



Massachusetts Water Resources Authority
**COMPREHENSIVE ANNUAL
FINANCIAL REPORT**
For the Fiscal Years Ended June 30, 2021 and 2020



Massachusetts Water Resources Authority



Comprehensive Annual Financial Report

For the Fiscal Years Ended June 30, 2021 and 2020

Frederick A. Laskey

Executive Director

Prepared by

Thomas J. Durkin, Director, Finance

Robert M. Belkin, Controller, Finance

This document is available at the MWRA website: www.mwra.com



WASM3, Access Pit in Medford

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Introductory Section



Chelsea Headworks



Frederick A. Laskey
Executive Director

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October 19, 2021

To the members of the MWRA Board of Directors

We are pleased to submit to you this Comprehensive Annual Financial Report (Annual Report) of the Massachusetts Water Resources Authority (MWRA) for the years ended June 30, 2021 and 2020. This document has been submitted to the Government Finance Officers Association to be awarded a Certificate of Achievement for Excellence in Financial Reporting. The financial section of this Annual Report includes management's discussion and analysis, the basic financial statements and the combining financial statements and schedules, as well as the independent auditors' report on these financial statements.

As required by generally accepted accounting principles (GAAP), MWRA management is responsible for the accuracy, completeness, and fairness of the presentation, including all disclosures. Management's discussion and analysis provides an overview of the MWRA's financial results. This letter of transmittal is designed to complement management's discussion and analysis and should be read in conjunction with it. Management's discussion and analysis can be found immediately following the Independent Auditors' Report.

Management assumes full responsibility for the completeness and reliability of the information contained in this report, based upon a comprehensive framework of internal control that it has established for this purpose. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable, rather than absolute assurance that the financial statements are free of any material misstatements.

MISSION

The Massachusetts Water Resources Authority is an independent authority 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. During the COVID-19 pandemic MWRA has maintained all core functions, without interruption.

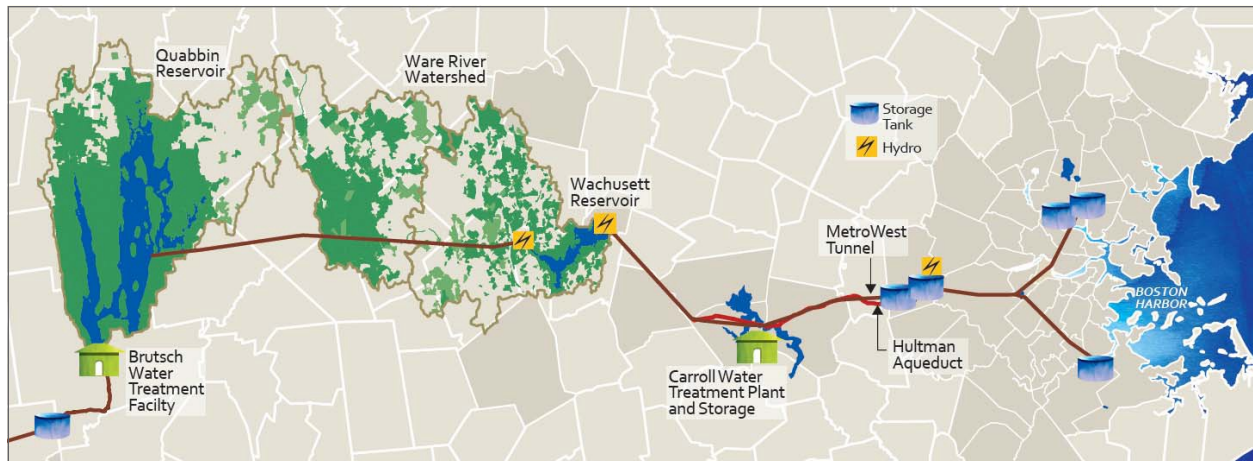
HISTORY

Created by the Massachusetts legislature in 1985 (Chapter 372 of the Acts of 1984, as amended, "the Enabling Act"), MWRA assumed 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 ("the Commonwealth") 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 all real property comprising the water and sewer systems, 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. MWRA's facilities span from the Quabbin Reservoir in western Massachusetts to the Deer Island Treatment Plant in Boston Harbor. In Fiscal Year 2021, the systems served approximately 3.1 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.

WATER SYSTEM



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 five-year supply of water.

The Quabbin and Wachusett Reservoirs are well 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 the watersheds are well-protected, the water in the Quabbin and Wachusett Reservoirs is of very high quality. MWRA has won numerous awards for quality, taste, and sustainability.



Ozone And UV Generators at the John J. Carroll Water Treatment Plant

Water for most MWRA communities is treated at the John J. Carroll Water Treatment Plant in Marlborough with two state-of-the-art methods – ozone and UV light. The treated water leaves the plant through the MetroWest Water Supply Tunnel and the Hultman Aqueduct. Along the way, it is stored in covered tanks. From there it is drawn into distribution mains and many smaller community pipes. Three member communities receive water directly from the Quabbin Reservoir: Chicopee, South Hadley Fire District #1 and Wilbraham. That water is treated at the Brutsch Water Treatment Facility in Ware and leaves the plant through the Chicopee Valley Aqueduct.

Meters installed by the member communities measure the amount of water delivered to each home or business.

Over 85% of the water delivered is via gravity, and, as the water travels through the system, electricity is generated at four hydroelectric facilities.

To maintain and ensure water quality, MWRA conducts hundreds of thousands of analyses each year as water travels from the well-protected reservoirs all the way to household taps, including over 1,600 bacteria samples per month. In addition, MWRA uses real-time water quality monitoring throughout the system to immediately identify any issues with water quality.

Since its inception, MWRA has promoted water conservation among its member communities, requiring each to perform bi-annual leak detection surveys and providing educational materials to residents and students. Since 1985, the average annual water demand in the MWRA service area has decreased by over 130 million gallons.

WASTEWATER SYSTEM



Clinton Wastewater Treatment Plant

Because of inadequate sewage treatment facilities, Boston Harbor was known as the dirtiest harbor in the country in the 1980s. The Deer Island Treatment Plant was constructed in the 1990s as part of the federal court mandated Boston Harbor Clean-up Project, which is widely recognized as a national environmental success story. The Charles River, once the inspiration for the song “Love that Dirty Water” now receives high marks for water quality, and Boston’s beaches are among the cleanest urban beaches in the nation.

MWRA also operates the smaller Clinton Wastewater Treatment Plant, which serves the Town of Clinton and the Lancaster Sewer District.

Wastewater is flushed through a building’s pipes into the community’s sewers. More than 5,100 miles of local sewers transport the flows from 43 communities into 227 miles of MWRA interceptor sewers. The interceptor sewers carry the region’s wastewater to two MWRA treatment plants. Most communities’ wastewater flows to the Deer Island Treatment Plant.

Before the flows reach the plant, they receive preliminary treatment at five headworks facilities that screen out larger objects, such as bricks and logs. These flows are then pumped through tunnels to the plant and receive Primary Treatment in settling tanks where up to 60% of the solids settle out as a mixture of sludge and water.

During Secondary Treatment, 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, or effluent, is disinfected and discharged through a 9.5-mile underwater tunnel into Massachusetts Bay. The effluent is dispersed over the last mile and a quarter of the tunnel through 55 “diffusers.” With water depths

up to 120 feet, the outfall provides a much higher rate of mixing and dilution than was possible with discharges into the shallow waters of Boston Harbor prior to construction of the new Deer Island Plant.

The remaining sludge from primary and secondary treatment is processed further in digesters, where it is mixed and heated to reduce its volume and stabilize biosolids. It is then transported through the Inter-Island Tunnel to the pelletizing plant in Quincy where it is dewatered, heat-dried, killing disease-causing bacteria, and reused as a fertilizer for use in agriculture, forestry and land reclamation.

MWRA also utilizes renewable energy at the Deer Island Treatment Plant, with wind, solar, hydroelectric and biogas systems. The plant currently generates over 50% of its total heat and electricity needs.



Wind turbines and solar panels at the Deer Island Wastewater Treatment Plant



Pleasure Bay Beach, South Boston

RATES AND CHARGES

Over 95% of MWRA's budgeted revenues are derived from wholesale rates and charges assessed to member communities. The Enabling Act requires MWRA to set its rates and charges at levels sufficient to pay, among other things, its current expenses and its debt service, and to provide debt service coverage required by MWRA's General Bond Resolution ("the Resolution").

In accordance with the Enabling Act, MWRA's rate setting is exercised independently by its Board of Directors without being subject to the approval of any department, agency or other instrumentality of the Commonwealth of Massachusetts or any other governing body. MWRA establishes charges of general application separately for the services provided by the Waterworks System and the Sewer System. Rates and charges are adopted annually in June, after notice and public hearing, and review of non-binding recommendations by the MWRA Advisory Board. MWRA's charges for services are billed directly to the member communities on a wholesale basis. Member communities include cities, towns, and other governmental entities tasked with providing retail water and/or sewer services.

In setting water rates, the total amount of revenue that must be raised through water rates in a given fiscal year is identified through a budgeting process, net of other sources of anticipated revenue, such as investment income, receipts from water supply contracts and other special arrangements. Generally, charges for water services are computed on the basis of the proportioned metered water use of each member community for the immediately preceding calendar year.

Sewer charges are computed on a proportional allocation basis utilizing, among other things, total flow, contributing population and census population for each member community. Consistent with the initial step in setting water rates, MWRA first determines the total amount of revenue required to be raised from sewer charges. The total amount of required revenue for the Sewer System is allocated either to operating costs or capital costs, based on a three-year average of total flows for operating costs and total flows, census information and other factors for capital costs.

MWRA has adopted policies to enforce collection of member community assessments, including use of local aid intercept. Local aid intercept would allow MWRA, after certification to the State Treasurer of any unpaid assessment, to instruct the State Treasurer to deduct unpaid assessment amounts from any state reimbursement, grant or local aid to cities and towns that are member communities and remit that amount to the MWRA. The local aid intercept is not available, however, for any non-municipal member community. Fortunately, MWRA has not needed to use local aid intercept in more than 20 years.

CAPITAL IMPROVEMENT PROGRAM

Since its establishment, MWRA has invested over \$8.7 billion to improve the wastewater and waterworks systems serving its 61 member communities. MWRA was created in response to and has been subject for most of its existence to a Clean Water Act enforcement action (Boston Harbor Case) 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). In 1982 and 1983, civil suits were filed against the MDC and other state agencies claiming that the Massachusetts Clean Waters Act had been violated as a result of discharges of untreated and partially treated sewage from Nut and Deer Islands. The Commonwealth, the Boston Water and Sewer Commission that provides retail water and sewer services within the city of Boston, the City of Quincy and the Town of Winthrop are also parties to the case.

The order of the federal court in the Boston Harbor Case set forth the schedules of activities to be undertaken to achieve compliance with the law. Since 1985, MWRA has complied with 420 milestones, which included the completion of extensive new wastewater treatment facilities at Deer Island in Boston and Nut Island in Quincy, a residuals processing facility in Quincy, and 35 separate CSO control projects in Boston, Brookline, Cambridge, Chelsea and Somerville which comprise the long-term CSO control plan, the last of which was completed in December 2015, in compliance with the Court Ordered milestone.

Under the Court Order, 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 was then required to submit bi-annual compliance and progress reports through December 2020. The Court has further extended the assessment period through 2021.

During the same time, MWRA also complied with regulatory mandates to improve and modernize the waterworks facilities, including the MetroWest Water Supply Tunnel, the Carroll Water Treatment Plant, and seven covered water storage facilities.

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

- Boston Harbor Clean-up Project - \$3.8 billion
- CSO Control Plan - \$913 million
- MetroWest Water Supply Tunnel - \$697 million
- Carroll Water Treatment Plant - \$425 million
- Covered Storage Facilities - \$239 million



Norumbega Covered Storage Facility in Weston

As MWRA matures as an agency, the infrastructure modernization and new facilities construction phase is nearing completion, and, barring new mandates, most of the 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 capital assets. Water System Redundancy aims to reduce the risks of service interruption and allow for planned maintenance of the water system assets.

Long-term water redundancy is expected to be the largest future CIP initiative and includes two new tunnels 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.

Capital initiatives to date have been primarily funded through long-term borrowings in the form of tax-exempt bonds, and the debt service on these outstanding bonds represents a significant and growing portion of the MWRA's operating budget. As of June 30, 2021, MWRA's total debt was \$5 billion. The capital finance obligation as a percent of total expenses has increased from 36% in 1990 to 60.9% in the Final FY2021 Current Expense Budget.

MWRA's senior 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.

The long-term strategy for capital work is identified in the MWRA's Water and Wastewater Master Plans, which were published in 2006, updated in 2013, and again in 2019. 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.

AWARDS AND ACKNOWLEDGMENTS

The Government Finance Officers Association of the United States and Canada awarded a Certificate of Achievement for Excellence in Financial Reporting to MWRA for its Comprehensive Annual Financial Report (Annual Report) for the fiscal year ended June 30, 2020. This was the third year that MWRA applied for and received this prestigious award. In order to be awarded a Certificate of Achievement, MWRA had to publish an easily readable and efficiently organized Annual Report that satisfied both generally accepted accounting principles and applicable program requirements.

A Certificate of Achievement for Excellence in Financial Reporting is valid for a period of one year only. However, we believe that our current Annual Report continues to meet the Certificate of Achievement for Excellence in Financial Reporting Program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

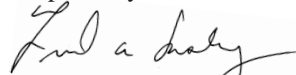
MWRA also received the Government Finance Officers Association's Distinguished Budget Presentation Award for its annual budget document dated September 2020. To qualify for the Distinguished Budget Presentation Award, the government's budget document had to be judged proficient as a policy document, a financial plan, and operations guide, and communications devise.

The preparation of this report would not have been possible without the skill, effort, and dedication of the entire staff of MWRA's Finance Division. We wish to thank all MWRA departments for their assistance in providing the data necessary to prepare this report. Credit is also due to the MWRA Board of Directors for their unfailing support for maintaining the highest standards of professionalism in the management of the MWRA's finances.

INDEPENDENT AUDIT

The Enabling Act requires that the MWRA's financial statements be audited annually by an independent certified public accounting firm. The MWRA General Bond Resolution and certain loan agreements, by reference, specify that the audit be conducted by independent accountants of nationally recognized standing and be satisfactory to the Trustee. The financial section of the 2021 Comprehensive Annual Financial Report begins with the report of our independent auditors, CliftonLarsonAllen LLP. This report expresses an unmodified opinion as to the fairness of the presentation of our financial statements.

Respectfully submitted,



Frederick A. Laskey

Executive Director



Thomas J. Durkin

Director of Finance



Robert M. Belkin, CPA

Controller



Government Finance Officers Association

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in Financial
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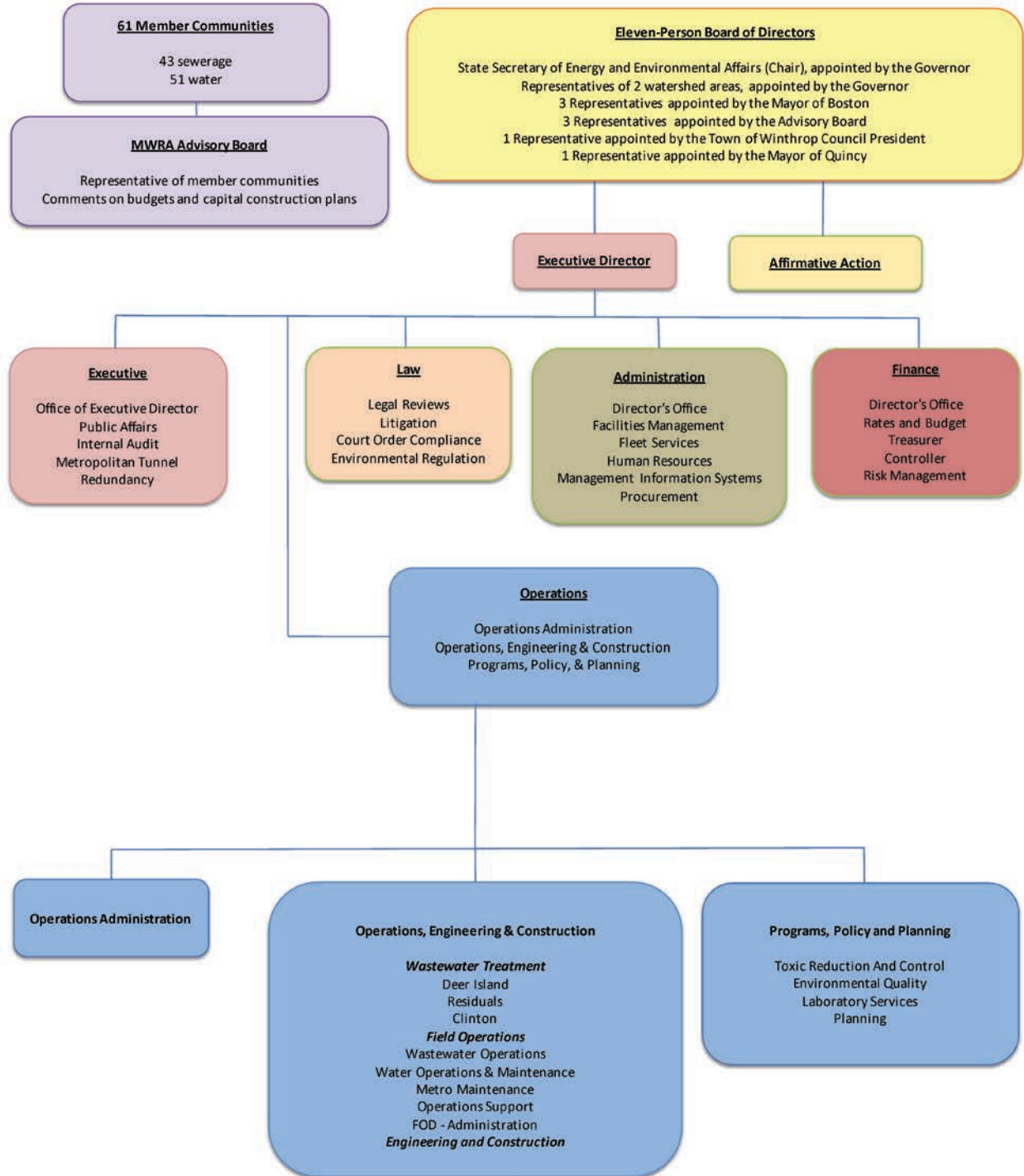
For its Comprehensive Annual
Financial Report
For the Fiscal Year Ended

June 30, 2020

Christopher P. Morrill

Executive Director/CEO

MWRA Organizational Chart



Principal Officials



Quabbin Shaft 2 Overflowing

BOARD OF DIRECTORS

Kathleen A. Theoharides , Chair
John J. Carroll, Vice Chair
Andrew M. Pappastergion, Secretary
Christopher Cook
Paul E. Flanagan
Joseph C. Foti
Brian Peña
Henry F. Vitale
John J. Walsh
Patrick J. Walsh
Jennifer L. Wolowicz

Executive Officers

Frederick A. Laskey, Executive Director
David W. Coppes, Chief Operating Officer
Thomas J. Durkin, Director, Finance
Michele S. Gillen, Director Administration
Carolyn Francisco Murphy, General Counsel

Controller Department

Robert Belkin, CPA, Controller
Elizabeth Feloni, CPA, Accounting Manager
June Kwan, Senior Staff Accountant
Samantha Wilson, Senior Staff Accountant
Brenda Guerra, Senior Staff Accountant

Financial Section



Park Circle Tower in Arlington



The Board of Directors
Massachusetts Water Resources Authority
Boston, Massachusetts

Report on the Financial Statements

We have audited the accompanying financial statements of the business-type activities and fiduciary activities of the Massachusetts Water Resources Authority (the Authority) as of and for the years ended June 30, 2021 and 2020 (except for the Massachusetts Water Resources Authority Employees' Retirement System, which is as of and for the years ended December 31, 2020 and 2019), and the related notes to the financial statements, which collectively comprise the Authority's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express opinions on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the business-type activities and fiduciary activities of the Authority as of June 30, 2021 and 2020 (except for the Massachusetts Water Resources Authority Employees' Retirement System, which is as of December 31, 2020 and 2019), and the respective changes in financial position and, where applicable, cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of a Matter

During the fiscal year ended June 30, 2021, the Authority adopted GASB Statement No. 84 *Fiduciary Activities*. As a result of the implementation of this standard, the financial statements of the Authority now include fiduciary activities related to pension and other postemployment benefit trust funds. Our auditors' opinion was not modified with respect to this matter.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis (located on pages 16 through 23) and certain pension and other post-employment benefits information (located on pages 76 through 81) be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary and Other Information

Our audit was conducted for the purpose of forming opinions on the Authority's financial statements. The schedule of Accounts Established by the General Revenue Bond Resolution, Combining Statements of Net Position and Combining Statements of Revenues, Expenses and Changes in Net Position, Combining Statements of Fiduciary Net Position, and Combining Statements of Changes in Fiduciary Net Position (Supplemental Schedules), Introductory Section and Statistical Section are presented for purposes of additional analysis and are not a required part of the basic financial statements.


The Supplemental Schedules are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Supplemental Schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The Board of Directors
Massachusetts Water Resources Authority

The Introductory and Statistical Sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated September 15, 2021 on our consideration of the Authority's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Authority's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Authority's internal control over financial reporting and compliance.



CliftonLarsonAllen LLP

Boston, Massachusetts
September 15, 2021

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2021 and 2020

(Unaudited)

This section of the Authority's annual financial report presents our discussion and analysis of the Authority's financial performance during the fiscal years ended June 30, 2021 and 2020. Please read it in conjunction with the Authority's financial statements, which immediately follow this section.

Financial Highlights – Fiscal Year 2021

The fiscal year 2021 customer service revenues were approximately \$781.4 million. Of this amount, rate revenues represent approximately 98.5%, or \$769.4 million, and were \$8.5 million higher than fiscal year 2020. This was due to an increase in assessments.

Total operating expenses, excluding depreciation, were approximately \$291.4 million in fiscal year 2021. The 0.8% decrease in total operating expenses over fiscal year 2020 is the result of decreases in pension expense of \$10.2 million, OPEB expense of \$6.4 million and utilities expense of \$1.3 million. These decreases were offset by increases in personnel costs of \$2.8 million, Harbor Energy Electric Company (HEEC) capacity and O & M charges of \$5.8 million and reimbursements to the Commonwealth of \$3.8 million.

Net nonoperating expenses increased \$8.1 million, or 5.2%, primarily due to a \$11.8 million reduction in interest expense offset by a \$20.3 million decrease in investment income. Interest expense decreased due to a combination of principal repayments and refunding/defeasance of outstanding debt. Interest income decreased due to a decrease in the unrealized gain on investments (\$11.7 million) and a decrease in actual interest earned on investments (\$8.6 million).

Total assets at June 30, 2021 were approximately \$7.1 billion, a \$129.6 million, or 1.8%, decrease over total assets at June 30, 2020.

During fiscal year 2021, the Authority issued General Revenue Bonds, 2020 Series B for \$160 million. The proceeds from these bonds will be used to finance new construction projects. The interest rate on these bonds is 5%.

Total capital assets (net of depreciation) were approximately \$5.7 billion at June 30, 2021, a \$96.5 million, or 1.7%, decrease over June 30, 2020. The decrease was primarily due to the rate of depreciation being higher than the rate of capitalization.

Financial Highlights – Fiscal Year 2020

The fiscal year 2020 customer service revenues were approximately \$773.2 million. Of this amount, rate revenues represent approximately 98.4%, or \$760.9 million, and were \$21.8 million higher than fiscal year 2019. This was due to an increase in assessments.

Total operating expenses, excluding depreciation, were approximately \$293.6 million in fiscal year 2020. The 3.8% decrease in total operating expenses over fiscal year 2019 is the result of decreases in pension expense of \$7.5 million, OPEB expense of \$7.0 million, utilities expense of \$1.3 million, maintenance expense of \$1.0 million, other materials expense of \$1.3 million and reimbursements to the Commonwealth of \$1.3 million. These decreases were offset by increases in personnel costs of \$4.7 million and Harbor Energy Electric Company (HEEC) capacity and O & M charges of \$3.2 million.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2021 and 2020

(Unaudited)

Net nonoperating expenses decreased \$13.8 million, or 8.2%, primarily due to a \$23.3 million reduction in interest expense offset by a \$9.6 million decrease in investment income. Interest expense decreased due to a combination of principal repayments and refunding/defeasance of outstanding debt. Interest income decreased due to a decrease in the unrealized gain on investments (\$5.6 million) and a decrease in actual interest earned on investments (\$4.0 million). This was due to a large volume of investments that were called and/or matured (\$190 million) and reinvested in securities with lower yields.

Total assets at June 30, 2020 were approximately \$7.2 billion, a \$238.6 million, or 3.2%, decrease over total assets at June 30, 2019.

During fiscal year 2020, the Authority issued General Revenue Bonds (Federally Taxable), 2019 Series E for \$50.0 million, General Revenue Refunding Bonds (Federally Taxable), 2019 Series F for \$547.8 million and General Revenue Refunding Bonds 2019 Series G for \$22.8 million. The proceeds from these bonds were used to finance new construction projects and refund bonds outstanding. The interest rate on these bonds range from 1.66% to 5%.

Total capital assets (net of depreciation) were approximately \$5.8 billion at June 30, 2020, an \$85 million, or 1.5%, decrease over June 30, 2019. The decrease was primarily due to the rate of depreciation being higher than the rate of capitalization.

Overview of the Financial Statements

The financial section of this annual report consists of four parts: management's discussion and analysis (this section), the financial statements and related notes to the financial statements, required supplementary information, and other supplementary information.

The financial statements provide both long-term and short-term information about the Authority's overall financial status. The financial statements also include notes that explain some of the information in the financial statements and provide more detailed data. The statements are followed by a section of required supplementary information and other supplementary information that further explains and supports the information in the financial statements.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2021 and 2020

(Unaudited)

Financial Analysis of the Authority

Net Position

The Authority's total net position at June 30, 2021 was approximately \$1.5 billion, a \$40.0 million decrease from June 30, 2020. Total assets decreased \$129.6 million, or 1.8%, to \$7.1 billion, and total liabilities decreased \$124.3 million, or 2.2%, to \$5.5 billion.

The Authority's total net position at June 30, 2020 was approximately \$1.5 billion, a \$40.1 million decrease from June 30, 2019. Total assets decreased \$238.6 million, or 3.2%, to \$7.2 billion, and total liabilities decreased \$282.7 million, or 4.8%, to \$5.7 billion.

Net Position (Dollars in thousands)

	2021	2020	2019	Percentage change 2021–2020	Percentage change 2020–2019
Current assets	\$ 1,015,387	\$ 915,651	\$ 943,454	10.9%	(2.9%)
Capital assets	5,658,876	5,755,377	5,840,416	(1.7)	(1.5)
Other noncurrent assets	387,852	520,681	646,436	(25.5)	(19.5)
Total assets	<u>7,062,115</u>	<u>7,191,709</u>	<u>7,430,306</u>	<u>(1.8)</u>	<u>(3.2)</u>
Deferred outflows from pension	44,083	33,219	64,041	32.7	(48.1)
Deferred outflows from OPEB	-	1,946	333	100.0	-
Deferred outflows from derivative instruments	29,923	42,543	31,640	(29.7)	34.5
Deferred outflows from refunded debt	8,965	9,464	28,842	(5.3)	(67.2)
Current liabilities	482,637	473,853	362,949	1.9	30.6
Noncurrent liabilities	5,058,796	5,191,892	5,585,463	(2.6)	(7.0)
Total liabilities	<u>5,541,433</u>	<u>5,665,745</u>	<u>5,948,412</u>	<u>(2.2)</u>	<u>(4.8)</u>
Deferred inflows from pension	39,360	15,887	6,066	147.7	161.9
Deferred inflows from OPEB	36,018	37,410	7,907	(3.7)	-
Deferred inflows from regulated activities	42,251	33,860	26,690	24.8	26.9
Net position:					
Net investment in capital assets	957,356	894,437	827,050	7.0	8.1
Restricted					
Construction	228,037	141,521	189,293	61.1	(25.2)
Debt service	131,239	186,277	98,251	(29.5)	89.6
Operating	54,144	52,446	50,862	3.2	3.1
Revenue	48,146	39,765	30,126	21.1	32.0
Unrestricted	67,102	211,533	370,505	(68.3)	(42.9)
Total net position	<u>\$ 1,486,024</u>	<u>\$ 1,525,979</u>	<u>\$ 1,566,087</u>	<u>(2.6%)</u>	<u>(3.7%)</u>

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2021 and 2020

(Unaudited)

Changes in Net Position

The decrease in net position at June 30, 2021 was \$40.0 million, or 2.6%, as compared with June 30, 2020. The Authority's total operating revenues increased by 1.0% to \$786.1 million and total operating expenses decreased 0.8% to \$291.4 million.

