Pittsburgh Water and Sewer Authority

Single Audit

2019

MaherDuessel

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PITTSBURGH WATER AND SEWER AUTHORITY

YEARS ENDED DECEMBER 31, 2019 AND 2018

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YEARS ENDED DECEMBER 31, 2019 AND 2018

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Independent Auditor's Report

Board of Directors
Pittsburgh Water and
Sewer Authority

Report on the Financial Statements

We have audited the accompanying financial statements of the Pittsburgh Water and Sewer Authority (Authority), a component unit of the City of Pittsburgh (City), Pennsylvania, as of and for the years ended December 31, 2019 and 2018, and the related notes to the financial statements, which collectively comprise the Authority's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

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

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Authority as of December 31, 2019 and 2018, and the changes in financial position and cash flows thereof for the years then ended in accordance with accounting principles generally accepted in the United States of America.

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

Supplementary Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Authority's basic financial statements. The combining statements of net position and revenue, expenses, and changes in net position (combining statements) are presented for purposes of additional analysis and are not a required part of the basic financial statements. The schedule of expenditures of federal awards is presented for purposes of additional analysis as required by Title 2 U.S. *Code of Federal Regulations* (CFR) Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*, and is also not a required part of the basic financial statements.

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

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated April 17, 2020 on our consideration of the Authority's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Authority's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Authority's internal control over financial reporting and compliance.

Maher Duessel

Pittsburgh, Pennsylvania
April 17, 2020

PITTSBURGH WATER AND SEWER AUTHORITY
2019 Financial Statements
Management's Discussion and Analysis

The Pittsburgh Water and Sewer Authority (Authority) comparative 2019 and 2018 fiscal year financial statements enclosed have been conformed to meet the requirements of Governmental Accounting Standards Board (GASB) Statement No. 34, *"Basic Financial Statements – and Management's Discussion and Analysis – for State and Local Governments."* The financial statements incorporate three basic statements: The Statements of Net Position, the Statements of Revenues, Expenses, and Changes in Net Position, and the Statements of Cash Flows.

This Management's Discussion and Analysis (MD&A) is based upon facts, decisions, and conditions known as of the date of the audit report. Please note that the historical information provided in the financial statements and MD&A reflects the results of past operations and is not necessarily indicative of results of future operations. Future operations will be affected by various factors, including, but not limited to, regulatory mandates, rate changes, weather, labor contracts, population changes, business environment and other matters, the nature and effect of which cannot now be determined.

Using This Financial Report – Overview of Reporting Changes

The Statements of Net Position present information about the resources which are available to the Authority and claims against these resources. Both assets and liabilities are classified in a format which segregates current from noncurrent. In addition, assets available for special purposes – labeled "restricted assets" - are segregated from those assets available for operations. The Authority's restricted assets represent money on deposit with the bond trustee to meet indenture, debt service, and construction program requirements. Liabilities have a similar classification segregating claims on restricted assets from claims on assets available for operations. The net position section of the Statements of Net Position classifies the total net position as net investment in capital assets, restricted, and unrestricted.

The Statements of Revenues, Expenses, and Changes in Net Position summarize operating and non-operating activity for the fiscal year and the resulting impact on the Authority's net position.

The Statements of Revenues, Expenses, and Changes in Net Position include wastewater treatment revenues and expenses for services provided by the Allegheny County Sanitary Authority (ALCOSAN). There are no outstanding bond issues associated directly or indirectly with wastewater revenue streams.

The Statements of Cash Flows have been prepared using the direct method. The statements provide an analysis of the Authority's cash by operating, investing, and capital and related financing activities over the respective fiscal year.

Financial Highlights 2019 and 2018

In 2019, operating income increased by 6.7% or $4.1 million to $65.8 million. The Authority realized an overall net income of $5.9 million, a result of increases in operating revenues being greater than increases in operating expenses combined with increases in non-operating expenses.

Below are the 2019 financial highlights:

Total operating revenues in 2019 were up $17.3 million or 7.5% to $249.0 million when compared to 2018. Wastewater treatment revenues increased by $3.7 million, attributable to ALCOSAN's rate increase being offset by decreases in consumption. Water and sewer conveyance revenues increased $12.2 million from 2018, attributable to rate increases by the Authority, offset by decreases in consumption. Other operating income increased by $1.4 million from 2018, attributable to the sum of various miscellaneous payments.

Total net non-operating revenues (expenses) changed by $19.9 million from 2018 to a net expense of $37.6 million in 2019 compared to a net expense of $17.7 million in 2018. This increase in expenses is attributable to higher interest and amortization, $2.4 million in bond issuance costs in 2019 compared to no bond issuance cost in 2018, an investment loss of $4.2 million from the change in swap fair market value, a decrease in donated property of $13.5 million from 2018 to 2019, and grant revenue of $6.9 million in 2019 compared to no grant revenue in 2018.

Total operating expenses increased in 2019 to $183.2 million compared to $170.1 million in 2018. Significant operating expenses included the following factors:

- Salary and employee benefit expenses were up $4.1 million or 16.6%. The increase is attributed to an average salary rate increase of 3% and increased employee headcount in 2019.

  The majority of Authority employees are represented by one of three labor unions. The Pittsburgh Joint Collective Bargaining Committee (PJCBC) represents blue-collar employees. The American Federation of State, County and Municipal Employees (AFSCME) represents Local 2719 employees and Local 2037. A new four-year agreement with AFSCME became effective January 1, 2017 and will expire December 31, 2020. A new four-year agreement with the PJCBC became effective January 1, 2017 and expires December 31, 2020.

- Sewage Treatment expense (paid to ALCOSAN) increased by $0.6 million to $72.4 million in 2019 from $71.8 million in 2018. This is attributable to ALCOSAN'S rate increase offset by decreased consumption.

- Most direct operating cost categories increased from 2018 to 2019, in many cases, due to planned spending to result in more investment in the system than the Authority has done in the past. A breakdown by category is as follows:

  - Chemical expenses increased 17.3% or $0.6 million from 2018 to $4.5 million in 2019, attributable to the addition of orthophosphate usage and increased ferric chloride pricing and utilization.
  - Equipment expenses increased 109% or $0.82 million from 2018 to $1.57 million in 2019, attributable to various machinery and equipment purchases under capitalization thresholds.
  - Material expenses increased 10.9% or $0.05 million from 2018 to $0.5 million in 2019.
  - Operating Contract expenses increased by 3.8% or $0.4 million from 2018 to $11.3 million in 2019.
  - Repair and Maintenance expenses increased by 23.8% or $1.9 million from 2018 to $9.7 million in 2019, attributable to increased spending for repairs to facilities, as well as an increase in surface restoration costs.
  - Miscellaneous Direct Operating expenses increased by 58.6% or $0.4 million from 2018 to $1.0 million in 2019, attributable to increased testing.
  - Inventory expense increased by 38.2% or $0.6 million from 2018 to $2.0 million in 2019, a function of overall increased work.
  - Administrative Fee expenses increased by 25.3% or $0.2 million from 2018 to $1.0 million in 2019, mainly attributable to increased credit card fees.
  - Freight and Postage expenses increased by 58.2% or $0.2 million from 2018 to $0.7 million in 2019, attributable to increased postage costs.
  - Lease and Rent expenses increased by 44.2% or $0.4 million to $1.2 million in 2019, attributable to additional office space and increased equipment rental.
  - Professional Service expenses increased by 23.8% or $3.4 million from 2018 to $17.6 million in 2019, attributable mainly to increased non-capital engineering spending of $2.8 million, and an accrual for $0.6 in payments owed to the City of Pittsburgh for the next ten years relating to Addison Terrace.
  - Supply expenses increased by 62.9% or $0.2 million from 2018 to $0.6 million in 2019, mainly attributable to the increased ground and maintenance supply purchasing.
  - Travel and Training expenses increased by 138.2% or $0.1 million from 2018 to $0.2 million in 2019, attributable to increased training for staff.

- Utility expenses decreased by 1.8% or $0.1 million from 2018 to $4.9 million in 2019.
- Miscellaneous Administrative expenses increased by 433% or $3.4 million from 2018 to $4.2 million in 2019, mainly attributable to a sizeable increase in bad debt expense offset by a sizeable decrease in inventory adjustments from the prior year. In 2018, there was a credit to bad debt expense, a result of a conservative approach to calculating necessary uncollectible reserves in 2017 for customer accounts with significant balances. Efforts of the collection team in 2018 resulted in these accounts either being paid down or adjusted, which ultimately resulted in a lower allowance for uncollectible accounts and a credit to bad debt expense. The same conservative approach to calculating the reserve has been used in subsequent years, including 2019; however, the large balances that existed in 2017, which were collected or adjusted in 2018 were no longer a factor in the 2019 calculation, which resulted in a more typical expense, in line with typical Authority collection percentages. In 2018, there was a large, one-time inventory write-off as a result of procedural reviews and reconciliations to correct balances that built up over multiple years. The 2019 adjustment was one-year worth of typical adjustments.

- Reimbursements for City of Pittsburgh services dropped by 59.5% or $2.9 million from $4.9 million in 2018 to $2.0 million in 2019, the decrease being attributable to credits related to the City receiving State Pension Aid for all enrolled Authority employees. The expense of water provided to other entities, mainly comprised of subsidy payments to Pennsylvania American Water Company (PAWC) decreased by 64.9% or $2.5 million to $1.3 million in 2019 compared to $3.8 million in 2018, a result of the Authority's rate increase.

Interest expense increased 12.7% or $4.4 million to $38.7 million in 2019 compared to $34.4 million in 2018. This change is attributable to increased interest payments on borrowings to fund capital projects.

In 2019, the Authority expended $22.3 million replacing private lead lines.

In 2019, cash collections increased by $11.6 million, with $244.7 million collected from billings compared to $233.1 million in 2018 due to rate increases by both the Authority and ALCOSAN.

Other 2019 highlights include:

- As a result of the Authority's initial rate case settlement with the Pennsylvania Public Utility Commission, the Authority's contract with Jordan Tax Service, Inc. (JTS) was terminated effective June 30, 2019.

- Accounts Receivable for Billed Wastewater Treatment decreased by $4.9 million from $7.0 million in 2018 to $2.1 million in 2019. The biggest contributing factor to this decrease was a $2.3 million dollar adjustment to the City of Pittsburgh accounts for Sewage Treatment balances. Instead of a cash payment, the Authority applied a $2.3 million credit to the reimbursement payment that they made to the City of Pittsburgh at the end of 2019 and made an adjustment to accounts receivable. Other factors impacting this decrease include payment plans set up in prior years being paid off in 2019 and other collections and adjustments applied to the older debt.

- Debt service coverage was 1.58 in 2019 and 1.71 in 2018. These coverage factors exceed the 1.25 coverage ratio required under the bond indenture in 2019, and the 1.2 coverage ratio required under the bond indenture in 2018.

- The Authority expended $107.9 million on capital projects in 2019, an increase of $38.7 million, or approximately 56% over the $69.2 million expended in 2018. $83.4 million of the capital expenditures spent in 2019 were funded by the revolving line of credit, and $24.5 million were funded by PENNVEST as part of the 2019 Lead Service Line Replacement funding award. Of the $24.5 million funded by PENNVEST, $17.7 million was a loan, and $6.8 million was a grant. It is anticipated that the Authority will spend the remaining amount of the PENNVEST funding award in 2020.

- In July 2016, the Authority entered into a drawdown, revolving line of credit financing with JPMorgan Chase Bank N.A. The maximum amount that could be drawn and outstanding at any one time was $80.0 million and has an initial term of four years. In September 2018, the maximum draw amount was increased from $80.0 million to $150.0 million. The Authority utilizes funds borrowed under this vehicle to finance capital projects. As of December 31, 2019, the Authority has drawn $62.5 million on this facility.

- In August 2018, the Authority entered into a drawdown, revolving line of credit with PNC Bank, National Association, to provide additional liquidity that can be used for operating expenses. The maximum amount that can be drawn and outstanding at any one time is $20.0 million with a one-year term. The drawdown, revolving line of credit expired in August 2019 and was not renewed or replaced. No drawdowns ever occurred on this facility.

