NEW YORK CITY WATER AND SEWER SYSTEM

Comprehensive Annual Financial Report

FOR THE FISCAL YEAR ENDED JUNE 30, 2018

A Component Unit of
The City of New York

OUR MISSION

THE NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY ("NYW") IS A PUBLIC BENEFIT CORPORATION CREATED IN 1985 PURSUANT TO THE NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY ACT.

NYW'S PURPOSE IS TO FINANCE THE CAPITAL NEEDS OF THE WATER AND SEWER SYSTEM OF THE CITY OF NEW YORK (THE "SYSTEM") WHICH IS OPERATED BY THE NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION.

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LETTER OF TRANSMITTAL

MEMBERS OF THE BOARD OF THE NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY

MEMBERS OF THE NEW YORK CITY WATER BOARD

THE COMMISSIONER OF THE NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

November 28, 2018

We are pleased to submit to you this Comprehensive Annual Financial Report ("CAFR") of the New York City Water and Sewer System (the "System") for the year ended June 30, 2018. The financial section of this CAFR includes management's discussion and analysis, the general-purpose financial statements and the combining financial statements and schedules, as well as the independent auditors' report on these financial statements.

The System is responsible for the accuracy, completeness, and fairness of the presentation, including all disclosures. The management's discussion and analysis provide an overview of the System's financial results.

The reporting entity consists of two separate and independent corporate bodies that are combined for reporting purposes: the New York City Municipal Water Finance Authority (the "Authority") and the New York City Water Board (the "Water Board"). In addition, the New York City Department of Environmental Protection ("DEP") operates the System. The passage of the New York City Municipal Finance Authority Act of 1984 (the "Act") by the New York State Legislature authorized this financing and operating relationship. The System is a component unit of The City of New York ("The City") for financial reporting purposes.

The Authority is authorized to issue bonds and other debt instruments for construction of and improvements to the System. The Authority also has the power to refund its bonds and notes. The Authority is administered by a Board of Directors composed of seven members, four of whom serve ex-officio, two of whom are appointed by the Mayor of The City, and one of whom is appointed by the Governor of the State of New York (the "State"). The staff of the Authority operates under the direction of its Executive Director.

The Water Board leases the System from The City, sets rates, and collects the System's revenue. The Lease Agreement dated July 1, 1985 (the "Lease"), provides for a lease term until all the bonds of the Authority are paid in full, or provision for payment has been made. The Water Board is obligated to first allocate the revenues of the System to debt service on the Authority's bonds and to the Authority's expense budget, after which revenues are allocated to the Water Board's expenses, DEP's cost of operating and maintaining the System, and to the rental payment paid to The City, if requested, under the terms of the Lease. The Lease requires the Water Board to make the rental payment to The City, if requested, which is no more than the greater of: i) principal and interest for the fiscal year on The City general obligation bonds issued for water and sewer purposes, or ii) fifteen percent of principal and interest on the Authority's debt for the fiscal year. In fiscal years 2017 and 2018, The City did not request a rental payment.

The Water Board consists of seven members who are appointed by the Mayor. The Act requires that at least one member have experience in the science of water resource development. Members of the Water Board cannot be members of the Board of Directors of the Authority. The Mayor appoints the Chairman. The staff of DEP supports the operations of the Water Board under the direction of the Water Board's Executive Director.

The operation and maintenance of the water and sewer system is performed by DEP. DEP is managed by a Commissioner who is appointed by the Mayor and oversees a workforce of over 5,500 people assigned to the system. DEP works to protect the environmental welfare and health of The City's residents and natural resources, manages The City's water supply, treatment, transmission and distribution system, and collects, treats, and disposes of waste and storm water. DEP supplies water and sewer service to the Boroughs of the Bronx, Brooklyn, Manhattan, Queens and Staten Island, an area of over 300 square miles, and serves over 8.6 million people. The City is also required by state law to sell water in counties where its water supply facilities are located. The System currently provides water to approximately 1 million people located in Westchester, Putnam, Orange, and Ulster Counties.

The System provides an average of approximately one billion gallons of water per day. Water consumption has decreased since 1980 when an average of approximately 1.6 billion gallons per day was provided by the water system, at a time when the population of The City was 7.1 million. DEP maintains a system of dams, reservoirs, aqueducts, and water tunnels in addition to approximately 6,700 miles of water mains. DEP also maintains approximately 7,500 miles of sewers that collect and transport waste and storm water for treatment at

1 BILLION GALLONS

THE SYSTEM PROVIDES AN AVERAGE OF APPROXIMATELY ONE BILLION GALLONS OF WATER PER DAY.

1.2 BILLIONS

THE SYSTEM COLLECTS AND TREATS AN AVERAGE OF APPROXIMATELY 1.2 BILLION GALLONS OF SEWAGE PER DAY.

The City's 14 wastewater treatment plants. Additionally, the System operates four major combined sewer overflow retention facilities, wastewater pump stations, laboratories, sludge dewatering facilities, and inner-harbor vessels which transport sludge between facilities. The System collects and treats an average of approximately 1.2 billion gallons per day of sewage. Sewer service is provided to virtually the entire City, except for parts of the Borough of Staten Island and the Borough of Queens community of Breezy Point. Sewer service is also provided to certain upstate communities in the System's watershed areas.

CREDIT RATINGS

The Authority's bonds are highly rated by three rating agencies. The Authority's ratings reflect the credit strengths resulting from the strong legal protections provided to bondholders and structural features, which provide a gross pledge of the System's revenue to bondholders for debt payments. Standard and Poor's Ratings Services rates the Authority's first (general) resolution debt "AAA", their highest rating. The Authority's second general resolution debt is rated "AA+" by Standard and Poor's. Fitch Ratings and Moody's Investors Service rate both the Authority's first and second general resolution debt "AA+" and "Aa1", respectively.

New York State Environmental Facilities Corporation ("EFC") Clean Water and Drinking Water Revolving Funds Revenue Bonds, issued for eligible System's projects are rated "AAA" from all three rating agencies. After the upgrade by Fitch from "AA+" in March 2017, EFC's subordinated state revolving fund bonds are also rated "AAA" from all three rating agencies. The bonds that the Authority places with EFC are an element of security for EFC's bonds, but are unrated second general resolution bonds of the Authority.

INTERNAL CONTROLS

The managements of the Water Board and the Authority are responsible for establishing and maintaining an internal control structure designed to provide reasonable, but not absolute, assurance that the assets of the System are protected from loss, theft or misuse, and that accounting policies are complied with and the preparation of financial statements conform with accounting principles generally accepted in the United States of America. 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. Internal controls cannot provide absolute assurance of achieving financial reporting objectives due to its inherent limitations. Internal controls involve human diligence and compliance; it is subject to human failures and may be circumvented. Because of such limitations, the Authority and the Water Board have designed into the process safeguards to reduce, though not eliminate, this risk.

DEP is subject to the internal control directives and memorandums that originate from the New York City Comptroller's Office. These directives establish internal controls and accountability, which safeguard The City's assets. In addition, DEP is subject to audit by The City Comptroller's Office, whose auditors periodically audit The City's agencies adherence to internal control policies and procedures.

BUDGETARY CONTROLS

The Water Board and the Authority maintain separate control structures for their specific areas of responsibility. The Water Board and the Authority establish separate operating budgets approved by their respective boards.

CAPITAL PROGRAM GOALS

The goals of the System's capital program are:

- To maintain the quality of the water in The City's watersheds and, where necessary, treat the supply to ensure its high quality;
- To maintain and improve the transmission and distribution capacity and the condition of The City's water supply system;
- To improve the quality of the surrounding waters by upgrading The City's sewage treatment facilities and by reducing pollution caused by combined sewer overflows; and
- To contain sanitary sewage and prevent flooding by replacing failing sewers and extending service to underserved areas of The City.

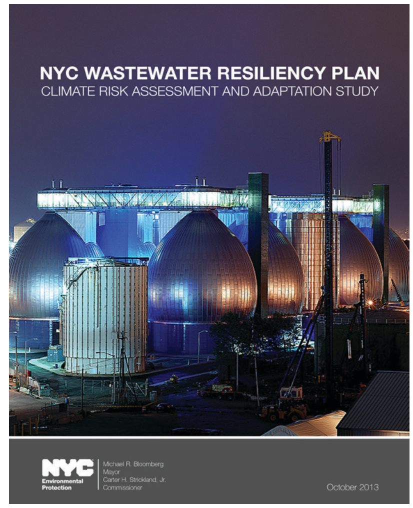
DEP's capital and operation and maintenance budgets are appropriated through The City's annual budgets. The City also maintains an encumbrance accounting system as another technique of accomplishing budgetary control. The Authority and the Water Board adopt their budgets conterminously with The City's operating budget cycle.

CAPITAL IMPROVEMENT PROGRAM AND FINANCING PROGRAM

The City updates its Ten Year Capital Strategy (the "Strategy") every two years. The City released the Strategy in April 2017. In fiscal year 2019, The City will update the Strategy. The Strategy included the projected contractual commitments for capital improvements to the System for fiscal years 2018 through 2027. The City's current capital plan, which covers fiscal years 2019 through 2022, was published on October 10, 2018. It is updated three times each fiscal year and the October 2018 release supersedes the Strategy for fiscal years 2019 through 2022. The Strategy, together with the current capital plan, comprises the capital improvement program (the "CIP").

The CIP is designed to maintain a satisfactory level of service and improve the operation of the System. The CIP establishes long-range programmatic goals for the System and reflects a review of the present condition and long-term needs of the plants and equipment constituting the System. The CIP also incorporates the System's requirements for meeting legal mandates, the present replacement cycle for the System's facilities, extensions to the present service area, and programs to enhance and optimize the operation and dependability of the System.

Additionally, DEP has been engaged in an ongoing review of the effects of



IN FISCAL YEAR 2019, THE CITY WILL UPDATE ITS TEN YEAR CAPITAL STRATEGY.

DEP HAS INSTALLED OVER 825,000 TRANSMITTERS, COVERING 98% OF ALL CUSTOMERS. ALL CUSTOMERS WHOSE ACCOUNTS HAVE BEEN UPGRADED FOR AUTOMATED METER READING CAN NOW ACCESS DETAILS OF THEIR WATER USAGE THROUGH DEP'S WEBSITE.

climate change on the System, including the impact of rising sea levels and changes to the intensity and frequency of precipitation events throughout the System. DEP is in the process of implementing climate resiliency projects which include both stand-alone resiliency projects and the integration of resiliency protection into DEP's ongoing investments. Such projects include structural upgrades, improvements to the Ashokan Reservoir, improvement to wastewater treatment assets to protect them from flooding, and resiliency projects along the East River. DEP expects that additional resiliency projects will be identified and implemented in the coming years.

The total capital commitments projected to be provided from the System funds is $17.2 billion for the nine-year period from fiscal years 2019 through 2027. The capital commitments shown in each year represent capital contracts authorized to be entered into each year that will be paid from The City funds and reimbursed by the Authority, largely from bond proceeds. Actual expenditures from such capital contracts and the issuance of the Authority's bonds to fund such expenditures occur in the current and subsequent years. The following table reflects the CIP as of October 2018. For a number of reasons, including unforeseen cost inflation and changes in plans, actual costs may vary from the CIP set forth in the table. The CIP is divided into five project types, each discussed below.

CAPITAL IMPROVEMENT PROGRAM

($ IN 000'S)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
WATER SUPPLY AND TRANSMISSION	156,242	280,391	138,956	1,109,482	82,000	408,000	110,000	–	–	2,285,071
WATER DISTRIBUTION	523,824	841,929	737,776	585,770	226,728	193,558	114,841	167,050	509,943	3,901,419
WATER POLLUTION CONTROL	992,519	1,215,698	1,368,247	927,085	610,122	335,833	322,076	478,782	188,750	6,439,112
SEWERS	513,687	907,381	715,143	612,219	253,629	252,368	435,810	189,053	115,065	3,994,355
EQUIPMENT	110,496	114,985	97,345	148,825	34,709	29,125	15,844	23,200	32,000	606,529
TOTAL CITY FUNDS	2,296,768	3,360,384	3,057,467	3,383,381	1,207,188	1,218,884	998,571	858,085	845,758	17,226,486

WATER SUPPLY AND TRANSMISSION

This component of the CIP includes approximately $1 billion for Stage II of The City's Water Tunnel No. 3 and upgrades at the Hillview Reservoir. Stage II extends from the end of Stage I to supply Queens, Brooklyn and the Richmond Tunnel servicing Staten Island, and from the valve chamber at Central Park into Lower Manhattan. Water Tunnel No. 3 will augment the transmission capacity from the watersheds into The City, permit the inspection and rehabilitation of Tunnels No. 1 and 2, and provide delivery alternatives to The City in the event of disruption in Tunnels No. 1 or 2, which were put into operation in 1917 and 1936, respectively. Stage I of Tunnel No. 3 commenced operation in July 1998. The Manhattan leg of Stage II was completed and activated in October 2013. The tunnel and most of the infrastructure work for the Brooklyn/Queens segment of Stage II are complete, with two final shafts to be designed and constructed. Construction of the shafts is expected to begin in 2020. Designs are also underway to connect the Brooklyn/Queens segment to the Richmond Downtake Chamber, which will provide water from Tunnel No. 3 to Staten Island.

The CIP also includes $1.2 billion for the Kensico-Eastview Connection, which was previously referred to as "Stage III of the City's Water Tunnel No. 3". The Kensico-Eastview Connection will connect the Kensico Reservoir to the Catskill/Delaware ultraviolet facility, which is necessary to provide redundancy in the water supply system.

The CIP includes $41.8 million for water conveyance projects. Funds included in the CIP for conveyance include DEP's Water for the Future program which consists of repair and replacement of the Rondout-West Branch Tunnel of the Delaware Aqueduct, as well as water supply augmentation projects required to ensure an adequate water supply to The City during the shut-down of the tunnel starting in 2022. Water supply augmentation includes the rehabilitation of the Catskill Aqueduct and a water demand management program to reduce The City water consumption. Shaft construction for the bypass tunnel is underway and funds for construction were committed in prior years.

WATER DISTRIBUTION AND TREATMENT

The System's drinking water is among the best in the country. The CIP includes approximately $3.9 billion for the protection, expansion, and distribution of The City's water supply, including over $1.3 billion for trunk and distribution water main replacements and extensions. Additionally, $48 million is included for the completion of construction of a full-scale filtration plant for the treatment of water from the Croton watershed, which commenced operation in May 2015, along with $835.8 million for the dam safety program, including the reconstruction of Gilboa Dam, improvements at the Ashokan Reservoir, including upgrading and stabilizing the thirteen dikes and dams to bring them up to modern standards.

The program also calls for approximately $1.3 billion to be committed to on-going water quality preservation and protection. To ensure its continuing quality and to comply with federal and state standards, DEP is pursuing a comprehensive program to protect the relatively pristine Catskill and Delaware watersheds. DEP continues to acquire and manage environmentally sensitive

DEP INVESTMENTS IN WATER POLLUTION CONTROL ARE PRIMARILY RESPONSIBLE FOR THE IMPROVEMENTS TO WATER QUALITY IN NEW YORK HARBOR AND THE JAMAICA BAY WATERSHED.

IN DECEMBER 2017, THE NEW YORK STATE DEPARTMENT OF HEALTH ISSUED A NEW 10-YEAR FILTRATION AVOIDANCE DETERMINATION.

property in the upstate watershed and undertake other ongoing projects in partnership with watershed residents, as part of the Filtration Avoidance Determination ("FAD") issued by the U.S. Environmental Protection Agency ("USEPA"). The FAD allows The City to avoid filtering water from the Catskill and Delaware systems. In July 2007, USEPA issued, for the first time, a 10-year FAD to The City, extending to 2017. The New York State Department of Health issued a midterm revision of the FAD in May 2014. In December 2017, the New York State Department of Health issued a new 10-year FAD. The estimated cost of complying with the 2017 FAD is $479 million, of which $278 million is funded in the CIP. USEPA has previously issued a series of FADs to The City for shorter terms, since 1993.

WATER POLLUTION CONTROL

To improve the quality of The City's estuaries and surrounding waterways and to comply with federal Clean Water Act mandates, $6.4 billion is included in the CIP for water pollution control programs. Investments in water pollution control are primarily responsible for the improvements to water quality in New York Harbor and the Jamaica Bay watershed.

The CIP allocates $3.3 billion for the replacement or reconstruction of components at The City's wastewater treatment facilities to ensure their continuous and reliable operations, including nitrogen removal upgrades at eight wastewater treatment plants, four of which discharge into the Upper East River and four of which discharge into Jamaica Bay. DEP's CIP also includes $1.9 billion for mandated projects, including those projects which will reduce combined sewer overflow ("CSO"). CSOs are currently a source of pollution in the waterways surrounding The City. CSO events occur during and after heavy rainstorms, when the flow of wastewater and storm water in the sewers exceeds the treatment capacity of a wastewater treatment plant and enters surrounding waterways untreated. In September 2010, DEP released a green infrastructure plan presenting an alternative approach to reducing CSOs. The plan uses a mix of green infrastructure to prevent storm water from reaching the sewers and cost-effective traditional infrastructure that will reduce sewer overflows into waterways. The City's standardized CSO capture rate has risen from about 30% in 1980 to over 80% today. On March 8, 2012, DEP signed a groundbreaking agreement with the New York State Department of Environmental Conservation to reduce CSOs which incorporated the goals of this innovative plan. As part of the agreement, DEP is required to submit a series of CSO long-term control plans to ensure the water bodies comply with Clean Water Act requirements.

THE CITY'S STANDARDIZED COMBINED SEWER OVERFLOW CAPTURE RATE HAS RISEN FROM ABOUT 30% IN 1980 TO OVER 80% TODAY.

SEWERS

Approximately $4.0 billion is projected in the CIP to be committed to replace existing sewers in areas requiring increased capacity, to extend sewers to unserved or underserved areas, and to replace failing, flawed, or collapsed sewer mains.

EQUIPMENT

Programs in this category of the CIP include water meter installation, automated meter reading systems, the procurement of vehicles and equipment, management information systems, and utility relocation for sewers and water mains. A total of $606.5 million is included in the CIP for these projects.

Approximately 96% of total accounts and 75% of total revenues, are billed on metered basis. The automated meter reading system transmits water usage information by radio signal to DEP. DEP has installed over 825,000 transmitters, covering 98% of all customers. All customers whose accounts have been upgraded for automated meter reading can now access details of their water usage through DEP's website.

INDEPENDENT AUDIT

Section 6.11 (b) of the Financing Agreement by and among The City, the Authority, and the Water Board dated as of July 1, 1985, requires that the Authority shall submit to the Mayor, the Comptroller and the Director of Management and Budget of The City, audited annual financial statements of the Authority and the Water Board. The financial section of the 2018 Comprehensive Annual Financial Report begins with the report of our independent auditors, Marks Paneth LLP. This report expresses an unmodified opinion as to the fairness of the presentation of our financial statements.

AWARD

Government Finance Officers Association of the United States and Canada ("GFOA") awarded a Certificate of Achievement for Excellence in Financial Reporting to New York City Water and Sewer System for its comprehensive annual financial report for the fiscal year ended June 30, 2017. This was the 22nd consecutive year that the government has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to GFOA to determine its eligibility for another certificate.