The decrease in net position at June 30, 2020 was \$40.1 million, or 2.6%, as compared with June 30, 2019. The Authority's total operating revenues increased by 3.0% to \$778.3 million and total operating expenses decreased 3.8% to \$293.6 million.

Changes in Net Position (Dollars in thousands)

	2021	2020	2019	Percentage change 2021–2020	Percentage change 2020–2019
Operating revenues:					
Customer service revenues	\$ 781,399	\$ 773,242	\$ 750,742	1.1%	3.0%
Other revenues	4,720	5,084	4,594	(7.2)	10.7
Total operating revenues	<u>786,119</u>	<u>778,326</u>	<u>755,336</u>	<u>1.0</u>	<u>3.0</u>
Operating expenses:					
Operations	116,455	113,284	113,878	2.8	(0.5)
Maintenance	30,661	29,737	30,651	3.1	(3.0)
Payments in lieu of taxes	8,368	8,330	8,230	0.5	1.2
Engineering, general, and administrative	135,886	142,276	152,351	(4.5)	(6.6)
Total operating expenses	<u>291,370</u>	<u>293,627</u>	<u>305,110</u>	<u>(0.8)</u>	<u>(3.8)</u>
Depreciation and amortization	214,478	211,214	207,127	1.5	2.0
Operating income	<u>280,271</u>	<u>273,485</u>	<u>257,648</u>	<u>2.5</u>	<u>6.1</u>
Nonoperating items:					
Regulatory accounting provisions	(164,293)	(165,792)	(121,739)	(0.9)	36.2
Net nonoperating expenses	(163,187)	(155,095)	(168,861)	5.2	(8.2)
Changes in derivative related accounts	2,940	2,940	2,940	-	-
Total nonoperating items	<u>(324,540)</u>	<u>(317,947)</u>	<u>(287,660)</u>	<u>2.1</u>	<u>10.5</u>
Capital grants and contributions	4,314	4,354	5,249	(0.9)	(17.1)
Change in net position	(39,955)	(40,108)	(39,312)	(0.4)	2.0
Total net position – beginning of year	<u>1,525,979</u>	<u>1,566,087</u>	<u>1,605,399</u>	<u>(2.6)</u>	<u>(2.4)</u>
Total net position – end of year	<u>\$ 1,486,024</u>	<u>\$ 1,525,979</u>	<u>\$ 1,566,087</u>	<u>(2.6%)</u>	<u>(2.6%)</u>

During fiscal year 2021, the increases in customer service revenues were primarily due to the 1.0% increase in the rate revenue requirement (\$8.5 million).

During fiscal year 2020, the increases in customer service revenues were primarily due to the 3.10% increase in the rate revenue requirement (\$21.8 million).

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

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(Unaudited)

Operating Costs by Functionality

(Dollars in thousands)

	2021	2020	2019	Percentage change 2021–2020	Percentage change 2020–2019
Wastewater treatment and transport	\$ 101,884	\$ 103,627	\$ 102,732	(1.7%)	0.9%
Water treatment and transport	39,982	38,040	38,731	5.1	(1.8)
Water and wastewater quality	10,678	10,433	9,734	2.3	7.2
Metering and monitoring	6,694	6,420	6,516	4.3	(1.5)
Facilities planning, design, and construction	12,289	12,712	11,362	(3.3)	11.9
Management information systems	13,219	12,225	12,617	8.1	(3.1)
Administration and support	54,721	52,281	51,989	4.7	0.6
Total direct operating costs	<u>239,467</u>	<u>235,738</u>	<u>233,681</u>	1.6	0.9
Indirect operating costs	<u>51,903</u>	<u>57,889</u>	<u>71,429</u>	(10.3)	(19.0)
 Total operating costs	 <u>\$ 291,370</u>	 <u>\$ 293,627</u>	 <u>\$ 305,110</u>	 <u>(0.8%)</u>	 <u>(3.8%)</u>

Decreases in wastewater treatment and transport were mainly due to a reduction in excess quantities of sludge processed at the pelletization plant (\$1.8 million). Water treatment and transportation costs increased due to increases in wages and salaries, maintenance and cost related to a water main break in Brookline. Facilities planning, design and construction costs decreased due to a reorganization of the meter data group from planning to metering and monitoring. Management and information systems costs increased in support of increased telework costs. Administration and support costs increased due to higher health insurance costs and additional expenses incurred for the COVID-19 testing program.

Retirement Benefits

The Massachusetts Water Resources Authority Employees' Retirement System (System) was established to provide pension benefits to Massachusetts Water Resources Authority (Authority) employees and their beneficiaries. The System is governed by a five-member board comprised of the Secretary of the Authority's Board (ex-officio), two members elected by the System's participants, one member appointed by the Authority's Board and one member appointed by the System's Board members.

The System has total plan assets of \$649 million and \$580.3 million at December 31, 2020 and 2019, respectively.

Other Post-Employment Benefits (OPEB) Irrevocable Trust

In April 2015, the Authority established the MWRA Other Post-Employment Benefits (OPEB) Irrevocable Trust. The Trust was established for the sole purpose of providing for the advance funding of future costs of retired employee health insurance and other benefits provided to retirees. It is intended that the Trust shall constitute a "Qualified OPEB Trust" according to the standards set forth in GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions* and the standards of GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. The Authority's Board of Directors appointed a five-member Board of Trustees, made up of Authority senior managers, to control and manage the trust.

An initial deposit of \$10.8 million was made to the trust upon establishment of the trust. The balance of the trust at June 30, 2021 and 2020 was \$61.8 million and \$43.7 million, respectively.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

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(Unaudited)

Capital Assets and Debt Administration

Capital Assets

As of June 30, 2021 and 2020, the Authority had \$5.7 billion of capital assets (net of depreciation), respectively. This includes land, construction in progress, plant and equipment for the water and sewer systems, furniture and fixtures, leasehold improvements, and motor vehicles and equipment. The Authority's net capital assets decreased approximately \$96.5 million, or 1.7%, during fiscal year 2021, primarily due to the rate of depreciation being higher than the rate of capitalization.

Capital Assets					
(Net of depreciation, dollars in thousands)					
	2021	2020	2019	Percentage change 2021–2020	Percentage change 2020–2019
Land	\$ 30,058	\$ 29,936	\$ 29,885	0.4%	0.2%
Construction in progress	228,033	214,102	149,794	6.5	42.9
Plant and equipment, water, and sewer systems	5,393,813	5,504,419	5,653,489	(2.0)	(2.6)
Furniture and fixtures	36	42	68	(14.3)	(38.2)
Leasehold improvements	243	255	267	(4.7)	(4.5)
Motor vehicles and equipment	6,693	6,623	6,913	1.1	(4.2)
Total	<u>\$ 5,658,876</u>	<u>\$ 5,755,377</u>	<u>\$ 5,840,416</u>	<u>(1.7%)</u>	<u>(1.5%)</u>

Additional information on the Authority's capital assets can be found in Note 8 of this financial report.

Debt Administration

The Authority's bond sales must be approved by its board of directors (the Board) and must comply with rules and regulations of the United States Treasury Department. Neither the Commonwealth of Massachusetts (the Commonwealth) nor any political subdivision thereof shall be obligated to pay the principal of, or premium or interest on, any debt outstanding and neither the faith and credit nor the taxing power of the Commonwealth or any political subdivision thereof is pledged to such payment.

Bond Resolutions

Pursuant to its general bond resolution, the Authority must comply with a rate covenant that requires it to set rates to maintain revenues sufficient to pay: current expenses; debt service on indebtedness; required deposits to reserves; costs of maintenance, replacement, and/or improvements to the wastewater and water systems that are considered current expenses and any additional amounts the Authority may be required to pay by any law or contract.

In addition to the rate covenant, the Authority is required to meet two covenants with respect to debt service coverage. The primary debt service coverage requires that the Authority fix and adjust rates and charges to provide revenues available for bond debt service in an amount equal to 1.2 times that is required for debt service on all outstanding bonds, not including subordinated bonds. The subordinated debt service coverage requires that the Authority fix and adjust rates and charges to provide revenues available for bond debt service in an amount equal to 1.1 times that is required for debt service on all outstanding bonds, including subordinated bonds.

Additional information on the Authority's long-term debt can be found in Note 6 of this financial report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2021 and 2020

(Unaudited)

Credit Rating

The Authority's \$3.1 billion Senior Lien General Revenue Bonds are rated Aa1 from Moody's Investors Service, AA+ by S&P Global Ratings and AA+ from FitchRatings. The \$596.6 million Subordinate Lien General Revenue Bonds are rated Aa2 from Moody's Investors Service, AA by S&P Global Ratings and AA from FitchRatings. Some of the Authority's revenue bonds are enhanced by bond insurance. The credit ratings of these bond series will be the higher rating of either the Authority or the firm providing the enhancement. In the case of bonds enhanced by a letter of credit, the rating will be the highest of the Authority's, the provider or, if available, a joint rating. The subordinated debt of \$893.9 million with the Massachusetts Clean Water Trust is not rated as the Authority's debt.

Economic Factors and Next Year's Budget

In June 2021, the Board approved the fiscal year 2022 Current Expense Budget (CEB), which totals \$813.0 million in expenses.

The \$813.0 million expense total is comprised of \$496.5 million (61.1%) in capital financing costs and \$316.5 million (38.9%) in operating expenses, of which \$259.8 million (82.1%) is for direct expenses and \$56.7 million (17.9%) is for indirect expenses. The total represents an increase of \$34.6 million from fiscal year 2021 spending, which is comprised of \$18.1 million in higher operating costs and \$16.5 million in higher debt service costs.

The fiscal year 2022 rate revenue requirement approved by the Board is \$792.1 million; an increase of 2.95% compared with the fiscal year 2021 budget.

Fiscal year 2022 budgeted nonrate revenue totals \$20.9 million, an increase of \$1.4 million from actual fiscal year 2021 nonrate revenue. The nonrate revenue budget is comprised of \$4.0 million in investment income, \$15.4 million in other user charges and other revenue, \$1.3 million in use of rate stabilization and \$0.2 million in entrance fees.

Covid-19 Response

In May 2020, the Board also approved allocation of Commonwealth of Massachusetts Debt Service Assistance, \$0.9 million, to offset June 2020 community assessment payments. The Board further approved a one-time exemption to community loan program guidelines to defer loan repayments in fiscal years 2021 and 2022.

CIP 10 Year Plan

The Authority's planned spending for capital improvements in future years reflects the Authority's ongoing efforts to upgrade and maintain the system and to align its project prioritization process with the Master Plan.

Major planned and ongoing projects include:

- Commitment to long-term redundancy plan for the metropolitan water tunnel system.
- Improvement and replacement of equipment on Deer Island and at major headworks facilities to ensure continued efficient and effective operations.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2021 and 2020

(Unaudited)

- Continued asset protection projects for both wastewater and water systems (pump stations and pipelines).
- Dedication to using resources efficiently, responding to climate change and reducing the environmental impacts of the Authority's daily operations by installing alternative energy sources and promotion of improved self-generation.
- Enhanced commitment to the community assistance programs for both the sewer and water systems to improve local infrastructure, including a new initiative to provide interest-free loans to assist communities in replacing lead service lines.
- Continued investment for the upgrade of Management Information Systems to ensure the availability, integrity and security of data.
- Continue the Residuals Asset Protection program for maintaining and improving the operations and infrastructure of the biosolids processing in the long term.

Contacting the Authority's Financial Management

This report is designed to provide our bondholders, member communities and other interested parties with a general overview of the Authority's finances and to demonstrate the Authority's accountability for the revenue it receives. If you have questions about this report or need additional information, contact the Massachusetts Water Resources Authority, Finance Division, 100 First Avenue, Boston, MA 02129.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Net Position

June 30, 2021 and 2020

(Dollars in thousands)

Assets	<u>2021</u>	<u>2020</u>
Current assets:		
Cash and cash equivalents (note 4)	\$ 69,931	\$ 70,858
Investments (note 4)	4,743	-
Restricted investments (note 4)	897,125	805,904
Intergovernmental loans (note 7)	35,926	31,252
Accounts receivable	1,466	1,445
Interest receivable	863	859
Other	5,333	5,333
Total current assets	<u>1,015,387</u>	<u>915,651</u>
Noncurrent assets:		
Capital assets:		
Capital assets – not being depreciated (note 8)	258,091	244,038
Capital assets – being depreciated – net (note 8)	5,400,785	5,511,339
Regulatory assets (note 3)	59,415	213,502
Other assets, net (note 7)	328,437	307,179
Total noncurrent assets	<u>6,046,728</u>	<u>6,276,058</u>
Total assets	<u>7,062,115</u>	<u>7,191,709</u>
Deferred Outflows of Resources		
Deferred outflows from pension (note 10)	44,083	33,219
Deferred outflows from OPEB (note 11)	-	1,946
Deferred outflows from derivative instruments (note 6)	29,923	42,543
Deferred outflows from refunding debt	8,965	9,464
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	68,655	52,919
Accounts payable for construction	17,592	22,532
Commercial paper notes (note 6)	75,000	75,000
Current portion of long-term debt (note 6)	247,882	245,839
Accrued interest on bonds payable	73,508	77,563
Total current liabilities	<u>482,637</u>	<u>473,853</u>
Noncurrent liabilities:		
Reserves (note 5)	63,866	62,050
Retainage on construction in progress	10,889	9,054
Long-term debt – less current portion (note 6)	4,791,028	4,889,620
Long-term capital lease (note 9)	23,561	24,876
Net pension liability (note 10)	64,488	74,659
Net OPEB liability (note 11)	75,041	89,090
Liability for derivative instruments (note 6)	29,923	42,543
Total noncurrent liabilities	<u>5,058,796</u>	<u>5,191,892</u>
Total liabilities	<u>5,541,433</u>	<u>5,665,745</u>
Deferred Inflows of Resources		
Deferred inflows from pension (note 10)	39,360	15,887
Deferred inflows from OPEB (note 11)	36,018	37,410
Deferred inflows from regulated activities (note 3)	42,251	33,860
Net Position		
Net investment in capital assets	957,356	894,437
Restricted		
Construction	228,037	141,521
Debt service	131,239	186,277
Operating	54,144	52,446
Revenue	48,146	39,765
Unrestricted	67,102	211,533
Total net position	<u>\$ 1,486,024</u>	<u>\$ 1,525,979</u>
Commitments and contingencies (notes 9,10,11,12 and 13)		

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Revenues, Expenses, and Changes in Net Position

Years ended June 30, 2021 and 2020

(Dollars in thousands)

	<u>2021</u>	<u>2020</u>
Operating revenues (note 2):		
Customer services	\$ 781,399	\$ 773,242
Other	4,720	5,084
Total operating revenues	<u>786,119</u>	<u>778,326</u>
Operating expenses:		
Operations	116,455	113,284
Maintenance	30,661	29,737
Payments in lieu of taxes	8,368	8,330
Engineering, general, and administrative	135,886	142,276
Total operating expenses	<u>291,370</u>	<u>293,627</u>
Income from operations before depreciation	494,749	484,699
Depreciation and amortization	<u>214,478</u>	<u>211,214</u>
Operating income	280,271	273,485
Regulatory accounting provisions:		
Change in reserves (note 5)	(1,815)	(2,094)
Change in regulatory provisions, net (note 3)	<u>(162,478)</u>	<u>(163,698)</u>
Total regulatory accounting provisions	<u>(164,293)</u>	<u>(165,792)</u>
Nonoperating revenues (expenses):		
Debt service grant	1,288	892
Investment income (loss)	(2,658)	17,645
Interest expense	(161,817)	(173,632)
Changes in derivative related accounts	2,940	2,940
Total nonoperating expenses	<u>(160,247)</u>	<u>(152,155)</u>
Net loss before capital grants and contributions	(44,269)	(44,462)
Capital grants and contributions	<u>4,314</u>	<u>4,354</u>
Decrease in net position	(39,955)	(40,108)
Total net position - beginning of year	<u>1,525,979</u>	<u>1,566,087</u>
Total net position - end of year	<u>\$ 1,486,024</u>	<u>\$ 1,525,979</u>

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Cash Flows

Years ended June 30, 2021 and 2020

(Dollars in thousands)

	2021	2020
Cash flows from operating activities:		
Cash received from customers	\$ 781,376	\$ 772,854
Cash paid to suppliers for goods and services	(129,810)	(123,216)
Cash paid to employees for services	(143,631)	(145,278)
Cash paid in lieu of taxes	(8,368)	(8,326)
Other operating receipts	4,701	5,161
Net cash provided by operating activities	504,268	501,195
Cash flows from capital and related financing activities:		
Proceeds from sale of revenue bonds, loans, and notes	224,205	89,665
Capital grants for construction	4,314	4,354
Debt service grant	1,288	892
Capital lease principal payments	(1,210)	(1,226)
Capital lease interest payments	(1,739)	(1,991)
Repayment of debt	(294,686)	(291,554)
Interest paid on debt	(186,396)	(192,872)
Plant expenditures	(152,344)	(152,808)
Net cash used for capital and related financing activities	(406,568)	(545,540)
Cash flows from investing activities:		
Purchases of short-term investments	(208,415)	(114,350)
Sales and maturities of short-term investments	59,863	237,548
Changes in restricted money market investments	45,508	(76,557)
Interest received	4,417	13,752
Net cash provided (used) for investing activities	(98,627)	60,393
Net increase (decrease) in cash and cash equivalents	(927)	16,048
Cash and cash equivalents - beginning of year	70,858	54,810
Cash and cash equivalents - end of year	\$ 69,931	\$ 70,858
Reconciliation of operating income to net cash provided by operating activities:		
Operating income	\$ 280,271	\$ 273,485
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation and amortization	214,478	211,214
Change in net pension liability	(10,171)	(25,297)
Change in deferred outflows from pension	(10,864)	30,822
Change in deferred inflows from pension	23,473	9,821
Change in net OPEB liability	(14,049)	(34,902)
Change in deferred outflows from OPEB	1,946	(1,613)
Change in deferred inflows from OPEB	(1,392)	29,503
Change in other accounts	5,312	5,042
Change in accounts payable	15,264	3,120
Net cash provided by operating activities	\$ 504,268	\$ 501,195

NONCASH CAPITAL AND RELATED FINANCING ACTIVITIES

In fiscal 2020, general revenue refunding bonds in the aggregate principal amount of \$570,575 were issued to defease \$529,485 of bonds outstanding.

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Fiduciary Net Position

June 30, 2021 (and December 31, 2020 for Pension Trust) and 2020 (and December 31, 2019 for Pension Trust)

(Dollars in thousands)

		<u>2021</u>	<u>2020</u>
		Pension (and Other Employee Benefit) Trust Funds	Pension (and Other Employee Benefit) Trust Funds
	Assets		
Cash and cash equivalents (note 4)		\$ 13,730	\$ 12,716
Investments: (note 4)			
Fixed income		168,937	170,973
Equities		321,132	271,597
Real estate		50,075	46,182
Private equity		50,667	41,013
Hedge funds		24,243	19,575
External investment pool		81,356	61,521
Total investments		<u>696,410</u>	<u>610,861</u>
Accounts receivable		652	434
Total assets		<u>697,062</u>	<u>624,011</u>
	Liabilities		
Current liabilities:			
Accounts payable and accrued expenses		269	130
Due to primary government		78	66
Payables for securities purchased		305	1,129
Total liabilities		<u>652</u>	<u>1,325</u>
	Fiduciary Net Position		
Restricted			
Pensions		648,376	578,957
Postemployment benefits other than pensions		61,764	43,729
Total fiduciary net position		<u>\$ 710,140</u>	<u>\$ 622,686</u>

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Statements of Changes in Fiduciary Net Position

Years ended June 30, 2021 (and December 31, 2020 for Pension Trust) and 2020 (and December 31, 2019 for Pension Trust)

(Dollars in thousands)

	<u>2021</u>	<u>2020</u>
	Pension (and Other Employee Benefit) Trust Funds	Pension (and Other Employee Benefit) Trust Funds
Additions		
Contributions:		
Employer	\$ 21,506	\$ 18,200
Plan members	10,188	9,721
Total contributions	<u>31,694</u>	<u>27,921</u>
Investment income:		
Interest and dividends	9,480	7,927
Net realized and unrealized gains	80,962	74,645
Less: investment fees	<u>(3,526)</u>	<u>(2,320)</u>
Net investment income	<u>86,916</u>	<u>80,252</u>
Reimbursements and transfers from other systems	<u>2,096</u>	<u>1,955</u>
Total additions	120,706	110,128
Deductions		
Benefits paid to participants or beneficiaries	32,588	30,584
Reimbursements and transfers to other systems	261	757
Administrative expenses	<u>403</u>	<u>464</u>
Total deductions	<u>33,252</u>	<u>31,805</u>
Change in fiduciary net position	87,454	78,323
Total fiduciary net position - beginning of year	<u>622,686</u>	<u>544,363</u>
Total fiduciary net position - end of year	<u>\$ 710,140</u>	<u>\$ 622,686</u>

See accompanying Notes to Financial Statements

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

(1) Organization

The Massachusetts Water Resources Authority (the Authority) was established in January 1985 pursuant to Chapter 372 (the Enabling Act) of the Act of 1984 of the Commonwealth of Massachusetts (the Commonwealth). The Authority, a successor agency to certain functions of the Metropolitan District Commission (the MDC) (which became part of the Department of Conservation and Recreation (the DCR) in July 2003), is a public instrumentality and, effective July 1, 1985, provides water supply services and sewage collection, treatment, and disposal services to areas of the Commonwealth.

The Authority is governed by an 11-member board of directors (the Board) chaired by the Secretary of Energy and Environmental Affairs for the Commonwealth. The Secretary and two other members are appointed by the Governor. Three members of the Board are appointed by the Mayor of Boston and three are appointed by the Authority's Advisory Board. One member is appointed by the Mayor of Quincy and one by the Winthrop Council President.

The Authority has also considered all component units for which it is financially accountable as well as other organizations for which the nature and /or significance of their relationship with the Authority are such that exclusion would cause the Authority's basic financial statements to be misleading or incomplete. As required by GAAP, these basic financial statements present the Authority (primary government) and its component units.

The Authority has included entities as fiduciary fund component units in the reporting entity because of the significance of their operational and financial relationship with the Authority. Component units are entities that are legally separate from the Authority, but are so related that they are, in substance, the same as the Authority or entities providing services entirely or almost entirely for the benefit of the Authority.

Fiduciary Fund Component Units

The Massachusetts Water Resources Authority Employees' Retirement System (Pension Trust) was established to provide pension benefits to Authority employees and their beneficiaries. The Pension Trust is governed by a five-member board comprised of the Secretary of the Authority's Board (ex-officio), two members elected by the Pension Trust's participants, one member appointed by the Authority's Board and one member appointed by the Pension Trust's Board members. The Pension Trust is presented using the accrual basis of accounting and is reported in the Pension (and Other Employee Benefit) Trust Funds in the fiduciary funds financial statement. The Pension Trust's year end is December 31st.

The Massachusetts Water Resources Authority Irrevocable OPEB Trust (OPEB Trust) is a single-employer other post-employment benefits (OPEB) plan, for the purpose of accumulating and investing assets to fund certain post-retirement medical and life insurance for retirees of the Authority. The Board of Trustees is composed of five members including the following Authority employees: Executive Director, Director of Finance, Treasurer, Budget Director and Director of Human Resources. The OPEB Trust is presented using the accrual basis of accounting and is reported in the Pension (and Other Employee Benefit) Trust Funds in the fiduciary funds financial statement. The OPEB Trust's year end is June 30th.

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Complete financial statements for the Trusts can be obtained from the Authority's administrative offices at Charlestown Navy Yard, 100 First Avenue, Boston, MA 02129.

(2) Summary of Significant Accounting Policies

The accounting policies of the Authority conform to U.S. generally accepted accounting principles as applicable to government enterprises. The following is a summary of the Authority's significant accounting policies:

(a) Basis of Presentation

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. The Authority's 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 Authority distinguishes operating revenues and expenses from nonoperating 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, with the exception of regulatory provisions as discussed below. All operating revenues are pledged for repayment of outstanding debt service.

In addition, the Authority 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 the Authority'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. The effects of the Authority's accounting policies are discussed further in Note 3.

The Authority has implemented GASB Statement No. 84, *Fiduciary Activities*. This statement resulted in reporting fiduciary funds financial statements with the Authority's financial statements.

(b) Capital Assets

On July 1, 1985, ownership of the MDC's sewer and waterworks personal property was transferred to the Authority. Pursuant to the Enabling Act, ownership of the real property of the MDC sewer and waterworks systems was not transferred from the Commonwealth to the Authority; however, the Authority has the right to use, improve, maintain, and manage that property. In addition, ownership of the real and personal property of the watershed system remains with the Commonwealth; however, the Authority has the right to utilize the water therefrom for water supply purposes.

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The personal property, together with the rights to the real property and watershed system, was recorded at its estimated fair value of \$2,331,465 (including certain construction projects which were in progress as of July 1, 1985), based upon an appraisal performed by valuation specialists. Property, plant, and equipment acquired or constructed since July 1, 1985, is stated at acquisition cost, and includes the expenditure of capital grants in aid of construction.

Betterments and major renewals are capitalized and included in capital asset accounts, while expenditures for maintenance and repairs are charged to expense when incurred. The cost of depreciable assets and related accumulated depreciation is eliminated from the accounts when such items are disposed of or otherwise retired.

The Authority's capitalization threshold is \$100.

(c) Interest Cost and Principal Payments on Construction

During fiscal years 2021 and 2020, none of the Authority's interest expense was capitalized to construction in progress in accordance with its current policy of recovering such costs through rates as incurred. Rates collected for principal payments on debt related to assets under construction are deferred until the related asset is completed and depreciation commences.

(d) Depreciation

The Authority provides for depreciation by use of the straight-line method. Depreciation is intended to distribute the cost of depreciable properties, including those financed by capital grants in aid of construction, over the following estimated average useful lives:

	<u>Years</u>
Plant and Equipment, Water and Sewerage Systems	5-100
Motor Vehicles and Equipment	5
Furniture and Fixtures	7
Leasehold Improvements	3-5

(e) Revenue Recognition

The Authority recognizes revenue as amounts become collectible from its customers for water and sewer services provided. The majority of the Authority's billings to cities and towns are subject to, in the event of nonpayment, the local aid intercept allowed by the Enabling Act.

(f) Net Position

When both restricted and unrestricted resources are available for use, it is the Authority's policy to use the restricted resources first, then unrestricted as they are needed.

(g) Cash and Cash Equivalents

Authority:

The Authority's policy is to treat unrestricted investments with a maturity date of three months or less when purchased as cash equivalents for purposes of the statements of cash flows. Restricted cash and cash equivalents are combined with investments on the statements of net position, and shown separately on the statements of cash flows as an investing activity.

Pension and OPEB Trust:

Cash and cash equivalents is considered to be cash on hand, demand deposits and short-term investments with an original maturity of three months or less from the date of acquisition.

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(h) Payments in Lieu of Taxes

The Enabling Act authorizes and directs the Authority to pay to the DCR (formerly the MDC) Division of Watershed Management, who in turn remits payment to each city or town in which land of the Quabbin watershed and Ware River watershed is located. Each such payment is equal to the amount which the respective city or town would receive in property taxes, based upon the fair value of such land if such land were not tax exempt.

