trained community staff for EPA's UCMR 4 program which started in 2018 and ends in December 2020. In FY20, staff conducted three training sessions for six partially served and CVA communities. Staff will complete all fully served community UCMR 4 sampling for cyanotoxins and several other parameters in 2020.
- Continued to upgrade and expand contaminant monitoring and detection capabilities to provide both routine water quality information and contaminant detection. Installed two new contaminant monitoring (S::can) units at Shaft 9A and the raw water tap at the Carroll Water Treatment plant. Investigated integration of new Enterprise Telog system with S::can equipment to serve as backup communication to SCADA at 23 contaminant-monitoring sites.
- Continued to develop and refine equipment maintenance plans and life cycle projection for newly expanded monitoring equipment inventory with a total estimated value of over \$2 million.
- Completed all MADEP-required drinking water sampling and reporting Assistance Events.
- Commenced the use of the Environmental Systems Research Institute (ESRI) Collector Application for seasonal cyanobacteria onsite inspections at active and standby reservoirs. Implemented web dashboards for water quality sonde/buoy data and grab sampling data review.
- Commenced programming for EnQual weekly report automation, and implemented automated notification of chlorine residual and other water quality data in the MWRA system.

EnQual-Wastewater

- EnQual-Wastewater published 13 technical reports during FY20.
- Met all NPDES reporting requirements including routine monthly, quarterly, and annual reports, and required notifications under Part II of permits, Contingency Plan, DITP blending order. Missed no reporting deadlines, even with the impacts of COVID-19.
- Conducted almost* all ambient monitoring sampling required under the DITP NPDES permit, collecting and analyzing seawater, sediment and flounder samples for evidence of outfall-related environmental degradation (none was observed). Worked with regulators and OMSAP to identify cost-saving reductions to sediment and flounder monitoring, which MWRA formally proposed in June 2020.
- Reviewed and analyzed impacts on MWRA of several new MADEP and EPA regulations; these include legislation relating to reporting CSO discharges and state water quality standards, such as "alternative Total Maximum Daily Load (TMDL)" for phosphorus in the Mystic River.
- Reviewed and commented on draft permits for Merrimack River wastewater treatment plants and Great Bay NH wastewater treatment plants, on issues that relate to a possible future DITP permit, as well as on the draft industrial stormwater permit that covers MWRA wastewater facilities.
- Continued monitoring* and data analyses required by the CSO Variances and oversaw related work by AECOM on the CSO Water Quality Assessment. Assisted with public briefings for variances and for the CSO post-construction monitoring and assessment program, and held discussions with MADEP and EPA about new requirements in the 2019-2024 variances for the Charles and Alewife/Mystic Rivers.
- Updated MWRA's CSO notification web page and database to meet the new rapid CSO notification requirements in the CSO Variances.

*Minor reductions in scope were necessitated by COVID-19 safety protocols

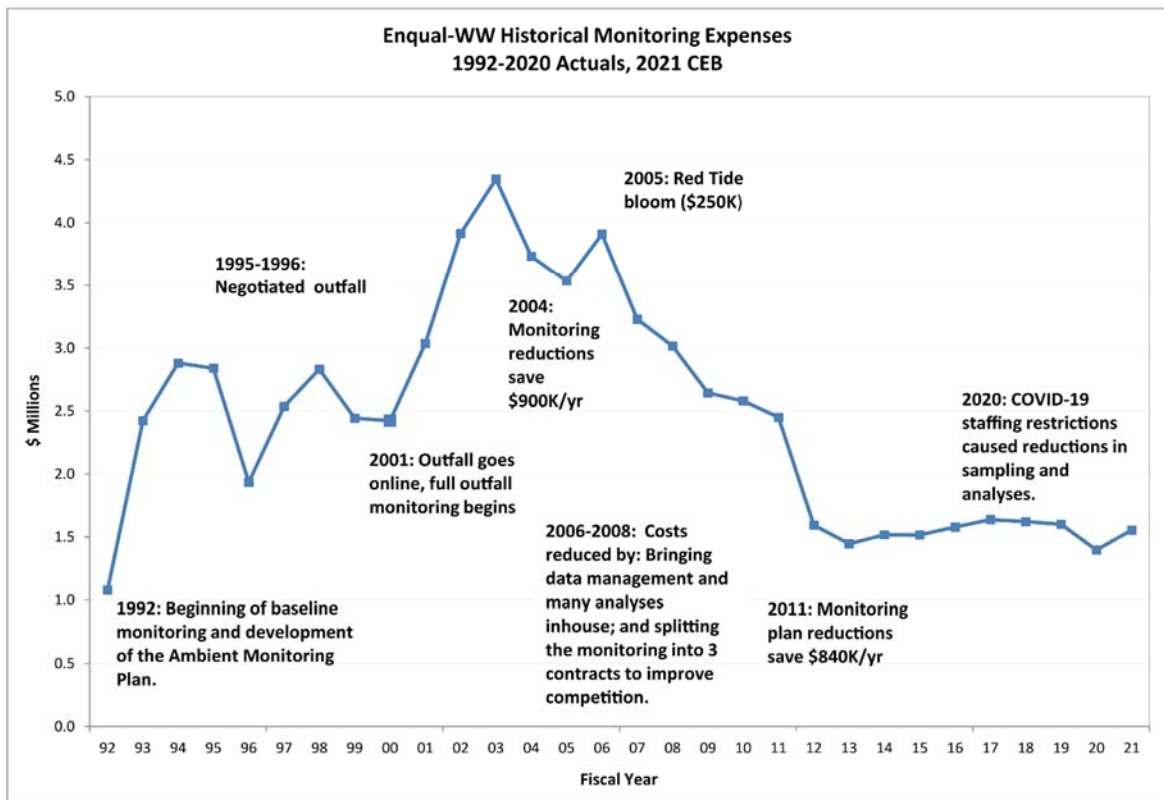
Budget Highlights:

The FY21 Final Budget is \$5.5 million, essentially level-funded with the FY20 Budget.

- \$3.6 million for **Wages and Salaries**, an increase of \$107,000 or 3.0%, primarily due to wage increases associated with collective bargaining agreements. The budget also includes \$58,000 for interns to assist with data analysis, water quality sampling, and technical support and \$40,000 for stand-by pay associated with wet weather and water quality monitoring programs.
- \$20,000 for **Overtime** to support wet weather and water quality monitoring programs, an increase of \$4,000 or 25% over the FY20 budget based on trends and expected needs.
- \$100,000 for **Maintenance**, an increase of \$16,000 or 19.4% from the FY20 Budget primarily due to inclusion of funds for Contaminant Monitoring System equipment and maintenance of Fluidion water quality monitoring instruments used for the CSO program.
- \$17,000 for **Training and Meetings** to cover staff participation in professional conferences and technical and software training, which is \$5,000 (23%) lower than the FY20 Budget due to expected pandemic-related constraints in on-site training and meetings during FY21.

- \$1.4 million for **Professional Services**, a decrease of \$46,000 or -3% from the FY20 Budget due to the decision to develop a backup reservoir testing plan in-house and not through an outside contract. The budget supports laboratory testing for MWRA's Harbor and Outfall Monitoring (HOM) Program, including Cape Cod Bay monitoring and \$280,000 for contracts for the following activities which are co-funded through cost-sharing or cost-reduction agreements:
 - UMass Amherst: special study on railroad and cyanotoxin contaminants in the Wachusett Reservoir extended to FY21 due to COVID-19 pandemic that delayed completion of the study in FY20; Draft of a new agreement is in progress to investigate strategies to reduce disinfection by-products and algae-related components in Quabbin reservoir.
 - University of Maine's buoy off Cape Ann: instruments measuring algae, chlorophyll and other water-quality indicators.
 - The Center for Coastal Studies: monitoring water quality in Cape Cod Bay.

The FY21 Budget continues to reflect approximately \$840,000 in annual savings due to the reduction in scope of HOM monitoring that took place in 2011 through 2013 based on favorable findings of many years of monitoring data and regulatory approval (see figure below).



- \$150,000 for **Other Materials** a decrease of \$107,000 or -41.6% from the FY20 Budget, primarily due to scaling back expansion of the Contaminant Monitoring System (CMS) and defunding radiological monitoring as suitable equipment is not yet available. The budget includes \$55,000 for lab and testing supplies for the CMS program and \$83,000 for equipment and parts for reservoir water quality monitoring such as buoy anchors, and sondes; and a light measuring station at Deer Island.
- \$88,000 for **Other Services**, a decrease of \$45,000 or -33.73% from the FY20 Budget for Verizon fees, the cost savings from MWRA purchasing the modems used for the CMS Program.

LABORATORY SERVICES

The core function of the **Department of Laboratory Services** is to provide high quality and responsive laboratory services to MWRA’s water and wastewater treatment programs, including the Watershed Division of the Department of Conservation and Recreation (DCR) and the MWRA member water and wastewater communities. This involves timely and cost-effective laboratory tests to meet the strict testing guidelines required by all regulatory programs and permits, including the Safe Drinking Water Act (SDWA), Clean Water Act, and National Pollutant Discharge Elimination System (NPDES) permits. The Department supports these functions at five locations: Chelsea, Southborough, Quabbin, the Central Laboratory at the Deer Island, and Clinton. Testing supports drinking water transmission and treatment processes, wastewater operations and process control at Deer Island and Clinton, NPDES compliance, Massachusetts Bay outfall monitoring, Toxic Reduction and Control, and wastewater residuals. The Department also conducts the Boston Harbor monitoring program that involves regular sampling for nutrients, bacteria, and water quality parameters throughout Boston Harbor. Laboratory staff track and analyze results for submission to the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP).

Most MWRA laboratory testing is done in-house. Certain highly specialized or low volume tests are outsourced, such as tests for cryptosporidium, giardia and radioactivity.

FY21 Final Current Expense Budget LABORATORY SERVICES

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 4,760,710	\$ 4,998,938	\$ 5,092,574	\$ 5,342,957	\$ 250,383	4.9%
OVERTIME	80,135	98,622	99,000	99,000	-	0.0%
FRINGE BENEFITS	755	1,505	1,100	1,100	-	0.0%
UTILITIES	4,764	33,468	27,695	27,695	-	0.0%
MAINTENANCE	232,644	314,411	329,125	338,625	9,500	2.9%
TRAINING & MEETINGS	1,255	2,042	7,000	4,700	(2,300)	-32.9%
PROFESSIONAL SERVICES	196,984	215,425	241,013	274,181	33,168	13.8%
OTHER MATERIALS	1,211,007	1,089,619	1,162,454	1,248,272	85,818	7.4%
OTHER SERVICES	79,915	109,781	91,555	103,555	12,000	13.1%
TOTAL	\$ 6,568,169	\$ 6,863,811	\$ 7,051,516	\$ 7,440,085	\$ 388,569	5.5%

FY21 Goals and Initiatives:

The Laboratory Services Department has significant responsibility for the following MWRA goals included in the draft FY21 - FY25 Five-Year Strategic Business Plan (pending Board approval):

I. Drinking Water Quality and System Performance

- **Goal #1 – Compliance with Regulatory Requirement and Public Health Standards:** Maintain drinking water quality to protect public health, and continue to ensure that MWRA water meets all applicable regulations.
- **Goal #3 – Technical Assistance for Water Communities:** Assist member communities to improve local water distribution systems through ongoing financial, technical, and operational support programs to maximize long-term water quality benefits.
 - PFAS testing: MWRA is developing the capability to meet the new MassDEP PFAS testing requirements for both fully and partially served communities.

II. Wastewater Quality and System Performance

- **Goal #4 – Compliance with Regulatory Requirements:** Meet or surpass environmental compliance standards at both MWRA treatment facilities and throughout the wastewater collection system.
 - CSO Assessment: Continue to perform weekend CSO receiving water sampling during/after significant wet weather events.
 - PFAS testing: MWRA is developing the capability to assess the PFAS inputs into the wastewater system and the subsequent impacts on effluent quality and fertilizer pellet marketability.
 - Decision support: Provide as-needed laboratory services to support assessment of regulatory and operational issues.
- **Goal #5 – Compliance with Regulatory Requirements:** Continue to initiative plans and studies to prepare for regulatory changes; identify opportunities to refine monitoring requirements; and improve effluent quality. Special initiatives include:
 - Continue to work with researchers investigating the use of wastewater as an indicator of the presences of the Covid19 virus.

In addition, the Laboratory Services Department provides support functions for other MWRA Departments. FY21 Major Initiatives in support of those functions include:

- **Ethics Training** – Continue laboratory ethics and data integrity training to meet MassDEP laboratory certification and National Environmental Laboratory Accreditation Program (NELAP) requirements.
- **NPDES Permits** – Provide laboratory data and consulting to wastewater operations and EnQual on Deer Island draft or final NPDES permits.
- **Laboratory Renovation Projects** – Replacement of the HVAC system and fume hoods at the Central Lab has been delayed, but may start in FY21. Related work will continue in FY21 including restoring cabinetry and lab benches at the Central Lab.
- **School Lead Testing Initiative** – This special project began in FY16 and is continuing into FY21. MWRA staff have tested thousands of samples.
 - **Key Department Performance Measurements and Accomplishments:**

Indicator	FY17 Actual	FY18 Actual	FY19 Actual	FY20 Actual	FY21 Goal
Total # of Tests Performed	314,270	265,877	270,194	261,011	270,000
Percent On-Time Results	91.3	94.7%	93.9%	95.5%	95%
Average Turnaround Time (days)	6.58	5.95	6.19	5.78	9

Percent Quality Control Within Specifications	97.6	97.7%	97.9%	97.7%	97%
Special Project: School Lead Project # Samples	12,476	1,886	1,498	442	As-needed

FY20 Year-End Accomplishments:

- **CSO Assessment:** Performed CSO receiving water sampling in the Charles and Mystic Rivers during/after significant wet weather events to document the recovery of the rivers after rain events. MWRA will use this information as part of the court-ordered CSO Assessment.
- **Pandemic Planning:** Updated the MWRA Pandemic Emergency Action Plan in August 2019 to meet requirements of America's Water Infrastructure Act (AWIA). Assisted with implementation of this plan throughout MWRA during the latter half of FY20.
- **Decision support:** Provided testing and analytical services to support assessment of numerous issues including School Lead testing, the next DITP NPDES Permit, the new Clinton NPDES Permit, testing for algae blooms in the Emergency Distribution Reservoirs, and red tide testing in Massachusetts Bay.

Budget Highlights:

The FY21 Final Budget is \$7.4 million, an increase of \$389,000 or 5.5% compared to the FY20 Budget.

- \$5.3 million for **Wages and Salaries**, an increase of \$250,000 or 4.9% compared to the FY20 Budget primarily due to backfilling of vacant positions and wage increases associated with collective bargaining agreements.
- \$99,000 for **Overtime**, level funded with the FY20 Budget based on recent history, to cover work associated with peak periods, emergencies, and special initiatives.
- \$28,000 for **Utilities**, level funded with the FY20 Budget based on historical spending levels. The budget covers the purchase of gases and cryogenic liquids used for various laboratory instruments.
- \$339,000 for **Ongoing Maintenance**, an increase of \$9,500 or 2.9% compared to the FY20 Budget. This budget includes Lab equipment maintenance, repairs, and calibration for major lab instruments and once a year preventive maintenance for all ovens, water baths, incubators, refrigerators, freezers, chillers, meters, sensors, microscopes, thermometers, and balances. The budget for FY21 is based on historical spending levels.
- \$4,700 for **Training and Meetings**, a decrease of \$2,300 compared to the FY20 Budget. This line funds attendance at the Lab Accreditation/National Environmental Monitoring Conference and the Association of Public Health Laboratories (APHL) annual meeting. Also included are several new conferences and seminars to keep staff technically knowledgeable.



- \$274,000 for **Professional Services**, an increase of \$33,000 or 13.8% compared to the FY20 Budget. The increase is because a portion of the UCMR4 water quality project was deferred from FY19 and FY20 to FY21. The cost of UCMR4 is based on actual contract lab bid prices. Funding in this line item supports laboratory and testing analysis services the department uses to contract out a variety of complex and/or low volume tests. Outside laboratories are used for emergencies, second opinions, capacity constraints, and unavailability of specialized equipment or economic justification.
- \$1.2 million for **Other Materials**, an increase of \$86,000 or 7.4% compared to the FY20 budget. This budget line includes funding for laboratory supplies and laboratory instrument replacements. The increase reflects recent historical spending.
- \$104,000 for **Other Services**, an increase of \$12,000 or 13.1% compared to FY20. This covers courier service for shipping samples between laboratories, required permit fees for MassDEP and NELAP certification, removal of hazardous waste, boat dockage for two boats, and boat rental service on an as-needed basis. The increase reflects recent historical spending.



Boston Harbor Sampling

PLANNING

The **Planning Department** provides regulatory, public policy, and public health advocacy for MWRA's drinking water and wastewater programs. It provides decision support on planning, policy and operations matters, using a range of technical and analytical tools. Staff administers financial assistance programs to improve the infrastructure of member communities and to promote water conservation. The Department integrates staff efforts and coordinates MWRA activities related to system and capital planning, infrastructure renewal, and watershed management (in conjunction with the Commonwealth's Department of Conservation and Recreation; DCR); strategic business planning; agency-wide performance measurement; and industry research.

FY21 Final Current Expense Budget PLANNING

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 2,848,834	\$ 2,699,631	\$ 3,085,557	\$ 2,570,713	\$ (514,844)	-16.7%
OVERTIME	-	1,211	-	-	-	-
FRINGE BENEFITS	-	30	50	-	(50)	-100.0%
ONGOING MAINTENANCE	174,327	240,790	223,201	-	(223,201)	-100.0%
TRAINING & MEETINGS	6,345	18,501	14,000	9,000	(5,000)	-35.7%
PROFESSIONAL SERVICES	8,934	23,104	800	1,000	200	25.0%
OTHER MATERIALS	299,983	173,063	171,250	179,750	8,500	5.0%
OTHER SERVICES	190,908	128,272	203,424	130,050	(73,374)	-36.1%
TOTAL	\$ 3,529,331	\$ 3,284,602	\$ 3,698,282	\$ 2,890,513	\$ (807,769)	-21.8%

The department previously had two units, the **Planning Unit** and the **Meter Data Unit**. As of FY21, the Meter Data Unit is shifting to the Field Operations/Operations Support Department, so the budget will no longer roll up into the Planning Department as noted below.

FY21 Final Current Expense Budget PLANNING by Program

PROGRAM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
PLANNING	\$ 2,610,443	\$ 2,252,909	\$ 2,562,711	\$ 2,890,513	\$ 327,802	12.8%
METER DATA	918,888	1,031,693	1,135,571	-	(1,135,571)	-100.0%
TOTAL	\$ 3,529,331	\$ 3,284,602	\$ 3,698,282	\$ 2,890,513	\$ (807,769)	-21.8%

The functions of the **Planning Department** are:

- **Mapping, Modeling, and Data Analysis** – Technical staff develops and maintains the Geographic Information Systems (GIS) for the water and wastewater systems, including integration of field and engineering records into GIS for access by planning, engineering, and operations staff. Provides

demand analysis and forecasting of water and wastewater flows for master planning and system operations; models reservoir operations and performs drought forecasting and planning; evaluates system expansion requests; and develops and maintains water and wastewater system models in support of master planning, system operations, and optimization. Staff assists in developing agency wide summaries of energy and greenhouse gas emission efficiency improvements.

- **System Planning and Renewal** – In coordination with colleagues across MWRA, staff with expertise in engineering and planning are responsible for water and wastewater system master planning, infrastructure needs assessment, and capital project development. Key work includes:
 - Reviews water and wastewater system expansion requests, water supply agreements, and emergency water withdrawal requests;
 - Assists with project siting decisions, environmental reviews, and permitting, including assessing impacts on MWRA facilities from other agencies' projects;
 - Develops strategies for reducing long-term emergency risks; and
 - Prepares plans for mitigating the risk of a range of hazards (i.e. climate change and sea level rise) on MWRA facilities and systems.
- **Regulatory and Policy Matters** – Staff work with various regulatory entities to advocate for cost-effective rule setting that protects the environment and promotes public health. Senior staff members also actively work with industry associations and other groups with agendas consistent with MWRA's to advance regulations that make environmental and economic sense. Senior staff conduct strategic policy research on a broad range of topics. Staff also conduct public health research and reports on potable water quality through production of the annual regulatory-required Consumer Confidence Report (CCR). Staff also coordinates with DCR on watershed protection initiatives. In conjunction with the Office of the Executive Director and Public Affairs, this unit serves as the Operations Division's lead on regulatory and policy matters potentially affecting MWRA's water and wastewater systems.
- **Community Support Program** – This unit oversees and manages MWRA's financial assistance and technical community support programs. Staff are responsible for the development, implementation, and reporting on Inflow/Infiltration (I/I) reduction policy; oversight of and reporting on MWRA leak detection and demand management programs; and reporting on the portions of MWRA's NPDES permit related to demand management and flow limitation activities. Staff administers community assistance programs including sewer Inflow/Infiltration financial and technical assistance, water pipeline rehabilitation financial assistance, lead service line replacement funding, water distribution systems technical assistance, water leak detection technical assistance, and water conservation programs.

FY21 Goals and Initiatives:

- I. **Drinking Water Quality and System Performance** – The Planning Department's purview and function supports all the goals associated with this strategic priority. FY21 priorities include:
 - Provide cost-effective and timely mapping, modeling, data analysis, and regulatory review services to support decision-making on operational, planning, environmental, and regulatory issues.
 - Continue coordination with member communities for distribution of grants and loans for local sewer, water, and lead service line removal projects.

- Continue outreach and coordination to schools and childcare facilities on lead testing and remediation. Work collaboratively with MA Department of Public Health on priority initiatives.
- Continue to advocate for responsible and reasonable revised drinking water regulations.
- Distribute the federally required annual water quality report, the Consumer Confidence Report (CCR), to all households.

II. Wastewater Quality and System Performance – The Planning Department’s purview and function supports all the goals associated with this strategic priority. FY21 priorities include:

- Provide cost-effective and timely mapping, modeling, data analysis, and regulatory review services to support decision-making on operational, planning, environmental, and regulatory issues
- Oversee implementation of the wastewater meter upgrade project.
- Update the MWRA wastewater maps, and produce an updated atlas. Participate in efforts to update selected water record plans and real estate records.
- Comply with I/I mapping and planning requirements in state environmental regulations and NPDES permits; interact with regulators after submitting full I/I control plan for MWRA collection system.
- Continue coordination with member communities for distribution of grants and loans for local sewer, water, and lead service line removal projects.

III. Infrastructure Management and Resilience

- Maintain and enhance water and wastewater system assets over the long term at the lowest possible life cycle cost and acceptable risk, consistent with customer, community, and regulatory support service levels. FY21 priorities include:
 - Provide cost-effective and timely mapping, modeling, data analysis, and regulatory review services to support decision-making on planning, regulatory, and infrastructure issues.

V. Environmental Sustainability – The Planning Department’s purview and function supports all the goals associated with this strategic priority by directing and managing MWRA’s planning processes including water system expansion planning, and climate change adaptation and mitigation efforts. FY21 priorities include:

- Update reports on greenhouse gas tracking and energy efficiency efforts and maintain a sustainability section on MWRA’s web page.
- Work with state and regional organizations and academic institutions to identify how MWRA can use existing long-term environmental data sets to help assess and project impacts of climate change.
- Continue to assist communities seeking admission to the MWRA’s water system or approval of emergency withdrawals.

FY20 Year-End Accomplishments:

- **Water Grant/Loan Program** - Distributed \$24.7 million in Local Water System Assistance Program interest-free loans, plus an additional \$5.2 million under the Lead Service Line Replacement Loan Program. In total, MWRA has distributed \$436 million in loans to fund 466 local projects with participation from 43 of the 45 eligible water communities. Since 1998, MWRA has replaced or cleaned and lined 563 miles of local water main (about 9% of the regional system) via projects funded by MWRA’s financial assistance. In addition, MWRA has loaned \$16.7 million via 20 distributions to 11 communities for Lead Line Replacement projects.

- **Community Leak Detection** - Assisted 26 municipalities in the MWRA's service area with leak detection (via task-order contracts) in their systems in FY20.
- **Lead Reduction Assistance** - Conducted additional outreach to communities on sampling in schools for lead in conjunction with third round of DEP's Technical Assistance program. Continued laboratory assistance to MDPH for water sampling for schools and day care centers.
- **Regulatory Input** - Planning Department staff have continued to be active in state and federal review of the Lead and Copper Rule as well as other proposed rule changes.
- **Sewer Grant/Loan Program** - Distributed \$40.2 million in grants and interest-free loans to member sewer communities for Infiltration/Inflow reduction and sewer system rehabilitation projects. In total, MWRA has distributed a total of \$441 million in grants and loans to fund 605 local projects with participation from all 43-member sewer communities.
- **Computer Modeling** - Provided computer modeling support for major capital programs including operational planning for pipeline shutdowns and metro tunnels emergency planning on the water side; and ongoing support for wastewater projects including the CSO evaluation.
- **Greenhouse Gas Reduction** - Continued tracking of vehicle greenhouse gas production. Continued coordination with local and regional climate change adaptation planning efforts.
- **Climate Change Adaptation** - Participated in Metro Mayors' Climate Change Coalition Task Force and continued to monitor new research related to the effects of climate change in the service area.
- **Mystic River** - Staff continued to represent MWRA on the Mystic River Steering Committee (facilitated by EPA and Mystic River Watershed Association staff). Key objectives are improved water quality and access to the River and improved open space opportunities are key objectives.

Budget Highlights:

- The FY21 Final Budget is \$2.9 million, a decrease of \$808,000 or -22.8% as compared to the FY20 Budget due to the shift of -\$1.1 million in funding for the Meter Data Unit to the Field Operations/Operations Support Department (FOD). This is offset by \$328,000 in net increases, primarily due to the shift of two emergency planning positions into the department plus expected hiring for positions that became vacant due to retirements.
- \$2.6 million for **Wages and Salaries**, a decrease of \$515,000 or -16.7% as compared to the FY20 Budget primarily due to the transfer of Meter Data Unit employees to FOD, offset by position transfers and additional hiring for vacant positions. The FY21 Budget also includes \$7,500 for summer interns to assist with analyses in the areas of climate change, benchmarking, public health, and other projects in the spring of 2021.
- **Ongoing Maintenance** is not funded in FY21 due to the transfer of the Meter Data Unit, resulting in a -\$223,000 change from FY20.
- \$9,000 for **Training and Meetings**, which is -\$5,000 versus the FY20 Budget due to COVID19 pandemic travel restrictions for the remainder of CY2020. The budget covers participation in training and conferences primarily focused on water quality regulations and geographic information systems.

- \$1,000 for **Professional Services** costs associated with the translation of the Consumer Confidence Report (CCR).
- \$179,000 for **Other Materials** which includes funding of \$157,000 for postage and mailing of the CCR, \$15,000 for water conservation kits, and \$5,000 for mapping supplies. The increase of \$8,500 is primarily due to expected price increases for distributing the CCR.
- \$130,000 for **Other Services**, a decrease of \$73,000 or -36% as compared to the FY20 Budget due to the shift of the Meter Data Unit (telephones) and a reduction in the expected level of spending for lead removal technical assistance. Other Services also includes \$85,000 for printing of the CCR, \$17,500 for printing water conservation and other informational brochures, and \$1,300 for Memberships and Dues for department employees.



Law Division
Budget

LAW DIVISION

Law

Legal Reviews
Litigation
Court Order Compliance
Environmental Regulation

The Law Division provides legal counsel to the Board of Directors, the Executive Director, and staff on compliance with federal and state laws, regulations, court cases, and administrative orders. Staff also handle and provide assistance with respect to litigation matters, real estate matters, labor/employment issues, procurement, and construction issues. The General Counsel interprets the MWRA Enabling Act and provides advice on conflict of interest and Code of Conduct issues. Division attorneys monitor the work of outside counsel when it is necessary to retain such services.

Law Division staff, though usually representing MWRA in a defensive posture, also work with Operations Division staff to effectuate cost recovery claims for design errors and omissions and construction defects. In addition, the Law Division assists in the early resolution of contractor and vendor claims prior to litigation so as to resolve them as favorably and early as possible thereby reducing or eliminating litigation costs and interest payable.

FY21 Final Current Expense Budget							
LAW DIVISION							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 1,661,759	\$ 1,654,125	\$ 1,683,900	\$ 1,766,762	\$ 82,862	4.9%	
OVERTIME	105	-	-	-	-	-	
TRAINING & MEETINGS	2,795	5,952	4,000	5,000	1,000	25.0%	
PROFESSIONAL SERVICES	344,853	95,871	358,000	400,000	42,000	11.7%	
OTHER MATERIALS	3,791	4,760	5,020	5,020	-	0.0%	
OTHER SERVICES	41,999	31,631	32,312	32,312	-	0.0%	
TOTAL	\$ 2,055,302	\$ 1,792,339	\$ 2,083,232	\$ 2,209,094	\$ 125,862	6.0%	

FY21 Goals and Initiatives:

For FY21, the Law Division has identified the following goals and initiatives:

- Provide exemplary legal representation of MWRA.
- Provide timely and cost effective resolution of legal disputes involving MWRA, through litigation, arbitration, administrative proceedings or alternative means of dispute resolution.

- Provide high quality legal services to support the business and operational needs of MWRA in several areas of the law including real estate, ethics/conflict of interest, tort, labor and employment, regulatory compliance, construction, procurement, environmental and contracts.
- Provide legal advice on legislation and regulatory issues.

FY20 Year-End Accomplishments:

- Working with staff and outside counsel, secured one-year extension of final milestone to submit report of the Authority's performance assessment, from December 2020 to December 2021, in the Boston Harbor case.
- Secured dismissals from the MCAD for lack of probable cause of a charge of discrimination on the basis of age in two cases.
- Secured favorable Department of Unemployment Assistance decision denying unemployment benefits to a former employee who voluntarily left MWRA's employ claiming constructive discharge.
- Obtained an arbitrator's decision in MWRA's favor ruling that the MWRA properly did not increase the pay rate of two employees after the hiring of a third.
- Obtained an arbitrator's decision in MWRA's favor ruling that the MWRA has the exclusive right to select an employee for promotion.
- Reviewed and advised staff on, laws, orders and guidance related to COVID-19 pandemic, including Families First Coronavirus Response Act. Provided counsel and advice to staff on Massachusetts Paid Family and Medical Leave Law.
- Negotiated and drafted new Memorandum of Agreement between the city of Braintree and MWRA regarding the continued use of the Howard Street Pump Station.
- Drafted Memorandum of Agreement between the town of Arlington and MWRA for cost sharing relating to MWRA Contract No. 6544 - Rehabilitation of WASM 3 Sections W11/W12/W16/51 Water Mains, Medford, Somerville, and Arlington.
- Drafted license between MWRA and Massachusetts State Police for the placement of an antenna array at the Deer Island Treatment Plant to gather information relating to communications between drones and their remote controls.
- Drafted license between MWRA and Air Force Technical Applications Center for access and use of designated areas at the Deer Island Treatment Plant for the placement of equipment to gather information relating to underground, surface, and atmospheric activities.
- Worked with DCR staff to secure five watershed acquisitions.
- Reviewed and finalized interconnection service agreements with NGRID for the John Carroll Water Treatment Plant Solar PV and for the CVA Fish Hatchery Hydro Facility.
- Assisted the Toxic Reduction and Control (TRAC) Division with the necessary documents to finalize the changes to TRAC's implementing regulations 360 CMR 1.00, 2.00, and 10.00.

Budget Highlights:

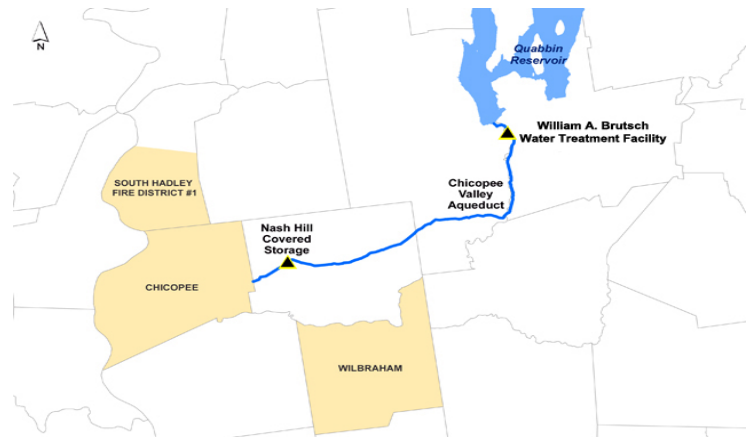
The FY21 Final Budget is \$2.2 million, an increase of \$126,000 or 6.0%, as compared to the FY20 Budget. Increased spending on Wages and Salaries and Professional Services were the principal drivers of the overall budget increase.