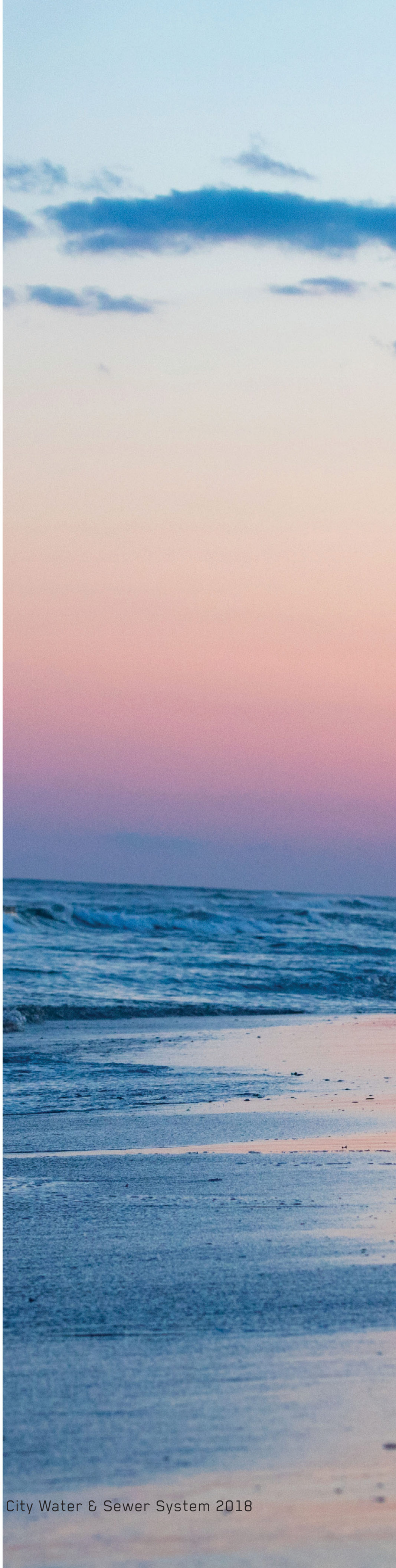
Respectfully submitted,

Olga Chernat

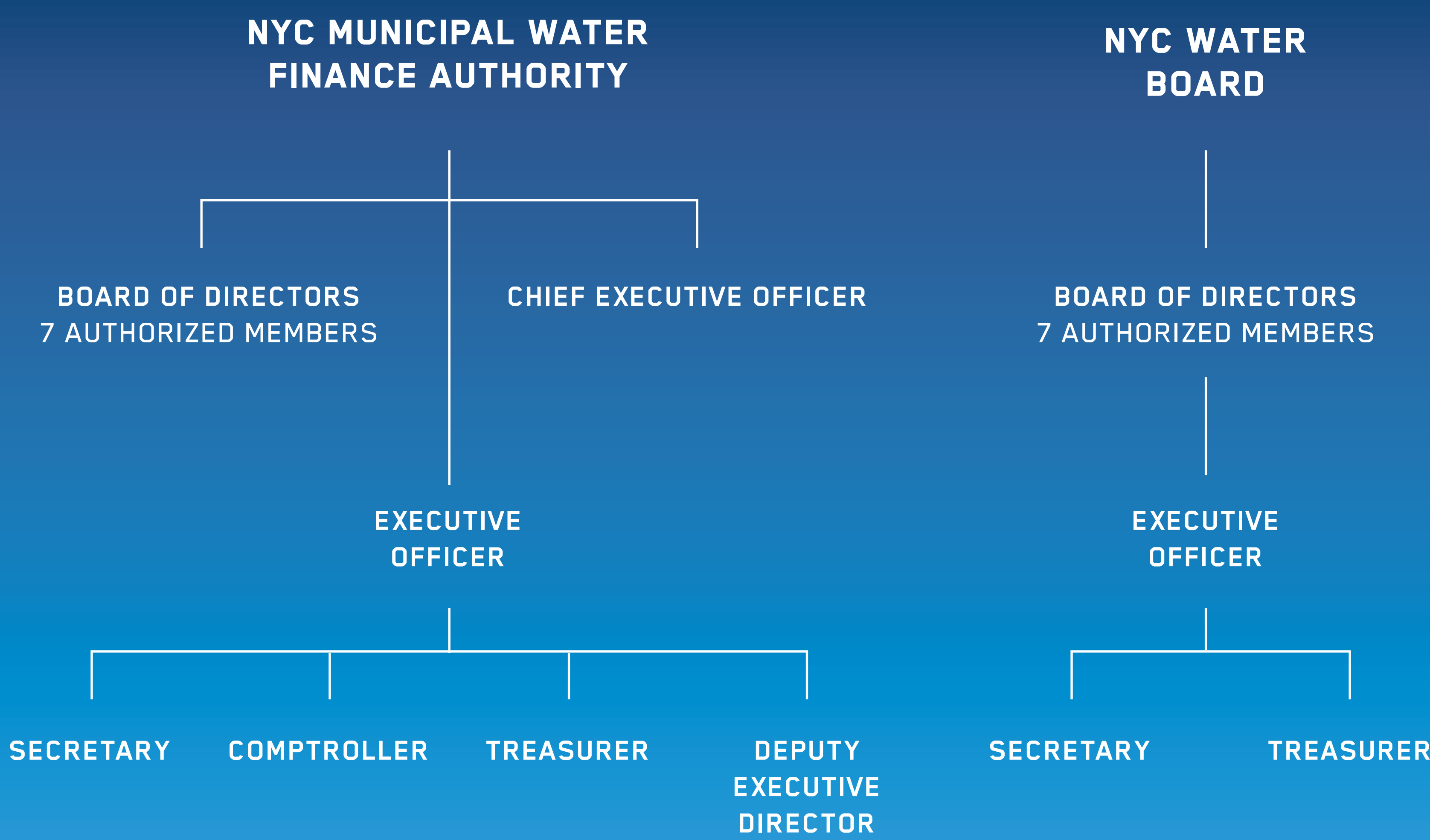
EXECUTIVE DIRECTOR

Robert L. Balducci

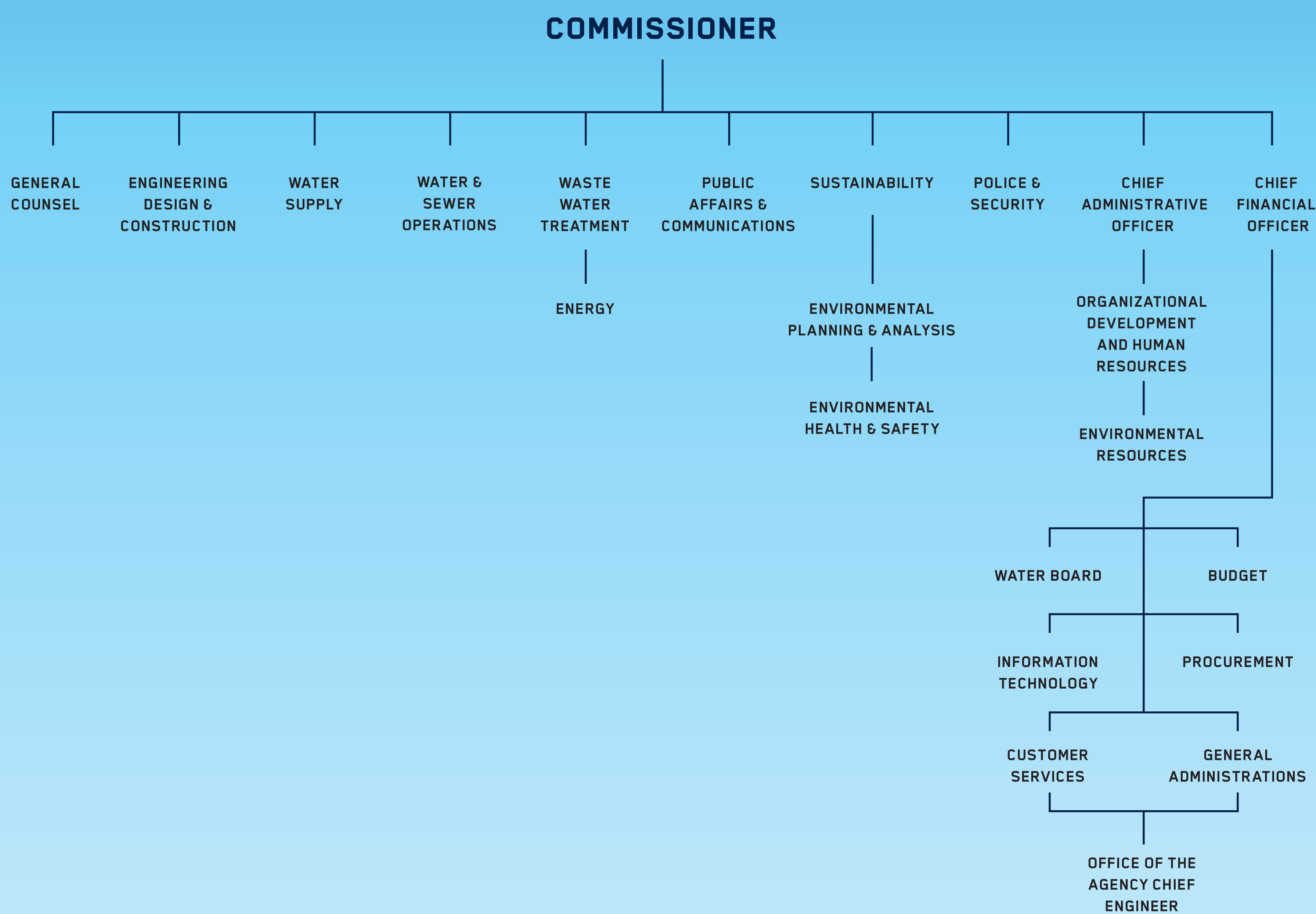
COMPTROLLER



ORGANIZATIONAL CHART



NYC DEPARTMENT OF ENVIRONMENT PROTECTION



Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

New York City Water and Sewer System

New York

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

June 30, 2017

Christopher P. Morrill

Executive Director/CEO

SYSTEM OFFICIALS

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BASIL SEGGOS, Ex Officio Member

JACQUES JIHA, Ex Officio Member

VINCENT SAPIENZA, P.E., Ex Officio Member

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MAX VON HOLLWEG, Member

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JEFFREY M. WERNER, Assistant Secretary

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ANA BARRIO, Deputy Commissioner

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ZOE ANN CAMPBELL, Deputy Commissioner

Water Supply

PAUL V. RUSH, P.E., Deputy Commissioner

Information Technology

CECIL MCMASTER, Chief Information Officer

Public Affairs & Communications

MICHAEL DELOACH, Deputy Commissioner

FINANCIAL

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MARKS PANETH
ACCOUNTANTS & ADVISORS

INDEPENDENT AUDITORS' REPORT

To the Members of the Joint Audit Committee of the
New York City Municipal Water Finance Authority and
New York City Water Board

We have audited the accompanying combining financial statements of the New York City Municipal Water Finance Authority and the New York City Water Board, which collectively comprise the New York City Water and Sewer System (the "System"), a component unit of The City of New York, which comprise the combining statements of net position (deficit) as of June 30, 2018 and 2017, and the related combining statements of revenues, expenses and changes in net position (deficit) and cash flows for the years then ended, and the related notes to the combining financial statements.

Management's Responsibility for the Combining Financial Statements

Management is responsible for the preparation and fair presentation of these combining 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 the combining financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these combining financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the combining financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the combining financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the combining 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 combining 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 combining financial statements.

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

Morison KSi
Independent member

Opinion

In our opinion, the combining financial statements referred to above present fairly, in all material respects, the financial position of the New York City Municipal Water Finance Authority and the New York City Water Board as of June 30, 2018 and 2017, and the changes in their financial position and their cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matter

As discussed in Note 2, the System has restated its combining financial statements as of and for the year ended June 30, 2017 during the current year to retroactively implement Governmental Accounting Standards Board Statement No. 83, *Certain Asset Retirement Obligations*. Our opinion is 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 on pages 21 through 31, the schedule of changes for total OPEB liability and related ratios on page 81, the schedule of the System's proportionate share of the net pension liability on page 82, and the schedule of the System's pension contributions on page 82 be presented to supplement the basic combining financial statements. Such information, although not a part of the basic combining 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 combining 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 combining financial statements, and other knowledge we obtained during our audits of the basic combining 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.

Other Information

Our audits were conducted for the purpose of forming an opinion on the basic combining financial statements as a whole. The introductory and statistical sections are presented for purposes of additional analysis and are not a required part of the basic combining financial statements. The introductory and statistical sections have not been subjected to the auditing procedures applied in the audits of the basic combining financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Marks Paneth LLP

New York, NY
October 16, 2018

MARKS PANETH
ACCOUNTANTS & ADVISORS

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

OVERVIEW OF THE FINANCIAL STATEMENTS

The following is an overview of the financial activities of the New York City Water and Sewer System (the "System") for the fiscal years ended June 30, 2018 and 2017. The System is a joint operation consisting of two legally separate and independent entities, the New York City Municipal Water Finance Authority (the "Authority") and the New York City Water Board (the "Water Board"). The System is a component unit of The City of New York ("The City").

The financial statements consist of four parts (1) management's discussion and analysis (this section), (2) the basic financial statements, (3) the notes to the financial statements and (4) required supplementary information.

The basic financial statements of the System, which include the combining statements of net position (deficit), the combining statements of revenues, expenses and changes in net position (deficit) and the combining statements of cash flows, are presented for the purposes of displaying entity-wide information in accordance with Governmental Accounting Standards Board ("GASB") requirements. These financial statements are prepared using the economic resources measurement focus and the accrual basis of accounting. Accordingly, revenue is recognized when earned, and expenses are recorded when a liability is incurred, regardless of the timing of the related cash flows.

FINANCIAL ANALYSIS AND RESULTS OF OPERATIONS

The following summarizes the activities of the System for the fiscal years 2018, 2017, and 2016 (in thousands):

		RESTATED (a)		VARIANCE	
	2018	2017	2016	2018 vs 2017	2017 vs 2016
REVENUES					
OPERATING REVENUE:					
Water supply and distribution	$ 1,346,045	$ 1,407,328	$ 1,431,148	$ (61,283)	$ (23,820)
Sewer collection and treatment	2,140,214	2,237,652	2,275,524	(97,438)	(37,872)
Bad debt expense	(18,259)	(2,620)	(4,467)	(15,639)	1,847
Other operating revenues	187,308	186,355	185,793	953	562
TOTAL OPERATING REVENUES	3,655,308	3,828,715	3,887,998	(173,407)	(59,283)
NON-OPERATING REVENUE:					
Subsidy income	175,620	166,715	164,502	8,905	2,213
Investment income	28,809	4,178	53,322	24,631	(49,144)
TOTAL NON-OPERATING REVENUES	204,429	170,893	217,824	33,536	(46,931)
TOTAL REVENUES	3,859,737	3,999,608	4,105,822	(139,871)	(106,214)
EXPENSES					
Operations and maintenance	1,389,954	1,385,446	1,297,294	4,508	88,152
Other operating expenses	84,983	56,116	16,546	28,867	39,570
General and administrative	55,493	50,749	61,335	4,744	(10,586)
Depreciation and amortization expense	1,042,968	930,482	918,950	112,486	11,532
Capital distribution	22,789	45,789	11,082	(23,000)	34,707
Net loss on retirement of capital assets	48,609	44,452	4,488	4,157	39,964
Loss/(Gain) on defeasance	14,991	(4,808)	22,962	19,799	(27,770)
Interest expense and cost of issuance	1,190,802	1,176,402	1,172,811	14,400	3,591
TOTAL EXPENSES	3,850,589	3,684,628	3,505,468	165,961	179,160
Net gain (loss) before capital contributions	9,148	314,980	600,354	(305,832)	(285,374)
CAPITAL CONTRIBUTIONS	19,642	6,225	4,060	13,417	2,165
CHANGE IN NET POSITION (DEFICIT)	28,790	321,205	604,414	(292,415)	(283,209)
NET POSITION (DEFICIT) - BEGINNING	1,054,953	733,748	129,334	321,205	604,414
NET POSITION (DEFICIT) - ENDING	$ 1,083,743	$ 1,054,953	$ 733,748	$ 28,790	$ 321,205

(a) The restatement in fiscal year 2017 is the result of the System's implementing GASB 83.

The implementation is discussed further in Note 9.

OPERATING REVENUE

Operating revenue is comprised of water supply and distribution, sewer collection and treatment, bad debt expense, and other operating revenues.

2018-2017

Operating revenues decreased by $173 million largely due to the following: (i) a one-time credit issued to residential properties holders with three or fewer units totaling $121 million and (ii) credits issued to multifamily residential properties subject to rental affordability agreements, credits to senior homeowners, and credits for leak forgiveness totaling $19.3 million.

2017-2016

Operating revenues decreased by $59.3 million or 1.5% largely due to a 1.8% decrease in consumption compared to fiscal year 2016.

OTHER OPERATING REVENUE

The following further details other operating revenues for fiscal years 2018, 2017, and 2016 (in thousands):

				VARIANCE	
	2018	2017	2016	2018 vs 2017	2017 vs 2016
Upstate water fees	$ 79,688	$ 85,410	$ 85,221	$ (5,722)	$ 189
Late payment fees	54,020	45,859	53,716	8,161	(7,857)
Change in residual interest in sold liens	(2,034)	2,274	1,737	(4,308)	537
Connection fees and permits	19,588	19,979	17,204	(391)	2,775
Service line protection program	36,046	32,833	27,915	3,213	4,918
TOTAL OTHER OPERATING REVENUES	$ 187,308	$ 186,355	$ 185,793	$ 953	$ 562

2018-2017

Upstate water fees declined due to lower sales of water charged at both the entitlement and excess rates, in particular the reduction of excess water revenues from the City of Newburgh.

Fiscal year 2018 late payment fees returned to a typical range. In fiscal year 2017, late payment fees were reduced by a billing adjustment made mid-year to certain accounts relating to a change in interest rate. This lowered the total amount of late payment charges for fiscal year 2017. This amount fluctuates depending on the timeliness of customer payment.

The change in residual interest in sold liens decreased by $4.3 million compared to fiscal year 2017. This was due to fewer residual liens from previous lien sales residing with the Lien Trust.

The amounts received for the service line protection program increased by $3.2 million. The number of effective policies increased from approximately 254,000 on July 1, 2017 to approximately 270,000 by the end of fiscal year 2018.

2017-2016

Upstate water fees increased slightly from fiscal year 2016 to fiscal year 2017. There was no rate increase in fiscal year 2017, however, water usage increased minimally.

Late payment fees decreased by $7.9 million or 14.6% compared to fiscal year 2016. This amount fluctuates depending on the timeliness of customer payments. In fiscal year 2017, collection improved along with a mid-year reduction on the interest rate charged for outstanding balances, a decrease from 9% to 6%.

The change in residual interest in sold liens increased by $0.5 million or 3.1% compared to fiscal year 2016. This was due to more residual liens from previous lien sales residing with the lien servicer.

The amounts received for the service line protection program increased by $4.9 million. The number of effective policies steadily increased from approximately 220,000 on July 1, 2016 to approximately 254,000 by the end of fiscal year 2017.

NON-OPERATING REVENUE

Non-operating revenue is comprised of subsidy income and investment income.

2018-2017

Investment income increased by $24.6 million compared to fiscal year 2017. The increase was due to higher interest rates on invested assets and a decrease in arbitrage rebate payments, which is recorded as an offset to investment income.

2017-2016

Investment income decreased by $49.1 million compared to fiscal year 2016. This is due to (a) the Water Board investment income that decreased by $4.9 million due to realized losses on securities purchased and lower interest rates on investment balances held at the institutions and (b) the Authority's $25.0 million of unrealized loss on investments, of which $20.6 million relates to Forward Purchase Agreements ("FPA"), and arbitrage rebate payments of approximately $14.3 million in fiscal year 2017. Excluding the unrealized loss on investments, the arbitrage rebate payments and the arbitrage accruals, investment income increased by $9.9 million.

OPERATING EXPENSES

Operating expenses are comprised of operations and maintenance, general and administrative, depreciation and amortization expense, and other operating expenses.

2018-2017

Other operating expenses increased by $28.9 million compared to fiscal year 2017. The Department of Environmental Protection ("DEP") pollution remediation obligations went up by approximately $8.0 million in fiscal year 2018 due to several projects, including the reconstruction of facilities lighting at the North River Wastewater Treatment Plant ("WWTP"), Main Sewage Pump upgrades at the Bowery Bay WWTP, the activation of The City Tunnel No. 3, Stage 2, and asbestos removal at various DEP facilities. The filtration avoidance determination ("FAD") expense increased in fiscal year 2018 compared to fiscal year 2017. This increase was due to the wastewater management program with various New York upstate counties for maintaining and enhancing water quality.

In fiscal year 2018, depreciation expense increased due to the addition of $3.7 billion of new depreciable assets placed in service.

2017-2016

Total operations and maintenance expenses increased by approximately $88.2 million or 6.8%. This increase was mainly due to the following: costs associates with dredging of the Flushing Bay, increased cost of sludge disposal, and increased costs associated with wastewater treatment.

Administrative and general expenses decreased by $11.0 million or 18.0% compared to fiscal year 2016 mainly due to decreased Water Board accrued expenses and consulting fees. The Authority's administrative and general expenses decreased marginally in fiscal year 2017.

Other operating expenses increased by $39.6 million compared to fiscal year 2016. In fiscal year 2016, there was a write down of $46.5 million of pollution remediation obligations. In fiscal year 2017, there was no write down to offset expenses.

NON-OPERATING EXPENSES

Non-operating expenses are comprised of interest expense, loss on defeasance, cost of issuance, net loss on retirement of capital assets, and capital distribution.

2018-2017

Net loss on retirement of capital assets increased by $4.2 million due to the disposition of assets with carrying values greater than those in fiscal year 2017. This amount fluctuates depending on the amount of fixed asset disposed.

Interest expense and cost of issuance increased by $14.4 million. This increase was primarily due to the issuance of additional debt.

Fiscal year 2018 cash defeasance resulted in an accounting loss of $15.0 million. This represents the difference between the carrying value of the defeased bonds and the amount transferred to fund the escrow account (using current resources) to defease the bonds. This loss was reported in the Systems' combining statement of revenues, expenses and changes in net position (deficit) (see Note 9).

2017-2016

Net loss on retirement and impairment of capital assets increased by $40.0 million due to the disposition of assets with carrying values greater than those in fiscal year 2016.

Interest expense and cost of issuance increased by $3.6 million. This increase was primarily due to the issuance of additional debt.

Fiscal year 2017 cash defeasance resulted in an accounting gain of $4.8 million. This represents the difference between the carrying value of the defeased bonds and the amount transferred to fund the escrow account (using current resources) to defease the bonds. This gain was reported in the System's combining statement of revenues, expenses and changes in net position (deficit) (see Note 9).

CHANGE IN NET POSITION (DEFICIT)

2018-2017

The change in net position (deficit) represents the net total of operating revenue and expenses, non-operating revenues and expenses, and capital contributions. The change in net position (deficit) decreased by $292 million in fiscal year 2018.

2017-2016

The change in net position (deficit) represents the net total of operating revenue and expenses, non-operating revenues and expenses, and capital contributions. The change in net position (deficit) decreased by $283 million in fiscal year 2017.

ENDING NET POSITION (DEFICIT)

2018-2017

The ending net position (deficit) represents the net total of operating revenue and expenses, non-operating revenues and expenses, capital contributions, and beginning balance of net position. Ending net position (deficit) increased by $28.8 million in fiscal year 2018.

2017-2016

The ending net position (deficit) represents the net total of operating revenue and expenses, non-operating revenues and expenses, capital contributions, and beginning balance of net position (deficit). Ending net position (deficit) increased by $321 million in fiscal year 2017.