(i) Investments

Authority:

Investments are recorded at fair value, other than certain investments that are recorded at net asset value (NAV). The Authority uses an independent pricing source to determine the fair value of investments at quoted market prices. Changes in fair value are included in nonoperating investment income in the Statements of Revenues, Expenses, and Changes in Net Position. Investments that are measured at NAV are the investments in the Massachusetts Municipal Depository Trust (MMDT) which is a 2a7-like external investment pool that is overseen by the Massachusetts State Treasurer and whose fair value of each share is equal to the number of shares; thus NAV is equal to \$1.00 per share.

Pension and OPEB Trusts:

Investments are reported at fair value. Fair values of investments are based on quotations from a national securities exchange, except for the Systems' investment in the Pension Reserves Investment Trust (PRIT), hedge funds, private equity and real estate investments, for which fair values are estimated as detailed below.

External Investment Pool (PRIT)

PRIT is an external investment pool comprised of securities measured at various fair value measurements. The investment pool is managed by the Pension Reserves Investment Management (PRIM) Board and the System's share of the pool is reported at fair value in the System's financial statements. A complete copy of PRIT's separately issued financial statements can be obtained from PRIM Board at 84 State Street, Boston, MA 02109, or by visiting the PRIM Board's website at <http://www.mapension.com/public-records/records-of-interest/>.

Hedge Funds, Private Equity, and Real Estate Investments

The fair values of these types of investments have been determined by third party investment managers using Net Asset Value (NAV) per share (or its equivalent) on the System's ownership interest in the pool or partner's capital.

(j) Compensated Absences

Employees of the Authority may accumulate unused sick time of which 30% will be paid in cash upon retirement from the Authority. The liability for vacation leave is based on the amount earned but not used; for sick leave, it is based on a percentage of the amount accumulated at the statement of net position dates. The liability for both amounts is calculated based on the pay or salary rates in effect at the statements of net position dates.

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(k) Pensions

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the Plan and additions to/deductions from the Plan's fiduciary net position have been determined on the same basis as they are reported by the Authority. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

(l) Postemployment Benefits Other Than Pensions (OPEB)

For purposes of measuring the net OPEB liability, deferred outflows of resources and deferred inflows of resources related to OPEB, and OPEB expense, information about the fiduciary net position of the OPEB Trust and additions to/deductions from the OPEB Trust's fiduciary net position have been determined on the same basis as they are reported by the Authority. For this purpose, the Authority recognizes benefit payments when due and payable in accordance with the benefit terms. Investments are reported at fair value, except for money market investments and participating interest-earning investment contracts that have a maturity at the time of purchase of one year or less, which are reported at cost.

(m) Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenditures during the reporting period. Actual results could differ from those estimates.

(n) Reclassifications

Certain reclassifications were made to the fiscal year 2020 financial statements to conform to the fiscal year 2021 presentation.

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(3) Regulatory Assets and Deferred Inflows from Regulatory Activities

In accordance with GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements*, regulatory assets and deferred inflows from regulatory activities that result primarily from differences between depreciation on property, plant, and equipment not financed by grants or capital contributions, which is recovered through rates as principal payments on debt service, and from amounts determined by the Board to be utilized in a subsequent year to reduce customer billings (rate stabilization).

A summary of the activity of regulatory assets and deferred inflows for fiscal years 2021 and 2020 is as follows:

	<u>Sewer</u>	<u>Water</u>	<u>Total</u>
Balance - June 30, 2019 - net	\$ 328,128	\$ 15,212	\$ 343,340
Difference Between Depreciation of Capital Assets Not Financed by Grants or Capital Contributions, and Debt Service in Excess of Interest Expense	(103,318)	(53,210)	(156,528)
Other, Net	<u>(4,134)</u>	<u>(3,036)</u>	<u>(7,170)</u>
Balance - June 30, 2020 - net	220,676	(41,034)	179,642
Difference Between Depreciation of Capital Assets Not Financed by Grants or Capital Contributions, and Debt Service in Excess of Interest Expense	(89,762)	(64,325)	(154,087)
Other, Net	<u>(9,007)</u>	<u>616</u>	<u>(8,391)</u>
Balance - June 30, 2021 - net	<u>\$ 121,907</u>	<u>\$ (104,743)</u>	<u>\$ 17,164</u>

The net balance at June 30, 2021 and 2020 is presented on the statements of net position as follows:

	<u>2021</u>	<u>2020</u>	<u>Current year change</u>
Regulatory Assets	\$ 59,415	\$ 213,502	\$ (154,087)
Deferred Inflows from Regulatory Activities	<u>(42,251)</u>	<u>(33,860)</u>	<u>(8,391)</u>
Net Change	<u>\$ 17,164</u>	<u>\$ 179,642</u>	<u>\$ (162,478)</u>

The balance in the rate stabilization reserve was \$41,544 and \$43,044 at June 30, 2021 and 2020, respectively.

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(Dollars in thousands)

(4) Deposits and Investments

(1) Authority (Excluding the Pension and OPEB Trusts):

The following represents essential risk information about the Authority's deposits and investments:

(a) *Custodial Credit Risk – Deposits*

The custodial credit risk for deposits and certificates of deposit is the risk that, in the event of a bank failure, the Authority's deposits may not be recovered.

The bank deposits at June 30, 2021 and 2020 were \$70,419 and \$66,833, respectively. Of these amounts, \$70,169 and \$66,583, were exposed to custodial credit risks as uninsured and uncollateralized.

(b) *Investments*

The Authority is authorized by its general bond resolution to invest in obligations of the U.S. Treasury, its agencies and instrumentalities, bonds, or notes of public agencies or municipalities, bank time deposits, guaranteed interest contracts, Massachusetts Municipal Depository Trust (MMDT) accounts, interest rate swap agreements, and repurchase agreements. All investments are held by a third-party in the Authority's name. These investments are recorded at fair value.

(c) *Credit Ratings*

All debt securities purchased, such as FNMA, FHLMC, and FHLB issues have historically had a credit rating of AAA or they have been collateralized to AAA. On August 8, 2011, Standard & Poor's reduced the credit rating for these agencies to AA+. The reduction in credit rating did not affect the Authority's bond covenants or escrow requirements.

The Massachusetts Municipal Depository Trust funds are not rated.

The general bond resolution limits the Authority to investing in securities that are rated in the three highest rating categories as defined by S&P and Moody's or other rating agencies.

(d) *Concentration Risk*

At June 30, 2021 and 2020, the Authority had investments with the issuer, Federal Home Loan Bank (FHLB), which totaled 6.4% and 5.5%, respectively, of the total investments.

At June 30, 2021, the Authority had investments with the issuer, Federal Farm Credit Banks (FFCB), which totaled 7.9% of the total investments.

At June 30, 2021, the Authority had investments with the issuer, Federal National Mortgage Association (FNMA), which totaled 9.2% of total investments.

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(e) Interest Rate Risk

The following is a listing of the Authority's fixed income investments and related maturity schedule as of June 30, 2021 and 2020:

June 30, 2021					
Investment maturities (in years)					
Investment Type	Fair Value	<1	1-3	4-8	>9
Mass Municipal Depository Trust	\$ 630,964	\$ 630,964	\$ -	\$ -	\$ -
U.S. Agency Obligations	248,556	4,067	41,543	136,836	66,110
U.S. Treasury Bills	22,348	-	22,348	-	-
Total	<u>\$ 901,868</u>	<u>\$ 635,031</u>	<u>\$ 63,891</u>	<u>\$ 136,836</u>	<u>\$ 66,110</u>

June 30, 2020					
Investment maturities (in years)					
Investment Type	Fair Value	<1	1-3	4-8	>9
Mass Municipal Depository Trust	\$ 676,361	\$ 676,361	\$ -	\$ -	\$ -
U.S. Agency Obligations	76,950	-	16,160	60,790	-
U.S. Treasury Bills	52,593	29,991	22,602	-	-
Total	<u>\$ 805,904</u>	<u>\$ 706,352</u>	<u>\$ 38,762</u>	<u>\$ 60,790</u>	<u>\$ -</u>

The majority of the Authority's investments are held in short-term money market funds and long-term investments in U.S. agency obligations that are held in the debt service reserve funds where the intent is to hold until maturity.

(f) Investment Values

The Authority categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Debt securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Debt securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. The Authority has no securities classified in Level 3. The investment in MMDT, an external investment pool, is measured at \$1.00 per share – the net asset value determined by the pool.

The Authority has the following recurring fair value measurements as of June 30, 2021 and 2020: U.S. Government agency obligations \$248,556 and \$76,950 (Level 2), respectively, U.S. Treasury Bills \$22,348 and \$52,593 (Level 2), respectively, and MMDT \$630,964 and \$676,361 (NAV), respectively. There are no withdrawal restrictions or unfunded commitments related to the MMDT investment.

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(g) Restricted Investments by Fund

The following summarizes restricted investments as of June 30, 2021 and 2020 by various funds and accounts established by the Authority for debt covenants and other purposes:

	<u>2021</u>	<u>2020</u>
Restricted Investments:		
Construction	\$ 228,037	\$ 141,521
Debt Service Reserves	155,383	159,503
Debt Service Principal and Interest	322,062	319,640
Debt Service - Revenue Redemption	25,532	26,362
Operating Reserve	45,861	44,046
Rate Stabilization Reserve	41,544	43,044
Revenue	48,146	39,765
Combined Reserves - Renewal and Replacement Reserve	10,000	10,482
Combined Reserves - Insurance Reserve	13,141	14,000
Insurance Related Escrow Deposits	7,419	7,541
Total Restricted Investments	<u>\$ 897,125</u>	<u>\$ 805,904</u>

No funds were withdrawn from the Operating Reserve, Renewal and Replacement Reserve or Insurance Reserve during the fiscal year. Changes in investment balances reflect changes in market value.

(2) Pension Trust:

(a) Deposits – Custodial Credit Risk

Custodial credit risk for deposits is the risk that, in the event of a bank failure, the Pension Trust's deposits may not be recovered. The Pension Trust's policy for custodial credit risk of deposits is to rely on FDIC insurance. As of December 31, 2020 and 2019, the Pension Trust was not exposed to custodial credit risk. The carrying value of the Pension Trust's deposits totaled \$10 and \$10 at December 31, 2020 and 2019, respectively.

(b) Investment Summary

The Pension Trust's investments at December 31, 2020 and 2019 are presented below. All investments are presented by investment type, with debt securities presented by maturity (using segmented time distribution).

Investment Type	December 31, 2020				
	Fair Value	Investment maturities (in years)			
		<1	1-5	6-10	>10
<u>Debt Securities:</u>					
Money market mutual funds	\$ 7,485	\$ 7,485	\$ -	\$ -	\$ -
Fixed income securities	168,937	96,928	24,850	40,121	7,038
Total Debt Securities	<u>176,422</u>	<u>\$ 104,413</u>	<u>\$ 24,850</u>	<u>\$ 40,121</u>	<u>\$ 7,038</u>
<u>Other Investments:</u>					
Equity Securities	321,132				
External Investment Pools (PRIT)	25,827				
Hedge Funds	24,243				
Real Estate	50,075				
Private Equity	50,667				
Total Other Investments	<u>471,944</u>				
Total Investments	<u>\$ 648,366</u>				

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Investment Type	December 31, 2019				
	Investment maturities (in years)				
	Fair Value	<1	1-5	6-10	>10
<u>Debt Securities:</u>					
Money market mutual funds	\$ 6,580	\$ 6,580	\$ -	\$ -	\$ -
Fixed income securities	170,973	98,362	36,709	22,841	13,061
Total Debt Securities	177,553	\$ 104,942	\$ 36,709	\$ 22,841	\$ 13,061
<u>Other Investments:</u>					
Equity Securities	271,597				
External Investment Pools (PRIT)	23,918				
Hedge Funds	19,575				
Real Estate	46,182				
Private Equity	41,013				
Total Other Investments	402,285				
Total Investments	\$ 579,838				

(c) Investments – Interest Rate Risk of Debt Securities

Interest rate risk for debt securities is the risk that changes in interest rates of debt securities will adversely affect the fair value of an investment. The Pension Trust's policy for interest rate risk is the duration of the portfolio should be consistent with the appropriate indices. Unless otherwise agreed to, the duration of the portfolio must be within 25% of the appropriate benchmark.

(d) Investments – Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty, the Pension Trust will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. The Pension Trust's policy for custodial credit risk of investments intends that all investments are either insured and/or registered in the name of the Pension Trust. As of December 31, 2020 and 2019, the Pension Trust was not exposed to custodial credit risk.

(e) Investments – Credit Risk of Debt Securities

Credit risk for debt securities is the risk that an issuer or other counterparty to a debt security will not fulfill its obligations. The Pension Trust's policies for credit risk of debt securities include the minimum quality rating at the time of purchase cannot be below a rating of CCC. Non-rated securities may comprise 10% of the portfolio, provided that the applicable manager determines that, if such an issue was rated, it would be allowed under the above limitation and that the non-rated issue is deemed to be below BAA (investment grade). Compliance with credit ratings provided by Moody's, Standard & Poor's and Fitch is not sufficient for an issue to be deemed an appropriate investment. The managers are responsible for making an independent analysis of the credit-worthiness of securities.

As of December 31, 2020 and 2019, the credit quality ratings of the Pension Trust's money market mutual funds are unrated by any nationally recognized statistical rating organization. As of December 31, 2020 and 2019, the credit quality ratings of the Pension Trust's fixed income securities, excluding U.S. Treasury securities of \$56,623 and \$46,890 respectively, are as follows:

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Quality Ratings	2020	2019
	Fixed income securities	
AA+	\$ -	\$ 1,729
AA-	-	1,767
A+	-	1,667
A	3,441	4,135
A-	10,094	10,720
BBB+	10,667	6,155
Unrated	88,112	97,910
Total	<u>\$ 112,314</u>	<u>\$ 124,083</u>

*Per Standard and Poors, a nationally recognized statistical rating organization.

(f) Deposits and Investments – Foreign Currency Risk

Foreign currency risk is the risk that fluctuations in exchange rates will adversely affect the fair value of an investment or a deposit. The Pension Trust does not have a policy regarding foreign currency risk. As of December 31, 2020 and 2019, the Pension Trust had indirect exposure to foreign currency risk for certain equity investments issued by foreign countries in the amount of \$122,551 and \$124,016, respectively.

(g) Investments – Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of the Pension Trust's investment in a single issuer. The Pension Trust's policy for concentration of credit risk is that not more than 5% of the fair value of the Pension Trust's portfolio can be invested in the debt obligations of any one issuer, with the exception of securities issued by the U.S. Government, or its agencies, which may be held without limitation. As of December 31, 2020 and 2019, the Pension Trust was not exposed to concentration of credit risk.

(h) Fair Value Measurements

The Pension Trust categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset. Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs. The Pension Trust has the following recurring fair value measurements as of December 31, 2020 and 2019:

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December 31, 2020			
Investments by Fair Value Level	Fair Value	Fair Value Measurements Using	
		Quoted Prices in Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2
<u>Debt Securities:</u>			
Money market mutual funds	\$ 7,485	\$ 7,485	\$ -
Fixed income securities	168,937	144,734	24,203
Total Debt Securities	<u>176,422</u>	<u>152,219</u>	<u>24,203</u>
Equity Securities	321,132	280,170	40,962
Total Investments by Fair Value Level	<u>497,554</u>	<u>\$ 432,389</u>	<u>\$ 65,165</u>
<u>Investments measured at Net Asset Value (NAV)</u>			
Private Equity	50,667		
Real Estate	50,075		
Hedge Funds	24,243		
Investments measured at NAV	<u>124,985</u>		
<u>Other investments measured at fair value</u>			
External Investment Pool (PRIT)	25,827		
Total Investments	<u>\$ 648,366</u>		

December 31, 2019			
Investments by Fair Value Level	Fair Value	Fair Value Measurements Using	
		Quoted Prices in Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2
<u>Debt Securities:</u>			
Money market mutual funds	\$ 6,580	\$ 6,580	\$ -
Fixed income securities	170,973	144,799	26,174
Total Debt Securities	<u>177,553</u>	<u>151,379</u>	<u>26,174</u>
Equity Securities	271,597	210,089	61,508
Total Investments by Fair Value Level	<u>449,150</u>	<u>\$ 361,468</u>	<u>\$ 87,682</u>
<u>Investments measured at Net Asset Value (NAV)</u>			
Private Equity	41,013		
Real Estate	46,182		
Hedge Funds	19,575		
Investments measured at NAV	<u>106,770</u>		
<u>Other investments measured at fair value</u>			
External Investment Pool (PRIT)	23,918		
Total Investments	<u>\$ 579,838</u>		

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Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Equity securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities relationship to benchmark quoted prices.

The valuation method for investments measured at the net asset value (NAV) per share (or its equivalent) is presented on the following table.

December 31, 2020				
	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Private equity (1)	\$ 50,667	32,600	N/A ⁽¹⁾	N/A ⁽¹⁾
Real estate (2)	50,075	4,805	N/A ⁽²⁾	N/A ⁽²⁾
Hedge funds (3)	24,243	-	Quarterly	90-100 days
Total Investments Measured at the NAV	<u>\$ 124,985</u>			
December 31, 2019				
	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Private equity (1)	\$ 50,667	32,600	N/A ⁽¹⁾	N/A ⁽¹⁾
Real estate (2)	50,075	4,805	N/A ⁽²⁾	N/A ⁽²⁾
Hedge funds (3)	24,243	-	Quarterly	90-100 days
Total Investments Measured at the NAV	<u>\$ 124,985</u>			

(1) Private Equity Funds: This type includes 24 private equity funds that consist primarily of limited partnership interests in corporate finance and venture capital funds. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the Pension Trust's ownership interest in partners' capital. The investments can never be redeemed with the funds. Distributions from each of these funds will be received as the underlying investments of the funds are liquidated. It is expected that the underlying assets of the funds will be liquidated over the next 1 to 12 years.

(2) Real Estate Funds: This type includes 10 real estate funds that invest primarily in U.S. commercial real estate and value added opportunities. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the Pension Trust's ownership interest in partners' capital. There are two investments with approximate values of \$20,600 and \$20,100 at December 31, 2020, and \$19,900 and \$15,300 at December 31, 2019, for which the investments can be redeemed quarterly, with a redemption notice period of 90 days. The remaining investments can never be redeemed with the funds. Distributions from each of these funds will be received as the underlying investments of the funds are liquidated. It is expected that the underlying assets of the funds will be liquidated over the next 1 to 12 years.

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- (3) Hedge Funds: This type includes 3 hedge funds that pursue multiple strategies to diversify risks and reduce volatility. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the Pension Trust's ownership interest in partners' capital. There are three investments with approximate values of \$800, \$11,500 and \$12,000 at December 31, 2020 and \$800, \$9,400 and \$9,500 at December 31, 2019. The investments can be redeemed quarterly, with a redemption notice period of 90 days, 90 days, and 100 days respectively.

(3) OPEB Trust:

The Trustees have adopted a formal cash and investment policy. All funds will be invested with the Commonwealth of Massachusetts Pension Reserves Investment Trust (PRIT) fund through the State Retiree Benefits Trust Fund.

The investment in the PRIT fund is not subject to custodial or concentration risk and the Trust does not have policies to address such risks. The investment in PRIT is subject to foreign currency risk to the extent exchange rates will adversely affect the fair value of PRIT's international investments. The Trust does not have a policy to address this risk. The PRIT fund is unrated.

Investments are recorded at fair value. The Trust categorizes its fair value measurements with the fair value hierarchy established by generally accepted accounting principles. Debt securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Debt securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. The Trust has no securities classified in Level 3.

The OPEB Trust's investment in the PRIT fund, totaling \$55,529 and \$37,603 at June 30, 2021 and 2020, respectively, is classified as Level 2.

(5) **Bond Resolution Reserves**

The components of the reserves funded from revenues and required by the general and supplemental bond resolutions at June 30, 2021 and 2020 are as follows:

<u>Reserves</u>	<u>Sewer</u>	<u>Water</u>	<u>Total</u>	
			<u>2021</u>	<u>2020</u>
Renewal and Replacement	\$ 2,544	\$ 1,457	\$ 4,001	\$ 4,001
Insurance	7,000	7,000	14,000	14,000
Operating	30,072	15,793	45,865	44,049
Total	<u>\$ 39,616</u>	<u>\$ 24,250</u>	<u>\$ 63,866</u>	<u>\$ 62,050</u>

A renewal and replacement reserve of \$6,000 was established through grant receipts transferred from the Commonwealth in 1985 and is included in restricted net position at June 30, 2021 and 2020.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

(6) Notes Payable and Long-Term Debt

Long-term debt at June 30, 2021 and 2020 consisted of the following:

	<u>2021</u>	<u>2020</u>
General Revenue Bonds:		
2002 Series J, 5 1/4% to 5 1/2%, issued December 18, 2002, due 2021 to 2022	\$ 73,205	\$ 117,680
2011 Series B, 5%, issued May 19, 2011, due 2021	3,030	3,030
2012 Series A, 3 1/4% to 5%, issued April 19, 2012, due 2022	3,505	3,505
2014 Series D, 5%, issued November 19, 2014, due 2021 to 2044	55,340	57,030
2016 Series B, 3% to 5%, issued May 12, 2016, due 2023 to 2040	60,770	60,770
2017 Series B, 5%, issued May 18, 2017, due 2023 to 2042	60,470	62,815
2018 Series B, 5%, issued May 16, 2018, due 2025 to 2043	99,705	106,405
2019 Series B, 5%, issued May 22, 2019, due 2024 to 2044	121,265	121,265
2019 Series E, 1 9/10% to 3 1/4%, issued November 1, 2019, due 2024 to 2044	50,000	50,000
2020 Series B, 5% issued August 20, 2020 due 2021 to 2045	156,175	-
Total	<u>683,465</u>	<u>582,500</u>
General Revenue Refunding Bonds:		
2007 Series B, 5 1/4%, issued February 1, 2007, due 2023 to 2038	647,950	647,950
2013 Series A, 4% to 5%, issued March 27, 2013, due 2022 to 2036	94,015	94,655
2014 Series E, 5%, issued November 19, 2014	-	4,215
2014 Series F, 4% to 5%, issued November 19, 2014, due 2021 to 2041	138,755	141,410
2016 Series C, 4% to 5%, issued May 12, 2016, due 2022 to 2040	672,445	675,195
2016 Series D, 3% to 5%, issued August 24, 2016, due 2025 to 2042	103,425	103,425
2017 Series C, 4% to 5%, issued May 18, 2017, due 2021 to 2032	220,120	237,370
2018 Series C, 5%, issued May 16, 2018, due 2023 to 2026	17,500	21,900
2019 Series C, 5%, issued May 22, 2019, due 2021 to 2022	19,190	19,190
2019 Series F, 1 2/3% to 3 1/10%, issued November 1, 2019, due 2021 to 2039	537,250	547,750
2019 Series G, 5%, issued November 1, 2019	-	22,825
Total	<u>2,450,650</u>	<u>2,515,885</u>

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	<u>2021</u>	<u>2020</u>
General Revenue Bonds with the Massachusetts		
Clean Water Trust - Direct Borrowings:		
1999 Series E Sewer, 4 3/4%, issued		
October 6, 1999, due 2021 to 2029	\$ 4,393	\$ 4,803
1999 Series F, 5 3/4% to 6%, issued		
November 3, 1999, due 2021 to 2029	124,940	144,080
2000 Series E Sewer, 5 1/2%, issued		
November 1, 2000, due 2021 to 2030	35,759	38,438
2000 Series E Water, 5 1/4%, issued		
November 1, 2000	-	840
2001 Series C Water, 5% , issued		
July 26, 2001	-	365
2001 Series D Sewer, 5 3/8% to 5 1/2%, issued		
July 26, 2001, due 2021 to 2029	446	487
2002 Series H Sewer, 5% to 5 1/4%, issued		
October 31, 2002, due 2021 to 2032	47,880	51,055
2002 Series H Water, 5% to 5 1/4%, issued		
October 31, 2002, due 2021 to 2022	4,370	6,460
2002 Series I Sewer, 5 1/2%, issued		
October 31, 2002, due 2021 to 2030	1,247	1,348
2002 Series I Water, 5 1/4%, issued		
October 31, 2002	-	2
2003 Series A Water, 5%, issued		
October 31, 2002, due 2021 to 2022	200	295
2003 Series B Water, 5%, issued		
July 24, 2003	-	328
2003 Series C Sewer, 5% to 5 1/4%, issued		
November 6, 2003, due 2021 to 2033	17,932	18,994
2003 Series C Water, 4 3/4% to 5%, issued		
November 6, 2003, due 2021 to 2023	4,135	5,430
2004 Series C Sewer, 5% to 5 1/4%, issued		
October 26, 2004, due 2021 to 2033	6,074	6,437
2004 Series C Water, 5%, issued		
October 26, 2004, due 2021 to 2022	113	168
2004 Series D Sewer, 4 1/2% to 5%, issued		
November 29, 2004, due 2021 to 2034	33,540	35,295
2004 Series D Water, 5%, issued		
November 29, 2004, due 2021 to 2024	3,660	4,480
2005 Series C Sewer, 5% to 5 1/4%, issued		
November 3, 2005, due 2021 to 2033	3,490	3,808
2005 Series C Water, 5%, issued		
November 3, 2005, due 2021 to 2023	217	284
2005 Series D Sewer, 2 3/10%, issued		
November 16, 2005, due 2021 to 2035	37,466	39,533
2005 Series D Water, 0% to 2%, issued		
November 16, 2005, due 2021 to 2025	3,888	4,653
2005 Series E Sewer, 2%, issued		
November 16, 2005, due 2021 to 2025	117	139

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(Dollars in thousands)

	2021	2020
General Revenue Bonds with the Massachusetts		
Clean Water Trust - Direct Borrowings (Continued):		
2005 Series E Water, 2%, issued		
November 16, 2005, due 2021 to 2025	\$ 26	\$ 31
2006 Series C Sewer, 5%, issued		
October 26, 2006, due 2021 to 2034	4,512	4,885
2006 Series D Sewer, 2 3/10%, issued		
December 14, 2006, due 2021 to 2036	36,325	38,175
2006 Series D Water, 0% to 2%, issued		
December 14, 2006, due 2021 to 2026	9,319	10,842
2006 Series E Sewer, 2%, issued		
December 14, 2006, due 2021 to 2026	129	148
2006 Series E Water, 2%, issued		
December 14, 2006, due 2021 to 2026	57	66
2007 Series C Sewer, 2% to 2 3/10%, issued		
November 9, 2007, due 2021 to 2035	1,536	1,799
2007 Series C Water, 2%, issued		
November 9, 2007, due 2021 to 2025	772	925
2007 Series D Sewer, 2 3/10%, issued		
November 9, 2007, due 2021 to 2036	14,901	15,663
2007 Series E Sewer, 2 2/5%, issued		
December 18, 2007, due 2021 to 2037	36,532	38,250
2007 Series E Water, 2%, issued		
December 18, 2007, due 2021 to 2027	7,927	8,971
2008 Series G Sewer, 2%, issued		
December 9, 2008, due 2021 to 2026	2,069	2,416
2008 Series G Water, 2%, issued		
December 9, 2008, due 2021 to 2026	447	518
2009 Series C Sewer, 2% to 2 2/5%, issued		
March 18, 2009, due 2021 to 2038	47,141	49,700
2009 Series C Water, 2%, issued		
March 18, 2009, due 2021 to 2028	13,613	15,166
2009 Series D Sewer, 2% to 2 2/5%, issued		
December 15, 2009, due 2021 to 2037	6,208	6,691
2009 Series D Water, 2%, issued		
December 15, 2009, due 2021 to 2027	547	619
2010 Series D Sewer, 2% to 2 2/5%, issued		
July 8, 2010, due 2021 to 2040	17,734	18,684
2010 Series D Water, 2%, issued		
July 8, 2010, due 2021 to 2030	12,695	13,830
2011 Series A Sewer, 2% to 2 2/5%, issued		
March 15, 2011, due 2021 to 2038	3,292	3,573
2011 Series A Water, 2%, issued		
March 15, 2011, due 2021 to 2028	2,615	2,917
2012 Series C Sewer, 2% to 2 2/5%, issued		
June 6, 2012, due 2021 to 2040	4,605	5,021
2012 Series C Water, 2%, issued		
June 6, 2012, due 2021 to 2030	2,274	2,476