- \$1.8 million for **Wages and Salaries**, an increase of \$83,000 or 4.9%, as compared to the FY20 Budget primarily for wage increases associated with collective bargaining agreements. The FY21 Final Budget includes funding for 13.6 FTEs, the same as the FY20 Budget.
- \$400,000 for **Professional Services**, an increase of \$42,000 or 11.7%, as compared to the FY20 Budget, mainly as a result of a revaluation of the cost and potential for additional services required from outside professionals and consultants.

	FY20	FY21
LAW DEPARTMENT	FTEs	FTEs
LAW	13.6	13.6
TOTAL	13.6	13.6



Brutsch Water Treatment Facility



CVA System Map



Administration Division
Budget

ADMINISTRATION DIVISION

Administration

Director's Office
Facilities Management
Fleet Services
Human Resources
Management Information Systems
Procurement
Occupational Health and Safety

The **Administration Division** is responsible for managing the support service functions of the Authority. Its departments support daily operations and maintenance and ensure the implementation of the Authority's long-term goals and strategies.

FY21 Final Current Expense Budget						
ADMINISTRATION						
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 13,089,315	\$ 13,188,405	\$ 15,033,960	\$ 15,386,919	\$ 352,959	2.3%
OVERTIME	47,289	95,868	132,682	132,682	-	0.0%
FRINGE BENEFITS	19,959,633	19,857,450	21,603,197	22,287,665	684,468	3.2%
WORKERS' COMPENSATION	2,147,063	2,717,568	2,354,256	2,476,655	122,399	5.2%
UTILITIES	103,094	101,963	111,109	107,306	(3,803)	-3.4%
MAINTENANCE	4,064,534	4,500,035	4,853,048	4,787,849	(65,199)	-1.3%
TRAINING & MEETINGS	144,127	137,687	166,741	166,741	-	0.0%
PROFESSIONAL SERVICES	1,394,705	994,783	2,456,530	2,575,628	119,098	4.8%
OTHER MATERIALS	1,410,130	2,291,900	1,988,863	1,558,932	(429,931)	-21.6%
OTHER SERVICES	3,400,384	3,237,373	3,521,728	3,741,192	219,464	6.2%
TOTAL	\$ 45,760,274	\$ 47,123,032	\$ 52,222,114	\$ 53,221,569	\$ 999,455	1.9%

The Administration Division is comprised of seven departments: Director's Office (which includes Real Property); Facilities Management; Fleet Services; Human Resources; Management Information Systems (MIS); Procurement; and Occupational Health and Safety.

FY21 Final Current Expense Budget ADMINISTRATION by Department						
DEPARTMENT	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
ADMIN DIRECTOR'S OFFICE	235,862	293,790	367,788	385,277	17,489	4.8%
HUMAN RESOURCES	24,331,384	24,533,325	26,475,283	27,195,112	719,829	2.7%
MIS	11,785,088	12,617,023	14,820,414	14,626,596	(193,818)	-1.3%
FACILITIES MANAGEMENT	2,464,285	2,452,708	2,725,795	2,864,445	138,650	5.1%
FLEET SERVICES	1,934,980	1,893,234	2,233,121	2,211,520	(21,601)	-1.0%
PROCUREMENT	4,304,750	4,459,912	4,506,361	4,526,606	20,245	0.4%
REAL PROPERTY / ENVIR MGMT	703,925	377,363	(2,743)	-	2,743	-100.0%
OCCUPAT HEALTH AND SAFETY	-	495,677	1,096,095	1,412,013	315,918	28.8%
TOTAL	\$ 45,760,274	\$ 47,123,032	\$ 52,222,114	\$ 53,221,569	\$ 999,455	1.9%

FY21 Goals and Initiatives:

Consistent with MWRA's Board approved FY16 - FY20 Five-Year Strategic Business Plan, the Administration Division's FY20 goals are as follows:

IV. Finance and Management

- **Goal #13 – Maintain an Excellent Workforce:**
 - Continue to expand on MWRA's in-house job shadowing and career development training programs in anticipation of critical retirements over the next several years.
 - Continue to provide training to ensure employee safety. Continue to transition to virtual trainings to the extent possible.
 - Provide effective training necessary for employees to obtain and maintain required licenses and certifications to ensure a highly skilled workforce.
 - Continue MWRA's efforts to develop new recruitment and retention strategies to foster diversity, including traditionally underrepresented categories, people with disabilities and veterans.
 - Negotiate successor collective bargaining agreements with the five unions.
- **Goal #14 – Leverage Information Technology to Improve Organizational Effectiveness:**
 - Deliver Information Technology (IT) services and solutions efficiently and effectively.
 - Continue to provide IT resources to support remote work and meetings.
 - Provide IT solutions to streamline work processes while ensuring the security and integrity of MWRA data by leveraging the use of existing or emerging technologies.
 - Maintain current technology hardware, software, and network infrastructure.
 - Maintain a secure technology environment.
- **Goal # 12 – Ensure Cost-Effective Operational and Resource Management:**
 - Maintain and expand MWRA-wide recycling efforts.
 - Work with staff MWRA-wide to improve specifications development and documentation.
 - Transition from paper to electronic processes.

V. Environmental Sustainability

- *Goal #15 – Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA’s energy assets:*
 - Look for opportunities to incorporate energy efficiency measures into specifications for new construction, rehabilitation, and equipment replacement.

FY20 Year-End Accomplishments:

- **MIS Reorganization:** MIS has completed the organizational transformation recommended in the 5-year Strategic Plan. The transition of responsibilities for all applications will continue during FY20.
- MIS successfully transitioned approximately 500 employees to telework.
- Developed and implemented a COVID-19 contact tracing procedure. Successfully monitored employees impacted by Covid -19 with the goal of preventing greater exposure within the Authority while supporting the needs of employees reporting illness for themselves or their families.
- Investigated incidents involving the safety and health of employees, visitors, vendors and contractors.
- Developed additional specialized recruitment sources to attract women, minorities, and veterans for difficult to fill positions including expanding social network recruiting capabilities.
- Continued to work with Deer Island Treatment Plant (DITP), Field Operations (FOD), and utility companies to establish energy conservation programs at DITP and FOD facilities utilizing various programs including the Green Communities Act. Continued to dispose of surplus scrap metal materials in an environmentally responsible manner.
- Spec’d and purchased 3 additional electric vehicles for the Authority and installed electric vehicle charging stations at four locations.
- Recycled 18.25 tons of batteries, 18.55 tons of paper and 186.65 tons of scrap metal, generating \$31,560 in revenue.

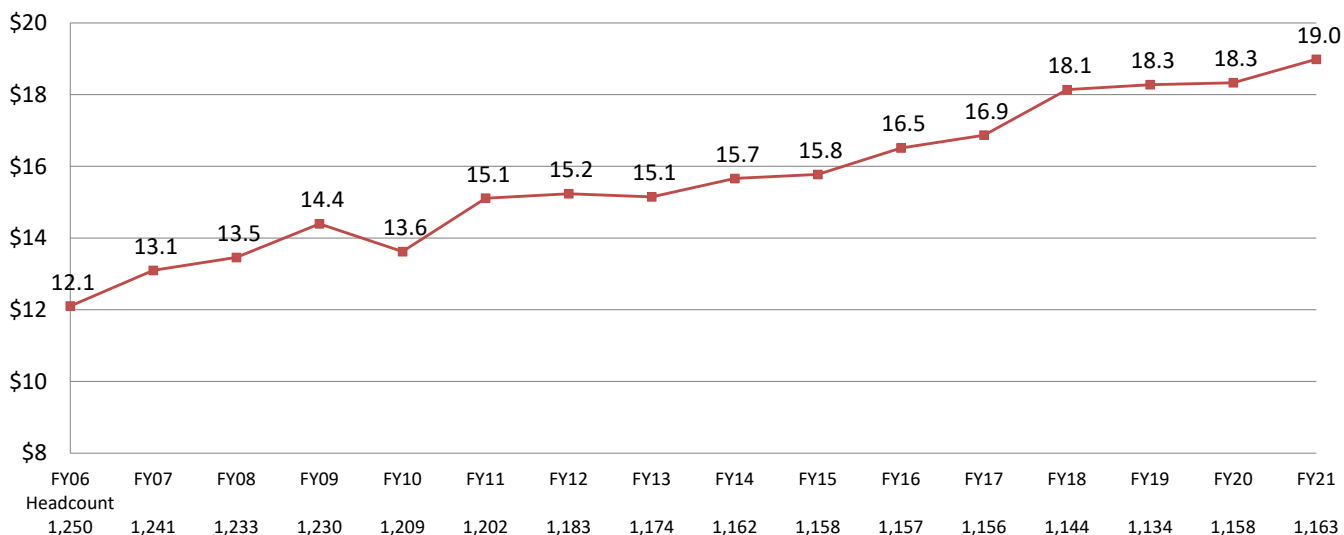
Budget Highlights:

The FY21 Final Budget is \$53.2 million, an increase of \$999,000 or 1.9% as compared to the FY20 Budget.

- \$15.4 million for **Wages and Salaries**, an increase of \$353,000 or 2.3% as compared to the FY20 Budget. The increase is primarily due to wage increases associated with collective bargaining agreements plus the addition of an FTE from OEP to OH&S. The FY21 Final Budget funds 146.7 FTEs, one more than FY20.
- \$133,000 for **Overtime**, level funded with the FY20 Budget.
- \$22.3 million for **Fringe Benefits**, an increase of \$685,000 or 3.2% as compared to the FY20 Budget, reflecting the continuing rise in health insurance costs.

FTEs		
ADMINISTRATION by Department		
DEPARTMENT	FY20 FTEs	FY21 FTEs
ADMIN DIR OFFICE	3.0	3.0
HUMAN RESOURCES	16.8	16.8
MIS	55.0	55.0
FACILITIES MGMT	7.0	7.0
FLEET SERVICES	12.0	12.0
OH&S	8.0	9.0
PROCUREMENT	43.9	43.9
TOTAL	145.7	146.7

**Health Insurance Spending
(in millions)**



- \$2.5 million for **Workers' Compensation**, \$122,000 greater than the FY20 Budget or 5.2%. Actual spending for Worker's Compensation can vary. The Workers' Compensation budget is based on the average of the last three years of actual spending.

Worker's Compensation	FY15 Actuals	FY16 Actuals	FY17 Actuals	FY18 Actuals	FY19 Actuals	FY20 Final	FY21 Final	3 Year Average*
Compensation Payments	1,285,809	1,257,703	1,771,557	1,259,213	1,862,210	1,429,491	1,630,993	1,630,993
Medical Payments	851,280	850,170	470,072	718,233	707,099	679,492	631,801	631,801
Other	170,034	242,496	323,706	169,617	148,259	245,273	213,861	213,861
Total Worker's Comp.	\$2,307,123	\$2,350,369	\$2,565,335	\$2,147,063	\$2,717,568	\$2,354,256	\$2,476,655	\$2,476,655

*Three year average of FY17 Actuals, FY18 Actuals, & FY19 Actuals

- \$107,000 for **Utilities**, a decrease of \$4,000 or 3.4%, as compared to the FY20 Budget, to reflect a drop in expected usage for the CNY Headquarters.
- \$4.8 million for **Maintenance**, a decrease of \$65,000 or 1.3% as compared to the FY20 Budget, due to number of software licenses coming off multi-year maintenance and support agreements, and equipment on extended service agreements. In FY21, spending on computer licenses totals \$2.9 million, accounting for 60.4% of maintenance budget.
- \$167,000 for **Training and Meetings**, a change of \$0 or 0% as compared to the FY20 Budget.
- \$2.6 million for **Professional Services**, an increase of \$119,000 or 4.8% as compared to the FY20 Budget. The largest component of this line item is \$1.8 million for computer consultants which increased \$137,000 over the prior year's budget.
- \$1.6 million for **Other Materials**, a decrease of \$430,000 or -21.6% as compared to the FY20 Budget. The decrease is due to the completion of the Server and Storage replacement and Conference Room Upgrade project in FY20 which reduced computer hardware expense by \$392,000. Vehicle expense dropped by \$33,000 due to lower projected fuel prices.
- \$3.7 million for **Other Services**, an increase of \$220,000 or 6.2% as compared to the FY20 Budget, primarily due to a \$111,000 increase in Space/Lease Rentals associated with a new record center in Walpole and double lease payments as new lease start date and old record center lease expiration results in a payment overlap. Included in the Other Services funding is \$2.1 million for Space/Lease Rentals for the Charlestown Navy Yard Headquarters, Marlborough and Walpole warehouses, \$1.2 million for Telecommunications expenses for all facilities, and MIS and security data lines.



Fog creeping in over Sudbury Dam

ADMINISTRATION DIVISION DIRECTOR'S OFFICE

The **Administration Division Director's Office** is responsible for the centralized support functions of procurement, human resources, management information systems, fleet services, facilities management, and real property. Additionally, the Director's Office ensures compliance with applicable statutes, regulations, Authority policies and procedures, and contract terms.

FY21 Final Current Expense Budget							
ADMINISTRATION DIVISION DIRECTOR'S OFFICE							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 235,364	\$ 293,565	\$ 357,566	\$ 375,055	\$ 17,489	4.9%	
OVERTIME	244	-	-	-	-	-	
PROFESSIONAL SERVICES	-	-	10,000	10,000	-	-	
OTHER MATERIALS	-	-	-	-	-	-	
OTHER SERVICES	254	225	222	222	-	0.0%	
TOTAL	\$ 235,862	\$ 293,790	\$ 367,788	\$ 385,277	\$ 17,489	4.8%	

The Administration Director's Office core functions are to:

- Manage and coordinate the Authority's support service functions.
- Guide and coordinate division activities to support MWRA's goals and objectives.
- Continuously improve processes and performance for greater efficiency.

For FY20, Real Property has been consolidated into the Administration Director's Office. This results in an additional FTE under the Director's Office, but an overall reduction if FTE under Administration. The remaining Environmental Management FTE's have been transferred into Operations.

FY20 Year-End Accomplishments:

- Renewed Records Center Lease in Marlborough through January 31, 2020. RFP for new lease scheduled in FY20.
- Provided real estate services (appraisal, negotiation, survey review and/or planning) for: Dorchester Interceptor Sewer (easements from three private entities and permits from two entities); Southern Extra High Service Pipeline, Dedham (executed construction license with MBTA for land at Dedham Corporate Station); General Edwards Bridge Waterline Removal, Lynn and Revere (construction permitting assistance); Section 65 waterline, Medford/Somerville (support to MBTA request to swap for the Greenline Extension); New Neponset Valley Sewer, Canton, (support to swap access easement at 777 Dedham Street to enable a redevelopment project).
- Managed six (6) permit agreements (four at Turkey Hill and two at Walnut Hill). FCC permitting completed allowing award of a seventh cell contract to T-Mobile at the Fells Tower in Stoneham with

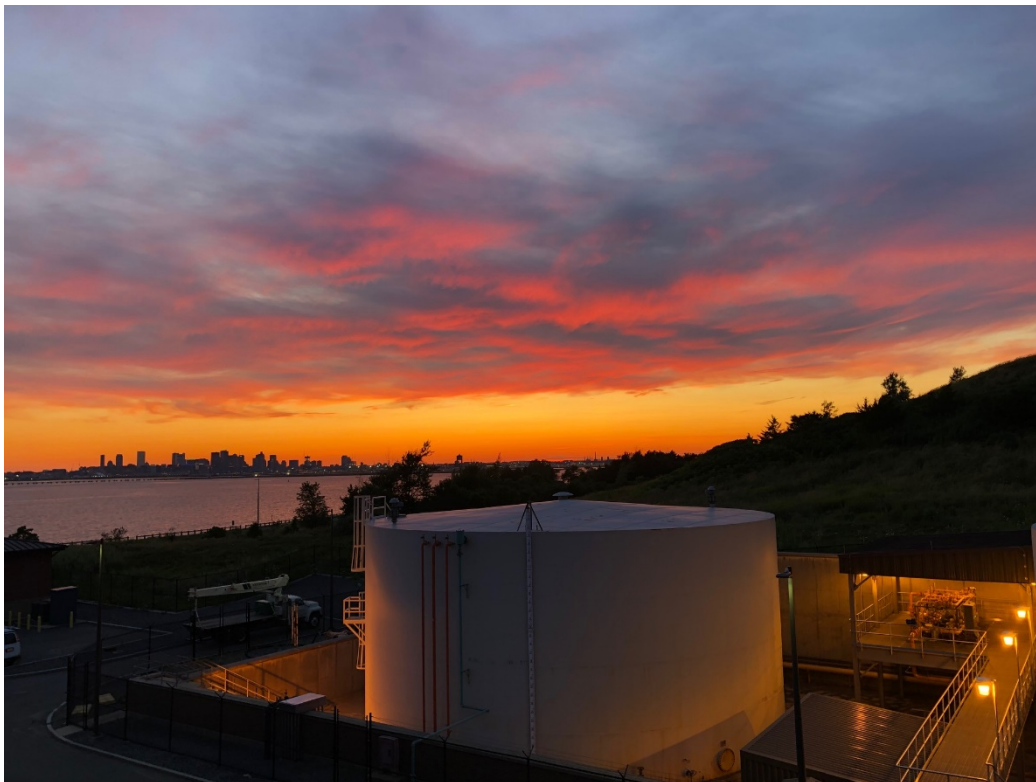
FY19 revenues of \$418,000, half of which goes to the host communities. Coordinated with Operations to remove and relocate all privately and publicly owned cellular equipment from the tank and to temporary scaffolding and successfully recovered \$200,000 of the cost of scaffolding from the private cellular vendors.

- Provided real estate support to Operations and Public Affairs for issuance of 8M permits to 1) private entities requesting use of MWRA controlled land and 2) cities and towns applying to the Aqueduct Trails Program. Annual revenue from long term 8m permit totals \$80,320.
- Managed with GIS a pilot project to convert 215 of MWRA’s real property takings to a user friendly GIS-map based interface. Worked with consultant and in process of integrating data into MWRA system in preparation for a second phase. Continued updating and editing records.

Budget Highlights:

The FY21 Final Budget is \$385,000, an increase of \$18,000 or 4.8% as compared to the FY20 Budget.

- \$375,000 for **Wages and Salaries**, an increase of \$18,000 or 4.9% as compared to the FY20 Budget, primarily due to wage increases associated with collective bargaining agreements. The FY21 Final Budget supports three FTEs, matching the FY20 Budget.



Deer Island Treatment Plant Thermal Power Plant

FACILITIES MANAGEMENT

The **Facilities Management Department** provides a range of support services to MWRA staff located at the MWRA Headquarters in the Charlestown Navy Yard (CNY).

Facilities Management is responsible for coordinating site management activities at CNY. Staff institute maintenance procedures, respond to facilities requests from MWRA staff, coordinate workspace planning, provide office furnishings, and develop and implement appropriate measures to ensure the safety of MWRA staff and protect and preserve MWRA assets.

In addition, staff provides administrative and office support services that facilitate the efficient use of MWRA resources. These responsibilities include providing and managing the motor pools at both the Chelsea Facility and CNY, general office equipment repairs, transportation, mail, and courier services. Staff coordinates MWRA parking programs and corporate Massachusetts Bay Transportation Authority (MBTA) pass programs.

FY21 Final Current Expense Budget							
FACILITIES MANAGEMENT							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 425,281	\$ 436,852	\$ 501,917	\$ 532,994	\$ 31,077	6.2%	
OVERTIME	9,740	11,146	40,000	40,000	-	0.0%	
FRINGE BENEFITS	-	-	-	-	-	-	
UTILITIES	99,616	99,161	108,609	104,806	(3,803)	-3.5%	
MAINTENANCE	9,367	7,794	18,600	18,600	-	0.0%	
PROFESSIONAL SERVICES	-	-	4,000	4,000	-	0.0%	
OTHER MATERIALS	73,854	76,290	67,250	67,250	-	0.0%	
OTHER SERVICES	1,846,427	1,821,465	1,985,419	2,096,795	111,376	5.6%	
TOTAL	\$ 2,464,285	\$ 2,452,708	\$ 2,725,795	\$ 2,864,445	\$ 138,650	5.1%	

FY21 Goals and Initiatives:

IV. Finance and Management

- **Goal #12 – Ensure Cost-Effective Operational and Resource Management:**
 - Assure a safe and well-maintained working environment for all MWRA staff at CNY and appropriate space for staff by coordinating workspace planning, design, and furniture acquisitions.
 - Continue to coordinate with the CNY landlord on building improvements.

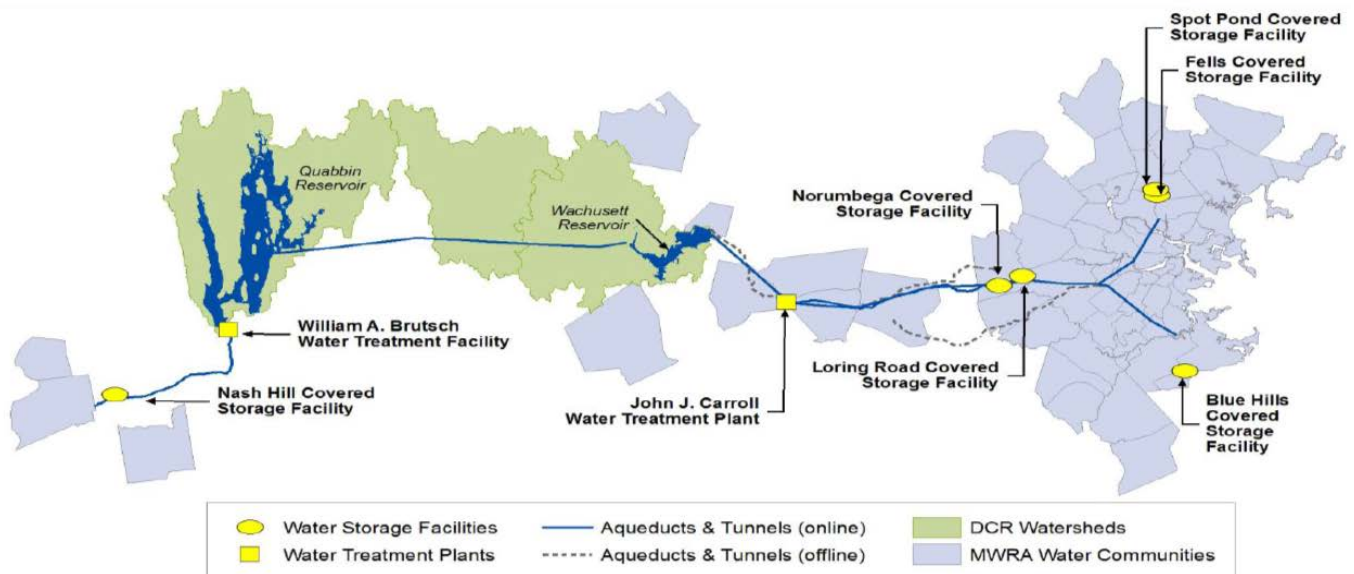
FY20 Year-End Accomplishments:

- Implemented facility improvements as provided in our lease agreement for CNY headquarters.
- In conjunction with MIS, continued to look at ways to maximize efficiency of day-to-day office equipment such as printers, copiers, and facsimile machines.

Budget Highlights:

The FY21 Final Budget is \$2.9 million, an increase of \$139,000 or 5.1% as compared to the FY20 Budget.

- \$533,000 for **Wages and Salaries**, an increase of \$31,000 or 6.2% as compared to the FY20 Budget, primarily for wage increases associated with collective bargaining agreements, offset by salary savings as a result of staff retiring and positions being filled at a lower salary. The FY21 Final Budget funds seven FTEs, the same as the FY20 Budget.
- \$105,000 for **Utilities**, \$4,000 below the FY20 Budget.
- \$2.1 million for **Other Services**, \$111,000 or 5.6% above the FY20 Budget. The main item under this line item is the lease for CNY Headquarters building at \$1.9 million. The lease includes base rent for the facility, real estate taxes, common area maintenance and operating costs. The increase reflects the additional cost of the new Walpole Record Center lease and the three month overlap with the old record center lease that expires January 2021.



FLEET SERVICES

The **Fleet Services Department** manages and maintains MWRA's motor vehicle and equipment fleet. The goal of the Fleet Services Department is to maintain MWRA's vehicle and equipment fleet to minimize downtime and extend the life of the assets. Fleet Services also manages the Chelsea and Deer island fuel facility, the gas card program and the development and processing of specifications for new vehicles and equipment.

FY21 Final Current Expense Budget							
FLEET SERVICES							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 910,912	\$ 907,069	\$ 945,020	\$ 956,932	\$ 11,912	1.3%	
OVERTIME	9,238	10,212	11,000	11,000	-	0.0%	
FRINGE BENEFITS	172	157	250	250	-	0.0%	
UTILITIES	3,478	2,802	2,500	2,500	-	0.0%	
MAINTENANCE	517,781	460,565	682,499	682,500	1	0.0%	
TRAINING & MEETINGS	782	910	4,000	4,000	-	0.0%	
OTHER MATERIALS	491,597	510,046	586,438	552,924	(33,514)	-5.7%	
OTHER SERVICES	1,020	1,473	1,414	1,414	-	0.0%	
TOTAL	\$ 1,934,980	\$ 1,893,234	\$ 2,233,121	\$ 2,211,520	\$ (21,601)	-1.0%	

FY21 Goals and Initiatives:

IV. Finance and Management

- **Goal #12 – Ensure Cost-Effective Operational and Resource Management:**
 - Continue to cost effectively maintain the Authority's fleet of vehicles and equipment.
- **Goal #13 – Maintain a Safe Workforce:**
 - Purchase vehicles with additional safety lighting to enhance driver/vehicle visibility. Add in blue tooth technology to all vehicles.

V. Environmental Sustainability

- **Goal #15 – Continue to maximize energy efficiency of MWRA operations, renewable energy production, and revenue generation opportunities using MWRA's energy assets:**
 - Integrate more alternative fueled vehicles into the Authority's fleet. Continue to install idle reduction devices in all Authority vehicles to comply with state and federal regulations and also purchase more fuel efficient vehicles.

FY20 Year-End Accomplishments:

- Developed specifications for new replacement vehicles and equipment. The majority of the vehicles and equipment will utilize alternative fuel, consistent with the Authority's goal of purchasing environmentally friendly products.
- Continued to work with MIS on the purchase and implementation of the new Fuel management system
- Spec'd and purchased 3 additional electric vehicles for the Authority.
- Installed electric vehicle charging stations at the Chelsea and Deer Island facility.

- Electric charging stations installed in CWTP and Southboro.

Budget Highlights:

The FY21 Final Budget is \$2.2 million, a decrease of \$22,000 or 1.0% as compared to the FY20 Budget.

- \$957,000 for **Wages & Salaries**, an increase of \$12,000 or 1.3% as compared to the FY20 Budget, primarily for wage increases associated with collective bargaining agreements. The FY21 Budget funds 12 FTEs, the same as the FY20 Budget.
- \$683,000 for **Ongoing Maintenance**, level funded with the FY20 Budget.
- \$553,000 for **Other Materials**, a decrease of \$34,000 or 5.7% from the FY20 Budget reflecting lower anticipated prices for vehicle fuel. The FY21 Budget includes \$334,000 for vehicle/equipment fueling which is based on historical fuel usage and current pricing. Fleet Services procures bulk fuels from state contracts while continuing to meet all governmental alternative fuel directives. It should be noted that the volatility of fuel pricing could impact this line item.



Gillis Water Pump Station

HUMAN RESOURCES

The **Human Resources Department** is responsible for the overall management of MWRA employees. The Department enables employees to contribute successfully to MWRA's goals and objectives through effective recruitment, labor management, training, and employee benefits management.

FY21 Final Current Expense Budget						
HUMAN RESOURCES						
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 1,536,643	\$ 1,482,068	\$ 1,721,399	\$ 1,639,394	\$ (82,005)	-4.8%
OVERTIME	21	-	-	-	-	-
FRINGE BENEFITS	19,959,013	19,856,253	21,602,172	22,286,639	684,467	3.2%
WORKERS' COMPENSATION	2,147,063	2,717,568	2,354,256	2,476,655	122,399	5.2%
MAINTENANCE	12	-	-	-	-	-
TRAINING & MEETINGS	4,243	6,093	3,963	3,963	-	0.0%
PROFESSIONAL SERVICES	661,805	444,604	756,590	738,290	(18,300)	-2.4%
OTHER MATERIALS	10,089	18,307	19,550	19,550	-	0.0%
OTHER SERVICES	12,495	8,432	17,353	30,621	13,268	76.5%
TOTAL	\$ 24,331,384	\$ 24,533,325	\$ 26,475,283	\$ 27,195,112	\$ 719,829	2.7%

The Human Resources Department is comprised of 3 units:

- The **Employment, Compensation, Benefits and HRIS Unit** coordinates and oversees all external recruitment and selection activities including hiring, lateral transfers, and promotions to meet the business needs of MWRA; develops and coordinates MWRA compensation and benefits strategies and programs; and ensures the proper processing and recording of personnel actions. The compensation unit also ensures that all MWRA employees possess the necessary licenses and certifications required for their positions.
- The **Labor Relations Unit** is responsible for fulfilling MWRA's collective bargaining and contract administration obligations under Massachusetts' public sector collective bargaining law, and its workers' compensation responsibilities.
- The **Training Unit** develops, coordinates, delivers, and evaluates MWRA technical and professional development training programs and other programs designed to improve employee knowledge, skills, productivity, and the quality of workplace interaction and safety.

In addition, the Human Resources Department includes the Centralized Fringe Benefits cost center, which carries the budget for fringe benefits for all MWRA employees as well as for mandatory payments for unemployment expenses and Medicare.

**FY21 Final Current Expense Budget
HUMAN RESOURCES by Unit**

UNIT	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20
EMPLOYEE/COMP/BEN	\$ 956,007	\$ 968,700	\$ 1,190,045	\$ 1,145,463	\$ (44,582) -3.7%
LABOR RELATIONS	433,592	385,200	547,795	505,481	(42,314) -7.7%
TRAINING	775,287	548,411	702,315	701,373	(942) -0.1%
CENTRALIZED FRINGE BENEFITS	22,166,498	22,631,014	24,035,128	24,842,795	807,667 3.4%
TOTAL	\$ 24,331,384	\$ 24,533,325	\$ 26,475,283	\$ 27,195,112	\$ 719,829 2.7%

FY21 Goals & Initiatives:

IV. Finance & Management

- **Goal #13 - Maintain an Excellent Workforce:**
 - o Attract and retain a qualified high-performance workforce, hire and promote qualified minority, female, and veteran employees, and offer a competitive total compensation package (salary and benefits) to all employees.
 - o Maintain effective relationships with the unions representing the MWRA workforce while protecting and enhancing management flexibility. Ensure that collective bargaining objectives are met, support MWRA initiatives by designing and implementing appropriate labor relations strategies, and create an environment that fosters safety consciousness and productive work.
 - o Provide effective training necessary for employees to obtain and maintain required licenses and certification to ensure a highly skilled workforce.
 - o Continue to expand on MWRA’s in-house job shadowing and career development training programs.
 - o Continue to provide training programs with a focus on professional and leadership development.
 - o Continue to aggressively manage MWRA Workers Comp claims to mitigate future exposure.
 - o Engage in Successor Collective Bargaining Negotiations.
 - o Continue to ensure compliance with new state and federal regulations.

FY20 Year-End Accomplishments:

- Developed and implemented a COVID-19 contact tracing procedure. Successfully monitored employees impacted by Covid -19 with the goal of preventing greater exposure within the Authority while supporting the needs of employees reporting illness for themselves or their families.
- Successfully transitioned 467 employees to telework in response the Coronavirus pandemic. Developed supervisor and employee telework rules.
- Negotiated agreements with all five unions on accruals of benefit time and travel as a result of the Coronavirus pandemic.

- Reviewed employee requests for accommodations for employees at higher risk due to the Coronavirus.
- Continued to support the agency's efforts in implementing succession planning activities due to an increase in retirements anticipated over the next several years.
- Continued to offer supervisory, professional, and career development training programs necessary to support succession planning initiatives.
- Developed additional specialized recruitment sources to attract women, minorities, and veterans for difficult to fill positions including expanding social network recruiting capabilities.
- Reduced future MWRA exposure on Workers Compensation cases through aggressive claims management.
- Revised Workers Compensation Program reporting to ensure consistency with OSHA standards.
- Completed procurement process for Third Party Administrator contract for MWRA CDL Drivers and MWRA Drug and Alcohol Testing program.
- Investigated complaints of violations of MWRA policies and Code of Conduct as necessary.
- Successfully maintained harmonious relationships with the unions while negotiating new/revised work rules, benefits and other conditions relating to employment in the wake of the COVID-19 pandemic.
- Offered a variety of professional and technical training to MWRA employees including Confined Space Entry, Hoisting License Mandatory Refresher Training, Wastewater & Water Operator Exam Prep, Wastewater OJT, OSHA 40-Hour Hazardous Waste Site, OSHA 10-Hour Construction Safety, OSHA 8-Hour Annual Refresher, Leadership Development, Supervisory Development, RCRA/DOT Safety, Hot Work Safety, Vehicle Maintenance, Work-zone Safety, Lockout/Tagout, Electrical Safety, CPR First Aid, Advance First Aid, Underground Storage Tanks, Chemistry for Water & Wastewater, Harassment Prevention, Keolis & MBTA Track Safety, O&M Wastewater Collection Systems, Prevailing Wage Law, The Art of Negotiation, and a number of TCH classes. Successfully transitioned several training programs to virtual ones in response to the Coronavirus Pandemic.
- Worked with a Union / Management team on Extraordinary Service award nominations, review and presentation at the February 19, 2020 Board of Directors meeting.
- Completed preliminary review and analysis of compensation for titles in several bargaining units to ensure compliance with the Massachusetts Equal Pay Act.