- As a result of the December 2017 bond refunding activity, a modernized bond indenture sprung into effect on December 28, 2017. The new indenture establishes an improved rate covenant calculation applicable to the 2019 financials, which will be viewed more favorably by rating agencies and credit providers. The modernized indenture and rate covenant will allow the Authority additional financing opportunities and a lower cost of capital, supporting a larger capital spending plan.

- In March 2019, the Authority closed on a funding award from PENNVEST for the purpose of financing the 2019 Lead Service Line Replacement program. The funding offered to the Authority consists of $13.7 million in grants and a $35.4 million loan at an interest rate of 1% for a total funding award of $49.1 million. The award will fund the replacement of approximately 3,400 public lead service lines and 3,400 associated private lead lines in 2019. Replacement locations will be focused in neighborhoods with a likelihood of at-risk populations, like children with high blood lead levels, pregnant mothers, and young children.

- In July 2019, the Authority issued $109.0 million (fixed-rate) Series A First Lien Water and Sewer Revenue Bonds and $104.3 million (fixed-rate) Series B Subordinate Water and Sewer Revenue Bonds. The proceeds from the Series A of 2019 Bonds were used to pay down the balance of the drawdown, revolving line of credit used to finance capital projects. The proceeds from the Series B of 2019 were used to refund the Series C-1 and C-2 of 2008 Water and Sewer System Revenue Bonds and terminate the associated swaps. The cost to terminate the swaps was $27.6 million, of which $5.7 million was funded with a cash contribution. The refunding was completed to reduce the Authority's exposure from the risks associated with swaps.

- HB 1490 was passed into law in December 2017. HB 1490 establishes the Authority as a "Utility" as defined by the Public Utility Code, resulting in Public Utility Commission (PUC) regulation of the Authority's rate making, its operating effectiveness, debt issuances, and other aspects of conducting its business similar to the way the PUC regulates investor-owned utilities. Effective April 1, 2018, the PUC began oversight of the Authority. PUC oversight requires compliance and conformity with their established regulations regarding administration, finances, operations, reporting, capital expenditures, and customer service for water and wastewater utilities. The PUC now approves all PWSA rates and fees through tariff filings.

- The City of Pittsburgh is the largest of the 83 municipalities that convey raw sewage to ALCOSAN for treatment. On January 29, 2004, the Authority and the City of Pittsburgh executed a Consent Order and Agreement (Order) regarding sanitary and combined sewer overflows within the City of Pittsburgh. The other signatories to the Order are the Pennsylvania Department of Environmental Protection (DEP) and the Allegheny County Health Department, which executed the Order on April 21, 2004. The Long-Term Control Plan to address combined and sanitary sewer overflows required under the order was submitted on schedule on July 31, 2013. Due to the complexities of regional governance, the Authority's regulatory body was switched from the DEP to the US Environmental Protection Agency (EPA). On January 21, 2016, the EPA issued a Clean Water Act Section 308 Information Request (308 Request) to the Authority. The request is meant to provide a jurisdictional basis for EPA to engage the Authority and the City of Pittsburgh in enforcement action by consent. The Authority intends that through such an action, it can more fully participate in the implementation of interim regional wet weather activities, controls, and improvements. The action will also permit the Authority and the City of Pittsburgh to participate more fully in the identification and implementation of any final wet weather control measures for the region. The Authority fulfilled the first portion of the 308 Request, the assessment and modeling of the sewer system, by the due date of March 31, 2016. The second phase of the 308 Request was fulfilled by the completion of a source reduction study, which was submitted on December 1, 2016. and the construction of Green Infrastructure (GI) Demonstration projects and submission of project performance evaluations were completed by December 1, 2017. The Authority continues to implement neighborhood Green Infrastructure based stormwater abatement projects to mitigate Combined Sewer Overflows. The Authority anticipates a new Consent Order negotiation related to Combined Sewer Overflows with the USEPA at some point in the future.

The 308 Request does not contain fines or penalties for past non-compliance but does propose binding obligations for work on a going forward basis. The Authority continues to meet the requirements of the 308 Request. The Final Consent Order will be adjudicated between the City, the Authority, and the USEPA to establish the extent of improvements that will be required to be complete within a specified time frame. Based upon initial discussions with the regulators, the Authority anticipates that the final recommendations implementation plan will be modified to assure its affordability to the Authority's rate payers. See Note 14 – Consent Agreement for additional details.

Financial Highlights 2018 and 2017

In 2018, operating income increased by 108.3% or $32.1 million to $61.7 million. The Authority realized an overall net income of $39.5 million due to increases in operating revenues, decreases in operating expenses and decreases in non-operating expenses, up from a $6.3 million net loss in 2017.

Below are the 2018 financial highlights:

Total operating revenues in 2018 were up $28.7 million or 14.1% to $231.7 million when compared to 2017. Wastewater treatment revenues decreased by $1.7 million, attributable to ALCOSAN's rate increase being offset by decreases in consumption and adjustments. Water and sewer conveyance revenues increased $31.0 million from 2017, attributable to rate increases by the Authority. Other operating income decreased by $0.6 million from 2017, attributable to the sum of various miscellaneous payments.

Total non-operating revenues (expenses) decreased by $18.2 million from 2017, largely impacted by $13.6 million in donated property revenue as well as bond issuance costs dropping to zero in 2018 compared to $3.9 million in 2017, from $35.9 million in 2017 to $17.7 million in 2018.

Total operating expenses decreased in 2018 to $170.1 million compared to $173.4 million in 2017. Significant operating expenses included the following factors:

- Salary and employee benefit expenses were up $3.1 million or 14.3%. The increase is attributed to an average salary rate increase of 2%, and increased employee headcount in 2018. Part of this increase is offset by a decrease in professional service expense.

  The majority of Authority employees are represented by one of three labor unions. The Pittsburgh Joint Collective Bargaining Committee (PJCBC) represents blue-collar employees. The

American Federation of State, County and Municipal Employees (AFSCME) represents Local 2719 employees and Local 2037. A new four-year agreement with AFSCME became effective January 1, 2017 and will expire December 31, 2020. A new four-year agreement with the PJCBC became effective January 1, 2017 and expires December 31, 2020.

- Expenses stayed relatively flat from 2017 to 2018 for multiple cost categories, including chemicals, equipment, materials, inventory, utilities, and overall administrative expenses.

- There were cost categories that decreased significantly from 2017 to 2018, in many cases due to one-time expenses that occurred in 2017. The sewage treatment expense (paid to ALCOSAN) dropped by $3.3 million from $75.1 million in 2017 to $71.8 million in 2018. In addition to net changes in consumption, this is also attributable to the net of catch up billings in 2017 and adjustment made in 2018. Equipment rentals dropped by $0.8 million from 2017, when there was a one-time emergency rental. Engineering related professional services decreased $1.7 million from 2017, as positions once filled by consultants in 2017 became filled by Authority employees in 2018. Bad debt expense decreased by $7.7 million from $4.2 million in 2017 to a $3.5 million credit in 2018. The large swing in bad debt expense is attributable to a conservative approach to calculating necessary uncollectible reserves in 2017 for customer accounts with significant balances. Efforts of the collection team in 2018 resulted in these accounts either being paid down or adjusted, which ultimately resulted in a lower allowance for uncollectible accounts and a credit to bad debt expense.

- In 2018, large inventory adjustments and write-offs totaling $3.1 million were booked as a result of procedural reviews and reconciliations to ensure that inventory reporting was accurate. Other significant non-salary direct operating expense increases from 2017 to 2018 include surface restoration costs, which increased by $1.9 million, and urgent water and sewer repairs, which increased by $1.0 million. Administrative expenses that increased from 2017 to 2018 include legal expenses, which increased by $1.0 million, a result of regulatory costs, and claims, which increased by $0.6 million, mainly attributable to accrued contingencies for legal settlements.

- Reimbursements for City of Pittsburgh services dropped by 8.4% or $0.5 million from $5.4 million in 2017 to $4.9 million in 2018, as the calculation for this payment switched from a lump sum basis to a transactional basis. The expense of water provided to other entities, mainly comprised of subsidy payments to Pennsylvania American Water Company (PAWC) decreased by 31.8% or $1.8 million to $3.8 million in 2018 compared to $5.6 million in 2017.

Interest expense decreased 1.6% or $0.5 million to $34.4 million in 2018 compared to $34.9 million in 2017. This drop is attributable to the net effect of increased interest payments on borrowings to fund capital projects offset by the Authority no longer having costs associated with credit and remarketing of variable rate debt, a result of the December 2017 refunding, which changed the debt structure.

In 2018, the Authority expended $4.5 million replacing private lead lines.

In 2018, cash collections increased by $43.0 million, with $233.1 million collected from billings compared to $190.1 million in 2017 due to rate increases by both the Authority and ALCOSAN.

Other 2018 highlights include:

- The Authority continued its relationship with Jordan Tax Service, Inc. (JTS) as its Collector and the law firm of Goehring, Rutter & Boehm, P.C. as Special Legal Counsel for the collection of delinquent water, sewer, and sewage treatment charges. The agreement calls for a collection commission, plus other administrative and legal proceeding costs, to be added to all Authority delinquent claims not paid within 90 days of the initial billing date. If fully collected, the Authority stands to collect 100% of delinquent balances without incurring a collection agency fee. JTS collected for the Authority $1.5 million during 2018.

- Debt service coverage was 1.71 in 2018 and 1.29 in 2017. These coverage factors exceed the 1.2 coverage ratio required under the bond indenture.

- The Authority expended $69.2 million on capital projects in 2018, an increase of $37.2 million or approximately 116% over the $32.0 million expended in 2017. All capital expenditures in 2018 were funded by the revolving line of credit, which was put in place in July 2016. Pennvest funding was not utilized in 2018. However, in October 2018, the PENNVEST Board approved a funding award of $49.1 million to be used for the replacement of both public and private lead service lines. The award is made up of a $13.6 million grant and $35.4 million one percent interest loan. The state funding award, the largest ever granted to the Authority, will fund the replacement of approximately 3,400 public lead service lines and 3,400 associated private lead lines in 2019. Replacement locations will be focused in neighborhoods with a likelihood of at-risk populations, like pregnant mothers and young children. The Authority will close on this funding award in 2019.

- In July 2016, the Authority entered into a drawdown, revolving line of credit financing with JPMorgan Chase Bank N.A. The maximum amount that could be drawn and outstanding at any one time was $80.0 million and has an initial term of four years. In September 2018, the maximum draw amount was increased from $80.0 million to $150.0 million. The Authority utilizes funds borrowed under this vehicle to finance capital projects. As of December 31, 2018, the Authority has drawn $113.0 million on this facility.

- In August 2018, the Authority entered into a drawdown, revolving line of credit with PNC Bank, National Association. The maximum amount that can be drawn and outstanding at any one time is $20.0 million and has a term of one year. The line of credit provides additional liquidity that can be used for operating expenses. No drawdowns have ever occurred on this facility. As of December 31, 2018, the Authority has drawn $0.0 million on this facility.

- As a result of the December 2017 bond refunding activity, a modernized bond indenture sprung into effect on December 28, 2017. The new indenture establishes an improved rate covenant calculation applicable to the 2019 financials, which will be viewed more favorably by rating agencies and credit providers. The modernized indenture and rate covenant will allow the Authority additional financing opportunities and a lower cost of capital, supporting a larger capital spending plan.

- HB 1490 was passed into law in December 2017. HB 1490 establishes the Authority as a “Utility” as defined by the Public Utility Code, resulting in Public Utility Commission (PUC) regulation of the Authority’s rate making, its operating effectiveness, debt issuances, and other aspects of conducting its business similar to the way the PUC regulates investor-owned utilities. Effective April 1, 2018, the PUC began oversight of the Authority. PUC oversight requires compliance and conformity with their established regulations regarding administration, finances, operations, reporting, capital expenditures, and customer service for water and wastewater utilities. The PUC now approves all PWSA rates and fees through tariff filings.