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	<u>2021</u>	<u>2020</u>
General Revenue Bonds with the Massachusetts		
Clean Water Trust - Direct Borrowings (Continued):		
2012 Series D Sewer, 2% to 2 2/5%, issued		
June 13, 2012, due 2021 to 2042	\$ 28,267	\$ 30,399
2012 Series D Water, 2%, issued		
June 13, 2012, due 2021 to 2032	5,588	5,992
2013 Series B Sewer, 2% to 2 2/5%, issued		
May 22, 2013, due 2022 to 2043	19,209	20,929
2013 Series B Water, 2%, issued		
May 22, 2013, due 2022 to 2033	5,603	6,007
2014 Series C Sewer, 2% to 2 2/5%, issued		
May 30, 2014, due 2021 to 2042	3,650	3,843
2014 Series C Water, 2%, issued		
May 30, 2014, due 2021 to 2032	3,808	4,105
2015 Series A Sewer, 2% to 2 2/5%, issued		
January 7, 2015, due 2022 to 2045	38,537	40,197
2015 Series A Water, 2%, issued		
January 7, 2015, due 2022 to 2035	11,756	12,468
2015 Series B Sewer, 2% to 2 2/5%, issued		
May 14, 2015, due 2021 to 2043	2,209	2,415
2015 Series B Water, 2%, issued		
May 14, 2015, due 2021 to 2033	1,490	1,607
2016 Series A Sewer, 2% to 2 2/5%, issued		
March 11, 2016, due 2022 to 2046	33,219	34,490
2016 Series A Water, 2%, issued		
March 11, 2016, due 2022 to 2036	10,793	11,397
2017 Series A Sewer, 2%, issued		
April 13, 2017, due 2022 to 2036	7,282	7,659
2017 Series A Water, 2%, issued		
April 13, 2017, due 2022 to 2037	20,668	21,739
2018 Series E Sewer, 2%, issued		
September 12, 2018, due 2021 to 2038	15,964	16,682
2018 Series E Water, 2%, issued		
September 12, 2018, due 2021 to 2038	29,947	31,295
2019 Series D Sewer, 2%, issued		
October 24, 2019, due 2021 to 2039	31,445	32,770
2019 Series D Water, 2%, issued		
October 24, 2019, due 2021 to 2039	18,922	19,720
2020 Series A Water, Interim loan, issued		
May 8, 2020	-	25,148
2020 Series A Water, Interim loan, issued		
May 8, 2020	-	15,000
2021 Series A Sewer, 2%, issued		
May 11, 2021, due 2022 to 2041	25,148	-
2021 Series A Water, 2%, issued		
May 11, 2021, due 2022 to 2041	25,290	-
	<u>893,938</u>	<u>952,950</u>
Total		

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(Dollars in thousands)

	2021	2020
General Revenue Bonds (Variable Rates):		
1999 Series B, 0.10% to 0.21%, issued January 29, 1999, due 2021 to 2028	\$ 42,100	\$ 46,500
Total	42,100	46,500
General Revenue Refunding Bonds (Fixed Rates):		
2012 Series G, 1.38%, issued November 15, 2012, due 2021 to 2023 (Direct Borrowing)	8,780	15,700
Total	8,780	15,700
General Revenue Refunding Bonds (Variable Rates):		
2008 Series A, 0.03% to 0.20%, issued May 29, 2008, due 2021 to 2037	160,150	193,310
2008 Series C, 0.02% to 0.20%, issued May 29, 2008, due 2021 to 2026	44,120	54,500
2008 Series E, 0.03% to 0.21%, issued May 29, 2008, due 2021 to 2037	107,140	133,640
2012 Series E, 0.48% to 0.66%, issued November 15, 2012, due 2021 to 2031 (Direct Borrowing)	55,237	56,870
2014 Series A, 0.54% to 0.67%, issued May 20, 2014, due 2022 to 2025 (Direct Borrowing)	50,000	50,000
2014 Series B, 0.50% to 0.56%, issued May 20, 2014, due 2021 to 2022 (Direct Borrowing)	31,505	43,035
2018 Series A, 0.40% to 0.44%, issued March 26, 2018, due 2023 to 2031 (Direct Borrowing)	47,530	47,530
2018 Series D, 0.43% to 0.61%, issued May 31, 2018, due 2025 to 2029 (Direct Borrowing)	50,000	50,000
Total	545,682	628,885
Revolving Loan:		
2015 Series C, issued November 1, 2015, due 2045	53,000	53,000
Total	4,677,615	4,795,420
Less:		
Unamortized Bond Premiums and Discounts	333,221	309,025
Current Portion of Long-Term Debt	(247,882)	(245,839)
Borrowings Associated with Derivative Instruments	28,074	31,014
Total	113,413	94,200
Long-Term Debt, Net	\$ 4,791,028	\$ 4,889,620

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June 30, 2021 and 2020

(Dollars in thousands)

Long-term obligations at June 30, 2021 and 2020 consisted of the following:

	2021			2021	Due
	Beginning	Additions	Reductions	Ending	Within
	Balance			Balance	One Year
General Revenue Bonds	\$ 629,000	\$ 160,000	\$ 63,435	\$ 725,565	\$ 61,395
General Revenue Refunding Bonds	2,897,335	-	135,275	2,762,060	90,485
Refunding from Direct Borrowings	263,135	-	20,083	243,052	24,117
General Revenue Bonds with the Massachusetts Clean Water Trust					
- Direct Borrowings	952,950	50,438	109,450	893,938	71,885
Borrowings Associated with Derivative Instruments	31,014	-	2,940	28,074	-
Revolving Loan	53,000	-	-	53,000	-
Total	\$ 4,826,434	\$ 210,438	\$ 331,183	\$ 4,705,689	\$ 247,882
	2020			2020	Due
	Beginning	Additions	Reductions	Ending	Within
	Balance			Balance	One Year
General Revenue Bonds	\$ 692,320	\$ 50,000	\$ 113,320	\$ 629,000	\$ 48,875
General Revenue Refunding Bonds	2,938,730	570,575	611,970	2,897,335	107,580
Refunding from Direct Borrowings	288,125	-	24,990	263,135	20,083
General Revenue Bonds with the Massachusetts Clean Water Trust					
- Direct Borrowings	979,883	92,638	119,571	952,950	69,301
Borrowings Associated with Derivative Instruments	33,954	-	2,940	31,014	-
Revolving Loan	53,000	-	-	53,000	-
Total	\$ 4,986,012	\$ 713,213	\$ 872,791	\$ 4,826,434	\$ 245,839

The Authority is required to establish water and sewer rates and charges at a level sufficient to provide, among other things, primary and subordinated debt service coverage ratios of 120% and 110%, respectively. For the year ended June 30, 2021, the Authority had primary and subordinated debt service coverage ratios of 203% and 120%, respectively.

Under the Authority's General Revenue Bond Resolution, all revenues, together with the investment earnings thereon, except to the extent that such earnings are required to be deposited in the Rebate Fund pursuant to a Supplemental Resolution, are pledged for payment of the Bonds.

The Act of 1984 imposes a limitation of \$600,000 on the total amount of bonds and notes which may be outstanding at any one time. The Authority has requested increases in its debt limit as necessary to allow for issuances of bonds in amounts required to finance the capital program. The state legislature increased the debt limit to \$6,450,000.

On August 20, 2020, the Authority issued General Revenue Bonds, 2020 Series B for \$160,000. The proceeds from these bonds will be used to finance new construction projects. The interest rate on these bonds is 5%.

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On November 1, 2019, the Authority issued General Revenue Bonds (Federally Taxable), 2019 Series E for \$50,000, General Revenue Refunding Bonds (Federally Taxable), 2019 Series F for \$547,750 and General Revenue Refunding Bonds, 2019 Series G for \$22,825.

The proceeds from the Series E bonds were used to finance new construction projects. The interest rate on these bonds range from 1.89 to 3.22%.

The proceeds from the Series F bonds were used to refund \$840 of General Revenue Bonds 2011 Series B, \$69,150 of General Revenue Bonds 2012 Series A, \$66,870 of General Revenue Refunding Bonds 2010 Series B, \$282,435 of General Revenue Refunding Bonds 2011 Series C and \$86,775 of General Revenue Refunding Bonds 2012 Series B.

The interest rate of these bonds range from 1.66% to 3.10%. The cash flow required to make principal and interest payments on the funding bonds is approximately \$95,685 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is \$72,934.

The proceeds from the Series G bonds were used to refund \$23,415 of General Revenue Bonds 2002 Series C.

The interest rate on these bonds is 5%. The cash flow required to make principal and interest payments on the refunding bonds is approximately \$349 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is \$345.

On November 1, 2015, the Authority entered into a revolving credit agreement with a bank. The Authority shall repay the loan at the Commitment Termination Date, December 29, 2023. The revolving loan automatically converts into a term loan if the Authority does not extend or refund the agreement by this date. Interest is payable at the Securities Industry and Financial Markets Association (SIFMA) index rate, beginning January 19, 2021 and, prior to this date, at 80% of the 1 month LIBOR rate. These rates were 0.10% and 0.17% at June 30, 2021 and 2020, respectively. Initial drawdown was \$100,000, which was reduced to \$79,000 at June 30, 2016. The balance was further reduced in fiscal year 2018 to \$53,000 using the proceeds from the General Revenue Bonds, 2018 Series B.

Synthetic Fixed Rate Swap Transactions

In connection with several of its bond issues, the Authority has entered into various interest rate swap agreements to reduce the impact of changes in interest rates on its variable rate debt. Under these agreements, the Authority pays a fixed interest rate (ranging from 4.0% to 6.9%) and receives interest from the swap counterparties at a variable rate (either SIFMA rate or a percentage of LIBOR). The SIFMA rate is based on the seven-day high-grade market index of tax-exempt variable rate demand obligations.

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Item	Objective	Effective Date	Current Notional Amount	Termination Date	Fixed Payable Swap Rate	Variable Receivable Swap Rate	Fair Value at June 30,	
							2021	2020
A	Hedge changes in cash flows on the 2008 Series A Bonds	April 4, 2011	\$ 106,750	August 1, 2030	6.585%	67% LIBOR Plus 0.13%	\$ (8,402)	\$ (12,108)
B	Hedge changes in cash flows on the 2008 Series E Bonds	October 28, 2008	106,750	August 1, 2030	6.935	SIFMA	(13,182)	(18,532)
C	Hedge changes in cash flows on the 2008 Series A and 2008 Series E Bonds	August 1, 2030	70,400	August 1, 2037	6.585	67% LIBOR Plus 0.13%	(4,930)	(6,658)
D	Hedge changes in cash flows on the 2008 Series C Bonds	May 29, 2008	31,435	November 1, 2026	3.994	SIFMA	(2,797)	(4,138)
E	Hedge changes in cash flows on the 2008 Series C and 2012 Series G Bonds	May 29, 2008	20,960	November 1, 2026	4.033	SIFMA	(612)	(1,107)
Total							<u>\$ (29,923)</u>	<u>\$ (42,543)</u>

All of the above are pay-fixed interest rate swap agreements. Under these interest rate swap agreements, the Authority incurred net interest expense of \$16,652 and \$16,852 in fiscal year 2021 and fiscal year 2020, respectively.

For the swap effective on April 4, 2011, with a current notional amount of \$106,750, the fixed rate paid by the Authority is as follows: 4.120% from execution until August 2013, 5.144% from August 2013 until August 2019, and 6.585% from August 2019 until August 2030.

For the swap execution on October 28, 2008, with a current notional amount of \$106,750, the fixed rate paid by the Authority is as follows: 4.470% from execution until August 2013, 5.494% from August 2013 until August 2019, and 6.935% from August 2019 until August 2030.

The aggregate fair value balance of the derivative instruments at June 30, 2021 and 2020 is \$(29,923) and \$(42,543), respectively, and is reflected on the Authority's statements of net position as a liability for derivative instruments. This liability is offset by deferred outflows from derivative instruments. The original notional amounts of the interest rate swaps totaled \$535,895.

The fair values of the interest rate swaps were estimated using the zero-coupon method. This method calculates the future net settlement payments required by the swap, assuming that the current forward rates implied by the yield curve correctly anticipate future spot interest rates. These payments are then discounted using the spot rates implied by the current yield curve for hypothetical zero-coupon bonds due on the date of each future net settlement on the swaps. The interest rate swaps are classified in Level 2 of the fair value hierarchy, as outlined in Government Accounting Standards Board Statement No. 72, *Fair Value Measurement and Application*, as valued using a market approach that considers benchmark interest rates.

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Risk Disclosure

Credit Risk - Because all of the Authority's swaps rely upon the performance of the third parties who serve as swap counterparties, the Authority is exposed to credit risk, or the risk that a swap counterparty fails to perform according to its contractual obligations. The appropriate measurement of this risk at the reporting date is the fair value of the swaps, as shown in the columns labeled Fair Value in the tables above. To mitigate credit risk, the Authority maintains strict credit standards for swap counterparties. The Authority monitors swap counterparties' credit ratings by the three rating agencies (FitchRatings, Moody's Investors Service, and S&P Global Ratings). Collateral may be obtained from any counterparty that does not maintain a set credit rating. Since all derivatives are in a liability position, there is no amount exposed to credit risk.

The following represents the credit ratings of the counterparties as of June 30, 2021:

<u>Derivative instrument</u>	<u>Counterparty credit rating</u>
Derivative A	A+
Derivative B	AA-
Derivative C	A+
Derivative D	A
Derivative E	A+

Basis Risk - The Authority is exposed to basis risk because the floating index the Authority receives on the swaps (SIFMA or 67% of LIBOR) may be different than the basis of the variable rate on the associated bonds. Should this occur, the expected savings may not be realized.

Termination Risk - The Authority or its counterparties may terminate a derivative instrument if the other party fails to perform under the terms of the contract. If, at the time of termination, a derivative is in a liability position, the Authority would be liable to the counterparty for a payment equal to the liability, subject to netting arrangements.

Rollover Risk - The Authority can be exposed to rollover risk on hedging derivative instruments that are hedges of debt that terminate prior to the maturity of the debt. The Authority currently has no rollover risk. When derivative instruments A and B terminate in 2030, those bond series will then be hedged by derivative instrument C.

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Swap Payments and Associated Bonds Outstanding

Bonds outstanding include certain variable rate bonds where the Authority pays a fixed interest rate and receives interest at a variable rate from the counterparty. The table below presents the debt service requirements and related net swap payments for these bonds. As rates vary, variable rate interest payments will vary.

Using rates as of June 30, 2021, debt service requirements of the hedged variable rate bonds and net swap payments, assuming current interest rates remain constant, were as follows:

<u>Fiscal Year Ending June 30:</u>	<u>Variable-rate</u>		<u>Interest Rate</u>	<u>Total</u>
	<u>Principal</u>	<u>Interest</u>	<u>Swaps, Net</u>	
2022	\$ 32,200	\$ 1,392	\$ 15,158	\$ 48,750
2023	67,345	1,128	11,827	80,300
2024	15,025	1,020	8,812	24,857
2025	16,000	907	7,562	24,469
2026	16,600	720	6,476	23,796
2027–2031	48,295	2,213	18,578	69,086
2032–2036	41,800	1,631	11,602	55,033
2037–2038	28,600	101	1,121	29,822
Total	<u>\$ 265,865</u>	<u>\$ 9,112</u>	<u>\$ 81,136</u>	<u>\$ 356,113</u>

Demand Bonds

Included in variable rate long-term debt of \$587,782 is \$353,510 of subordinated variable rate demand obligations (VRDOs). The bonds were issued on various dates from 1999 through 2008. Subordinated VRDOs are subject to purchase on the demand of the holder at a price equal to principal plus accrued interest. The ability of the Authority to purchase such bonds, if not remarketed, is secured through letters of credit and standby bond purchase agreements with various nationally recognized financial institutions that expire between May 2022 and May 2024. The VRDOs are classified as long-term debt because the liquidity agreement for each series contains term out provisions that, if demand is made to repurchase the bonds, calls for a two to three year amortization to repay the bonds.

In 2014, \$114,755 of 2014 Series A and B General Revenue Refunding Bonds were issued as direct-purchase bonds, to be held by the purchaser for a specific period of time and are not subject to purchase or remarketing at the demand of the holder and therefore do not require a letter of credit or standby bond purchase agreement. The \$50,000 of Series A and \$31,505 of Series B have been purchased through August 2025 and August 2022, respectively. In addition, the 2012 Series E General Revenue Refunding Bonds, totaling \$55,237, has a three year term out provision beginning at the expiration date and the 2018 Series A & D General Revenue Refunding Bonds, totaling \$97,530, have three year term out provisions beginning at the expiration dates.

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At June 30, 2021, the following bonds outstanding are considered defeased in-substance:

<u>Description</u>	<u>Redemption date</u>	<u>Redemption price</u>	<u>Outstanding principal amount</u>
2011 Series B	2021	100	\$ 120,895
2011 Series C	2021	100	291,160
2012 Series A	2022	100	120,740
2012 Series B	2022	100	86,775
2013 Series A	2021 - 2023	100	11,305
2014 Series D	2022 - 2024	100	10,425
2014 Series F	2023	100	2,655
2016 Series C	2022 and 2023	100	5,740
2016 Series D	2024	100	835
2017 Series B	2023 and 2026	100	3,735
2017 Series C	2021 - 2023 and 2026	100	25,380
2018 Series B	2024 and 2025	100	6,700
2018 Series C	2024	100	4,400
2019 Series B	2023	100	3,735
2020 Series B	2024	100	3,825

The proceeds and available funds were deposited in irrevocable trusts with escrow agents in an amount which will provide for payment of interest due to the redemption date and redemption of the defeased bonds outstanding on such date. The defeased portion of such debt, accrued interest thereon, and related unamortized issuance and discount costs were removed from the statements of net position in an in-substance defeasance transaction.

In June 2021, the Authority used funds on hand to defease \$2,345 of the 2017 Series B, \$6,700 of the 2018 Series B and \$3,825 of the 2020 Series B General Revenue Bonds and \$640 of the 2013 Series A and \$12,500 of the 2017 Series C General Revenue Refunding Bonds outstanding.

In September 2020, the Authority used funds on hand to defease \$1,690 of the General Revenue Bonds 2014 Series D and \$2,655 of the 2014 Series F, \$2,750 of the 2016 Series C, \$4,750 of the 2017 Series C and \$4,400 of the 2018 Series C General Revenue Refunding Bonds outstanding.

In June 2020, the Authority used funds on hand to defease \$3,135 of the 2014 Series D, \$1,455 of the 2017 Series B and \$3,735 of the 2019 Series B General Revenue Bonds and \$7,860 of the 2013 Series A, \$2,990 of the 2016 Series C, \$835 of the 2016 Series D and \$8,130 of the 2017 Series C General Revenue Refunding Bonds outstanding.

In November 2019, the Authority used funds on hand to defease \$1,390 of the General Revenue Bonds 2017 Series B and \$8,725 of the General Revenue Refunding Bonds 2011 Series C outstanding.

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At June 30, 2021, outstanding bonds that are redeemable before their scheduled due dates are as follows:

<u>Description</u>	<u>Redemption date</u>	<u>Redemption price</u>	<u>Outstanding principal amount</u>
2013 Series A	August 2023	100	\$ 43,830
2014 Series D	August 2024	100	53,885
2014 Series F	August 2024	100	93,655
2016 Series B	August 2026	100	54,775
2016 Series C	August 2026	100	610,650
2016 Series D	August 2026	100	98,425
2017 Series B	August 2027	100	55,775
2017 Series C	August 2027	100	114,795
2018 Series B	August 2025	100	20,430
2018 Series B	August 2028	100	75,940
2019 Series B	August 2029	100	70,265
2019 Series E	August 2029	100	38,395
2019 Series F	August 2029	100	180,180
2020 Series B	August 2030	100	118,325

The variable rate General Revenue Bonds are subject to redemption prior to maturity at the option of the Authority in whole or in part, on any interest payment date for bond Series 1999B and on any business day for bond Series 2008A, 2008C, 2008E, 2012G, 2014A, 2014B, 2018A and 2018D, respectively. Series 2012E is subject to redemption prior to maturity on any interest payment date after November 15, 2014.

During fiscal year 2021, the Authority executed loan agreements with the Massachusetts Clean Water Trust providing for 2021 Series A Sewer and Water loans in the principal amounts of \$25,148 and \$25,290, respectively. These loans replaced \$25,148 of interim sewer loans and \$15,000 of interim water loans executed in fiscal year 2020. All proceeds for these loans were received by June 30, 2021.

During fiscal year 2020, the Authority executed loan agreements with the Massachusetts Clean Water Trust providing for 2019 Series D Sewer and Water loans in the principal amounts of \$32,770 and \$19,720, respectively, replacing interim loans executed in fiscal year 2019. All proceeds for these loans were received by June 30, 2020.

Federal and Commonwealth subsidies for purposes of offsetting principal payments aggregating \$21,656 will be recognized as capital grants in aid of construction over the term of the loans.

Interest is payable semiannually on all debt, except on the commercial paper, on which interest is payable upon maturity and the General Revenue Bonds and General Revenue Refunding Bonds with variable interest rates on which interest is payable monthly. The Senior General Revenue Bonds and the Senior General Revenue Refunding Bonds are collateralized equally and ratably by a lien and pledge on substantially all of the Authority's cash and revenues, except the operating fund.

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The subordinated debt series, including the commercial paper interest are collateralized equally and ratably by a subordinated pledge on substantially all of the Authority's revenues and cash and investments, except the operating, senior debt service, and debt service reserve funds. Premiums, discounts, issuance costs, and the excess of reacquisition price over the carrying amount of the defeased debt are being amortized over the lives of the respective issues.

The amounts of long-term debt, principal, and interest payable in future fiscal years are as follows:

<u>Year Ending June 30:</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2022	\$ 247,882	\$ 181,978	\$ 429,860
2023	271,083	172,583	443,666
2024	283,684	162,910	446,594
2025	285,752	151,372	437,124
2026	289,531	140,450	429,981
2027–2031	1,349,953	537,725	1,887,678
2032–2036	908,006	306,943	1,214,949
2037–2041	826,432	114,662	941,094
2042–2046	215,292	14,161	229,453
Total	<u>\$ 4,677,615</u>	<u>\$ 1,782,784</u>	<u>\$ 6,460,399</u>

In fiscal year 2021 the Authority had \$75,000 of commercial paper notes outstanding. In fiscal year 2021 the Authority issued commercial paper notes of \$75,000 to finance capital expenditures.

These notes are secured by \$100,000 and \$150,000 irrevocable direct-pay letters of credit which expire on December 8, 2021, and April 12, 2023, respectively. These letters of credit carry a fee of 0.45% and 0.265% per annum, respectively, on the amount available. The maximum aggregate principal amount of commercial paper which may be outstanding at any one time is \$250,000.

Commercial paper at June 30, 2021 and 2020 consisted of the following:

	<u>2021</u>			<u>2021</u>
	<u>Beginning</u>	<u>Additions</u>	<u>Reductions</u>	<u>Ending</u>
	<u>balance</u>			<u>balance</u>
1.72% Commercial Paper	\$ 75,000	\$ -	\$ 75,000	\$ -
1.14% Commercial Paper	-	75,000	-	75,000
Total	<u>\$ 75,000</u>	<u>\$ 75,000</u>	<u>\$ 75,000</u>	<u>\$ 75,000</u>
	<u>2020</u>			<u>2020</u>
	<u>Beginning</u>	<u>Additions</u>	<u>Reductions</u>	<u>Ending</u>
	<u>balance</u>			<u>balance</u>
1.86% Commercial Paper	\$ 75,000	\$ -	\$ 75,000	\$ -
1.72% Commercial Paper	-	75,000	-	75,000
Total	<u>\$ 75,000</u>	<u>\$ 75,000</u>	<u>\$ 75,000</u>	<u>\$ 75,000</u>

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(7) Intergovernmental Loans

The Authority has entered into various interest-free loan agreements with certain member communities. Under these agreements, the Authority loaned these communities \$51,845 and \$40,599 in fiscal years 2021 and 2020, respectively, to be received in five or ten equal annual installments.

The long-term portion of these loans at June 30, 2021 and 2020 is \$178,874 and \$159,980, respectively, and is included in other assets. The loans due within one year total \$35,926 and \$31,252 at June 30, 2021 and 2020, respectively. This program is designed to assist member communities with sewer and water systems rehabilitation.

(8) Capital Assets

Capital assets at June 30, 2021 and 2020 consisted of the following:

	<u>2020</u>	<u>Additions</u>	<u>Disposals/ transfers</u>	<u>2021</u>
Capital assets not being depreciated:				
Land	\$ 29,936	\$ 122	\$ -	\$ 30,058
Construction in progress	214,102	100,042	(86,111)	228,033
Total capital assets not being depreciated	<u>244,038</u>	<u>100,164</u>	<u>(86,111)</u>	<u>258,091</u>
Capital assets being depreciated:				
Plant and equipment – water and sewage system	9,893,027	85,013	-	9,978,040
Furniture and fixtures	17,561	-	-	17,561
Leasehold improvements	2,423	-	-	2,423
Motor vehicles and equipment	11,428	976	-	12,404
Total capital assets being depreciated	<u>9,924,439</u>	<u>85,989</u>	<u>-</u>	<u>10,010,428</u>
Less: accumulated depreciation for:				
plant and equipment – water and sewage system	4,388,608	195,619	-	4,584,227
Furniture and fixtures	17,519	6	-	17,525
Leasehold improvements	2,168	12	-	2,180
Motor vehicles and equipment	4,805	906	-	5,711
Total accumulated depreciation	<u>4,413,100</u>	<u>196,543</u>	<u>-</u>	<u>4,609,643</u>
Total capital assets being depreciated, net	<u>5,511,339</u>	<u>(110,554)</u>	<u>-</u>	<u>5,400,785</u>
Total capital assets, net	<u><u>\$ 5,755,377</u></u>	<u><u>\$ (10,390)</u></u>	<u><u>\$ (86,111)</u></u>	<u><u>\$ 5,658,876</u></u>

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(Dollars in thousands)

Capital assets at June 30, 2020 and 2019 consisted of the following:

	<u>2019</u>	<u>Additions</u>	<u>Disposals/ transfers</u>	<u>2020</u>
Capital assets not being depreciated:				
Land	\$ 29,885	\$ 51	\$ -	\$ 29,936
Construction in progress	<u>149,794</u>	<u>110,945</u>	<u>(46,637)</u>	<u>214,102</u>
Total capital assets not being depreciated	<u>179,679</u>	<u>110,996</u>	<u>(46,637)</u>	<u>244,038</u>
Capital assets being depreciated:				
Plant and equipment – water and sewage system	9,846,990	46,037	-	9,893,027
Furniture and fixtures	17,561	-	-	17,561
Leasehold improvements	2,423	-	-	2,423
Motor vehicles and equipment	<u>10,880</u>	<u>548</u>	<u>-</u>	<u>11,428</u>
Total capital assets being depreciated	<u>9,877,854</u>	<u>46,585</u>	<u>-</u>	<u>9,924,439</u>
Less: accumulated depreciation for:				
plant and equipment – water and sewage system	4,193,501	195,107	-	4,388,608
Furniture and fixtures	17,493	26	-	17,519
Leasehold improvements	2,156	12	-	2,168
Motor vehicles and equipment	<u>3,967</u>	<u>838</u>	<u>-</u>	<u>4,805</u>
Total accumulated depreciation	<u>4,217,117</u>	<u>195,983</u>	<u>-</u>	<u>4,413,100</u>
Total capital assets being depreciated, net	<u>5,660,737</u>	<u>(149,398)</u>	<u>-</u>	<u>5,511,339</u>
Total capital assets, net	<u>\$ 5,840,416</u>	<u>\$ (38,402)</u>	<u>\$ (46,637)</u>	<u>\$ 5,755,377</u>

Depreciation and amortization for fiscal years 2021 and 2020 was \$214,478 and \$211,214, respectively.