Budget Highlights:

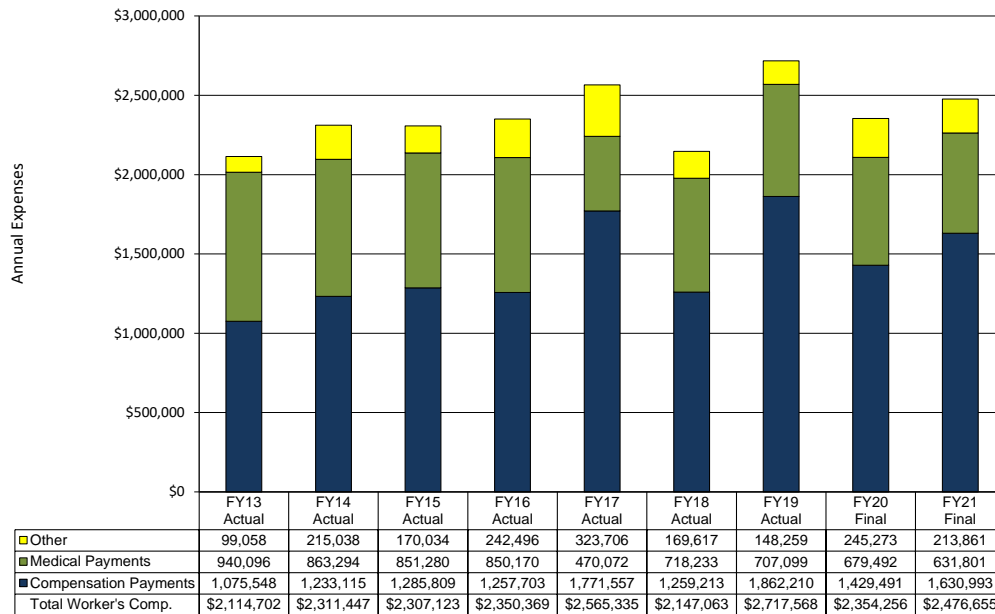
The FY21 Final Budget is \$27.2 million, an increase of \$720,000 or 2.7% as compared to the FY20 Budget.

- \$1.6 million for **Wages and Salaries**, a decrease of \$82,000 or 4.8%, as compared to the FY20 Budget, the overall decrease reflects the reduction in a position’s hours and staff replacements filled at lower salaries which more than offset wage increases associated with collective bargaining agreements. The FY21 Budget includes funding for 17 FTEs, the same as the FY20 Budget.
- \$22.3 million for **Fringe Benefits**, an increase of \$685,000 or 3.2%, as compared to the FY20 Budget mainly for increases in health insurance costs. The FY21 Final Budget includes \$19.0 million for health insurance, \$1.5 million for Medicare, \$1.2 million for dental insurance, \$367,000 for the new Massachusetts Paid Family and Medical Leave (PFML) law, \$130,000 for unemployment insurance, and \$50,000 for tuition reimbursement.

Human Resources Fringe Benefits			
Line Item	FY20 Budget	FY21 Budget	Difference
Health Insurance	\$ 18,331,265	\$ 18,987,428	\$ 656,163
Dental Insurance	1,202,354	1,218,578	16,224
Unemployment Insurance	150,000	130,000	(20,000)
PFML	356,542	366,863	10,321
Medicare	1,492,011	1,533,770	41,759
Tuition Reimbursement	70,000	50,000	(20,000)
Total Fringe Benefits	\$ 21,602,172	\$ 22,286,639	\$ 684,467

- \$2.5 million for **Workers’ Compensation**, an increase of \$122,000 or 5.2%, as compared to the FY20 Budget, based on historical spending. The Workers’ Compensation expenses can be difficult to predict and the budget is based on an average of the prior three years of expenditures. Below is a graph showing actual expenditures beginning in FY13 and budgets for fiscal years FY20 and FY21. The Human Resources Department is responsible for the management of this program and the coordination with the third-party administrator and legal counsel.

Worker's Compensation Expenses
FY13 - FY19 Actual & FY20 & FY21 CEB



- \$738,000 for **Professional Services**, a decrease of \$18,000 or 2.4% as compared to the FY20 Budget. The major budgeted items for FY21 include \$364,000 for Professional Development and Technical Training, \$135,000 for Workers' Compensation Claims Administration and Legal Services, \$100,000 for Pay Equity Consultant, \$47,000 for Arbitrators and Arbitration Expenses, \$35,000 for Medical Evaluation Services, and \$25,000 for the Employee Assistance Program.

MANAGEMENT INFORMATION SYSTEM

The **MIS Department** provides MWRA with the secure information processing services necessary to carry out the Authority's mission. Applications in use range from financial to operational, and enhance MWRA's ability to access data and improve internal controls, reporting, and management performance. In addition to computing and telephone systems, the department also provides library and records management services. The MIS department supports the 1,146 MWRA users, including those at the Charlestown Navy Yard (CNY), Chelsea Facility, Deer Island Wastewater Treatment Plant, Southborough Facility, Carroll Water Treatment Plant, and other remote sites.

FY21 Final Current Expense Budget						
MANAGEMENT INFORMATION SYSTEM						
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 5,633,993	\$ 5,607,115	\$ 6,276,434	\$ 6,606,239	\$ 329,805	5.3%
OVERTIME	11,235	16,283	12,000	12,000	-	0.0%
FRINGE BENEFITS	125	178	-	-	-	-
MAINTENANCE	3,276,360	3,578,182	4,151,949	4,086,750	(65,199)	-1.6%
TRAINING & MEETINGS	130,806	122,350	146,528	146,528	-	0.0%
PROFESSIONAL SERVICES	729,675	550,179	1,685,940	1,823,338	137,398	8.1%
OTHER MATERIALS	697,384	1,565,377	1,140,425	559,183	(581,242)	-51.0%
OTHER SERVICES	1,305,510	1,177,359	1,407,138	1,392,558	(14,580)	-1.0%
TOTAL	\$ 11,785,088	\$ 12,617,023	\$ 14,820,414	\$ 14,626,596	\$ (193,818)	-1.3%

FY21 Goals and Initiatives:

IV. Finance and Management

- **Goal #14 – Leverage Information Technology to Improve Organizational Effectiveness:**
 - o Deliver Information Technology (IT) services and solutions efficiently and effectively.
 - o Provide IT solutions to streamline work processes by leveraging the use of existing or emerging technologies.
 - o Maintain current technology hardware, software, and network infrastructures.
 - o Maintain a secure technological environment by ensuring the confidentiality, availability, and integrity of MWRA data.

The MIS Department divides the IT services that it provides into 4 programs. A description of each program and the specific initiatives in each are detailed below:

Information Technology Management Program

This program is intended to improve the Information Technology (IT) organization and the oversight processes for selecting, implementing and operating IT solutions throughout the MWRA.

- Complete the transition of application responsibilities to the appropriate team, which matches the new organizational structure for the department.
- **Project Portfolio Management:** In order to get a better handle on the number of projects and associated resource loading requirements, MIS is looking at products that will help manage the IT portfolio of projects and possibly integrate it with the ECM Management Dashboard

Application Improvement Program Initiatives

This program, along with associated projects, continue MWRA’s efforts to update and enhance a wide range of applications to improve efficiencies of business processes and effectiveness of the staff while ensuring the availability and integrity of the MWRA’s data resources.

Administration and Finance Initiatives

- **Electronic Document Management:** A component of ECM “proof of concept” is ongoing with the Chelsea Creek Headworks Rehabilitation Project for e-Construction. e-Construction is a paperless engineering and construction administration delivery process. This process includes electronic submission of all engineering and construction documentation by all stakeholders, electronic document routing/approvals (e-signature), and digital management of all construction documentation in a secure environment allowing distribution to all project stakeholders through mobile devices. Based on this proof of concept, the MWRA is pursuing the identification of a Content Management System that will support e-Construction processes as well as design (e-Engineering) processes including corresponding Procurement and Contract Management processes (e-Procurement) and corresponding Document and Records Management processes. The identified content management system will improve communication and make design and construction management practices more efficient, replace the legacy document/records management system and provide the infrastructure for expansion and integrations with other systems. A Selection Committee is currently evaluating bid proposals and expects to have a recommendation in the fall of 2020.
- **Archiving & Purge and e-Discovery:** A component of Enterprise Content Management (ECM) initial proof of concept with one solution proved to be unsuccessful. MIS is researching a new solution with our current backup software vendor.
- **Website Replacement/Upgrade:** The current website www.mwra.com and Intranet (Pipeline) infrastructure includes nonstandard MWRA IT components impacting support and maintenance. This project will replace the existing websites leveraging current technologies, adoption of standards, and enhance the user/visitor experience.
- **Enterprise Resource Planning (ERP) System Upgrades:** The current software version of the ERP system is approaching end of support by the vendor. An independent assessment of the existing ERP system was conducted Q1 FY20 to assist staff in selecting the most cost effective and efficient approach to addressing this. The assessment recommended that MWRA upgrade the ERP system to the latest supported on premise version of the software. An RFQ/P is underway and this initiative will be accomplished over multiple Fiscal Years.

- **Miscellaneous Lawson Support:** In response to the COVID-19 pandemic, the Training Department is seeking a solution to provide training virtually. In FY21 a new Learning Management System will be procured and integrated with the existing ERP system. Additionally, the current check printing software used with the ERP system only supports one browser version, runs on an unsupported operating system and is no longer an Infor/Lawson premier partner. During FY21, check printing will be migrated to a new solution.
- **Visitor Management:** Staff evaluated applications to track MWRA visitors at security guard managed facilities to help support COVID19 Contact Tracing needs and ongoing visitor management. An application was selected and the procurement process is underway.

Compliance Management Initiatives

- **PIMS/Dental Discharge Permit:** The US EPA promulgated regulations requiring MWRA to regulate the dental industry. In March 2020, the PIMS application was modified to accept requests for dental permits and is currently being piloted with dental offices. In March 2021, the ability to issue dental permit fees must be available and will require additional customizations in the applications.
- **PIMS/WebSMR CROMERR:** In FY 2019 CROMERR compliant WebSMR application was piloted for select Industrial users. Defects and new functional gaps identified since then, are being fixed now. It is expected that in Q1 of FY21, the application will be ready for Pilot.
- **HOML Upgrade:** Re-platform the Harbor Outfall Monitoring and Loading application onto a Windows 2019 server and on the latest stable version of IBM Websphere. The existing HOML infrastructure is hosted on Windows 2003 OS and Oracle Application Server which are both unsupported.
- **Oracle Discoverer Migration to SAP Business Objects (BO) Proof of Concept:** Oracle is planning to end support of the Oracle Discoverer product and MIS is migrating to SAP BO technology. SAP BO has technical/functional capabilities similar to Oracle Discoverer. There are approximately 600-700 Oracle Discoverer Workbooks. Five of these workbooks have been selected for migration to SAP BO for this Proof of Concept.
- **Gasmonitor :** MWRA is planning to upgrade MSA Safety Gas monitoring software and hardware to the latest version with in FY 21. The statement of work for this upgrade is under review.

System Integration and Data Warehousing Initiatives

- **ESRI GIS Infrastructure:** MIS will conduct an assessment of the existing GIS environment to get recommendations on best practices.

Operations Management Initiatives

- **Maximo/Lawson Interface Enhancements:** The MWRA utilizes a custom interface to synchronize the Maximo Enterprise Asset Management (EAM) and Infor/Lawson Enterprise Resource Planning (ERP) systems. The interface has eighteen “touch points” where Infor/Lawson is the system of record for the

majority of the data. The Maximo Integration Framework (MIF) is the primary controlling element for data flow between the two systems with supporting functions coded in Infor/Lawson. The objective of this project is to build on the existing interface by streamlining process flows, enhancing functionality, and adding data validation for optimal performance and transaction integrity.

- **Maximo 1080 Form Automation:** This initiative will automate a paper submission process by allowing the Construction contractors to submit specification form data electronically in a format that can be imported into Maximo, saving significant data entry time and reducing the risk of data entry errors. A working prototype and associated training materials was completed and leveraged by the application development team to complete the remaining forms. All forms have been developed and are awaiting User Acceptance Testing.
- **Telog:** Upgrade the existing Telog environment to support new 4G meters. Additionally, the Enterprise Telog system currently communicates over the internet. The communication infrastructure will be moved to a private wireless network.
- **WQRS/AQUARIUS:** WQRS/AQUARIUS application improvements and enhancements will continue in FY21 and will wrap up by Q2 FY21
- **OMMS Application replacement/upgrade:** MWRA's existing OMMS application is built using 20 year old technology and is hosted on Windows 2008 Server. Prototype application to present data to the communities has been demonstrated. MIS is currently working on defects identified by the user community and anticipate completion by the end of FY21

Information Security Program Initiatives

This program focuses on the strength, resiliency, and sustainability of MWRA's cyber security practices for its data and computing-related assets. The program also monitors for and protects against penetrations, intrusions, and malicious actions from both internal and external threats. The projects associated with this program continue to assess, implement, and improve MWRA's information security protections, including recommendations to improve each IT system's security profile. The following are the FY21 projects under this program:

- **American Water Infrastructure Act (AWIA):** Congress imposed a new requirements for assessing and responding to water system vulnerabilities in the AWIA. AWIA requires that community drinking water systems develop or update risk assessments and emergency response plans and certify to EPA that they have been completed or updated by specific deadlines. Under AWIA, systems must now recertify that they have reviewed and updated their Risk and Resiliency Assessments (RRA) every five year. The initial assessment was completed in March 2020 and responses to the assessment will continue in FY21.
- **Phase 2 of the Information Security Program Implementation:** Phase 2 of this program focuses on the review and formalization of draft information security policies, standards and procedures into daily operations. Work will continue in FY21 to complete the remaining eleven policies.
- **Web Filter Technology Refresh:** The current appliance (Websense) used for web filtering is reaching

End of Life (EOL). A replacement must be procured and implemented to ensure the MWRA has continued protection.

- ***Email Filter Technology Refresh:*** The current appliance (ForcePoint) used for email filtering is reaching End of Life (EOL). A replacement must be procured and implemented to ensure the MWRA has continued protection. The additional protection of Domain-based Message Authentication, Reporting and Conformance (DMARC) authentication will be added. DMARC is the industry standard protocol that can verify the sender of the email. DMARC authentication makes email trustworthy by ensuring that attackers are not impersonating MWRA staff.
- ***Load Balancer Appliance Replacement:*** The current appliance (Netscaler) used for load balancing secure access to MWRA network resources is reaching End of Life (EOL). A replacement must be procured and implemented to ensure the MWRA has continued protection.
- ***Multi-Factor Authentication:*** Implementation of two factor authentication technologies for key IT services.

Technology Infrastructure Improvement Program

The MWRA currently operates 1,390 desktops, 183 laptops, 325 servers, 206 tablets and 250 iPhones. This program will assess and implement consolidated and optimized versions of these core IT infrastructure elements as utility-like services and commodities. Furthermore, it will look to improve and optimize data management practices including: storage, backup, and archive and purge processes and technologies. The following projects are currently under way:

- ***Disaster Recovery:*** Build out of a Disaster Recovery site providing the ability to restore business data and applications should the Chelsea data center, servers or infrastructure get damaged or destroyed.
- ***Telephone System Replacement:*** The current telephone system, Mitel PBXs, has exceeded end of life and is unsupported by the vendor. Much of the current hardware cannot be replaced unless using refurbished equipment, as it is no longer being manufactured. MWRA is not able to upgrade the software or purchase new features because the software is no longer supported. A telephone system replacement should be implemented for continued and reliable service.
- ***Edge Switch Hardware Refresh:*** The current hardware is approaching end of life and will require replacement in order to maintain support.
- ***Instrumentation and Controls of IT:*** Plan for the implementation of additional tools to monitor and alert on the infrastructure and application health.
- ***Cabling:*** Replacement of older cabling in six facilities to support the telephone system replacement.
- ***Server Hardware Refresh:*** Replacement of end of life servers

- **Network Convergence:** Explore new technologies for future implementation considerations including new networking technologies for upcoming network upgrade, web and mobile platforms for business and information services.
- **Office Automation Refresh Program:** Flat panels, tablets, smartphones, and printers are targeted for a hardware refresh in FY21.
- **Workforce Mobilization:** Continue to explore new technologies and hardware platforms to improve efficiencies in business process.

FY20 Year-End Accomplishments:

Information Technology Management Program

- **MIS Reorganization:** MIS has completed the organizational transformation recommended in the 5-year Strategic Plan. The transition of responsibilities for all applications will continue during FY20.

Application Improvement Program

- **Electronic Document Management:** The documentation of the current list of 48 use cases and 91 workflows is complete. To date, 21 related databases have been identified 95% have been documented. All use case and workflow documentation are being prioritized for initial and future implementations in preparation of system procurement.
- **Crystal Reports Migration to SAP Business Objects (BO):** New SAP BO v4.2 platform environment built, which includes Crystal v2016 version and porting of reports was completed.
- **Telog:** The Telog Enterprise Application System was successfully upgraded in both the development and production environments. The new application system resides in virtual environment with latest version of software Components.
- **Sewer Inspection TV truck software Upgrade from GraniteXP to GraniteNet:** The Upgrade of TV truck software Upgrade from GraniteXP to GraniteNet has been completed and is in use. GraniteNet is Windows 10 compliant.
- **Custom Development: New OMMS DCR Data Portal** an internet facing application went live. The application was modernized to meet business needs.
- **Portia Upgrade:** Portia was upgraded to version 12.1.2 to support Windows 10.
- **Fuel Management System:** A new fuel management system was implemented on Deer Island and in Chelsea. Historical data was migrated from the old Gasboy system to retain history. The new system utilizes employee badges and hardware key fobs for authentication. Future enhancement may include the implementation of RF ID on vehicles.

Information Security Program

- ***Branch Office VPN Replacement:*** The hardware appliance providing network connectivity from the smaller branch offices is approaching end of support and product life. This initiative will explore VPN technologies to replace the existing solution. Design work is complete for this project. Hardware has not been received yet. This work was completed during FY19.
- ***External Email Banner:*** In an effort to improve staff awareness of potential phishing emails, an “External” banner was added to all emails coming from outside of the MWRA.
- ***Cyber Security Incidence Response Plan:*** Developed the Cyber Security Incidence Response Plan, trained staff and conducted a table top exercise against the plan.
- ***Phishing:*** A phishing campaign was conducted which resulted in the requirement of all new hire to complete the training the first week of hire.

Technology Infrastructure Improvement Program

During FY20, several upgrades were completed and or started in order to keep the aging infrastructure up to date.

One of the biggest efforts started in March was the support to teleworking due to CoVid-19. Remote access through Citrix Workspace was expanded. The supporting infrastructure was increased from three servers to six and the associated licensing was increased from 300 to 500. Mobile devices were deployed as needed to those staff that are teleworking minimizing contact and focusing on employee safety. Several Job Aids were developed to assist with the migration to teleworking and the adoption of video conferencing to replace in person meetings including the monthly Board of Directors’ meeting. Additionally, three new pay codes were added to time entry for time tracking for teleworkers.

Other FY20 infrastructure projects included:

- Infrastructure hardware refresh and operating system upgrades were completed in Southboro, CWTP and Clinton.
- Hardware segmentation of DI Operations and disaster recovery infrastructure completed.
- The Deer Island, Clinton Treatment Plant, and Belchertown circuits were upgraded to improve network response.
- All network switch were upgraded to latest recommended version.
- Audio Visual equipment upgrade was completed for the Chelsea EOC to replace end of life equipment.
- MWRA Email system was upgraded to Exchange 2019

- Active Directory was upgraded to Windows 2019
- Data Storage: Data storage capacity was expanded to support growing use of electronic documents, construction videos, and data retention needs. It is anticipated the additional storage will support MWRA's needs for the next five years.
- LIMS/Infrastructure Upgrade: LIMS system was upgraded to the Windows Server 2016 operating system.
- PIMS/Infrastructure Upgrade: PIMS system was upgraded to the Windows Server 2012R2 operating system version.

Budget Highlights:

The FY21 Final Budget is \$14.6 million, a decrease of \$194,000 or 1.3% as compared to the FY20 Budget.

- \$6.6 million for Wages and Salaries, an increase of \$330,000 or 5.3% as compared to the FY20 Budget. The rise in Wages and Salaries reflects wage increases associated with collective bargaining agreements in addition to salary adjustments associated with position changes/upgrades within the department. The FY21 Budget includes funding for 55 FTEs, matching FY20's level.
- \$4.1 million for **Ongoing Maintenance**, a decrease of \$65,000 or 1.6%, as compared to the FY20 Budget, due to the timing of projects maintenance on software licenses and/or hardware not yet procured will not requirement maintenance and support agreements renewal in FY21. Examples of these are the Fuel Management System, Email Security Gateway and Web security.
- \$1.8 million for **Professional Services**, an increase of \$137,000 or 8.2% as compared to the FY20 Budget. Professional services to augment MIS staff are needed for the following planned software and hardware upgrades: Fuel Management System, Peopleclick, Bartender, Ivanti, Tiscor, PGP server, Websense appliances, Ironport appliances, Aruba wireless equipment, and AV equipment in meeting rooms, training rooms, and other locations.
- \$559,000 for **Other Materials**, a decrease of \$581,000 or 51.0%, as compared to the FY20 Budget. The majority of these fund are attributed to the purchase of equipment for the conference room upgrades estimated at \$372,000.
- \$1.4 million for **Other Services**, a decrease of \$15,000 or 1.0%, as compared to the FY20 Budget. Funding of \$1.4 million is for facility and security data lines and network upgrades. Remaining funds are for the lease of Automated Vehicle Location (AVL) services.

PROCUREMENT

The **Procurement Department** provides timely and high quality services to all MWRA Divisions to enable MWRA programs to meet their public, production and schedule responsibilities. The Procurement Department is responsible for procuring materials, equipment, supplies, construction, professional, and non-professional services in a timely, efficient, and openly competitive process in accordance with MWRA applicable law and policies and procedures, including those related to meeting affirmative action goals. The Department also maintains a centralized, efficient, and cost-effective management of spare parts and operating supplies inventory.

FY21 Final Current Expense Budget							
PROCUREMENT							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 3,828,459	\$ 3,801,122	\$ 4,255,424	\$ 4,275,669	\$ 20,245	0.5%	
OVERTIME	16,811	22,707	23,471	23,471	-	0.0%	
FRINGE BENEFITS	317	451	300	300	-	0.0%	
MAINTENANCE	261,014	453,494	-	-	-	-	
TRAINING & MEETINGS	4,391	6,029	10,750	10,750	-	0.0%	
OTHER MATERIALS	136,869	120,143	144,000	144,000	-	0.0%	
OTHER SERVICES	56,889	55,966	72,416	72,416	-	0.0%	
TOTAL	\$ 4,304,750	\$ 4,459,912	\$ 4,506,361	\$ 4,526,606	\$ 20,245	0.4%	

The **Procurement Department** includes three operational units. The **Purchasing Unit** operates a competitive purchasing system for the procurement of materials, goods, and non-professional services in accordance with MWRA policies and procedures. The **Contract Management Unit** reviews, drafts, and negotiates contracts, amendments, and change orders for all professional, non-professional, and construction services contracts. Staff directs the bid, review, and selection process, and maintains a contracts database. The **Materials Management Unit** manages an Authority-wide inventory control and management system for better control, storage, distribution, and accounting of MWRA's inventory. The unit manages three regional warehouses/distribution centers that support all MWRA activities.

FY21 Goals & Initiatives:

IV. Finance & Management

- **Goal #11 - Ensure Financial Sustainability, Integrity, and Transparency:**
 - Continue to conduct strategic energy procurements for both the purchase of energy and sale of energy credits generated from MWRA energy production.
- **Goal #12 – Ensure Cost-Effective Operational and Resource Management:**
 - Maintain a recycling program in order to contain MWRA operating costs by removing recyclable materials from the waste stream.
 - Continue implementing electronic procurement for contract bids, with a focus on electronic bidding for professional services contracts.
 - Review and update policies and procedures for procurement of professional services, non-professional services and goods and materials.

- o Provide training to MWRA staff on various procurement policies and procedures including purchasing of goods and materials and consultant selection committee service.
- o Update construction contract documents.

FY20 Year-End Accomplishments:

- Awarded the following Major Capital Improvement Program Contracts and Other Contracts necessary for Operations and Maintenance through Q4, FY20:
 - SCADA System Improvements
 - Metropolitan Tunnel Redundancy Program Support Services
 - Intermediate High Pipeline Improvements
 - HVAC Systems Maintenance, Western Ops
 - Grounds keeping Services
 - 69kV Electrical System Maintenance
 - Chestnut Hill Pump Station Emergency Pump Design and ESDC Services
 - Combined Heat and Power Study, DITP
 - Siphon/Junction Structure Rehab Phase I Design/ESDC
 - Section 56 Replacement Saugus River Crossing Design/ESDC
 - Section 53 and 99 Improvements Design/CA
 - Wachusett Dam Bastion Improvements Design/ESDC
 - Section 22 North Facility Alternatives Analysis and Enviro.
 - Technical Assistance Consulting Services
 - Battery Storage System at Brattle Court and Chelsea Tariff OPT
 - Towable Generator Docking Station Resident Inspection/Eng
 - Purchase and Supply of Electric Energy for Profile Accounts
 - Harbor and Outfall Monitoring 2020-2023
 - Quinapoxet Dam Removal Design/ESDC
 - Cape Cod Bay Water Quality Monitoring
 - Chelsea and Deer Island Fuel Management System Replacement
 - Bond Counsel
 - Actuarial Services
 - Oren Nichols Buildings Demolition
 - Chemical Tank Relining and Pipe Replacement DITP
 - Gas Protection System Replacement Phase 1 DITP
 - DITP Maintenance Coating
 - Piping Relocation at Pelletizing Plant
 - Overhead Door Maintenance Services
 - Boiler and Water Heater Services
 - Continuous Emissions Monitoring Systems Service
 - Elevator Maintenance and Repair Services
 - Wind Turbine Maintenance
 - Nut Island Headworks Odor Control and HVAC

- HVAC Systems Maintenance
 - Air Compressor Systems and Equipment Maintenance
 - 13.8 kV Electrical Systems Maintenance
 - MIS Data Center AC Units Replacement/Chelsea
 - Charles River Valley Sewer Sections 191 and 192
 - Prison Point CSO Facility Tide Replacement
 - Security Equipment Repair and Maintenance
 - Oxygen Generation Facility Services DITP
 - Fuel Storage and Day Tank Systems Replacement
 - Diesel Generator Maintenance JJCWTP
 - Dorchester Interceptor Sewer Section 240/241/242
 - Electrical Testing and Tech Services Metro Boston
 - Overhead Door Maintenance Services
 - Grit and Screenings Hauling and Disposal
 - Dry Fire Protection Sprinkler System Replacement
 - Fire Protection Sprinkler System Service
 - Cape Cod Bay Water Quality Monitoring
- Continued to work with Deer Island Treatment Plant (DITP), Field Operations (FOD), and utility companies to establish energy conservation programs at DITP and FOD facilities utilizing various programs including the Green Communities Act. Continued to dispose of surplus scrap metal materials in an environmentally responsible manner.
 - Work on improvements to the electronic procurement bidding process.
 - Processed 7,072 purchase orders in FY20 for a total of \$44,502,420.
 - Online vehicle and equipment auctions resulted in revenue of \$293,126.
 - Recycled 18.25 tons of batteries, 18.55 tons of paper and 186.65 tons of scrap metal, generating \$31,560 in revenue.

Budget Highlights:

The FY21 Final Budget is \$4.5 million, an increase of \$20,000 or 0.4% as compared to the FY20 Budget.

- \$4.3 million for **Wages and Salaries**, an increase of \$20,000 or 0.5% as compared to the FY20 Budget, including wage increases associated with collective bargaining agreements. The FY21 Final Budget funds 43.9 FTEs, matching the FY20 Budget.

OCCUPATIONAL HEALTH AND SAFETY

The **Occupational Health and Safety** Department manages MWRA's compliance with Massachusetts Department of Labor Standards (state) and federal rules and regulations and provides programs, guidance and recommendations in areas of employee safety and health. The department oversees a program for regulatory compliance with state standards and works closely with other authority safety and health staff to communicate, implement, monitor and track safety and health regulatory compliance. OHS leads the agency's activities in a proactive way to minimize health issues and prevent situations that could create workers' compensation cases.

FY21 Final Current Expense Budget							
OCCUPATIONAL HEALTH AND SAFETY							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ -	\$ 456,988	\$ 978,944	\$ 1,000,637	\$ 21,693	2.2%	
OVERTIME	-	35,520	46,210	46,210	-	0.0%	
FRINGE BENEFITS	-	405	475	475	-	0.0%	
CHEMICALS	-	-	-	-	-	-	
UTILITIES	-	-	-	-	-	-	
MAINTENANCE	-	-	-	-	-	-	
TRAINING & MEETINGS	-	-	1,500	1,500	-	0.0%	
PROFESSIONAL SERVICES	-	-	-	-	-	-	
OTHER MATERIALS	-	1,131	31,200	216,025	184,825	592.4%	
OTHER SERVICES	-	1,633	37,766	147,166	109,400	289.7%	
TOTAL	\$ -	\$ 495,677	\$ 1,096,095	\$ 1,412,013	\$ 315,918	28.8%	

FY21 Goals and Initiatives:

IV. Finance and Management

- **Goal #12 – Ensure Cost-Effective Operational and Resource Management:**
 - o Continue to cost effectively maintain the Authority's safety equipment.
 - o Works closely with other authority safety staff to establish and/or update operating procedures including the MWRA Online Safety & Health Manual and ensure the appropriate communication to employees is delivered in order to ensure employee compliance with safety and health requirements.
 - o Ensures that any required DLS postings are prominently displayed at authority worksites in order to inform employees of their rights and responsibilities.
- **Goal #13 – Maintain a Safe Workforce:**
 - o Conducts multi-facility (30+) worksite safety assessments and inspections (i.e., self-audits) to determine risks to employee safety and health and ensure that the workplace conditions conform to DLS standards.
 - o Evaluates risks and hazard control measures.
 - o Review training needs to assure the proper training is available to all employees while the content of current training is appropriate.

FY20 Year-End Accomplishments:

- Created the Occupational Health and Safety Department by moving salaried staff currently in safety roles into the department to better support regulatory needs.
- Assessed potential hazards and controls.
- Investigated incidents involving the safety and health of employees, visitors, vendors and contractors.
- Maintained and evaluated injury and illness records in accordance with OSHA standards.
- Assisted with the development and deployment of emergency response plans.

Budget Highlights:

The FY21 Final Budget is \$1.4 million which is \$316,000 or 28.8% above the FY20 Budget. The Occupational Health and Safety department was established in FY20 when it was spun out of Operations.

- \$1.0 million for **Wages & Salaries**, an increase of \$22,000 or 2.2% over FY20 primarily due to wage increases associated with collective bargaining agreements and the transfer of one FTE from OEP. OHS is staffed by 9 FTE's in FY21, one more than FY20's level.
- \$46,000 for **Overtime**, to respond to as need incidents.
- \$1,500 for **Trainings and Meetings**, for safety conferences.
- \$216,000 for **Other Materials**, an increase of \$185,000 primarily for computer hardware for industrial gas monitors.
- \$147,000 for **Other Services**, an increase of \$109,000 for services to maintain Authority wide safety equipment like winches, fire extinguishers, AEDs, and first aid cabinets.



Finance Division
Budget

FINANCE DIVISION

Finance

Director's Office
Rates and Budget
Treasury
Controller
Risk Management

The **Finance Division** is responsible for managing the finance functions of the Authority. It performs a multitude of functions that support the daily operations and ensure the implementation of the Authority's long term goals and strategies. The Finance Division also ensures that a variety of fiscal management systems are in place to monitor and control the Current Expense Budget (CEB) and Capital Improvement Program (CIP).

FY21 Final Current Expense Budget FINANCE DIVISION						
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 3,383,581	\$ 3,341,537	\$ 3,763,132	\$ 3,738,108	\$ (25,024)	-0.7%
OVERTIME	16	-	-	-	-	-
TRAINING & MEETINGS	1,651	2,489	3,000	3,000	-	0.0%
PROFESSIONAL SERVICES	574,874	432,489	636,763	626,310	(10,453)	-1.6%
OTHER MATERIALS	5,937	9,561	11,100	11,100	-	0.0%
OTHER SERVICES	5,494	8,094	6,985	6,774	(211)	-3.0%
TOTAL	\$ 3,971,553	\$ 3,794,170	\$ 4,420,980	\$ 4,385,292	\$ (35,688)	-0.8%

The Finance Division is comprised of five departments: Director's Office; Rates and Budget; Treasury; Controller; and Risk Management.