The following is a summary of the System's assets, deferred outflows of resources, liabilities, deferred inflows of resources and net position (deficit) as of June 30 (in thousands):

			RESTATED		VARIANCE	
		2018	2017	2016	2018 vs 2017	2017 vs 2016
Current assets	$	3,274,730	$ 3,497,079	$ 3,185,052	$ (222,349)	$ 312,027
Residual interest in sold liens		73,574	75,607	73,333	(2,033)	2,274
Capital assets		30,063,299	29,536,272	29,065,790	527,027	470,482
TOTAL ASSETS		33,411,603	33,108,958	32,324,175	302,645	784,783
DEFERRED OUTFLOWS OF RESOURCES:						
Accumulated decrease in fair value of hedging derivative		76,115	100,438	142,802	(24,323)	(42,364)
Deferred changes in net pension liability		(353)	(184)	275	(169)	(459)
Unamortized asset retirement obligation		15,454	16,752	-	(1,298)	16,752
Deferred changes in OPEB liability		31	-	-	31	-
TOTAL DEFERRED OUTFLOWS OF RESOURCES		91,247	117,006	143,077	(25,759)	(26,071)
TOTAL ASSETS AND DEFERRED OUTFLOWS OF RESOURCES	$	33,502,850	$ 33,225,964	$ 32,467,252	$ 276,886	$ 758,712
Current liabilities	$	1,251,166	$ 1,369,149	$ 1,285,910	$ (117,983)	$ 83,239
Long-term liabilities		31,158,544	30,785,167	30,430,785	373,377	354,382
TOTAL LIABILITIES		32,409,710	32,154,316	31,716,695	255,394	437,621
DEFERRED INFLOWS OF RESOURCES:						
Deferred changes in net pension liability		37	11	154	26	(143)
Deferred changes in OPEB liability		349	291	8	58	283
Unamortized deferred bond refunding costs		9,011	16,393	16,647	(7,382)	(254)
TOTAL DEFERRED INFLOWS OF RESOURCES		9,397	16,695	16,809	(7,298)	(114)
NET POSITION (DEFICIT):						
Net investment in capital assets		116,124	(204,403)	(430,201)	320,527	225,798
Restricted for debt service		1,501,529	1,781,994	1,457,332	(280,465)	324,662
Restricted for operations and maintenance		247,304	237,746	250,447	9,558	(12,701)
Unrestricted (deficit)		(781,214)	(760,384)	(543,830)	(20,830)	(216,554)
TOTAL NET POSITION (DEFICIT)		1,083,743	1,054,953	733,748	28,790	321,205
TOTAL LIABILITIES, DEFERRED INFLOWS OF RESOURCES, AND NET POSITION (DEFICIT)	$	33,502,850	$ 33,225,964	$ 32,467,252	$ 276,886	$ 758,712

DEFERRED OUTFLOWS OF RESOURCES

Deferred Outflows of Resources are comprised of accumulated decrease in fair value of hedging derivative, deferred changes in net pension liability, unamortized asset retirement obligations, and deferred changes in OPEB liability.

2018-2017

Accumulated decrease in fair value of hedging derivative decreased by $24.3 million or 24.2% compared to fiscal year 2017 because of an increase in the fair value of the hedging derivative instruments.

2017-2016

Deferred outflows of resources from hedging decreased by $42.4 million or 29.7% compared to fiscal year 2016 because of an increase in the fair value of the hedging derivative instruments.

CURRENT LIABILITIES

Current liabilities are comprised of accounts payable, interest payable, revenue received in advance, current portion of bonds and notes payable, payable to The City of New York, and service credits on customer accounts.

2018-2017

Current liabilities decreased by $118 million or 8.6% compared to fiscal year 2017. This was primarily due to a decrease in the current portion of bonds and notes payable.

2017-2016

Current liabilities increased by $83.2 million or 6.5% compared to fiscal year 2016. This was due to an increase in the current portion of Bonds Anticipation Notes payable offset by a decrease of $200 million in outstanding commercial paper.

LONG-TERM LIABILITIES

Long-term liabilities are comprised of bonds and notes payable, pollution remediation obligation, interest rate swap agreement—net, revenue requirements payable to the Authority, net pension liability, net OPEB liability, and other long-term liability.

2018-2017

Long-term liabilities increased by $373 million or 1.2% primarily due to the issuance of new debt to fund capital projects.

2017-2016

Long-term liabilities increased by $354 million or 1.2% primarily due to the issuance of new debt for capital projects.

CAPITAL ASSETS

The System's capital assets include buildings, machinery and equipment, vehicles, water supply and wastewater treatment systems, and water distribution and sewage collection systems, as well as utility construction.

The Authority issues debt to pay for the capital improvements to the System and related costs. Costs related to the System's filtration avoidance determination, including land acquisition in the upstate watershed area and certain costs associated with pollution remediation, are financed with debt but are not recorded as System assets on the combining statements of net position (deficit). The cumulative amount of expenses not capitalized as assets as of June 30, 2018 was $1.4 billion. These costs or distributions are expensed in the System's combining statements of revenues, expenses, and changes in net position (deficit) in the years incurred. The land purchased is granted to The City and becomes The City's capital asset because it is not subject to the method of capitalization under which the System reports its capital assets.

Capital assets as of June 30, are detailed as follows (in thousands):

				VARIANCE	
	2018	2017	2016	2018 vs 2017	2017 vs 2016
NONDEPRECIABLE ASSETS:					
Utility construction in progress	$ 3,394,126	$ 5,475,307	$ 5,227,182	$ (2,081,181)	$ 248,125
DEPRECIABLE ASSETS:					
Utility plant in service:					
Buildings	35,767	34,937	34,877	830	60
Machinery and Equipment	4,826,881	3,940,876	3,826,694	886,005	114,182
Vehicles	250,359	246,899	292,404	3,460	(45,505)
Water supply and distribution and wastewater treatment and sewage collection systems	36,345,548	33,670,666	32,661,550	2,674,882	1,009,116
TOTAL UTILITY PLANT IN SERVICE	41,458,555	37,893,378	36,815,525	3,565,177	1,077,853
LESS ACCUMULATED DEPRECIATION FOR:					
Buildings	28,003	26,455	25,140	1,548	1,315
Machinery and Equipment	2,120,838	1,872,243	1,641,501	248,595	230,742
Vehicles	101,819	94,025	128,549	7,794	(34,524)
Water supply and distribution and wastewater treatment and sewage collection systems	12,538,722	11,839,690	11,181,727	699,032	657,963
TOTAL ACCUMULATED DEPRECIATION	14,789,382	13,832,413	12,976,917	956,969	855,496
TOTAL UTILITY PLANT IN SERVICE - NET	26,669,173	24,060,965	23,838,608	2,608,208	222,357
TOTAL CAPITAL ASSETS - NET	$ 30,063,299	$ 29,536,272	$ 29,065,790	$ 527,027	$ 470,482

2018-2017

Total gross additions to nondepreciable assets utility construction in progress were $1.6 billion and a total of $3.7 billion of completed projects were moved from construction in progress into depreciable assets utility plant in service. This resulted in a $2.1 billion reduction in construction in progress, representing a 38% net decrease compared to fiscal year 2017. The System completed the construction of the Croton filtration plant at a cost of $2.4 billion, the Gowanus Canal facilities upgrade of $204 million, carbon addition facilities at various treatment plants of $121 million, supervisory control and data acquisition system at various treatment plants of $92.0 million, Catskills Delaware shaft 4 interconnection of $40.0 million, Tallman Island wet weather sewage flow maximization of $30.0 million and various other projects. Total depreciable assets, net of depreciation increased by $527 million, a 2% increase from fiscal year 2017 (see Note 3).

2017-2016

The increase in the System's capital assets, net of depreciation during fiscal year 2017 was $470 million or 1.6%. Additions to utility construction in progress for fiscal year 2017 were $248 million. Total gross additions to utility construction in progress were $1.4 billion, less deletions for fiscal year 2017 of $1.2 billion. The System completed and placed in service over $286 million of sewage treatment projects, $352 million of water distribution capital projects, installed and upgraded over $303 million sewage pipes, and $108 million water pipes throughout the five boroughs of New York City. The System also completed numerous other projects (see Note 3).

DEBT ADMINISTRATION

The debt program of the Authority includes commercial paper and long-term debt issued to the public; and Bond Anticipation Notes ("BANs") and interest-subsidized bonds issued to the New York State Environmental Facilities Corporation ("EFC"). The commercial paper program and BANs are interim financing instruments. Traditionally, they have been the main source of funds used to reimburse The City for payments made for water and sewer projects. The Authority periodically issues long-term debt to retire outstanding commercial paper and subsidized debt through EFC to retire BANs. From time to time, the Authority issues long-term bonds to pay for water and sewer projects foregoing the interim borrowing. The Authority also periodically issues refunding bonds to refinance higher coupon debt.

As of June 30, 2018, the total outstanding debt of the System was $30.0 billion, of which $215 million was outstanding BANs issued to EFC, and $29.8 billion consisted of adjustable and fixed-rate bonds maturing in varying installments through 2053.

As of June 30, 2018, the total outstanding long-term debt including current portion were issued as follows (in thousands):

ISSUE DATE		PRINCIPAL OUTSTANDING[1]
2018	$	3,124,497
2017		2,792,148
2016		2,330,180
2015		2,924,925
2014		2,628,372
2013 and prior		16,215,280
TOTAL LONG-TERM DEBT	$	30,015,402

[1] Principal outstanding does not include premium or discount on bonds.

In fiscal year 2018, the Authority issued $2.3 billion of water and sewer system revenue bonds to the public, including $1.4 billion of refunding bonds and $833 million of new money bonds. Additionally, the Authority issued $669 million of new money water and sewer system revenue bonds to EFC. The Authority used new money bond proceeds to finance capital improvements to the System, to provide long-term financing of BANs that previously financed capital improvements to the System, and to pay for bond issuance costs (see Note 9).

During fiscal year 2018, the Authority legally defeased $769 million of outstanding bonds using current resources. This resulted in an accounting loss of $15.0 million and a gross debt service savings of $1.7 billion (see Note 9).

REQUEST FOR INFORMATION

This financial report is provided as an overview of the System's finances. Questions concerning any of the information in this report or requests for additional information should be directed to Investor Relations, New York City Municipal Water Finance Authority, 255 Greenwich Street, New York, New York 10007 or to NYWInvestors@omb.nyc.gov.

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF NET POSITION (DEFICIT)

JUNE 30, 2018

ASSETS AND DEFERRED OUTFLOWS OF RESOURCES	WATER BOARD	NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY	ELIMINATIONS	TOTAL
ASSETS		(IN THOUSANDS)		
CURRENT ASSETS:				
Restricted cash and cash equivalents	$ 9,007	$ 1,265,802	$ -	$ 1,274,809
Restricted investments	247,302	932,776	-	1,180,078
Accrued interest and subsidy receivable	-	13,389	-	13,389
Accounts receivable:				
Billed - less allowance for uncollectable water and sewer receivables of $404,018	429,663	-	-	429,663
Unbilled - less allowance for uncollectable water and sewer receivables of $27,907	356,581	-	-	356,581
Receivable from The City of New York	20,210	-	-	20,210
TOTAL CURRENT ASSETS	1,062,763	2,211,967	-	3,274,730
NON-CURRENT ASSETS:				
Utility plant in service - less accumulated depreciation of $14,789,382	26,669,173	-	-	26,669,173
Utility plant construction	3,394,126	-	-	3,394,126
TOTAL CAPITAL ASSETS	30,063,299	-	-	30,063,299
Residual interest in sold liens	73,574	-	-	73,574
Revenue required to be billed by and received from the Water Board	-	11,588,295	(11,588,295)	-
TOTAL NON-CURRENT ASSETS	30,136,873	11,588,295	(11,588,295)	30,136,873
TOTAL ASSETS	31,199,636	13,800,262	(11,588,295)	33,411,603
DEFERRED OUTFLOWS OF RESOURCES:				
Accumulated decrease in fair value of hedging derivative	-	76,115	-	76,115
Deferred changes in net pension liability	-	(353)	-	(353)
Unamortized asset retirement obligations	15,454	-	-	15,454
Deferred changes in OPEB liability	-	31	-	31
TOTAL DEFERRED OUTFLOWS OF RESOURCES	15,454	75,793	-	91,247
TOTAL ASSETS AND DEFERRED OUTFLOWS OF RESOURCES	$ 31,215,090	$ 13,876,055	$ (11,588,295)	$ 33,502,850

See notes to combining financial statements.

(Continued)

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF NET POSITION (DEFICIT)

JUNE 30, 2018

LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION (DEFICIT)	WATER BOARD	NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY	ELIMINATIONS	TOTAL
LIABILITIES		(IN THOUSANDS)		
CURRENT LIABILITIES:				
Accounts payable	$ 6,871	$ 5,719	$ -	$ 12,590
Interest payable	-	53,203	-	53,203
Revenue received in advance	58,537	-	-	58,537
Current portion of bonds and notes payable	-	451,477	-	451,477
Payable to The City of New York	-	595,020	-	595,020
Service credits on customer accounts	80,339	-	-	80,339
TOTAL CURRENT LIABILITIES	145,747	1,105,419	-	1,251,166
LONG-TERM LIABILITIES:				
Bonds and notes payable	-	31,023,455	-	31,023,455
Pollution remediation obligation	37,561	-	-	37,561
Interest rate swap agreement - net	-	76,115	-	76,115
Revenue requirements payable to the Authority	11,588,295	-	(11,588,295)	-
Net pension liability	-	516	-	516
Net OPEB liability	-	1,457	-	1,457
Other long-term liability	18,051	1,389	-	19,440
TOTAL LONG-TERM LIABILITIES	11,643,907	31,102,932	(11,588,295)	31,158,544
TOTAL LIABILITIES	11,789,654	32,208,351	(11,588,295)	32,409,710
DEFERRED INFLOWS OF RESOURCES:				
Unamortized deferred bond refunding costs	-	9,011	-	9,011
Deferred changes in net pension liability	-	37	-	37
Deferred changes in OPEB liability	-	349	-	349
TOTAL DEFERRED INFLOWS OF RESOURCES	-	9,397	-	9,397
NET POSITION (DEFICIT):				
Net investment in capital assets	30,063,299	(29,947,175)	-	116,124
Restricted for debt service	-	1,501,529	-	1,501,529
Restricted for operations and maintenance	247,304	-	-	247,304
Unrestricted (deficit)	(10,885,167)	10,103,953	-	(781,214)
TOTAL NET POSITION (DEFICIT)	19,425,436	(18,341,693)	-	1,083,743
TOTAL LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION (DEFICIT)	$ 31,215,090	$ 13,876,055	$ (11,588,295)	$ 33,502,850

See notes to combining financial statements.

(Concluded)

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF NET POSITION (DEFICIT)

JUNE 30, 2017 (RESTATED)

ASSETS AND DEFERRED OUTFLOWS OF RESOURCES	WATER BOARD	NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY	ELIMINATIONS	TOTAL
ASSETS		(IN THOUSANDS)		
CURRENT ASSETS:				
Restricted cash and cash equivalents	$ 11,191	$ 1,600,551	$ -	$ 1,611,742
Restricted investments	237,341	876,126	-	1,113,467
Accrued interest and subsidy receivable	-	5,455	-	5,455
Accounts receivable:				
Billed - less allowance for uncollectable water and sewer receivables of $384,895	404,669	-	-	404,669
Unbilled - less allowance for uncollectable water and sewer receivables of $28,772	327,231	-	-	327,231
Receivable from The City of New York	34,515	-	-	34,515
TOTAL CURRENT ASSETS	1,014,947	2,482,132	-	3,497,079
NON-CURRENT ASSETS:				
Utility plant in service - less accumulated depreciation of $13,832,413	24,060,965	-	-	24,060,965
Utility plant construction	5,475,307	-	-	5,475,307
TOTAL CAPITAL ASSETS	29,536,272	-	-	29,536,272
Residual interest in sold liens	75,607	-	-	75,607
Revenue required to be billed by and received from the Water Board	-	12,113,674	(12,113,674)	-
TOTAL NON-CURRENT ASSETS	29,611,879	12,113,674	(12,113,674)	29,611,879
TOTAL ASSETS	30,626,826	14,595,806	(12,113,674)	33,108,958
DEFERRED OUTFLOWS OF RESOURCES:				
Accumulated decrease in fair value of hedging derivatives	-	100,438	-	100,438
Deferred changes in net pension liability	-	(184)	-	(184)
Unamortized asset retirement obligations	16,752	-	-	16,752
TOTAL DEFERRED OUTFLOWS OF RESOURCES	16,752	100,254	-	117,006
TOTAL ASSETS AND DEFERRED OUTFLOWS OF RESOURCES	$ 30,643,578	$ 14,696,060	$ (12,113,674)	$ 33,225,964

See notes to combining financial statements.

(Continued)

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF NET POSITION (DEFICIT)

JUNE 30, 2017 (RESTATED)

LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION (DEFICIT)	WATER BOARD	NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY	ELIMINATIONS	TOTAL
LIABILITIES		(IN THOUSANDS)		
CURRENT LIABILITIES:				
Accounts payable	$ 3,249	$ 16,558	$ -	$ 19,807
Interest payable	-	51,706	-	51,706
Revenue received in advance	69,561	-	-	69,561
Current portion of bonds and notes payable	-	632,921	-	632,921
Payable to The City of New York	-	525,138	-	525,138
Service credits on customer accounts	70,016	-	-	70,016
TOTAL CURRENT LIABILITIES	142,826	1,226,323	-	1,369,149
LONG-TERM LIABILITIES:				
Bonds and notes payable	-	30,633,829	-	30,633,829
Pollution remediation obligation	29,500	-	-	29,500
Interest rate swap agreement - net	-	100,438	-	100,438
Revenue requirements payable to the Authority	12,113,674	-	(12,113,674)	-
Net pension liability	-	828	-	828
Net OPEB liability	-	1,412	-	1,412
Other long-term liability	18,051	1,109	-	19,160
TOTAL LONG-TERM LIABILITIES	12,161,225	30,737,616	(12,113,674)	30,785,167
TOTAL LIABILITIES	12,304,051	31,963,939	(12,113,674)	32,154,316
DEFERRED INFLOWS OF RESOURCES:				
Unamortized deferred bond refunding costs	-	16,393	-	16,393
Deferred changes in net pension liability	-	11	-	11
Deferred changes in OPEB liability	-	291	-	291
TOTAL DEFERRED INFLOWS OF RESOURCES	-	16,695	-	16,695
NET POSITION (DEFICIT):				
Net investment in capital assets	29,536,273	(29,740,676)	-	(204,403)
Restricted for debt service	-	1,781,994	-	1,781,994
Restricted for operations and maintenance	237,746	-	-	237,746
Unrestricted (deficit)	(11,434,492)	10,674,108	-	(760,384)
TOTAL NET POSITION (DEFICIT)	18,339,527	(17,284,574)	-	1,054,953
TOTAL LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION (DEFICIT)	$ 30,643,578	$ 14,696,060	$ (12,113,674)	$ 33,225,964

See notes to combining financial statements.

(Concluded)

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION (DEFICIT)

FOR THE YEAR ENDED JUNE 30, 2018

	NEW YORK CITY WATER BOARD	NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY	TOTAL
		(IN THOUSANDS)	
OPERATING REVENUES:			
Water supply and distribution	$ 1,346,045	$ -	$ 1,346,045
Sewer collection and treatment	2,140,214	-	2,140,214
Bad debt expense	(18,259)	-	(18,259)
Other operating revenues	187,308	-	187,308
TOTAL OPERATING REVENUES	3,655,308	-	3,655,308
OPERATING EXPENSES:			
Operations and maintenance	1,389,954	-	1,389,954
General and administrative	5,661	49,832	55,493
Other operating expenses	84,983	-	84,983
Depreciation and amortization expense	1,042,968	-	1,042,968
TOTAL OPERATING EXPENSES	2,523,566	49,832	2,573,398
OPERATING INCOME (LOSS)	1,131,742	(49,832)	1,081,910
NON-OPERATING REVENUE (EXPENSES):			
Interest expense	-	(1,171,567)	(1,171,567)
Loss on defeasance	-	(14,991)	(14,991)
Cost of issuance	-	(19,235)	(19,235)
Net loss on retirement and impairment of capital assets	(48,609)	-	(48,609)
Subsidy income	-	175,620	175,620
Capital distribution	(22,789)	-	(22,789)
Investment income	5,923	22,886	28,809
NET INCOME (LOSS) BEFORE CAPITAL CONTRIBUTIONS	1,066,267	(1,057,119)	9,148
Capital Contribution	19,642	-	19,642
CHANGE IN NET POSITION (DEFICIT)	1,085,909	(1,057,119)	28,790
NET POSITION (DEFICIT) - BEGINNING OF YEAR	18,339,527	(17,284,574)	1,054,953
NET POSITION (DEFICIT) - END OF YEAR	$ 19,425,436	$ (18,341,693)	$ 1,083,743

See notes to combining financial statements.

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION (DEFICIT)

FOR THE YEAR ENDED JUNE 30, 2017 (RESTATED)

	WATER BOARD	NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY	TOTAL
		(IN THOUSANDS)	
OPERATING REVENUES:			
Water supply and distribution	$ 1,407,328	$ -	$ 1,407,328
Sewer collection and treatment	2,237,652	-	2,237,652
Bad debt expense	(2,620)	-	(2,620)
Other operating revenues	186,355	-	186,355
TOTAL OPERATING REVENUES	3,828,715	-	3,828,715
OPERATING EXPENSES:			
Operations and maintenance	1,385,446	-	1,385,446
General and administrative	2,697	48,052	50,749
Other operating expenses	56,116	-	56,116
Depreciation and amortization expenses	930,482	-	930,482
TOTAL OPERATING EXPENSES	2,374,741	48,052	2,422,793
OPERATING INCOME (LOSS)	1,453,974	(48,052)	1,405,922
NON-OPERATING REVENUE (EXPENSES):			
Interest expense	-	(1,153,116)	(1,153,116)
Gain on defeasance	-	4,808	4,808
Cost of issuance	-	(23,286)	(23,286)
Net loss on retirement and impairment of capital assets	(44,452)	-	(44,452)
Subsidy income	-	166,715	166,715
Capital distribution	(45,789)	-	(45,789)
Investment income	2,058	2,120	4,178
NET INCOME (LOSS) BEFORE CAPITAL CONTRIBUTIONS	1,365,791	(1,050,811)	314,980
Capital Contribution	6,225	-	6,225
CHANGE IN NET POSITION (DEFICIT)	1,372,016	(1,050,811)	321,205
NET POSITION (DEFICIT) - BEGINNING OF YEAR	16,967,511	(16,233,763)	733,748
NET POSITION (DEFICIT) - END OF YEAR	$ 18,339,527	$ (17,284,574)	$ 1,054,953

See notes to combining financial statements.