- The City of Pittsburgh is the largest of the 83 municipalities that convey raw sewage to ALCOSAN for treatment. In January 2004, the Authority and the City of Pittsburgh executed a Consent Order and Agreement (Order) regarding sanitary and combined sewer overflows within the City of Pittsburgh. The other signatories to the Order are the Pennsylvania Department of Environmental Protection (DEP) and Allegheny County Health Department, which executed the Order on April 21, 2004. The Long-Term Control Plan to address combined and sanitary sewer overflows required under the order was submitted on schedule on July 31, 2013. Due to the complexities of regional governance, the Authority’s regulatory body was switched from the DEP to the US Environmental Protection Agency (EPA). On January 21, 2016, the EPA issued a Clean Water Act Section 308 Information Request (308 Request) to the Authority. The request is meant to provide a jurisdictional basis for EPA to engage the Authority and the City of Pittsburgh in an enforcement action by consent. The Authority intends that through such an action, it can more fully participate in the implementation of interim regional wet weather activities, controls, and improvements. The action will also permit the Authority and the City of Pittsburgh to participate more fully in the identification and implementation of any final wet weather control measures for the region. The Authority has fulfilled the first portion of the 308 Request, which was due on March 31, 2016. The second phase of the 308 Request supplied a source reduction study, which was submitted on December 1, 2016 and GI Demonstration projects must be constructed and performance evaluations completed by December 1, 2017. The demonstration project evaluations were submitted on time on December 1, 2017.

The 308 Request does not contain fines or penalties for past non-compliance, but does propose binding obligations for work on a going forward basis. The Authority continues to meet the requirements of the 308 Request. The Final Consent Order will be adjudicated between the City, the Authority, and the USEPA to establish the extent of improvements that will be required to be complete within a specified time frame. Based upon initial discussions with the regulators, the Authority anticipates that the final recommendations implementation plan will be modified to assure its affordability to the Authority's rate payers. See Note 14 – Consent Agreement for additional details.

CONDENSED FINANCIAL STATEMENTS

CONDENSED STATEMENTS OF NET POSITION

(Dollars expressed in thousands)

	December 31,		Variance	
	2019	2018	Dollars	%
Capital assets:				
Producing assets	$ 695,291	$ 618,177	$ 77,114	12.47%
Construction in progress	135,287	139,303	(4,016)	-2.88%
Hedging derivative - interest rate swap	-	4,750	(4,750)	0.00%
Restricted assets	25,964	23,326	2,638	11.31%
Current assets	91,392	78,787	12,605	16.00%
Total Assets	**947,934**	**864,343**	**83,591**	9.67%
Deferred Outflows of Resources	112,363	103,291	9,072	8.78%
Liabilities:				
Current liabilities	79,366	69,662	9,704	13.93%
Long-term liabilities	979,396	897,581	81,815	9.12%
Total Liabilities	1,058,762	967,243	91,519	9.46%
Deferred Inflows of Resources	-	4,750	(4,750)	0.00%
Net Position:				
Net investment in capital assets	(15,365)	(14,892)	(473)	3.18%
Restricted	19,320	16,388	2,932	17.89%
Unrestricted	(2,420)	(5,855)	3,435	-58.67%
Total Net Position	**$ 1,535**	**$ (4,359)**	**$ 5,894**	**-135.21%**

CONDENSED STATEMENTS OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION
(Dollars expressed in thousands)

	Year Ended December 31,		Variance	
	2019	2018	Dollars	%
			Increase (Decrease)	
Operating revenues	$ 249,049	$ 231,734	$ 17,315	7.47%
Operating expenses:				
Direct operating	89,512	72,633	16,879	23.24%
Wastewater treatment	72,389	71,822	567	0.79%
Reimbursement for City of Pittsburgh services	1,991	4,911	(2,920)	-59.46%
Subsidy of non-customer City residents	1,338	3,814	(2,476)	-64.92%
Depreciation	18,011	16,894	1,117	6.61%
Total Operating Expenses	**183,241**	**170,074**	**13,167**	**7.74%**
Operating income	65,808	61,660	4,148	6.73%
Non-operating revenues (expenses):				
Federal and private grants	6,922	-	6,922	0.00%
Donated property	110	13,649	(13,539)	-99.19%
Interest revenue	719	469	250	53.30%
Interest expense and other	(45,382)	(31,823)	(13,559)	42.61%
Total Non-operating Revenues (Expenses)	(37,631)	(17,705)	(19,926)	112.54%
Special item: private lead line replacement	(22,283)	(4,478)	(17,805)	397.61%
Total Special Items	(22,283)	(4,478)	(17,805)	397.61%
Net Income/(Loss)	$ 5,894	$ 39,477	$ (33,583)	-85.07%

Financial Condition 2019 and 2018

The Authority's financial condition in 2019 remained stable for a seventeenth consecutive year. Water utility revenues increased to $171.7 million from $159.5 million. The rate increase effective March 1, 2019 had a positive impact on utility revenue and unrestricted cash. Total cash and cash equivalents stood at $64.7 million at year-end 2019. Investment interest rates remain near historic lows, impacting the return on reserves invested.

CONDENSED FINANCIAL STATEMENTS

CONDENSED STATEMENTS OF NET POSITION

(Dollars expressed in thousands)

	December 31,		Variance	
	2018	2017	Dollars	%
Capital assets:				
Producing assets	$ 618,177	$ 589,567	$ 28,610	4.85%
Construction in progress	139,303	100,240	39,063	38.97%
Hedging derivative - interest rate swap	4,750	-	4,750	0.00%
Restricted assets	23,326	29,948	(6,622)	-22.11%
Current assets	78,787	46,417	32,370	69.74%
Total Assets	**864,343**	**766,172**	**98,171**	12.81%
Deferred Outflows of Resources	103,291	113,605	(10,314)	-9.08%
Liabilities:				
Current liabilities	69,662	62,962	6,700	10.64%
Long-term liabilities	897,581	860,651	36,930	4.29%
Total Liabilities	967,243	923,613	43,630	4.72%
Deferred Inflows of Resources	4,750	-	4,750	0.00%
Net Position:				
Net investment in capital assets	(14,892)	(29,609)	14,717	-49.70%
Restricted	16,388	13,240	3,148	23.78%
Unrestricted	(5,855)	(27,467)	21,612	-78.68%
Total Net Position	**$ (4,359)**	**$ (43,836)**	**$ 39,477**	**-90.06%**

CONDENSED STATEMENTS OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION
(Dollars expressed in thousands)

	Year Ended December 31,		Variance	
	2018	2017	Dollars	%
			Increase (Decrease)	
Operating revenues	$ 231,734	$ 202,996	$ 28,738	14.16%
Operating expenses:				
Direct operating	72,633	71,156	1,477	2.08%
Wastewater treatment	71,822	75,107	(3,285)	-4.37%
Reimbursement for City of Pittsburgh services	4,911	5,363	(452)	-8.43%
Subsidy of non-customer City residents	3,814	5,594	(1,780)	-31.82%
Depreciation	16,894	16,172	722	4.46%
Total Operating Expenses	**170,074**	**173,392**	**(3,318)**	**-1.91%**
Operating income	61,660	29,604	32,056	108.28%
Non-operating revenues (expenses):				
Donated property	13,649	1,595	12,054	755.74%
Interest revenue	469	460	9	1.96%
Interest expense and other	(31,823)	(37,972)	6,149	-16.19%
Total Non-operating Revenues (Expenses)	(17,705)	(35,917)	18,212	-50.71%
Special item: private lead line replacement	(4,478)	-	(4,478)	0.00%
Total Special Items	(4,478)	-	(4,478)	0.00%
Net Income/(Loss)	$ 39,477	$ (6,313)	$ 45,790	-725.33%

Financial Condition 2018 and 2017

The Authority's financial condition in 2018 remained stable for a sixteenth consecutive year. Water utility revenues increased to $159.5 million from $128.5 million. The rate increase effective March 1, 2019 should have a positive impact on utility revenue and unrestricted cash. Total cash and cash equivalents stood at $46.9 million at year-end 2018. Investment interest rates remain near historic lows, impacting the return on reserves invested.

Requests for Information

This financial report is designed to provide a general overview of the Authority's finances for all those with an interest in its finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Executive Director, Penn Liberty Plaza I, 1200 Penn Ave., Pittsburgh, PA 15222.

PITTSBURGH WATER AND SEWER AUTHORITY

STATEMENTS OF NET POSITION

(Dollars expressed in thousands)

DECEMBER 31, 2019 AND 2018

	2019	2018
Assets		
Current assets:		
Cash and cash equivalents	$ 64,680	$ 46,920
Accounts receivable, net:		
Water:		
Billed	7,138	8,537
Unbilled	8,965	8,583
Total water	16,103	17,120
Wastewater treatment:		
Billed	2,130	7,014
Unbilled	3,725	3,719
Total wastewater treatment	5,855	10,733
Other receivables	2,450	1,510
Total accounts receivable, net	24,408	29,363
Prepaid expenses	707	520
Inventory	1,597	1,984
Total current assets	91,392	78,787
Noncurrent assets:		
Restricted assets:		
Cash and cash equivalents	16,360	13,970
Investments	9,604	9,356
Total restricted assets	25,964	23,326
Hedging derivative - interest rate swap	-	4,750
Capital assets, not being depreciated	135,287	139,303
Capital assets, net of accumulated depreciation	695,291	618,177
Total noncurrent assets	856,542	785,556
Total Assets	947,934	864,343
Deferred Outflows of Resources		
Deferred charge on refunding	99,012	102,534
Accumulated decrease in fair value of hedging derivatives	13,351	757
Total Deferred Outflows of Resources	112,363	103,291

(Continued)

The notes to financial statements are an integral part of this statement.

PITTSBURGH WATER AND SEWER AUTHORITY

STATEMENTS OF NET POSITION

(Dollars expressed in thousands)

DECEMBER 31, 2019 AND 2018

(Continued)

	2019	2018
Liabilities		
Current liabilities:		
Bonds and loans payable	27,022	23,400
Accrued payroll and related obligations	989	1,373
Accounts payable wastewater treatment	19,017	19,349
Accounts payable and other accrued expenses	22,720	20,911
Accrued interest payable from restricted assets	9,618	4,629
Total current liabilities	79,366	69,662
Noncurrent liabilities:		
Unearned revenue	121	143
Accrued payroll and related obligations	621	558
Swap liability	13,351	13,254
Bonds and loans payable, net	965,303	883,626
Total noncurrent liabilities	979,396	897,581
Total Liabilities	1,058,762	967,243
Deferred Inflows of Resources		
Accumulated increase in fair value of hedging derivatives	-	4,750
Net Position		
Net investment in capital assets	(15,365)	(14,892)
Restricted	19,320	16,388
Unrestricted	(2,420)	(5,855)
Total Net Position	$ 1,535	$ (4,359)

(Concluded)

The notes to financial statements are an integral part of this statement.

PITTSBURGH WATER AND SEWER AUTHORITY

STATEMENTS OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION

(Dollars expressed in thousands)

YEARS ENDED DECEMBER 31, 2019 AND 2018

	2019	2018
Operating Revenues:		
Residential, commercial, and industrial water sales	$ 171,681	$ 159,506
Wastewater treatment	70,970	67,261
Other	6,398	4,967
Total operating revenues	249,049	231,734
Operating Expenses:		
Direct operating expenses	89,512	72,633
Wastewater treatment	72,389	71,822
Reimbursement for City of Pittsburgh services	1,991	4,911
Expense of water provided by other entities:		
Subsidy of customers located in the City	1,338	3,814
Depreciation	18,011	16,894
Total operating expenses	183,241	170,074
Operating Income	65,808	61,660
Non-operating Revenues (Expenses):		
Federal and private grants	6,922	-
Donated property	110	13,649
Interest revenue	719	469
Investment income (loss) - change in fair value of swap	(4,180)	2,542
Interest and amortization	(38,740)	(34,365)
Bond issuance costs	(2,462)	-
Total non-operating revenues (expenses)	(37,631)	(17,705)
Net Income before Special Item	28,177	43,955
Special Item:		
Private lead line replacement	(22,283)	(4,478)
Net Income	5,894	39,477
Net Position:		
Beginning of year	(4,359)	(43,836)
End of year	$ 1,535	$ (4,359)

The notes to financial statements are an integral part of this statement.