FY21 Final Current Expense Budget FINANCE by Department						
DEPARTMENT	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
DIR OFFICE (FINANCE)	\$ 250,518	\$ 252,903	\$ 254,486	\$ 264,543	\$ 10,057	4.0%
CONTROLLER	1,401,702	1,376,686	1,629,082	1,531,148	(97,934)	-6.0%
RATES AND BUDGET	915,850	801,628	945,195	933,802	(11,393)	-1.2%
TREASURY	946,571	893,567	1,062,978	1,119,573	56,595	5.3%
RISK MANAGEMENT	456,912	469,386	529,239	536,226	6,987	1.3%
TOTAL	\$ 3,971,553	\$ 3,794,170	\$ 4,420,980	\$ 4,385,292	\$ (35,688)	-0.8%

FY21 Goals & Initiatives:

The Finance Division supports the fourth key strategic priority set forth in the Authority's FY16 - FY20 Strategic Business Plan.

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Develop and implement long-term strategies to ensure assessment increases to MWRA's communities are sustainable and predictable, both at the combined and at the water and wastewater utility level.
 - Continue to fund the pension at appropriate levels and address the Other Post-Employment Benefits.
 - Manage MWRA's debt portfolio to contribute to the achievement of sustainable and predictable utility assessment increases.
 - Manage diversification strategy to insulate against overexposure and promote resiliency to changing market conditions.
 - Continue assessment and evaluation of sustainable cost savings opportunities throughout the organization.

FY20 Year-End Accomplishments:

- Developed the FY21 Final Budget consistent with the FY20 planning estimates, for both the Current Expense Budget and the Capital Improvement Program.
- Maintained MWRA's strong credit ratings, Aa1, AA+, AA+ from Moody's, Standard & Poor's and Fitch respectively. MWRA's credit ratings from all three major agencies are only one ratings step below the highest rating of AAA. These high credit ratings enable MWRA to borrow at very advantageous interest rates helping to minimize debt service expenses.
- Prepared submission of MWRA's Comprehensive Annual Financial Report (CAFR) to the Government Finance Officers Association
- Implemented pandemic planning protocols to ensure that employees and vendors are paid timely and accurately, without interruption, while teleworking.
- Held Budget Briefings with the MWRA Advisory Board to communicate FY21 departmental budgets and initiatives and how they relate to the MWRA's Master Plan.

Budget Highlights:

The FY21 Final Budget for the Finance Division is \$4.4 million, a decrease of \$36,000 or 0.8% as compared to the FY20 Budget.

- \$3.7 million for **Wages and Salaries**, a decrease of \$25,000 or 0.7% as compared to the FY20 Budget, the decrease reflects the salary savings due to staff replacements at lower salaries only partially offset by wage increases associated with collective bargaining agreements. The FY21 Final Budget funds 37 FTEs, the same as the FY20 Budget.

FTEs		
FINANCE by Department		
DEPARTMENT	FY20 FTEs	FY21 FTEs
DIR OFFICE (FINANCE)	2.0	2.0
CONTROLLER	16.0	16.0
RATES AND BUDGET	8.0	8.0
TREASURY	7.0	7.0
RISK MANAGEMENT	4.0	4.0
TOTAL	37.0	37.0

FINANCE DIVISION DIRECTOR'S OFFICE

The **Finance Division Director's Office** oversees a multitude of functions that support the daily operations and ensure the implementation of the Authority's long-term goals and strategies.

The Director's Office is responsible for the centralized financial functions of rates development, revenue collection, budgeting, capital financing, debt and investment management, accounting, payroll processing, and risk management. Additionally, the Director's Office ensures that transactions comply with all rules, regulations, Authority policies and procedures, and contract terms. The Director's Office manages the development and implementation of policies to uphold the efficient utilization of resources and control of all monies. The Director's Office provides advice and analysis to the Executive Director and the Board of Directors on all financial issues.

The Division's continuing challenge in FY21 will be maintaining an agency-wide focus on balancing competing needs to minimize assessment increases while ensuring the provision of critical MWRA services.

FY21 Final Current Expense Budget							
FINANCE DIVISION DIRECTOR'S OFFICE							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 244,492	\$ 240,667	\$ 239,634	\$ 249,691	\$ 10,057	4.2%	
OVERTIME	16	-	-	-	-	-	
TRAINING & MEETINGS	1,651	2,455	3,000	3,000	-	0.0%	
OTHER MATERIALS	3,467	7,547	10,100	10,100	-	0.0%	
OTHER SERVICES	892	2,234	1,752	1,752	-	0.0%	
TOTAL	\$ 250,518	\$ 252,903	\$ 254,486	\$ 264,543	\$ 10,057	4.0%	

FY21 Goals and Initiatives:

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Manage and coordinate the Authority's finance functions.
 - Identify and pursue optimization in all aspects of MWRA's financial operations.
 - Continue to fund the Pension Fund at the annual required contribution level and to develop strategies to address the growing Other Post-Employment Benefits.
 - Guide and coordinate division activities to support MWRA's goals and objectives.
 - Continuously improve processes and performance for greater efficiency.
 - Develop and implement long-term strategies to ensure sustainable and predictable assessments and charges to our communities at both the water and wastewater utility level.

Budget Highlights:

The FY21 Final Budget is \$265,000, in increase of \$10,000 or 4.0% as compared to the FY20 Budget.

- \$250,000 for **Wages and Salaries**, an increase of \$10,000 or 4.2% as compared to the FY20 Budget, reflecting collective bargaining agreements. The FY21 Final Budget funds two FTEs, the same as in FY20.

RATES & BUDGET

The **Rates & Budget Department** provides the financial analysis that allows MWRA to translate its goals, and legal and financial commitments into cost-effective annual and multi-year programs and budgets. Department staff works closely with divisional staff to coordinate development of the long-term Capital Improvement Program (CIP) and monitor the progress of capital projects compared to projected schedules and budgeted spending. Staff also coordinates the development of MWRA’s annual Current Expense Budget (CEB) and monitors spending compared to the budget throughout the year. The Budget Department also manages the annual process of establishing water and sewer assessments to be paid by MWRA’s member communities and develops planning estimates of rate projections.

FY21 Final Current Expense Budget RATES AND BUDGET							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 913,211	\$ 799,506	\$ 943,935	\$ 932,765	\$ (11,170)	-1.2%	
TRAINING & MEETINGS	-	34	-	-	-	-	
OTHER MATERIALS	984	1,016	500	500	-	0.0%	
OTHER SERVICES	1,655	1,072	760	537	(223)	-29.3%	
TOTAL	\$ 915,850	\$ 801,628	\$ 945,195	\$ 933,802	\$ (11,393)	-1.2%	

FY21 Goals and Initiatives:

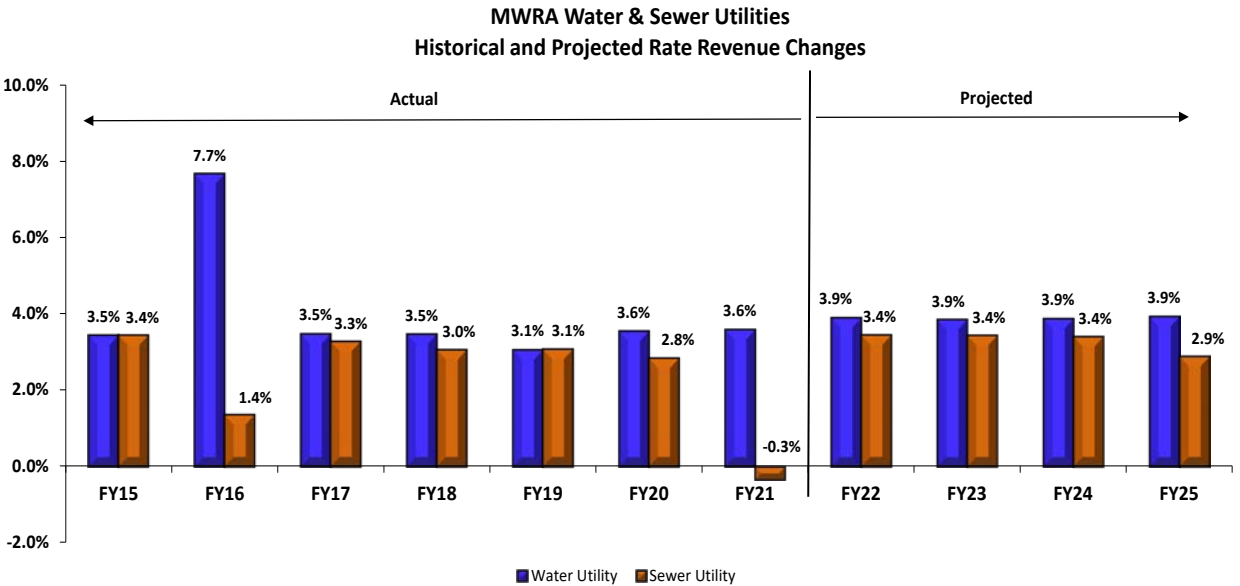
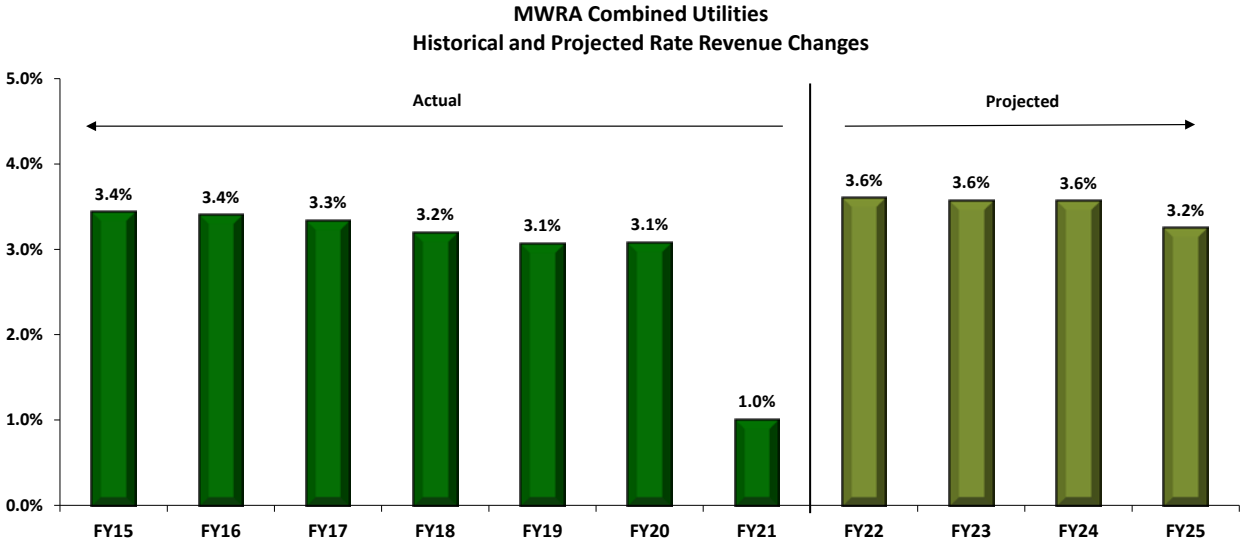
IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Continue long-term strategic budgeting practices to ensure predictable and sustainable sewer and water assessments and charges to our member communities at both the combined and the water and wastewater utility level.
 - Continue to employ budget and expense control practices to manage expenses.
 - Continue to enhance processes and the management of resources to deliver the final CIP and CEB timely and accurately.
 - Adhere to all MWRA policies, procedures, and administrative practices as well as all relevant statutory and regulatory authority, accounting, and budgeting principles.
 - Provide financial analysis as required, including system expansion opportunities.
 - Start the process of evaluating and selecting software applications to replace the CEB and CIP programs.
 - Improve the quality and presentation of budget documents and regularly required reports while working to develop new reports that will aid the Authority’s Board of Directors, Management, and the MWRA Advisory Board.

FY20 Year-End Accomplishments:

- Developed the FY21 Current Expense Budget below the FY20 planning estimates for combined water and sewer assessment increases.

- Developed the FY21 Capital Improvement Budget to fit within the five-year spending cap for the FY19-23 period.
- Communicated final FY21 Assessments to the service area communities, staying within the 1.0% projected assessment changes that are in the MWRA’s multi-year planning model.
- Held Budget Briefings with the MWRA Advisory Board to communicate FY21 departmental budgets and initiatives and how they relate to the MWRA’s Master Plan.



Budget Highlights:

The FY21 Final Budget is \$934,000, a decrease of \$11,000 or 1.2% as compared to the FY20 Budget.

- \$933,000 for **Wages and Salaries**, a decrease of \$11,000 or 1.2% as compared to the FY20 Budget, the decrease reflects the salary savings due to staff replacements at lower salaries partially offset by wage increases associated with collective bargaining agreements. The FY21 Final Budget funds eight FTEs, the same as in the FY20 Budget.

TREASURY

The **Treasury Department** secures funds for ongoing operations and capital programs in addition to processing cash disbursements. Department staff collects revenue, disburses funds, and manages grant and loan programs in addition to debt issuance and investments.

FY21 Final Current Expense Budget						
TREASURY						
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 539,449	\$ 614,458	\$ 642,103	\$ 694,151	\$ 52,048	8.1%
TRAINING & MEETINGS	-	-	-	-	-	-
PROFESSIONAL SERVICES	404,867	276,440	419,263	423,810	4,547	1.1%
OTHER MATERIALS	1,155	771	300	300	-	0.0%
OTHER SERVICES	1,100	1,898	1,312	1,312	-	0.0%
TOTAL	\$ 946,571	\$ 893,567	\$ 1,062,978	\$ 1,119,573	\$ 56,595	5.3%

FY21 Goals and Initiatives:

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Manage debt and investment portfolio to maximize savings/returns in compliance with all applicable rules and regulations while maintaining compliance with the General Revenue Bond Resolution requirements regarding security and liquidity and contributing to the achievement of sustainable and predictable assessment increases.
 - Continue diversification strategy to insulate against overexposure and promote resiliency to changing market conditions.

FY20 Year-End Accomplishments:

- Maintained MWRA's strong credit ratings, Aa1, AA+, AA+ from Moody's, Standard & Poor's and Fitch respectively. MWRA's credit ratings from all three major agencies are only one ratings step below the highest rating of AAA. The credit report from Moody's noted that for the rates management and Compliance and Capital Planning key ratings indicators, MWRA was assigned the highest Aaa rating. These high credit ratings enable MWRA to borrow at very advantageous interest rates minimizing debt service expense.
- Completed a \$620.6 million refunding and new money bond transaction on November 1, 2019. This transaction was the first time MWRA has sold taxable new money and refunding bonds. The transaction carried an All-in True Interest Cost of 2.66% with an average life of 9.7 years. This is the second lowest All-in True Interest Cost MWRA has observed and the lowest cost which is particularly notable since 96% of the bonds were federally taxable, which typically carries a higher interest cost. The \$50 million federally taxable new money portion was deposited into the Construction Fund to pay for capital projects. The federally taxable refunding totaled \$547.8 million and the tax-exempt refunding totaled \$22.8 million. The refunded resulted in \$73.3 million in present value savings and \$96.0 million in gross debt service savings between FY20 and FY42.

- Executed a \$10.6 million and a \$31.1 million defeasance of outstanding senior principal in September 2019 and June 2020 respectively. These defeasances reduced the debt service requirement between FY20 and FY24 by a total of \$42.5 million reducing the rate of increase to the Rate Revenue Requirement in those years. The transactions also resulted in \$1.3 million in interest savings by paying bonds on their call dates.
- Completed a \$52.5 million long-term borrowing and a \$40.1 million interim borrowing with the Massachusetts Clean Water Trust in September 2019 and April 2020 respectively. The long-term borrowings are for a term of 20 years at a 2.0% interest rate.

Budget Highlights:

The FY21 Final Budget is \$1.1 million, an increase of \$57,000 or 5.3% as compared to the FY20 Budget.

- \$694,000 for **Wages and Salaries**, an increase of \$52,000 or 8.1% as compared to the FY20 Budget, this increase is driven by to collective bargaining agreements and position upgrades. The FY20 Final Budget includes funding for seven FTEs, the same as the FY20 Budget.
- \$424,000 for **Professional Services**, level funded as compared to the FY20 Budget. These funds are used for banking, financial advisory, bond and disclosure council services.

CONTROLLER

The **Controller Department** consists of the Accounting, Accounts Payable, Accounts Receivable, and Payroll units. The department has the responsibility for ensuring integrity within the financial accounting system and integration among the four functions. The department is also responsible for the appropriate treatment, classification, and reporting of the MWRA’s assets, liabilities, revenues and expenditures in accordance with accounting principles generally accepted in the United States of America.

FY21 Final Current Expense Budget CONTROLLER

LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 1,277,174	\$ 1,261,245	\$ 1,468,220	\$ 1,365,275	\$ (102,945)	-7.0%
PROFESSIONAL SERVICES	123,307	113,804	157,500	162,500	5,000	3.2%
OTHER MATERIALS	299	82	200	200	-	0.0%
OTHER SERVICES	922	1,555	3,162	3,173	11	0.3%
TOTAL	\$ 1,401,702	\$ 1,376,686	\$ 1,629,082	\$ 1,531,148	\$ (97,934)	-6.0%

FY21 Goals and Initiatives:

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Implement process efficiencies in all department units.
 - Enhance controls to safeguard Authority assets and ensure accurate and timely reporting.
 - Implement new cash management tool for recording cash transactions to General Ledger.
 - Continue to support management initiatives with underlying documentation and detail.
 - Implement any new or changed GASB standards as appropriate.
 - Manage the certification of Financial Statements by Independent Auditors.

FY20 Year-End Accomplishments:

- Successfully completed certified financial statement audit with no audit findings.
- Awarded the Certificate of Achievement for Excellence in Financial Reporting by the Government Finance Officers Association (GFOA) for the MWRA’s FY19 Comprehensive Annual Financial Report (CAFR). The FY20 CAFR has been submitted to the GFOA for review.
- Reviewed over one dozen contractor financial statements to support Procurement Department analysis of contractor’s financial capacity to successfully perform under the terms of the MWRA contract.
- Implemented pandemic planning protocols to ensure that employees and vendors are paid timely and accurately, without interruption, while teleworking.

Budget Highlights:

The FY21 Final Budget is \$1.5 million, a decrease \$98,000 or 6.0% as compared to the FY20 Budget.

- \$1.4 million for **Wages and Salaries**, a decrease of \$103,000 or 7.0%, as compared to the FY20 Budget, the decrease reflects the salary savings due to staff replacements at lower salaries partially offset by wage increases associated with collective bargaining agreements. The FY21 Final Budget funds 16 FTEs, the same as the FY20 Budget.

RISK MANAGEMENT

The **Risk Management Department** is responsible for all MWRA insurance programs and risk management functions. Department staff manages all administrative functions relating to the initial reporting, processing, and resolution of construction contract claims and self-insured auto, general liability, and property damage claims. Department staff members are responsible for the annual procurement, renewals, and maintenance of all Authority-wide insurance policies and programs and for managing all aspects of MWRA’s contractor/vendor insurance certificate program. Department staff serves as liaisons to insurance industry participants including brokers, insurers, insurance consultants, and attorneys as well as providing support to all MWRA departments.

FY21 Final Current Expense Budget							
RISK MANAGEMENT							
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20		
WAGES & SALARIES	\$ 409,255	\$ 425,661	\$ 469,239	\$ 496,226	\$ 26,987	5.8%	
PROFESSIONAL SERVICES	46,700	42,245	60,000	40,000	(20,000)	-33.3%	
OTHER MATERIALS	32	145	-	-	-	-	
OTHER SERVICES	925	1,335	-	-	-	-	
TOTAL	\$ 456,912	\$ 469,386	\$ 529,239	\$ 536,226	\$ 6,987	1.3%	

FY21 Goals and Initiatives:

IV. Finance & Management

- **Goal #11- Ensure Financial Sustainability, Integrity, and Transparency:**
 - Secure the timely, cost effective renewal of Authority-wide insurance policies and contracts.
 - Minimize MWRA’s exposure to financial loss stemming from contractor and vendor activities by reviewing risk exposures and establishing contract insurance requirements and monitoring contractors/vendors for compliance.
 - Process self-insured automobile, general liability, property damage, and construction contract claims in an efficient and timely manner.
 - Provide support to all MWRA Departments on all insurance, claims, litigation and risk management issues.

FY20 Year-End Accomplishments:

- Successfully procured MWRA’s Insurance Program through a competitive bid process for all lines of coverage.
- Staff renewed MWRA’s license to operate as a self-insured entity for workers’ compensation claims by completing the annual application process with the Division of Insurance.
- Completed triennial adequacy review of MWRA Insurance Reserve Fund.
- Received, investigated and processed more than 65 self-insured Automobile, General Liability and Property damage claims.

- Provided timely support to MWRA managers on all insurance, claims, litigation and risk management issues.
- Performed over 183 Insurance reviews and Project/Contract risk assessments in support of construction, professional services and purchase order contracts.

Budget Highlights:

The FY21 Final Budget is \$536,000, an increase \$7,000 or 1.3% as compared to the FY20 Budget.

- \$496,000 for **Wages & Salaries**, an increase of \$27,000 or 5.8% as compared to the FY20 Budget, due to wage increases associated with collective bargaining agreements. The FY21 Final Budget funds four FTEs, the same as the FY20 Budget.



Quabbin Reservoir



Appendices

APPENDIX A

DIRECT EXPENSES BUDGET LINE ITEM DESCRIPTIONS

MWRA's direct expenses budget funds the annual expenses of its operating and support divisions. Though the direct expenses budget is approximately 31% of MWRA's total budget, it is these expenses which directly support the provision of water and sewer services to MWRA's customers. The direct expense budget includes the annual costs of operating the water and sewer systems, and funds the policy direction, administrative, financial, and legal support services for MWRA's ongoing operations. The direct expenses budget also includes the personnel costs for management and oversight of MWRA's extensive capital programs.

There are 11 line items in the division budgets. The line items are:

Wages and Salaries - This line item includes funds for regular pay, shift differential, holiday pay, and standby pay for MWRA staff, as well as funds for interns and temporary staff.

Overtime - This line item includes funds for overtime related to operations, maintenance, emergencies, and training.

Fringe Benefits - This line item includes funds for health and dental insurance, unemployment compensation, Medicare, overtime meals, and tuition reimbursement.

Workers' Compensation - This line item includes funds for compensation payments, medical payments, and settlements of compensation claims.

Chemicals - This line item includes funds for the chemicals used in water and wastewater treatment, such as sodium hypochlorite, soda ash, sodium bisulfite, and hydrofluosilicic acid.

Utilities - This line item includes funds for electricity, diesel fuel, natural gas and other utilities such as water and sewer services paid by MWRA to the towns in which it operates facilities.

Maintenance - This line item includes funds to purchase materials and services for the maintenance of MWRA's plants and machinery, water and sewer pipelines, grounds, and buildings.

Training and Meetings - This line item covers the costs of staff training, meetings, and professional seminars.

Professional Services - This line item funds outside consultants supporting MWRA activities, including engineering and construction services, laboratory and testing contracts, computer system consultants, and legal and audit services.

Other Materials - This line item includes funds for office materials, equipment, postage, laboratory supplies, MWRA vehicles, work clothes, and computer hardware and software.

Other Services - This line item includes funds for space leasing, health and safety initiatives, removal of grit and screenings from the sewerage system, and the contracted operation of MWRA's residuals processing plant.

FY21 Final Current Expense Budget						
MWRA Direct Expenses by Line Item						
LINE ITEM	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
WAGES & SALARIES	\$ 100,875,415	\$ 102,331,904	\$ 109,953,488	\$ 112,919,297	\$ 2,965,809	2.6%
OVERTIME	4,571,567	5,208,556	4,898,965	5,019,296	120,331	2.4%
FRINGE BENEFITS	20,068,927	19,982,221	21,717,533	22,402,224	684,691	3.1%
WORKERS' COMPENSATION	2,147,063	2,717,568	2,354,256	2,476,655	122,399	4.9%
CHEMICALS	9,659,734	10,891,948	11,811,221	12,091,255	280,034	2.3%
UTILITIES	21,997,423	24,446,278	24,454,796	24,200,846	(253,950)	-1.0%
MAINTENANCE	29,067,175	30,650,570	32,726,954	32,618,569	(108,385)	-0.3%
TRAINING & MEETINGS	314,745	499,836	504,394	405,264	(99,130)	-24.5%
PROFESSIONAL SERVICES	6,955,638	6,194,703	8,295,315	8,377,283	81,968	1.0%
OTHER MATERIALS	6,293,935	6,987,854	6,867,239	6,706,916	(160,323)	-2.4%
OTHER SERVICES	22,794,735	23,769,299	24,683,370	24,983,777	300,407	1.2%
TOTAL	\$ 224,746,357	\$ 233,680,737	\$ 248,267,531	\$ 252,201,382	\$ 3,933,851	1.6%

FY21 Final Current Expense Budget						
MWRA Direct Expenses by Division						
DIVISION	FY18 Actuals	FY19 Actuals	FY20 Final Budget	FY21 Final Budget	Change FY21 to FY20	
EXECUTIVE	\$ 1,315,341	\$ 1,319,644	\$ 1,440,611	\$ 1,514,614	\$ 74,003	4.9%
EMERGENCY PREPAREDNESS	3,673,985	3,312,285	3,618,929	2,886,776	(732,153)	-25.4%
ADMINISTRATION	45,760,274	47,123,032	52,222,114	53,221,569	999,455	1.9%
FINANCE	3,971,553	3,794,170	4,420,980	4,385,292	(35,688)	-0.8%
LAW	2,055,302	1,792,339	2,083,232	2,209,094	125,862	5.7%
AFFIRMATIVE ACTION	511,201	510,917	683,060	704,828	21,768	3.1%
INTERNAL AUDIT	659,333	653,896	715,847	730,565	14,718	2.0%
PUBLIC AFFAIRS	1,117,372	946,001	1,144,317	1,119,621	(24,696)	-2.2%
OPERATIONS/PLANNING	165,681,999	174,228,443	181,938,441	185,429,023	3,490,582	1.9%
TOTAL	\$ 224,746,357	\$ 233,680,737	\$ 248,267,531	\$ 252,201,382	\$ 3,933,851	1.6%

Performance measures for all MWRA Divisions and Departments are published monthly in the MWRA “Yellow Notebook” and quarterly in the MWRA “Orange Notebook.” In addition, monthly financial staff summaries are presented to the Board of Directors reviewing monthly budget performance and explaining variances. All documents are available on-line at mwra.com.

**APPENDIX B
BUDGET PROCESS AND TIMETABLE**

MWRA operates on a fiscal year that starts July 1. The budget development process begins in August and, as described below, continues through a series of interactive reviews and revisions until June, when the Board of Directors approves the final budget. Throughout the formal budget process, MWRA staff maintains an ongoing dialogue with the Board of Directors and Advisory Board to discuss issues, the status of budget development, and other concerns.

	Current Expense Budget (CEB)	Capital Improvement Program (CIP)
Date	Activity	Activity
8/14/19	Prepare budget guidelines and materials	Update database with current awards, change orders, and annual estimated inflation factor
9/14/19		Kick-off meeting
9/25/19	Kick-off meeting - Release database files to all departments	
10/27/19		Project Managers update project schedules and costs
10/30/19		Proposed CIP finalized
11/6/19	Budget staff prepare capital financing requirements and indirect expenses	Review of Proposed CIP with senior management
11/13/19	Update CEB impacts from CIP	
11/20/19		Proposed CIP Staff Summary and Board of Directors presentation
12/1/19	Proposed CEB, Rate Revenue Requirement and planning projections	
12/15/19	Review of Proposed CEB with Senior Management	
12/20/19		Present Proposed CIP at Board Of Directors Meeting
12/21/19		Advisory Board Review and Comments begins
1/15/20	Proposed CEB Staff Summary and Board of Directors presentation	
2/21/20	Present Proposed CEB at Board of Directors Meeting	
2/22/20	Advisory Board Review and Comments begins	
3/15/20	Spring Revisit - Distribute Proposed FY19 database files to all departments	
4/9/20	Update Proposed CEB	Update Proposed CIP
4/15/20	Public hearings	Public hearings
4/27/20	Receive Advisory Board Comments	Receive Advisory Board Comments
5/18/20	Prepare MWRA's response to Advisory Board Comments	Prepare MWRA's response to Advisory Board Comments
5/18/20	Prepare Draft Final CEB presentation for Board of Directors	Prepare Draft Final CIP presentation for Board of Directors
5/30/20	Presentation - Draft Final CEB to Board of Directors	Presentation - Draft Final CIP to Board of Directors
6/15/20	Draft Final CEB Staff Summary	Draft Final CIP Staff Summary
6/20/20	Board of Directors Meeting - Vote on Final CEB	Board of Directors Meeting - Vote on Final CIP

APPENDIX C

MASSACHUSETTS WATER RESOURCES AUTHORITY BUDGET AND ASSESSMENT POLICIES AND PROCEDURES

(Revised August 2003 to incorporate changes to capital budget section of Management Policies adopted by the Board of Directors June 11, 2003)

These policies and procedures govern certain budget, assessment, and rates management practices at the Massachusetts Water Resources Authority (MWRA). Policies and procedures may be amended from time to time, provided that changes in provisions governing reporting to or approvals by the Board of Directors or the Advisory Board must be approved by the Board of Directors. If any sections of these policies and procedures are at variance with requirements of MWRA's financing agreements, the latter shall govern.

ASSESSMENT POLICIES AND PROCEDURES

Basis of MWRA Assessments

MWRA is required by its Enabling Act to establish assessments which, with other revenues, provide sufficient funds each year to pay all current expenses, debt service, and obligations to the Commonwealth; to pay all costs of maintenance, replacement, improvements, extension, and enlargement of the sewer and waterworks systems; to create and maintain reserve funds; and to provide amounts required by financing agreements. These assessments are adopted by MWRA based on the rate revenue requirements set forth in the Current Expense Budget.

Costs Recovered

MWRA capitalizes certain of its asset costs in accordance with its capitalization policy. Capital expenditures are planned as set forth in the Capital Improvement Program and are recovered through assessments in accordance with MWRA financing agreements. The Current Expense Budget provides detailed information on capital and debt costs, additions to reserves, and all operations and maintenance costs to be recovered with current revenue.

Sources of Current Revenue

MWRA recovers most of its current expenses from users of the services it provides. In addition to rate revenue requirements, budgeted current revenue includes anticipated fines, fees, investment income on certain fund balances, and payments for contracted services. MWRA is committed to seeking additional sources of current revenue.

Coverage Requirements

MWRA's financing agreements include coverage requirements which provide that each year revenue less operating expenses (net revenue) must be more than the amount required for debt

service payments on outstanding bonds. The primary bond coverage requirement is that net revenue must be 120 percent of required debt service fund deposits for bonds outstanding excluding subordinated bonds. The secondary coverage requirement is that net revenue must be 110 percent of required debt service fund deposits for all bonds outstanding, including subordinated bonds. Revenue must be raised annually to meet the primary and secondary bond coverage requirements and may be used for additions to reserves or for payment of obligations to the Commonwealth. Amounts remaining after these uses are used to pay capital costs in order to reduce the need for future borrowing or to reduce current debt service costs. In addition, MWRA has a supplemental bond coverage requirement that amounts contained in its Community Obligation and Revenue Enhancement (CORE) Fund shall equal 10 percent of required debt service fund deposits for bonds outstanding, excluding subordinated bonds. Amounts required to be on deposit in the CORE Fund are recovered through assessments as necessary.

Basis of Budgeting

The Authority is required by the Enabling Act to establish user rates for its water and sewer services which provide sufficient funds to recover the costs of operations (excluding depreciation), debt service, maintenance, replacements, improvements to its facilities, and appropriate reserves. MWRA budgets on the accrual basis, its financial statements are reported on the accrual basis of accounting and the economic measurement focus as specified by the Governmental Accounting Standards Board's (GASB) requirements for an enterprise fund.

The MWRA distinguishes operating revenues and expenses from nonoperation items. Operating revenues and expenses generally result from providing water and sewer services to its member communities. All revenues and expenses not meeting this definition are reported as nonoperating revenues and expenses. All operating revenues are pledged for repayment of outstanding debt service.

In addition, MWRA applies the provisions of GASB Statement No. 62, Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements, to provide a better matching of revenues and expenses. The effect of this policy has been to defer certain outflows of resources, which will be recovered through future revenues in accordance with MWRA's rate model, and to record deferred inflows of resources for revenue collected through current rates for costs expected to be incurred in the future.