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF CASH FLOWS

FOR THE YEAR ENDED JUNE 30, 2018

		NEW YORK CITY				
		WATER BOARD		MUNICIPAL WATER FINANCE AUTHORITY		TOTAL
				(IN THOUSANDS)		
CASH FLOWS FROM OPERATING ACTIVITIES:						
Receipts from customers	$	3,602,297	$	-	$	3,602,297
Payments for operations and maintenance		(1,411,311)		-		(1,411,311)
Payments for administration		(2,042)		(50,201)		(52,243)
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES		2,188,944		(50,201)		2,138,743
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:						
Proceeds from issuing bonds, notes and other borrowings - net of issuance costs		-		3,858,636		3,858,636
Acquisition and construction of capital assets		292		(1,592,121)		(1,591,829)
Payments by the Water Board to the Authority		(2,187,383)		2,187,383		-
Repayments of bonds, notes and other borrowings		-		(3,582,676)		(3,582,676)
Interest paid on bonds, notes and other borrowings		-		(1,113,958)		(1,113,958)
NET CASH PROVIDED BY (USED IN) CAPITAL AND RELATED FINANCING ACTIVITIES		(2,187,091)		(242,736)		(2,429,827)
CASH FLOWS FROM INVESTING ACTIVITIES:						
Sales and maturities of investments		197,049		287,336		484,385
Purchases of investments		(205,582)		(368,337)		(573,919)
Interest on investments		4,496		39,189		43,685
NET CASH PROVIDED BY (USED IN) INVESTING ACTIVITIES		(4,037)		(41,812)		(45,849)
NET DECREASE IN CASH AND CASH EQUIVALENTS		(2,184)		(334,749)		(336,933)
CASH AND CASH EQUIVALENTS - BEGINNING OF YEAR		11,191		1,600,551		1,611,742
CASH AND CASH EQUIVALENTS - END OF YEAR	$	9,007	$	1,265,802	$	1,274,809

See notes to combining financial statements.

(Continued)

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF CASH FLOWS

FOR THE YEAR ENDED JUNE 30, 2018

	NEW YORK CITY		
	WATER BOARD	MUNICIPAL WATER FINANCE AUTHORITY	TOTAL
		(IN THOUSANDS)	
RECONCILIATION OF OPERATING INCOME (LOSS) TO NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES:			
Operating income (loss)	$ 1,131,742	$ (49,832)	$ 1,081,910
ADJUSTMENTS TO RECONCILE OPERATING INCOME (LOSS) TO NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES:			
Amortization	1,299	-	1,299
Depreciation	1,041,669	-	1,041,669
Other operating expenses paid for with bond proceeds	34,280	-	34,280
Pollution remediation expense	6,979	-	6,979
Changes in assets and liabilities:			
Pollution remediation liability	8,061	-	8,061
Receivables - net	(54,343)	-	(54,343)
Receivable from The City	14,305	-	14,305
Residual interest in sold liens	2,034	-	2,034
Accounts payable	3,620	(369)	3,251
Revenues received in advance	(11,024)	-	(11,024)
Refunds payable	10,322	-	10,322
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES	$ 2,188,944	$ (50,201)	$ 2,138,743

THE FOLLOWING ARE THE NONCASH CAPITAL AND RELATED FINANCING ACTIVITIES (IN THOUSANDS):

Interest expense includes the amortization of net (premium) and discount in the amount of $92,719 in 2018.

Capital expenditures in the amount of $595,020 had been incurred but not paid at June 30, 2018.

The Water Board received federal, state, and other capital contributions of $19,350 in 2018.

The Water Board received capital contributions of $292 in 2018 from Westchester County.

See notes to combining financial statements.

(Concluded)

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF CASH FLOWS

FOR THE YEAR ENDED JUNE 30, 2017 (RESTATED)

	NEW YORK CITY		
	WATER BOARD	MUNICIPAL WATER FINANCE AUTHORITY	TOTAL
		(IN THOUSANDS)	
CASH FLOWS FROM OPERATING ACTIVITIES:			
Receipts from customers	$ 3,876,746	$ -	$ 3,876,746
Payments for operations and maintenance	(1,263,445)	-	(1,263,445)
Payments for administration	(6,433)	(47,043)	(53,476)
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES	2,606,868	(47,043)	2,559,825
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:			
Proceeds from issuing bonds, notes and other borrowings - net of issuance costs	-	3,681,935	3,681,935
Acquisition and construction of capital assets	292	(1,478,319)	(1,478,027)
Payments by the Water Board to the Authority	(2,623,998)	2,623,998	-
Repayments of bonds, notes and other borrowings	-	(3,165,157)	(3,165,157)
Interest paid on bonds, notes and other borrowings	-	(1,081,883)	(1,081,883)
NET CASH PROVIDED BY (USED IN) CAPITAL AND RELATED FINANCING ACTIVITIES	(2,623,706)	580,574	(2,043,132)
CASH FLOWS FROM INVESTING ACTIVITIES:			
Sales and maturities of investments	1,819	14,213	16,032
Purchases of investments	(109,773)	(461,057)	(570,830)
Interest on investments	2,969	32,163	35,132
NET CASH PROVIDED BY (USED IN) INVESTING ACTIVITIES	(104,985)	(414,681)	(519,666)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(121,823)	118,850	(2,973)
CASH AND CASH EQUIVALENTS - BEGINNING OF YEAR	133,014	1,481,701	1,614,715
CASH AND CASH EQUIVALENTS - END OF YEAR	$ 11,191	$ 1,600,551	$ 1,611,742

See notes to combining financial statements.

(Continued)

NEW YORK CITY WATER AND SEWER SYSTEM
COMBINING STATEMENTS OF CASH FLOWS

FOR THE YEAR ENDED JUNE 30, 2017 (RESTATED)

	NEW YORK CITY		
	WATER BOARD	MUNICIPAL WATER FINANCE AUTHORITY	TOTAL
		(IN THOUSANDS)	
RECONCILIATION OF OPERATING INCOME (LOSS) TO NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES:			
Operating income (loss)	$ 1,453,974	$ (48,052)	$ 1,405,922
ADJUSTMENTS TO RECONCILE OPERATING INCOME (LOSS) TO NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES:			
Depreciation	930,482	-	930,482
Other operating expenses paid for with bond proceeds	11,207	-	11,207
Pollution remediation expense	9,943	-	9,943
Changes in assets and liabilities:			
Pollution remediation liability	(2,881)	-	(2,881)
Receivables - net	52,468	-	52,468
Receivable from The City	159,847	-	159,847
Residual interest in sold liens	(2,274)	-	(2,274)
Accounts payable	(3,735)	1,009	(2,726)
Revenues received in advance	808	-	808
Refunds payable	(2,971)	-	(2,971)
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES	$ 2,606,868	$ (47,043)	$ 2,559,825

THE FOLLOWING ARE THE NONCASH CAPITAL AND RELATED FINANCING ACTIVITIES (IN THOUSANDS):

Interest expense includes the amortization of net (premium) and discount in the amount of $80,967 in 2017.

Capital expenditures in the amount of $525,137 had been incurred but not paid at June 30, 2017.

The Water Board received federal, state, and other capital contributions of $5,931 in 2017.

The Water Board received capital contributions of $292 in 2017 from Westchester County.

See notes to combining financial statements. (Concluded)

NOTES TO COMBINING FINANCIAL STATEMENTS

AS OF AND FOR THE YEARS ENDED JUNE 30, 2018 AND 2017

1. ORGANIZATION

The New York City Water and Sewer System (the "System") provides water supply, treatment and distribution, and sewage collection, treatment, and disposal for the citizenry of The City of New York ("The City"). The System, as presented in the accompanying combining financial statements, began operations on July 1, 1985 and is a joint operation consisting of two legally separate and independent entities: the New York City Municipal Water Finance Authority (the "Authority") and the New York City Water Board (the "Water Board"). The Authority is a public benefit corporation created in accordance with the New York City Municipal Water Finance Act (the "Act"), duly enacted into law as Chapter 513 of the laws of 1984 of the State of New York (the "State"), as amended by Chapter 514 of the laws of 1984 of the State of New York. The Water Board was created by Chapter 515 of the laws of 1984 of the State of New York. The Act also empowers the Authority to issue debt to finance the cost of capital improvements to the System and to refund any and all outstanding bonds and general obligation bonds of The City issued for water and sewer purposes. The Act empowers the Water Board to lease the System from The City and to set and collect water rates, fees, rents and other charges for use of, or for services furnished, rendered, or made available by, the System to generate enough revenue to pay debt service on the Authority's bonds and to place the System on a self-sustaining basis.

The Financing Agreement by and among The City of New York, The New York City Municipal Water Finance Authority and the New York City Water Board dated as of July 1,1985 (the "Agreement") provides that the Authority will issue bonds to finance the cost of capital investment and related costs of the System. It also sets forth the funding priority for debt service costs of the Authority, operating costs of the System, and the rental payment to The City.

The physical operation and capital improvements of the System are performed by The City's Department of Environmental Protection ("DEP") subject to contractual agreements with the Authority and the Water Board.

In accordance with Governmental Accounting Standards Board ("GASB") standards, the Water Board and the Authority are considered to be part of the same reporting entity (the "System") since they are fiscally interdependent. Accordingly, the accompanying combining financial statements for the System present the individual financial statements of the Water Board and the Authority as major funds. In addition, the accompanying combining financial statements present a total column, which represents the entity-wide financial statements of the System. Transactions and balances between the Water Board and the Authority are eliminated in the entity-wide combining financial statements.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accompanying financial statements of the System have been prepared on the accrual basis of accounting. Revenues are recognized when earned and expenses are recognized when incurred. Other significant accounting policies are:

Component Unit—The System is a component unit of The City. The System leases the water and sewer related capital assets from The City, which is responsible for the operations, maintenance and capital improvement of the System. The System reimburses The City for costs incurred for operations and maintenance and issues debt to pay for capital improvements.

Investments and Cash Equivalents—Investments and cash equivalents primarily consist of securities of the United States and its agencies, guaranteed investment contracts, forward purchase agreements, and the State of New York obligations. All investments are carried at fair value with the exception of money market funds that are carried at cost plus accrued interest. For purposes of the combining statement of cash flows and the combining statements of net position (deficit), the System generally considers all highly-liquid debt instruments purchased with an original maturity of three months or less to be cash equivalents.

Restricted Assets—Proceeds from the issuance of debt and monies set aside for debt service and operation and maintenance of the System are classified as restricted cash and cash equivalents and restricted investments in the combining statements of net position (deficit), these restrictions are based on the requirements of the applicable bond indentures.

Lien Sales and Residual Interest in Sold Liens—The City periodically sells tax liens secured by water and sewer rents and surcharges, for which the Water Board receives the applicable sale proceeds. At the time of sale, the Water Board recognizes the proceeds as operating revenue and removes the related receivables. The Water Board maintains a residual interest in the liens, which represents the amount estimated to be received by the Water Board if and when liens held by the purchasing trusts generate cash flows above the amounts needed by the trusts to pay their operating costs, bondholders, and satisfy reserve requirements.

Bond Premium and Discount—Bond premiums and discounts are capitalized and amortized over the life of the related bond issue, using the effective yield method of amortization for bond premiums and discounts. Bond premiums and discounts are presented as additions or reductions to the face amount of the long-term bonds payable on the combining statements of net position (deficit). The amortized bond premiums and discounts are an off-set to interest expense on the combining statements of revenues, expenses and changes in net position (deficit). Bond issuance costs are recognized and expensed in the period incurred, except for bond insurance premiums that are amortized over the life of the related bonds.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Utility Plant—Utility plant acquired through purchase or internal construction is recorded at cost, net of retirements. It is the Water Board's policy to capitalize assets with a cost of $35,000 or more and a useful life of five years or longer. Contributed utility plant is recorded at its estimated historical cost based on appraisals or other methods when historical cost information is not available, net of accumulated depreciation. Depreciation is computed using the straight-line method based upon estimated useful lives, as follows:

ASSETS	YEARS
Buildings	40–50
Water supply and wastewater treatment systems	15–50
Water distribution and sewage collection systems	15–75
Machinery and equipment	5–35
Vehicles	10

Maintenance and repairs of property are charged to maintenance expense. Replacements and betterments are recorded as additions to utility plant. The System pays for certain improvements of assets that are not owned by The City or the System, as well as certain pollution remediation activities, through bond proceeds. These costs are shown as other operating expenses in the System's combining statements of revenues, expenses and changes in net position (deficit).

Operating Revenues and Operating Expenses—Operating revenues consist of services provided to customers of the System. Revenues are reported net of allowances, discounts and refunds and are based on billing rates imposed by the Water Board and upon customers' water and sewer usage or, in some cases, characteristics of customer properties. The System records unbilled revenue at year-end based on meter readings collected as of June 30. As of June 30, 2018 and 2017, the System reported credits of $140.6 million and $2.6 million, respectively.

Operating expenses include, but are not limited to costs incurred for maintenance, repair, and operations of the System; administration costs of the Water Board and the Authority; and rental payments to The City, if requested. In fiscal years 2018 and 2017, The City did not request a rental payment.

Revenues Received in Advance—Revenues received in advance of the period to which they relate are unearned and recorded as revenue when earned. Customer account credit balances are reported as a current liability "service credits on customer accounts", and is not included in accounts receivable.

Unamortized Deferred Bond Refunding Costs—Deferred bond refunding costs represent the accounting gains or losses incurred in advance and current bond refundings. It is reported as deferred outflows of resources or deferred inflows of resources and are amortized over the lesser of the remaining life of the old debt or the life of the new debt. The amortized deferred bond refunding cost is an off-set of interest expense on the combining statements of revenues, expenses and changes in net position (deficit).

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Use of Estimates—The preparation of the combining financial statements in accordance with accounting principles generally accepted in the United States of America, requires management to make estimates and assumptions in determining the amounts of assets, deferred outflows of resources, liabilities, deferred inflows of resources, and disclosure of contingent liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Pensions—Net pension liabilities are required to be recognized and disclosed using the accrual basis of accounting. The Authority recognizes a net pension liability for the pension plan in which it participates, which represents the Authority's proportional share of excess total pension liability over the pension plan assets—actuarially calculated—of a cost-sharing multiple-employer plan, measured as of the fiscal year-end.

Changes in the net pension liability during the period are recorded as pension expense, or as deferred inflows of resources or deferred outflows of resources depending on the nature of the change, in the period incurred. Those changes in net pension liability that are recorded as deferred inflows of resources or deferred outflows of resources are amortized over the weighted average remaining service life of all participants in the qualified pension plan and recorded as a component of pension expense beginning with the period in which they are incurred. The change in the Authority's proportion of the collective net pension liability and collective deferred outflow of resources and deferred inflow of resources related to the pension since the prior measurement date is recognized in current reporting period over a closed period that is equal to the average of the expected remaining service lives of all employees provided with a pension through the pension plan.

For the contribution to the pension plan, the difference during the measurement period between the total amount of the Authority's contribution and the amount of the Authority's proportionate share of the total of such contributions from all employers and all nonemployee contributing entities is recognized in the Authority's pension expense, beginning in the current reporting period, over a closed period that is equal to the average of the expected remaining service lives of all employees provided with pension through the Plan. The amount not recognized in pension expense is reported as deferred outflow of resources or deferred inflow of resources related to the pension.

Projected earnings on qualified pension plan investments are recognized as a component (reduction) of pension expense. Differences between projected and actual investment earnings are reported as deferred inflows of resources or deferred outflows of resources and amortized as a component of pension expense on a closed basis over a five-year period beginning with the period in which the difference occurred.

Changes in total pension liability arising from changes of benefit terms are required to be included in pension expense in the period the change is first reported in the net pension liability. The changes in the total pension liability resulting from (1) differences between expected and actual experience with regard to economic and demographic factors and (2) changes of assumptions regarding the expected future behavior of economic and demographic factors or other inputs are recognized as a deferred outflow of resources or a deferred inflow of resources related to the pension and included in the pension expense over a period equal to the average of the expected remaining service lives of all employees that are provided with benefits through the plan.

Recent Accounting Pronouncements—As a component unit of The City, the System implements new GASB standards in the same fiscal year as they are implemented by The City. The following are discussions of the standards requiring implementation in the current year and standards that may impact the System in future years.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

In November 2016, GASB issued Statement No. 83, *Certain Asset Retirement Obligations*, ("GASB 83"). GASB 83 addresses accounting and financial reporting for certain asset retirement obligations. This statement establishes criteria for determining the timing and pattern of recognition of a liability and corresponding deferred outflow of resources for asset retirement obligations. The requirements of GASB 83 are effective for fiscal years beginning after June 15, 2018, but was adopted by the System in the current year. The adoption of GASB 83 resulted in the restatement of the System's fiscal year 2017 combining financial statements to reflect the reporting of a deferred outflow of resources, a liability, and an expense for fiscal year 2017 amortization of the System's asset retirement obligation ("ARO"), in accordance with the provisions of GASB 83. Net position (deficit) as of July 1, 2017, decreased by $1.3 million to reflect the cumulative retrospective effect of the adoption of GASB 83. AROs of $18.0 million were reported under other long-term liabilities and $16.7 million of deferred outflows of resources at June 30, 2017 (see Note 9).

In January 2017, GASB issued Statement No. 84, *Fiduciary Activities*, ("GASB 84"). The objective of GASB 84 is to improve guidance regarding the identification of fiduciary activities for accounting and financial reporting purposes and how those activities should be reported. The requirements of GASB 84 are effective for fiscal years beginning after December 15, 2018. The System has not completed the process of evaluating GASB 84, but does not expect it to have an impact on the System's combining financial statements.

In May 2017, GASB issued Statement No. 86, *Certain Debt Extinguishment Issues*, ("GASB 86"). The primary objective of GASB 86 is to improve consistency in accounting and financial reporting for in-substance defeasance of debt by providing guidance for transactions in which cash and other monetary assets are acquired with only existing resources—resources other than the proceeds of refunding debt. This statement also improves accounting and financial reporting for prepaid insurance on debt that is extinguished. The requirements of GASB 86 are effective for fiscal years beginning after June 15, 2017. The adoption of GASB 86 required the System to disclose certain information discussing its defeasance transaction using resources other than bond proceeds in the System's combining financial statements (see Note 9).

In June 2017, GASB issued Statement No. 87, *Leases*, ("GASB 87"). The objective of GASB 87 is to improve accounting and financial reporting for leases by governments. This statement increases the usefulness of governments' financial statements by requiring recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as deferred inflows of resources or deferred outflows of resources based on the payment provisions of the contract. It establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Under this statement, a lessee is required to recognize a lease liability and an intangible right-to-use lease asset, and a lessor is required to recognize a lease receivable and a deferred inflow of resources, thereby enhancing the relevance and consistency of information about governments' leasing activities. The requirements of GASB 87 are effective for fiscal years beginning after December 15, 2019. The System has not completed the process of evaluating GASB 87. The System expects that GASB 87 will have an impact on its combining financial statements.

In March 2018, GASB issued Statement No. 88, *Certain Disclosures Related to Debt, including Direct Borrowings and Direct Placements*, ("GASB 88"). The objective of GASB 88 is to improve consistency in the information that is disclosed in notes to government financial statements related to debt by defining debt for the purpose of note disclosure and establishes additional note disclosure requirements related to debt obligations of governments, including direct borrowing and direct placements. The requirements of GASB 88 are effective for fiscal years beginning after June 15,

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

2018. The System has not completed the process of evaluating GASB 88, but does not expect it to have a significant impact on the System's combining financial statements.

In June 2018, GASB issued Statement No. 89, *Accounting for Interest Cost Incurred before the End of a Construction Period*, ("GASB 89"). The objectives of GASB 89 are to enhance the relevance and comparability of information about capital assets and cost of borrowing for a reporting period and to simplify accounting for certain interest costs by requiring interest costs incurred before the end of a construction period to be recognized as an expense/expenditure in governmental fund and government-wide financial statements. The requirements of GASB 89 are effective for fiscal years beginning after December 15, 2019. The System has not completed the process of evaluating GASB 89, but does not expect it to have a significant impact on the System's combining financial statements.

3. UTILITY PLANT

The following is a summary of utility plant activity for the fiscal years ended June 30, 2018 and 2017 (in thousands):

	BALANCE AT 06/30/16	ADDITIONS	DELETIONS	BALANCE AT 06/30/17	ADDITIONS	DELETIONS	BALANCE AT 06/30/18
NONDEPRECIABLE ASSETS:							
Utility construction in progress	$ 5,227,182	$ 1,444,117	$ 1,195,992	$ 5,475,307	$ 1,617,305	$ 3,698,486	$ 3,394,126
DEPRECIABLE ASSETS:							
UTILITY PLANT IN SERVICE:							
Buildings	34,877	59	-	34,936	831	-	35,767
Equipment	3,826,694	114,183	-	3,940,877	925,580	39,576	4,826,881
Vehicles	292,404	5,286	50,791	246,899	6,249	2,789	250,359
Water supply and distribution and wastewater treatment and sewage collection systems	32,661,550	1,076,464	67,348	33,670,666	2,765,826	90,944	36,345,548
TOTAL DEPRECIABLE ASSETS	36,815,525	1,195,992	118,139	37,893,378	3,698,486	133,309	41,458,555
LESS ACCUMULATED DEPRECIATION FOR:							
Buildings	25,140	1,315	-	26,455	1,548	-	28,003
Equipment	1,641,501	230,742	-	1,872,243	283,545	34,950	2,120,838
Vehicles	128,549	9,132	43,656	94,025	10,471	2,677	101,819
Water supply and distribution and wastewater treatment and sewage collection systems	11,181,727	687,995	30,032	11,839,690	746,105	47,073	12,538,722
TOTAL ACCUMULATED DEPRECIATION	12,976,917	929,184	73,688	13,832,413	1,041,669	84,700	14,789,382
TOTAL UTILITY PLANT IN SERVICE-NET	23,838,608	266,808	44,451	24,060,965	2,656,817	48,609	26,669,173
TOTAL CAPITAL ASSETS- NET	$ 29,065,790	$ 1,710,925	$ 1,240,443	$ 29,536,272	$ 4,274,122	$ 3,747,095	$ 30,063,299

Contributed Capital—The System received federal, State and other capital contributions of $19.6 million and $6.2 million in fiscal years 2018 and 2017, respectively.

Westchester County makes semi-annual capital contributions to compensate the System for constructing a water conduit that provides treated water to the Westchester County.

4. DEPOSITS AND INVESTMENTS

Cash Deposits—The System follows the New York City Banking Commission designations for the System's bank depositories. The Commission consists of the Comptroller, the Mayor, and the Finance Commissioner of The City and uses independent bank rating agencies in part to assess the financial creditworthiness of each bank. The banking relationships are under constant operational and credit reviews. Each bank in which the System's cash is deposited is required to have its principal office in New York State and have capital stock, surplus, and undivided earnings aggregating at least $100 million. Cash was comprised of bank deposits; there was no difference between the carrying amounts and bank balances as of June 30, 2018 and 2017.