PITTSBURGH WATER AND SEWER AUTHORITY

STATEMENTS OF CASH FLOWS

(Dollars expressed in thousands)

YEARS ENDED DECEMBER 31, 2019 AND 2018

	2019	2018
Cash Flows From Operating Activities:		
Cash received from customers	$ 252,010	$ 236,767
Cash paid to suppliers and employees and customer refunds	(84,867)	(68,688)
Cash paid to City of Pittsburgh for reimbursement of services	(1,991)	(4,911)
Cash paid to other water companies for subsidy of customers located in the City of Pittsburgh	(1,338)	(3,814)
Cash paid to ALCOSAN for wastewater treatment	(72,721)	(70,336)
Net cash provided by (used in) operating activities	91,093	89,018
Cash Flows From Investing Activities:		
Purchase of investment securities	(77,528)	(92,905)
Proceeds from sale and maturities of investment securities	76,561	94,036
Interest income	719	469
Net cash provided by (used in) investing activities	(248)	1,600
Cash Flows From Capital and Related Financing Activities:		
Purchase/construction of property, plant, and equipment	(91,137)	(70,918)
Grant proceeds	5,937	-
Private lead line replacements	(22,283)	(4,478)
Proceeds from issuance of bonds	259,235	-
Proceeds from revolving line of credit	80,700	69,200
Proceeds from Pennvest Loans	15,323	-
Payment to refunding bond escrow agent	(103,660)	-
Payment made for bond issuance costs	(2,462)	-
Principal payments on debt	(23,140)	(24,603)
Principal payments on revolving line of credit	(131,200)	-
Principal payments on capital lease	(454)	(438)
SWAP termination payment	(27,605)	-
SWAP receipts	4,464	4,430
SWAP payments	(8,243)	(10,564)
Liquidity and remarketing fees	-	(307)
Interest paid on borrowings	(26,170)	(21,390)
Net cash provided by (used in) capital and related financing activities	(70,695)	(59,068)
Increase (Decrease) in Cash and Cash Equivalents	20,150	31,550
Cash and Cash Equivalents:		
Beginning of year	60,890	29,340
End of year	$ 81,040	$ 60,890
Consists of:		
Restricted cash and cash equivalents	$ 16,360	$ 13,970
Unrestricted cash and cash equivalents	64,680	46,920
	$ 81,040	$ 60,890
Reconciliation of Operating Income to Net Cash Provided by (Used in) Operating Activities:		
Operating income	$ 65,808	$ 61,660
Adjustments to reconcile operating income to net cash provided by (used in) operating activities:		
Depreciation	18,011	16,894
Reserve for uncollectible amounts	2,979	(3,506)
Change in:		
Accounts receivable - water and wastewater	2,916	5,469
Other accounts receivable	45	(436)
Prepaid expenses	(187)	154
Inventory	387	1,793
Accounts payable wastewater treatment	(332)	1,486
Accounts payable and other accrued expenses	1,809	5,405
Accrued payroll and related obligations	(321)	120
Unearned revenue	(22)	(21)
Net cash provided by (used in) operating activities	$ 91,093	$ 89,018
Schedule of Non-Cash Capital and Related Financing Activities:		
Donated property	$ 110	$ 13,649

The notes to financial statements are an integral part of this statement.

1. Organization

The Pittsburgh Water and Sewer Authority (Authority) provides water to approximately 80,000 residential, commercial, and industrial customers located in the City of Pittsburgh (City), Pennsylvania, and collects wastewater throughout the City.

A Board of Directors (Board) appointed by the Mayor of the City governs the Authority.

The Authority is a body politic and corporate, organized and existing under the Pennsylvania Municipalities Authorities Act. The Authority was established by the City in 1984 to assume responsibility from the City for management, operation, maintenance, and improvement of virtually the entire City water supply, distribution, and wastewater collection systems (the "Water and Wastewater System" or "System"). The Authority's term of existence is through 2045. At inception, the City contributed $5.3 million to the Authority in the form of customer accounts receivable. The Authority is authorized to issue bonds and notes payable solely from the Authority's revenues.

Prior to April 1, 2018, the Authority had the right to establish user fees and charges without being subject to the approval of any department, board, or agency of Pennsylvania or the City. Effective April 1, 2018, the Public Utility Commission (PUC) began oversight of the Authority. PUC oversight requires compliance and conformity with their established regulations regarding administration, finances, operations, reporting, capital expenditures, and customer service for water and wastewater utilities. The PUC now approves all Authority rates and fees through tariff filings.

2. Summary of Significant Accounting Policies

Reporting Entity

These financial statements present the financial position, changes in net position, and cash flows of the Authority. The Authority is a component unit of the City in accordance with applicable guidance. The Authority's financial statements are not intended to present the financial position or results of operations of the City taken as a whole.

Basis of Accounting and Measurement Focus

The accompanying financial statements have been prepared using the economic resources measurement focus and the accrual basis of accounting in accordance with accounting principles generally accepted in the United States of America, as prescribed by the Governmental Accounting Standards Board (GASB). Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows.

The Authority functions as a Business-Type Activity, as defined by GASB.

Classification of Net Position

The Authority's net position is classified into three components – net investment in capital assets; restricted; and unrestricted. These classifications are defined as follows:

- Net investment in capital assets – This component of net position consists of capital assets, net of accumulated depreciation, reduced by the outstanding balances of bonds, mortgages, notes, or other borrowings that are attributable to the acquisition, construction, or improvement of those assets. Deferred outflows of resources and deferred inflows of resources that are attributable to the acquisition, construction, or improvement of those assets or related debt are also included in this component of net position. If there are significant unspent related debt proceeds or deferred inflows of resources at the end of the reporting period, the portion of the debt or deferred inflows of resources attributable to the unspent amount is not included in the calculation of net investment in capital assets. Instead, that portion of the debt or deferred inflow of resources is included in the same net position component (restricted or unrestricted) as the unspent amount.

- Restricted – This component of net position consists of restricted assets reduced by liabilities and deferred inflows of resources related to those assets. Generally, a liability relates to restricted assets if the asset results from a resource flow that also results in the recognition of a liability or if the liability will be liquidated with the restricted assets reported.

- Unrestricted – This component of net position is the net amount of the assets, deferred outflows of resources, liabilities, and deferred inflows of resources that are not included in the determination of net investment in capital assets or the restricted components of net position.

When an expense is incurred that can be paid using either restricted or unrestricted resources, the Authority's policy is to first apply the expense towards restricted resources and then towards unrestricted resources.

Deposits and Investments

The Authority's cash and cash equivalents are considered to be cash on hand, demand deposits, and all highly liquid investments, both restricted and unrestricted, with maturity of three months or less at date of purchase.

Investments are recorded at fair value. Accordingly, the change in fair value of investments is recognized as an increase or decrease to investment assets and investment income.

Fair Value Measurements

The Authority categorizes its fair value measurements within the fair value hierarchy established by accounting principles generally accepted in the United States of America. The hierarchy is based on the valuation inputs used to measure the fair value of the asset. Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs.

Premiums and Discounts

Original issue bond premiums and discounts are amortized over the life of the related bonds using the straight-line method of amortization, which is materially comparable to the effective interest method. The unamortized balance of premiums and discounts is presented net on the statements of net position as a decrease or increase to bonds payable.

Deferred Charge on Refunding

In accordance with applicable guidance, the excess of the reacquisition price over the net carrying amount of refunded debt is recorded as a deferred outflow of resources on the statements of net position and amortized as a component of interest expense over the shorter of the term of the refunding issue or refunded bonds.

Capital Assets

Capital assets owned by the Authority are recorded at cost. Depreciation of capital assets owned by the Authority is provided on the straight-line method based on the estimated useful lives of the various classes of assets. Utility assets have estimated useful lives ranging from 30 to 70 years. Non-utility assets have estimated useful lives ranging from five to 10 years.

The Authority also receives donated property relating mostly to dedicated water and sewer lines. These assets are capitalized at acquisition value at the date of the donation and depreciated in accordance with the estimated useful lives noted above.

The water and sewer system represents assets leased from the City. Amortization of capital lease assets is provided on the straight-line basis applying an estimated average remaining useful life from the inception of the lease.

Maintenance and repairs are charged to expense as incurred.

Deferred Outflows/Inflows of Resources

In addition to assets, the statement of financial position reports a separate section for deferred outflows of resources. This separate financial statement element, deferred outflows of resources, represents a consumption of net position that applies to a future period(s) and so will not be recognized as an outflow of resources (expense) until then.

In addition to liabilities, the statement of financial position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element, deferred inflow of resources, represents an acquisition of net position that applies to a future period(s) and so will not be recognized as an inflow of resources (revenue) until that time.

Classification of Revenues

The Authority has classified its revenues as either operating or non-operating revenues according to the following criteria:

- Operating revenues – Operating revenues include activities that have the characteristics of exchange transactions, such as residential, commercial, and industrial water sales and wastewater treatment.

- Non-operating revenues – Non-operating revenues include activities that have the characteristics of non-exchange transactions, such as grants, interest income and other revenue sources.

Compensated Absences

A liability for vacation, personal, and sick days is accrued when related benefits are attributable to services rendered and to the extent it is probable that the Authority will ultimately compensate employees.

Inventory

Inventory is stated at cost, on a moving average price basis.

Accounts Payable Wastewater Treatment

The Authority has adopted a methodology for recording estimated wastewater treatment accounts payable that assumes a uniform meter reading date for all customers in each cycle. The estimate is based on the portion of wastewater treatment invoices paid after year-end with usage estimated to have occurred during the previous fiscal year. Generally, the methodology assumes either 33%, 66%, or 100% of a cycle remains unbilled at year-end.

Special Item

The Authority has recorded a special item for private line lead replacements. In accordance with GASB Statement No. 34, a special item is defined as an expenditure within control of management and either unusual or infrequent in occurrence. The Authority has determined that private lead line replacements qualify as a special item.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets, deferred outflows of resources, liabilities, deferred inflows of resources, and disclosure of contingent assets and 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.

Adoption of Accounting Standards

The following Governmental Accounting Standards Board (GASB) statements were adopted for the year ended December 31, 2019: Statement Nos. 83 (Certain Asset Retirement Obligations), 84 (Fiduciary Activities), 88 (Certain Disclosures Related to Debt, including Direct Borrowings and Direct Placements), and 90 (Majority Equity Interests). These statements had no significant impact on the Authority's financial statements for the year ended December 31, 2019.

Pending Standards

GASB has issued statements that will become effective in future years, including Statement Nos. 87 (Leases), 89 (Accounting for Interest Cost Incurred before the End of a Construction Period), 91 (Conduit Debt Obligations), 92 (Omnibus 2020) and 93 (Replacement of Interbank Offered Rates). Management has not yet determined the impact of these statements on the financial statements.

3. Transactions with the City of Pittsburgh

During July 1995, the City and the Authority entered into a Capital Lease Agreement and a Cooperation Agreement (collectively referred to as the "Agreements"). The Cooperation Agreement was renegotiated by the Authority's Board of Directors and the City Mayor's Office.

Cooperation Agreement

Under the terms of the previous Cooperation Agreement, City Water Department employees became employees of the Authority. As a result, the Authority assumed various obligations from the City. The City and the Authority provided various services to each other in accordance with the Cooperation Agreement, and the Authority reimbursed the City for direct and indirect costs attributed by the City to the operation and maintenance of the System.

Under the previous Agreement, the Authority provided up to 600 million gallons of water annually for the City's use without charge. Also, the Authority assumed the City's obligation for the cost of subsidizing water service to residents of the City situated beyond the Authority's service area so that those water users pay charges that mirror the rates of the Authority.

On February 4, 2019, the Authority's Board issued a resolution that the existing Cooperation Agreement shall be terminated in accordance with the terms of the agreement, 90 days after the approval of the resolution. City and Authority officials have collaborated on a New Cooperation Agreement to further implement efficiencies and improvements, including: permitting the Authority to reimburse the City for pension costs for Authority employees covered by the City's pension plans, allowing the City to charge the Authority the usual rates that other utilities pay for permit fees, and charging the City for water, wastewater, and ALCOSAN usage, with a five-year phase-in starting in 2020. The Board implemented the new Cooperation Agreement as of October 3, 2019. This agreement has been filed with the Pennsylvania Public Utility Commission (Commission) according to Title 66, § 507 of the Public Utility Code, and can be modified by order of the Commission.