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(9) Leases

Operating

The Authority leases office space in Boston and other property under long-term operating leases. Future minimum rental payments required under operating leases having initial or remaining non-cancelable lease terms in excess of one year at June 30, 2021 are as follows:

<u>Year Ending June 30:</u>	<u>Amount</u>
2022	\$ 1,876
2023	1,777
2024	160
2025	164
2026	168
2027-2031	791
Total	<u>\$ 4,936</u>

Rental expense was \$4,103 and \$3,881 in fiscal years 2021 and 2020, respectively.

Capital

In fiscal year 2002, the Authority entered into a 30-year capital lease agreement for the new maintenance facility. The interest rate for the capital lease is 7.83%. Future minimum lease payments for the capital lease at June 30, 2021 are as follows:

<u>Year Ending June 30:</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2022	\$ 1,422	\$ 1,795	\$ 3,217
2023	1,538	1,679	3,217
2024	1,663	1,554	3,217
2025	1,798	1,419	3,217
2026	1,944	1,273	3,217
2027-2031	12,359	3,727	16,086
2032	2,837	112	2,949
Total	<u>\$ 23,561</u>	<u>\$ 11,559</u>	<u>\$ 35,120</u>

Under this lease, the Authority is also responsible for “Additional Rent,” as defined in the lease. The Additional Rent includes real estate taxes, assessments, and other government charges.

The associated capital asset is reported in plant and equipment – water and sewage system at a cost of \$37,134 with \$24,519 of accumulated depreciation as of June 30, 2021.

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(10) Retirement Benefits

(a) Plan Description

The Enabling Act provided for the establishment of the Massachusetts Water Resources Authority Employees' Retirement System (the Plan), a contributory single-employer retirement system that is separate from the State Employees Retirement System. The Plan is a defined benefit pension plan covering those employees not employed by the MDC prior to July 1, 1985. Complete financial statements for the Plan can be obtained from the Authority's administrative offices at Charlestown Navy Yard, 100 First Avenue, Boston, MA 02129.

(b) Benefits Provided

The Plan provides retirement, disability and death benefits. For employees hired prior to April 2, 2012, the annual amount of the retirement allowance is based on the member's final three-year average salary multiplied by (1) the number of years and full months of creditable service at the time of retirement and (2) a percentage based on age at retirement in accordance with a schedule provided by state law. Assuming normal retirement at age 65, this percentage is 2.5%, which is reduced for individuals who retire prior to age 65 to reflect the longer pay out period.

For employees hired on or after April 2, 2012, the annual amount of the retirement allowance is based on the member's final five-year average salary multiplied by (1) the number of years and full months of creditable service at the time of retirement and (2) a percentage based on age at retirement in accordance with a schedule provided by state law. Assuming normal retirement at age 67, this percentage is 2.5%.

Employees hired prior to April 2, 2012, may elect early retirement after 20 years of service or at any time after attaining age 55 with 10 years of eligible service. Plan members who become permanently and totally disabled may be eligible to receive a disability retirement allowance. The amount of benefits to be received depends on several factors, including the member's age, compensation, veteran status, years of service and whether or not the disability is work-related. In addition, certain death benefits exist for beneficiaries of employees who die in active service.

All MDC personnel who became employees of the Authority on July 1, 1985, and were members of the State Employees Retirement System, retained their membership in that system. The Authority is not liable for retirement allowances paid to or on account of these employees. Funding of the pension liability of the State Employees Retirement System is the obligation of the Commonwealth. Employees covered by this plan become 100% vested after 10 years of service.

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(c) *Employees Covered by Benefit Terms*

At December 31, 2020 (the date of the Plan's latest actuarial valuation), the following employees were covered by the benefit terms:

Retired Participants and Beneficiaries Receiving Benefits	702
Inactive Participants Entitled to a Return of their Employee Contributions	89
Inactive Participants with a Vested Right to a Deferred or Immediate Benefit	34
Active Participants	<u>1,103</u>
Total	<u><u>1,928</u></u>

(d) *Contributions*

Contributions made by employees are based upon a percentage of employee base pay (5% for employees hired before December 31, 1974, 7% for employees hired between January 1, 1975 and December 31, 1983, 8% for employees hired between December 31, 1983, and June 30, 1996, and 9% for employees hired after July 1, 1996). Additionally, certain employees earning in excess of \$30 contribute an extra 2% of their salary effective January 1, 1979. Employees receive full payment of contributions upon withdrawal from the Plan and 50% of interest earned for employees with five to nine years of service or 100% of interest earned for employees with 10 or more years of service.

The Authority's 2021 and 2020 contributions to the plan were based on an amount approved by the Retirement Board and the Authority's board of directors, which is based on an actuarially determined amount. The Authority's Enabling Act requires funding to be made in accordance with the Retirement Board's recommendation. In fiscal year 2021 the Authority made a \$10.0 million required contribution. In fiscal year 2020 the Authority made a \$7.3 million required contribution.

(e) *Net Pension Liability (Pension Trust Reporting)*

Investment Policy:

Deposits and investments made by the Pension Trust are governed by Chapter 32 of the MGL. The Pension Trust has the ability to invest in equity securities, corporate bonds, annuities and other specified investments in accordance with state laws and regulations.

The Retirement Board has the authority for establishing and amending investment policy decisions. Based on the investment objectives and constraints of the Pension Trust, and based on an annual review of the asset allocation and asset classes, the Retirement Board will specify a long-term target allocation for each class of permissible assets. These targets will be expressed as a percentage of the total portfolio, and will have ranges surrounding them, allowing for the portfolio to maintain policy through market fluctuations.

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The long-term target allocations are intended as strategic goals. Thus, it is permissible for the overall Pension Trust's asset allocation to deviate from the long-term target, as would likely occur during manager transitions, asset class restructurings, and other temporary changes in the Pension Trust. Surplus cash flows are utilized to maintain the asset management structure. Should these cash flows not be sufficient to reallocate the plan according to policy, the transfer of assets may occur between managers. At least annually, the Retirement Board reevaluates the portfolio weightings by asset class and adjustments are made accordingly. The following identifies the asset allocation policy as of December 31, 2020 and 2019:

Asset Class	December 31, 2020	December 31, 2019
	Target Allocation	Target Allocation
Domestic Equity	26%	24%
International Equity	21	20
Real Estate	10	10
Private Equity	10	10
Hedge Funds	6	11
Fixed Income	27	25
Total	100%	100%

Rates of Return:

For the years ended December 31, 2020 and 2019, the annual money-weighted rate of return on investments, net of investment expense, was 12.78% and 15.58%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

The components of the net pension liability of the Pension Trust at December 31, 2020 and 2019, were as follows:

	2020	2019
Total Pension Liability	\$ 712,864	\$ 653,616
Plan Fiduciary Net Position	648,376	578,957
Net Pension Liability	\$ 64,488	\$ 74,659
Plan's Fiduciary Net Position as Percentage of the Total Pension Liability	90.95%	88.58%

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Actuarial assumptions: The total pension liability was determined by actuarial valuations as of January 1, 2021 and January 1, 2020, and update procedures were used to roll back the total pension liability to the December 31, 2020 and 2019 measurement dates. The following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Inflation	3%
Salary Increases	Based on years of service, starting at 5.75% at 0 years of service decreasing to 4% after 9 years of service
Discount Rate	6.90% and 7.10% at December 31, 2020 and 2019, respectively
Cost of Living Adjustments	Adjusted to 3% of the first \$15,000 at December 31, 2020 and 2019 as permitted under Massachusetts Chapter 188 of the Acts of 2010
Mortality Rates (January 1, 2021):	
Pre-Retirement:	Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Amount - weighted Mortality Tables projected generationally using Scale MP-2020
Healthy Retiree:	Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Amount - Weighted Mortality Tables projected generationally using Scale MP-2020
Disabled Retiree:	Pub-2010 General Disabled Retiree Amount - weighted Mortality Tables set forward one year projected generationally using Scale MP-2020
Mortality Rates (January 1, 2020):	
Pre-Retirement:	RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017
Healthy Retiree:	RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017
Disabled Retiree:	RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year projected generationally with Scale MP-2017

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Rates of return on investments: The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the Plan's target asset allocation are summarized as follows:

Asset Class	Long-Term Expected Rate of Return (%)	
	December 31, 2020	December 31, 2019
Domestic Equity	6.28	6.15
International Equity	7.00 - 8.82	6.78 - 8.65
Real Estate	3.5	4.33
Private Equity	10.11	9.99
Hedge Funds	2.35	3.19
Fixed Income	0.38 - 2.97	1.11 - 3.51

(f) Discount Rate

The discount rate used to measure the total pension liability was 6.90% and 7.10% for December 31, 2020 and 2019, respectively. The projection of cash flows used to determine the discount rate assumed that Plan member contributions will be made at the current contribution rate and that the Authority contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current Plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

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(g) Changes in the Net Pension Liability (Employer Reporting)

The Plan's net pension liability was measured as of December 31, 2020 and 2019 for the reporting dates June 30, 2021 and 2020, respectively. The total pension liability was determined by actuarial valuations as of January 1, 2021 and January 1, 2020, respectively, rolled back to the measurement dates.

	Increase (Decrease)		
	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a) - (b)
Balances at June 30, 2019	<u>\$ 607,247</u>	<u>\$ 507,291</u>	<u>\$ 99,956</u>
Changes for the Year:			
Service Cost	12,735	-	12,735
Interest	44,062	-	44,062
Differences Between Expected and actual experience	3,529	-	3,529
Contributions - employer	-	7,315	(7,315)
Contributions - employee	-	9,722	(9,722)
Net investment income	-	79,557	(79,557)
Benefit payments	(24,464)	(24,464)	-
Administrative expenses	-	(464)	464
Changes of assumptions	<u>10,507</u>	<u>-</u>	<u>10,507</u>
Net changes	<u>46,369</u>	<u>71,666</u>	<u>(25,297)</u>
Balances at June 30, 2020	653,616	578,957	74,659
Changes for the year:			
Service cost	13,338	-	13,338
Interest	46,455	-	46,455
Differences between expected and actual experience	(263)	-	(263)
Contributions - employer	-	10,000	(10,000)
Contributions - employee	-	10,188	(10,188)
Net investment income	-	74,947	(74,947)
Benefit payments	(25,313)	(25,313)	-
Administrative expenses	-	(403)	403
Changes of assumptions	<u>25,031</u>	<u>-</u>	<u>25,031</u>
Net changes	<u>59,248</u>	<u>69,419</u>	<u>(10,171)</u>
Balances at June 30, 2021	<u>\$ 712,864</u>	<u>\$ 648,376</u>	<u>\$ 64,488</u>

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(h) Sensitivity of the Net Pension Liability (Asset) to Changes in the Discount Rate

The following presents the net pension liability (asset), calculated using the discount rate of 6.90% and 7.10%, as well as what the net pension liability (asset) would be if it were calculated using a discount rate that is 1-percentage-point lower (5.90% and 6.10%) or 1-percentage-point higher (7.90% and 8.10%) than the current rate:

	1% Decrease (5.90%)	Current Discount (6.90%)	1% Increase (7.90%)
Net pension liability as of June 30, 2021	<u>\$ 150,983</u>	<u>\$ 64,488</u>	<u>\$ (8,904)</u>

	1% Decrease (6.10%)	Current Discount (7.10%)	1% Increase (8.10%)
Net pension liability as of June 30, 2020	<u>\$ 153,966</u>	<u>\$ 74,659</u>	<u>\$ 7,444</u>

(i) Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

For the years ended June 30, 2021 and 2020, the Authority recognized pension expense of \$12,437 and \$22,662, respectively, and reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	June 30, 2021		June 30, 2020	
	Deferred Outflow of Resources	Deferred Inflow of Resources	Deferred Outflow of Resources	Deferred Inflow of Resources
Differences between expected and actual experience	\$ 3,978	\$ 1,783	\$ 5,108	\$ 3,121
Changes of assumptions	40,105	-	28,111	-
Net difference between projected and actual earnings on pension plan investments	-	37,577	-	12,766
Total	<u>\$ 44,083</u>	<u>\$ 39,360</u>	<u>\$ 33,219</u>	<u>\$ 15,887</u>

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ending June 30:	Amount
2022	\$ 1,308
2023	7,782
2024	(4,852)
2025	485
Total	<u>\$ 4,723</u>

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(11) Other Postemployment Benefits (OPEB)

(a) Plan Description

In addition to providing the pension benefits described, the Authority provides postemployment health care and life insurance benefits for retired employees through the Group Insurance Commission (GIC). The GIC is a quasi-independent state agency that administers an agent multi-employer defined benefit OPEB plan. The benefits, benefit levels, employee contributions and employer contributions are governed by the Authority and can be amended by the Authority. The plan issues a separate financial report that can be obtained by contacting the Massachusetts Water Resources Authority, Finance Division, 100 First Avenue, Boston, MA 02129.

In April 2015, the Authority established the MWRA OPEB Irrevocable Trust. The Trust was established for the sole purpose of providing for the advance funding of future costs of retired employee health insurance and other benefits provided to retirees. An initial deposit of \$10.8 million was made to the trust upon establishment of the trust. The balance of the trust was \$61.8 million and \$43.7 million at June 30, 2021 and June 30, 2020, respectively.

(b) Plan Membership

At June 30, 2021 plan membership consisted of the following:

Inactive plan members or beneficiaries currently receiving benefits	916
Inactive plan members entitled to but not yet receiving benefits	33
Active plan members	<u>943</u>
Total	<u><u>1,892</u></u>

(c) Benefits Provided

The Authority provides medical, prescription drug, mental health/substance abuse and life insurance to retirees and their covered dependents. All active employees who retire from the Authority and meet the eligibility criteria will receive these benefits.

(d) Contributions

Retirees who retired on or before July 1, 1994 contribute 10% of the cost of the health plans, as determined by the GIC. Those who retired after July 1, 1994 contribute 15% of the cost of the health plan and those who retired after October 1, 2009 contribute 20% of the cost of the health plan, as determined by the GIC. The Authority contributes the remainder of the health plan costs on a pay-as-you-go basis.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

(e) Investments

Investment policy. The assets are invested by the Trust with the Commonwealth of Massachusetts Pension Reserves Investment Trust (PRIT) fund. The Trust's Board of Trustees may vote to approve a different investment vehicle, at its discretion. The following was the PRIT fund's asset allocation at June 30, 2021 and 2020:

Asset Class	June 30, 2021 Target Allocation	June 30, 2020 Target Allocation
Domestic Equity	22%	21%
International Equity	17	18
Fixed Income	23	23
Private Equity	14	13
Real Estate	10	10
Other	14	15
Total	<u>100 %</u>	<u>100 %</u>

Concentrations. No investment in any one organization represented 5% or more of the Trust's investments.

Rate of return. For the year ended June 30, 2021 and 2020, the annual money-weighted rate of return on investments, net of investment expense was 27.37% and 1.88%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for changing amounts actually invested.

(f) Net OPEB Liability (Trust Reporting)

The components of the net OPEB liability at June 30, 2021 and 2020, were as follows:

	2021	2020
Total OPEB Liability	\$ 136,805	\$ 132,819
Plan Fiduciary Net Position	61,764	43,729
Net OPEB Liability	<u>\$ 75,041</u>	<u>\$ 89,090</u>
 Plan's Fiduciary Net Position as Percentage of the Total OPEB Liability	 45.15%	 32.92%

Actuarial assumptions. The total OPEB liability was determined by an actuarial valuation as of December 31, 2019, and update procedures were used to roll forward the total OPEB liability to June 30, 2021 and 2020 measurement dates. The following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

Inflation	3.0%
Salary increases	5.75%, decreasing over 9 years to an ultimate level of 4.0%
Discount rate	7.0%, net of OPEB plan investment expense, including inflation
Healthcare cost trend rates	7.0% for 2019, decreasing 0.5% per year for 3 years to 5.5%, then decreasing by 0.5% each year to an ultimate rate of 4.5%
Mortality Rates (June 30, 2021):	Mortality rates were based on the Pub-2010 General Employee, Healthy Retiree and Contingent Survivor Headcount- Weighted Mortality Tables projected generationally using Scale MP-2020 for retirees and Pub-2010 General Healthy Retiree Headcount-Weighted Mortality Tables set forward one year projected generationally using Scale MP-2020 for the disabled.
Mortality Rates (June 30, 2020):	Mortality rates were based on the RP-2014 Blue Collar Mortality Table for Employees projected using generational mortality and scale MP-2017 for active employees, the RP-2014 Blue Collar Mortality Tables for Healthy Annuitants projected using generational mortality and scale MP-2017 for retirees and the RP-2014 Blue Collar Mortality Tables for Healthy Annuitants projected using generational mortality and scale MP-2017 set forward one year for the disabled.

The long-term expected rate of return on OPEB plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the target asset allocation as of June 30, 2021 and 2020 (see discussion of the Trust's investment policy) are summarized in the following table:

Asset Class	Long-Term Expected Rate of Return (%)	
	June 30, 2021	June 30, 2020
Domestic Equity	6.28	6.15
International Equity	7.00 - 8.82	6.78 - 8.65
Fixed Income	0.38 - 2.97	1.11 - 3.51
Private Equity	10.11	9.99
Real Estate	3.50	4.33
Other	2.35 - 3.45	3.19 - 4.13

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

Discount rate. The discount rate used to measure the total OPEB liability was 7.0% for both June 30, 2021 and 2020. The projection of cash flows used to determine the discount rate assumed that Authority contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

(g) Changes in the Net OPEB Liability

	Increase (Decrease)		
	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability
	(a)	(b)	(a) - (b)
Balances at June 30, 2019	\$ 161,064	\$ 37,072	\$ 123,992
Changes for the year:			
Service cost	4,604	-	4,604
Interest	11,424	-	11,424
Differences between expected and actual experience	(5,862)	-	(5,862)
Contributions - employer	-	10,885	(10,885)
Net investment income	-	695	(695)
Benefit payments	(4,923)	(4,923)	-
Changes of assumptions	(33,488)	-	(33,488)
Net changes	(28,245)	6,657	(34,902)
Balances at June 30, 2020	132,819	43,729	89,090
Changes for the year:			
Service cost	3,739	-	3,739
Interest	9,372	-	9,372
Differences between expected and actual experience	-	-	-
Contributions - employer	-	11,506	(11,506)
Net investment income	-	11,969	(11,969)
Benefit payments	(5,440)	(5,440)	-
Changes of assumptions	(3,685)	-	(3,685)
Net changes	3,986	18,035	(14,049)
Balances at June 30, 2021	\$ 136,805	\$ 61,764	\$ 75,041

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

Sensitivity of the net OPEB liability to changes in the discount rate. The following presents the net OPEB liability of the Authority, as well as what the Authority's net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.0%) or 1-percentage-point higher (8.0%) than the current discount rate:

	<u>1% Decrease (6.0%)</u>	<u>Discount Rate (7.0%)</u>	<u>1% Increase (8.0%)</u>
Net OPEB Liability as of June 30, 2021	<u>\$ 91,860</u>	<u>\$ 75,041</u>	<u>\$ 60,872</u>
	<u>1% Decrease (6.0%)</u>	<u>Discount Rate (7.0%)</u>	<u>1% Increase (8.0%)</u>
Net OPEB Liability as of June 30, 2020	<u>\$ 106,574</u>	<u>\$ 89,090</u>	<u>\$ 74,561</u>

Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates. The following presents the net OPEB liability of the Authority, as well as what the Authority's net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage-point lower or 1-percentage-point higher than the current healthcare cost trend rates:

	<u>1% Decrease (6.0% - 3.5%)</u>	<u>Base Rate (7.0% - 4.5%)</u>	<u>1% Increase (8.0% - 5.5%)</u>
Net OPEB Liability as of June 30, 2021	<u>\$ 57,705</u>	<u>\$ 75,041</u>	<u>\$ 96,238</u>
	<u>1% Decrease (6.0% - 3.5%)</u>	<u>Base Rate (7.0% - 4.5%)</u>	<u>1% Increase (8.0% - 5.5%)</u>
Net OPEB Liability as of June 30, 2020	<u>\$ 72,456</u>	<u>\$ 89,090</u>	<u>\$ 109,595</u>

(h) OPEB Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to OPEB

For the years ended June 30, 2021 and 2020, the Authority recognized OPEB expense of (\$1,990) and \$3,873, respectively, and reported deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources:

	<u>June 30, 2021</u>		<u>June 30, 2020</u>	
	<u>Deferred Outflow of Resources</u>	<u>Deferred Inflow of Resources</u>	<u>Deferred Outflow of Resources</u>	<u>Deferred Inflow of Resources</u>
Differences between expected and actual experience	\$ -	\$ 7,471	\$ -	\$ 10,620
Changes of assumptions	-	23,040	-	26,790
Net difference between projected and actual earnings on OPEB Trust investments	-	5,507	1,946	-
Total	<u>\$ -</u>	<u>\$ 36,018</u>	<u>\$ 1,946</u>	<u>\$ 37,410</u>

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(Dollars in thousands)

Amounts reported as deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized in OPEB expense as follows:

<u>Year Ending June 30:</u>	<u>Amount</u>
2022	\$ (11,827)
2023	(11,790)
2024	(9,925)
2025	(2,476)
Total	<u>\$ (36,018)</u>

(12) Commitments and Contingencies

(a) General

The Authority's capital improvement program continues to proceed. As part of this program, the Authority has entered into a number of contracts for the design and construction of infrastructure and improvements to its facilities. Commitments under these contracts aggregated approximately \$757,339 at June 30, 2021.

The Authority's operating and construction plans are designed to comply with the Federal District Court's schedule of actions. The Authority has incurred capital expenditures of approximately \$8,768,000 from fiscal years 1986 through 2021, including those projects required to comply with the Federal District Court's schedule. The Authority anticipates spending an additional \$575,035 on these projects through fiscal year 2023. These capital expenditures have been forecasted based upon certain preliminary assumptions and estimates, which may change significantly as design and construction of the necessary facilities proceed. Funding is expected to come from various federal and state grants, as available and approved, and from the Authority's debt proceeds. To date, federal appropriations for the Boston Harbor Project have aggregated \$810,000.

(b) Boston Harbor Case

The Authority continues to be a defendant, along with Boston Water and Sewer Commission (BWSC) and the Commonwealth, in the federal Boston Harbor Case. The federal action was originally brought in 1985 by the United States on behalf of the United States Environmental Protection Agency (EPA) and by certain citizens' groups for Clean Water Act violations. As part of the Boston Harbor Case, the Authority was required to undertake certain corrective actions to meet wastewater treatment, discharge and combined sewer overflow (CSO) requirements, including the completion of new and improved primary and secondary treatment facilities at Deer Island. Beyond these major improvements to its wastewater treatment capabilities, the Authority also was required to improve water quality in the Alewife Brook and Charles and Mystic Rivers by its adoption of a Long Term CSO Control Plan which was comprised of 35 projects, the last three of which were completed on time by the close of calendar year 2015. In March 2016 the federal district court formally received the Authority's 2015 annual CSO project report, officially noting completion of all Plan projects.

MASSACHUSETTS WATER RESOURCES AUTHORITY

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June 30, 2021 and 2020

(Dollars in thousands)

In March 2006, the Authority reached agreement with the United States and the Massachusetts Department of Environmental Protection (DEP) on the scope and schedule for the remaining CSO projects which was filed with the Court as part of a joint motion to amend the Court Schedule. In April 2006, the Court allowed the joint motion and issued an Order with a schedule. Under the Order, the Authority had a three-year performance assessment period, from 2018 through 2020, to conduct analyses which will compare project benefits of the CSO program against actual performance results and to report those findings to the district court. The Court has further extended the assessment period through 2021.

As part of the agreement, DEP agreed to reissue and EPA agreed to approve five (5) consecutive variances of no more than three years duration each, through the year 2020, for the Charles River and Alewife Brook/Upper Mystic River that are consistent with and limited to the requirements in the Authority's revised Long Term CSO Control Plan. Variances have most recently been issued by DEP on or about August 2019. The variances will respectively remain in place for the Charles River until August 31, 2024 and for the Alewife/Upper Mystic until August 31, 2024. In addition, the United States and the Authority agreed to withdraw the February 27, 1987 *Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflows* and replace it with a Second Stipulation that requires the Authority to implement the CSO requirements set forth in the Court Schedule and to meet the levels of control described in the Authority's long term CSO Control Plan. Once these performance parameters have been reached, the Second Stipulation makes the Authority responsible for only those CSO outfalls which it owns and operates.

There has been no imposition of penalties by the Court against MWRA on the merits of the claims originally asserted in the Boston Harbor Case to date. The Court always retains the right to order remedial action and to assess penalties.

(c) Deer Island Submarine Power Cable

In 2004, the United States Army Corps of Engineers (Corps) notified Boston Edison Co. (NSTAR), its subsidiary Harbor Energy Electric Company (HEEC), and the Authority of allegations that each, as permittees, were in violation of certain depth requirements contained in a permit (MA BOSS 198900530, dated August 31, 1989) which authorized the installation of a submarine electric power cable running under the channel bed of Boston Harbor extending from South Boston to Deer Island, used to provide electric power for Deer Island operations. The Corps alleges that the power cable, in places, has been installed at depths less than those required by the permit and would eventually interfere with a project of harbor dredging known as the Boston Harbor Deep Draft Navigation Improvement Project (the "Project") which will allow deep-draft cargo vessels to dock in Boston Harbor.

MWRA's position is that it is not the owner of the cable, that it was not involved in the planning, design, location or installation of the cable, that it had no meaningful knowledge, participation in or control over the misplacement of the cable and therefore should have no legal responsibility to move it or relocate it. MWRA has also maintained that its status as a "permittee" in the Corps' permit differs substantially from that of NSTAR and HEEC as the former merely lent its name to an application for the permit solely because it would allow permit review by the Corps to be expedited. The cable is vitally important to MWRA as it provides the primary means by which electricity is delivered to Deer Island to power its wastewater operations.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

Settlement Efforts

Efforts to resolve the dispute concerning compliance with the permit and responsibility for the cable protection costs date back to approximately 2005. Discussions during these prior years among the interested parties over the years produced only a proposed method intended by NSTAR and HEEC for protection of the cable from the Project which would have entailed carefully exposing the cable, placing concrete mats over it followed by backfilling of sediments over both the cable and mats without either moving it or burying the cable deeper in the channel. The Authority has consistently advised NSTAR and HEEC that it has and will accept no financial responsibility whatsoever for the costs of either protecting or relocating the cable.

Litigation and Conditional Settlement

United States of America v. NSTAR Electric Company d/b/a Eversource Energy, Harbor Electric Energy Co., and Massachusetts Water Resources Authority, U.S. District Court, District of Massachusetts, C.A. No. 16-11470-RGS As a result of the need to achieve even deeper dredging depths than the Army Corps had initially recommended in 2016 and the likelihood that those depths might not be practicably reachable especially in light of the addition of the proposal to add protective concrete mats, the United States, acting on behalf of the Corps, commenced a lawsuit in July 2016 in the federal district court in Boston against MWRA, NSTAR and HEEC under the Rivers and Harbors Act and under the Clean Water Act asking the federal district court to determine the permittees' non-compliance with the 1990 permit and to assess penalties for the obstruction caused by the mis-located cable in two shipping channels of Boston Harbor. In that lawsuit, the Corps also asked that MWRA, NSTAR and HEEC, each named as permittees under the permit, be enjoined from further maintaining the cable in its present location. MWRA filed its Answer to the Complaint, including cross claims against co-defendants NSTAR and HEEC, in August 2016. Following a failed motion to dismiss both the Complaint and MWRA's cross-claims, NSTAR and HEEC eventually filed their Answer to the Complaint and cross-claimed against MWRA upon a theory of indemnification that MWRA had the primary obligation as the sole customer of the cable to pay any and all expenses necessary to correct the location of the cable improperly installed by HEEC.

Resolution of the federal court litigation was conditionally accomplished over the period of May through July 2017 when it became imperative that the Corps be able to determine whether it would be able to save the federal appropriation dollars for the Project without the aid of or reliance upon the federal court's enforcement powers. The first component of this recent resolution was the negotiation and execution of an agreement among MWRA, NSTAR and HEEC whereby HEEC will provide MWRA with a new 115 kV power cable over a different cross-harbor route by December 31, 2019.