Budget Surpluses

In any year in which current revenue exceeds both current expenses on a budget basis and amounts required to meet bond coverage tests, the amount of over-recovery is deposited first to reserve funds, if any, which are below the level specified in any financing agreements, and second into MWRA's rate stabilization fund or bond redemption fund. Amounts deposited in these funds are used to offset rate requirements in subsequent years and such, to provide rate relief for our communities. With Board approval, surplus funds can also be used for targeted defeasance in future years and/or to reduce future liabilities, as part of a multi-year rate strategy. MWRA consults with the Advisory Board regarding the yearly use of these funds.

Budgeting and Assessment Objectives

MWRA follows conservative budgeting practices, and has the following objectives in developing budgets and community assessments:

1. To minimize total costs, consistent with MWRA's statutory responsibilities to provide effective, environmentally sound wholesale water delivery and wastewater collection and treatment services;
2. To minimize the cost of debt;
3. To avoid single year assessment spikes by prudent management of cost and assessment increases, and
4. To support inter-generational equity by avoiding unfair assessment burdens on either current or future ratepayers.

Allocation of Costs and Revenue to Systems

Most of MWRA's current expenses are directly attributable to either water or sewerage service costs or to investment in either the water or sewerage systems. Expenses which support both systems (indirect system costs) are allocated to the water or sewer system based on generally accepted cost allocation principles. Investment, contract, and other income offsets water and sewerage expenses on either a direct or allocated, indirect basis. The resulting net cost of water and sewerage services is the amount to be recovered through water and sewer assessments.

Allocation of Rate Revenue Requirements to User Assessments

Users of MWRA wholesale water and sewerage services are assessed for those services according to MWRA's water and sewer assessment methodologies. Assessments for water services are computed by MWRA based on metered water use for the preceding calendar year. The total assessment is allocated based on each community's share of water delivered in the immediately preceding calendar year.

Assessments for sewer services are computed on the basis of a combination of metered wastewater flow and loads, and population.

- Operations and Maintenance (O&M) costs are allocated based on total annual metered wastewater flow, and total annual average strength, septage, and high strength flow loads.
- Capital (or debt service) costs are allocated based on a combination of metered wastewater flow and loads, and population. One-quarter of capital costs are allocated based on maximum month flow, and total annual average strength, septage, and high strength flow loads. The

remaining three-quarters of capital costs are allocated based on population. Half of the population allocation is based on census population and half is based on contributing population.

Schedule and Procedure for Adoption of Assessments

During the preparation of the proposed Current Expense Budget, required water and sewer rate revenue is determined, and a preliminary calculation of the allocation of costs to user-specific assessments is made. This information is provided to MWRA customers to assist them in their own fiscal planning. As provided in the Enabling Act, the proposed Current Expense Budget and preliminary assessments undergo statutory review, including public hearings and review by MWRA's Advisory Board. Further refinements of projected expenses and revenues also occur during this period. If review and analysis of the proposed Current Expense Budget results in lower projected expenses or higher projected revenue, some or all of such savings from preliminary estimates of assessments can be included in the adopted budget as additions to the rate stabilization fund and used to reduce rate revenue requirements in subsequent years. Alternatively, some or all of such savings can be used to reduce final assessments to customers below preliminary estimates.

The Current Expense Budget and final water and sewer assessments are adopted in June for the fiscal year beginning in July. The budget adopted in June may differ from the proposed budget as a result of review and further refinement of the proposed budget, although final assessments adopted by MWRA must be sufficient to recover water and sewer rate revenue requirements specified in the adopted budget. Final water and sewer rate requirements and their allocation to users may thus change from preliminary estimates. In addition, any individual community's final assessment may be higher or lower than the preliminary estimate, both because of changes in the factors which affect the allocation of assessments among wholesale customers, and because of differences between MWRA's proposed and final budgets as approved by the Board of Directors.

Review and Dispute Resolution Process

MWRA annually determines preliminary and final assessments for water and sewer services in February and June prior to the beginning of the new fiscal year. These assessments must satisfy the requirement that MWRA fully recover its water and sewer costs by apportioning total costs as assessments among its wholesale water and sewer customers pursuant to its water and sewer rate methodologies and to certain specified data including:

- Calendar year metered water volume and metered wastewater flow obtained from MWRA's water and wastewater metering systems;
- Federal and state community census statistics, and sewer population estimates and other information supplied on Customer Service Update forms and Municipal Discharge Permits; and
- High strength user monitoring data and estimates of community septage volumes as obtained by MWRA's Toxic Reduction and Control Department.

The review and dispute resolution process provides MWRA's wholesale customers with the opportunity to review and comment on the reasonableness of the data used to calculate preliminary water and sewer assessments. During the year, MWRA provides its customers with monthly summaries of water and wastewater flow data distributed, at a minimum, on a bimonthly basis. Because annual metered water and wastewater flows are major components for establishing water and sewer charges for each community, customers are strongly encouraged to review this data closely upon receipt and raise questions with MWRA staff concerning the data. MWRA expects that prompt customer review and comment on meter data will result in the resolution of most water and wastewater metering questions and assure the most consistency between preliminary assessments in February and final assessments announced in June. Community contributions of high strength flow and septage, and population data are made available with the release of preliminary assessments in February.

If after an initial review a community believes that specific data used to calculate assessments should be reevaluated, a community may submit a written objection to the Executive Director with a copy to the Rates Manager or their designee. The objection must be signed by the local official on record with MWRA as responsible for water or sewer services in the city, town, or district. The objection should state the community's concern with the data used to calculate community assessments, and should also include information and technical data to support the community's objection.

In order for any data adjustments to be incorporated into the allocation of final fiscal year assessments, all objections to data used to calculate preliminary assessments must be received no later than the date of the final public hearing on the proposed budget and preliminary assessments, held pursuant to Section 10 of the MWRA Enabling Act. MWRA staff will review and evaluate the merits of all written objections. Customers are notified in writing of the results of this review prior to the release of final assessments.

Adjustments to preliminary data, if any, are not retroactive beyond the applicable calendar year for proposed assessments. Final fiscal year assessments are calculated incorporating adjustments, if any, resulting from the review and objection process, and final rate revenue requirements as adopted by the Board of Directors.

Written objection(s) may also be submitted following the adoption of final fiscal year assessments, but no later than the end of the fiscal year for which the assessments are applicable. Objections submitted in this manner must also be directed to the Executive Director with a copy to the Rates Manager or their designee.

Following MWRA staff review, adjustments to assessments resulting from the challenge of rate basis data that are submitted following the adoption of final fiscal year assessments will be applied to the subsequent year's assessments. Customers are notified in writing of the results of this review and any assessment adjustments prior to the release of the subsequent year's assessments.

Water and Sewer Assessment Payment Schedule

MWRA adopts a schedule of assessments and a schedule of payments annually. Any adjustments for prior years resulting from the review and objection process are apportioned to each of the scheduled payment amounts. No interest is paid or billed by MWRA for previous year's adjustments.

Assessments are payable to MWRA in ten equal installments due on the first day of August, September, October, November, December, February, March, April, May, and June.

Interest Charge on Delinquent Payments

For payments received after a payment due date MWRA levies an interest charge of one percent per month or 0.033 percent per day. Interest charges do not accrue until 30 days after the bills are mailed to MWRA's customer communities. Interest charges are added to subsequent regular billings.

Retail Rates

MWRA assessments are for MWRA's provision of wholesale services. Local bodies which receive wholesale services in turn provide retail services to their users at the local level.

MWRA encourages its customers to establish retail rates which:

1. Recover the full cost of providing local water and/or sewerage services, including both direct costs and an allocation or estimate of indirect costs,
2. Charge users of local water and/or sewerage services in a manner which demonstrates to customers that increased use of services results in increased user costs,
3. Comply with MWRA policies directed to conservation of water; elimination of infiltration and inflow of surface water and ground water into the sewage collection, treatment, and disposal system; and removal or pretreatment of industrial wastes, and
4. To the extent consistent with #1 and #2, provide assistance to low income users through lifeline rates.

CAPITALIZATION POLICY

It is the policy of the MWRA that capitalization of expenditures conforms to generally accepted accounting principles. Under such guidelines, MWRA has adopted the provisions of the Financial Accounting Standards Board's Statement No. 71, "Accounting for the Effects of Certain Types of Regulation," which is intended to assure that utility revenues are appropriately matched with incurred costs. Capital expenditures create assets or extend their useful lives. Assets are valued at their cost and provide benefits over an extended period of time. Sources of funds for capital expenditures include grants, proceeds of MWRA borrowing, loans, and current revenue.

Asset value created by MWRA is of two kinds. One is the value of tangible assets either created or increased through MWRA capital investments. Such assets include land, buildings, plant, equipment, and the system infrastructure for water and wastewater. The cost of such fixed asset investment includes not only purchase, rehabilitation, and construction cost, but also ancillary expenses necessary to make productive use of the asset. Ancillary costs can include, but are not limited to, costs for planning studies, professional fees, transportation charges, site preparation expenditures, and legal fees and claims directly attributable to the asset.

The second kind of asset value created by MWRA investment is the value of intangible assets. While such investment does not result in tangible MWRA assets, it does create a benefit to MWRA and its users over several years. Such assets include the cost of MWRA efforts to establish baseline leak detection information for the water systems of MWRA customers. The cost of providing water consumption-limiting devices to households is another example.

Expenditures for tangible assets are included in the Capital Improvement Program and Budget if the expected cost of the individual asset or capital project is \$100,000 or more and if the expected useful life is more than one year. Expenditures for intangible assets are capitalized if the expected cost is \$100,000 or more and if the expected benefit period is three years or more. Annually recurring costs and expenditures for maintenance of assets are not capitalized, even though their cost may exceed \$100,000. Examples of such maintenance expenditures include replacement of vehicles or computers, replacement of inoperable valves or other equipment before the anticipated useful life has been reached, and pipeline or interceptor repairs that do not add significant life to the underlying asset.

RESERVES FUNDED FROM CURRENT REVENUE

Operating Reserve

The Operating Reserve has been established to provide a source of funds to be used to pay operating expenses of the sewer or water systems should there not be sufficient funds otherwise available for that purpose. Bond agreements specify that the fund level shall not be less than one-sixth of MWRA's annual operating expenses.

Insurance Reserve

The Insurance Reserve has been established to provide funds to restore, replace, or reconstruct lost or damaged property or facilities of the water or sewer system. It provides funds reserved against risks for which MWRA does not currently maintain insurance. This self-insurance reduces the cost MWRA might otherwise incur for purchased insurance policies. MWRA periodically evaluates the level of its insurance reserve and every three years a consulting engineer or an insurance consultant recommends an appropriate insurance reserve fund requirement. The current funding level of \$14.0 million has been determined to be adequate based on a FY17 Insurance Reserve Fund review performed by an outside insurance consultant who estimated an acceptable fund level in the range of \$12 to \$16 million. The next Insurance Reserve Fund review is expected in February 2020.

Renewal and Replacement Reserve

The Renewal and Replacement Reserve has been established to pay the costs of emergency repairs or capital improvements to the system when funds are not available in either the Construction Fund or the Operating Fund. Amounts may not be withdrawn until MWRA has specified the project to which the amount will be applied, its estimated cost, and estimated completion date. It must also certify that such expenditures are reasonably required for the continued operation of the systems, or for maintenance of revenues, or that other provisions have not been made for funding such expenditures. The requirement of the Bond Resolution, every three years, MWRA receives recommendations from a Consulting Engineer as to the adequacy of the renewal and replacement reserve fund requirement. The Renewal and Replacement Reserve Fund requirement is presently established at \$35 million. The adequacy of the funding requirements for the Operating Reserve Fund and the Replacement Reserve Fund have been confirmed by the Consulting Engineer in its most recent triennial report dated October 2014, prepared and delivered in accordance with the General Resolution. The next Triennial Report is scheduled for October 2017. The Consulting Engineer also provides an opinion as to the adequacy of the Authority rates, rentals, and other charges.

CURRENT EXPENSE BUDGET MANAGEMENT POLICIES AND PROCEDURES

A. Budget Allocations

Budget Contingency Holdbacks

After the Board of Directors adopts the Current Expense Budget each year, the Executive Director, the Chief Operating Officer, or a division director may reserve between two percent and four percent of a division's approved budget as a budget contingency to be expended only upon approval of the Executive Director. The contingency holdback may be from any line item or cost center or combinations thereof, and any amount reserved as a budget contingency is not to be included in the monthly budget allocation process described below. The Administration, Finance, and Audit Committee will be notified of all budget contingency holdback amounts.

Monthly Allocation of the Annual Current Expense Budget

Initial monthly allocations are made for purposes of adopting and filing an operating budget in accordance with MWRA's financing agreements. Before the end of the first reporting period of the fiscal year, divisions, with the assistance of the Rates and Budget Department, allocate the approved budget, less any holdbacks, by month. The allocations set forth planned expenditures and accruals for each of the 12 months of the year to be compared to actual expenditures and accruals as reported in MWRA's monthly variance reports.

B. Budget Variance Monitoring and Analysis

At the close of each monthly accounting period, the Controller Department prepares MWRA financial statements. The Rates and Budget Department then prepares monthly variance reports that compare budgeted to actual revenues and expenses.

Variance Analysis

Division directors and staff review variance reports and explain variances between budgeted and actual expenditures as requested by the Rates and Budget Department. Variance explanations are prepared as needed, usually at the first quarter of the year, and following monthly for the rest of the year. At least twice each year MWRA staff prepares forecasts of year-end expenditures and revenue. Barring extraordinary circumstances, division directors are responsible for controlling spending within the overall division budget. The Rates and Budget Department reviews all variances and projections so that appropriate measures may be taken to ensure that overall spending is within the MWRA's budget.

Variance explanations are submitted to the Rates and Budget Department in accordance with the schedule developed by the Rates and Budget Department. Each month the Rates and Budget Department prepares a summary of budget variances for inclusion in the Management Indicators Report (Yellow Notebook). The Rates and Budget Department also prepares a monthly staff summary (except for July and August) to the Board of Directors describing major budget variances and a quarterly budget variance report for inclusion in the Board of Directors Report on Key

Indicators of MWRA Performance (Orange Notebook). At least twice a year, the Rates and Budget Department prepares a staff summary to the Board of Directors on year-end projections of revenue and expenses.

C. Budget Amendments

An amendment to an MWRA Current Expense Budget is defined as follows:

A proposed change in an adopted budget or a proposed budget transmitted to the MWRA Advisory Board in accordance with Section 8(b) of Chapter 372 of the Acts of 1984 which meets any of the following criteria:

1. Any increase in total current expenses.
2. An increase of five percent or more in total division expenses.
3. An increase in any expense line item (subsidiary account) of 15 percent or more if that line item is at least 2.5 percent of total current expenses.
4. An addition or deletion of a specific new program or initiative, the cost of which is greater than one percent of total current expenses, unless the addition or deletion has been specifically recommended by the Advisory Board.

The Executive Director, with the concurrence of the Chairman of the Board of Directors and the Chairman of the Administration, Finance, & Audit Committee of the Board of Directors, submits proposed amendments to the Advisory Board for comment and recommendation. At the end of the Advisory Board 30-day review period, the Board of Directors may take action on the amendment.

CAPITAL BUDGET MANAGEMENT POLICIES AND PROCEDURES

General Guidelines

The Authority shall periodically adopt and revise capital facility programs for the Waterworks and Sewer Systems and capital budgets based on these programs. The Authority shall consult in the preparation of its capital facility programs for the Sewer and Waterworks Systems with the Authority's Advisory Board and the Executive Office of Environmental Affairs, and may consult with other agencies of federal, state and local government concerned with the programs of the Authority. Proposed capital facility programs and capital expenditure budgets for said systems shall be submitted to the Advisory Board for such consultation no less than sixty days prior to adoption or revision by the Authority. The Authority shall prepare a written response to reports submitted to it by the Advisory Board, which response shall state the basis for any substantial divergence between the actions of the Authority and the recommendations contained in such reports of the Advisory Board. The Authority shall capitalize expenditures in accordance with generally accepted accounting principles. Capital expenditures will be planned in accordance with Authority financing agreements and policies for amortization of capital costs.

Capital Budget Contingency

A contingency for each fiscal year is incorporated into the Capital Improvement Program for the purpose of providing for unanticipated or unpredictable expenditures under the CIP spending cap.

Capital Budget Monitoring and Reporting

The Authority continually monitors the progress of capital projects for purposes of managerial control and decision-making and for financial planning and management. Two capital budget variance analysis reports are provided to the Board of Directors, one for the first six months of a year and one at year-end. The reports include a comparison between planned project schedules to actual performance. The reports highlight any major changes, either in scope or budget, of any project. Based on these reports, staff may recommend to the Board of Directors revisions, if appropriate, to the annual and five-year caps based upon said changes. In addition, capital budget progress reports are provided to the Board of Directors on a regular basis, both as project specific updates and in Quarterly Orange Notebook reports that shall include discussions of project progress compared to schedules. Monthly Financial Summary reports shall include discussions of capital expenditures compared to budget.

Capital Budget Spending Cap

Beginning in June 2003, the Board of Directors established a five-year Capital Budget Spending cap and annual caps for each year within the cap period. Spending for any year in the cap period may vary within plus or minus 20% of the annual cap, as long as total spending for the five-year period does not exceed the five-year cap. Before the end of each five-year cap period, the Board will adopt a cap for the next five-year period and annual caps for each year in the period. The Board established the third five-year cap for the FY14-18 period at its June 2013 meeting.

Expenditures in Excess of the Spending Cap

In the event of unanticipated spending requirements, the Executive Director may recommend to the Board of Directors that annual expenditures exceed an annual cap by more than 20% or that five-year expenditures exceed the current five-year CIP spending cap. In such an event, a proposed plan to adjust the five-year cap or any of the annual caps will be presented to the Board. Any such proposed plan will be submitted to the MWRA Advisory Board for review and comment for a period of thirty days. At the end of the thirty-day period, the Board of Directors may take action on the proposed plan.

Debt Limit

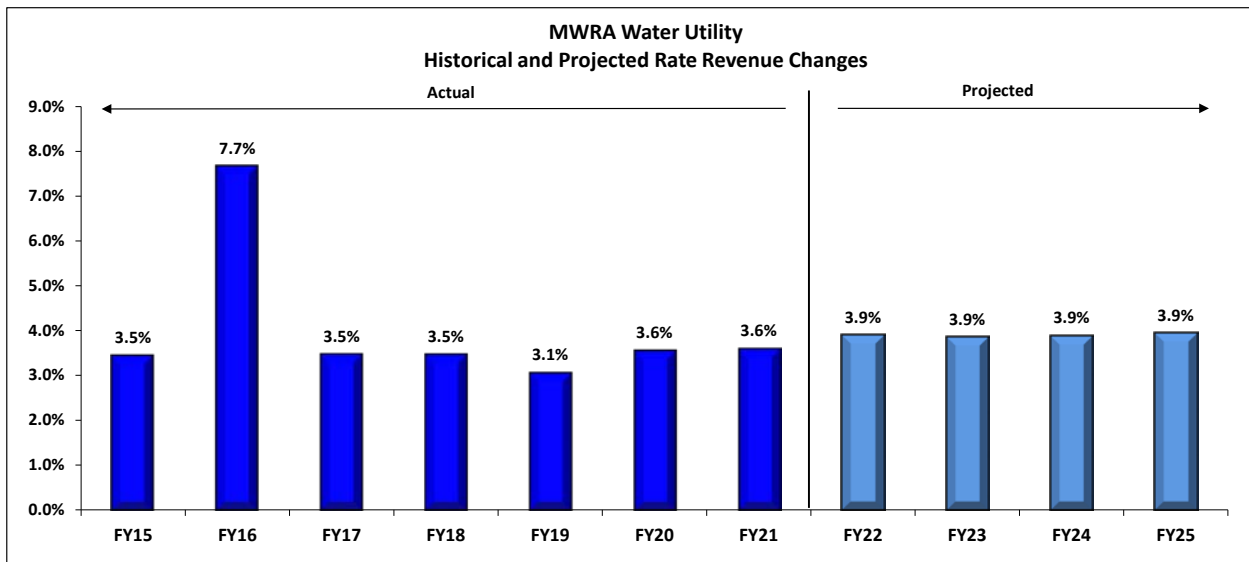
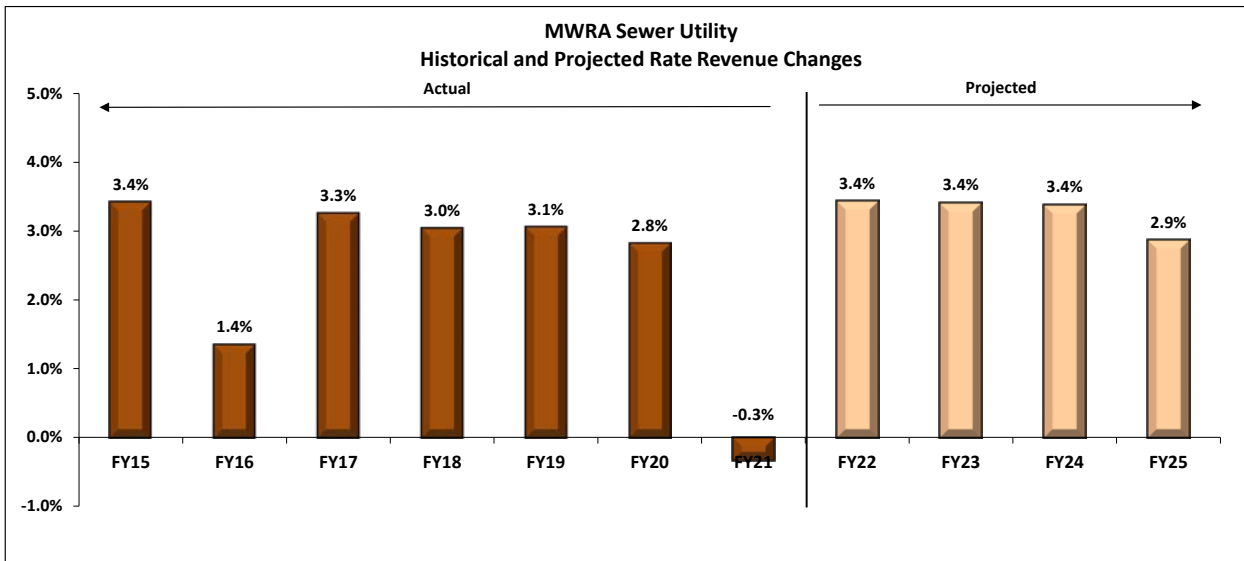
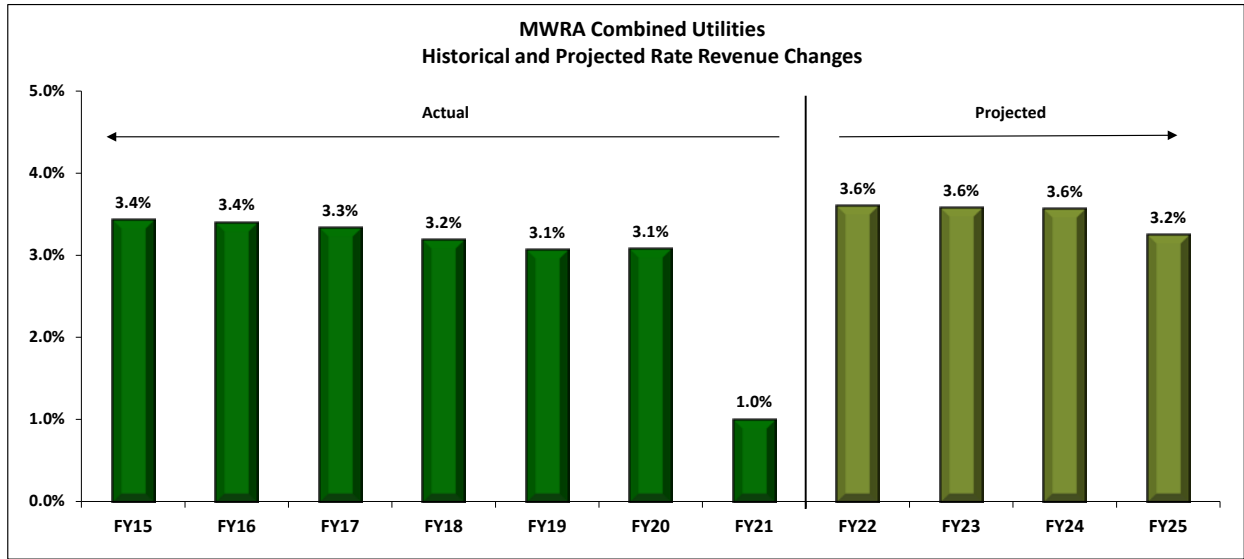
The Authority's statutory debt limit is \$6,450,000,000. The current debt is well below the debt limit. The Authority's debt limit was most recently amended by Chapter 312 of the Acts of 2008 of the Commonwealth of Massachusetts.

APPENDIX D

MWRA Planning Estimates FY2021 to FY2030										
COMBINED UTILITIES	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030
EXPENSES										
Direct Expenses	\$252,201	\$259,832	\$267,255	\$274,874	\$282,655	\$290,541	\$299,196	\$307,077	\$315,784	\$324,661
Indirect Expenses	57,269	57,980	59,186	60,508	61,873	63,298	64,946	66,449	68,284	70,068
Capital Financing (before offsets)	481,886	501,685	523,358	544,021	565,261	588,006	595,420	595,746	590,421	592,887
Sub-Total Expenses	\$791,356	\$819,497	\$849,799	\$879,402	\$909,788	\$941,844	\$959,562	\$969,272	\$974,490	\$987,616
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Expenses	\$791,356	\$819,497	\$849,799	\$879,402	\$909,788	\$941,844	\$959,562	\$969,272	\$974,490	\$987,616
REVENUE & INCOME										
Non-Member and Other Revenue	\$15,304	\$15,703	\$16,116	\$16,462	\$16,814	\$17,237	\$17,628	\$18,025	\$18,432	\$18,670
Interest Income	5,168	4,716	6,127	7,963	10,237	15,021	15,803	16,262	16,693	17,014
Rate Stabilization	1,500	2,000	2,000	0	0	0	0	0	0	0
Total Other Revenue	\$21,971	\$22,419	\$24,243	\$24,425	\$27,050	\$32,258	\$33,431	\$34,286	\$35,125	\$35,684
Total Rate Revenue	\$769,385	\$797,078	\$825,556	\$854,977	\$882,738	\$909,587	\$926,131	\$934,986	\$939,365	\$951,932
Rate Revenue Increase	1.0%	3.6%	3.6%	3.6%	3.2%	3.0%	1.8%	1.0%	0.5%	1.3%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$1,218	\$1,272	\$1,328	\$1,386	\$1,446	\$1,508	\$1,566	\$1,622	\$1,678	\$1,742
Based on water use of 90k gpy (weighted)	\$1,797	\$1,876	\$1,959	\$2,046	\$2,134	\$2,225	\$2,310	\$2,393	\$2,476	\$2,570
WASTEWATER UTILITY										
EXPENSES										
Direct Expenses	\$165,981	\$170,719	\$175,632	\$180,565	\$185,691	\$190,851	\$196,805	\$201,699	\$207,439	\$213,267
Indirect Expenses	22,853	22,569	22,740	22,906	23,118	23,342	23,772	23,969	24,513	24,948
Capital Financing (before offsets)	321,842	334,857	348,419	360,720	372,670	384,864	383,015	373,966	358,513	351,088
Sub-Total Wastewater Expenses	\$510,677	\$528,146	\$546,792	\$564,190	\$581,480	\$599,057	\$603,591	\$599,635	\$590,465	\$589,303
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Wastewater Expenses	\$510,677	\$528,146	\$546,792	\$564,190	\$581,480	\$599,057	\$603,591	\$599,635	\$590,465	\$589,303
REVENUE & INCOME										
Non-Member and Other Revenue	\$5,156	\$5,279	\$5,407	\$5,541	\$5,678	\$5,820	\$5,960	\$6,099	\$6,240	\$6,395
Interest Income	2,707	2,337	3,131	4,222	5,461	8,188	8,587	8,666	8,759	8,823
Rate Stabilization	1,500	2,000	2,000	0	0	0	0	0	0	0
Prior Year Utility Surplus/Deficit Transfer	0	0	0	0	0	0	0	0	0	0
Total Other Revenue	\$9,363	\$9,616	\$10,539	\$9,763	\$11,139	\$14,008	\$14,547	\$14,765	\$15,000	\$15,218
Wastewater Rate Revenue	\$501,314	\$518,530	\$536,253	\$554,427	\$570,341	\$585,049	\$589,044	\$584,870	\$575,466	\$574,086
Rate Revenue Increase	-0.3%	3.4%	3.4%	3.4%	2.9%	2.6%	0.7%	-0.7%	-1.6%	-0.2%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$732	\$764	\$798	\$833	\$868	\$904	\$935	\$963	\$990	\$1,023
Based on water use of 90k gpy (weighted)	\$1,079	\$1,127	\$1,177	\$1,229	\$1,280	\$1,333	\$1,379	\$1,421	\$1,461	\$1,509
WATER UTILITY										
EXPENSES										
Direct Expenses	\$86,220	\$89,113	\$91,622	\$94,309	\$96,963	\$99,690	\$102,391	\$105,378	\$108,345	\$111,394
Indirect Expenses	34,416	35,410	36,445	37,602	38,754	39,956	41,174	42,480	43,771	45,119
Capital Financing (before offsets)	160,043	166,828	174,939	183,301	192,591	203,142	212,405	221,780	231,908	241,799
Sub-Total Water Expenses	\$280,680	\$291,351	\$303,007	\$315,212	\$328,308	\$342,788	\$355,971	\$369,637	\$384,025	\$398,313
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Water Expenses	\$280,680	\$291,351	\$303,007	\$315,212	\$328,308	\$342,788	\$355,971	\$369,637	\$384,025	\$398,313
REVENUE & INCOME										
Non-Member and Other Revenue	\$10,148	\$10,424	\$10,708	\$10,921	\$11,135	\$11,417	\$11,668	\$11,926	\$12,192	\$12,275
Interest Income	2,461	2,379	2,996	3,741	4,776	6,833	7,216	7,596	7,934	8,191
Rate Stabilization	0	0	0	0	0	0	0	0	0	0
Prior Year Utility Surplus/Deficit Transfer	0	0	0	0	0	0	0	0	0	0
Total Other Revenue	\$12,609	\$12,803	\$13,704	\$14,661	\$15,911	\$18,250	\$18,884	\$19,521	\$20,126	\$20,466
Water Rate Revenue	\$268,071	\$278,548	\$289,303	\$300,550	\$312,397	\$324,538	\$337,087	\$350,116	\$363,899	\$377,846
Rate Revenue Increase	3.6%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.8%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$486	\$508	\$530	\$554	\$578	\$604	\$631	\$659	\$688	\$719
Based on water use of 90k gpy (weighted)	\$718	\$749	\$782	\$817	\$853	\$891	\$931	\$972	\$1,015	\$1,060

** Annual household charges are estimated for communities that receive full water and wastewater services from MWRA weighted by the number of households in each of these core communities. Based on community responses to the 2019 MWRA Advisory Board's Annual Water and Sewer Retail Rate Survey.