System Leases

The Capital Lease Agreement stipulates minimum lease payments of approximately $101 million, all of which were satisfied during the initial three years of the capital lease.

The Capital Lease Agreement has a term of thirty years and provides the Authority with the option to purchase the System for one dollar in 2025.

Pension

Most Authority employees participate in the City's Municipal Pension Fund Plan (Plan). Employees who became members of the Plan prior to January 1, 1988 are required to contribute 5% of pre-tax pay. Those joining thereafter are required to contribute 4%. Participation in the Plan is closed to non-union employees hired after March 1, 2019. The Authority's 2019 and 2018 payroll covered by the Plan was approximately $19,239 and $15,883, respectively. Employee contributions for the years 2019 and 2018 amounted to $750 and $614, respectively.

The City's obligations relative to the Plan are determined in accordance with various Pennsylvania statutes. The extent of the Authority's participation in such obligations with respect to those former City employees whose membership continued upon becoming employees of the Authority, as well as new members, is determined by the Cooperation Agreement.

For the years ended December 31, 2019 and 2018, the City and the Authority determined upon a payment of approximately $3,627 and $3,905, respectively, for the Authority's share of the City's pension costs, prior to adjustment for the Authority's portion of the state aid received by the City for pension costs. The Authority's payment was calculated based on a percentage of its covered payroll to the total covered payroll, which approximates 15.4% for 2019 and 2018.

Normal retirement benefits are available upon attainment of age sixty and completion of twenty service years. Early retirement benefits are available upon attainment of age fifty and completion of eight service years. Early retirement benefits may be deferred until age sixty or may be obtained upon retirement at a reduced level. A member who terminates employment after attaining age forty and completing eight service years can sustain eligibility for benefits by continuing contributions through age fifty. A member who terminates employment after attaining fifteen service years, but has been a member since before January 1, 1975, can be vested by continuing contributions through age fifty.

Retirement benefits for employees who were members of the Plan are based upon a percentage of either three-year or four-year average pay, depending on date of hire, subject to certain specified minimum monthly benefit amounts. Special membership and benefit rules apply to those experiencing disability.

The "net pension liability" is an actuarial present value of credited projected benefits (a standardized measure for financial statement disclosure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future by the Plan as a result of members' service to date) less the pension plan's net position available for paying such benefits. The measure is intended to help users assess the Plan's funding status on a going concern basis, assess progress made in accumulating sufficient assets to pay benefits when due, and make comparisons among public employee retirement systems. The Plan has not reported or attributed measurements of assets or the net pension liability on the basis of the group of members who are Authority employees. The City's net pension liability at December 31, 2019 and 2018 and is $212,094 and $233,514, respectively.

Additional information about the Plan and required supplementary information showing the Plan's progress in accumulating sufficient assets to pay benefits when due is presented in the City's Comprehensive Annual Financial Report.

4. Revenue and Accounts Receivable

Water

Water sales revenue is recognized as earned during the period when water is supplied to customers. Customers are billed on a monthly billing cycle by the Authority based on actual or estimated meter readings. The Authority recognizes unbilled accounts receivable for water service provided prior to year-end that is billed during the following year.

Water accounts receivable are presented net of a reserve for uncollectible amounts. This reserve, based on an analytical review of outstanding accounts and historical collection data, is recognized coincident with recognition of revenue. At December 31, 2019 and 2018, the reserve for uncollectible water accounts was approximately $21.12 million and $19.75 million, respectively. The Authority has rights to utilize collection agencies, service terminations, liens, and real property sales to protect its interests, limit further losses, and motivate payments from delinquent customers.

Wastewater Treatment

Although the Authority does not provide wastewater treatment, it assumed responsibility for certain wastewater treatment revenue and expenses beginning in 1996. Effective May 2004, the Authority began direct billing City residents for current and delinquent wastewater treatment charges and remitting to ALCOSAN the aggregate amount of service charges billed. Wastewater treatment activity and the related assets and liabilities appear on the statements of revenue, expenses and changes in net position and the statements of net position, respectively. The related estimated amount of unbilled accounts receivable at year-end has been recorded on the statement of net position. At December 31, 2019 and 2018, the reserve for uncollectible wastewater accounts was approximately $11.34 million and $10.61 million, respectively.

Bad Debt Recovery/Expense

For the year ended December 31, 2019, bad debt expense was $2.98 million and is included in direct operating expenses on the statement of revenues, expenses, and changes in net position. For the year ended December 31, 2018, bad debt recoveries of $3.5 million included in direct operating expenses on the statement of revenues, expenses, and changes in net position relate in part to collection on City-owned accounts negotiated to be payable and the resolution of large outstanding balances from other local government entities.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

5. Capital Assets

Capital assets consisted of the following at December 31, 2019 and 2018:

	Balance at January 1, 2019	Additions	Deletions/ Reclassification	Balance at December 31, 2019
Capital assets, not being depreciated:				
Construction in progress	$ 139,303	$ 91,247	$ (95,263)	$ 135,287
Capital assets, being depreciated:				
Utility assets	919,999	95,211	(16,315)	998,895
Non-utility assets	23,819	52	(11,690)	12,181
Total capital assets, being depreciated	943,818	95,263	(28,005)	1,011,076
Less accumulated depreciation	(325,641)	(18,011)	27,867	(315,785)
Total capital assets, being depreciated, net	618,177	77,252	(138)	695,291
Total capital assets	$ 757,480	$ 168,499	$ (95,401)	$ 830,578

	Balance at January 1, 2018	Additions	Deletions/ Reclassification	Balance at December 31, 2018
Capital assets, not being depreciated:				
Construction in progress	$ 100,240	$ 84,567	$ (45,504)	$ 139,303
Capital assets, being depreciated:				
Utility assets	875,597	44,402	-	919,999
Non-utility assets	22,717	1,102	-	23,819
Total capital assets, being depreciated	898,314	45,504	-	943,818
Less accumulated depreciation	(308,747)	(16,894)	-	(325,641)
Total capital assets, being depreciated, net	589,567	28,610	-	618,177
Total capital assets	$ 689,807	$ 113,177	$ (45,504)	$ 757,480

During 2019 and 2018, the Authority received donated utility assets of $110 and $13,649, respectively, related to various development projects.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

6. Payroll and Related Obligations

Payroll and related obligations presented on the statements of net position are comprised of:

	Balance at December 31, 2018	Change	Balance at December 31, 2019	Current Portion
Compensated absences	$ 456	$ 123	$ 579	$ 81
Workers' compensation	167	(44)	123	-
Payroll, withholdings, and taxes	1,308	(400)	908	908
	$ 1,931	$ (321)	$ 1,610	$ 989

	Balance at December 31, 2017	Change	Balance at December 31, 2018	Current Portion
Compensated absences	$ 462	$ (6)	$ 456	$ 55
Workers' compensation	200	(33)	167	10
Payroll, withholdings, and taxes	1,149	159	1,308	1,308
	$ 1,811	$ 120	$ 1,931	$ 1,373

7. Defined Contribution Plan

During 2019, the Authority established a 401(a) profit-sharing plan available to all full-time employees (part-time employees with over 1,000 hours of service) who do not participate in the City’s Plan. As part of its fiduciary role, the Authority has an obligation of due care in selecting the third-party administrator. The Authority does not control the assets of the 401(a) profit-sharing plan, and thus the plan is not considered a fiduciary fund of the Authority.

Benefit terms are established and amended by the Authority. Employee contributions are made after-tax and the Authority offers a single match rate up to 5%. Employees become vested after three years. For the year ended December 31, 2019, the Authority contributed $11 to the 401(a) profit-sharing plan.

8. Bonds and Loans Payable

Series 1998

In March 1998, the Authority issued $36,440 Series B First Lien Revenue Bonds ("1998 Series B Bonds"), the proceeds of which are dedicated to a capital improvements program.

The 1998 Series B Bonds are capital appreciation bonds with an original issuance amount of $36,440. During 2017, $12,406 (par) of the 1998 Series B Bonds with an accreted value of $34,625 were refunded with the Series 2017 A bonds. The remaining 1998 Series B Bonds have maturity values ranging from $26,930 to $14,660 from 2027 to 2030. The bonds were issued to yield rates from 5.18% to 5.3%. The 1998 Series B Bonds accrue and compound interest on a semi-annual basis and are carried at cost plus accrued interest. Total maturity value of the 1998 Series B Bonds is $95,450.

The 1998B Bonds at December 31, 2019 and 2018 have carrying amounts of approximately $59,900 and $56,800, respectively.

Series 2008

During June 2008, the Authority issued $320,515 Series 2008 Water and Sewer System First Lien Revenue Bonds ("2008 Variable Rate Demand Bonds"): $145,495 Series B of 2008 (variable rate demand), $51,910 Series C-1 of 2008 (variable rate demand), $51,885 Series C-2 of 2008 (variable rate demand), and $71,225 Series D-2 of 2008 (variable rate demand). The purpose of this bond issue was to currently refund the Series 1998A and Series 1998C, to currently refund certain maturities of the Series 2007 B-1 and Series 2007 B-2 Bonds, to advance refund certain maturities of the Series 1998B Bonds, to fund approximately $98 million of certain capital additions, to fund the premium for the Bond Insurance Policy securing payments on 2008 Variable Rate Demand Bonds, and to fund termination payments on certain interest rate swaps. During 2019, the Series C-1 and C-2 Bonds were currently refunded with the Series 2019B Bonds. As part of the Series 2019B refunding, the related 2008 Series C swaps were terminated, see Note 8: interest rate swaps.

In connection with these advance refundings, portions of the proceeds of the 2008 Bonds were deposited into irrevocable trusts with an escrow agent to provide for certain debt service payments on the refunded bonds.

The maturity value of defeased 1998B compound interest bonds outstanding at December 2019 and 2018 was $19,300 and $19,800, respectively.

Series 2013

During December 2013, the Authority issued $130,215 Series A First Lien Revenue Refunding Bonds ("2013 Series A Bonds"), the proceeds of which were used to defease through current refunding the entire balance of the Series 2003, Series 2007 B-1, and Series 2007 B-2 and pay certain amounts in respect of termination of certain interest rate swap agreement related to the Series 2007 B-1 and B-2 bonds; $86,695 Series B First Lien Revenue Bonds ("2013 Series B Bonds"), the proceeds of which are to fund certain water and sewer system capital improvement projects and reimburse the Authority for certain capital expenditures paid for by the Authority.

The 2013 Bonds were issued at a bond premium of $14,828, which is being amortized as an adjustment to interest expense over the life of the bonds.

During 2017, $42,340 of Series 2013 B bonds outstanding were currently refunded with Series 2017 A bonds.

The 2013 Bonds at December 31, 2019 and 2018 have carrying amounts of $114,190 and $124,880, respectively.

Series 2017

During December 2017, the Authority issued $165,390 First Lien Revenue Refunding Bonds composed of Series A (159,795) and Series B (taxable) ($5,595). The proceeds of the bonds were used to fund the costs of the refunding of all or a portion of the Authority’s outstanding Series of 1998B, 2008A, 2008D-1, and 2013B water and sewer system revenue bonds.

The 2017 A and B Bonds were issued at a bond premium of $23,374, which is being amortized as an adjustment to interest expense over the life of the bonds.

The 2017 A Bonds at December 31, 2019 and 2018 have carrying amounts of $142,605 and $151,870, respectively. The 2017 B Bonds were paid off during 2018.

During December 2017, the Authority issued $218,805 Series C First Lien Revenue Refunding Bonds, the proceeds of which were used to fund the costs of refunding the Authority's outstanding Series 2008 B-1, B-2, and D-2 water and sewer system revenue bonds. The Bonds bear interest at the LIBOR index rate. Upon the phase out of LIBOR in 2021, the interest rate will be replaced by the Federal Funds Rate if not renegotiated prior to the phase out.

The 2017 C Bonds at December 31, 2019 and 2018 have a carrying amount of $218,805.