In fiscal year 2020 the new cable was installed and energized and the old cable de-energized and decommissioned, meeting the stipulated dates in the Order.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

The agreement stipulates that the Authority pay 50% of the cost of the cable, total estimated at \$114,000 less a credit of \$17,500, at the in-service date of the new cable or earlier if the parties mutually agree to such advance payment. The remainder of the total cost of the cable will be paid by the Authority to HEEC in accordance with the provisions for electric service set forth in the tariff established by the Massachusetts Department of Public Utilities. The credit of \$17,500 will be provided by HEEC to the Authority if the cable is placed in service by December 31, 2019. The credit will be applied at a rate of \$2,500 over a period of seven years, commencing in 2020. As of June 2021, HEEC estimates the project costs to be approximately \$119,000, exclusive of any project costs for unknown conditions or requirements imposed on HEEC to close out the project or secure dismissal of the federal court action. The Authority, upon agreement by HEEC, has prepaid \$48,796 of its estimated share of the cost of the cable.

The agreement is for a term of thirty years, at least the useful life of the cable. Annual tariff cost of the cable is estimated between \$4,500 and \$7,300 in the next ten years. In addition to the tariff cost, operating and maintenance costs will also be charged.

The second component of the conditional resolution of the federal court lawsuit involves the entry of a Stipulation and Order in the federal lawsuit by the parties and the Court in July 2017 which, inter alia, compels NSTAR and HEEC, but not MWRA, to be responsible for all costs and efforts toward the design and installation, by the end of calendar year 2019 inclusive of all permitting, of the new 115 kV power cable along a new route to serve MWRA's power distribution needs at its Deer Island facility. NSTAR and HEEC, but not MWRA, further agreed to de-energize and decommission the existing non-compliant power cable by February 2020 and remove from the harbor channels portions of the old cable by May 2020. As noted above, the old cable was de-energized and decommissioned in fiscal year 2020 meeting the stipulated dates in the Order. The Order includes the potential assessment of stipulated penalties and/or actual delay damages against NSTAR and HEEC, but not MWRA, for failure without good cause to meet those milestones, the completion of which are necessary to allow the harbor and shipping channel-deepening Project to move forward. MWRA will not be a permittee with respect to the new Corps permit and satisfaction of HEEC and NSTAR's obligations regarding the installation of the new cable will preclude the Corps from any further enforcement of its 1990 permit against MWRA. All claims of all parties to the federal court lawsuit have been stayed pending satisfaction of the obligations of HEEC and NSTAR under the Stipulation and Order. Completion of all obligations under the Stipulation and Order will result in the eventual dismissal with prejudice of all such claims. Outstanding permit issues are all that remain for the Corps to sign off on dismissal of this action.

(d) Miscellaneous

The Authority is also a defendant in several legal actions and administrative proceedings arising out of its operation, maintenance, and improvement of the water and sewer systems under its care. It is the opinion of management that any judgments or settlements that may result from these actions will not have a materially adverse effect upon the Authority.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2021 and 2020

(Dollars in thousands)

(13) Risk Management

The Authority is exposed to various risks of loss. The risk management program involves insurance and self-insurance related to property, general liability (including automobile, marine and employers' liability), excess liability, public officials' liability, workers' compensation, unemployment liability, and employee health care and life insurance.

Buildings, plants, and equipment are fully insured on an all risk replacement basis to the extent that losses exceed \$2,500 per occurrence, up to a limit of \$300,000. The Authority maintains insurance coverage for general liability, automobile liability, marine liability, and employers' liability to the extent that losses exceed \$2,500 per occurrence, up to a limit of \$25,000. In addition to the primary liability insurance, the Authority maintains excess liability policies with additional limits of \$75,000. The Authority is self-insured for workers' compensation claims up to \$1,000 per occurrence and maintains excess workers' compensation insurance coverage with a limit of \$25,000 per occurrence. The Authority also maintains public officials' liability insurance with a limit of \$5,000 per occurrence with a \$1,000 self-insured retention. All insurance policies are renewed on an annual basis. The amount of claim settlements has not exceeded insurance coverage in any of the previous three fiscal years.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Employer Contributions – Last Ten Years
Required Supplementary Information – GASB No. 67 and 68

(Unaudited)

(Dollars in Thousands)

Plan, Year Ended December 31, Employer, Year Ended June 30,	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Actuarially Determined Contribution	\$ 10,000	\$ 7,315	\$ 7,000	\$ 3,277	\$ 3,133	\$ 8,159	\$ 7,808	\$ 5,919	\$ 5,766	\$ 5,512
Contributions in Relation to the Actuarially Determined Contribution	10,000	7,315	7,000	3,277	4,633	8,159	12,630	12,447	10,490	7,363
Contribution Deficiency (Excess)	\$ -	\$ -	\$ -	\$ -	\$ (1,500)	\$ -	\$ (4,822)	\$ (6,528)	\$ (4,724)	\$ (1,851)
Covered Payroll	\$ 99,988	\$ 97,814	\$ 95,819	\$ 92,975	\$ 89,755	\$ 89,169	\$ 88,646	\$ 84,829	\$ 84,829	\$ 82,870
Contributions as a Percentage of Covered Payroll	10.00%	7.48%	7.31%	3.52%	5.16%	9.15%	14.25%	14.67%	12.37%	8.89%

Notes to Required Supplementary Information

Valuation Date Actuarial determined contributions for fiscal year 2021 are determined with the January 1, 2020 actuarial valuation.

Actuarial Cost Method Entry age normal

Amortization Method Total appropriation increases 12.05% per year.

Remaining Amortization Period As of July 1, 2020, 10 years for the remaining unfunded liability

Asset Valuation Method Market value of assets as reported in the Plan's annual statement less unrecognized return in each of the last five years.
Unrecognized return is equal to the difference between the actual market value return and the expected market value return and is recognized over a five-year period, further adjusted, if necessary, to be within 10% of the market value.

Actuarial Assumptions:

Investment Rate of Return	7.10%
Discount Rate	7.10%
Inflation Rate	3.00%
Projected Salary Increases	Based on years of service, ranging from 5.75% at 0 years of service decreasing to 4.00% after 9 years of service.
Cost of Living Adjustments	3% on first \$15,000

Plan Membership:

Retired Participants and Beneficiaries Receiving Benefits	672
Inactive Participants Entitled to a Return of their Employee Contributions	75
Inactive Participants with a Vested Right to a Deferred or Immediate Benefit	37
Active Participants	1,105
Total	1,889

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Changes in the Net Pension Liability and Related Ratios – Last Ten Years

Required Supplementary Information – GASB No. 67 and 68

(Unaudited)

(Dollars in Thousands)

	Measurement Date						
	2020	2019	2018	2017	2016	2015	2014
Total Pension Liability:							
Service cost	\$ 13,338	\$ 12,735	\$ 11,762	\$ 11,308	\$ 11,080	\$ 10,638	\$ 10,529
Interest	46,455	44,062	41,392	38,520	36,917	34,598	33,587
Differences between expected and actual experience	(263)	3,529	3,250	(146)	(9,143)	-	(8,380)
Changes of assumptions	25,031	10,507	16,401	7,977	13,298	-	4,921
Changes of benefit terms	-	5,027	-	-	2,050	-	-
Benefit payments, including refunds of employee contributions	(25,313)	(24,464)	(21,428)	(18,222)	(16,129)	(15,390)	(12,963)
Net change in total pension liability	59,248	46,369	56,404	39,437	38,073	29,846	27,694
Total pension liability - beginning	653,616	607,247	550,843	511,406	473,333	443,487	415,793
Total pension liability - ending	\$ 712,864	\$ 653,616	\$ 607,247	\$ 550,843	\$ 511,406	\$ 473,333	\$ 443,487
Plan Fiduciary Net Position:							
Contributions - employer	\$ 10,000	\$ 7,315	\$ 7,000	\$ 3,277	\$ 4,633	\$ 8,159	\$ 12,630
Contributions - employee	10,188	9,722	9,484	9,091	8,757	8,402	8,245
Net investment income	74,947	79,557	(17,114)	70,517	24,183	(530)	20,484
Benefit payments, including refunds of employee contributions	(25,313)	(24,464)	(21,428)	(18,222)	(16,129)	(15,390)	(12,963)
Administrative expenses	(403)	(464)	(469)	(447)	(426)	(412)	(408)
Other - military service fund contribution	-	-	-	-	-	-	16
Net change in fiduciary net position	69,419	71,666	(22,527)	64,216	21,018	229	28,004
Plan fiduciary net position - beginning	578,957	507,291	529,818	465,602	444,584	444,355	416,351
Plan fiduciary net position - ending	\$ 648,376	\$ 578,957	\$ 507,291	\$ 529,818	\$ 465,602	\$ 444,584	\$ 444,355
Net Pension Liability (Asset) - Ending	\$ 64,488	\$ 74,659	\$ 99,956	\$ 21,025	\$ 45,804	\$ 28,749	\$ (868)
Plan's Fiduciary Net Position as a Percentage of the Total Pension Liability	90.95%	88.58%	83.54%	96.18%	91.04%	93.93%	100.20%
Covered Payroll	\$ 102,143	\$ 98,145	\$ 95,819	\$ 92,975	\$ 89,755	\$ 89,169	\$ 88,646
Net Pension Liability (Asset) as a Percentage of Covered Payroll	63.14%	76.07%	104.32%	22.61%	51.03%	32.24%	(0.98%)

This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Investment Returns – Last Ten Years

Required Supplementary Information – GASB No. 67

(Unaudited)

	Year ended December 31,						
	2020	2019	2018	2017	2016	2015	2014

Annual money-weighted rate of return, net of investment expenses

	12.78%	15.58%	-10.03%	15.02%	5.81%	-0.24%	4.40%
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This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Changes in the Employer's Net OPEB Liability and Related Ratios – Last Ten Years Required Supplementary Information – GASB No. 74 and 75

(Unaudited)

(Dollars in Thousands)

	2021	2020	2019	2018	2017
Total OPEB Liability					
Total OPEB Liability - Beginning	\$ 132,819	\$ 161,064	\$ 150,978	\$ 154,254	\$ 146,143
Service Cost	3,739	4,604	4,463	2,820	2,705
Interest	9,372	11,424	10,705	10,821	10,253
Differences between expected and actual experience	-	(5,862)	-	(11,860)	-
Change of assumptions	(3,685)	(33,488)	-	-	-
Benefit Payments	(5,440)	(4,923)	(5,082)	(5,057)	(4,847)
Net Change in total OPEB liability	3,986	(28,245)	10,086	(3,276)	8,111
Total OPEB Liability - Ending	136,805	132,819	161,064	150,978	154,254
Plan Fiduciary Net Position					
Plan fiduciary net position - beginning	43,729	37,072	29,774	22,782	16,123
Contributions - employer (claims + additional funding)	11,506	10,885	10,656	10,093	9,723
Net Investment Income	11,969	695	1,724	1,956	1,783
Benefit Payments	(5,440)	(4,923)	(5,082)	(5,057)	(4,847)
Net Change in plan fiduciary net position	18,035	6,657	7,298	6,992	6,659
Plan fiduciary net position - ending	61,764	43,729	37,072	29,774	22,782
Net OPEB Liability	\$ 75,041	\$ 89,090	\$ 123,992	\$ 121,204	\$ 131,472
Plan fiduciary net position as a percentage of the total OPEB liability	45.1%	32.9%	23.0%	19.7%	14.8%
Covered-employee payroll	\$ 106,879	\$ 103,778	\$ 98,238	\$ 94,816	\$ 86,475
MWRAs net OPEB liability as a percentage of covered-employee payroll	70.2%	85.8%	126.2%	127.8%	152.0%

Notes to Schedule

Changes in Assumptions - June 30, 2021 : mortality assumptions and retirement rates were updated in order to be consistent with the companion pension plan

Changes in Assumptions - June 30, 2020 : the per capital health care costs were updated to reflect recent experience (reduced to 7% starting from 8%), trend assumptions were revised to better reflect future expectations, the excise tax on high cost health plans beginning in 2022 was repealed effective December 20, 2019 and removed from the valuation, spouse election percentage assumptions was lowered from 75% to 65% after analysis of past experience

Data is being accumulated annually to present 10 years of the reported information.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Employer Contributions - Last Ten Years

Required Supplementary Information – GASB No. 75

(Unaudited)

(Dollars in Thousands)

	Fiscal year ended June 30,									
	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Actuarially determined contribution	\$ 9,144	\$ 8,997	\$ 11,812	\$ 11,400	\$ 10,948	\$ 14,996	\$ 14,564	\$ 15,621	\$ 14,482	\$ 19,151
Contributions in relation to the actuarially determined contribution	11,506	10,885	10,656	10,093	9,723	9,804	14,852	3,493	2,813	3,986
Contribution deficiency (excess)	<u>(2,362)</u>	<u>(1,888)</u>	<u>1,156</u>	<u>1,307</u>	<u>1,225</u>	<u>5,192</u>	<u>(288)</u>	<u>12,128</u>	<u>11,669</u>	<u>15,165</u>
Covered-employee payroll	\$ 106,879	\$ 103,778	\$ 98,238	\$ 94,816	\$ 86,475					
Contributions as a percentage of covered-employee payroll	10.8%	10.5%	10.8%	10.6%	11.2%					

Notes to Schedule

Methods and assumptions used to determine contributions rates:

Actuarial cost method	Entry Age Normal
Amortization method	30 years (closed)
Asset valuation method	Market value of assets
Inflation	3%
Healthcare cost trend rates	7% for 2019, decreasing 0.5% per year for 6 years to an ultimate rate of 4.5%
Discount rate	7%
Mortality	<i>Actives:</i> RP-2014 Blue Collar mortality table for employees projected using generational mortality and scale MP-2017 <i>Retirees:</i> RP-2014 Blue Collar mortality tables for healthy annuitants projected using generational mortality and scale MP-2017 <i>Disabled:</i> RP-2014 Blue Collar mortality tables for healthy annuitants projected using generational mortality and scale MP-2017. Set forward one year.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Schedules of Investment Returns - Last Ten Years
Required Supplementary Information – GASB No. 74

(Unaudited)

	Fiscal year ended June 30,		
	2020	2019	2017

Annual money-weighted rate of return, net of investment expenses	27.37%	1.88%	5.80%	8.58%	10.58%
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This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY
Accounts Established by the General Revenue Bond Resolution
June 30, 2021
(comparative totals for June 30, 2020)
(Dollars in thousands)

	<u>Construction</u>	<u>Debt Service</u>	<u>Operating</u>	<u>Rate Stabilization</u>	<u>Revenue</u>	<u>Combined Reserves</u>	<u>Total</u>
Balance – June 30, 2020	\$ 141,521	\$ 505,505	\$ 44,046	\$ 43,044	\$ 39,765	\$ 24,482	\$ 798,363
Proceeds from:							
Revenue Bonds and Loans	224,205	-	-	-	-	-	224,205
Cash Received from Customers	-	-	-	-	786,077	-	786,077
Investment Income (Loss)	460	(2,708)	-	-	666	(1,271)	(2,853)
Debt Service Grant	-	1,288	-	-	-	-	1,288
Grant Receipts	984	3,330	-	-	-	-	4,314
Construction Payments	(152,344)	-	-	-	-	-	(152,344)
Capital Lease Payments	(1,210)	(1,739)	-	-	-	-	(2,949)
Debt Service Payment	(898)	(432,728)	-	-	(47,456)	-	(481,082)
Other Commonwealth Payments	-	-	-	-	(27,233)	-	(27,233)
Interfund Transfers	14,753	428,290	1,815	(1,500)	(443,288)	(70)	-
Transfers from (to) Operating Account	566	1,739	-	-	(260,385)	-	(258,080)
Balance – June 30, 2021	<u>\$ 228,037</u>	<u>\$ 502,977</u>	<u>\$ 45,861</u>	<u>\$ 41,544</u>	<u>\$ 48,146</u>	<u>\$ 23,141</u>	<u>\$ 889,706</u>

	<u>Total</u>			
	<u>Sewer</u>	<u>Water</u>	<u>2021</u>	<u>2020</u>
Restricted Investments:				
Construction	\$ 141,183	\$ 86,854	\$ 228,037	\$ 141,521
Debt Service - Debt Service Reserves	94,051	61,332	155,383	159,503
Debt Service - Debt Service P & I	216,255	105,807	322,062	319,640
Debt Service - Revenue Redemption	5,613	19,919	25,532	26,362
Operating Reserve	30,624	15,237	45,861	44,046
Rate Stabilization Reserve	24,047	17,497	41,544	43,044
Revenue	34,000	14,146	48,146	39,765
Combined - Renewal and Replacement Reserve	7,410	2,590	10,000	10,482
Combined - Insurance Reserve	6,571	6,570	13,141	14,000
Total Restricted Investments	<u>\$ 559,754</u>	<u>\$ 329,952</u>	<u>\$ 889,706</u>	<u>\$ 798,363</u>

See accompanying independent auditors' report.

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Net Position

June 30, 2021

(Dollars in thousands)

	Assets	Sewer	Water	Combined Total
Current assets:				
Cash and cash equivalents		\$ 47,586	\$ 22,345	\$ 69,931
Investments		2,223	2,520	4,743
Restricted investments		562,479	334,646	897,125
Intergovernmental loans		6,866	29,060	35,926
Accounts receivable		469	997	1,466
Interest receivable		490	373	863
Other		-	5,333	5,333
Total current assets		<u>620,113</u>	<u>395,274</u>	<u>1,015,387</u>
Noncurrent assets:				
Capital assets:				
Capital assets – not being depreciated		193,357	64,734	258,091
Capital assets – being depreciated – net		3,123,140	2,277,645	5,400,785
Regulatory assets		144,324	(84,909)	59,415
Other assets, net		157,715	170,722	328,437
Total noncurrent assets		<u>3,618,536</u>	<u>2,428,192</u>	<u>6,046,728</u>
Total assets		<u>4,238,649</u>	<u>2,823,466</u>	<u>7,062,115</u>
Deferred Outflows of Resources				
Deferred outflows from pension		28,920	15,163	44,083
Deferred outflows from derivative instruments		27,002	2,921	29,923
Deferred outflows from refunding debt		6,129	2,836	8,965
Liabilities				
Current liabilities:				
Accounts payable and accrued expenses		64,548	4,107	68,655
Accounts payable for construction		14,500	3,092	17,592
Commercial paper notes		21,000	54,000	75,000
Current portion of long-term debt		167,445	80,437	247,882
Accrued interest on bonds payable		48,150	25,358	73,508
Total current liabilities		<u>315,643</u>	<u>166,994</u>	<u>482,637</u>
Noncurrent liabilities:				
Reserves		39,616	24,250	63,866
Retainage on construction in progress		8,957	1,932	10,889
Long-term debt – less current portion		2,965,238	1,825,790	4,791,028
Long-term capital lease		16,770	6,791	23,561
Net pension liability		41,467	23,021	64,488
Other postemployment benefits		48,357	26,684	75,041
Liability for derivative instruments		27,002	2,921	29,923
Total noncurrent liabilities		<u>3,147,407</u>	<u>1,911,389</u>	<u>5,058,796</u>
Total liabilities		<u>3,463,050</u>	<u>2,078,383</u>	<u>5,541,433</u>
Deferred Inflows of Resources				
Deferred inflows from pension		25,231	14,129	39,360
Deferred inflows from OPEB		23,253	12,765	36,018
Deferred inflows from regulated activities		22,417	19,834	42,251
Net Position				
Net investment in capital assets		457,377	499,979	957,356
Restricted				
Construction		141,183	86,854	228,037
Debt service		80,587	50,652	131,239
Operating		33,839	20,305	54,144
Revenue		33,390	14,756	48,146
Unrestricted		20,373	46,729	67,102
Total net position		<u>\$ 766,749</u>	<u>\$ 719,275</u>	<u>\$ 1,486,024</u>
Commitments and contingencies				
See accompanying independent auditors' report				

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Net Position

June 30, 2020

(Dollars in thousands)

	Assets	Sewer	Water	Combined Total
Current assets:				
Cash and cash equivalents		\$ 46,351	\$ 24,507	\$ 70,858
Restricted investments		512,938	292,966	805,904
Intergovernmental loans		6,144	25,108	31,252
Accounts receivable		430	1,015	1,445
Interest receivable		632	227	859
Other		-	5,333	5,333
Total current assets		<u>566,495</u>	<u>349,156</u>	<u>915,651</u>
Noncurrent assets:				
Capital assets:				
Capital assets – not being depreciated		146,663	97,375	244,038
Capital assets – being depreciated – net		3,236,084	2,275,255	5,511,339
Regulatory assets		234,086	(20,584)	213,502
Other assets, net		141,780	165,399	307,179
Total noncurrent assets		<u>3,758,613</u>	<u>2,517,445</u>	<u>6,276,058</u>
Total assets		<u>4,325,108</u>	<u>2,866,601</u>	<u>7,191,709</u>
Deferred Outflows of Resources				
Deferred outflows from pension		21,987	11,232	33,219
Deferred outflows from OPEB		1,257	689	1,946
Deferred outflows from derivative instruments		38,417	4,126	42,543
Deferred outflows from refunding debt		6,455	3,009	9,464
Liabilities				
Current liabilities:				
Accounts payable and accrued expenses		51,673	1,246	52,919
Accounts payable for construction		19,616	2,916	22,532
Commercial paper notes		21,000	54,000	75,000
Current portion of long-term debt		180,468	65,371	245,839
Accrued interest on bonds payable		51,537	26,026	77,563
Total current liabilities		<u>324,294</u>	<u>149,559</u>	<u>473,853</u>
Noncurrent liabilities:				
Reserves		38,399	23,651	62,050
Retainage on construction in progress		6,384	2,670	9,054
Long-term debt – less current portion		3,026,024	1,863,596	4,889,620
Long-term capital lease		17,559	7,317	24,876
Net pension liability		47,958	26,701	74,659
Other postemployment benefits		57,324	31,766	89,090
Liability for derivative instruments		38,417	4,126	42,543
Total noncurrent liabilities		<u>3,232,065</u>	<u>1,959,827</u>	<u>5,191,892</u>
Total liabilities		<u>3,556,359</u>	<u>2,109,386</u>	<u>5,665,745</u>
Deferred Inflows of Resources				
Deferred inflows from pension		10,251	5,636	15,887
Deferred inflows from OPEB		24,141	13,269	37,410
Deferred inflows from regulated activities		13,410	20,450	33,860
Net Position				
Net investment in capital assets		385,842	508,595	894,437
Restricted				
Construction		85,420	56,101	141,521
Debt service		146,032	40,245	186,277
Operating		32,820	19,626	52,446
Revenue		23,990	15,775	39,765
Unrestricted		114,959	96,574	211,533
Total net position		<u>\$ 789,063</u>	<u>\$ 736,916</u>	<u>\$ 1,525,979</u>
Commitments and contingencies				
See accompanying independent auditors' report				

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Revenues, Expenses, and Changes in Net Position

Year Ended June 30, 2021

(Dollars in thousands)

	<u>Sewer</u>	<u>Water</u>	<u>Combined Total</u>
Operating revenues:			
Customer services	\$ 504,293	\$ 277,106	\$ 781,399
Other	3,033	1,687	4,720
Total operating revenues	<u>507,326</u>	<u>278,793</u>	<u>786,119</u>
Operating expenses:			
Operations	65,519	50,936	116,455
Maintenance	21,501	9,160	30,661
Payments in lieu of taxes	-	8,368	8,368
Engineering, general, and administrative	86,619	49,267	135,886
Total operating expenses	<u>173,639</u>	<u>117,731</u>	<u>291,370</u>
Income from operating before depreciation	333,687	161,062	494,749
Depreciation and amortization	<u>153,282</u>	<u>61,196</u>	<u>214,478</u>
Operating Income	<u>180,405</u>	<u>99,866</u>	<u>280,271</u>
Regulatory accounting provisions:			
Change in reserves	(1,217)	(598)	(1,815)
Change in regulatory provisions, net	<u>(98,769)</u>	<u>(63,709)</u>	<u>(162,478)</u>
Total regulatory accounting provisions	<u>(99,986)</u>	<u>(64,307)</u>	<u>(164,293)</u>
Nonoperating revenues (expenses):			
Debt service grant	1,172	116	1,288
Investment loss	(1,621)	(1,037)	(2,658)
Interest expense	(107,385)	(54,432)	(161,817)
Changes in derivative related accounts	2,528	412	2,940
Total nonoperating expenses	<u>(105,306)</u>	<u>(54,941)</u>	<u>(160,247)</u>
Net loss before capital grants and contributions	(24,887)	(19,382)	(44,269)
Capital grants and contributions	<u>2,573</u>	<u>1,741</u>	<u>4,314</u>
Decrease in net position	(22,314)	(17,641)	(39,955)
Total net position - beginning of year	<u>789,063</u>	<u>736,916</u>	<u>1,525,979</u>
Total net position - end of year	<u>\$ 766,749</u>	<u>\$ 719,275</u>	<u>\$ 1,486,024</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Revenues, Expenses, and Changes in Net Position

Year Ended June 30, 2020

(Dollars in thousands)

	<u>Sewer</u>	<u>Water</u>	<u>Combined Total</u>
Operating revenues:			
Customer services	\$ 504,993	\$ 268,249	\$ 773,242
Other	3,118	1,966	5,084
Total operating revenues	<u>508,111</u>	<u>270,215</u>	<u>778,326</u>
Operating expenses:			
Operations	67,757	45,527	113,284
Maintenance	19,207	10,530	29,737
Payments in lieu of taxes	-	8,330	8,330
Engineering, general, and administrative	88,797	53,479	142,276
Total operating expenses	<u>175,761</u>	<u>117,866</u>	<u>293,627</u>
Income from operating before depreciation	332,350	152,349	484,699
Depreciation and amortization	<u>149,712</u>	<u>61,502</u>	<u>211,214</u>
Operating income	<u>182,638</u>	<u>90,847</u>	<u>273,485</u>
Regulatory accounting provisions:			
Change in reserves	(1,529)	(565)	(2,094)
Change in regulatory provisions, net	<u>(107,452)</u>	<u>(56,246)</u>	<u>(163,698)</u>
Total regulatory accounting provisions	<u>(108,981)</u>	<u>(56,811)</u>	<u>(165,792)</u>
Nonoperating revenues (expenses):			
Debt service grant	820	72	892
Investment income	10,604	7,041	17,645
Interest expense	(112,686)	(60,946)	(173,632)
Changes in derivative related accounts	2,528	412	2,940
Total nonoperating expenses	<u>(98,734)</u>	<u>(53,421)</u>	<u>(152,155)</u>
Net loss before capital grants and contributions	(25,077)	(19,385)	(44,462)
Capital grants and contributions	<u>2,440</u>	<u>1,914</u>	<u>4,354</u>
Decrease in net position	(22,637)	(17,471)	(40,108)
Total net position - beginning of year	<u>811,700</u>	<u>754,387</u>	<u>1,566,087</u>
Total net position - end of year	<u>\$ 789,063</u>	<u>\$ 736,916</u>	<u>\$ 1,525,979</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Fiduciary Net Position

June 30, 2021

(Dollars in thousands)

	<u>December 31, 2020</u>	<u>June 30, 2021</u>	<u>2021</u>
	<u>MWRA Employees'</u>	<u>MWRA OPEB</u>	<u>Total</u>
	<u>Retirement System</u>	<u>Trust</u>	
Assets			
Cash and cash equivalents	\$ 7,495	\$ 6,235	\$ 13,730
Investments:			
Fixed income	168,937	-	168,937
Equities	321,132	-	321,132
Real estate	50,075	-	50,075
Private equity	50,667	-	50,667
Hedge funds	24,243	-	24,243
External investment pool	25,827	55,529	81,356
Total investments	<u>640,881</u>	<u>55,529</u>	<u>696,410</u>
Accounts receivable	652		652
Total assets	<u>649,028</u>	<u>61,764</u>	<u>710,792</u>
Liabilities			
Current liabilities:			
Accounts payable and accrued expenses	269	-	269
Due to primary government	78	-	78
Payables for securities purchased	305	-	305
Total liabilities	<u>652</u>	<u>-</u>	<u>652</u>
Fiduciary Net Position			
Restricted			
Pensions	648,376	-	648,376
Postemployment benefits other than pensions	-	61,764	61,764
Total fiduciary net position	<u>\$ 648,376</u>	<u>\$ 61,764</u>	<u>\$ 710,140</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Fiduciary Net Position