APPENDIX D



APPENDIX E
FY21 Current Expense Budget - Capital Financing Detail (as of 6/30/20)

	Outstanding as of 6/30/20	Total	Sewer	Water
SRF ¹				
1999E Sewer		391,973	391,973	-
1999E Water	4,803,009	-	-	-
1999F	144,080,000	24,110,017	24,110,017	-
2000E Sewer		3,065,657	3,065,657	-
2000E Water	39,277,603	-	-	-
2001C Water	392,043	137,118	-	137,118
2001D Sewer		40,281	40,281	-
2001D Water	460,108	-	-	-
2002H Sewer		3,148,137	3,148,137	-
2002H Water	57,515,000	1,554,865	-	1,554,865
2002I Sewer		95,412	95,412	-
2002I Water	1,349,568	-	-	-
2003A	295,016	71,351	-	71,351
2003B	328,375	104,667	-	104,667
2003C Sewer		1,347,516	1,347,516	-
2003C Water	24,423,785	971,166	-	971,166
2004C Sewer		537,817	537,817	-
2004C Water	6,605,333	41,285	-	41,285
2004D Sewer		2,689,060	2,689,060	-
2004D Water	39,775,000	693,862	-	693,862
2005C Sewer		415,825	415,825	-
2005C Water	4,092,623	69,103	-	69,103
2005D Sewer		3,035,300	3,035,300	-
2005D Water	44,185,573	797,236	-	797,236
2005E Sewer		24,961	24,961	-
2005E Water	170,508	5,479	-	5,479
2006C Sewer		481,594	481,594	-
2006D Sewer		2,799,187	2,799,187	-
2006D Water	49,015,710	1,598,729	-	1,598,729
2006E Sewer		22,883	22,883	-
2006E Water	214,638	10,281	-	10,281
2007C Sewer		225,160	225,160	-
2007C Water	2,723,983	169,755	-	169,755
2007D Sewer		1,144,554	1,144,554	-
2007E Sewer		2,732,762	2,732,762	-
2007E Water	47,220,449	1,254,442	-	1,254,442
2008G Sewer		382,220	382,220	-
2008G Water	2,934,567	81,760	-	81,760
2009C Sewer		3,826,287	3,826,287	-
2009C Water	64,866,450	1,877,377	-	1,877,377
2009D Sewer		639,592	639,592	-
2009D Water	7,309,663	85,256	-	85,256
2010 D Sewer		1,418,572	1,418,572	-
2010 D Water	32,514,217	1,431,120	-	1,431,120
2011A Sewer		306,745	306,745	-
2011A Water	6,489,483	363,276	-	363,276
2012C Sewer		515,706	515,706	-
2012C Water	7,496,632	254,928	-	254,928
2012D Sewer		2,859,533	2,859,533	-
2012D Water	36,391,198	532,783	-	532,783
2013B Sewer		2,216,110	2,216,110	-
2013B Water	26,936,035	534,084	-	534,084
2014C Sewer		283,581	283,581	-
2014C Water	7,948,113	385,391	-	385,391
2015A Sewer		2,648,318	2,648,318	-
2015A Water	52,665,299	980,138	-	980,138
2015B Sewer		212,648	212,648	-
2015B Water	4,022,586	151,825	-	151,825
2016A Sewer		2,130,054	2,130,054	-
2016A Water	45,886,510	848,335	-	848,335
2017A Sewer		541,926	541,926	-
2017A Water	29,397,376	1,538,258	-	1,538,258
2018E Sewer		1,077,407	1,077,407	-
2018E Water	47,977,448	2,021,140	-	2,021,140
2019D Sewer		2,030,489	2,030,489	-
2019D Water	\$ 52,490,139	1,221,866	-	1,221,866
2020A Sewer		4,440,000	4,440,000	-
2020A Water	\$ 40,148,306	1,222,500	-	1,222,500

APPENDIX E
FY21 Current Expense Budget - Capital Financing Detail (as of 6/30/20)

	Outstanding as of 6/30/20	Total	Sewer	Water
Pool 24 Sewer		3,742,000	3,742,000	-
Pool 24 Water		1,222,500	-	1,222,500
Total SRF Debt	\$ 952,950,055	\$ 97,811,162	\$ 75,579,287	\$ 22,231,874
MWRA Senior Debt				
2002J Refunding	117,680,000	54,836,275	49,352,648	5,483,628
2007B Refunding	647,950,000	34,017,375	28,574,595	5,442,780
2011B New	3,030,000	3,181,500	2,227,050	954,450
2012A New	3,505,000	175,250	87,625	87,625
2013A Refunding	94,655,000	4,600,000	2,576,000	2,024,000
2014D New	57,030,000	4,306,500	2,928,420	1,378,080
2014E Refunding	4,215,000	1,475,250	1,290,844	184,406
2014F Refunding	141,410,000	30,296,700	9,391,977	20,904,723
2016B New	60,770,000	2,994,450	1,497,225	1,497,225
2016C Refunding	675,195,000	32,104,800	16,373,448	15,731,352
2016D Refunding	103,425,000	4,482,250	2,913,463	1,568,788
2017B New	62,815,000	3,140,750	1,570,375	1,570,375
2017C Refunding	237,370,000	24,177,500	10,879,875	13,297,625
2018B New	106,405,000	5,288,350	3,173,010	2,115,340
2018C Refunding	21,900,000	1,095,000	821,250	273,750
2019B New	121,265,000	6,063,250	4,244,275	1,818,975
2019C Refunding	19,190,000	12,519,500	9,014,040	3,505,460
2019E New	50,000,000	1,407,472	703,736	703,736
2019F Refunding	547,750,000	20,189,111	8,075,644	12,113,466
2019G	22,825,000			
FY20 New Money		8,002,997	6,402,398	1,600,599
FY 21 New Money		4,376,624	3,501,299	875,325
Defeasance Assumption		-	-	-
Total Senior	\$ 3,098,385,000	258,730,904	\$ 165,599,196	\$ 93,131,708
Subordinate Debt				
1999B	\$ 46,500,000	\$ 6,086,333	\$ 3,651,800	\$ 2,434,533
2008A Refunding	193,310,000	27,724,281	\$ 24,397,367	\$ 3,326,914
2008C Refunding	54,500,000	8,326,663	\$ 7,993,596	\$ 333,067
2008E Refunding	133,640,000	20,346,451	\$ 18,718,735	\$ 1,627,716
2012E Refunding	56,870,000	4,490,574	\$ 943,021	\$ 3,547,553
2012G Refunding	15,700,000	4,690,442	\$ 4,502,825	\$ 187,618
2014A Refunding	50,000,000	1,750,000	\$ 157,500	\$ 1,592,500
2014B Refunding	43,035,000	19,511,304	\$ 1,756,017	\$ 17,755,287
2018A Refunding	47,530,000	1,663,550	\$ 349,346	\$ 1,314,205
2018D Refunding	50,000,000	1,750,000	\$ 157,500	\$ 1,592,500
Total Subordinate Debt	\$ 691,085,000	96,339,599	\$ 62,627,706	\$ 33,711,892
Total SRF & MWRA Debt Service²	\$ 4,742,420,055	452,881,664	\$ 303,806,190	\$ 149,075,474
Other Capital				
Water Pipeline Commercial Paper	\$ 175,000,000	\$ 5,686,864	-	5,686,864
Current Revenue/Capital ³		\$ 16,200,000	15,390,000	810,000
Capital Lease		\$ 3,217,060	1,932,221	1,284,839
Debt Prepayment ⁴		\$ 3,900,000	713,800	3,186,200
Total Other Capital	\$ 175,000,000	\$ 29,003,924.30	\$ 18,036,021	\$ 10,967,903
Total Capital Financing (before Debt Service Offsets)	\$ 4,917,420,055	481,885,588.35	\$ 321,842,211	\$ 160,043,377
Debt Service Offsets				
Debt Service Assistance				
Bond Redemption				
Total Debt Service Offsets				
Total Capital Financing	\$ 4,917,420,055	481,885,588	\$ 321,842,211	\$ 160,043,377

¹ SRF debt service payments reflect net MWRA obligations after state and federal subsidies.

² Numbers may not add due to rounding.

³ Current Revenue/Capital is revenue used to fund ongoing capital projects.

⁴ Debt Prepayment will be used defeasance of bonds at end of fiscal year.

APPENDIX F

Advisory Boards and Committees

The Advisory Board

The Advisory Board is established by section 23 of the MWRA Enabling Act. The Advisory Board's primary purposes are as follows:

1. To appoints 3 members of the Board of Directors, with staggered 6-year terms.
2. To review and comment on the current expense and capital improvement budgets.
3. To approve expansion of the MWRA's service area, whether permanent or temporary.
4. To make recommendations to the governor and the legislature with respect to matters that affect the Authority.

The Authority's proposed annual current expenses budget and its capital improvement program budget must be submitted to the Advisory Board at least sixty days prior to the adoption of each budget by the Board of Directors. Amendments to the current expenses budget must be submitted to the Advisory Board at least thirty days prior to adoption, except in the event of emergencies. The Authority is required to provide a written response to any reports of the Advisory Board regarding its finances. The Advisory Board has provided the Authority with written comments to both the current expenses and the capital improvement budgets. The Advisory Board's budget for personnel and expenses is included in the Executive Division's budget.

Water Supply Citizens Advisory Committee to MWRA (WSCAC)

Originally formed in 1977 to review a proposed diversion of the Connecticut River for water supply to the metropolitan Boston area, WSCAC represents an unusual approach for engaging citizen participation in water resource policy decisions.

WSCAC advises the MWRA and the Department of Conservation and Recreation on water conservation and watershed protection strategies. The MWRA has implemented leak repair and demand management programs, avoiding the need for river diversion.

WSCAC's current focus is water quality - source protection and management of the watersheds, reservoirs and distribution system.

WSCAC worked with the New England Safe Drinking Water Task Force on the Safe Drinking Water Act reauthorization. WSCAC helped secure passage of state legislation - the Interbasin Transfer Act of 1983, the Water Management Act of 1985, and the Watershed Protection Act of 1992. State officials have tapped WSCAC for other statewide advisory groups.

The Wastewater Advisory Committee (WAC)

The MWRA Board of Directors created WAC in 1990 to offer independent recommendations on wastewater policies and programs. WAC's mission is to be an independent public forum for holistic discussion of wastewater issues. Membership is designed to reflect the knowledge and interest of major affected constituencies: engineering and construction, environmental advocacy, planning, academic research, and business.

WAC's contractual duties are as follows:

1. Provide independent advice to the MWRA Board and staff on wastewater programs and policies directly related to the MWRA
2. Review and comment to the Authority on wastewater reports and proposed documents; offer independent advice on current and proposed wastewater program and policy directions to further MWRA objectives
3. Reflect the knowledge and interest of major affected constituencies, including
 - a. Engineering
 - b. Construction
 - c. Business/industry
 - d. Planning
 - e. Academic research
 - f. Environmental advocacy
4. Advise MWRA on wastewater planning
5. Increase citizen participation and education by providing MWRA with assistance in outreach. Review programs and explain plans & policies to citizens
6. Attend Authority working groups related to wastewater programs and policy, including the Advisory Board and WSCAC
7. Propose to the Authority ways to continue effective and efficient long-term public involvement in wastewater programs.

WAC's focus for 2017-2018 includes:

- Protecting the ratepayer's massive investment in clean water remains one of WAC's primary interests, and it will continue to monitor maintenance as well as progress on the CSO project.
- WAC is interested in the possibilities of further energy efficiency and renewable energy production at all MWRA facilities.
- Other areas of interest:
 - Co-digestion as it expands across New England
 - Marketability of Bay State Fertilizer
 - Climate Change impacts
 - Regulatory changes that might affect MWRA

APPENDIX G

MWRA Capital Improvement Program Overview

In 1984, legislation was enacted to create the Massachusetts Water Resources Authority, an independent agency with the ability to raise its revenues from ratepayers, bond sales and grants. The primary mission was to modernize the area's water and sewer systems and clean up Boston Harbor. Since its establishment, the MWRA has invested over \$8.7 billion to improve the wastewater and waterworks systems serving its 61 customer communities with projected future spending of \$4.1 billion. The system serves 3.0 million people and more than 5,500 businesses.

Since 1985, MWRA has been subject to a Clean Water Act enforcement action to end years of wastewater pollution of Boston Harbor and its tributaries from the old Deer Island and Nut Island treatment plants and combined sewer overflows (CSOs). The enforcement case was initiated by the Conservation Law Foundation in 1983 and taken up by the U.S. Environmental Protection Agency in 1985. The Commonwealth of Massachusetts, the Boston Water and Sewer Commission, the City of Quincy and the Town of Winthrop are also parties to the case.

The Orders of the Court set forth the schedules of activities to be undertaken to achieve compliance with the law. Since 1985, MWRA has complied with 420 milestones which include the completion of extensive new wastewater treatment facilities at Deer Island in Boston and Nut Island in Quincy, a residuals facility in Quincy, and 35 CSO control projects in Boston, Cambridge, Chelsea and Somerville which comprise the long-term CSO control plan, the last of which were completed in December 2015.

As part of compliance with the Court's Orders, MWRA was required to file monthly compliance and progress reports on its ongoing activities through December 15, 2000 and quarterly compliance and progress reports through December 2016. MWRA is currently required to submit bi-annual compliance and progress reports through December 2020.

During the same time, MWRA complied with regulatory mandates to improve waterworks facilities. The mandated waterworks projects included the MetroWest Water Supply Tunnel, the Carroll Water Treatment Plant, and several covered water storage facilities.

The mandated projects account for most of the Capital Improvement Program (CIP) spending. The five initiatives below account for over \$6.0 billion or nearly 70% of life spending to date:

- Boston Harbor Project - \$3.8 billion
- Combined Sewer Overflow - \$913 million
- MetroWest Tunnel - \$697 million
- Carroll Water Treatment Plant - \$424 million
- Covered Storage Facilities - \$239 million

As the MWRA reaches maturity as an agency, the infrastructure modernization and new facilities construction phase is nearing completion, and, barring new mandates, most of the Authority's future capital budget will be designated for Asset Protection, Water System Redundancy, Pipeline Replacement and Rehabilitation, and Business System Support.

Asset Protection focuses on the preservation of the Authority's building facilities. Water System Redundancy aims to reduce the risks of service interruption and facilitate planned maintenance where major sections of the water delivery system assets can be taken off-line. Long-term water redundancy will be the largest single future CIP initiative with estimated spending in excess of \$1.5 billion over 17 years. Pipeline Replacement and Rehabilitation focuses on the maintenance and replacement of water and sewer pipelines. Business System Support provides for the continuing improvement and modernization of technology and security systems.

The FY21 CIP Budget reaffirms MWRA's commitment to the community financial assistance programs on both the water and wastewater side.

Capital initiatives to date have been primarily funded through long-term borrowings, and the debt service on these outstanding bonds represents a significant and growing portion of the Authority's operating budget. As of June 30, 2020, MWRA's total debt was \$4.9 billion. The Authority's capital finance (including debt service) obligation as a percent of total expenses has increased from 36% in 1990 to 60.9% in the Final FY21 Current Expense Budget.

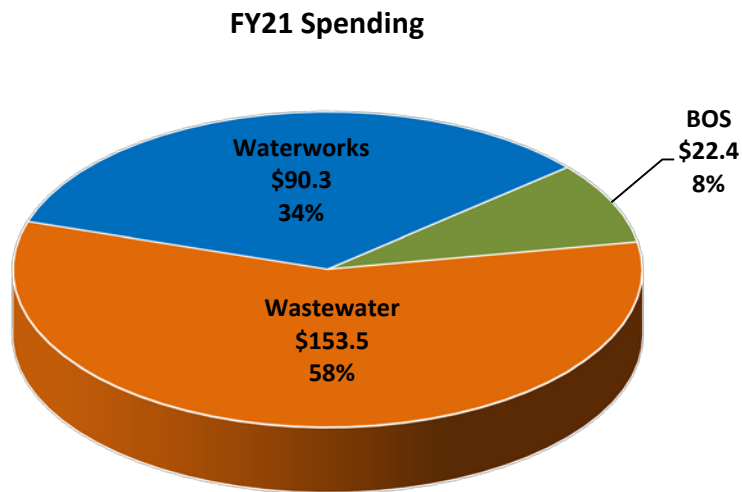
The MWRA's credit ratings of Aa1 from Moody's, AA+ from S&P, and AA+ from Fitch, reflect strong management of financial performance, application of operating surpluses to early debt defeasance, satisfactory debt service coverage ratios, well maintained facilities, comprehensive long-term planning of both operating and capital needs, and the strong credit quality of its member service communities.

To arrive at the FY21 CIP, the Authority identified the needs of the capital programs taking into account the recommendations of the Master Plan. The long-term strategy for capital work is identified in the Authority's Master Plan which was published in 2006, updated in 2013, and in 2018. The Master Plan serves as a road map for inclusion of projects in the CIP in every budget cycle.

The FY21 CIP represents an update to the FY20 CIP approved by the MWRA Board in June 2019. The spending projections are the result of prioritizing the projects, establishing realistic estimates based on the latest information, striking a balance between maintenance and infrastructure improvements, and ensuring that there is adequate support for MWRA's core operations to meet all regulatory operating permit requirements.

FY21 Spending

The FY21 Final Capital Improvement Program projects \$266.2 million spending for FY21, of which \$153.5 million supports Wastewater System Improvements, \$90.3 million supports Waterworks System Improvements, and \$22.4 million is for Business and Operations Support. Capital spending continues to target asset protection to preserve the integrity of the Authorities operating assets and the initial funding in preparation for the next major redundancy initiative.



FY21 spending includes \$65.2 million for community assistance programs, which are a combination of loan and partial grant programs, with net expenditures of \$32.0 million for the local Infiltration/Inflow Program and net expenditures of \$33.2 million for the Local Water Pipeline Program. In response to the COVID-19 pandemic and in an effort to ease financial hardship, member communities are able to defer loan repayments due in FY21 and FY22 which will provide some cash flow relief and improve financial flexibility.

The table below lists project contracts with spending greater than \$5.0 million in FY21 and totals \$127.4 million or 47.9% of projected spending for the year. When local community assistance programs are excluded, projected spending with spending greater than \$5.0 million drops to \$81.7 million or 30.7% of projected FY21 spending.

Project	Contract	Projected FY21 Expenditures \$s in millions
Corrosion & Odor Control	NI Odor Ctrl HVAC Imp Constr Ph 2	\$20.0
Facility Asset Protection	Chelsea Creek Upgrades - Construction	\$17.7
Local Water System Assistance Program	LWSAP Phase 3 Distributions	\$16.0
Facility Asset Protection	Prison Point Rehab - Construction	\$15.7
DI Treatment Plant Asset Protection	Clarifier Rehab Phase 2 - Construction	\$14.5
Local Water System Assistance Program	Local Water System Assistance Loans	\$11.2
I/I Local Financial Assistance	Phase X Grants	\$7.5
SEH Redundancy & Storage	Redundancy Pipeline Sect 111 - Constr 3	\$7.3
DI Treatment Plant Asset Protection	Gravity Thickener Rehab	\$6.6
I/I Local Financial Assistance	Phase XI Grants	\$6.0
Local Water System Assistance Program	Lead Service Line Replace Loans	\$5.0
	Total Contracts > \$5.0 million	\$127.4
	% of FY21 Spending	47.9%
	Excluding Community Loan Programs	\$81.7
	% of FY21 Spending	30.7%
	Total Projected FY21 Spending	\$266.2



Nut Island Odor Control and HVAC Improvements - Construction Phase 2 - \$20.0 million (\$57.6 million total construction cost). Improvements to the Nut Island Headworks odor control, HVAC and energy management systems. These are the long-term improvement projects that arose following the January 2016 fire and the odor control, HVAC and energy management systems evaluation contract completed in February 2017.



Chelsea Creek Headworks Upgrade Construction - \$17.7 million (\$83.3 million total construction cost). This major rehabilitation project includes replacement/upgrade to the screens, grit collection system, grit and handling systems, odor control systems, HVAC, mechanical, plumbing and instrumentation. Solids handling systems are being automated and the building's egress and fire suppressions systems are also being upgraded.

Prison Point Rehabilitation Construction - \$15.7 million (\$41.8 million total construction cost). This rehabilitation will include upgrades to the facility including replacement of diesel pump engines, dry weather screens, wet weather screens, sluice gates, chemical tanks, updating of other facility equipment including electrical distribution and chemical disinfection systems, and repair/replacement of miscellaneous equipment. Improvement/installation of systems as appropriate for energy efficiencies, security, and fire alarm will also be included.



Southern Extra High Redundancy Section 111 Phase 3 Construction - \$7.3 million (\$20.4 million total construction cost). This is a redundancy project for MWRA's Southern Extra High service area. This project will provide redundancy to Sections 77 and 88 serving Boston, Norwood, Stoughton, and Dedham-Westwood through construction of a redundant pipeline. Phase 1 was substantially complete in September 2018. Phase 2 and Phase 3 began in October 2017 and August 2018, respectively.

Deer Island Wastewater Treatment Plant Asset Protection and Residuals:

Clarifier Rehabilitation Phase 2 Construction - \$14.5 million (\$137.2 million total construction cost). This project will rehabilitate the sludge removal system in the primary tanks and the aeration/recirculation systems in the secondary tanks. The influent gates, effluent launders and aeration systems, and concrete corrosion in primary clarifiers will also be addressed and repaired.





Gravity Thickener Rehabilitation - \$6.6 million (\$19.9 million total construction cost). This project involves installing catwalks around the perimeter of several tanks, removing concrete blocks in the effluent channels, and modifying the sludge thickener roofing to improve staff access and operating efficiency.

FY21 New Projects

The FY21 Draft Final CIP adds \$55.0 million in new projects of which Waterworks projects total \$50.3 million and Wastewater projects total \$4.7 million. Most of the projected spending is beyond FY23 at \$47.8 million. Projected new project spending over the FY19-23 timespan is \$7.2 million.

\$s millions			
Program	Total Contract Amount	FY19-23 Expenditures	Expenditures Beyond FY23
Total Waterworks Projects	\$ 50.3	\$ 3.3	\$ 47.0
Total Wastewater Projects	\$ 4.7	\$ 3.9	\$ 0.8
Total Projects	\$ 55.0	\$ 7.2	\$ 47.8

The top three new Waterworks projects include the Phase 2 painting of Bellevue, Park Circle and Walnut Hill Water Tanks at \$14.0 million, Cosgrove Tunnel Rehabilitation Design at \$10.0 million, and Beacon Street Line Rehabilitation at \$6.9 million. The largest new Wastewater project is a new roof at Deer Island with an estimated cost of \$2.0 million.

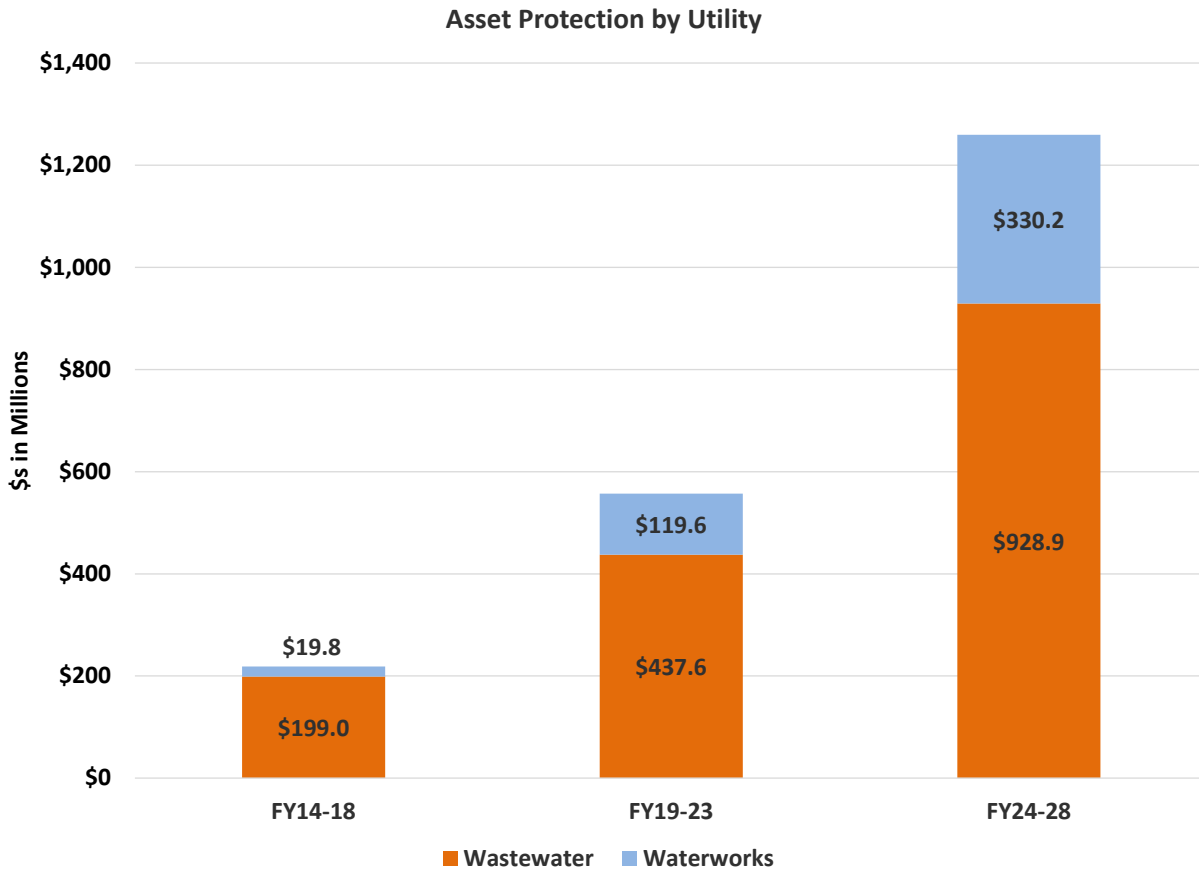
Asset Protection and Water System Redundancy

Asset Protection accounts for the largest share of capital expenditures for the FY19-23 period. The FY21 CIP includes \$570.5 million for asset protection initiatives, representing over 54% of total MWRA spending. Wastewater and Waterworks Asset Protection are \$437.6 million and \$119.6 million, respectively. Deer Island Treatment Plant Asset Protection alone accounts for \$193.0 million in spending. Spending for water system redundancy projects total \$206.8 million in the same FY19-23 period, accounting for 20% of total spending.

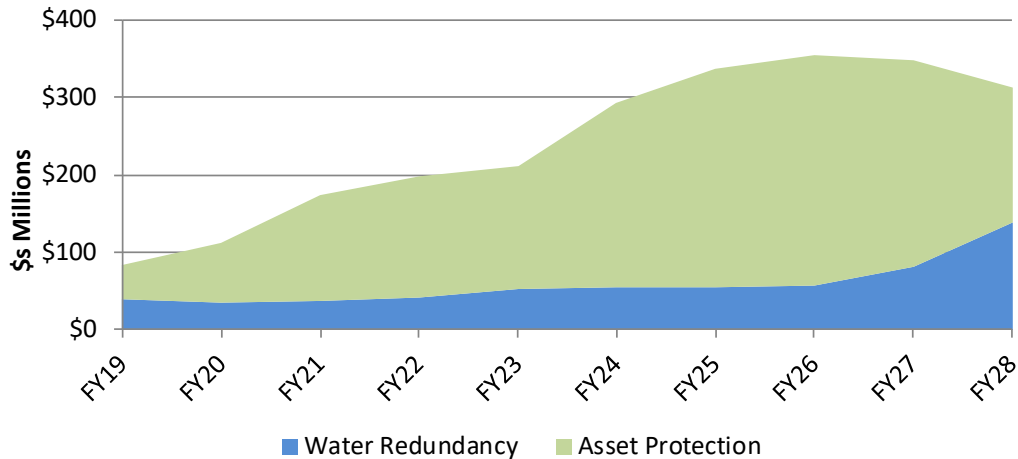
Changing nature of the CIP by Category

Project Category	Total Contract	FY19-23	FY24-28
Asset Protection	\$3,069.3	\$570.5	\$1,259.2
Water Redundancy	\$3,108.3	\$206.8	\$386.6
CSO	\$887.8	\$10.0	\$0.1
Other	\$1,471.8	\$267.9	\$213.3
Total	\$8,537.3	\$1,055.2	\$1,859.1
Asset Protection	36.0%	54.1%	67.7%
Water Redundancy	36.4%	19.6%	20.8%
CSO	10.4%	1.0%	0.0%
Other	17.2%	25.4%	11.5%
Total	100.0%	100.0%	100.0%

In terms of utility spending, wastewater asset protection accounts for nearly 42% of the FY19-23 projected spending at \$437.6 million of which \$193.0 million is designated for the Deer Island Wastewater Treatment Plant and \$244.6 million for headworks, pump stations, residuals facility, and pipelines. The \$120.0 million targeted for waterworks asset protection and includes \$54.3 million for water pipelines.



As illustrated in the following graph, the next two waves of spending over the FY19-23 period and the FY24-28 period will be for asset protection and water redundancy. This reflects MWRA’s commitment to maintaining its physical plant and addressing the need for water system redundancy in some critical service areas. Total asset protection spending for FY19-23 is projected at \$570.5 million or 54.1% of projected spending. Similarly, water redundancy spending for FY19-23 is projected at \$206.8 million or 19.6% of projected FY19-23 spending. For the FY24-28 period, asset protection expenditures increased to \$1.2 billion or 67.7% of period spending. Similarly, redundancy expenditures increased to \$386.6 million, 20.8% of period spending.



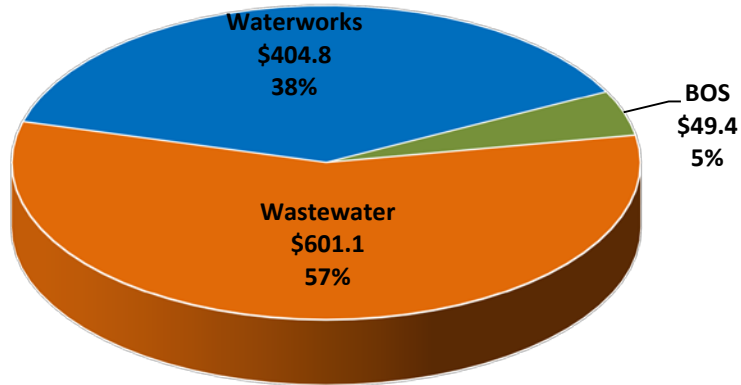
FY21 CIP Future Expenditures

The FY21 CIP contains future spending (beyond FY19) estimated at \$4.1 billion. The table below represents the projected spending by the major project categories:

	Future Spending Beyond FY19	FY19	FY20	FY21	FY22	FY23	Total FY19-23	Beyond 23
Wastewater System Improvements	\$1,698.3	\$74.8	\$96.6	\$153.5	\$143.4	\$132.8	\$601.1	\$1,172.0
Interception & Pumping	612.9	23.1	34.9	74.2	57.8	31.1	221.2	414.8
Treatment	810.1	10.0	17.3	38.5	56.7	78.5	201.1	619.1
Residuals	103.4	0.8	10.9	3.7	0.5	0.8	16.8	87.5
CSO	8.9	1.2	2.0	5.0	1.7	0.1	10.0	0.1
Other Wastewater	162.9	39.6	31.5	32.0	26.6	22.3	152.0	50.5
Waterworks System Improvements	\$2,352.8	\$65.6	\$53.6	\$90.3	\$98.3	\$96.9	\$404.8	\$2,013.6
Drinking Water Quality Improvement	57.3	0.8	1.5	2.8	8.1	3.2	16.4	41.7
Transmission	1,785.8	9.9	13.5	25.1	39.0	42.9	130.4	1,665.4
Distribution & Pumping	538.8	36.6	26.2	24.6	31.7	44.4	163.4	412.0
Other Waterworks	(29.2)	18.4	12.5	37.9	19.5	6.4	94.6	(105.5)
Business & Operations Support	69.6	2.4	8.0	22.4	10.2	6.3	49.4	22.6
Total MWRA	\$4,120.6	\$142.9	\$158.3	\$266.2	\$251.9	\$236.0	\$1,055.2	\$3,208.3

Spending over the FY19-23 period totals \$1,055.2 million with Wastewater projects accounting for \$601.1 million of total period spending or 57% and Waterworks planned spending following at \$404.8 million or 38%. Total Projected Expenditures for the Final FY19-23 Cap period by category, including community loan and grant programs, is illustrated in the pie chart below:

FY19-23 Spending



It is important to emphasize that the majority of spending within the Wastewater and Waterworks programs is concentrated in several larger projects with significant spending in the FY19-23 timeframe. Project contracts with expenditures greater than \$15.0 million for the FY19-23 Cap total \$631.7 million and are listed in the table below. This total includes local community assistance programs, and accounts for nearly 60% of total spending. When loan program funding is excluded, top spending projects greater than \$15.0 million drops to \$318.6 million or 30.6% of FY19-23 spending. The FY19-23 timeframe is dominated by several large projects with the top five construction projects totaling \$246.8 million and accounting for 23.4% of FY19-23 spending. Large construction initiatives include the Clarifier Rehabilitation at Deer Island, Nut Island Odor Control & HVAC Improvements, and Chelsea Creek Upgrades at \$75.3 million (total cost \$137.2 million), \$59.9 million (total cost \$59.9 million, and \$51.4 million (total cost \$83.4 million), respectively between FY19-23.