Series 2019

During June 2019, the Authority issued $109,855 Series A First Lien Revenue Bonds, the proceeds of which were used to refund interim debt incurred by the Authority to fund costs of capital projects; and $104,290 Series B Subordinate Revenue Refunding Bonds, the proceeds of which were used to currently refund all of the Authority's outstanding Series of 2008 C-1 and C-2 bonds, including swap termination payments on interest rate swaps associated with the refunded bonds. The refunding was completed to reduce the Authority's volatility due to the nature of the related swaps and to obtain cash flows savings of $1,882. After consideration of the Authority's contribution of $5,700, the net cash outlay and economic loss were $4,000.

The 2019 A and B Bonds were issued at a bond premium of $45,090, which is being amortized as an adjustment to interest expense over the life of the bonds.

The 2019 A and B Bonds at December 31, 2019 have carrying amounts of $109,855 and $104,290, respectively.

Deferred Charge on Refunding

In conjunction with the debt refundings described above, the Authority has recorded a deferred charge on refunding, which is shown as a deferred outflow of resources on the statements of net position. The deferred charge on refunding at December 31, 2019 and 2018 is as follows:

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

	Balance at December 31, 2018	Additions	Amortization	Balance at December 31, 2019
Deferred charge on refunding	$ 102,534	$ 4,686	$ 8,208	$ 99,012

	Balance at December 31, 2017	Additions	Amortization	Balance at December 31, 2018
Deferred charge on refunding	$ 110,326	$ -	$ 7,792	$ 102,534

Capital Revolving Line of Credit – Direct Borrowing

In July 2016, the Authority obtained an $80,000 revolving line of credit to finance certain capital projects. In October 2018, the capital revolving line of credit was amended to increase the maximum amount that can be drawn and outstanding at any one time to $150,000. The capital revolving line of credit is secured by the revenues of the Authority. The Authority has until July 1, 2020 to request revolving advances on the line of credit, at which time the Authority has the option to convert the unpaid principal amount of the outstanding revolving advances to a term loan advance. The term loan advance base interest rate would be the greater of; prime plus 1.5%, the Federal effective rate plus 1.5% or 8.50%. The capital revolving line of credit contains a provision that in the event of a default, the outstanding amounts under this line of credit become immediately due; and the commitment amount be reduced to $0; Each revolving advance bears interest at the LIBOR Index Rate, which ranged from 2.85% to 3.429% and 2.04% to 3.429% for the years ended December 31, 2019 and 2018, respectively. At December 31, 2019 and 2018, the interest rate was 2.85% and 3.429%, respectively. At December 31, 2019 and 2018, the Authority had $62,500 and $113,000, respectively, in outstanding revolving advances.

Operating Line of Credit – Direct Borrowing

In August 2018, the Authority obtained a $20,000 revolving line of credit for operating expenses. The operating line of credit was secured by the revenues of the Authority. Amounts outstanding under the operating line of credit bore interest at a rate per annum equal to the daily LIBOR rate plus 0.65%. No draws were made on the operating line of credit during 2018 or 2019. The operating line of credit expired on August 30, 2019 and was not renewed.

State Loans – Direct Borrowing

The Authority has several loans outstanding from PENNVEST for various capital projects and water and sewer improvement projects, with carrying amounts of $39,948 and $27,810 at December 31, 2019 and 2018, respectively. Interest rates vary from 1.00% to 3.25%. The State Loans are secured by the project collateral related to each loan. In an event of default on the State Loans, the entire unpaid principal, plus accrued interest, plus all other amounts due and payable to PENNVEST shall at the option of PENNVEST become due and payable immediately upon request.

Capital Lease

During 2015, the Authority entered into a lease agreement as lessee for financing the acquisition of a utility assets valued at $7,445. The utility assets have a ten-year estimated useful life. Depreciation on the utility assets began in 2016, with accumulated depreciation totaling $2,979 and $2,234 for the years ended December 31, 2019 and 2018, respectively. This lease agreement qualifies as a capital lease for accounting purposes and, therefore, has been recorded at the value of future minimum lease payments as of the inception date. At December 31, 2019 and 2018, the outstanding balance of the capital lease was $5,439 and $5,893, respectively.

Swap Borrowing – Direct Borrowing

During November 2014, the Authority terminated the original 2008 Series 2008 C-1A, C-1B, C-1C, and C-2 swaps and reissued and restructured the swaps to bear interest based upon 70% of one-month LIBOR. At termination, those derivative instruments had an aggregate fair value of ($9,471), which is considered a swap borrowing from the counterparty. The swap borrowing was terminated during the year ended December 31, 2019 with the issuance of the 2019 Series B Bonds. At December 31, 2018, the unamortized balance was $7,587.

During December 2017, the Authority terminated the original 2008 Series B-1, B-2, and D swaps and reissued and restructured the swaps to bear interest based upon 70% of one-month LIBOR. Upon the phase out of LIBOR in 2021, the interest rate will be replaced by the Federal Funds Rate if not renegotiated prior to the phase out. At termination, those derivative instruments had an aggregate fair value of ($70,869), which is considered a swap borrowing from the counterparty. The swap borrowing is being amortized over the remaining life of the bond. At December 31, 2019 and 2018, the unamortized balance is $64,837 and $67,649, respectively.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

Bonds, state loans payable, revolving line of credit, capital lease, and swap borrowing consisted of the following at December 31, 2019 and 2018:

	Balance at December 31, 2018	Additions	Accretion	Reductions	Balance at December 31, 2019
Bonds and loans payable:					
Revenue bonds:					
1998 Series B	$ 56,823	$ -	$ 3,047	$ -	$ 59,870
2008 Series C-2	51,820	-	-	(51,820)	-
2008 Series C-1A	10,000	-	-	(10,000)	-
2008 Series C-1B	10,000	-	-	(10,000)	-
2008 Series C-1C	5,000	-	-	(5,000)	-
2008 series C-1D	26,840	-	-	(26,840)	-
2013 Series A	86,120	-	-	(10,690)	75,430
2013 Series B	38,760	-	-	-	38,760
2017 Series A	151,870	-	-	(9,265)	142,605
2017 Series C	218,805	-	-	-	218,805
2019 Series A	-	109,855	-	-	109,855
2019 Series B	-	104,290	-	-	104,290
	656,038	214,145	3,047	(123,615)	749,615
Direct borrowings:					
State loans (PENNVEST)	27,810	15,323	-	(3,185)	39,948
Revolving line of credit	113,000	80,700	-	(131,200)	62,500
Swap borrowing	75,236	-	-	(10,399)	64,837
Capital lease	5,893	-	-	(454)	5,439
	877,977	310,168	3,047	(268,853)	922,339
Unamortized bond (discount) premium	29,049	45,090	-	(4,153)	69,986
Total bonds and loans, net	$ 907,026	$ 355,258	$ 3,047	$ (273,006)	$ 992,325

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

	Balance at December 31, 2017	Additions	Accretion	Reductions	Balance at December 31, 2018
Bonds and loans payable:					
Revenue bonds:					
1998 Series B	$ 53,911	$ -	$ 2,912	$ -	$ 56,823
2008 Series C-2	51,820	-	-	-	51,820
2008 Series C-1A	10,000	-	-	-	10,000
2008 Series C-1B	10,000	-	-	-	10,000
2008 Series C-1C	5,000	-	-	-	5,000
2008 series C-1D	26,840	-	-	-	26,840
2013 Series A	93,825	-	-	(7,705)	86,120
2013 Series B	38,760	-	-	-	38,760
2017 Series A	159,795	-	-	(7,925)	151,870
2017 Series B	5,595	-	-	(5,595)	-
2017 Series C	218,805	-	-	-	218,805
	674,351	-	2,912	(21,225)	656,038
Direct borrowings:					
State loans (PENNVEST)	31,188	-	-	(3,378)	27,810
Revolving line of credit	43,800	69,200	-	-	113,000
Swap borrowing	78,431	-	-	(3,195)	75,236
Capital lease	6,331	-	-	(438)	5,893
	834,101	69,200	2,912	(28,236)	877,977
Unamortized bond (discount) premium	32,076	-	-	(3,027)	29,049
Total bonds and loans, net	$ 866,177	$ 69,200	$ 2,912	$ (31,263)	$ 907,026

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

Debt service payments on the Revenue Bonds at December 31, 2019 are as follows:

	Revenue Bonds		
	Principal	Interest	Total
2020	$ 23,300	$ 31,258	$ 54,558
2021	24,255	30,090	54,345
2022	25,430	28,873	54,303
2023	26,775	27,597	54,372
2024	27,370	26,277	53,647
2025-2029	98,671	177,624	276,295
2030-2034	173,484	101,908	275,392
2035-2039	229,665	46,631	276,296
2040-2044	79,939	7,076	87,015
	708,889	477,334	1,186,223
Accretion	40,726	(40,726)	-
Total	$ 749,615	$ 436,608	$ 1,186,223

Debt service payments of the State Loans at December 31, 2019 are as follows:

	State Loans		
	Principal	Interest	Total
2020	$ 3,668	$ 615	$ 4,283
2021	4,064	554	4,618
2022	4,087	492	4,579
2023	3,963	431	4,394
2024	3,789	372	4,161
2025-2029	16,224	1,056	17,280
2030-2034	4,042	92	4,134
2035	111	-	111
	$ 39,948	$ 3,612	$ 43,560

Repayment of the revolving line of credit will begin once the Authority has drawn all available advances from the line, but no later than July 2020.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

Minimum lease payments of the capital lease at December 31, 2019 are as follows:

	Capital Lease		
	Principal	Interest	Total
2020	$ 469	$ 178	$ 647
2021	486	161	647
2022	502	145	647
2023	520	127	647
2024	537	109	646
2025-2029	2,925	256	3,181
	$ 5,439	$ 976	$ 6,415

Amortization on the swap borrowing is as follows:

Year Ending December 31,	Principal	Interest
2020	$ 2,882	$ 1,582
2021	2,953	1,510
2022	3,027	1,437
2023	3,102	1,362
2024	3,179	1,285
2025-2029	17,117	5,203
2030-2034	19,288	2,971
2035-2039	12,872	757
2040	417	5
	$ 64,837	$ 16,112

Interest payments were calculated for the Variable Rate Bonds using the synthetic fixed rate interest rates as described in Note 9.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

Interest and amortization expense for the years ended December 31 is as follows:

	2019	2018
Bond, loan and swap interest	$ 30,638	$ 24,327
Accretion	3,047	2,912
Amortization of deferred refunding loss, discounts and premiums	2,708	4,765
Other	2,347	2,361
	$ 38,740	$ 34,365

In accordance with the provisions of the trust indentures for the 1998, 2013, 2017, and 2019 Bonds, the Authority has created a number of funds that are restricted for specific purposes. The complement of these restricted funds, collectively referred to on the statements of net position as "Restricted Assets," at December 31, 2019 and 2018 was:

	2019	2018
Capital project funds	$ 1	$ 1
Debt service and reserve funds	6,643	6,937
Operating reserve account	18,712	15,792
Other funds	608	596
	$ 25,964	$ 23,326

Among the Authority's debt covenants is one which requires that rates charged by the Authority will be sufficient to satisfy a formula which is intended to ensure that the Authority will be able to satisfy debt service requirements. If the Authority fails to comply with the rate covenant, the Authority shall request a Qualified Independent Consultant (QPI) to submit a written report and recommendations with respect to increases in the Authority's rates, fees and other charges and improvements in the operations and the services rendered and the Authority's accounting and billing procedures necessary to bring the Authority into compliance. Any failure to meet the rate covenant will not result in an event of default if within 180 days after the tested year end, the Authority files the report of the QPI and the Authority revises its rates, fees and charges and alter its operations and services to conform to the report of the QPI to the extent permitted by law.

The trust indenture also requires that revenue collections be deposited into a Revenue Fund and disbursed therefrom as provided for in the trust indenture. This Revenue Fund constitutes the vast majority of unrestricted funds cash and cash equivalents. At December 31, 2019 and 2018, the Authority was in compliance with these covenants.

9. Interest Rate Swaps

Interest rate swaps disclosures (not in thousands) as of December 31, 2019 and 2018 are presented below.