At June 30, 2018 and 2017, the cash deposit balances were $193 million and $246 million, respectively. Of the 2018 cash deposits, $250 thousand was covered by federal depository insurance, and the remaining balance was collateralized. Of the 2017 cash deposits, $250 thousand was covered by federal depository insurance, and the remaining balance was collateralized except for $154 thousand that was uncollateralized and uninsured.

Restricted cash and cash equivalents were comprised of the following at June 30, 2018 and 2017 (in thousands):

		2018		2017
RESTRICTED CASH AND CASH EQUIVALENTS:				
Cash	$	192,724	$	245,484
Cash equivalents		1,082,085		1,366,258
TOTAL RESTRICTED CASH AND CASH EQUIVALENTS	$	1,274,809	$	1,611,742

Custodial Credit Risk—Custodial credit risk is the risk that in the event of the failure of a depository financial institution, the System may not be able to recover its deposits that are in the possession of an outside party. As of June 30, 2018 and 2017, the System had $0 and $154 thousand of uninsured and uncollateralized deposits, respectively, that were exposed to custodial credit risk. The System's deposit policy, which is not otherwise subject to limitations under the Authority's Water and Sewer General Revenue Bond Resolution (the "Resolution"), is that deposits shall be held in a bank located in the State or national banking association having a capital surplus aggregating at least $100 million.

Investments—Pursuant to the Resolution and the Authority's investment guidelines, the Authority may generally invest in obligations of, or guaranteed by, the United States of America, certain highly rated obligations of the State of New York, certain certificates of deposit and similar instruments issued by highly rated commercial banks, certain highly rated corporate securities or commercial paper securities, certain repurchase agreements with highly rated institutions, certain investment agreements with highly rated institutions, certain highly rated money market funds, and other certain highly rated municipal obligations. All the accounts held by the Water Board are invested as permitted by the Water Board's investment guidelines and may include investments in obligations of, or guaranteed by, the United States of America and certain repurchase agreements with highly rated institutions. The System invests funds that are not immediately required for operations, debt service, or capital project expenses and funds that are held for debt service and operations and maintenance reserves.

4. DEPOSITS AND INVESTMENTS (CONTINUED)

The System had the following investments at June 30, 2018 and 2017 (in thousands):

INVESTMENTS		2018		2017
U.S. Agencies securities	$	1,166,844	$	1,680,184
U.S. Treasury securities		840,482		576,560
New York State instrumentalities		73,644		84,419
Money Market funds		59,818		-
Guaranteed Investment Contracts		96,680		104,443
Forward Purchase Agreements		24,695		34,119
TOTAL INVESTMENTS INCLUDING CASH EQUIVALENTS		2,262,163		2,479,725
Less amounts reported as cash equivalents		(1,082,085)		(1,366,258)
TOTAL INVESTMENTS	$	1,180,078	$	1,113,467

Fair Value Hierarchy—The System categorizes its fair value measurements into the fair value hierarchy established by generally accepted accounting principles.

4. DEPOSITS AND INVESTMENTS (CONTINUED)

The System had the following recurring fair value measurements as of June 30, 2018 and 2017 (in thousands):

		2018 FAIR VALUE MEASUREMENT		
INVESTMENT BY FAIR VALUE LEVEL	JUNE 30, 2018	QUOTED PRICES IN ACTIVE MARKETS FOR IDENTICAL ASSETS (LEVEL 1)	SIGNIFICANT OTHER OBSERVABLE INPUTS (LEVEL 2)	SIGNIFICANT UNOBSERVABLE INPUTS (LEVEL 3)
Fixed income investments:				
U.S. Treasury securities	$ 840,482	$ -	$ 840,482	$ -
U.S. Agencies securities	1,166,844	-	1,166,844	-
New York State instrumentalities	73,644	-	73,644	-
Money Market funds	59,818	-	59,818	-
Guaranteed Investment Contracts	96,680	-	96,680	-
Forward Purchase Agreements	24,695	-	24,695	-
TOTAL INVESTMENTS BY FAIR VALUE LEVEL	$ 2,262,163	$ -	$ 2,262,163	$ -
HEDGING DERIVATIVE INSTRUMENTS				
Interest rate swap (liability)	$ (76,115)	$ -	$ (76,115)	$ -
TOTAL HEDGING DERIVATIVE INSTRUMENTS	$ (76,115)	$ -	$ (76,115)	$ -

		2017 FAIR VALUE MEASUREMENT		
INVESTMENT BY FAIR VALUE LEVEL	JUNE 30, 2017	QUOTED PRICES IN ACTIVE MARKETS FOR IDENTICAL ASSETS (LEVEL 1)	SIGNIFICANT OTHER OBSERVABLE INPUTS (LEVEL 2)	SIGNIFICANT UNOBSERVABLE INPUTS (LEVEL 3)
Fixed income investments:				
U.S. Treasury securities	$ 576,560	$ -	$ 576,560	$ -
U.S. Agencies securities	1,680,184	-	1,680,184	-
New York State instrumentalities	84,419	-	84,419	-
Guaranteed Investment Contracts	104,443	-	104,443	-
Forward Purchase Agreements	34,119	-	34,119	-
TOTAL INVESTMENTS BY FAIR VALUE LEVEL	$ 2,479,725	$ -	$ 2,479,725	$ -
HEDGING DERIVATIVE INSTRUMENTS				
Interest rate swap (liability)	$ (100,438)	$ -	$ (100,438)	$ -
TOTAL HEDGING DERIVATIVE INSTRUMENTS	$ (100,438)	$ -	$ (100,438)	$ -

4. DEPOSITS AND INVESTMENTS (CONTINUED)

Fixed income investments and derivative instruments classified in Level 2 of the fair value hierarchy are valued using matrix pricing techniques.

Credit Risk—Both the Water Board and the Authority have Board-approved investment guidelines and policies in place designed to protect principal by limiting credit risk. This is accomplished through ratings, collateral, and diversification requirements that vary according to the type of investment. Investments held by the System at June 30, 2018, and 2017 include obligations of, or guaranteed by, the United States of America, the Federal Home Loan Mortgage Corporation, the Federal Home Loan Bank, the Federal National Mortgage Association, the Federal Agriculture Mortgage Corporation, Resolution Funding Corporation, Freddie Mac, Fannie Mae and the Federal Farm Credit Bank. Also held by the Authority are direct obligations of the State of New York, or direct obligations of any agency or public authority thereof, which are rated at the time of purchase in one of the two highest rating categories. In addition, the Authority has entered into investment agreements and guaranteed investment contracts with financial institutions whose long-term debt obligations, or whose obligations under such an investment agreement or guaranteed investment contract, are guaranteed by a financial institution whose senior long-term debt obligations have a rating in one of the two highest rating categories for comparable types of obligations by each rating agency at the time such agreement or contract was entered into.

Interest Rate Risk—The System has no formal policy relating to interest rate risk. Approximately 17.7% of the System's investments are agreements to purchase securities or Guaranteed Investment Contracts ("GICs") with guaranteed fixed rates of return. The par value of the agreements to purchase securities and interest earned are held as cash on June 30, 2018. The fair value of the agreements to purchase securities are themselves susceptible to changes in market rates because of the interest rates.

Segmented time distribution on investments and cash equivalents as of June 30, 2018 (in thousands):

MATURITY DATE		FAIR VALUE AMOUNT
Under 6 months	$	1,664,940
Over 6 months to 1 year		67,013
Over 1 year to 3 years		151,630
Over 3 years and beyond		343,242
Over 3 years and beyond (GIC and Forward Purchase Agreement adjustments) [1]		35,338
TOTAL	$	2,262,163

[1] Includes the fair value of $24,695 related to Forward Purchase Agreements and $10,643 related to a GIC agreement.

4. DEPOSITS AND INVESTMENTS (CONTINUED)

Custodial Credit Risk—For an investment, custodial credit risk is the risk that, in the event of the failure of the custodian, the System may not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the System, and are held by either the counterparty or the counterparty's trust department or agent but not in the name of the System. All investments held by the Water Board's custodian bank were registered in the Water Board's name and therefore were not subjected to custodial credit risk. All of the Authority's investments were held by the Trustee in the Trustee's name pursuant to the Authority's Trust Agreement, except for the GICs.

As of June 30, 2018 and 2017, the Authority had $1.9 billion and $2.1 billion of investments, respectively, that were registered in the name of the Trustee pursuant to the Authority's Trust Agreement. The types and amounts of investments are listed in the table on page 31, except for the Authority's GIC of $96.7 million and $104 million in 2018 and 2017, respectively, and the Water Board's U.S. Treasury securities of $247 million and $237 million in 2018 and 2017, respectively.

5. DERIVATIVE INSTRUMENTS

As of June 30, 2018, the Authority had the following (in thousands):

TYPE	NOTIONAL AMOUNT	EFFECTIVE DATE	MATURITY DATE	TERMS	FAIR VALUE	COUNTERPARTY CREDIT RATING (MOODY'S/S&P/FITCH)
HEDGING DERIVATIVES						
Synthetic fixed rate	$ 240,600	10/24/07	6/15/36	pay 3.439% receive 67% of 1-month LIBOR	$ (45,669)	Aa2/AA-/NR
Synthetic fixed rate	160,400	10/24/07	6/15/36	pay 3.439% receive 67% of 1-month LIBOR	(30,446)	Aa3/A+/AA-

LIBOR: London Interbank Offered Rate Index

Hedging Derivative Instruments—The Authority executed two interest rate exchange agreements (the "synthetic fixed rate agreements"), effective October 24, 2007, in conjunction with its sale of $401 million of Adjustable Rate Fiscal 2008 Series BB Second Resolution Bonds on October 24, 2007. Under these agreements, the Authority pays a fixed interest rate of 3.439% in exchange for a floating rate based on 67% of one-month LIBOR on the combined notional amount of $401 million. The agreements are with two separate counter-parties: one agreement with Goldman Sachs Mitsui Marine Derivative Products in the amount of $241 million and the second agreement with Bank of America in the amount of $160 million. These agreements allowed the Authority to achieve a fixed rate cost lower than the cost of conventional fixed rate debt at the time of issuance. The Authority's obligations under these interest rate exchange agreements are payable on a parity with the related Second Resolution revenue bonds.

Credit Risk—The risk that the counterparty (or its guarantor) will default under its agreement and the Authority would be left with unhedged variable rate debt. To continue to be hedged, the Authority may have to pay another entity to assume the position of the defaulting counterparty while not receiving an offsetting payment from the defaulting counterparty (full or in part). The Authority seeks to limit credit risk by contracting with highly rated counterparties or requiring highly rated guarantees of the counterparty's obligations. In the event that a counterparty loses its high rating,

5. DERIVATIVE INSTRUMENTS (CONTINUED)

the Authority has built in two forms of protection into its swap agreements. First, the Authority has required the counterparty to post collateral if its ratings fall below “Aa3” by Moody’s and “AA-” by Standard and Poor’s and the mark-to-market in the Authority’s favor exceeds specified threshold amounts. Second, the Authority has the right to terminate the Interest Rate Exchange Agreement if the counterparty is downgraded below “A3” and “A-” by Moody’s and S&P, respectively. In addition, the Authority monitors the credit ratings and overall financial condition of its counterparties and may exercise its right to assign the agreement to another counterparty if necessary, in its judgment, to mitigate credit risk, even in the absence of a significant credit rating downgrade.

Termination Risk—The counterparties can terminate the agreements upon the occurrence of certain events, when the mark-to-market value is such that the Authority would owe a termination payment to the counterparty. The counterparties may terminate the agreement only upon the occurrence of certain events, such as payment defaults by the Authority, other defaults which remain uncured for 30 days after notice, bankruptcy or insolvency of the Authority (or similar events), or a downgrade of the Authority’s credit rating below “Baa2” and “BBB” by Moody’s and Standard & Poor’s, respectively.

Basis Risk—Basis risk is the risk of a mismatch between two floating rates. For example, the amount the Authority receives under an Interest Rate Exchange Agreement may be lower than the amount the Authority is required to pay on the bonds associated with the transaction, which would require the Authority to make up the shortfall.

Interest Rate Risk—Interest rate risk is the risk that changes in long-term interest rates will adversely affect the mark-to-market values of the Authority’s swap instruments which may result in termination payments.

Financial Statements Effect—The fair value of derivatives at June 30, 2018 and June 30, 2017 was negative $76.1 million and negative $100 million, respectively. The Authority does not currently own investment derivatives.

6. LEASE AGREEMENT

The Water Board is party to a long-term lease (the “Lease”) with The City, which transfers the water and sewer related property to the Water Board for the term of the Lease. The Lease term commenced on July 1, 1985, and continues until the later of the fortieth anniversary of the commencement of the Lease or the date on which all bonds, notes or other obligations of the Authority are paid in full or provision for such payment has been made pursuant to the applicable debt instrument. The Lease provides for payments to The City to cover the following:

a. an amount sufficient to pay the cost of administration, maintenance, repair, and operation of the leased property, which includes overhead costs incurred by The City that are attributable to the leased property, net of the amount of any federal, the State, or other operating grants received by The City and

b. an amount sufficient to reimburse The City for capital costs incurred by The City for the construction of capital improvements to the leased property that are not paid or reimbursed from any other source.

In addition to the payments described above, the Water Board pays rent to The City, if requested, each fiscal year in an amount not to exceed the greater of: (a) the principal and interest payable on general obligation bonds issued by The City for water and sewer purposes certified by The City to be paid within such fiscal year or (b) 15% of principal and interest payable on the bonds of the Authority to be paid within such fiscal year.

A summary of operations and maintenance and rental expenses for the years ended June 30 is as follows (in thousands):

		2018		2017
Water supply, treatment, transmission and distribution	$	506,831	$	508,682
Sewer collection and treatment systems		589,883		602,400
The City agency support cost		54,545		54,981
Fringe benefits		225,960		210,724
Judgments and claims		12,735		8,659
OPERATION AND MAINTENANCE		1,389,954		1,385,446
Rental payments to The City		-		-
TOTAL OPERATIONS AND MAINTENANCE EXPENSES	$	1,389,954	$	1,385,446

7. PAYABLE TO AND RECEIVABLE FROM THE CITY

As of June 30, 2018 and 2017, all utility construction and other projects financed by the Authority debt and recorded by the System, which have not been reimbursed to The City, are recorded as a payable to The City. The Authority had a payable to The City of $595 million and $525 million, respectively, net of the amount of State or federal and other capital grants recognized by The City.

As of June 30, 2018 and 2017, the Water Board had receivables due from The City of $20.2 million and $34.5 million, respectively. The 2018 receivable from The City is a result of an over payment of $20.2 million for operations and maintenance expense. The 2017 receivable from The City is a result of an over payment of $34.5 million for operations and maintenance expense.

8. OTHER OPERATING EXPENSES

A summary of other operating expenses for the years ended June 30 is as follows (in thousands):

		2018		2017
Pollution remediation	$	15,040	$	7,062
Payments for watershed improvements		34,280		11,208
Program expense		35,663		37,846
TOTAL OTHER OPERATING EXPENSES	$	84,983	$	56,116

The City's DEP manages both the System's operations and its capital program, and it also manages other projects with long-term benefits to the System, which do not result in capital assets of the System and that are paid for using the Authority's bond proceeds. Such long-term benefit projects include payment for environmental protection, related improvement in the watershed areas, and pollution remediation projects throughout the System. The System has estimated these amounts based on the current value of outlays expected to be incurred for pollution remediation, which it is currently obligated to perform. Actual future outlays will differ from the estimated amounts if the prices or techniques for remediation measures change or differ from the estimates. In fiscal year 2018, several projects including the reconstruction of facilities lighting at the North River Wastewater Treatment Plant ("WWTP"), Main Sewage Pump upgrades at the Bowery Bay WWTP, the activation of The City Tunnel No. 3, Stage 2, and asbestos removal at various DEP facilities resulted in a higher than estimated amount. Filtration avoidance determination ("FAD") increased due to additional outlays on the wastewater management program in the New York upstate counties.

The System offers its residential customers the option to enroll into a protection program on their water and sewer lines against any breakage for a monthly fee. The fee is included in the participating customer utility bill. This protection program is offered by American Water Resources. In fiscal years 2018 and 2017, the System incurred program expenses of $35.7 million and $37.8 million, respectively.

9. LONG-TERM LIABILITIES

Changes in Long-term Liabilities

In fiscal years 2018 and 2017, the long-term debt were as follows (in thousands):

BONDS/BANs PAYABLE		BALANCE AT JUNE 30, 2017		ADDITIONS		DELETIONS		BALANCE AT JUNE 30, 2018
First resolution bonds	$	2,429,956	$	-	$	501,250	$	1,928,706
Second resolution bonds		27,241,067		2,941,846		2,311,951		27,870,962
Second resolution BANs		359,375		571,767		715,408		215,734
TOTAL BEFORE PREMIUM AND DISCOUNTS		30,030,398		3,513,613		3,528,609		30,015,402
Premium/(discounts) - net		1,236,352		364,063		140,885		1,459,530
TOTAL DEBT		31,266,750		3,877,676		3,669,494		31,474,932
Due within one year - bonds		(391,031)						(423,879)
Due within one year - BANs		(241,890)						(27,598)
TOTAL LONG-TERM DEBT	$	30,633,829	$	-	$	-	$	31,023,455

BONDS/BANs PAYABLE		BALANCE AT JUNE 30, 2016		ADDITIONS		DELETIONS		BALANCE AT JUNE 30, 2017
First resolution bonds	$	3,261,416	$	-	$	831,460	$	2,429,956
Second resolution bonds/BANs		26,254,580		3,482,222		2,136,360		27,600,442
TOTAL BEFORE PREMIUM AND DISCOUNTS		29,515,996		3,482,222		2,967,820		30,030,398
Premium/(discounts) - net		1,113,359		223,003		100,010		1,236,352
TOTAL DEBT		30,629,355		3,705,225		3,067,830		31,266,750
Due within one year - bonds		(363,793)						(391,031)
Due within one year - BANs		(14,235)						(241,890)
TOTAL LONG-TERM DEBT	$	30,251,327	$	-	$	-	$	30,633,829

As of June 30, 2018, the interest rates on the Authority's outstanding First and Second Resolution bonds ranged from a low of 0.77%, on a direct loan from the New York State Environmental Facilities Corporation ("EFC"), to a high of 6.49% on certain outstanding Build America Bonds ("BABs") prior to interest subsidies.

The debt program of the Authority includes commercial paper, long-term debt, Bond Anticipation Notes (BANs), and interest-subsidized bonds issued to EFC. While historically commercial paper program was the main source of short-term financing to reimburse The City for payments made for water and sewer projects, in fiscal year 2018, the Authority primarily relied on BANs and long-term bonds.

When it is time to retire short-term financings, the Authority issues long-term debt directly to the public or to EFC. The Authority also periodically issues refunding bonds to refinance higher-coupon debt and defeases bonds using revenues. With respect to all of the Authority debt, the Water Board has agreed to maintain rates and charges to provide revenues at levels sufficient to pay principal and interest requirements as well as to meet certain debt service coverage and operating cost funding requirements. All series of debt are special obligations of the Authority payable solely from and secured by a pledge of and lien on the gross revenue of the System.

9. LONG-TERM LIABILITIES (CONTINUED)

In case of the funding received through draws on BANs, each project was tracked for spending, and funding was received from EFC after submission of required documentation as of June 30, 2018, there was $216 million of BANs outstanding. In fiscal year 2018, the Authority issued $834 million of new money bonds and an additional $669 million of new money water and sewer system revenue bonds to EFC. The Authority used new money bond proceeds to finance capital improvements to the System, to provide long-term financing of BANs that previously financed capital improvements to the System, and to pay for bond issuance costs.

During fiscal year 2018, as further detailed below, the Authority issued $1.44 billion of bonds to refund $1.6 billion of outstanding bonds. These refundings resulted in an accounting loss of $677 thousand. The Authority reduced its aggregate debt service for principal and interest by $424 million and obtained an economic benefit (present value savings) of $302 million.

On July 11, 2017, the Authority issued $162 million of refunding tax exempt fixed rate Second Resolution bonds, 2018 Series AA. The bonds refunded $185 million of the Authority's First Resolution bonds, 2008 Series A. The Authority reduced its overall debt service by $60.6 million and obtained an economic gain of $40.6 million.

On October 12, 2017, the Authority issued $164 million of fixed rate tax exempt Second Resolution bonds, 2018 Subseries BB-2 to refund $200 million of the Authority's adjustable rate bonds, 2006 Series AA-2 and 2006 Series AA-3. As a result of this transaction, the Authority reduced its debt service by $40.0 million and obtained an economic gain of $28.0 million.

On November 29, 2017, the Authority issued $59.6 million of fixed rate tax exempt Second Resolution bonds, 2018 Subseries CC-2. The proceeds from the sale of the 2018 Subseries CC-2 refunded $25.0 million of 2012 Series GG and $45.0 million of 2014 Subseries CC-2. As a result of this transaction, the Authority increased its debt service by $5.4 million and obtained an economic gain of $4.4 million.

On March 20, 2018, the Authority issued $220 million of refunding tax exempt fixed rate Second Resolution bonds, 2018 Subseries DD-2. The bonds refunded $137 million of the Authority's First Resolution bonds, 2009 Series A, $71.2 million of the Authority's Second Resolution bonds, 2008 Series DD and $35.9 million of 2009 Series AA. The Authority reduced its overall debt service by $75.0 million and obtained an economic gain of $50.0 million.

On April 18, 2018, the Authority issued $459 million of refunding tax exempt fixed rate Second Resolution bonds, 2018 Series EE. The bonds refunded $153 million of the Authority's First Resolution bonds, 2009 Series A, and the following Second Resolution bonds: $243 million of 2008 Series DD, $83.1 million of 2009 Series CC and $46 million of 2009 Series DD. The Authority reduced its overall debt service by $152 million and obtained an economic gain of $106 million.

On June 28, 2018, the Authority issued $374 million of refunding tax exempt fixed rate Second Resolution bonds, 2018 Series FF. The bonds refunded $11.3 million of the Authority's First Resolution bonds, 2009 Series A. The bonds also refunded the following Second Resolution bonds: $137 million of 2008 Series DD, $67.9 million of 2009 Series AA, $50.0 million of 2009 Series CC and $158 million of 2009 Series DD. The Authority reduced its overall debt service by $102 million and obtained an economic gain of $73.6 million.