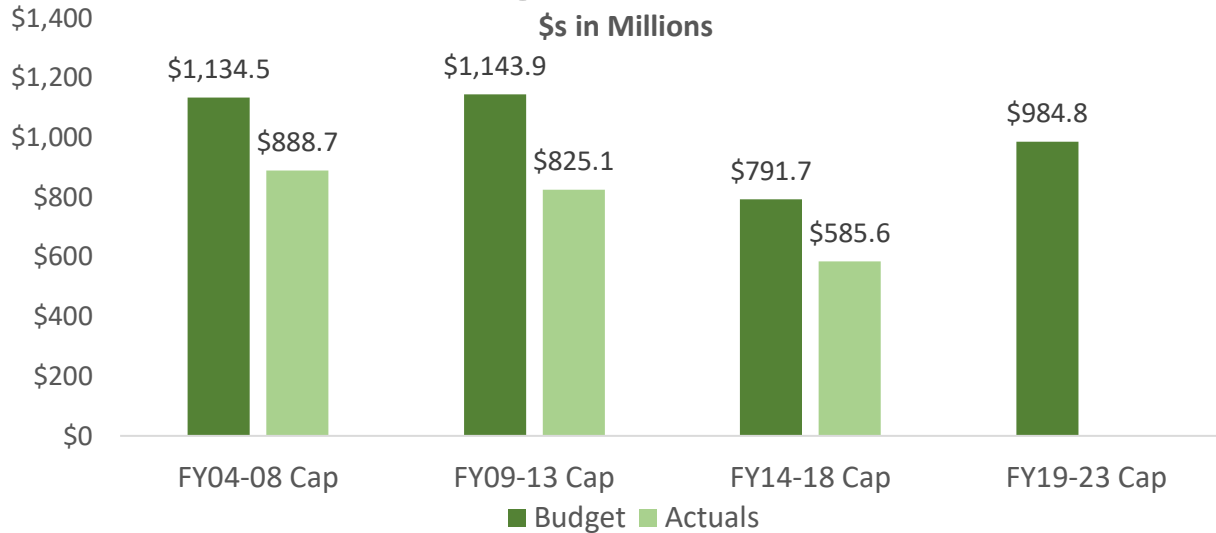
Project	Contract	Projected FY19-23 Expenditures \$s in millions
Local Water Pipeline Improvement	LWSAP Phase 3 Distributions	\$85.6
DI Treatment Plant Asset Protection	Clarifier Rehab Phase 2 - Construction	\$75.3
Local Water Pipeline Improvement	Local Water System Assistance Loans	\$59.9
Corrosion & Odor Control	NI Odor Ctrl HVAC Imp Constr Ph 2	\$57.6
Facility Asset Protection	Chelsea Creek Upgrades - Construction	\$51.8
I/I Local Financial Assistance	Phase XI Grants	\$46.5
Facility Asset Protection	Prison Point Rehab - Construction	\$41.8
I/I Local Financial Assistance	Phase X Grants	\$33.2
I/I Local Financial Assistance	Phase XII Grants	\$26.1
I/I Local Financial Assistance	Phase IX Grants	\$23.6
Local Water Pipeline Improvement	Lead Service Line Replace Loans	\$22.7
SEH Redundancy and Storage	Redundancy Pipeline Sect 111 - Constr 3	\$20.4
NIH Redundancy & Storage	Section 89 & 29 Redun Const. Phase 2	\$19.8
DI Treatment Plant Asset Protection	Gravity Thickener Rehab	\$19.5
NIH Redundancy & Storage	Section 89 & 29 Repl - Constr	\$16.7
DI Treatment Plant Asset Protection	Fire Alarm System Replacement - Construc	\$15.8
I/I Local Financial Assistance	Phase XI Loans	\$15.5
Total Contracts > \$15.0 million		\$631.7
% of FY19-23 Spending		59.9%
Excluding Community Loan Programs		\$318.6
% of FY21 Spending		30.2%
Total Projected FY19-23 Spending		\$1,055.2

FY19-23 Five-Year Spending Cap

The concept of a five-year spending Cap was first introduced at the Advisory Board's recommendation in 2003 for the FY04-08 period. The Cap represents targeted spending levels to ensure adequate capital program funding and to serve as a guide for long-term planning estimates and community assessments. The graph below describes the history of the past three five-year caps and the Final FY19-23 Cap, both in terms of the Cap budget levels and actual spending.

The most recent Cap (FY19-23) of \$984.8 million is significantly higher than the prior Cap (FY14-18) of \$791.7 million for a variety of reasons including increased spending on asset protection and the initial phases of the long-term redundancy program.

Cap Spending Budget and Actual



Today, the Authority is better positioned to reinvest in rehabilitation and replacement of aging facilities as result of conservative fiscal management which includes judicious control of expenses, and the fact that MWRA has implemented the practice of utilizing available funds resulting from positive current expense budget variances for defeasances resulting in the reduction of future fiscal years debt service expense. MWRA projects an overall reduction in outstanding principal of debt during the FY19-23 cap period.

It is important to note that the spending on capital programs is largely determined by the nature, magnitude, and number of upcoming projects. In the prior five-year Caps, specifically FY04-08 and FY09-13, the majority of spending was driven by court-mandated projects and building new facilities. During the FY14-18 Cap, the Authority reached substantial completion on its court-mandated CSO Control Plan at an approximate total cost of \$912.0 million. The Authority's main focus going forward is asset protection and water system redundancy. The FY21 Final CIP includes approximately \$2.0 billion in future expenditures for asset protection and continues to fund the critical redundancy for the Metropolitan Tunnels System at approximately \$1.5 billion over a seventeen-year period. However, the FY19-23 period includes only \$23.9 million related to the that tunnel project.

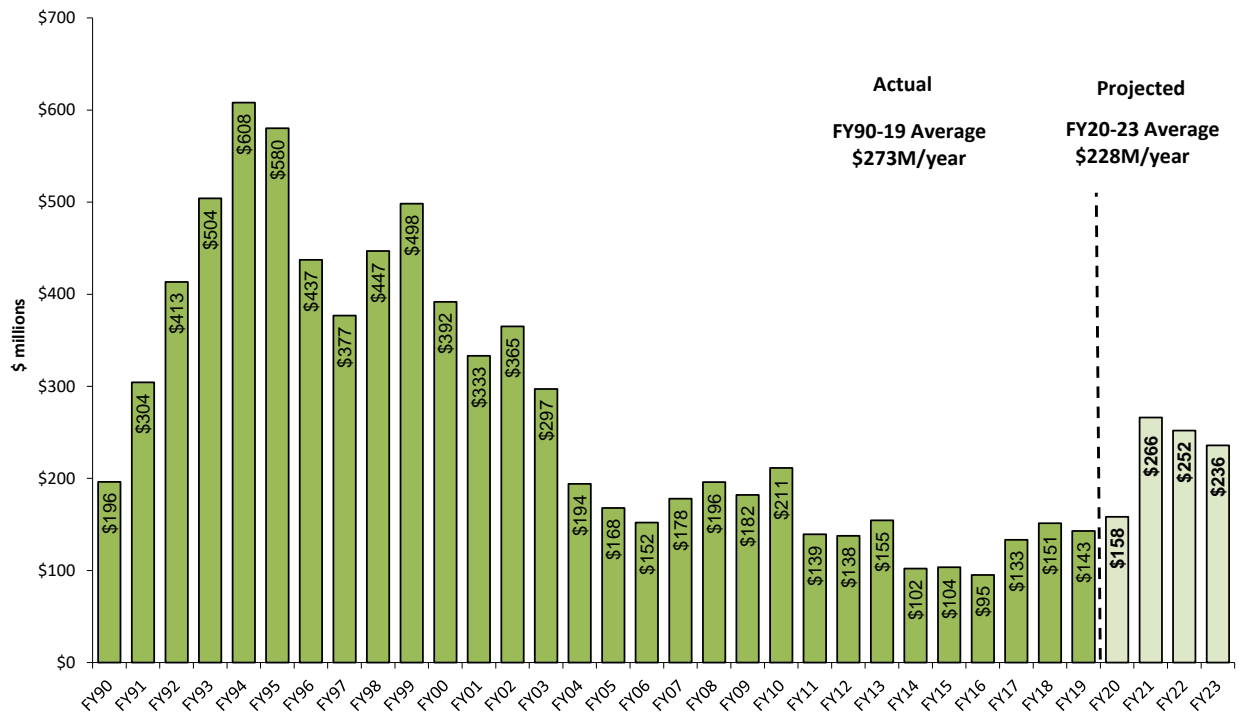
The FY21 Final FY19-23 cap cash flow totals \$905.1 million, \$79.7 million under the approved Cap of \$984.8 million. Annual cash flows for the proposed Cap period are shown below in millions:

FY21 Final		FY19	FY20	FY21	FY22	FY23	Total FY19-23
	Projected Expenditures	\$142.9	\$158.3	\$266.2	\$251.9	\$236.0	\$1,055.2
	I/I Program	(39.6)	(31.5)	(32.0)	(26.6)	(22.3)	(152.0)
	Water Loan Program	(13.8)	(5.8)	(33.2)	(9.7)	8.3	(54.2)
	MWRA Spending	\$89.4	\$121.0	\$201.0	\$215.7	\$222.0	\$849.1
	Contingency	0.0	0.0	12.1	14.2	15.1	41.5
	Inflation on Unawarded Construction	0.0	0.0	1.4	5.2	8.1	14.6
Chicopee Valley Aqueduct Projects	(0.0)	0.0	0.0	0.0	0.0	(0.0)	
FY21 Final FY19-23 Spending	\$89.4	\$121.0	\$214.5	\$235.0	\$245.2	\$905.1	

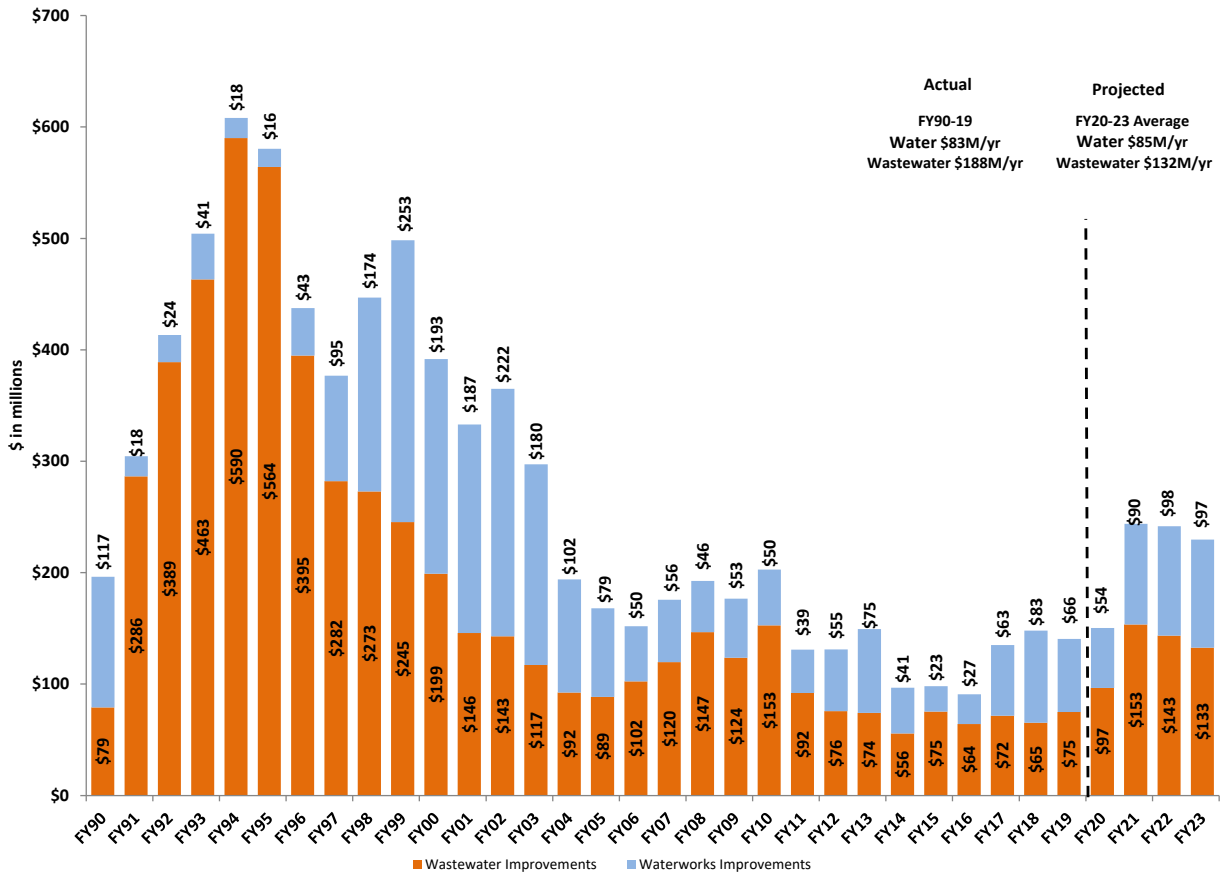
The format of the Cap table has changed to account separately for MWRA spending, which excludes the local I/I grant and loan program and the local water pipeline loan spending which are both outside of MWRA's control. As in past Caps, contingency for each fiscal year is incorporated into the CIP to fund 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.

Historical and Projected Spending Thru 2028

The following two charts below capture the historical CIP spending through FY19 and projects spending through FY23 based on the FY21 CIP both overall at the MWRA level and by utility. Average total annual CIP spending through FY19 was \$273 million. Average annual CIP spending for the proposed FY20-23 is projected to be \$228 million. Average annual CIP spending through FY19 was \$83 million for Waterworks and \$188 million for Wastewater. Average annual CIP spending for the proposed FY20-23 is projected to be \$85 million for Waterworks and \$132 million for Wastewater.



Total Annual CIP Spending
By Utility



The FY21 Final CIP includes approximately \$2.0 billion in future expenditures for asset protection and \$1.9 million for redundancy, including \$1.5 billion for the critical redundancy of the Metropolitan Tunnels System to be completed over a seventeen-year period. The initial contract for Program Support Services began in April 2019 and Preliminary Design and MEPA Review is expected to commence in May 2020.

	Total FY19-23	Total FY24-28
Wastewater System Improvements	\$601.1	\$1,044.7
Interception & Pumping	221.2	356.4
Treatment	201.1	550.0
Residuals	16.8	30.9
CSO	10.0	0.1
Other Wastewater	152.0	107.3
Waterworks System Improvements	\$404.8	\$791.8
Drinking Water Quality Improvements	16.4	13.5
Transmission	130.4	365.3
Distribution & Pumping	163.4	349.7
Other Waterworks	94.6	63.3
Business & Operations Support	49.4	22.6
Total MWRA	\$1,055.2	\$1,859.1

The table to the left depicts CIP projected spending for the FY19-23 period and FY24-28 period by major program categories for Wastewater Systems Improvements, Waterworks System Improvements and Business and Operations Support. Spending during the FY19-23 timeframe is planned to be \$1.1 billion. Wastewater System's \$601.1 million in spending is led by Deer Island Asset Protection (\$193.0 million), Facility Asset Protection (\$144.3 million), and Corrosion & Odor Control (\$62.1 million) which combine to account for over 81% of Division expenditures. Similarly, Waterworks Division FY19-

23 spending of \$404.8 million includes these major spenders: the Metro Redundancy Interim Improvement (\$65.9 million), NIH Redundancy & Storage (\$45.6 million), and Southern Extra High Redundancy & Storage (\$38.5 million) which combine for over 37% of Division spending. Additionally, Wastewater and Waterworks spending include local community spending of \$152.0 million for the I/I loan and grant program and \$54.2 million for the water pipeline loan program.

FY24-28 spending of nearly \$1.9 billion is dominated by asset protection projects and water redundancy initiatives totaling \$1.3 billion and \$386.6 million, respectively, accounting for 88.5% of planned expenditures. Top Wastewater spenders include Deer Island Asset Protection \$540.9 million and Facility Asset Protection \$285.8 million. Top Water Division spenders include Metropolitan Tunnel Redundancy (\$197 million) and Metro Redundancy Interim Improvement (\$95 million). The Metropolitan Tunnel Redundancy project is expected to drive Beyond FY28 spending with planned expenditures of \$1.3 billion. Redundancy project spending accelerates in the FY24-28 window.

Community Loan Programs

The MWRA offers its water and wastewater communities loan and grant opportunities for infrastructure preservation. Community loans are interest-free and repaid to MWRA over a 5-year or a 10-year period. On the water side, the program's goal is to improve local water system pipeline conditions to help maintain high water quality distribution from MWRA's treatment plant through local pipelines to customers' taps. The water loan program was established in 1998 and over 546 miles of pipeline have been improved. Similarly, on the wastewater side, the local financial assistance program provides MWRA sewer communities funding to perform local infiltration and inflow "I/I" reduction and sewer rehabilitation. The I/I program was established in 1993 and funds are currently approved for distribution through Fiscal Year 2025. Unlike the water loan program, the I/I program is a partial grant program.

Over the FY19-23 timeframe \$152.0 million in funding is projected to be distributed to MWRA wastewater communities and \$54.2 million is projected to be distributed to MWRA water communities. In response to the Covid pandemic and to provide some financial relief to member communities, the MWRA allowed for the deferral of I/I and water loan repayments in FY21 and FY22. Deferred payments will be amortized over a five-year period.

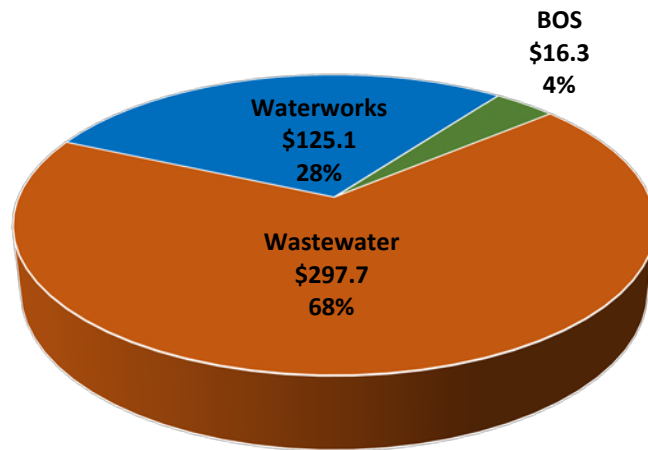
	FY19	FY20	FY21	FY22	FY23	FY19-23
I/I Financial Assistance (Net of repayments)	\$39.6	\$31.5	\$32.0	\$26.6	\$22.3	\$152.0
Local Water System Assistance (Net of Repayments)	\$13.8	\$5.8	\$33.2	\$9.7	(\$8.3)	\$54.2

Major Planned Contract Awards for FY21:

In Fiscal Year 2021, 74 contracts totaling \$439.1 million are projected to be awarded. The largest ten projected contract awards total \$312.1 million and account for 71.1% of expected awards and are presented in the following table.

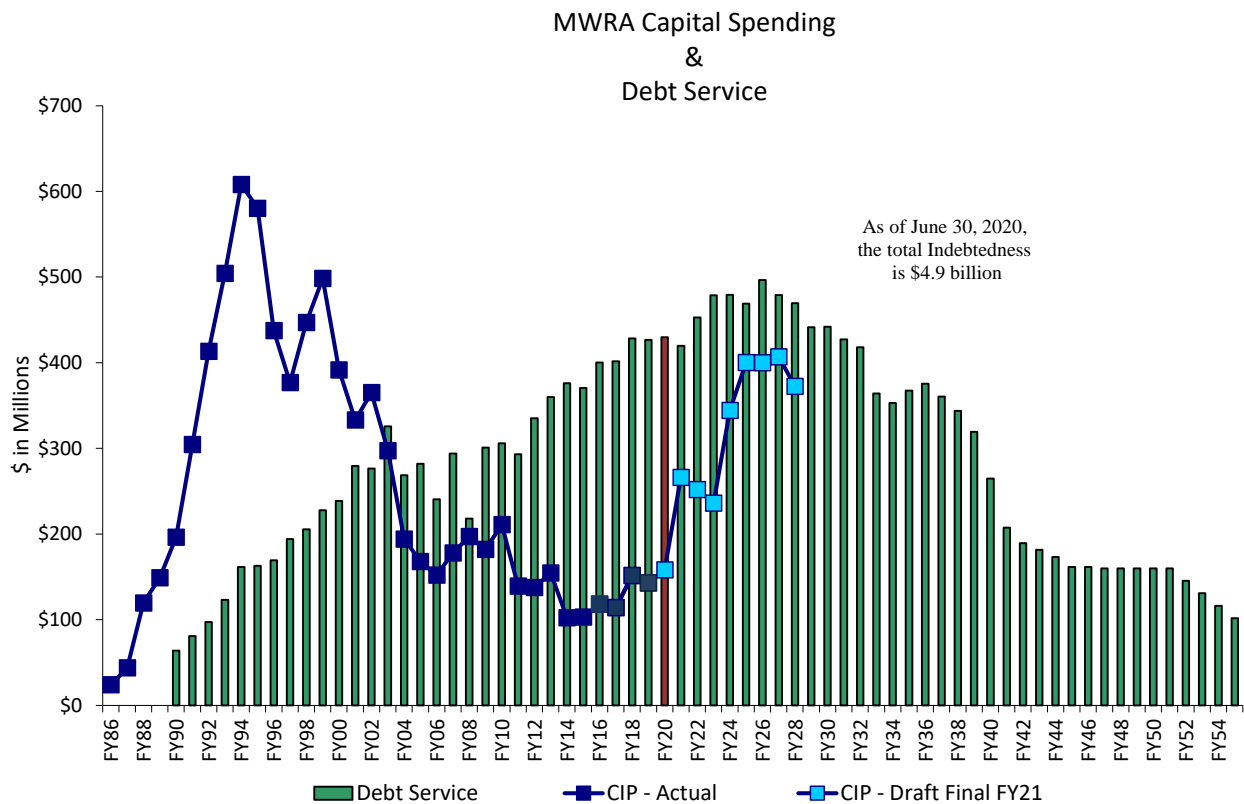
Project	Subphase	Notice to Proceed	Total Contract Amount \$s in Millions
DI Treatment Plant Asset Protection	Clarifier Rehabilitation Phase 2 - Construction	Sep-20	\$137.2
Facility Asset Protection	Prison Point Rehab - Construction	Sep-20	\$41.8
DI Treatment Plant Asset Protection	Fire Alarm System Replacement - Construction	Jan-21	\$28.8
Facility Asset Protection	Ward St & Columbus Park Headworks Des/CA	Jul-20	\$22.0
NIH Redundancy & Storage	Section 89 & 29 Repl - Construction	Jul-20	\$21.3
New Connecting Mains-Shaft 7	CP3-Section 23,24,47, Rehabilitation	Sep-20	\$14.7
Metro Redundancy Interim Improvements	WASM 3 CP-1	Jul-20	\$13.0
Central Monitoring System	CWTP SCADA Upgrade Construction	Dec-20	\$13.0
DI Treatment Plant Asset Protection	MCC & Switchgear Replace Construction	Sep-20	\$11.2
Cathodic Protection Of Distribution Mains	Cathodic Protection Metropolitan System Des/CA	Jan-21	\$9.2
Top 10 Contracts			\$312.1
% of Total Planned Awards			71.1%
74 Contract Awards Planned			\$439.1

Of the 74 planned awards, 29 are Wastewater totaling \$297.7 million, followed by 34 Waterworks awards for \$125.1 million and finally 11 Business and Operations & Support for \$16.3 million.



MWRA Capital Improvement Spending and Debt Service

As of June 30, 2020, MWRA’s total debt is \$4.9 billion, which is \$156.6 million less than the MWRA’s total debt as of June 30, 2019. While total outstanding debt is decreasing, debt service obligations continue to rise and are projected to increase in coming years.



APPENDIX H

Water Supply Protection Trust

Code	Line Item	FY20 Final	FY21 Final	Change	% Change
AA	Personnel	\$ 10,924,239	\$ 10,776,725	\$ (147,514)	-1.4%
BB	Employee Expenses	\$ 20,000	\$ 20,000	\$ -	0.0%
CC	Contracted Services	\$ 50,000	\$ 50,000	\$ -	0.0%
DD	Pensions/Insurance	\$ 4,117,361	\$ 4,152,413	\$ 35,052	0.9%
EE	Admin Expenses	\$ 130,000	\$ 130,000	\$ -	0.0%
FF	Facility Operational Supplies	\$ 228,000	\$ 225,000	\$ (3,000)	-1.3%
GG	Energy Costs	\$ 295,000	\$ 325,000	\$ 30,000	10.2%
HH	Consultant Contracts	\$ 355,000	\$ 400,000	\$ 45,000	12.7%
JJ	Operational Services	\$ 45,000	\$ 35,000	\$ (10,000)	-22.2%
KK	Equipment	\$ 540,000	\$ 1,010,000	\$ 470,000	87.0%
LL	Leases, Rentals	\$ 133,000	\$ 250,000	\$ 117,000	88.0%
NN	Construction Improvements	\$ 2,230,000	\$ 1,313,000	\$ (917,000)	-41.1%
PP	Grants to Public Entities	\$ -	\$ 100,000	\$ 100,000	100.0%
TT	Specials Payments	\$ 130,000	\$ 130,000	\$ -	0.0%
UU	IT Expenses	\$ 211,000	\$ 215,000	\$ 4,000	1.9%
	Total Expenses	\$ 19,408,600	\$ 19,132,138	\$ (276,462)	-1.4%

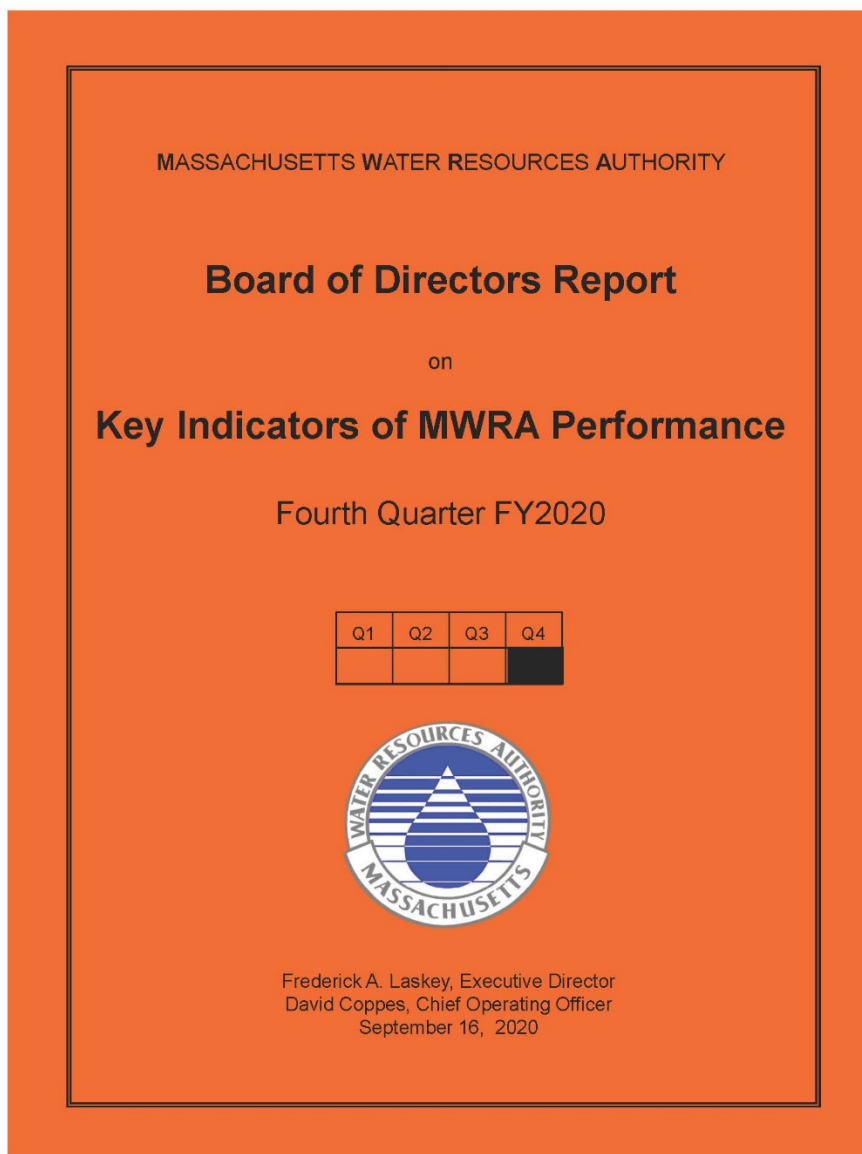
6995	Hydro + Transmission	\$ 300,000	\$ 450,000	\$ 150,000	50.0%
4500	Forestry	\$ 500,000	\$ 500,000	\$ -	0.0%
3148	Fishing & Recreation	\$ 225,000	\$ 210,000	\$ (15,000)	-6.7%
6900	Miscellaneous	\$ 50,000	\$ 50,000	\$ -	0.0%
	Total Revenue	\$ 1,075,000	\$ 1,210,000	\$ 135,000	12.6%

	Total Net Operating Budget	\$ 18,333,600	\$ 17,922,138	\$ (411,462)	-2.2%
	PILOT net of Fay School and Southboro rec use fee	\$ 8,500,000	\$ 8,500,000	\$ -	0.0%
	Grand Total to Budget in Indirect Expense Section	\$ 26,833,600	\$ 26,422,138	\$ (411,462)	-1.5%

Appendix I

Performance Indicators

The performance indicator reports (published by MWRA as the Orange Notebook) captures a variety of parameters regarding performance of each major functional area of the Authority, on a quarterly basis. A snapshot of the latest (Quarter 4 of FY2020) report cover page and table of contents are included below. The detailed reports can be found at <http://www.mwra.com/quarterly/orangenotebook/orangenotebook.htm>.



**Board of Directors Report on Key Indicators of MWRA Performance
Fourth Quarter FY20**

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

Frederick A. Laskey, Executive Director
David Coppes, Chief Operating Officer
September 16, 2020

APPENDIX J

GLOSSARY OF FINANCIAL AND OPERATING TERMS

8M permit: Permission granted by MWRA to persons who wish to construct property improvements on land either adjoining or overlapping MWRA property interests. Permission may be conditioned on various operational and/or engineering concerns.

Accrued Costs: Adjustments to paid expenditures to account for materials or services received but for which payment has not yet been made.

Activated Sludge: The sludge that results when primary effluent is mixed with bacteria-laden sludge and then agitated and aerated to promote biological treatment.

Advanced Waste Treatment: Wastewater treatment beyond the secondary or biological stage that includes the removal of nutrients such as phosphorus and nitrogen and the removal of a higher percentage of suspended solids and organic matter than primary treatment.

Advisory Board: The agency that represents the interests of MWRA's 61 user communities to the Board of Directors in an advisory capacity in accordance with the provisions of MWRA's Enabling Act. The Advisory Board elects three members of the Board of Directors, reviews and comments on MWRA's CIP and CEB, and approves the addition of new communities to the wastewater and water systems.

Aerobic: In the presence of free oxygen.

Anaerobic: Life or processes such as bacteria that digest sludge that require, or are not destroyed by, the absence of free oxygen.

AOC: Assimilable Organic Carbon - One measure of the "food" available to bacteria within a water system. More complex carbon compounds can become assimilable when oxidized by strong disinfectants.

ARRA: American Recovery and Reinvestment Act of 2009 – principal forgiveness loans distributed based on the Department of Environmental Protection's Intended Use Plan.

Ash: The inert material remaining after the combustion of wastewater sludge. Ash is either wet or dry depending on combustion system design.

Audit: An independent examination of the financial books and records of the organization. Typically, audit refers to the year-end examination and preparation of audited financial statements performed by an outside accounting firm hired under contract.

Bacteria: One-celled microscopic organisms commonly found in the environment. Bacteria can be harmful, such as pathogens, or helpful and perform a variety of biological treatment processes.

BDOC: Biologically Degradable Organic Carbon - Another, more precise, measure of the “food” available to bacteria within a water system.

BGD: Billion gallons per day.

Biofilm: Growth of various bacteria within a water distribution system on the pipe walls. Biofilm growth can contribute to iron corrosion, colored water, poor taste, excessive chlorine demand, and complications with coliform testing.

Blow-off valves: Valves operated during pipeline repair to de-water (drain) a portion of a pipeline.

BOD: Biochemical Oxygen Demand - An indicator of the amount of biodegradable contaminants in wastewater.

Board of Directors: The 11-member governing board of MWRA.

Bond: A general debt obligation. Typically, bonds are issued as a series of bonds of different amounts and interest rates maturing in different years.

Bond Resolution: A document adopted by the Board of Directors that governs MWRA's issuance of revenue bonds and sets forth its obligations to bondholders.

Boston Harbor Project: An extensive plan of activities which MWRA developed and implemented to construct new wastewater treatment facilities in response to a federal court order to comply with the provisions of the U.S. Clean Water Act.

Business Systems Plan (BSP): The strategic planning framework for MWRA’s management information systems. The BSP is updated annually to reflect ongoing business requirements, new opportunities identified by ongoing MWRA strategic planning efforts, technology changes, and user requests.

BWSC: Boston Water and Sewer Commission - The agency responsible for providing water and sewer services to the City of Boston, MWRA’s largest customer.

BWTF: William A. Brutsch Water Treatment Facility – Water treatment plant for the Chicopee Valley Aqueduct communities of Chicopee, South Hadley Fire District #1, and Wilbraham. The facility has a capacity of 24 mgd, and disinfects the water using a combination of UV light and chlorine.

CADD: Computer aided drafting and design.

Capital Improvement Program (CIP): A plan which identifies and estimates the nature, schedule, cost, and financing of long-term assets that MWRA intends to build or acquire during a specific period.

Capital Investment: Development of a facility or other asset that adds to the long-term value of an organization.

Carroll Water Treatment Plant (CWTP): Water treatment facility for waters from Quabbin and Wachusett Reservoirs with capacity of 405 mgd using ozonation as a primary disinfectant and UV as a secondary disinfectant beginning in February 2014.

CCR: Consumer Confidence Report – The 1996 Amendments to the Safe Drinking Water Act required public water suppliers to provide all consumers with an annual Consumer Confidence Report by July 1, 2005. The report includes water quality information and education for the consumer about their publicly supplied drinking water.