Interest rate swaps at December 31, 2019:

Current Notional Amount	Effective Date	Maturity Date	Interest Rate Paid	Interest Rate Received	Counterparty Credit Rating	Underlying Bonds	
Hedging Derivatives, Cash Flow Hedges, Receive Variable - Pay Fixed, Interest Rate Swaps:							
$ 72,747,500	12/28/2017	9/1/2039	1.732%	70% 1mo LIBOR	A-	Series 2017 C	*
72,747,500	12/28/2017	9/1/2039	1.732%	70% 1mo LIBOR	A+	Series 2017 C	*
71,225,000	12/28/2017	9/1/2040	1.735%	70% 1mo LIBOR	A+	Series 2017 C	*

* - Represents a hybrid instrument comprised of an on-market swap and a borrowing. The information above reflects the on-market rate as of the date on which the swap was associated with the underlying bonds.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

Interest Rate Swap – Fair Value Information:

Notional Amount	12/31/2017 Fair Value *	Change in Fair Value	12/31/2018 Fair Value *		Change in Fair Value	Swap Termination	12/31/2019 Fair Value *		Underlying Bonds
Hedging Derivatives, Cash Flow Hedges, Receive Variable - Pay Fixed, Interest Rate Swaps:									
$ 72,747,500	$ (484,501)	$ 2,021,053	$ 1,536,552	**	$ (5,911,917)	$ -	$ (4,375,365)	***	Series 2017 C
41,464,000	(1,834,140)	1,077,156	(756,984)	***	(10,171,016)	10,928,000	-		Series 2008 C
72,747,500	(484,501)	2,020,053	1,535,552	**	(5,910,917)	-	(4,375,365)	***	Series 2017 C
71,225,000	(475,904)	2,154,251	1,678,347	**	(6,278,978)	-	(4,600,631)	***	Series 2017 C
	(3,279,046)	7,272,513	3,993,467		(28,272,828)	10,928,000	(13,351,361)		
Investment Derivatives, Receive Variable - Pay Fixed, Interest Rate Swap:									
62,196,000	(15,039,536)	2,542,135	(12,497,401)	***	(4,179,599)	16,677,000	-		Series 2008 C
Total	$ (18,318,582)	$ 9,814,648	$ (8,503,934)		$ (32,452,427)	$ 27,605,000	$ (13,351,361)		

* The fair value is an estimated net present value of the expected cash flows calculated using relevant mid-market data inputs and based on the assumption of no unusual market conditions or forced liquidation.

** Reported as hedging derivative - interest rate swap on the Statement of Net Postion.

*** Reported as swap liabilty on the Statement of Net Position.

Description of the Swaps

During fiscal year 2008, the Authority entered into five pay-fixed, receive-variable interest rate swap contracts. The 2008 C interest rate swaps were effective June 12, 2008. Beginning September 1, 2008, the Authority began to make semi-annual interest payments on the 1st of each March and September through September 1, 2035 (two swaps); September 1, 2039 (two swaps); and, September 1, 2040 (for one swap), respectively. The Counterparties make monthly interest payments on the 1st of each calendar month, which began July 1, 2008 through September 1, 2035 for two of the swaps; September 1, 2039 for two of the swaps; and September 1, 2040 for one swap.

The intention of the 2008 swaps was to effectively change the Authority's variable interest rate on the $145,495 Water and Sewer System (Variable Rate Demand) First Lien Revenue Refunding Bonds Series B of 2008, on the $71,225 Water and Sewer System (Variable Rate Demand) First Lien Revenue Bonds Series D-2 of 2008, and on the $103,795 Water and Sewer System (Variable Rate Demand) Subordinate Revenue Refunding Bonds Series C of 2008 (the bonds) to synthetic fixed rates of 4.038%, 4.103%, and 3.998%, respectively.

During November 2014, the 2008 Series C Bonds were reissued and restructured to bear interest based upon 70% of one-month LIBOR. In conjunction with this reissuance/restructuring, the floating rate on the Series 2008 C swaps was converted from SIFMA to 70% of one-month LIBOR and the fixed rate was amended from 3.998% to 3.50%. With respect to the Series 2008 C swap treated as an effective hedge, this "off-market" swap is considered to be a hybrid instrument consisting of an on-market swap and a borrowing. The on-market swap rate is calculated as of the date of reissuance. The borrowing will be amortized over the remaining life of the swap and is included in bonds and loans payable on the statement of net position. See Note 7: Bonds and Loans Payable for detail on the borrowing.

The bonds will accrue interest at a weekly rate that is determined by a remarketing agent on each effective rate date. The interest rate on the bonds may not exceed 12%. Per the interest rate swap agreements, the Authority will receive SIFMA Municipal Swap Index while paying fixed rates as noted in the chart above.

The interest payments on the 2008 interest rate swaps are calculated based on notional amounts, all of which reduce, beginning on September 1, 2012 for the 2008 C Bonds, September 1, 2032 for the 2008 D2 Bonds and September 1, 2035 for the 2008 B Bonds, so that the notional amounts approximate the principal outstanding on the respective bonds. The interest rate swaps expire consistent with the final maturity of the respective bonds.

During December 2017, the swaps that were previously associated with the 2008 B-1, 2008 B-2 and 2008D bonds were newly associated with the 2017C refunding Bonds.

During 2019, the swaps associated with the Series 2008C bonds were terminated as part of the issuance of the Series 2019B Bonds.

<u>Description of 2017 C Swaps</u>

During fiscal year 2017, the Authority restructured three pay-fixed, receive-variable interest rate swap contracts. The original interest rate swaps were effective June 12, 2008. Beginning December 28, 2017, the Authority will make semi-annual interest payments on the 1st of each March and September through September 1, 2039 (two swaps); and, September 1, 2040 (for one swap), respectively. The Counterparties make monthly interest payments on the 1st of each calendar month, which begin February 2018 through September 1, 2039 for two of the swaps; and, September 1, 2040 for one swap.

The intention of the 2017 swaps restructuring is to effectively change the Authority's variable interest rate on the $216,720,000, Water and Sewer System First Lien Revenue Refunding Bonds Series C of 2017 with notional amounts of $71,225,000, $72,747,500, and $72,747,500 to fixed rates of 3.8255%, 3.770%, and 3.7835%, respectively.

The bonds will accrue interest at a weekly rate that is determined by a remarketing agent on each effective rate date. The interest rate on the bonds may not exceed 12%. Per the interest rate swap agreements, the Authority will receive 70% of one-month LIBOR.

The interest payments on the interest rate swaps are calculated based on notional amounts, all of which reduce beginning on September 2032, so that the notional amounts approximate the principal outstanding on the respective bonds. The interest rate swaps expire consistent with the final maturity of the respective bonds.

Accounting and Risk Disclosures

During the years ended December 31, 2019 and 2018, the Authority paid $8,243 and $10,564, respectively, fixed and received $4,464 and $4,430, respectively, variable related to their outstanding swap agreements.

As noted in the tables above, current period changes in fair value for the interest rate swaps that are accounted for as hedges are recorded on the statements of net position as an adjustment to hedging derivative – interest rate swap, deferred outflows or deferred inflows. Additionally, current period changes in fair value for the interest rate swap accounted for as an investment is recorded on the statements of revenues, expenses, and changes in net position as a component of investment income. The fair value of the outstanding interest rate swaps as of December 31, 2019 and 2018 is reported on the statements of net position as a swap liability. The swaps are valued using significant other observable inputs (Level 2 inputs).

The Authority has the ability to early terminate the interest rate swaps and to cash settle the transaction on any business day by providing at least two business days' written notice to the counterparty. Evidence that the Authority has sufficient funds available to pay any amount payable to the counterparty must be provided at the time notice is given. At early termination, the Authority will be required to pay or receive a settlement amount which is comprised of the fair value of the terminated transaction(s) based on market quotations and any amounts accrued under the contract(s).

Through the use of derivative instruments such as interest rate swaps, the Authority is exposed to a variety of risks, including credit risk, interest rate risk, termination risk, basis risk, and rollover risk.

- Credit risk is the risk that a counterparty will not fulfill its obligations. The credit ratings by Moody's Investors Service, Inc., a nationally recognized statistical rating organization for the respective counterparties are listed in the table above. If a counterparty failed to perform according to the terms of the interest rate swap agreement, there is some risk of loss to the Authority, up to the fair value of the swaps.

  The Authority currently does not enter into master netting arrangements with its counterparties. As such, each derivative instrument should be evaluated on an individual basis for credit risk. As of December 31, 2019, the Series 2017 C derivative instruments currently have a negative fair value position to the Authority; therefore, the Authority is not exposed to credit risk.

  Concentration of credit risk: The Authority's outstanding market value as of December 31, 2019 and 2018, respectively, is $(8,974,996) and $(9,283,582) with one counterparty and $(4,375,365) and $779,568 with the second counterparty. Both counterparties operate in the same markets and could be similarly impacted by changes in economic or other conditions.

  It is the Authority's policy to require counterparty collateral posting provisions in its non-exchange traded derivative instruments. Their terms require collateral to be posted if the respective counterparty's credit rating falls below BBB- by Standard & Poor's and the swap insurer becomes bankrupt. The amount of collateral to be posted is calculated based on derivatives in asset positions to the Authority. As of year-end, the counterparties had not and were not required to post collateral for these transactions.

- Termination risk is the risk that a derivative's unscheduled end will affect the Authority's asset/liability strategy or will present the Authority with potentially significant unscheduled termination payments to the counterparty. The counterparties to the interest rate swaps do not have the ability to voluntarily terminate the interest rate swap; however, the Authority is exposed to termination risk in the event that one or more of the counterparties default. The Authority has the ability to voluntarily terminate the swaps with prior written consent of the insurer by providing between 2 and 20 business days notice to the counterparty. The Authority must demonstrate the ability to pay all amounts due to the counterparty on the termination date. During 2017, the 2008 B-1, B-2, and D swaps were terminated and reissued. During 2019, the 2008C swaps were terminated through the Series 2019B bond issuance.

- Interest rate risk is the risk that changes in interest rates will adversely affect the fair values of a government's financial instruments or cash flows. The interest rate swap that is accounted for as an investment exposes the Authority to interest rate risk. The interest rate swap is highly sensitive to changes in interest rates; changes in the variable rate will have a material effect on the swap's fair value. The interest rate swap will terminate on September 4, 2035. The interest rate swap was terminated during 2019.

- Basis risk is the risk that arises when variable interest rates on a derivative and an associated bond or other interest-paying financial instrument are based on different indexes. The Authority is subject to basis risk on the 2008 C swaps as the interest index on the variable rate arm of the swaps is based on the 70% of one-month LIBOR and the variable interest rate on the bonds is based on a different index, a weekly rate that is determined by a remarketing agent. Although expected to correlate, the relationships between different indexes vary and that variance could adversely affect the Authority's calculated payments, and as a result cost savings or synthetic interest rates may not be realized.

  The Authority is further subject to basis risk in the event that the underlying bonds become fixed rate Bank Bonds or that the maturity of the underlying bonds is accelerated.

  Upon the phase out of LIBOR in 2021, the interest rate will be replaced by the Federal Funds Rate if not renegotiated prior to the phase out.

- Rollover risk is the risk that a derivative associated with the Authority's debt does not extend to the maturity of that debt. When the derivative terminates, the associated debt will no longer have the benefit of the derivative. The Authority is not exposed to rollover risk as the swap agreements terminate on the same day the last payment is due on the respective bonds.

Contingencies

All of the Authority's derivative instruments include provisions that require the Authority to post collateral in the event that the credit ratings of its credit support provider's senior long term, unsecured debt credit rating falls below BBB- by Standard & Poor's and FSA, the swap insurer, becomes bankrupt. The collateral is to be posted in the form of cash, U.S. Treasuries or other approved securities. As of year-end, the Authority was not required to post collateral for these transactions.

10. Deposits and Investments with Financial Institutions

The Authority is authorized to invest in: obligations of the U.S. Government and government-sponsored agencies and instrumentalities; fully insured or collateralized certificates of deposits; commercial paper of the highest rating; repurchase agreements collateralized by government obligations or securities; highly rated bank promissory notes or investment funds or trusts; and, as to trusteed assets, as otherwise permitted by the trust indenture as supplemented and amended in 2019. Throughout the years ended December 31, 2019 and 2018, the Authority invested its funds in such authorized investments. The Authority has a formal investment policy which addresses custodial credit risk, interest rate risk, credit risk, or concentration of credit risk.