9. LONG-TERM LIABILITIES (CONTINUED)

During fiscal year 2018, the Authority legally defeased $250 million of 2011 Series GG, $346 million of 2012 Series AA and $173 million 2012 Series CC using current revenue by depositing $844 million into a defeasance escrow. This defeasance transaction resulted in an accounting loss of $15.0 million that is reported in the System's combining statements of revenues expenses and changes in net position (deficit) and aggregate reduction of debt service of $1.7 billion.

During fiscal year 2017, the Authority issued $1.1 billion of bonds to refund $1.1 billion of outstanding bonds. These refundings resulted in an accounting gain of $3.8 million. The Authority reduced its aggregate debt service for principal and interest by $204 million and obtained an economic benefit (present value savings) of $158 million.

During fiscal year 2017, the Authority legally defeased $782 million of outstanding bonds using current revenue. This resulted in an accounting gain of $4.8 million that was reported in the System's combining statements of revenues expenses and changes in net position (deficit) and a gross debt service savings of $1.5 billion.

The Authority had legally defeased some of its bonds by placing proceeds of refunding bonds or current revenue in irrevocable escrow accounts to provide for all future debt service payments on the defeased bonds. The escrow account assets and the liability for the defeased bonds are not included in the System's combining financial statements. As of June 30, 2018 and 2017, $802 million and $733 million, of the Authority's defeased bonds, respectively, were still outstanding.

Debt service requirements to maturity, including amounts relating to BANs with maturities greater than one year at June 30, 2018 are as follows (in thousands):

YEAR ENDING JUNE 30,	PRINCIPAL	INTEREST[1]	TOTAL
2019	$ 451,477	$ 1,393,841	$ 1,845,318
2020	476,216	1,379,433	1,855,649
2021	678,260	1,365,729	2,043,989
2022	517,739	1,344,999	1,862,738
2023	580,514	1,322,227	1,902,741
2024-2028	3,262,585	6,192,110	9,454,695
2029-2033	3,853,624	5,390,289	9,243,913
2034-2038	4,780,630	4,415,943	9,196,573
2039-2043	6,752,247	3,117,459	9,869,706
2044-2048	7,482,625	1,230,868	8,713,493
2049-2053	1,179,485	71,423	1,250,908
TOTAL	$ 30,015,402	$ 27,224,321	$ 57,239,723

[1] Includes projected interest expense for variable rate bonds at 4.25% for fiscal year 2019 and thereafter. Variable rate bonds are remarketed daily or weekly, and interest rates are determined by the market on the day of sale.

9. LONG-TERM LIABILITIES (CONTINUED)

Asset Retirement Obligations ("ARO")

Existing laws and regulations require the System to take specific action when retiring chemical and petroleum storage tanks. The System has approximately 474 above and underground tanks with a capacity ranging from 10 to 100,000 gallons. The New York State Department of Conservation Under Title 6 of the New York Codes, Rules and Regulations requires that the System take specific steps to permanently take out the service including the removal, transportation and disposal of liquid, sludge, hazardous waste, piping and the tanks themselves; and to take remedial actions on the area surrounding the tanks. Based on contract estimates and invoice for similar projects, the System's ARO for storage tanks was approximately $15.2 million as of June 30, 2018 and 2017 with tanks having a remaining useful life ranging from 0 to 39 years.

The System has entered into office space lease agreements requiring the removal of affixed furnishings including condensed filing systems, HVAC units, and distributions systems and the restoration of premises to original condition existing prior to installation of fixtures. Based on engineer and architectural estimates, the System's ARO for leases was approximately $2.8 million as of June 30, 2018 and 2017 respectively. The remaining lease terms range from 4 to 5 years.

Commitments and Contingencies

Construction—The System had contractual commitments of approximately $6.9 billion and $6.5 billion at June 30, 2018 and 2017, respectively, for water and sewer projects.

Risk Financing Activities—The System is self-insured and carries no commercial or insurance policies other than directors and officer's insurance for the Authority. Any claims made against the System are resolved through The City's legal support, and the amounts of the maximum liability for such judgments are described in the claims and litigation section below. The System is subject to claims for construction delays, property damage, personal injury, and judgments related to delays in construction deadlines under consent agreements.

Claims and Litigation—In accordance with the Lease, the Water Board is required to reimburse The City for any judgment or settlement paid by The City arising out of a tort claim to the extent that The City's liability is related to capital improvements and the operation or maintenance of the System. However, in no event shall the payment made to The City, in any fiscal year, exceed an amount equal to 5% of the aggregate revenues shown on the prior year's audited financial statements of the System. In addition, the System is required to reimburse The City, to the extent requested by The City, for the payment of any judgment or settlement arising out of a contract claim with respect to the construction of capital improvements of the System. In addition, The City has agreed, subject to certain conditions, to indemnify the Authority, the Water Board, and their staffs against any and all liability in connection with any act done or omitted in the exercise of their powers, which is taken or omitted in good faith in pursuance of their purposes under the Act. Currently, The City is a defendant in a significant number of lawsuits pertaining to the System. The litigation includes, but is not limited to, actions commenced and claims asserted against The City arising out of alleged torts, alleged breaches of contract, condemnation proceedings, and other alleged violations of law. As of June 30, 2018, the potential future liability attributable to the System for claims outstanding against The City was estimated to be $321 million. This amount is included in the estimated liability for unsettled claims, which is reported in The City's statement of net position (deficit). The potential future liability is The City's best estimate based on available information. The estimate maybe revised as further information is obtained and as pending cases are litigated.

9. LONG-TERM LIABILITIES (CONTINUED)

Arbitrage Rebate—To maintain the exemption from federal income tax of interest on bonds issued subsequent to January 1, 1986, the System will fund amounts required to be rebated to the Federal Government pursuant to Section 148 of the Internal Revenue Code of 1986, as amended (the "Code"). The Code requires the payment to the United States Treasury of the excess amount earned on all non-purpose obligations over the amount that would have been earned if the gross proceeds of the issue were invested at a rate equal to the yield on the issue, together with any earnings attributable to such excess. Construction funds, debt service funds, or any other funds or accounts funded with proceeds of such bonds, including earnings, or pledged to or expected to be used to pay interest on such bonds are subject to this requirement. Payment is to be made after the end of the fifth bond year and after every fifth bond year thereafter and within 60 days after retirement of the bonds. During fiscal years 2018 and 2017, the System paid $11.4 million and $4 million, respectively, in arbitrage rebates. At June 30, 2018 and 2017, the Authority had a liability of $1.4 million and $11 million, respectively. These amounts are included in accrued payable expense in the combining statements of net position (deficit).

10. RESTRICTED ASSETS

As of June 30, 2018 and 2017, certain cash, investments, and accrued interest of the System were restricted as follows (in thousands):

		2018		2017
THE WATER BOARD				
Operation and maintenance reserve fund	$	247,304	$	237,746
Local water fund		9,005		10,786
SUBTOTAL -THE WATER BOARD		256,309		248,532
THE AUTHORITY				
Revenue fund		946,965		1,202,036
Debt service reserve fund		389,598		415,754
Construction fund		493,652		474,239
Ecsrow account		368,363		384,648
SUBTOTAL -THE AUTHORITY		2,198,578		2,476,677
TOTAL RESTRICTED ASSETS	$	2,454,887	$	2,725,209

The operation and maintenance reserve fund is established as a depository to hold the operations and maintenance reserve as required by the Resolution. At June 30 of each year, the reserve fund is required to hold one-sixth of the operating expenses as set forth in the following year's annual budget. It is funded through the cash receipts of the Water Board. The local water fund is established as the account to which all revenues are deposited. Its assets are subject to the payment priority set forth in the Resolution.

The revenue fund is established as a depository to fund the debt service, the Authority's expenses, debt service reserve, and escrow funds. It is funded through cash transfers from the Water Board.

10. RESTRICTED ASSETS (CONTINUED)

The debt service reserve fund is established as a depository to hold the First Resolution Bond maximum annual debt service requirement for the next or any future fiscal year. It is funded through revenue bond proceeds and the revenue fund.

The debt service fund is established as a depository to pay all principal and interest payments on the Authority's debt for the current fiscal year. It is funded through the revenue fund. On or prior to June 30, the balances in the debt service fund are transferred to the revenue fund.

The construction fund is established as a depository to pay all capital construction costs incurred by The City and reimbursed by the Authority. It is funded through the proceeds of commercial paper, bond, and note sales.

The escrow account is established as a depository to refund debt in future years. It is funded through bond proceeds or the revenue fund.

11. PENSION PLANS

General Information about the Pension Plan

Plan Description—The Authority's eligible employees are provided with pension benefits through New York City Employee Retirement System Qualified Pension Plan ("NYCERS QPP" or "Pension Plan"). The Pension Plan is a cost-sharing, multiple-employer defined benefit pension plan administered by NYCERS.

The Pension Plan functions in accordance with existing State statutes and The City laws which are the basis by which benefit terms and the Authority's and its members' contribution requirements are established and amended. NYCERS issues a publicly-available financial report that can be obtained at www.nycers.org.

Benefits Provided—The Pension Plan provides pension benefits to retired employees generally based on the salary, length of service, member contributions, and membership tier ("Tier"). For certain members, voluntary member contributions also impact pension benefits provided. In addition, the Pension Plan provides automatic cost-of-living-adjustments ("COLA") and other supplemental pension benefits to certain retirees and beneficiaries. Subject to certain conditions, members become fully vested as to benefits upon the completion of five years of service for Tier I to Tier IV and ten years of service for Tier VI. Upon termination of employment before retirement, certain members are entitled to refunds of their own contributions, including accumulated interest, less any outstanding loan balances. In the event of disability during employment, participants may receive retirement allowances based on satisfaction of certain service requirements and other provisions. The Pension Plan also provides death benefits.

The State Constitution provides that pension rights of public employees are contractual and shall not be diminished or impaired. In 1973, 1976, 1983, and 2012, significant amendments made to the State Retirement and Social Security Law ("RSSL") modified certain benefits for employees joining the Pension Plan on or after the effective date of such amendments, creating membership tiers. Currently, there are several Tiers, referred to as Tier I, Tier II, Tier III, Tier IV, and Tier VI. Members are assigned a Tier based on membership date. Chapter 18 of the Laws of 2012 (Chapter 18/12) amended the retirement benefits of public employees who establish membership in the Pension Plan on or after April 1, 2012. Chapter 18/12 is commonly referred to as Tier VI. Tier VI is expected to reduce future employer pension contributions.

11. PENSION PLANS (CONTINUED)

Certain members of Tier I and Tier II of the NYCERS QPP have the right to make voluntary excess contributions, which are supplemental voluntary contributions. Members can elect to direct these contributions to an investment program under which such accumulated contributions are credited with interest at rates set by statute ("Statutory Rates"). The Authority does not have any Tier I, Tier II, or Tier III members.

Contributions and Funding Policy—Contribution requirements of participating employers and active members are determined in accordance with State statutes and City laws and are generally funded within the appropriate fiscal year. Effective with fiscal year 2006, employer contributions are actuarially determined under the One-Year Lag Methodology ("OYLM"). Under OYLM, the actuarial valuation date is used for calculating the employer contributions for the second following fiscal year. For example, the June 30, 2016 actuarial valuation was used for determining the fiscal year 2018 statutory contributions. Member contributions vary by class.

In general, Tier III and Tier IV members make basic contributions of 3.0% of salary regardless of age at membership. Effective October 1, 2000, in accordance with Chapter 126 of the Laws of 2000, Tier III and Tier IV members are not required to make any contributions after the 10th anniversary of their membership date or completion of ten years of credited service, whichever is earlier. Tier VI members who joined between April 1, 2012 and March 31, 2013 contribute 3% of salary. Beginning April 1, 2013, when Tier VI took effect, joining members contribute between 3.0% and 6.0% of salary, depending on their salary level.

Employer contributions are determined annually to be an amount that, together with member contributions and investment income, provides for the Pension Plan assets to be sufficient to pay benefits when due. The aggregate statutory contribution due to NYCERS QPP from all participating employers for fiscal years 2018 and 2017 was $3.4 billion and $3.3 billion, respectively and the amount of the Authority's contribution to the Pension Plan for such fiscal years 2018 and 2017 was $111 thousand and $136 thousand, respectively.

Information on the Employer's Proportionate Share of the Collective Net Pension Liability

The Authority's net pension liabilities reported at June 30, 2018 and 2017 were measured as of those fiscal year-end dates. The total pension liability used to calculate those net pension liabilities were determined by actuarial valuations as of June 30, 2016 and June 30, 2015, respectively, based on the OYLM described above, and rolled forward to the respective fiscal year-end measurement dates.

Information about the Authority net position and additions to and deductions from NYCERS QPP fiduciary net position has been determined on the same basis as that reported by NYCERS QPP. For this purpose, benefits and refunds are recognized when due and payable in accordance with the terms of the respective qualified pension plan, and investments are reported at fair value.

Actuarial Assumptions—Measurement of the total net pension liability, on which the net pension liability is based, requires the use of assumptions about numerous future events that affect the benefit payments that will be made to employees in retirement. The following table provides a brief description of the significant assumptions used in the June 30, 2016 actuarial valuation to determine the fiscal year 2018 Authority contributions.

11. PENSION PLANS (CONTINUED)

ACTUARIAL ASSUMPTIONS USED FOR DETERMINING FINAL FISCAL YEAR 2018 AUTHORITY'S CONTRIBUTIONS

ITEM	FINAL FISCAL YEAR 2018 AUTHORITY'S[1]
Valuation Date	June 30, 2016 (Lag)
Assumed Rate of Return on Investment[2]	7.0% per annum, net of investment expense. Actual return for variable funds.
Post-Retirement Mortality	Tables adopted by the Boards of Trustee during fiscal year 2016[3].
Active Service: Withdrawal, Death, Disability[4]	Tables adopted by the Boards of Trustee during fiscal year 2012[5].
Retirement	Tables adopted by the Boards of Trustee during fiscal year 2012[5].
World Trade Center Benefit	Estimates of certain obligations.
Salary Increases[2]	Tables adopted by the Boards of Trustee during fiscal year 2012[5]. In general, Merit and Promotion Increases plus assumed General Wage Increase of 3.0% per year.
Assumed Cost-of-Living Adjustments[2]	1.5% per year for Tier I, Tier II, Tier IV and certain Tier III and Tier VI retirees. 2.5% per year for certain Tier III and Tier VI retirees.
Liability Loads	Estimates of certain obligations.

[1]Based on actuarial assumptions and methods proposed by the Actuary during fiscal year 2012 adopted by the Boards of Trustee and enacted into law as Chapter 3/13 with revisions proposed by the Actuary and adopted by the Boards of Trustees in Fiscal Year 2017.

[2] Developed using a long-term Customer Price Inflaiton ("CPI") assumption of 2.5% per year.

[3] See December 2015 memoranda to the Boards of Trustees.

[4] The accidential disability rates for tier VI sanitation and corrections members were revised as a result of the change in the disability provisions to be equal to the tier IV assumptions of their respective group.

The accidential disability rates for III/VI police and fire members were revised as a result of the change in the disability provisions to be equal to the tier II assumptions of their respective group.

[5] See the Reports entitled "Proposed Changes in Actuarial Assumptions and Methods for Determining Employer Contributions for Fiscal Year Beginning on and After July, 2011" dated February 10, 2012 (the "Silver Books").

In accordance with the Administrative Code of The City of New York and with appropriate practice, the NYCERS Board of Trustees of the actuarially-funded the Pension Plan is to periodically review and adopt certain actuarial assumptions as proposed by the Actuary for use in the determination of Employer Contributions, which are also generally used to determine the total pension liability, as applicable. Based, in part, upon a review of the then two most recent experience studies, the Actuary issued reports for the Pension Plan proposing changes in actuarial assumptions and methods for fiscal years beginning on and after July 1, 2011 (February 2012 Reports). Where required, the Board of Trustees of NYCERS adopted those changes to actuarial assumptions that required the NYCERS Board of Trustees approval. The State Legislature and the Governor enacted Chapter 3/13 to provide for those changes to the actuarial assumptions and methods that require legislation, including the actuarial interest rate ("AIR") assumption of 7.0% per annum, net of investment expenses.

11. PENSION PLANS (CONTINUED)

The long-term expected rate of return was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of the 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 real rates of return by the target asset allocation percentage and by adding expected inflation. The target allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

ASSET CLASS	TARGET ASSET ALLOCATION	LONG-TERM EXPECTED REAL RATES OF RETURN
U.S. Public Market Equities	29.00%	6.30%
International Public Market Equities	13.00%	7.00%
Emerging Public Market Equities	7.00%	9.50%
Private Market Equities	7.00%	10.40%
Fixed Income (Core, TIPS, HY, Opportunistic, Convertibles)	33.00%	2.20%
Alternatives (Real Assets, Headge Funds)	11.00%	5.50%
TOTAL	100.00%	

Discount Rate—The discount rate used to measure the total pension liability of the Pension Plan as of June 30, 2018 and 2017 was 7% per annum. The projection of cash flows used to determine the discount rate assumed that employee contributions will be made at the rates applicable to the current Tier for each member and that employer contributions will be made based on rates determined by the actuary. Based on those assumptions, the Pension Plan fiduciary net position was projected to be available to make all projected future benefit payments of current active and non-active Pension Plan members. Therefore, the long-term expected rate of return on the Pension Plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Authority's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate— The following table presents the Authority's proportionate share of the net pension liability using the discount rate of 7.0%, as well as what the Authority's proportionate share of the net pension liability would be if it were calculated using a discount rate that is one-percentage point lower (6.0%) or one-percentage point higher (8.0%) than the current rate (in thousands):

SENSITIVITY ANALYSIS

	NET PENSION LIABILITY AS OF JUNE 30, 2018		
	1% DECREASE (6.0%)	CURRENT DISCOUNT RATE (7.0%)	1% INCREASE (8.0%)
Net Pension Liability	$ 811	$ 516	$ 291

11. PENSION PLANS (CONTINUED)

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions.

Pension Liability—At June 30, 2018 and 2017, the Authority reported a liability of $516 thousand and $828 thousand, respectively, for its proportionate share of the net pension liability. The Authority's portion of the net pension liability was based on projection of the Authority's long-term share of contributions to the Pension Plan relative to the projected contributions of all participating City governments and their component units, actuarially determined. At June 30, 2018 and 2017, the Authority's proportion was 0.003% and 0.004% respectively.

Pension Expense—For the years ended June 30, 2018 and 2017, the Authority recognized pension expense of $111 thousand and $136 thousand, respectively.

Deferred Outflows and Inflows of Resources—At June 30, 2018, the Authority reported total deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	DEFERRED OUTFLOWS OF RESOURCES		DEFERRED INFLOWS OF RESOURCES	
Difference between expected and actual experience	$	-	$	51,105
Changes of assumptions		8,063		-
Net difference between projected and actual earnings on pension plan investments		-		29,677
Changes in proportion and difference between the Authority's contributions and proportionate share of contributions		(360,780)		(43,863)
The Authority's contributions subsequent to the measurement date		-		-
TOTAL	$	(352,717)	$	36,919

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions at June 30, 2018 will be recognized in pension expense as follows:

YEAR ENDED JUNE 30,		
2019	$	71,368
2020		92,304
2021		108,259
2022		73,376
2023		43,894
2024		435

12. OTHER POST-EMPLOYMENT BENEFITS

Plan Description—The Authority's Other Postemployment Benefits Plan ("OPEB Plan") is a single-employer defined benefit plan administered by the New York City Office of Labor Relations. The plan provides certain health and related benefits to eligible retirees and their beneficiaries/dependents of the New York City Municipal Water Finance Authority in accordance with GASB Statement No. 75, ("GASB 75") *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*.

The OPEB Plan consists of three programs: (1) the New York City Health Benefits Program, (2) Welfare Fund Program, and (3) Medicare Part B Program. The Authority's policy is to follow the eligibility criteria applicable to retirees of The City and to provide benefits substantially the same as those provided to The City retirees and eligible beneficiaries/dependents.

There are three classes of employees: active, inactive and retirees.

The following presents a summary of the Authority's census data used in the June 30, 2018 and 2017 OPEB actuarial valuations:

GROUP	2018	2017
Active	9	10
Inactive	2	2
Retired	4	4
TOTAL	**15**	**16**

Funding Policy—The Authority is not required to provide funding for the OPEB Plan, other than the pay-as-you-go amount necessary to provide current benefits to retirees and eligible beneficiaries/dependents. For the years ended June 30, 2018 and 2017, the Authority had four retirees and made contributions of $20.3 thousand and $14.9 thousand, respectively. Members are not required to contribute; although, retirees may elect basic health insurance programs and/or optional coverage that requires contributions. Plan retiree participants who opt for other basic or enhanced coverage must contribute 100% of the incremental costs above the premiums for the benchmark plan. The OPEB Plan also reimburses covered employees for 100% of the Medicare Part B premium rate applicable to a given year, and there is no retiree contribution to the welfare fund (the "Welfare Fund") that covers retirees for various health care benefits not provided through the basic coverage.

Annual OPEB Cost and Net OPEB Obligation—The Authority's annual OPEB cost is calculated based on the annual expense ("Expense"), an amount that was actuarially determined in accordance with the parameters of GASB 75. Actuarial valuations involve estimates and assumptions about the probability of events far into the future. The entry age actuarial cost method was used in the actuarial valuation prepared as of June 30, 2017 for the fiscal year ending June 30, 2018, which was the basis for the fiscal year 2018 Expense calculation. Under this method, as used in this OPEB Plan valuation, the actuarial present value ("APV") of benefits ("APVB") of each individual included in actuarial

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit age(s). The employer portion of this APVB allocated to the valuation year is the employer normal cost. The portion of this APVB that is not provided for on the valuation date by the APV of future employer normal cost or future member contributions is the total OPEB Plan liability. The excess of the total OPEB Plan liability over the plan fiduciary net position, which represents the assets of the plan, is the net OPEB Plan liability.

All changes in the net OPEB liability as of June 30, 2018 and 2017 are being amortized over the future working lifetime of all plan participants for purposes of calculating the expense except for the amount of change in plan assets, which would be amortized over a 5-year period using level-dollar amortization. This plan however, is not assumed to have any assets.