CDF: Cosgrove Disinfection Facility

Cathodic Protection: A form of corrosion protection that is particularly effective against galvanic corrosion. Galvanic corrosion occurs when pipe metal is in the presence of other metals while immersed in water. The interaction of these elements causes an electric current to flow away from the pipe, taking electrons with it and pitting the pipe as a result. Cathodic protection reverses the current, thereby stopping the corrosion.

Centrifuge: A machine that uses centrifugal force to separate substances of different densities and remove moisture. MWRA uses centrifuges at the Deer Island Wastewater Treatment Plant to de-water sludge.

CFM: Cubic Feet per Minute - A measure of the quantity of a material flowing through a pipe.

Chloramination: The process of adding chloramine to drinking water. Chloramine, a form of chlorine and ammonia, is used as a residual disinfectant because it lasts longer in the water distribution system than primary disinfectants.

Chloramine: A long lasting residual disinfectant created by combining measured amounts of chlorine and ammonia. Chloramine forms fewer disinfection by-products than chlorine.

Chlorination: The process of adding chlorine to drinking water to inactivate pathogens.

Chlorine: A relatively strong primary disinfectant, effective against bacteria, *giardia*, and viruses, but not *cryptosporidium*. Concerns exist about the health effects of its by-products, some of which are or will be regulated.

Clarifiers: Settling tanks or basins in which wastewater is held for a period of time, during which heavier solids settle to the bottom and lighter materials float to the surface.

Clean Water Act: A law passed by Congress in 1972, and subsequently amended, which sets national standards for pollution reduction, permits discharges from wastewater treatment plants, and promotes achievement of the national goal that all surface waters be "fishable and swimmable."

Cleaning and Lining: Cleaning and cement lining of unlined cast iron water mains to improve hydraulic capacity and extend useful life.

CMMS (Computerized Maintenance Management System): *Maximo* is the computerized maintenance management system which is an essential component of successful asset management. This system is an important tool used in refining the long-term maintenance strategy to ensure proper maintenance and replacement of plant assets.

Co-Digestion Process: Introduction of non-wastewater derived organic waste material into the wastewater anaerobic digestion process. Co-digestion could potentially increase digester gas production which would be utilized for heating and electricity generation at Deer Island.

Coliform bacteria: A group of lactose fermenting bacteria, which while not of direct health concern, are used as a first line indicator of potential problems. See fecal coliform and *E.coli*.

Combined Sewer and Combined Sewer Overflow: While modern systems transport rainwater and sewage from homes and businesses through separate pipes, some older systems like Boston's have "combined" sewers that carry both flows together. During normal conditions flows are delivered to treatment plants. During very heavy rains, these systems become overloaded. Built-in overflows (called combined sewer overflows or "CSOs") must then act as relief points by releasing excess flows into the nearest body of water. This prevents sewage backups into homes and onto area streets, but the discharges can impact water quality.

Comminutor - A machine or process that pulverizes and reduces solids to minute particles.

Commonwealth Debt Service Assistance (DSA): Funds appropriated by the Commonwealth to offset MWRA capital financing expenses.

Community Obligation and Revenue Enhancement (CORE) Fund: A fund established by MWRA's bond resolution that is used to provide insurance against delays by communities in paying charges due to MWRA.

Composting: The process of converting wastewater treatment residuals to a soil-like humus material often used in the horticultural industry. The process involves the aerobic breakdown of the residuals and the addition of sawdust or wood chips.

Corrosion Control: Adjustments to the chemistry of treated water to reduce its ability to dissolve lead, copper, other metals, or form hydrogen sulfide. Corrosion control can include adjustments to pH and alkalinity, as well as the addition of corrosion inhibitors such as phosphates or oxidizers.

Coverage Requirement: Requirement of MWRA's bond resolution which provides that each year, revenue less operating expenses (net revenue) must be more than the amount required for debt service payments on outstanding bonds.

CP (Construction Package): Major construction projects such as the Carroll Water Treatment Plant or the North Dorchester Bay CSO project will group areas of work into individual construction contracts.

Cross-Connection: A point at which potable water piping is connected to a non-potable water source creating an opportunity for the introduction of pollutants into the potable water.

Cryogenic oxygen plant: MWRA operates a cryogenic oxygen-based facility as part of its secondary wastewater treatment program at Deer Island.

Cryptosporidium: A protozoan parasite that can cause severe gastrointestinal disease in healthy individuals, and may be fatal to people with compromised immune systems. Cryptosporidia exist in the environment as hard walled oocysts that are very resistant to chlorination, but can be inactivated by disinfection with ozone or ultraviolet light.

CSO: Combined Sewer Overflow – An overflow point and the discharged flow from a combined sewer system intended to provide hydraulic relief to avoid system flooding and backups during large wet weather events. During large rainstorms, systems can become overloaded, with the excess discharged directly into surface waters. The discharged flow and the discharge location are called CSOs. In the metropolitan Boston area there are approximately 46 active, permitted CSOs that currently discharge into rivers or Boston Harbor.

CSO Facilities: MWRA has six facilities that intercept the flow from CSO pipes. Four of these facilities provide treatment and two provide storage prior to discharge. The CSO facilities have some capacity to store flow and pump it to the Deer Island plant after rainstorms end.

CT: Concentration x Contact Time - A measure of disinfection effectiveness established under the Surface Water Treatment Rule. CT is the product of the concentration of disinfectant [C] and the time it has been in contact with the water [T]. Required CT varies by type of disinfectant, organism, temperature, and pH.

CTG (Combustion Turbine Generator): CTGs are used to generate electricity during planned cable outages, wet weather operations and for participation in price response events.

Current Expense Budget: A financial plan that estimates the revenues and expenses associated with MWRA's operations for a fiscal year.

C-Value: The carrying capacity of a water main for a specified length and pressure drop that is determined by its diameter and resistance to flow. The friction coefficient "C" of the main is often used as a measure of flow resistance. C-values for new pipe are about 120 for water mains that are 6 to 16-inches in diameter, and 130 and 140 for larger diameter mains.

DAF: Dissolved Air Flotation - A process of adding super saturated air into water to cause coagulated solids to rise to the top to be skimmed off. DAF replaces conventional gravity sedimentation (clarification) and is particularly cost-effective for low turbidity waters subject to periodic algae blooms.

DBP: Disinfection By-products - Complex compounds formed by the use of oxidizing agents such as chlorine or ozone in waters containing organic matter.

D/DBP Stage 1: Disinfectants/Disinfection By-products, Stage 1 Rule - Promulgated 11/1998, and effective 1/2002, this rule set DBP limits at 80 parts per billion for Trihalomethanes and 60 parts per billion for Haloacetic Acids, averaging all samples over four quarters.

D/DBP Stage 2: Disinfectants/Disinfection By-products Stage 2 Rule - The rule further regulates the amount of DBPs allowed in water. The 80/60 values set in Stage 1 will now apply to each individual sample location in a "Locational Running Annual Average".

Debt Service: In a given fiscal year, the amount of money necessary to pay interest and principal on outstanding notes and revenue bonds.

Defeasance: The setting aside of cash or securities sufficient to make debt service payments allowing the reduction of the debt amount to the liabilities of a balance sheet and the reduction of the debt service amount to the Current Expense Budget.

DEP: Department of Environmental Protection - The Massachusetts agency that regulates water pollution control, water supplies, and waterways and dispenses federal and state grant funds to support these activities.

Department: A sub-unit of an MWRA division.

Department of Conservation and Recreation (DCR): Created in 2003 through the merger of the Metropolitan District Commission and the Department of Environmental Management, DCR manages the Commonwealth's diverse parks system and protects and enhances natural resources and outdoor recreational opportunities throughout Massachusetts.

De-watering: The process of removing water from wastewater treatment residuals. De-watered sludge has the appearance of mud or wet soil material.

Diffusers: A system of shafts, rising from the end of MWRA's effluent outfall tunnel to the seabed, which disperses treated wastewater over a large area. Technically, the diffusers are the "sprinkler heads" mounted on top of the riser shafts that lead from the outfall tunnel and disperse wastewater into Massachusetts Bay.

Digesters: Tanks for the storage and anaerobic or aerobic decomposition of organic matter present in sludge.

Direct Program Expenses: Costs directly associated with providing services or performing activities.

Disinfection, Primary: The inactivation (killing) of pathogenic organisms in a water system by the use of chemical or other disinfection agents.

Disinfection, Residual: The presence of a measurable residual of disinfectant within a water distribution system to help control bacterial re-growth and guard against contamination.

Dissolved Oxygen (DO): A measure of the amount of oxygen in a given amount of water. Adequate levels of DO are needed to support aquatic life. Low dissolved oxygen concentrations can result from inadequate wastewater treatment.

Division: A major organizational unit within MWRA, encompassing the activities and resources for providing a major service or function.

DLS (Department of Laboratory Services): Laboratory Services is a full service analytical testing and consulting group within the MWRA that primarily serves client groups primarily within the Operations Division. The analytical services that Laboratory Services provides include wet chemistry, metals, organics, and microbiology testing. Related services include field sampling, technical consultation, and contract laboratory management.

DMR (Discharge Monitoring Report): Monthly reports that are submitted to federal and state regulators. MWRA monitors the effluent (treated sewage) that is discharged into Massachusetts Bay, to ensure that it meets the standards set out in the NPDES permit. Analytical support to the effluent monitoring program is provided by the Department of Laboratory Services.

E.coli: A normal inhabitant of the digestive tract of mammals. The presence of *E.coli* indicates probable contamination by fecal matter.

Effluent: Treated wastewater discharged from a treatment plant.

EIR: Environmental Impact Report – A document prepared in adherence with the Massachusetts Environmental Policy Act (MEPA) to review the environmental impact of projects and ensure opportunities for public review and comment.

EIS: Environmental Impact Statement – A document prepared in adherence with the National Environmental Policy Act to review the environmental impact of projects and ensure opportunities for public review and comment.

Enabling Act: Legislation (Chapter 372 of the Acts of 1984) that established MWRA and define its purpose and authority as of January 1, 1985.

ENF: Environmental Notification Form - The first step in the MEPA process.

EOEEA: Executive Office of Energy and Environmental Affairs - The Massachusetts cabinet office that oversees state environmental agencies.

EOC: Emergency Operations Center

EOEA: Executive Office of Environmental Affairs - The Massachusetts cabinet office that oversees state environmental agencies.

EPA: Environmental Protection Agency - The federal government agency responsible for environmental enforcement and investigation.

ESWTR: Enhanced Surface Water Treatment Rule - A federal rule that is promulgated in three stages:

1) Interim Enhanced Surface Water Treatment Rule (IESWTR): The IESWTR was promulgated in 1998 and tightened the requirements for the operation of water filtration plants in large systems to take a first step toward controlling *cryptosporidium* in source waters. IESWTR also added *cryptosporidium* to the list of issues considered within watershed protection plans for unfiltered systems.

2) LT1ESWTR primarily extends the IESWTR to smaller systems

3) LT2ESWTR: further tightens the standards for the operation of filtration plants and adds requirements for 99% inactivation of *cryptosporidium* and the use of two primary disinfectants for unfiltered systems. The concept of proportional treatment, with less treatment required for cleaner sources, was implemented as part of the rule.

Enterococcus: A pathogen indicator, similar to fecal coliform, that is used in the Massachusetts Water Quality Standards for marine waters, consistent with the Federal Clean Water Act requirements, which indicates potential contamination from human or animal waste.

Enterprise Fund: A governmental accounting and budgeting Fund that is designed to be self-supporting with revenues equal to expenditures.

Eutrophication: Nutrient enrichment of a lake or other water body typically characterized by increased growth of planktonic algae and rooted plants. Eutrophication can be accelerated by wastewater discharges and polluted runoff.

Eversource: Formerly NStar, formerly Boston Edison Company, is a publicly traded, Fortune 500 energy company headquartered in Hartford, Connecticut and Boston, Massachusetts, with several regulated subsidiaries offering retail electricity and natural gas service to more than 3.6 million customers in Connecticut, Massachusetts and New Hampshire.

Expenditures: Payments for goods and services received.

Expenses: Costs associated with the operating activities of a period, including expenditures and accrued costs.

Facility Information System (FIS): The management information system at the Deer Island Treatment Plant.

Fecal coliform bacteria: A group of bacteria used as a primary indicator organism for potential contamination from human or animal waste. Also called thermo-tolerant bacteria. Specific organisms in the group may or may not be of health concern (see *E.coli*).

Filtration: A water treatment process involving the removal of suspended particulate matter by passing the water through a porous medium such as sand or carbon.

Fiscal Year: The 12-month financial period used by MWRA that begins July 1 and ends June 30 of the following calendar year. MWRA's fiscal year is numbered according to the calendar year in which it ends.

Flash coat: A light coat of shotcrete used to cover minor blemishes on a concrete surface.

FOD (Field Operations Department): Department within the Operations Division created to provide high quality, uninterrupted water delivery and wastewater collection services to MWRA communities. The department is responsible for the treatment, transmission, and distribution of water from the Quabbin and Wachusett reservoirs to community water systems. It also manages the collection, transport, and screening of wastewater flow from MWRA communities to the Deer Island Treatment Plant.

Force Main: A pressure pipe joining the pump discharge at a water or wastewater pumping station with a point of gravity flow.

FRSA (Fore River Staging Area): The site of the Sludge Pelletization Plant.

FTE (Full Time Equivalent): An FTE is the hours worked by one employee on a full-time basis. The concept is used to convert the hours worked by several part-time employees into the hours worked by full-time employees.

Fund: A separate accounting entity for a particular purpose facilitating the accounting of assets, liabilities, and net assets.

Giardia: A protozoan parasite that can cause severe gastrointestinal disease, although there is medical treatment available. *Giardia* exist in the environment as hard-walled cysts, and are moderately resistant to chlorine disinfection.

Geographic Information System (GIS) -- A geographic information system is a system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data.

Green Energy: Energy that comes from natural sources such as sunlight, wind, rain, tides, plants, algae and geothermal heat. These energy resources are renewable, meaning they're naturally replenished.

Goal: A statement in general terms of a desired condition, state of affairs, or situation. Goals, which are long-term in nature and not usually directly measurable, provide general direction for the activities of operating units.

Global Positioning System (GPS): Also known as an Automatic Vehicle Location system (GPS/AVL), this tool provides real-time transmission alerts utilizing a cell phone/satellite communication system and a web-based mapping system to track vehicles and operator-driven mobile equipment in MWRA's service area. The system allows MWRA to respond more quickly to emergencies, enhance driver and vehicle safety, reduce fuel costs, track mileage electronically, monitor unauthorized vehicle usage, and improve efficiency.

Graphitization: A corrosion mechanism that alters the molecular structure of the carbon/iron matrix of cast iron pipe. During the process, iron atoms are forced away from the metal leaving behind an unstable carbon matrix. The result is a weakened pipe, easily susceptible to ruptures. High frequency in the number of breaks causes leakage to be a major problem of graphitized pipe.

Grit: Sand-like materials that quickly settle out of wastewater.

Groundwater: A body of water beneath the surface of the ground. Groundwater is made up primarily of water that has seeped down from the surface.

HAA: Haloacetic Acids - A class of disinfection by-products related to chlorine disinfection. HAAs are regulated under D/DBP Stage 1 and 2 Rules at 60 ppb.

Harbor Electric Energy Company (HEEC): A subsidiary of Eversource which installed a cross harbor power cable and built a sub-station to provide power for construction and operation of the Deer Island Wastewater Treatment Plant.

Head House: A structure containing the control gates to a conduit such as a sewer pipeline.

Headworks: A preliminary treatment structure or device, usually including a screening and de-gritting operation, that removes large or heavy materials such as logs and sand from wastewater prior to primary treatment.

Heavy Metals: Metals such as lead, silver, gold, mercury, bismuth, and copper that can be precipitated by hydrogen sulfide in an acid solution.

HOM (Harbor and Outfall Monitoring): A comprehensive program to provide environmental data that helps to predict and measure the effect of Deer Island outfall discharge on the marine ecosystem.

Incentives and Other Charges: A fee system designed to help recover permitting, inspecting, and monitoring costs incurred by MWRA's TRAC Program and provide incentives to permitted users to reduce discharges.

Indirect Expenses: Costs not directly associated with providing services or performing activities.

Infiltration/Inflow (I/I): The problem of clean water flows entering sewers resulting in diminished pipe capacity for sanitary flows and in costly pumping and treatment of unnecessarily large wastewater volumes. Infiltration is groundwater that leaks into the sewerage system through pipe joints and defects. Inflow, primarily a wet-weather phenomenon, refers to water that enters sewers from improperly connected catch basins, sump pumps, land and basement drains, and defective manholes. Inflow also enters through improperly closed or defective tidegates during high tides.

Influent: The flow of water that enters the wastewater treatment process.

Insurance Reserve: A fund established to adequately reserve against risks for which MWRA does not currently maintain insurance.

Interceptors: The large pipes that convey wastewater from collection systems to treatment plants.

Investment Income: Income derived by investing certain operating and reserve fund balances in interest-yielding securities in accordance with the provisions of MWRA's bond resolution.

ISO - NE (Independent System Operator of New England): Non-profit wholesale operator of the regional grid system. The MWRA receives payment from ISO-NE when Deer Island, Carroll Water Treatment Plant, and the four Remote Headworks remove themselves from the grid. All six facilities participate in load response programs offered by ISO-NE which pays larger commercial and industrial electricity consumers to “shed load” during grid peaks. There are several programs available such as price, demand response and load response. MWRA constantly evaluates the options and participates in the most advantageous program.

Labor Costs: Direct costs of employing permanent and temporary personnel, including wages, salaries, overtime pay, fringe benefits, and workers' compensation.

Land Application: The use of wastewater treatment residuals on land for agricultural benefits.

Landfilling: The disposal of residuals by burial. Modern landfills have double liners, leachate collection systems, and other design features to protect against groundwater contamination.

LCR: Lead and Copper Rule – A federal rule that set an action level for lead and copper at “worst case” consumer taps. Optimized corrosion control, notification, education, and lead service replacements are all components of compliance plans.

Leachate: Water that drains from a landfill after having been in contact with, and potentially contaminated by, buried residuals. Modern landfills are designed to collect leachate for subsequent treatment.

Limnology: The scientific study of physical, chemical, meteorological, and biological conditions in fresh waters.

LIMS: Laboratory Information and Management System – An automated database system used to transfer information between MWRA’s Central Laboratory to its client groups and to process information obtained by the Central Laboratory to monitor substances that enter and leave the MWRA wastewater system. Use of LIMS removes the potential for human error in the sampling process by bar coding samples, eliminating the need to transcribe sample data, producing pre-printed project-specific sample check-off forms for field crews, and automating testing through pre-set test codes and project-specific parameters.

LOX (Liquid Oxygen): Liquid oxygen is used together with electrical energy to generate ozone at the Carroll Water Treatment Plant.

Mapping Protocols: Sets of specifications defining the content and format of data to be collected.

MCL: Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available control technology.

MCLG: Maximum Contaminant Level Goal - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Massachusetts Environmental Policy Act (MEPA) Unit: A unit of the Commonwealth’s Executive Office of Environmental Affairs responsible for implementation of the state environmental review process.

Methane: A colorless, nonpoisonous, flammable gas produced as a by-product of anaerobic sludge processing. At Deer Island, MWRA uses methane as fuel to provide heat and hot water and to generate electricity.

MGD: Million gallons per day.

MIS: Management Information Systems

Mission: A description of the fundamental purposes and major activities of an operating unit or program.

Mitigation: Financial remuneration or non-financial considerations that MWRA provides to communities to alleviate the negative effects of major construction projects.

Molybdenum (Mo): A metallic element that resembles chromium and tungsten in many properties, and is used in strengthening and hardening steel. Mo is a trace element in plant and animal metabolism. The concentration of molybdenum in sludge products is strictly regulated.

NACWA (Nation Association of Clean Water Agencies): NACWA represents the interests of publicly owned wastewater treatment plants. NACWA is involved in all areas of water quality protection including the development of environmental legislation and assisting federal regulatory agencies in the implementation of environmental programs.

NEFCo: New England Fertilizer Company - The contractor responsible for the operation of processing sludge into fertilizer pellets at MWRA's residuals processing plant located in Quincy. NEFCo is also responsible for marketing and distributing the pellets and disposing of any product that is not marketable.

National Pollutant Discharge Elimination System (NPDES) Permit: A permit issued by EPA in conjunction with DEP that governs wastewater discharges into surface waters.

NHS (Northern High Service): Project that involves a series of water system pipeline improvements in the MWRA's Northern High Service Area.

Nitrification: An aerobic process in which bacteria changes the ammonia and organic nitrogen in wastewater into oxidized nitrogen (usually nitrate). Second-stage BOD is sometimes referred to as the nitrification stage (first-stage BOD is called the carbonaceous stage). Also, a similar process in the water distribution system, where ammonia from chloramine can be used by nitrifying bacteria, resulting in a reduced chlorine residual, and the potential for additional bacteria growth.

OCC: Metropolitan Operations Control Center, located at MWRA's Chelsea Facility.

OEP (Office of Emergency Preparedness): The Office of Emergency Preparedness has oversight over security, exercises, emergency operations, planning, the Emergency Services Unit and critical infrastructure protection.

OMS (Operations Management Systems): OMS correlates PICS data with laboratory analysis to track and analyze DITP's process performance with regard to the plant's discharge permit from EPA and DEP and with respect to cost effective operation.

Operating Reserve: A fund established to adequately reserve for operating contingencies, required by MWRA's bond resolution to be not less than one-sixth of its annual operating expenses.

Organic Matter: Material containing carbon, the cornerstone of plant and animal life. It originates from domestic and industrial sources.

Other User Charges: Revenue received per agreements MWRA has for provision of water, sewer, and other services to entities other than communities which are charged assessments.

Outfall: The pipe or structure where effluent is discharged into receiving waters.

Ozonation: The application of ozone to water, wastewater, or air, generally for the purposes of disinfection or odor control. The Carroll Water Treatment Plant (CWTP) employs the ozonation process to inactivate pathogens, including *cryptosporidium*, with lower levels of DBPs.

Ozone: A strong disinfectant made from oxygen and electrical energy. Ozone is effective against *cryptosporidium*.

Pathogens: Harmful organisms, often called germs that can cause disease. Waterborne pathogens (or the diseases they cause) include *giardia*, *cryptosporidium*, cholera, typhoid, *E.coli*, Hepatitis A, *legionella*, and MAC.

Payments in Lieu of Taxes (PILOT): Amounts which MWRA pays each fiscal year to cities and towns for land owned by the Commonwealth in the Quabbin, Ware River, Wachusett, and Sudbury watersheds. Consistent with the provisions of MWRA's Enabling Act, these payments are based on the past commitments of the Commonwealth of Massachusetts.

Penalty Revenue: Revenue derived from penalties assessed by MWRA to violators of its sewer use regulations.

Performance Measure: An indicator of the work and/or service provided, defined by output, work or service quality, efficiency, effectiveness, or productivity.

Performance Objective: A statement of proposed accomplishments or attainments that is short-term in nature and measurable.

PICS (Process Instrumentation and Control System): PICS provides real-time operations data from systems throughout Deer Island (including system status, flow, etc.).

PILOT (Payment in Lieu of Taxes): The Watershed PILOT program is the method that DCR compensates communities which contain the state owned land bought to protect one of the nation's largest unfiltered water supply systems. The law that defines this PILOT program, MGL c. 59 s.5G, guarantees regular and stable payment to 29 Massachusetts communities.

Plume: The rising discharge of treated wastewater effluent from a treatment plant outfall pipe.

Preliminary Treatment: The process of removing large solid objects, sticks, gravel, and grit from wastewater.

Pretreatment: The reduction or elimination of pollutant properties in wastewater prior to discharge into a sewer system.

Primacy: Primary enforcement authority for Federal Safe Drinking Water Act regulations delegated to a state by the Environmental Protection Agency (EPA).

Primary Treatment: A wastewater treatment process that takes place in a rectangular or circular tank and allows substances in wastewater that readily settle or float to be separated from the water being treated. Primary treatment results in 50-60% removal of suspended solids and 30-34% removal of BOD.

Program: An organized group of activities and the resources to carry them out aimed at achieving one or more related objectives.

Rate Revenue: Revenue received from annual assessments of communities within MWRA's service area for water and sewer services.

Rate Stabilization Reserve: A fund established by the Board of Directors that is used to reduce rate revenue requirements. MWRA finances this reserve with unexpended or surplus funds available from the Current Expense Budget at the end of each fiscal year.

RCM (Reliability Centered Maintenance): A maintenance strategy adopted at Deer Island in FY00 for critical systems. RCM is a failure modes and effects process that involves maintenance, operations and engineering staff in the development of preventative maintenance and operation plans for plant systems.

Relief Sewer: A sewer built to carry flows in excess of the capacity of an existing sewer.

Renewable Energy: Energy from a source that is not depleted when used, such as wind or solar power

RGGI: The Regional Greenhouse Gas Initiative is a mandatory, market-based program in the United States to reduce greenhouse gas emissions. The program involves selling emission allowances through auctions and investing the proceeds in demand-side management and clean energy technology projects.

Remote Headworks: The initial structures and devices of a treatment plant set apart by some distance from the plant site.

Renewal and Replacement Reserve: A fund established to adequately reserve for the cost of capital improvements not provided for by funds available through the Capital Improvement Program or the Current Expense Budget.

Residuals: The by-products of the wastewater treatment process, including scum (floatables), grit and screenings, primary sludge, and secondary sludge.

Revenue Bonds: Bonds payable from a specific source of revenue and which do not pledge the full faith and credit of the issuer.

RPS (Renewable Portfolio Standards): State policies which mandate a state to generate a percent of its electricity from renewable resources. Qualified renewable generation facilities for the MWRA include: the Steam Turbine Generator (STG) and a variety of Hydroelectric, Wind and Solar units. The MWRA is issued electronic certificates for each megawatt hour of electricity produced from the digester gas, which is considered renewable energy. RPS credits are a source of revenue for the MWRA.

Safe Yield Model: The equation used to determine the maximum dependable draft that can be made continuously on a water supply source during a period of years during which the probable driest period or period of greatest deficiency in water supply is likely to occur.

SAMS: Sewerage Analysis and Management System – A database which contains specifications of the location, size, and condition of MWRA wastewater interceptors and appurtenances and which produces maps for use by MWRA and outside parties. Now referred to as Wastewater GIS.

Sanitary Sewers: In a separate system, pipes that carry only domestic wastewater.

SCADA: Supervisory Control and Data Acquisition - Equipment for monitoring and controlling water or wastewater facilities remotely.

SCBA: Self-contained breathing apparatus.

Screenings: Large items such as wood and rags that are collected from wastewater in coarse screens prior to primary treatment.

Scum: Floatable materials such as grease, oil, and plastics that are skimmed from the surface of wastewater as it flows through large settling tanks.

SDWA: Safe Drinking Water Act - A Federal law enacted in 1986 and amended in 1996 that requires EPA to establish national primary drinking water regulations for water suppliers which consist of MCLs or treatment techniques.

Secondary Treatment: Usually following primary treatment, secondary treatment employs microorganisms to reduce the level of BOD and suspended solids in wastewater.

Sedimentation Tanks: Settling tanks where solids are removed from sewage. Wastewater is pumped to the tanks where the solids settle to the bottom or float on the top as scum. The scum is skimmed off the top, and solids on the bottom are pumped out for further treatment and/or final disposal.

Seeding: The initial filling of sludge into digesters.

Sensitive user: A member of a group within the general population likely to be at greater risk than the general population of adverse health effects due to exposure to contaminants in drinking water. Sensitive users include infants, children, pregnant women, the elderly, and individuals with histories of serious illness.

Septic Tanks: Tanks used for domestic wastes when a sewer line is not available to carry them to a treatment plant. Periodically, the septic is pumped out of the tanks, usually by commercial firms, and released into a wastewater treatment system.

Shotcrete: Mortar or concrete conveyed through a hose and projected at high velocity onto a surface; also known as air-blown mortar, pneumatically applied sprayed mortar, or gunned concrete.

Siphon: A closed conduit, a portion of which lies above the hydraulic grade line, resulting in a pressure less than atmospheric and requiring a vacuum within the conduit to start flow. A siphon utilizes atmospheric pressure to effect or increase the flow of water through the conduit.

Slip Lining: Insertion by pushing or pulling of lines fabricated of plastic, concrete cylinder pipe, reinforced concrete, or steel through existing conduits from access pits.

Sludge: Material removed by sedimentation during primary and secondary treatment. Sludge includes both settled particulate matter and microorganisms and is the single largest component of wastewater residuals. At the time sludge is removed during the treatment process, it contains only 0.5% to 5% solid content by weight. It has the appearance of muddy water.

Sodium Hypochlorite (NaOCl): A liquid form of chlorine that MWRA uses in the disinfection and/or odor processes at the Deer Island Treatment Plant, various other Wastewater facilities, and the Carroll Water Treatment Plant (CWTP).

Storm Sewers: Separate systems of pipes that carry only water runoffs from roofs, streets, and parking lots during storms.

Surcharging: Loads on a system beyond those normally anticipated; also, the height of wastewater in a sewer manhole above the crown of the sewer when the sewer is flowing completely full.

Suspended Solids: The particulate matter contained in wastewater.

SWTR: Surface Water Treatment Rule – A Federal rule promulgated in 1989 that affects all utilities using surface waters or waters under the influence of surface waters. SWTR requires filtration unless certain criteria on source water quality, watershed control, and disinfection effectiveness can be met (see also ESWTR).

Telemetry: Remote measuring or monitoring devices connected to a central monitoring station via telephone lines.

TCR: Total Coliform Rule – A federal rule that requires monitoring of water distribution systems for coliform bacteria and chlorine residual. No more than 5% of the coliform samples in a month can be positive.

TOC: Total Organic Carbon - A measure of the amount of organic material in water. Often used as a surrogate for disinfectant demand or DBP precursors.

Transition: A short section of conduit used as a conversion section to unite two conduits having different hydraulic elements.

TTHM: Total Trihalomethanes - A class of disinfection by-products, related to primarily chlorine disinfection (see D/DBP Rule).

TRAC: Toxic Reduction and Control – The department responsible for MWRA’s industrial pretreatment program.

TSS (Total Suspended Solids): A measure of the settleable solids and non-settleable solids in wastewater. During the primary treatment process, flows are routed to primary treatment clarifiers that remove about half of the pollutants brought to the plant in typical wastewater (50-60% of total suspended solids and up to 50% of pathogens and toxic contaminants are removed).

Ultraviolet (UV) Treatment: Ultraviolet light is an effective method of disinfection in drinking and wastewater applications. UV light damages the DNA of microbes, and is particularly effective against cryptosporidium. Federal regulations require two primary disinfectants for unfiltered water systems. The Carroll Water Treatment Plant added UV as a second disinfectant (in addition to ozonation) in February 2014 and the Quabbin Disinfection Facility (now named the William A. Brutsch Water Treatment Facility) in Ware added UV (as a second disinfection in addition to chlorine) in October 2014.

United States Geological Survey (USGS): The federal agency that collects Geographic Information System (GIS) data for developing mapping protocols.

Vector Jet Truck: A vehicle used to clean and/or remove blockages from sewer lines by pushing and/or pulling fluids in the sewer.

VMM: Vehicle Management and Maintenance – The program responsible for management and maintenance of MWRA’s vehicles and heavy equipment.

WASM (Weston Aqueduct Supply Mains): Project involving the rehabilitation of the four Weston Aqueduct Supply Mains that carry potable water to MWRA’s service area. When complete, they will transmit about one-third of the water to MWRA’s service area and the City tunnel will carry the remaining two-thirds.

Wastewater: The water carried by sewers serving residences and businesses that enters wastewater facilities for treatment. Wastewater is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, and/or agricultural and can encompass a wide range of potential contaminants and concentrations.

Wastewater Treatment Plant (WTP): A facility containing a series of tanks, screens, filters, and other equipment and processes for removing pollutants from wastewater.

Water Supply Trust: The legislature further enhanced the ability of the Department of Conservation and Recreation (DCR) Office of Watershed Management to protect the source waters of the MWRA drinking water supply by establishing a Water Supply Protection Trust in 2004. The

trust provides a more efficient mechanism for MWRA's direct funding of the Office of Watershed Management. The Water Supply Protection Trust has a five person board of trustees responsible for approving the Annual Work Plan and Budget each spring for the following fiscal year.

Watershed Reimbursement: An amount that MWRA pays to the Department of Conservation and Recreation (DCR) each fiscal year for maintaining and managing the primary sources of MWRA's water supply (watersheds) in accordance with the laws of the Commonwealth of Massachusetts. The amount of the reimbursement is determined by prevailing legislation.

Wholesale Water and Sewer Services: Potable water and wastewater collection, transport, delivery, and treatment services that MWRA provides to communities. Communities provide the same services directly to retail customers or end users.

WOCC: Western Operations Control Center, located at the Carroll Water Treatment Plant.