June 30, 2020

(Dollars in thousands)

	<u>December 31, 2019</u>	<u>June 30, 2020</u>	<u>2020</u>
	<u>MWRA Employees'</u>	<u>MWRA OPEB</u>	<u>Total</u>
	<u>Retirement System</u>	<u>Trust</u>	
Assets			
Cash and cash equivalents	\$ 6,590	\$ 6,126	\$ 12,716
Investments:			
Fixed income	170,973	-	170,973
Equities	271,597	-	271,597
Real estate	46,182	-	46,182
Private equity	41,013	-	41,013
Hedge funds	19,575	-	19,575
External investment pool	23,918	37,603	61,521
Total investments	<u>573,258</u>	<u>37,603</u>	<u>610,861</u>
Accounts receivable	434		434
Total assets	<u>580,282</u>	<u>43,729</u>	<u>624,011</u>
Liabilities			
Current liabilities:			
Accounts payable and accrued expenses	130	-	130
Due to primary government	66	-	66
Payables for securities purchased	1,129	-	1,129
Total liabilities	<u>1,325</u>	<u>-</u>	<u>1,325</u>
Fiduciary Net Position			
Restricted			
Pensions	578,957	-	578,957
Postemployment benefits other than pensions	-	43,729	43,729
Total fiduciary net position	<u>\$ 578,957</u>	<u>\$ 43,729</u>	<u>\$ 622,686</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Changes in Fiduciary Net Position

Year ended June 30, 2021

(Dollars in thousands)

	<u>December 31, 2020</u>	<u>June 30, 2021</u>	<u>2021</u>
	<u>MWRA Employees'</u>	<u>MWRA OPEB</u>	<u>Total</u>
	<u>Retirement System</u>	<u>Trust</u>	
Additions			
Contributions:			
Employer	\$ 10,000	\$ 11,506	\$ 21,506
Plan members	10,188	-	10,188
Total contributions	<u>20,188</u>	<u>11,506</u>	<u>31,694</u>
Investment income:			
Interest and dividends	9,474	6	9,480
Net realized and unrealized gains	68,757	12,205	80,962
Less: investment fees	<u>(3,284)</u>	<u>(242)</u>	<u>(3,526)</u>
Net investment income	<u>74,947</u>	<u>11,969</u>	<u>86,916</u>
Reimbursements and transfers from other systems	<u>2,096</u>	<u>-</u>	<u>2,096</u>
Total additions	<u>97,231</u>	<u>23,475</u>	<u>120,706</u>
Deductions			
Benefits paid to participants or beneficiaries	27,148	5,440	32,588
Reimbursements and transfers to other systems	261	-	261
Administrative expenses	403	-	403
Total deductions	<u>27,812</u>	<u>5,440</u>	<u>33,252</u>
Change in fiduciary net position	69,419	18,035	87,454
Total fiduciary net position - beginning of year	<u>578,957</u>	<u>43,729</u>	<u>622,686</u>
Total fiduciary net position - end of year	<u>\$ 648,376</u>	<u>\$ 61,764</u>	<u>\$ 710,140</u>

See accompanying independent auditors' report

MASSACHUSETTS WATER RESOURCES AUTHORITY

Combining Statement of Changes in Fiduciary Net Position

Year ended June 30, 2020

(Dollars in thousands)

	<u>December 31, 2019</u>	<u>June 30, 2020</u>	<u>2020</u>
	<u>MWRA Employees'</u>	<u>MWRA OPEB</u>	<u>Total</u>
	<u>Retirement System</u>	<u>Trust</u>	
Additions			
Contributions:			
Employer	\$ 7,315	\$ 10,885	\$ 18,200
Plan members	9,721	-	9,721
Total contributions	<u>17,036</u>	<u>10,885</u>	<u>27,921</u>
Investment income:			
Interest and dividends	7,874	53	7,927
Net realized and unrealized gains	73,816	829	74,645
Less: investment fees	<u>(2,133)</u>	<u>(187)</u>	<u>(2,320)</u>
Net investment income	<u>79,557</u>	<u>695</u>	<u>80,252</u>
Reimbursements and transfers from other systems	<u>1,955</u>	-	<u>1,955</u>
Total additions	<u>98,548</u>	<u>11,580</u>	<u>110,128</u>
Deductions			
Benefits paid to participants or beneficiaries	25,661	4,923	30,584
Reimbursements and transfers to other systems	757	-	757
Administrative expenses	<u>464</u>	-	<u>464</u>
Total deductions	<u>26,882</u>	<u>4,923</u>	<u>31,805</u>
Change in fiduciary net position	71,666	6,657	78,323
Total fiduciary net position - beginning of year	<u>507,291</u>	<u>37,072</u>	<u>544,363</u>
Total fiduciary net position - end of year	<u>\$ 578,957</u>	<u>\$ 43,729</u>	<u>\$ 622,686</u>

See accompanying independent auditors' report



Fish Pier Opening at Deer Island

This part of the Massachusetts Water Resources Authority's Fiscal Year 2021 Comprehensive Annual Financial Report presents detailed information to provide context to the information in the financial statements, note disclosures, required supplementary information and supplemental schedules.

CONTENTS

Financial Trends (92–95)

These schedules contain trend information to help the reader understand how MWRA's financial performance and well-being have changed over time.

Revenue Capacity (96–99)

These schedules contain information to help the reader assess MWRA's primary revenue source and community assessments.

Debt Capacity (100–103)

These schedules present information to help the reader assess the affordability of the MWRA's current level of outstanding debt and MWRA's ability to issue additional debt in the future.

Demographic and Economic Information (104–109)

These schedules offer demographic and economic indicators to help the reader understand the environment within which MWRA's financial activities take place.

Operating Information (110–112)

These schedules contain service and infrastructure data to help the reader understand how the information in MWRA's financial report relates to the services the MWRA provides and the activities it performs.

MASSACHUSETTS WATER RESOURCES AUTHORITY
Components of Net Position
Last Ten Fiscal Years
(Dollars in thousands)

	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>
Net investment in capital assets	\$ 957,356	\$ 894,437	\$ 827,050	\$ 759,757
Restricted				
Construction	228,037	141,521	189,293	105,802
Debt Service	131,239	186,277	98,251	173,098
Operating	54,144	52,446	50,862	48,915
Revenue	48,146	39,765	30,126	29,952
Unrestricted	67,102	211,533	370,505	487,875
Total net position	<u>\$ 1,486,024</u>	<u>\$ 1,525,979</u>	<u>\$ 1,566,087</u>	<u>\$ 1,605,399</u>

Source: FY2012 -2021 financial statements

<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>	<u>2012</u>
\$ 729,903	\$ 679,739	\$ 632,029	\$ 608,232	\$ 588,872	\$ 705,721
117,813	119,743	72,375	80,109	129,783	240,904
140,344	161,723	171,305	145,160	135,678	11,217
47,544	47,167	48,029	47,508	48,366	46,456
33,372	17,733	38,105	37,616	32,181	32,198
597,321	678,004	749,750	837,790	860,287	796,751
<u>\$ 1,666,297</u>	<u>\$ 1,704,109</u>	<u>\$ 1,711,593</u>	<u>\$ 1,756,415</u>	<u>\$ 1,795,167</u>	<u>\$ 1,833,247</u>

MASSACHUSETTS WATER RESOURCES AUTHORITY
Changes in Net Position
Last Ten Fiscal Years
(Dollars in thousands)

	2021	2020	2019	2018
Operating revenues:				
Customer services	\$ 781,399	\$ 773,242	\$ 750,742	\$ 728,281
Other	4,720	5,084	4,594	10,023
Total operating revenues	<u>786,119</u>	<u>778,326</u>	<u>755,336</u>	<u>738,304</u>
Operating expenses:				
Operations	116,455	113,284	113,878	106,943
Maintenance	30,661	29,737	30,651	29,067
Payments in lieu of taxes	8,368	8,330	8,230	8,220
Engineering, general, and administrative	135,886	142,276	152,351	133,627
Total operating expenses	<u>291,370</u>	<u>293,627</u>	<u>305,110</u>	<u>277,857</u>
Depreciation and amortization	214,478	211,214	207,127	202,799
Operating income	<u>280,271</u>	<u>273,485</u>	<u>243,099</u>	<u>257,648</u>
Nonoperating items:				
Regulatory accounting provisions	(164,293)	(165,792)	(121,739)	(106,777)
Net nonoperating expenses	(163,187)	(155,095)	(168,861)	(198,327)
Changes in derivative related accounts	2,940	2,940	2,940	2,940
Total nonoperating items	<u>(324,540)</u>	<u>(317,947)</u>	<u>(287,660)</u>	<u>(302,164)</u>
Capital grants and contributions	4,314	4,354	5,249	4,715
Decrease in net position	(39,955)	(40,108)	(39,312)	(39,801)
Total net position – beginning of year	1,525,979	1,566,087	1,605,399	1,666,297
Restatement to comply with GASB*	-	-	-	(21,097)
Total net position – end of year	<u><u>\$ 1,486,024</u></u>	<u><u>\$ 1,525,979</u></u>	<u><u>\$ 1,566,087</u></u>	<u><u>\$ 1,605,399</u></u>

*2018 - GASB 75

*2015 - GASB 68

Source: FY2012 -2021 financial statements

2017	2016	2015	2014	2013	2012
\$ 705,933	\$ 683,501	\$ 661,305	\$ 639,691	\$ 617,415	\$ 599,372
10,843	13,472	7,299	8,326	5,978	3,248
<u>716,776</u>	<u>696,973</u>	<u>668,604</u>	<u>648,017</u>	<u>623,393</u>	<u>602,620</u>
106,844	98,972	102,322	100,778	101,425	99,802
30,799	30,978	28,323	29,453	26,956	26,776
8,191	8,129	7,966	7,872	7,640	7,311
140,435	133,959	124,792	135,401	131,329	127,621
<u>286,269</u>	<u>272,038</u>	<u>263,403</u>	<u>273,504</u>	<u>267,350</u>	<u>261,510</u>
201,481	197,128	194,000	193,062	190,852	191,124
<u>229,026</u>	<u>227,807</u>	<u>211,201</u>	<u>181,451</u>	<u>165,191</u>	<u>149,986</u>
(62,714)	(72,162)	(41,634)	(3,808)	23,917	57,229
(214,288)	(204,259)	(217,218)	(225,293)	(239,616)	(259,537)
2,940	2,940	2,940	2,940	5,798	2,940
<u>(274,062)</u>	<u>(273,481)</u>	<u>(255,912)</u>	<u>(226,161)</u>	<u>(209,901)</u>	<u>(199,368)</u>
7,224	38,190	6,429	5,958	6,630	7,696
(37,812)	(7,484)	(38,282)	(38,752)	(38,080)	(41,686)
1,704,109	1,711,593	1,756,415	1,795,167	1,833,247	1,874,933
-	-	(6,540)	-	-	-
<u>\$ 1,666,297</u>	<u>\$ 1,704,109</u>	<u>\$ 1,711,593</u>	<u>\$ 1,756,415</u>	<u>\$ 1,795,167</u>	<u>\$ 1,833,247</u>

MASSACHUSETTS WATER RESOURCES AUTHORITY
Historical Rate Revenue and Percentage Increases
Last Ten Fiscal Years
 (Dollars in millions)

	Water		Sewer		Combined	
	Amount	Increase	Amount	Increase	Amount	Increase
2021	\$268.1	3.6%	\$501.3	-0.2%	\$769.4	1.1%
2020	258.7	3.6	502.2	2.7	760.9	3.0
2019	249.8	3.1	489.2	3.1	739.0	3.1
2018	242.4	3.5	474.6	3.0	717.0	3.2
2017	234.3	3.5	460.6	3.3	694.9	3.3
2016	226.4	7.7	446.1	1.4	672.4	3.4
2015	210.2	3.5	440.1	3.4	650.3	3.4
2014	203.2	3.7	425.5	3.4	628.7	3.5
2013	196.0	6.6	411.5	1.4	607.5	3.5
2012	183.9	2.0	405.8	4.2	589.7	3.5

Note: Rate revenue is derived exclusively from member community assessments and does not include other charges and fees.

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MASSACHUSETTS WATER RESOURCES AUTHORITY
Historical Revenues, Expenses and Fund Deposits
Last Ten Fiscal Years
(Dollars in thousands)

	2021	2020	2019	2018
Revenues:				
Rates and Charges	\$ 778,828	\$ 770,817	\$ 748,389	\$ 726,073
Investment Income	4,242	12,986	16,985	12,755
Transfer from Rate Stabilization Fund	1,500	-	-	-
Other Income	8,579	8,400	6,947	12,231
Total Revenues	793,149	792,203	772,321	751,059
Operating Expenses				
Operating Expenses	298,396	281,880	277,104	263,226
Capital Lease	3,217	3,217	3,217	3,217
Net Operating Revenues	491,536	507,106	492,000	484,616
Debt Service				
Debt Service on Bonds	\$ 281,064	\$ 241,330	\$ 285,663	\$ 279,790
Other Debt Service	175,082	225,558	169,017	158,485
Debt Prepayment	3,900	5,000	7,100	10,900
Amount Available After Operations and Debt Service	\$ 31,490	\$ 35,218	\$ 30,220	\$ 35,441
Fund Deposits:				
Reserve Funds	\$ 1,815	\$ 2,094	\$ 1,882	\$ 821
Construction Fund	\$ 16,745	\$ 17,317	\$ 16,740	\$ 14,683
Core Fund	\$ -	\$ -	\$ -	\$ -
Rate Stabilization	\$ -	\$ -	\$ -	\$ 6,532

Note: Schedule prepared in accordance with MWRA General Bond Resolution.
*Permit fees are reflected in Other Income

2017	2016	2015	2014	2013	2012
\$ 703,688	\$ 681,223	\$ 650,316	\$ 628,721	\$ 607,512	\$ 589,700
9,758	10,303	9,689	12,130	13,590	16,268
-	-	-	3,500	-	1,092
13,088	15,750	18,289	19,296	15,881	12,920
726,534	707,276	678,294	663,647	636,983	619,980
258,046	293,682	258,534	257,724	252,333	245,210
3,217	3,217	3,217	3,217	3,217	3,217
465,271	410,377	416,543	402,706	381,433	371,553
\$ 286,666	\$ 274,212	\$ 233,079	\$ 228,652	\$ 209,826	\$ 208,332
139,430	114,481	161,736	160,032	158,666	145,722
10,995	-	-	-	-	-
\$ 28,180	\$ 21,684	\$ 21,728	\$ 14,022	\$ 12,941	\$ 17,499
\$ (168)	\$ (35)	\$ 483	\$ 169	\$ 1,398	\$ 195
\$ 13,059	\$ 11,462	\$ 10,464	\$ 9,516	\$ 8,535	\$ 7,481
\$ -	\$ -	\$ 730	\$ 132	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

MASSACHUSETTS WATER RESOURCES AUTHORITY
Debt Service Coverage
Last Ten Fiscal Years
(Dollars in thousands)

	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>
Operating Revenues	\$ 786,119	\$ 778,326	\$ 755,336	\$ 738,304
Interest Income	4,242	12,985	16,985	12,755
Transfers from Rate Stabilization Fund	1,500	-	-	-
Total Revenues	<u>\$ 791,861</u>	<u>\$ 791,311</u>	<u>\$ 772,321</u>	<u>\$ 751,059</u>
Operating Expenses	\$ (283,600)	\$ (272,901)	\$ (276,631)	\$ (263,394)
Commonwealth Obligations	25,845	22,075	23,412	23,757
OPEB	(13,495)	(7,012)	331	(236)
Pollution Remediation	514	127	1,078	1,225
Capital Lease	(3,217)	(3,217)	(3,217)	(3,217)
Net Revenues	<u>\$ 517,908</u>	<u>\$ 530,383</u>	<u>\$ 517,294</u>	<u>\$ 509,194</u>
CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -
Revenues Available for Primary and SRF Primary Coverage (Before Provision for Transfer to Rate Stabilization Fund)	\$ 517,908	\$ 530,383	\$ 517,294	\$ 509,194
Provision for Transfer to Rate Stabilization Fund	\$ -	\$ -	\$ -	\$ 6,532
Revenues Available for Primary and SRF Primary Coverage (After Provision for Transfer to Rate Stabilization Fund)	\$ 517,908	\$ 530,383	\$ 517,294	\$ 502,662
Required Senior Debt Service Fund Deposits	\$ 255,429	\$ 216,129	\$ 269,435	\$ 261,383
Required Subordinated Debt Service Deposits	\$ 175,082	\$ 225,558	\$ 169,017	\$ 158,485
Coverage:				
Before Provision for Transfer to Rate Stabilization Fund:				
Primary	203%	245%	192%	195%
SRF Primary	120%	120%	118%	121%
After Provision for Transfer to Rate Stabilization Fund:				
Primary	203%	245%	192%	192%
SRF Primary	120%	120%	118%	120%
Required CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -
CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -

Note: Schedule prepared in accordance with MWRA General Bond Resolution.

	2017	2016	2015	2014	2013	2012
\$	716,776	\$ 696,973	\$ 668,605	\$ 648,017	\$ 623,393	\$ 602,620
	9,758	10,303	9,689	12,130	13,590	16,268
	-	-	-	3,500	-	1,092
\$	726,534	\$ 707,276	\$ 678,294	\$ 663,647	\$ 636,983	\$ 619,980
\$	(266,415)	\$ (278,887)	\$ (271,329)	\$ (273,500)	\$ (267,351)	\$ (261,510)
	23,912	27,470	27,168	26,641	26,004	25,630
	3,449	11,555	9,401	13,521	13,123	15,118
	4,752	322	3,394	2,261	-	-
	(3,217)	(3,217)	(3,217)	(3,217)	(3,217)	(3,217)
\$	489,015	\$ 464,519	\$ 443,711	\$ 429,353	\$ 405,542	\$ 396,001
\$	-	\$ -	\$ 862	\$ 132	\$ -	\$ -
\$	489,015	\$ 464,519	\$ 442,849	\$ 429,221	\$ 405,542	\$ 396,001
\$	-	\$ -	\$ -	\$ -	\$ -	\$ -
\$	489,015	\$ 464,519	\$ 442,849	\$ 429,221	\$ 405,542	\$ 396,001
\$	262,093	\$ 272,570	\$ 208,500	\$ 203,338	\$ 192,834	\$ 188,054
\$	139,430	\$ 114,481	\$ 161,737	\$ 160,032	\$ 151,598	\$ 145,236
	187%	170%	212%	211%	210%	211%
	122%	120%	120%	118%	118%	119%
	187%	170%	212%	211%	210%	211%
	122%	120%	120%	118%	118%	199%
\$	-	\$ -	\$ 862	\$ 132	\$ -	\$ -
\$	-	\$ -	\$ 862	\$ 132	\$ -	\$ -

MASSACHUSETTS WATER RESOURCES AUTHORITY
Long Term Debt by System
Last Ten Fiscal Years
(Dollars in thousands)

	2021		2020		2019		2018	
	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water
General Revenue Bonds:								
1993C Series Bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2002J Series Bonds	67,417	5,788	107,445	10,235	128,338	12,557	171,651	17,369
2006A Series Bonds	-	-	-	-	-	-	-	-
2007A Series Bonds	-	-	-	-	-	-	-	-
2009A Series Bonds	-	-	-	-	-	-	-	-
2010A Series Bonds	-	-	-	-	-	-	-	-
2011B Series Bonds	2,121	909	2,121	909	4,379	1,877	5,495	2,355
2012A Series Bonds	1,753	1,753	1,753	1,753	36,328	36,328	37,295	37,295
2014D Series Bonds	37,631	17,709	38,780	18,250	40,912	19,253	40,912	19,253
2016B Series Bonds	30,385	30,385	30,385	30,385	31,045	31,045	31,685	31,685
2017B Series Bonds	30,235	30,235	31,408	31,408	33,490	33,490	34,120	34,120
2018B Series Bonds	59,823	39,882	63,843	42,562	64,548	43,032	64,548	43,032
2019B Series Bonds	84,886	36,380	84,886	36,380	87,500	37,500	-	-
2019E Series Bonds	25,000	25,000	25,000	25,000	-	-	-	-
2020B Series Bonds	109,322	46,853	-	-	-	-	-	-
General Revenue Refunding Bonds:								
2004B Series Bonds	-	-	-	-	-	-	-	-
2005A Series Bonds	-	-	-	-	-	-	-	-
2005B Series Bonds	-	-	-	-	-	-	-	-
2006B Series Bonds	-	-	-	-	-	-	-	-
2007B Series Bonds	544,278	103,672	544,278	103,672	544,278	103,672	544,278	103,672
2009B Series Bonds	-	-	-	-	47,146	18,334	91,019	35,396
2010B Series Bonds	-	-	-	-	49,741	36,019	55,648	40,297
2011C Series Bonds	-	-	-	-	113,552	177,608	125,252	195,908
2012B Series Bonds	-	-	-	-	18,223	68,552	18,223	68,552
2013A Series Bonds	52,648	41,367	53,007	41,648	57,408	45,107	57,408	45,107
2014E Series Bonds	-	-	3,688	527	4,589	656	13,654	1,951
2014F Series Bonds	43,014	95,741	43,837	97,573	43,837	97,573	43,837	97,573
2016C Series Bonds	342,947	329,498	344,349	330,846	345,874	332,311	345,874	332,311
2016D Series Bonds	67,226	36,199	67,226	36,199	67,769	36,491	67,769	36,491
2017C Series Bonds	99,054	121,066	106,817	130,554	110,475	135,025	112,275	137,225
2018C Series Bonds	13,125	4,375	16,425	5,475	16,425	5,475	16,425	5,475
2019C Series Bonds	13,817	5,373	13,817	5,373	13,817	5,373	-	-
2019F Series Bonds	214,900	322,350	219,100	328,650	-	-	-	-
2019G Series Bonds	-	-	7,608	15,217	-	-	-	-
General Revenue Bonds (variable rates):								
1999B Series Bonds	25,260	16,840	27,900	18,600	30,420	20,280	32,820	21,880
General Revenue Refunding Bonds (fixed rate):								
2012G Series Bonds	8,429	351	15,072	628	25,440	1,060	35,424	1,476
General Revenue Refunding Bonds (variable rates):								
2002C Series Bonds	-	-	-	-	11,290	23,830	11,290	23,830
2002D Series Bonds	-	-	-	-	-	-	-	-
2008A Series Bonds	140,932	19,218	170,113	23,197	179,467	24,473	184,294	25,131
2008B Series Bonds	-	-	-	-	-	-	-	-
2008C Series Bonds	42,355	1,765	52,320	2,180	67,872	2,828	82,848	3,452
2008D Series Bonds	-	-	-	-	-	-	-	-
2008E Series Bonds	98,569	8,571	122,949	10,691	122,949	10,691	122,949	10,691
2008F Series Bonds	-	-	-	-	-	-	-	-
2012E Series Bonds	11,600	43,637	11,943	44,927	12,271	46,164	12,590	47,361
2012F Series Bonds	-	-	-	-	-	-	-	-
2014A Series Bonds	4,500	45,500	4,500	45,500	4,500	45,500	4,500	45,500
2014B Series Bonds	2,835	28,670	3,873	39,162	4,869	49,226	5,828	58,927
2018A Series Bonds	9,981	37,549	9,981	37,549	10,310	38,785	10,628	39,982
2018D Series Bonds	4,500	45,500	4,500	45,500	4,500	45,500	4,500	45,500
Revolving Loan:								
2015C Revolving Loan	26,500	26,500	26,500	26,500	26,500	26,500	26,500	26,500
General Revenue Bonds with the Massachusetts Clean Water Trust:								
	693,196	200,742	743,953	208,997	767,588	212,295	766,343	176,538
Total	\$2,908,239	\$1,769,376	\$2,999,375	\$1,796,045	\$3,127,650	\$1,824,408	\$3,177,882	\$1,811,833

MASSACHUSETTS WATER RESOURCES AUTHORITY
Schedule of Sewer Flows
Last Ten Fiscal Years
(Million gallons per day)

MWRA Community	2021	2020	2019	2018
Arlington	4.22	4.99	5.28	4.79
Ashland	1.14	1.25	1.37	1.28
Bedford	1.97	2.44	2.72	2.51
Belmont	2.62	3.04	3.40	2.93
Boston (BWSC)	80.68	89.04	101.54	89.82
Braintree	5.99	7.33	8.74	7.07
Brookline	6.91	8.00	9.72	8.05
Burlington	3.01	3.77	3.95	3.58
Cambridge	18.18	19.18	19.08	17.98
Canton	2.77	2.90	3.35	3.24
Chelsea	5.57	5.86	5.90	5.49
Dedham	3.40	3.73	4.52	3.92
Everett	4.86	5.56	6.43	5.60
Framingham	6.60	6.35	7.86	7.32
Hingham Sewer District	1.07	1.33	1.62	1.32
Holbrook	0.80	0.85	1.01	0.91
Lexington	4.24	5.27	5.85	5.03
Malden	8.16	8.66	9.35	8.73
Medford	6.70	7.78	7.79	7.52
Melrose	3.65	4.31	4.80	4.18
Milton	2.69	3.17	3.97	3.28
Natick	2.44	2.89	3.28	2.77
Needham	3.28	3.76	4.28	3.68
Newton	12.29	14.35	16.50	14.21
Norwood	5.27	5.57	6.93	6.20
Quincy	11.97	12.94	14.92	13.48
Randolph	3.07	3.49	4.06	3.85
Reading	2.30	2.63	3.63	2.88
Revere	6.11	6.47	7.18	6.18
Somerville	8.79	9.79	10.25	10.63
Stoneham	3.07	3.57	3.57	3.13
Stoughton	2.66	2.81	3.55	3.24
Wakefield	3.41	4.39	5.02	4.17
Walpole	1.98	2.10	2.48	2.07
Waltham	7.78	8.81	10.02	9.07
Watertown	2.91	3.40	3.84	3.48
Wellesley	2.88	3.59	3.80	3.22
Westwood	1.58	1.72	1.99	1.76
Weymouth	7.29	8.40	10.14	8.65
Wilmington	1.37	1.58	1.56	1.45
Winchester	1.78	2.32	2.73	2.30
Winthrop	2.15	2.29	2.40	2.10
Woburn	4.80	6.52	5.97	6.29

Source: MWRA metering

2017	2016	2015	2014	2013	2012
4.64	3.96	4.56	4.15	4.47	5.08
1.36	1.11	1.16	1.20	1.22	1.24
2.46	2.34	2.57	2.42	2.41	2.52
2.69	2.31	2.89	2.56	2.92	3.10
87.04	80.51	87.21	85.18	94.79	97.02
6.26	6.63	7.08	6.39	6.58	6.82
7.72	7.07	8.62	8.89	9.09	10.03
3.38	3.00	3.31	3.12	3.22	3.45
17.83	16.31	17.93	16.15	17.28	17.16
2.79	2.59	2.77	2.98	2.77	2.26
5.12	4.67	5.16	4.76	4.88	4.91
3.41	3.06	3.53	3.44	3.57	3.61
5.12	4.54	4.95	4.85	5.15	5.81
6.87	7.15	7.62	6.76	7.05	6.11
1.25	1.22	1.37	1.25	1.32	1.26
0.85	0.83	0.89	0.86	0.92	0.76
4.59	4.22	4.93	4.47	5.06	5.25
8.45	8.19	9.20	8.13	8.95	9.11
7.17	6.72	8.26	7.09	7.96	7.68
4.29	3.69	4.64	3.86	4.50	4.69
3.04	2.56	3.26	2.93	3.14	3.33
2.76	2.80	2.93	2.95	3.07	3.10
3.52	3.06	3.39	3.29	3.52	3.62
14.73	14.11	15.22	13.29	15.31	17.09
5.41	4.58	5.29	4.97	5.13	4.82
12.58	12.11	13.56	12.96	13.45	14.09
3.58	2.82	3.52	3.41	3.66	3.63
2.89	2.42	2.83	2.65	2.86	3.07
6.14	5.97	6.82	6.13	7.01	7.50
10.27	9.96	10.70	9.30	10.87	10.63
2.68	2.39	3.16	2.70	3.15	3.47
2.75	2.60	3.20	2.67	2.66	3.09
4.09	3.59	4.26	3.50	3.88	4.42
1.99	1.75	1.88	1.89	2.00	1.93
8.39	8.10	9.11	8.06	9.26	9.39
3.36	3.00	3.31	3.14	3.49	3.68
3.15	2.82	3.14	3.05	3.38	3.63
1.78	1.50	1.50	1.28	1.42	1.42
7.93	7.15	7.82	6.90	8.18	7.56
1.40	1.28	1.33	1.20	1.20	1.32
2.23	1.94	2.24	1.99	2.30	2.39
2.14	1.85	1.90	1.84	1.99	2.21
6.48	5.83	6.86	6.97	7.34	7.28