Total OPEB Liability—The Authority's total OPEB Plan obligation of $1.5 million was measured as of June 30, 2018, and was determined by an actuarial valuation as of that date.

The following table shows changes in the Authority's net OPEB Plan liability for fiscal years 2018 and 2017 (in thousands):

		2018		2017
Balance at beginning of the year	$	1,412	$	1,601
CHANGES FOR THE YEAR:				
Service cost		94		101
Interest		43		43
Difference between expected and actual experience		(106)		(96)
Changes in assumptions or other inputs		35		(222)
Actual benefit payments		(21)		(15)
NET CHANGES		**45**		**(189)**
NET OPEB PLAN LIABILITY - END OF THE YEAR	**$**	**1,457**	**$**	**1,412**

The Authority's annual OPEB Plan expense for fiscal years 2018 and 2017 were as follows (in thousands):

		2018		2017
COMPONENTS				
Service costs	$	94	$	101
Interest on the total OPEB Plan liability		43		43
Changes of assumptions		(23)		(24)
Difference between expected and actual experience		(20)		(11)
TOTAL OPEB PLAN EXPENSE	$	94	$	109

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

Funded Status and Funding Progress—As of June 30, 2018, the most recent actuarial measurement date, the cost was 0% funded. The total OPEB Plan liability for benefits was $1.5 million, and the plan fiduciary net position was $0, resulting in a net OPEB Plan liability of $1.5 million. The covered payroll (annual payroll of active employees covered by the OPEB Plan) was $.9 million, and the ratio of the net OPEB liability to the covered payroll was 169.7%. The impact on the net OPEB Plan liability of a 1% increase or decrease in the discount rate and trend is included in the Required Supplementary Information.

Actuarial Methods Assumptions and Other Inputs—Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future, such as assumptions about future employment, demographic, salary increase, mortality, and the healthcare cost trend. The actuarial assumptions used in the fiscal year 2018 and the fiscal year 2017 OPEB Plan valuations are a combination of those used in the New York City Employee Retirement Systems ("NYCERS") pension actuarial valuations and those specific to the OPEB Plan valuations.

Amounts determined regarding the funded status of the OPEB Plan and the annual Expense of the Authority are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. Projections of benefits for financial reporting purposes are based on the types of benefits provided at the time of each valuation and the historical pattern of the sharing of benefit costs between the employer and employees to that point. The actuarial methods and assumptions used include techniques that are designed to reduce short-term volatility in total OPEB Plan liability, consistent with the long-term perspective of the calculations.

The actuarial assumptions used in the fiscal year 2018 and fiscal year 2017 OPEB Plan valuations are classified as those used in the New York City Retirement Systems ("NYCRS") valuations and those specific to the OPEB valuations.

The OPEB Plan actuarial valuations incorporate only the use of certain NYCERS demographic and salary increase assumptions. The NYCERS demographic and salary scale assumptions are unchanged from the prior OPEB Plan actuarial valuation. For purposes of determining pension obligations, the demographic and salary scale assumptions requiring NYCERS Board approval (available on the website of the Office of the Actuary at www.nyc.gov/actuary) were adopted by each respective Board of Trustees during fiscal year 2012. Chapter 3 of the Laws of 2013 enacted those actuarial assumptions and methods that require New York State Legislation.

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

The OPEB Plan-specific actuarial assumptions used in the fiscal year 2018 OPEB Plan valuation are as follows:

Valuation Date	June 30, 2017
Measurement Date	June 30, 2018
Discount Rate	2.98% per annum for the June 30, 2017 measurement date. 3.13% for the June 30, 2017 valuation date.[1]
Actuarial Cost Method	Entry age calculated on an individual basis with the actuarial value of projected benefits allocated on a level basis over earnings from hire through age of exit.
Salary Increases	3.00% per annum which includes an inflation rate of 2.50% and a general wage increase rate of 0.50%. For more information see the Silver Books
Inflation	2.50%
Per-Capita Claims Costs	EBCBS and GHI plans are insured via a Minimum Premium arrangement while the HIP and many of the other HMOs are community rated. Costs reflect age adjusted premiums for all plans. HIP HMO and GHI/EBCBS non-Medicare premiums have been adjusted for Health Savings Agreement changes.

[1]Rates are based solely on the S&P Municipal Bond 20 Year High Grade Rate Index, since the plan has no assets, as per the guidance under GASB 75.

Employer premium contribution schedules for the month of July 2017 and January 2018 were reported by the New York City Office of Labor Relations (“OLR”). In most cases, the premium contributions remained the same throughout the year. HIP HMO Medicare rates varied by date and by specific Plan options. These variations are the result of differing Medicare reimbursements. The various monthly rates were blended by proportion of enrollment. For other rates, where the January 2017 premium rate was different than the July 2016 premium rate, the valuation assumed that the January 2017 premium rate was more representative of the long-term cost of the arrangement.

These assumptions are generally unchanged from the previous valuation except as noted below. The NYCERS pension assumptions are provided in the five “Silver Books” available on the Reports page of the OA website (www.nyc.gov/actuary).

The probability of retirement set out in each of the Silver Books is assumed to be 100% at either age 63 or 70, depending upon the program of benefits for the individual employee. For the OPEB Plan valuation, 100% of the individuals remaining in service at these ages are assumed to either retire with a benefit or to terminate employment without a benefit, depending upon whether they have attained the requisite service.

Based on those assumptions, The City’s OPEB Plan’s fiduciary net position was projected to be available to make all projected OPEB payments for current active and inactive employees until 2025. After that time, benefit payments will be funded on a pay-as-you go basis. The discount rate is the single equivalent rate which results in the same present value as discounting future benefit payments made from assets at the long-term expected rate of return and discounting future benefit payments funded on a pay-as-you-go basis at the Municipal Bond 20-year Index Rate.

Results for the OPEB Plans for Component Units are presented using a discount rate of the Municipal Bond 20-year Index Rate, since there is no pre-funding assumed for these plans.

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

The initial monthly premium rates used in the valuations are shown in the following table:

PLAN	MONTHLY RATES	
	FY 2018	FY 2017
HIP HMO		
Non-Medicare Single	$ 652.44[1]	$ 600.18
Non-Medicare Family	1,598.47[1]	1,470.45
Medicare	164.98	160.83
GHI/EBCBS		
Non-Medicare Single	620.08 [1]	567.48
Non-Medicare Family	1,625.27[1]	1,487.47
Medicare	172.42	168.35
OTHER HMOs[2]		
Non-Medicare Single	1,018.56	1,030.56
Non-Medicare Family	2,223.80	2,226.45
Medicare Single	311.79	276.18
Medicare Family	621.50	546.28

[1] For the fiscal year 2018 valuation, HIP HMO premiums are decreased by 4.13% and status quo fiscal year 2018 GHI/EBCBS Pre-Medicare premiums are decreased by 0.51% to reflect fiscal year 2018 Health Savings Agreement changes announced during fiscal year 2017.

[2] Other HMO premiums represent the total premium for medical (not prescription) coverage including retiree contributions.

Welfare Fund—For the fiscal year 2017 valuation, the Welfare Fund contribution reported for fiscal year 2017, including any reported retroactive amounts, was used as the per capita cost for valuation purposes.

Projected contributions reflect $25 increases at July 1, 2017.

Reported annual contribution amounts for the last two years are shown in Appendix B, Tables 2a to 2e of the OPEB Plan valuation report dated September 14, 2018.

Welfare Fund rates are based on actual reported union Welfare Fund code for current retirees. Where a union Welfare Fund code was missing, the most recently reported union code was reflected.

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

The weighted average annual contribution rates used for future retirees is shown below.

	ANNUAL RATE	
	2018	2017
NYCERS	$ 1,850	$ 1,743

Contributions are assumed to increase by 3.5% annually starting in fiscal year 2019.

Medicare Part B Premiums are as follows:

CALENDAR YEAR	MONTHLY PREMIUM
2013 - 2015	$ 104.90
2016	109.97
2017	113.63
2018	125.85

2018 Medicare Part B premiums are assumed to increase by Medicare Part B trend rates.

Medicare Part B premium reimbursement amounts have been updated to reflect the actual premium rates announced for calendar years through 2018. Due to limited cost-of-living increase in Social Security benefits for calendar year 2017 and 2018, some Medicare Part B participants will not be charged the Medicare Part B premium originally projected or ultimately announced for those years. Thus, the valuation uses a blended estimate as a better representation of future Part B premium costs.

For the fiscal year 2018 OPEB Plan valuation, the annual premium used was $1,436.89, which is equal to an average of the calendar year 2017 and 2018 monthly premiums shown.

For calendar year 2018, the monthly premium was determined as follows:

a. 28% of the basic $104.90 monthly hold-harmless amount, assuming that there would be no claims made for the slight increase in Part B premiums for continuing retirees, and

b. 72% of the announced premiums of $134.00 for calendar year 2018, representing the proportion of the Medicare population that will pay the announced amount.

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

Overall Medicare Part B Premium amounts are assumed to increase by the following percentages to reflect the income-related increases in Medicare Part B Premiums for high income individuals.

FISCAL YEAR	INCOME-RELATED MEDICARE PART B INCREASE
2018	4.5 %
2019	5.0
2020	5.2
2021	5.3
2022	5.4
2023	5.5
2024	5.6
2025	5.8
2026	5.9
2027 and later	6.0

Medicare Part B Premium Reimbursement Assumption—90% of Medicare participants are assumed to claim reimbursement; based on historical data.

Health Care Cost Trend Rate ("HCCTR")—Covered medical expenses are assumed to increase by the following percentages (unchanged from the last valuation). For purposes of measuring entry age calculations, actual historic plan increases are reflected to the extent known, with further historic trend rates based on the trend assumed for fiscal year 2017 (initial trend).

HCCTR ASSUMPTIONS

YEAR ENDING[1]	PRE-MEDICARE PLANS	MEDICARE PLANS	MEDICARE PART B PREMIUMS	WELFARE FUND CONTRIBUTIONS
2018[2]	7.6%	2.4%	7.7%	0.0%
2019	7.0	5.0	5.0	3.5
2020	6.5	5.0	5.0	3.5
2021	6.0	5.0	5.0	3.5
2022	5.5	5.0	5.0	3.5
2023 and later	5.0	5.0	5.0	3.5

[1] Fiscal year for Pre-Medicare and Medicare Plans and calendar year for Medicare Part B Premiums.

[2] Actual amounts based on the *2015 Health Care Savings Agreement Initiative Report of Status of Healthcare Savings* dated March 29, 2018. Welfare Fund contribution rates assumed to increase based on current pattern bargaining (additional $25 each for fiscal year 2018).

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

Age and Gender-Related Morbidity—The premiums are age and gender adjusted for GHI/EBCBS, HIP HMO and Other HMOs. The assumed relative costs of coverage are consistent with information presented in the 2013 study Health Care Costs—From Birth to Death, sponsored by the Society of Actuaries.

For non-Medicare costs, a sample of factors used are:

AGE	MALE	FEMALE	AGE	MALE	FEMALE
20	0.170	0.225	45	0.355	0.495
25	0.146	0.301	50	0.463	0.576
30	0.181	0.428	55	0.608	0.671
35	0.227	0.466	60	0.783	0.783
40	0.286	0.467	64	0.957	0.917

Children costs assumes a factor of 0.229.

For Medicare costs, relative factors based on the Yamamoto Study for net Medicare costs for 2010 for inpatient, outpatient, and professional costs were blended. Prescription drug costs were not reflected as NYCHBP excludes most drugs from coverage. Professional costs were weighted at 64%, based on the GHI portion of the combined GHI/EBCBS premiums reported historically. Inpatient costs were weighted as twice as prevalent as outpatient costs based on the relative allocation suggested in the Yamamoto Study.

Costs prior to age 65 were approximated using the non-Medicare data, but they assume that individuals under age 65 on Medicare had an additional disability-related morbidity factor.

Medicare costs prior to age 65 assume an additional disability-related morbidity factor. A sample of factors are:

AGE	MALE	FEMALE	AGE	MALE	FEMALE
20	0.323	0.422	60	1.493	1.470
25	0.278	0.565	65	0.919	0.867
30	0.346	0.804	70	0.946	0.885
35	0.432	0.876	75	1.032	0.953
40	0.545	0.878	80	1.122	1.029
45	0.676	0.929	85	1.217	1.116
50	0.883	1.082	90	1.287	1.169
55	1.159	1.260	95	1.040	1.113
			99+	1.281	0.978

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

The age adjustment for the non-Medicare GHI/EBCBS premium reflects a 5% reduction in the GHI portion of the monthly premium (with the GHI portion representing $292.12 out of the $623.28 for single coverage and $772.65 out of the $1,633.66 for family coverage for fiscal year 2018 rates) and a 3% reduction in the EBCBS portion of the premium (with the EBCBS portion representing the remainder of the premiums) for the estimated margin that is expected to be returned.

Mortality Rates—For the fiscal year 2018, OPEB Plan and pension valuations, new tables of postretirement mortality were proposed by the Actuary and adopted by each of the NYECRS Boards during fiscal year 2016. These tables were based primarily on the experience of each system and the application of Mortality Improvement Scale MP-2015 published by the Society of Actuaries in October 2015. Scale MP-2015 applied on a generational basis replaced Mortality Improvement Scale AA which was applied on a static projection basis.

There were no changes to benefits.

Participation—Active participation assumptions are based on actual elections for current retirees. Portions of current retirees not eligible for Medicare are assumed to change elections upon attaining age 65 based on the patterns of elections of Medicare-eligible retirees. Detailed assumptions appear in the following table. The participation assumptions have been updated since the prior valuation to reflect recent experience.

PLAN PARTICIPATION ASSUMPTIONS

BENEFITS	NYCERS
PRE-MEDICARE	
GHI/EBCBS	72%
HIP HMO	20
Other HMO	4
Waiver	4
MEDICARE	
GHI	72
HIP HMO	20
Other HMO	4
Waiver	4
POST-MEDICARE MIGRATION	
Other HMO to GHI	0
HIP HMO to GHI	0
Pre-Med. Waiver	
** To GHI @ 65	0
** To HIP @ 65	0

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

Waivers are assumed to include participants who do not qualify for coverage because they were working less than 20 hours a week at termination.

Dependent Coverage—Dependent coverage is assumed to terminate when a retiree dies.

Dependents—Dependent assumptions based on distribution of coverage of recent retirees are shown in the following table. Actual spouse data is shown for current retirees. Child dependents of current retirees are assumed to receive coverage until age 26.

Based on experience under the OPEB Plan for NYCERS, male retirees were assumed to be four (4) years older than their wives, and female retirees were assumed to be two (2) years younger than their husbands. Children are assumed to be covered for eight (8) years after retirement. For employees eligible to retire based only on service, children are assumed to be covered for an additional five (5) years.

DEPENDENT COVERAGE ASSUMPTIONS

GROUP	NYCERS %
MALE	
Single Coverage	40
Spouse	40
Child/No Spouse	5
Spouse and Child	15
TOTAL	100%
FEMALE	
Single Coverage	70
Spouse	20
Child/No Spouse	5
Spouse and Child	5
TOTAL	100%

Demographic Assumptions—The assumptions are the same as those that were used to value the pension benefits of the NYCERS for determining employer contributions for fiscal years beginning 2017.

COBRA Benefits—Although COBRA beneficiaries pay 102% of “premiums,” typical claim costs for COBRA participants run about 50% greater than costs for other participants.

There is no cost to The Authority for COBRA beneficiaries who enroll in community-rated HMOs, including HIP, since these individuals pay their full community rate. However, The City’s costs under the experience-rated GHI/EBCBS coverage are affected by the claims for COBRA-covered individuals.

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

In order to reflect the cost of COBRA coverage, the cost of excess claims for GHI-covered individuals and families is estimated assuming that 15% of employees not eligible for other benefits elect COBRA coverage for 15 months. A lump-sum COBRA cost of $1,000 was assumed for terminations during fiscal year 2018. This lump-sum amount is increased by the Pre-Medicare HCCTR for future years but is not adjusted for age-related morbidity.

Cadillac Tax—The OPEB Plan valuation includes an explicit calculation of the high-cost plan excise tax (“Cadillac Tax”) that will be imposed beginning in 2022 under NCR.

The tax is 40% of the excess of (a) over (b) where (a) is the cost of medical coverage and (b) is the statutory limits ($10,200 for single coverage and $27,500 for family coverage), adjusted for the following:

- For Pre-Medicare retirees above the age of 55, the limit will be further increased by $1,650 for single coverage and $3,450 for family coverage.
- For 2019, the limits are increased by CPI + 1% (e.g., 3.5%). For each year after 2019, the limits are further increased by CPI (e.g., 2.5%). The indexing of limits starts in 2018; the tax is first applied in 2022.

The impact of the Cadillac Tax for the program benefit is calculated based on the following assumptions about the cost of medical coverage:

- The cost for each benefit option without age adjustment (GHI, HIP, or Other HMO, combined with the average cost of Medicare Part B premium reimbursement, if applicable) was separately compared to the applicable limit.
- The additional Cadillac Tax due to the riders or optional benefit arrangements is assumed to be reflected in the contribution required for the rider or optional benefit.
- Pre-Medicare retirees under age 55 are not assumed to have the higher limits that apply to employees engaged in high-risk professions because the majority of employees included in this valuation are not in such professions.

In cases where the Authority provides only a portion of the OPEB Plan benefits, which give rise to the Cadillac Tax, the calculated Cadillac Tax is allocated to the appropriate paying entity in proportion to the OPEB liabilities for relevant OPEB Plan benefits.

Active/Inactive Liabilities—40% of the measured liability of the Active/Inactive population. This is roughly equivalent to assuming that 60% of the Active/Inactive members will terminate membership prior to vesting and not receive OPEB.

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

Sensitivity of the Net OPEB Plan Liability to Changes in the Discount Rate

Sensitivity of the Authority's Proportionate Share of the Net OPEB Plan Liability to Changes in the Discount Rate—The following table presents the Authority's proportionate share of the net OPEB Plan liability using the discount rate of 3.13 percent, as well as what the Authority's proportionate share of the net OPEB Plan liability would be if it were calculated using a discount rate that is one-percentage point lower (2.13 percent) or one-percentage point higher (4.13 percent) than the current rate (in thousands):

SENSITIVITY ANALYSIS

NET OPEB LIABILITY AS OF JUNE 30, 2018

	1% Decrease (2.13%)	Current Discount Rate (3.13%)	1% Increase (4.13%)
TOTAL OPEB PLAN LIABILITY	$ 1,748	$ 1,457	$ 1,234

Sensitivity of the Net OPEB Plan Liability to Changes in the Healthcare Cost Trend Rate—The following presents the total OPEB Plan liability of the Authority, as well as what the Authority's total OPEB Plan liability would be if it were calculated using healthcare cost trend rates that are 1-percent-point lower or 1-percent-point higher than the current healthcare cost trend rates:

SENSITIVITY ANALYSIS

NET OPEB LIABILITY AS OF JUNE 30, 2018

	1% DECREASE (6.84% DECREASING TO 4.0%)	HEALTHCARE COST TREND RATES (7.84% DECREASING TO 5.0%)	1% INCREASE (8.84% DECREASING TO 6.0%)
TOTAL OPEB PLAN LIABILITY	$ 1,164	$ 1,457	$ 1,885

Deferred Outflows of Resources and Deferred Inflows of Resources Related to the OPEB Plan

At June 30, 2018, the Authority reported deferred outflows of resources and deferred inflows of resources related to the OPEB Plan from the following sources:

	DEFERRED OUTFLOWS OF RESOURCES	DEFERRED INFLOWS OF RESOURCES
Difference between expected and actual experience	$ -	$ 175
Changes of assumptions or other inputs	31	174
TOTAL	$ 31	$ 349

12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

Amounts reported as Deferred Outflows of Resources and Deferred Inflows of Resources related to OPEB will be recognized in OPEB expense as follows:

YEAR ENDED JUNE 30,		AMOUNT
2019	$	43.5
2020		43.5
2021		43.5
2022		43.5
Thereafter		144.6

13. POLLUTION REMEDIATION OBLIGATIONS

The System reports pollution remediation obligations ("PROs") as required by the GASB. The System's PROs may arise as a result of: (1) federal, State, and local laws and regulations, (2) violations of pollution-related permits or licenses, (3) a determination by the System that there is an imminent endangerment to public health and safety as a result of an existing pollution condition, (4) the System's being named in a lawsuit to compel remediation or being identified by a regulator as a party responsible or potentially responsible for remediation, and/or (5) the System's voluntarily commencement of remediation. As of June 30, 2018 and 2017, the System reported $37.6 million and $29.5 million of liabilities for known PROs, respectively.

The System has estimated these amounts based on the current value of outlays expected to be incurred for pollution remediation, which it is currently obligated to perform. Actual future outlays will differ from the estimated amounts if the prices or techniques for remediation measures change or differ from estimates, if and when additional information about existing pollution conditions becomes known to the System in the future and/or if applicable laws or regulations change.

Remediation outlays for certain pollution conditions currently known to the System are not included in the reported liabilities because they are not yet reasonably estimable. These include certain locations that the System has been informed have been designated under federal law as Superfund sites to address alleged hazardous substances, pollutants, or contaminants at these sites and for which the System may be named as a potentially responsible party for the remediation because there are the System's facilities operated at these locations.

14. SUBSEQUENT EVENTS

- On July 12, 2018, the Authority drew down on $90.3 million of Fiscal 2018 Series 3 BAN to pay for the costs of improvements to the System.
- On August 2, 2018, the Authority issued $320 million of fixed rate refunding Second Resolution Bonds through EFC, Fiscal 2019 Series 1. Proceeds of the bonds were used to refund the following amounts of outstanding Second General Resolution Bonds: $137 million Fiscal 2008 Series 1, $157 million of Fiscal 2008 Series 2, and $71.7 million of Fiscal 2013 Series 1 bonds. Proceeds of Fiscal 2019 Series 1 also paid for bond issuance costs. As a result of this transaction, the Authority reduced its overall debt service by $44.1 million and obtained an economic gain of $36.5 million.
- On August 9, 2018, the Authority drew down on $101 million of Fiscal 2018 Series 3 BAN to pay for the costs of improvements to the System.
- On August 15, 2018, the Authority converted the following bonds from adjustable rate to index rate through direct purchase: $100 million of Fiscal 2008 Subseries BB3, $50.0 million of Fiscal 2008 Subseries BB4, and $50.0 million of Fiscal 2016 Subseries AA3.
- On August 21, 2018, the Authority issued $264 million of fixed rate refunding Second Resolution Bonds, Fiscal 2019 Series AA. Proceeds of the bonds were used to fix out $100 million of adjustable rate bonds, Fiscal 2008 Subseries 1B, $100 million of adjustable rate bonds Fiscal 2008 Subseries B2, and $100 million of adjustable rate bonds Fiscal 2008 Subseries B4. Proceeds of Fiscal 2019 Series AA also paid for bond issuance costs. As a result of this transaction, the Authority reduced its overall debt service by $107 million and obtained an economic gain of $101 million.
- On September 13, 2018, the Authority issued $100 million of adjustable rate new money, Fiscal 2019 Series BB. The bonds are supported by a liquidity facility from a bank. Proceeds of the bonds were uses to pay for the costs of improvements to the System and to pay for bond issuance costs.
- On September 13, 2018, the Authority drew down $120 million of Fiscal 2018 Series 3 BAN to pay for the costs of improvements to the system.

* * * * * *

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

Schedule of changes for total OPEB liability and related ratios June 30 (in thousands):

	2018	2017	2016
TOTAL OPEB LIABILITY			
Service cost	$ 94	$ 101	$ 136
Interest	42	43	43
Differences between expected and actual experience	(106)	(96)	(8)
Changes of assumptions	35	(222)	-
Benefits payments	(20)	(15)	(17)
NET CHANGE IN TOTAL OPEB LIABILITY	**45**	**(189)**	**154**
TOTAL OPEB LIABILITY - BEGINNING	1,412	1,601	1,447
TOTAL OPEB LIABILITY - ENDING	**$ 1,457**	**$ 1,412**	**$ 1,601**
Covered-employee payroll	$ 859	$ 1,038	$ 1,148
Total OPEB liability as a percentage of covered-employee payroll	169.6%	135.9%	139.5%

NOTES TO THE SCHEDULE:

Changes of assumption: Changes of assumption and other inputs reflect the effects of changes in the discount rate each period. The following are the discount rates used in each period:

2018	2.98%
2017	3.13%
2016	2.71%

The Authority funds OPEB benefits on a pay-as-you-go basis and contributions are not actuarially determined. Therefore, the required supplementary information related to actuarially determined contributions for the 10 most current fiscal years is not applicable.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

SCHEDULE OF THE AUTHORITY'S PROPORTIONATE SHARE OF THE NET PENSION LIABILITY

LAST 10 FISCAL YEARS* (IN THOUSANDS):

		2018	2017	2016	2015	2014	2013
Authority's proportion of the net pension liability	%	0.003	0.004	0.005	0.005	0.005	0.005
Authority's proportionate share of the net pension liability	$	516	828	1,215	1,012	901	1,154
Authority's covered-employee payroll	$	859	1,038	1,148	1,289	1,181	1,124
Authority's proportionate share of the net pension liability as percentage of its covered employee payroll	%	60.07	79.77	105.84	78.51	76.29	102.67
Plan fiduciary net position as a percentage of the total pension liability	%	78.8	74.8	69.6	73.1	75.3	67.2

*This data is presented for those years for which information is available.

SCHEDULE OF THE AUTHORITY'S PENSION CONTRIBUTIONS

LAST 10 FISCAL YEARS (IN THOUSANDS):

		2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially determined contribution	$	111	136	170	161	141	136	157	113	121	55
Contribution in relation to the actuarially determined contribution	$	(111)	(136)	(170)	(161)	(141)	(136)	(157)	(113)	(121)	(55)
Contribution deficiency (excess)	$	-	-	-	-	-	-	-	-	-	-
Authority's covered -employee payroll1	$	859	1,038	1,148	1,289	1,181	1,124	919	1,026	676	729
Contribution as a percentage of covered-employee payroll	%	12.92	13.10	14.81	12.49	11.94	12.10	17.08	11.01	17.90	7.54

[1]Covered-employee payroll data from the actuarial valuation date with one-year lag.

STATISTICAL

CONTENTS

THIS PART OF THE NEW YORK CITY WATER AND SEWER SYSTEM'S COMPREHENSIVE ANNUAL FINANCIAL REPORT PRESENTS DETAILED INFORMATION TO PROVIDE CONTEXT TO THE INFORMATION IN THE COMBINING FINANCIAL STATEMENTS, NOTE DISCLOSURES AND REQUIRED SUPPLEMENTARY INFORMATION.

FINANCIAL TRENDS 85

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

REVENUE CAPACITY 87

These schedules contain information to help the reader assess the System's primary revenue source and customer's utility payments.

DEBT CAPACITY 88

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

DEMOGRAPHIC AND ECONOMIC INFORMATION 90

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

OPERATING INFORMATION 92

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

SCHEDULES OF FINANCIAL TRENDS INFORMATION

NET POSITION (DEFICIT) BY CATEGORY - TEN YEAR TREND

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
		Restated	Restated			Restated	Restated			
Net investment in capital assets	$116,124	$(204,403)	$(430,201)	$(598,349)	$(771,165)	$(945,890)	$(840,201)	$(215,322)	$920,728	$1,253,882
RESTRICTED FOR:										
Debt service	1,501,529	1,781,994	1,457,332	1,224,925	1,145,505	918,229	687,656	573,461	239,192	285,348
Operations and maitenance	247,304	237,746	250,447	226,383	221,440	212,233	212,885	199,636	191,772	195,844
Unrestrected (deficit)	(781,214)	(760,384)	(543,830)	(723,166)	(754,581)	(668,471)	(869,372)	(910,633)	(1,632,209)	(1,474,823)
TOTAL NET POSITION (DEFICIT)	**$1,083,743**	**$1,054,953**	**$733,748**	**$129,793**	**$(158,801)**	**$(483,899)**	**$(809,032)**	**$(352,858)**	**$(280,517)**	**$260,251**

CHANGES IN NET POSITION (DEFICIT) - TEN YEAR TREND

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
		Restated	Restated			Restated	Restated			
OPERATING REVENUES										
Water Supply and distribution	$1,346,045	$1,407,328	$1,431,148	$1,382,189	$1,351,550	$1,278,646	$1,238,352	$1,158,977	$1,005,045	$920,033
Sewer collection and treatment	2,140,214	2,237,652	2,275,524	2,197,679	2,148,964	2,033,047	1,857,527	1,797,777	1,562,777	1,430,588
Bad debt expense	(18,259)	(2,620)	(4,467)	(23,301)	(26,979)	(16,983)	(28,541)	(76,799)	(14,032)	(36,060)
Other operating revenues	187,308	186,355	185,793	211,267	266,996	172,283	140,595	111,552	190,251	97,946
TOTAL OPERATING REVENUES	3,655,308	3,828,715	3,887,998	3,767,834	3,740,531	3,466,993	3,207,933	2,991,507	2,744,041	2,412,507
OPERATING EXPENSES										
Operation and maintenance	1,474,937	1,441,562	1,313,840	1,517,132	1,518,424	1,375,740	1,446,852	1,397,867	1,829,835	1,448,268
Administration and general	55,493	50,749	61,335	55,865	68,936	56,738	47,402	40,424	40,257	50,581
Depreciation and amortization	1,042,968	930,482	918,950	1,023,906	740,879	677,560	692,296	628,339	574,483	696,345
TOTAL OPERATING EXPENSES	2,573,398	2,422,793	2,294,125	2,596,903	2,328,239	2,110,038	2,186,550	2,066,630	2,444,575	2,195,194
OPERATING INCOME	1,081,910	1,405,922	1,593,873	1,170,931	1,412,292	1,356,955	1,021,383	924,877	299,466	217,313
NONOPERATING REVENUE (EXPENSES)										
Interest expense	(1,205,793)	(1,171,594)	(1,195,773)	(1,264,538)	(1,263,305)	(1,225,771)	(1,246,863)	(1,178,226)	(1,019,633)	(929,333)
Loss on retirement/ impairment of fixed assets	(48,609)	(44,452)	(4,488)	(2,334)	(18,815)	(20,976)	(1,646)	(3,426)	(23,254)	(299,450)
Subsidy income	175,620	166,715	164,502	163,655	174,606	174,862	196,241	180,986	128,110	108,708
Capital distribution	(22,789)	(45,789)	(11,082)	(25,337)	(39,627)	(25,429)	(42,005)	(53,591)	(32,580)	(51,921)
Investment income	28,809	4,178	53,322	22,426	50,148	58,793	48,936	38,313	65,760	99,122
NET INCOME (LOSS) BEFORE CAPITAL CONTRIBUTIONS	9,148	314,980	600,354	64,803	315,299	318,434	(23,954)	(91,067)	(582,131)	(855,561)
Capital contributions	19,642	6,225	4,060	223,791	9,799	7,699	26,903	18,696	30,424	11,529
CHANGE IN NET POSITION (DEFICIT)	28,790	321,205	604,414	288,594	325,098	326,133	2,949	(72,371)	(551,707)	(844,032)
Net position (deficit) - beginning of year	1,054,953	733,748	129,793	(158,801)	(483,899)	(809,032)	(352,888)	(280,517)	260,251	1,165,891
Restatement of beginning net position (deficit)	-	-	(459)	-	-	(1,000)	(459,093)	-	10,939	(61,608)
NET POSITION (DEFICIT) - END OF YEAR	$1,083,743	$1,054,953	$733,748	$129,793	$(158,801)	$(483,899)	$(809,032)	$(352,888)	$(280,517)	$260,251

REVENUE CAPACITY INFORMATION

WATER AND SEWER RATE INCREASE - TEN YEAR TREND

EFFECTIVE DATE	INCREASE IN FLAT-RATE WATER/ METERED WATER	METERED WATER RATE (PER CCF) [1]	SEWER RATE
July 1, 2009	Increased 12.9%	2.61	159% of water charge
July 1, 2010	Increased 12.9%	2.95	159% of water charge
July 1, 2011	Increased 7.5%	3.17	159% of water charge
July 1, 2012	Increased 7.0%	3.39	159% of water charge
July 1, 2013	Increased 5.6%	3.58	159% of water charge
July 1, 2014	Increased 3.4%	3.70	159% of water charge
July 1, 2015	Increased 3.0%	3.81	159% of water charge
July 1, 2016	No rate increase	3.81	159% of water charge
July 1, 2017	No rate increase	3.81	159% of water charge
July 1, 2018	Increased 2.36%	3.90	159% of water charge

[1] Ccf equals 100 cubic feet or approximately 748 gallons

AVERAGE DAILY WATER CONSUMPTION - TEN YEAR TREND

FISCAL YEAR	TOTAL (MGD) [1]	UPSTATE COUNTIES (MGD) [1]	CITY (MGD) [1]	PER CAPITA (GALS/DAY) [2]
2009	1,152	114	1,038	129
2010	1,127	112	1,016	126
2011	1,152	117	1,035	127
2012	1,117	109	1,009	123
2013	1,123	110	1,013	124
2014	1,116	111	1,005	123
2015	1,115	112	1,003	123
2016	1,109	112	997	122
2017	1,112	113	999	122
2018	1,114	110	1,004	123

[1] MGD = millions of gallons used per day

[2] Population source: U.S. Department of Commerce, Bureau of the Census.

SCHEDULES OF DEBT CAPACITY INFORMATION

REVENUE BOND COVERAGE - LAST TEN FISCAL YEARS

YEARS ENDED JUNE 30, 2009 - 2018 (IN THOUSANDS):

		DEBT SERVICE REQUIEMENTS [1]				
FISCAL YEAR	CASH RECEIPTS $	PRINCIPAL $	INTEREST $	TOTAL $	FIRST RESOLUTION DEBT SERVICE COVERAGE	SECOND RESOLUTION DEBT SERVICE COVERAGE [2]
2009	2,400,849	204,530	575,476	780,006	4.67	3.05
2010	2,622,290	249,093	592,194	841,287	5.24	3.09
2011	3,039,374	345,591	778,235	1,123,826	5.77	2.67
2012	3,270,827	378,042	700,658	1,078,700	7.41	2.98
2013	3,512,710	343,287	617,189	960,476	10.32	3.61
2014	3,728,823	359,259	415,611	774,870	12.62	4.76
2015	3,911,463	291,955	163,574	455,529	19.72	8.49
2016	3,960,660	398,877	125,945	524,822	32.81	7.46
2017	3,981,404	365,383	131,018	496,401	36.97	7.92
2018	3,722,423	359,501	-	359,501	62.81	10.21

[1] Debt service requirements include First Resolution debt service and Second Resolution debt service, net of subsidy from the NYS Environmental Facilities Corporation and surplus revenues carried forward from the prior fiscal year.

[2] Revenue for coverage purposes for Second Resolution is net of Authority expenses.

RATIO OF DEBT OUTSTANDING - TEN YEAR TREND

YEARS ENDED JUNE 30, 2009 - 2018 (IN THOUSANDS):

FISCAL YEAR	TOTAL DEBT OUSTANDING ($)	DEBT PER CAPITA
2009	21,619,470	2.66
2010	23,728,997	2.90
2011	26,275,774	3.17
2012	27,992,861	3.34
2013	28,864,590	3.41
2014	30,144,755	3.54
2015	29,941,881	3.49
2016	30,629,355	3.56
2017	31,266,750	3.63
2018	31,474,932	N/A

N/A = data not available

AVERAGE NUMBER OF CUSTOMERS BILLED BY THE SYSTEM

YEARS ENDED JUNE 30, 2009 - 2018

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Residential	758,940	759,850	760,760	761,700	761,400	762,300	758,300	758,500	759,200	759,550
Commercial & Industrial	75,060	75,150	75,240	74,300	74,100	74,000	76,300	75,800	75,500	75,700
TOTAL ACCOUNTS	**834,000**	**835,000**	**836,000**	**836,000**	**835,500**	**836,300**	**834,600**	**834,300**	**834,700**	**835,250**
Metered accounts	780,000	780,000	787,100	789,000	792,000	792,000	793,000	797,500	799,500	801,600
Percent metered	94%	93%	94%	94%	95%	95%	95%	96%	96%	96%

Sources: [1] Historical NYCMWFA official statements and
[2] DEP Bureau of Customer Service.

TEN LARGEST CUSTOMERS (IN THOUSANDS):

NAME	FISCAL 2018 BILLED
New York City Housing Authority	$202,308
The City of New York	111,300
Riverbay Corporation (Co-op City)	21,455
Consolidated Edison, Inc	20,512
Port Authority of New York and New Jersey	14,085
New York City Health and Hospital Corporation	12,871
New York Presbyterian Hospital	10,215
Columbia University	8,083
NYCT Subway	6,646
The City University of NY	6,354

DEMOGRAPHIC AND ECONOMIC INFORMATION

POPULATION - TEN YEAR TREND

YEAR	UNITED STATES	PERCENTAGE CHANGE FROM PRIOR PERIOD	CITY OF NEW YORK	PERCENTAGE CHANGE FROM PRIOR PERIOD
2008	304,093,966	0.95	8,068,195	0.68
2009	306,771,529	0.88	8,131,574	0.79
2010	309,338,421	0.84	8,193,703	0.76
2011	311,644,280	0.75	8,292,688	1.21
2012	313,993,272	0.75	8,383,504	1.10
2013	316,234,505	0.71	8,458,642	0.90
2014	318,622,525	0.76	8,521,135	0.74
2015	321,039,839	0.76	8,582,459	0.72
2016	323,405,935	0.74	8,615,426	0.38
2017	325,719,178	0.72	8,622,698	0.08

Source: U.S. Department of Commerce, Bureau of Economic Analysis. US Census Bureau

POPULATION - TEN YEAR TREND

	PERSONAL INCOME			PER CAPITA		
YEAR	UNITED STATES ($ BILLIONS)	CITY OF NEW YORK ($ BILLIONS)	NEW YORK CITY AS A PERCENTAGE OF THE UNITED STATES	UNITED STATES ($)	CITY OF NEW YORK ($)	NEW YORK CITY AS A PERCENTAGE OF THE UNITED STATES
2008	12,439	413.6	3.33	40,904	51,263	125.33
2009	12,051	406.9	3.38	39,284	50,044	127.39
2010	12,542	428.3	3.42	40,545	52,273	128.93
2011	13,315	460.0	3.45	42,727	55,468	129.82
2012	13,998	484.0	3.46	44,582	57,735	129.50
2013	14,176	498.8	3.52	44,826	58,966	131.54
2014	14,983	524.0	3.50	47,025	61,498	130.78
2015	15,712	547.7	3.49	48,940	63,815	130.39
2016	16,116	571.1	3.54	49,831	66,283	133.02
2017	16,820	611.2	3.63	51,640	70,879	137.26

Source: U.S. Department of Commerce, Bureau of Economic Analysis. Amounts as of November 15, 2018

UNEMPLOYMENT RATE - TEN YEAR TREND

YEAR	CITY OF NEW YORK	CHANGE FROM PRIOR PERIOD
2008	5.63%	0.61
2009	9.32	3.70
2010	9.54	0.22
2011	9.08	-0.46
2012	9.33	0.25
2013	8.82	-0.51
2014	7.24	-1.58
2015	5.68	-1.56
2016	5.18	-0.51
2017	4.55	-0.63

Source: NY State, Department of Labor.

EMPLOYMENT DISTRIBUTION - TEN YEAR TREND

Average Annual Employment (In thousands)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
GOODS PRODUCING SECTORS										
Construction	132.7	120.8	112.5	112.3	116.1	122.2	129.2	139.3	147.2	151.1
Manufacturing	95.6	81.6	76.3	75.7	76.3	76.4	76.6	77.8	76.1	73.1
SERVICE PRODUCING SECTORS										
Trade Transportation and Utilities	574.6	552.7	559.7	575.6	590.5	605.0	620.6	630.2	630.4	634.3
Information	169.5	165.2	165.9	170.8	175.7	179.2	185.0	189.0	192.6	197.1
Financial Activities	464.6	433.9	428.3	439.1	438.8	437.5	449.2	459.3	465.9	469.8
Professional and Business Services	603.4	569.2	575.3	597.5	619.3	642.9	669.0	700.0	722.3	742.3
Education and Health Services	736.3	752.6	771.6	789.2	805.6	831.1	866.4	896.9	928.7	963.4
Leisure and Hospitality	310.2	308.5	322.2	342.2	365.7	385.4	408.5	427.8	440.2	452.1
Other Services	160.8	160.3	160.6	165.2	170.4	174.9	180.2	185.7	190.1	191.5
TOTAL PRIVATE	3,247.7	3,144.7	3,172.5	3,267.5	3,358.5	3,454.5	3,584.7	3,705.9	3,793.5	3,874.7
Government	564.1	567	558	550.6	546.1	544.4	545.4	549.9	552.3	552.1
TOTAL	3,811.8	3,711.7	3,730.5	3,818.1	3,904.6	3,998.9	4,130.1	4,255.8	4,345.8	4,426.8

Source: NY State, Department of Labor. Data are presented using the North American Industry Classification System ("NAICS").

OPERATING INFORMATION

WATER POLLUTION CONTROL PLANTS DAILY FLOW

PLANT	DESIGN FLOW (MGD)[1]	12 MONTH AVG. (MGD)[1] JULY 16 - JULY 17	12 MONTH AVG. (MGD)[1] JULY 17 - JULY 18
Wards Island	275	206	201
North River	170	110	109
Hunts Point	200	130	138
26th Ward	85	46	47
Coney Island	110	91	93
Owls Head	120	95	93
Newtown Creek	310	215	211
Red Hook	60	28	30
Jamaica	100	78	78
Tallmans Island	80	57	58
Bowery Bay	150	105	102
Rockaway	45	18	18
Oakwood Beach	40	29	30
Port Richmond	60	25	26
TOTAL	1,805	1,233	1,234

[1] mgd=millions of gallons of water

WATER SYSTEM TUNNELS AND AQUEDUCTS LENGTH DIAMETER TRANSMISSION IN SERVICE

	CONNECTIONS	LENGTH (MILES)	DIAMETER (FEET)[1]	IN SERVICE DATE
TUNNELS UPSTATE				
Shandanken		18.1	11.5 x 10.25[1]	1924
West Delaware		44.0	11.33	1964
East Delaware		25.0	11.33	1955
Neversink		6.0	10	1954
AQUEDUCTS				
New Croton	New Croton to Gatehouse 1	24.0	3.5 x 13.6[1]	1893
	Gatehouse 1 to Shaft 33, including Branch Aqueduct	8.3	12.25-10.5[2]	1893
	Croton Water Treatment Plant (CWTP) Raw Water	0.2	12	2015
	CWTP Low-Level Service Treated Water	0.8	9	2015
	CWTP High-Level Service Treated Water	0.7	9	2015
Catskill	Ashokan to Kensico	75.0	17 x 17.5[1]	1915
	Kensico to Hillview	17.0	17 x 18[1]	1915
Delaware	Rondout to West Branch	44.2	13.5	1944
	West Branch to Kensico	27.2	15	1943
	Kensico to Hillview	13.6	19.5	1942
TUNNELS DOWNSTATE				
Tunnel 1	Hillview to Shaft 24	18.3	15-11[2]	1917
Tunnel 2	Hillview to Shaft 17A	19.3	17-15[2]	1936
Tunnel 3, Stage 1	Hillview to Shaft 15B	12.0	24-20[2]	1998
Tunnel 3, Stage 2	Shaft 13B to Manhattan Distribution	8.5	10	2013
Richmond Tunnel	Tunnel 2 to Staten Island Uptake Shaft	5.0	10	1970
Staten Island Siphon	Richmond Tunnel and Brooklyn Trunk Water Mains	2.0	6	2016

[1] Tunnels are not round

[2] Variable diameter tunnels

NUMBER OF EMPLOYEES - DEPARTMENT OF ENVIRONMENTAL PROTECTION - TEN YEAR TREND

YEAR	NUMBER OF EMPLOYEES	PERCENTAGE CHANGE FROM PRIOR PERIOD
2009	5,785	-1.87%
2010	5,749	-0.62
2011	5,653	-1.67
2012	5,564	-1.57
2013	5,567	0.05
2014	5,547	-0.36
2015	5,558	0.20
2016	5,720	2.91
2017	5,748	0.49
2018	5,849	1.76

NEW YORK CITY
WATER AND SEWER SYSTEM

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