MASSACHUSETTS WATER RESOURCES AUTHORITY
Schedule of Water Flows
Last Ten Fiscal Years
(Million gallons per day)

MWRA Community	2021	2020	2019	2018
Arlington	3.618	3.618	3.573	3.676
Belmont	2.060	1.953	1.990	2.032
Boston (BWSC)	58.451	60.687	62.331	63.418
Brookline	5.059	4.782	4.903	4.948
Chelsea	3.392	3.336	3.278	3.368
Chicopee	5.186	5.188	4.878	5.131
Clinton	1.345	1.297	1.390	1.416
Everett	3.948	3.857	3.710	3.778
Framingham	5.844	5.657	5.669	5.752
Lexington	5.429	5.381	5.034	5.047
Lynnfield W.D.	0.552	0.513	0.488	0.549
Malden	5.246	5.123	5.101	5.088
Marblehead	1.963	1.788	1.654	1.804
Medford	4.588	4.567	4.292	4.587
Melrose	2.213	2.044	1.976	2.038
Milton	2.532	2.305	2.271	2.420
Nahant	0.362	0.326	0.315	0.323
Newton	8.636	8.656	8.540	8.511
Norwood	2.769	2.727	2.662	2.771
Quincy	8.485	8.018	7.894	8.106
Reading	1.776	1.548	1.540	1.610
Revere	3.750	3.500	3.558	3.600
Saugus	3.048	2.932	2.830	2.852
Somerville	5.523	5.653	5.653	5.636
So. Hadley Fire District #1	1.132	1.130	0.978	1.034
Southborough	1.057	0.996	0.904	0.934
Stoneham	2.130	2.066	1.865	2.220
Swampscott	1.592	1.539	1.473	1.461
Waltham	6.809	6.248	6.400	6.600
Watertown	2.618	2.529	2.547	2.640
Weston	1.794	1.590	1.566	1.739
Wilbraham	1.246	1.175	1.066	1.107
Winthrop	1.202	1.273	1.258	1.224
Burlington (Partial)	0.208	-	-	-
Cambridge (Partial)	0.053	-	0.025	-
Canton (Partial)	1.292	0.892	1.342	1.198
Dedham-Westwood W.D. (Partial)	0.096	0.909	0.210	0.134
Lynn (LWSC) (Partial)	0.082	0.141	0.330	0.269
Marlborough (Partial)	4.104	4.047	3.883	4.074
Needham (Partial)	1.347	0.873	0.834	0.638
Northborough (Partial)	1.029	1.000	0.893	0.890
Peabody (Partial)	2.242	1.018	1.562	3.487
Stoughton (Partial)	0.096	0.102	0.078	0.102
Wakefield (Partial)	1.675	1.843	1.782	1.541
Wellesley (Partial)	1.678	1.114	1.158	1.160
Wilmington (Partial)	0.598	0.475	0.461	0.456
Winchester (Partial)	1.406	1.104	1.230	1.144
Woburn (Partial)	3.558	2.699	2.766	2.400
Worcester (Partial)	-	-	-	-
Comm. of Mass. - Fernald (Other)	-	-	-	-
D.C.R. Parks/Pool/Blue Hills (Other)	0.093	0.086	0.077	0.103
MWRA - Deer Island Water (Other)	1.320	1.249	1.310	1.275
Other Reservoir Withdrawals (Other)	6.089	4.655	6.146	6.001
Quinapoxet Withdrawal (Other)	3.695	6.343	3.192	5.250
Westboro State Hospital (Other)	-	-	-	-
Westboro State Hospital (DYS) (Other)	-	-	0.008	0.024

2017	2016	2015	2014	2013	2012
3.782	3.907	3.826	3.778	3.933	4.061
2.105	2.187	2.157	2.113	2.169	2.174
64.334	64.902	64.567	63.184	64.325	64.395
5.068	5.275	5.500	5.462	5.344	5.078
3.323	3.283	3.248	3.306	3.121	3.095
5.122	5.306	5.251	5.285	5.394	5.496
1.433	1.637	1.700	1.719	1.951	1.975
3.905	3.883	3.755	3.832	3.902	3.857
5.883	6.017	6.621	6.504	6.542	6.578
5.304	5.377	5.824	5.145	4.961	4.534
0.560	0.522	0.488	0.463	0.415	0.354
4.941	5.225	5.684	5.250	5.372	5.524
1.817	1.839	1.803	1.791	1.715	1.698
4.624	4.944	5.059	5.075	4.957	4.835
2.071	2.207	2.323	2.235	2.218	2.144
2.578	2.632	2.598	2.394	2.464	2.442
0.390	0.384	0.357	0.331	0.307	0.290
8.973	9.986	10.095	9.174	8.858	8.891
2.835	2.776	2.932	2.892	2.736	2.808
8.869	9.209	9.330	9.173	8.933	8.878
1.658	1.646	1.625	1.616	1.648	1.601
3.673	3.770	3.919	3.909	3.798	3.871
2.926	2.862	2.935	2.805	2.632	2.668
5.805	6.186	5.672	5.609	5.843	5.521
1.070	1.091	1.082	1.074	1.128	1.159
0.984	1.050	1.014	0.956	0.909	0.860
2.247	2.336	2.573	2.793	2.982	2.785
1.426	1.431	1.380	1.559	1.459	1.546
6.599	7.077	7.133	6.823	6.855	6.753
2.582	2.553	2.599	2.661	2.606	2.583
1.973	1.940	1.919	1.675	1.608	1.599
1.166	1.193	1.153	1.112	1.153	1.121
1.196	1.225	1.312	1.263	1.243	1.241
-	-	-	-	-	-
1.403	0.942	-	5.874	-	-
1.867	1.559	1.068	0.875	1.082	1.560
0.198	0.140	0.273	0.039	0.089	0.063
0.233	0.690	0.175	0.227	0.172	0.233
3.834	3.570	3.247	3.482	2.969	2.260
0.703	0.933	0.907	0.787	0.894	1.091
0.912	0.906	0.891	0.875	0.882	0.882
2.105	1.126	1.257	1.155	0.828	0.509
0.154	0.526	0.979	0.759	0.753	0.632
1.667	1.426	1.505	1.355	1.439	1.360
0.994	1.054	0.820	0.686	1.499	0.789
0.485	0.539	0.456	0.256	0.204	0.084
1.407	1.542	1.042	1.048	0.987	0.928
2.627	2.482	2.673	2.383	3.029	2.520
2.322	0.001	-	-	0.002	-
-	-	0.015	0.063	0.066	0.060
0.044	0.052	0.058	0.061	0.052	0.047
1.325	1.397	1.279	1.247	1.310	1.448
2.821	-	-	-	-	-
2.654	7.582	3.824	4.110	6.241	0.530
-	-	-	-	0.014	0.015
0.023	0.024	0.045	0.017	0.017	-

MASSACHUSETTS WATER RESOURCES AUTHORITY
Sewer-System Total
Community Population Estimates
Last Ten Calendar Years

Population	Customer Type	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Arlington	Sewer & Water	45,169	45,531	45,624	45,510	45,052	44,204	44,212	44,028	43,711	43,290
Ashland	Sewer	17,887	17,807	17,739	17,706	17,684	17,185	17,191	17,150	16,993	16,767
Bedford	Sewer	14,053	14,123	14,195	14,197	14,411	14,058	14,086	13,975	13,765	13,455
Belmont	Sewer & Water	25,873	26,116	26,330	26,458	26,171	25,425	25,431	25,332	25,204	24,987
Boston Water & Sewer Comm.	Sewer & Water	691,531	692,600	694,583	685,094	673,184	651,710	649,917	645,966	636,479	625,087
Braintree	Sewer	37,074	37,190	37,250	37,156	37,297	36,984	36,968	36,727	36,249	35,990
Brookline	Sewer & Water	59,022	59,121	59,310	59,157	59,126	59,277	59,246	59,128	59,115	59,132
Burlington	Sewer	28,432	28,627	28,742	27,176	26,351	25,502	25,502	25,507	25,165	24,755
Cambridge	Sewer & Partial Water	119,192	118,927	118,977	113,630	110,651	107,705	107,732	107,289	106,471	106,038
Canton	Sewer & Partial Water	24,029	23,805	23,629	23,444	22,952	22,257	22,246	22,221	21,932	21,710
Chelsea	Sewer & Water	39,230	39,690	40,160	40,227	38,599	37,359	37,881	37,670	36,828	35,649
Chicopee	Water	54,825	55,126	55,582	55,363	55,342	55,789	56,233	55,882	55,795	55,583
Clinton	Water	13,952	14,000	14,022	13,958	13,873	13,837	13,788	13,748	13,693	13,643
Dedham	Sewer & Partial Water	25,345	25,219	25,334	25,364	25,263	25,322	25,346	25,299	24,974	24,895
Everett	Sewer & Water	46,107	46,451	46,880	46,324	44,840	43,484	43,110	42,935	42,567	42,101
Framingham	Sewer & Water	73,892	74,416	73,123	72,032	71,594	70,569	70,583	70,441	70,068	68,991
Hingham Sewer District	Sewer	7,808	7,795	7,586	7,611	7,708	7,370	7,260	7,475	7,279	7,201
Holbrook	Sewer	11,014	11,033	11,048	11,026	11,022	10,994	10,988	10,952	10,899	10,866
Lexington	Sewer & Water	33,003	33,132	33,792	33,727	33,410	32,810	32,817	32,650	32,272	31,718
Lynnfield	Water	13,040	12,999	13,041	12,944	12,839	12,765	12,667	12,409	11,821	11,726
Malden	Sewer & Water	59,922	60,470	61,036	61,246	60,840	60,776	60,788	60,509	60,374	60,071
Marblehead	Water	20,551	20,555	20,634	20,559	20,467	20,428	20,364	20,256	20,119	19,980
Marlborough	Partial Water	39,290	39,597	39,825	39,788	39,793	39,799	39,691	39,468	39,305	38,934
Medford	Sewer & Water	60,847	57,341	57,765	57,797	57,213	57,266	57,385	57,170	57,033	56,738
Melrose	Sewer & Water	27,790	28,016	28,193	28,367	27,928	27,777	27,810	27,690	27,435	27,263
Milton	Sewer & Water	27,537	27,593	27,616	27,575	27,351	27,358	27,345	27,270	27,158	27,182
Nahant	Water	3,506	3,513	3,524	3,506	3,493	3,496	3,483	3,474	3,446	3,432
Natick	Sewer	35,766	36,050	36,229	36,246	36,137	35,326	35,339	35,214	33,760	33,349
Needham	Sewer & Partial Water	31,537	31,388	31,248	30,999	30,755	29,797	29,785	29,736	29,366	29,083
Newton	Sewer & Water	87,803	88,414	88,904	88,994	89,045	87,908	87,927	87,971	86,307	85,945
Northborough	Partial Water	15,038	15,109	15,101	15,038	14,962	14,944	14,905	14,749	14,646	14,664
Norwood	Sewer & Water	29,737	29,725	29,327	29,195	29,097	29,021	29,007	28,951	28,780	28,801
Peabody	Partial Water	53,063	53,070	53,278	53,008	52,809	52,661	52,489	52,243	51,913	51,633
Quincy	Sewer & Water	94,421	94,470	94,580	94,166	93,688	93,373	93,327	93,494	93,027	92,909
Randolph	Sewer	34,260	34,362	34,398	34,272	33,610	33,541	33,519	33,456	33,226	32,336
Reading	Sewer & Water	25,535	25,400	25,337	26,106	25,834	25,397	25,433	25,327	25,192	25,001
Revere	Sewer & Water	52,375	53,073	53,821	53,993	53,157	53,316	54,063	53,756	53,179	52,459
Saugus	Water	28,542	28,361	28,385	28,265	28,125	28,080	27,976	27,826	27,387	27,047
Somerville	Sewer & Water	80,935	81,360	81,562	81,360	81,322	78,929	78,857	78,804	77,104	76,519
South Hadley Fire District #1	Water	17,514	17,625	17,806	17,836	17,765	17,625	17,712	17,715	17,834	17,817
Southborough	Water	10,200	10,208	10,169	10,138	10,087	10,015	9,936	9,894	9,851	9,816
Stoneham	Sewer & Water	23,961	24,126	22,729	22,036	21,953	21,803	21,808	21,734	21,605	21,659
Stoughton	Sewer & Partial Water	28,891	28,915	28,950	28,528	28,431	28,197	28,183	28,106	27,849	27,150
Swampscott	Water	15,462	15,298	15,227	14,976	14,898	14,564	14,085	14,025	13,949	13,874
Wakefield	Sewer & Partial Water	27,051	27,045	27,135	27,157	26,753	26,147	26,182	26,080	25,613	25,191
Walpole	Sewer	26,582	25,200	25,209	25,073	25,125	24,788	24,776	24,818	24,562	24,234
Waltham	Sewer & Water	62,069	62,495	62,962	62,442	63,002	62,412	62,424	62,227	61,918	61,181
Watertown	Sewer & Water	36,125	35,939	35,954	35,756	34,025	33,124	33,130	32,996	32,863	32,248
Wellesley	Sewer & Partial Water	28,684	28,670	29,673	29,479	29,215	28,897	29,180	29,090	28,748	28,152
Weston	Water	12,028	12,124	12,134	12,119	12,100	12,066	11,921	11,845	11,698	11,515
Westwood	Sewer & Partial Water	16,384	16,400	16,127	16,056	15,279	14,904	14,896	14,876	14,768	14,721
Weymouth	Sewer	58,104	57,746	57,719	56,664	55,972	55,510	55,482	55,419	54,906	54,116
Wilbraham	Water	14,670	14,689	14,749	14,625	14,588	14,573	14,477	14,432	14,366	14,311
Wilmington	Sewer & Partial Water	23,287	23,445	23,907	23,803	23,570	23,199	23,204	23,147	22,936	22,557
Winchester	Sewer & Partial Water	22,678	22,799	22,851	22,838	22,808	22,159	22,166	22,079	21,869	21,594
Winthrop	Sewer & Water	18,446	18,544	18,688	18,625	18,190	17,979	18,232	18,111	17,940	17,737
Woburn	Sewer & Partial Water	40,135	40,228	40,397	39,701	39,452	39,162	39,170	39,083	38,949	38,520
SYSTEM		2,671,204	2,673,071	2,680,096	2,656,436	2,626,208	2,580,923	2,579,666	2,569,781	2,542,261	2,513,323

Source: U.S. Census Bureau

MASSACHUSETTS WATER RESOURCES AUTHORITY
Sewer-System Total
Community Population Estimates
Last Ten Calendar Years

System Share	Customer Type	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Arlington	Sewer & Water	1.69%	1.70%	1.70%	1.71%	1.72%	1.71%	1.71%	1.71%	1.72%	1.72%
Ashland	Sewer	0.67%	0.67%	0.66%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%
Bedford	Sewer	0.53%	0.53%	0.53%	0.53%	0.55%	0.54%	0.55%	0.54%	0.54%	0.54%
Belmont	Sewer & Water	0.97%	0.98%	0.98%	1.00%	1.00%	0.99%	0.99%	0.99%	0.99%	0.99%
Boston Water & Sewer Comm.	Sewer & Water	25.89%	25.91%	25.92%	25.79%	25.63%	25.25%	25.19%	25.14%	25.04%	24.87%
Braintree	Sewer	1.39%	1.39%	1.39%	1.40%	1.42%	1.43%	1.43%	1.43%	1.43%	1.43%
Brookline	Sewer & Water	2.21%	2.21%	2.21%	2.23%	2.25%	2.30%	2.30%	2.30%	2.33%	2.35%
Burlington	Sewer	1.06%	1.07%	1.07%	1.02%	1.00%	0.99%	0.99%	0.99%	0.99%	0.98%
Cambridge	Sewer & Partial Water	4.46%	4.45%	4.44%	4.28%	4.21%	4.17%	4.18%	4.18%	4.19%	4.22%
Canton	Sewer & Partial Water	0.90%	0.89%	0.88%	0.88%	0.87%	0.86%	0.86%	0.86%	0.86%	0.86%
Chelsea	Sewer & Water	1.47%	1.48%	1.50%	1.51%	1.47%	1.45%	1.47%	1.47%	1.45%	1.42%
Chicopee	Water	2.05%	2.06%	2.07%	2.08%	2.11%	2.16%	2.18%	2.17%	2.19%	2.21%
Clinton	Water	0.52%	0.52%	0.52%	0.53%	0.53%	0.54%	0.53%	0.53%	0.54%	0.54%
Dedham	Sewer & Partial Water	0.95%	0.94%	0.95%	0.95%	0.96%	0.98%	0.98%	0.98%	0.98%	0.99%
Everett	Sewer & Water	1.73%	1.74%	1.75%	1.74%	1.71%	1.68%	1.67%	1.67%	1.67%	1.68%
Framingham	Sewer & Water	2.77%	2.78%	2.73%	2.71%	2.73%	2.73%	2.74%	2.74%	2.76%	2.75%
Hingham Sewer District	Sewer	0.29%	0.29%	0.28%	0.29%	0.29%	0.28%	0.28%	0.29%	0.29%	0.29%
Holbrook	Sewer	0.41%	0.41%	0.41%	0.42%	0.42%	0.43%	0.43%	0.43%	0.43%	0.43%
Lexington	Sewer & Water	1.24%	1.24%	1.26%	1.27%	1.27%	1.27%	1.27%	1.27%	1.27%	1.26%
Lynnfield	Water	0.49%	0.49%	0.49%	0.49%	0.49%	0.49%	0.48%	0.48%	0.46%	0.47%
Malden	Sewer & Water	2.24%	2.26%	2.28%	2.31%	2.32%	2.35%	2.36%	2.35%	2.37%	2.39%
Marblehead	Water	0.77%	0.77%	0.77%	0.77%	0.78%	0.79%	0.79%	0.79%	0.79%	0.79%
Marlborough	Partial Water	1.47%	1.48%	1.49%	1.50%	1.52%	1.54%	1.54%	1.54%	1.55%	1.55%
Medford	Sewer & Water	2.28%	2.15%	2.16%	2.18%	2.18%	2.22%	2.22%	2.22%	2.24%	2.26%
Melrose	Sewer & Water	1.04%	1.05%	1.05%	1.07%	1.06%	1.08%	1.08%	1.08%	1.08%	1.08%
Milton	Sewer & Water	1.03%	1.03%	1.03%	1.04%	1.04%	1.06%	1.06%	1.06%	1.07%	1.08%
Nahant	Water	0.13%	0.13%	0.13%	0.13%	0.13%	0.14%	0.14%	0.14%	0.14%	0.14%
Natick	Sewer	1.34%	1.35%	1.35%	1.36%	1.38%	1.37%	1.37%	1.37%	1.33%	1.33%
Needham	Sewer & Partial Water	1.18%	1.17%	1.17%	1.17%	1.17%	1.15%	1.15%	1.16%	1.16%	1.16%
Newton	Sewer & Water	3.29%	3.31%	3.32%	3.35%	3.39%	3.41%	3.41%	3.42%	3.39%	3.42%
Northborough	Partial Water	0.56%	0.57%	0.56%	0.57%	0.57%	0.58%	0.58%	0.57%	0.58%	0.58%
Norwood	Sewer & Water	1.11%	1.11%	1.09%	1.10%	1.11%	1.12%	1.12%	1.13%	1.13%	1.15%
Peabody	Partial Water	1.99%	1.99%	1.99%	2.00%	2.01%	2.04%	2.03%	2.03%	2.04%	2.05%
Quincy	Sewer & Water	3.53%	3.53%	3.53%	3.54%	3.57%	3.62%	3.62%	3.64%	3.64%	3.70%
Randolph	Sewer	1.28%	1.29%	1.28%	1.29%	1.28%	1.30%	1.30%	1.30%	1.31%	1.29%
Reading	Sewer & Water	0.96%	0.95%	0.95%	0.98%	0.98%	0.98%	0.99%	0.99%	0.99%	0.99%
Revere	Sewer & Water	1.96%	1.99%	2.01%	2.03%	2.02%	2.07%	2.10%	2.09%	2.09%	2.09%
Saugus	Water	1.07%	1.06%	1.06%	1.06%	1.07%	1.09%	1.08%	1.08%	1.08%	1.08%
Somerville	Sewer & Water	3.03%	3.04%	3.04%	3.06%	3.10%	3.06%	3.06%	3.07%	3.03%	3.04%
South Hadley Fire District #1	Water	0.66%	0.66%	0.66%	0.67%	0.68%	0.68%	0.69%	0.69%	0.70%	0.71%
Southborough	Water	0.38%	0.38%	0.38%	0.38%	0.38%	0.39%	0.39%	0.39%	0.39%	0.39%
Stonham	Sewer & Water	0.90%	0.90%	0.85%	0.83%	0.84%	0.84%	0.85%	0.85%	0.85%	0.86%
Stoughton	Sewer & Partial Water	1.08%	1.08%	1.08%	1.07%	1.08%	1.09%	1.09%	1.09%	1.10%	1.08%
Swampscott	Water	0.58%	0.57%	0.57%	0.56%	0.57%	0.56%	0.55%	0.55%	0.55%	0.55%
Wakefield	Sewer & Partial Water	1.01%	1.01%	1.01%	1.02%	1.02%	1.01%	1.01%	1.01%	1.01%	1.00%
Walpole	Sewer	1.00%	0.94%	0.94%	0.94%	0.96%	0.96%	0.96%	0.97%	0.97%	0.96%
Waltham	Sewer & Water	2.32%	2.34%	2.35%	2.35%	2.40%	2.42%	2.42%	2.42%	2.44%	2.43%
Watertown	Sewer & Water	1.35%	1.34%	1.34%	1.35%	1.30%	1.28%	1.28%	1.28%	1.29%	1.28%
Wellesley	Sewer & Partial Water	1.07%	1.07%	1.11%	1.11%	1.11%	1.12%	1.13%	1.13%	1.13%	1.12%
Weston	Water	0.45%	0.45%	0.45%	0.46%	0.46%	0.47%	0.46%	0.46%	0.46%	0.46%
Westwood	Sewer & Partial Water	0.61%	0.61%	0.60%	0.60%	0.58%	0.58%	0.58%	0.58%	0.58%	0.59%
Weymouth	Sewer	2.18%	2.16%	2.15%	2.13%	2.13%	2.15%	2.15%	2.16%	2.16%	2.15%
Wilbraham	Water	0.55%	0.55%	0.55%	0.55%	0.56%	0.56%	0.56%	0.56%	0.57%	0.57%
Wilmington	Sewer & Partial Water	0.87%	0.88%	0.89%	0.90%	0.90%	0.90%	0.90%	0.90%	0.90%	0.90%
Winchester	Sewer & Partial Water	0.85%	0.85%	0.85%	0.86%	0.87%	0.86%	0.86%	0.86%	0.86%	0.86%
Winthrop	Sewer & Water	0.69%	0.69%	0.70%	0.70%	0.69%	0.70%	0.71%	0.70%	0.71%	0.71%
Woburn	Sewer & Partial Water	1.50%	1.50%	1.51%	1.49%	1.50%	1.52%	1.52%	1.52%	1.53%	1.53%
SYSTEM		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

MASSACHUSETTS WATER RESOURCES AUTHORITY
Full-time Equivalent Employees by Function
Last Ten Fiscal Years

Division	2021		2020		2019		2018	
	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate
Executive	4.0	20.00%	4.0	20.00%	4.0	20.00%	4.0	20.00%
Internal Audit	5.8	25.00%	5.8	25.00%	5.7	25.00%	6.7	12.50%
Public Affairs	9.9	33.33%	9.9	28.57%	9.9	28.57%	10.9	15.38%
Affirmative Action	7.0	0.00%	5.0	28.57%	5.0	28.57%	6.0	0.00%
Emergency Preparedness	4.0	0.00%	4.0	0.00%	4.0	0.00%	8.0	0.00%
Tunnel Redundancy	10.0	16.67%	7.0	0.00%	7.0	0.00%	1.0	0.00%
Finance	34.3	16.67%	32.3	21.43%	31.5	23.81%	33.5	19.05%
Operations	911.9	10.44%	920.4	9.37%	922.8	8.51%	923.3	8.70%
Law	12.0	42.11%	12.5	31.58%	12.5	31.58%	13.5	26.32%
Administration	141.9	14.11%	138.8	15.00%	136.8	15.63%	135.5	13.46%

2017		2016		2015		2014		2013		2012	
FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate
5.0	0.00%	5.0	0.00%	5.0	0.00%	5.0	0.00%	5.0	0.00%	5.0	0.00%
6.7	12.50%	6.7	12.50%	6.7	12.50%	7.5	0.00%	7.5	0.00%	7.5	0.00%
11.9	7.69%	12.9	7.14%	12.9	7.69%	11.9	7.69%	12.9	0.00%	12.9	0.00%
4.0	33.33%	6.0	0.00%	5.0	33.33%	6.0	14.29%	7.0	0.00%	6.8	12.50%
8.0	0.00%	5.8	0.00%	4.8	0.00%	5.8	0.00%	4.8	0.00%	3.8	0.00%
-		-		-		-		-		-	
35.5	14.29%	37.5	11.63%	38.3	9.30%	39.3	4.65%	39.3	6.98%	41.3	4.55%
930.0	7.35%	922.7	6.93%	925.1	7.35%	917.2	7.55%	935.1	4.96%	939.8	4.77%
13.5	26.32%	15.5	15.79%	14.5	26.32%	14.9	15.79%	15.1	15.79%	16.1	10.53%
135.4	12.26%	138.0	10.32%	138.0	9.74%	136.6	9.03%	139.6	8.97%	144.8	5.77%

MASSACHUSETTS WATER RESOURCES AUTHORITY

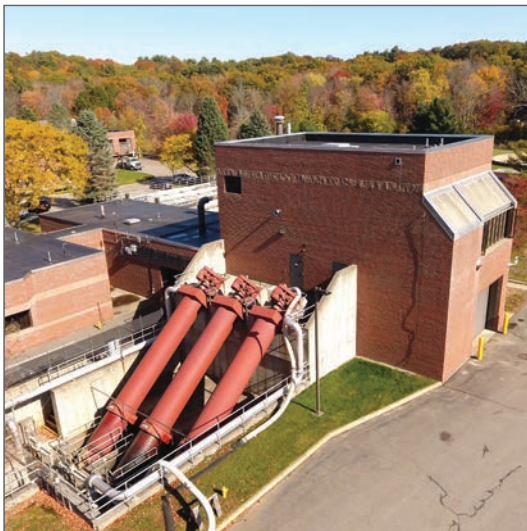
Capital Asset Statistics by Function



Commonwealth Avenue Pumping Station, Newton

WATER SYSTEM

- ◆ 2 protected reservoirs
 - Quabbin
 - Wachusett
- ◆ 2 water treatment facilities
 - John J. Carroll
 - William A. Brutsch
- ◆ 385 miles of distribution infrastructure, including aqueducts, deep rock tunnels, and pipeline
- ◆ 12 active storage reservoirs and standpipes
- ◆ 13 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*



Clinton Wastewater Treatment Plant

WASTEWATER SYSTEM

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



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