GASB Statement No. 40, *"Deposit and Investment Risk Disclosures,"* requires disclosures related to the following deposit and investment risks: credit risk (including custodial credit risk and concentration of credit risk), interest rate risk, and foreign currency risk. The following is a description of the Authority's deposit and investment risks:

Custodial Credit Risk – Custodial credit risk is the risk that in the event of a bank failure, the Authority's deposits may not be returned to it. As of December 31, 2019 and 2018, $73,827 and $51,969, respectively, of the Authority's bank balance of $74,077 and $52,219, respectively, was exposed to custodial credit risk; $73,827 and $51,969 of these amounts exposed to custodial credit risk are collateralized in accordance with Act 72 of the Pennsylvania state legislature, which requires the institution to pool collateral for all governmental deposits and have the collateral held by an approved custodian in the institution's name. These deposits have carrying amounts of $64,680 and $46,920 as of December 31, 2019 and 2018, respectively, all of which is reported as current assets in the statements of net position.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

At December 31, 2019, the Authority held the following investment balances:

		Maturity in years
	Carrying value	Less than 1 year
PA INVEST	$ 8,997	$ 8,997
Money market	16,360	16,360
U.S. Treasury bills	607	607
Total Investments	$ 25,964	$ 25,964

At December 31, 2018, the Authority held the following investment balances:

		Maturity in years
	Carrying value	Less than 1 year
PA INVEST	$ 8,761	$ 8,761
Money market	13,970	13,970
U.S. Treasury bills	595	595
Total Investments	$ 23,326	$ 23,326

Money market funds are included in cash and cash equivalents as non-current restricted assets on the statements of net position.

The carrying value of the Authority's investments is the same as their fair value amount. U.S. Treasury bills are valued using quoted market prices (Level 1 inputs).

The Authority's investments in money markets and PA INVEST (external investment pool) are the same as the value of the pool shares and are reported at amortized cost, which approximates market. All investments in an external investment pool that are not SEC-registered are subject to oversight by the Commonwealth. The Authority can withdraw funds from INVEST without limitations or fees.

Interest Rate Risk – Interest rate risk is the risk that changes in the interest rates will adversely affect the fair value of the Authority's investments. The Authority is not subject to interest rate risk, as all of its investments at December 31, 2019 and 2018 had maturities of less than one year.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

Credit Risk – Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligation. As of December 31, 2019, the Authority's investments in PA INVEST were rated AAAm by Standard & Poor's. The Authority's investments in U.S. Treasury bills at December 31, 2019 were rated AA+ by Standard & Poor's.

Concentration of Credit Risk – Concentration of credit risk is the risk of loss attributed to the magnitude of a government's investments in a single issuer. The Authority has the following limits, applicable at the time or purchase:

Security Type	Maximum Allocation	Maximum Issuer
U.S. Government Securities	100%	N/A
U.S. Government Agencies & Instruments:		
Guaranteed by the full faith and credit of the United States	100%	N/A
Not guaranteed by the full faith and credit of the United States	60%	40%
Bank Certificates of Deposit	30%	20%
Negotiable Certificates of Deposit	30%	10%
Bank Acceptances	15%	3%
Commercial Paper	20%	3%
Money Market Funds	100%	N/A
Local Government Investment Pools	100%	N/A
Savings or demand deposits	100%	N/A
Repurchase Agreements	25%	10%

The Authority was in compliance with the established limits at December 31, 2019 and 2018.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

11. Net Position

Net position represents the difference between assets, deferred outflows of resources, and liabilities. An analysis of net position amounts is as follows:

	December 31,	
	2019	2018
Net investment in capital assets:		
Net property, plant, and equipment	$ 830,578	$ 757,480
Debt subject to capital improvements	(886,762)	(794,111)
Swap liability net of deferred outflow and inflow	-	(12,497)
Swap borrowing	(64,837)	(75,236)
Deferred charge on refunding	99,012	102,534
Restricted for capital activity and debt service:		
Capital projects	1	1
Debt service and reserve funds	6,643	6,937
	(15,365)	(14,892)
Restricted assets:		
Operating reserve account	18,712	15,792
Other funds	608	596
	19,320	16,388
Unrestricted	(2,420)	(5,855)
Total net position	$ 1,535	$ (4,359)

12. Operating Lease

Operating Lease

The Authority leases office space. The term of the lease is for twenty years commencing on August 1, 2007 and ending on July 31, 2027. The lease is subject to an automatic roll-over for five years, if the Authority does not communicate in writing one year prior to expiration that is desires not to extend the lease. The general terms of the lease require the lessor to provide for utilities, building repairs, maintenance, and real estate taxes.

(DOLLARS EXPRESSED IN THOUSANDS UNLESS OTHERWISE INDICATED)

The total minimum future commitments under the lease for year ended December 31, 2019 are as follows:

2020	$	815
2021		815
2022		823
2023		844
2024		844
2025-2027		2,320
	$	6,461

The total annual rental for office space was approximately $913 and $707 for 2019 and 2018, respectively.

13. Commitments and Contingencies

The Authority is proceeding with a capital improvement program which the Authority's independent engineer has estimated will entail expenditure of the existing construction funds and potential future bond issues.

The Authority was insured for general liability coverage through 2001; however, effective January 1, 2002, it became self-insured. In previous years, the Authority established a fund to pay for deductibles, small claims, and other litigation costs. At year-end, the balance in this fund was approximately $607. This fund is grouped with "Restricted Assets" on the statements of net position. During 2019 and 2018, the Authority paid $0 from this fund for claims.

In addition to the matters discussed below and in Note 14, Consent Agreement, various other claims and lawsuits are pending against the Authority.

<u>Attorney General Criminal Complaint</u>

On September 6, 2017, the Authority self-reported violations of the Safe Drinking Water Act, dating back to July of 2016, to the Pennsylvania Department of Environmental Protection (PADEP). The Authority failed to provide at least 45-day notice prior to commencing partial water line replacements to affected residents and failed to collect representative water samples from residences within 72 hours of completion of the partial water line replacements.

On November 17, 2017, the Authority and the PADEP entered into a voluntary Consent Order and Agreement in full satisfaction of these violations whereby the Authority paid the PADEP a fine of $2,400 with $1,800 of the fine designated for the Authority to perform a Community Environmental Project acceptable to the PADEP. The fine was paid, and the Community Environmental Project was designated and approved by the PADEP as a grant to assist low income homeowners in the Authority's service system in their replacement of privately-owned lead service lines on their property.

At some point after the Authority self-reported these violations to the PADEP, the PADEP referred the matter to the PA Attorney General's Office for investigation of potential criminal liability. After investigation, the PA Attorney General's Office concluded that no individuals were criminally liable for any of the violations of the Safe Drinking Water Act.

However, on February 1, 2019, the PA Attorney General's Office filed a criminal complaint against the Authority as a corporation. The complaint alleged the same self-reported violations, the same type of monetary penalties, and the same suggested type of Community Environmental Project as the Authority already paid under the voluntary Consent Order and Agreement dated November 17, 2017.

The Authority is contesting these duplicative charges and penalties.

<u>Lead Mitigation</u>

The Authority has implemented a number of critical initiatives to comply with the lead service line replacement consent order, and other requirements mandated by the PADEP. These initiatives include: (1) a lead service line identification program to be completed by 2020 for residential properties and 2022 for commercial properties, (2) a water treatment program to mitigate lead corrosion so as to comply with current water quality standards, and (3) a lead service line replacement program. These requirements are stipulated in the PADEP consent order with the Authority dated November 2017.

Lead Service Line Identification Program: The lead service line identification program determines the materials of manufacture for each existing water service line in the

Authority's system. The first phase of that program was completed with the digitization of existing records, which is currently available to the public via the Authority's website. The second phase, which has evolved since the signing of the consent order, consists of a combination of video inspection of accessible service lines to evaluate the materials of manufacture, identification of private service lines while replacing meters, the development of a machine-learning predictive model in conjunction with the University of Pittsburgh and further records mining with the Authority, City of Pittsburgh and Allegheny County Plumbing Department. All updated records are made publicly available on the Authority's website as soon as possible, but no more than 120 days after a video inspection is completed and accepted by the Authority. The third phase includes identifying service line locations that were unable to be confidently determined using the above methods. The identification program will culminate in a complete digital file and mapping of all service lines within the Authority's service territory.

Water Treatment: Chemical treatment testing of orthophosphate application to the Authority's finished water demonstrates rapid mitigation of lead and copper corrosion to levels well below any current federal drinking water standard. The Authority fully implemented the introduction of orthophosphate to the drinking water system in April 2019, and the latest 6-month round (December 2019) of lead monitoring results were at 10.0 parts per billion (ppb), below the 2018 and June 2019 reported levels of up to 22 ppb and below Federal action level of 15.0 ppb. [Action levels are the EPA's established standard for water system compliance with the Federal Lead and Copper Rule.]

Lead Service Line Replacement: The Authority was ordered by PADEP to replace 1,341 public owned lead service lines by June 30, 2018 and an additional 7 percent of the public owned lead service lines by December 31, 2018 (a total of about 2,200). By the end of 2018 a total of 2,765 public lead service lines had been replaced. In addition, the Authority is required to continue to replace 7 percent of the initial number of lead service lines in the system (revised to 855 based upon PWSA data) until two consecutive 6-month monitoring period sampling events are below the lead action level. In January 2019, the Authority awarded $35.9 million in contracts for lead line replacements. Since the June 2019 monitoring results exceeded the lead action level, an additional 855 public lead service lines were replaced, prior to the June 2020 deadline. As of the date of this report, over 6,800 public lead service lines have been replaced.

In March 2019, the Authority started work on the 2019 Neighborhood LSLR project with $49.1 million in funding through PENNVEST, of which $35.4 million is a loan and $13.7

million is a grant. As of the date of this report the Authority has replaced the initial planned number of lead service lines (3,400) and estimates that over 4,300 public lead service lines will be replaced with the available funding. Moving forward, the Authority will begin replacing lead service lines in concert with a water main replacement program. In this manner, the Authority can minimize the overall cost for water main and service line replacements. Most of the remaining lead service lines are connected to the oldest water mains in the system, most subject to breakage and failure. The Authority is implementing a small diameter water main program throughout the city to replace the oldest pipes and services at the same time, with construction bids received in February 2020 for the current program of 15 miles of water main replacement. The Authority will strive to implement this program at the lowest possible cost to the Authority, while addressing those water mains that have the highest likelihood of failure. The Authority's investment in water main replacement will continue unabated to ensure that the Authority can mitigate the amount of annual pipe breaks and minimize the risk of service disruption to its customers. The Authority's program intends to achieve an average water main life more in line with national standards.

Environmental Protection Agency

The Authority has been cooperating with the Environmental Protection Agency ("EPA") in an investigation related to The Authority's Aspinwall Water Treatment Plant. The investigation is ongoing and involves potential violations of the Clean Water Act, Sections 1319(c)(2) and (4) in 2016 and prior years, which may result in penalties. The Authority has redoubled its training and operations monitoring under the auspices of the PADEP and USEPA to provide greater assurance of full regulatory compliance.

14. Consent Agreement

The Authority is subject to federal regulation under the Clean Water Act (1977) and regulations adopted under that Act. Among the specific requirements applicable to the Authority's system are those imposed by the United States Environmental Protection Agency's Combined Sewer Overflow (CSO) Policy (1994). On January 29, 2004, the Authority and the City of Pittsburgh executed a Consent Order and Agreement (COA) regarding wet weather sewer overflows within the City. The other signatories to the COA are the Pennsylvania Department of Environmental Protection (DEP) and the Allegheny County Health Department (ACHD).

Generally, the COA requires the Authority and the City to assess the City sewers to develop a plan with ALCOSAN to address wet weather sewer overflows within the City. The COA is part of a sewer assessment program for all municipalities served by ALCOSAN. To date, assessment activities have been completed for all accessible critical sewers and separate sanitary sewers with the exception of any additional sewers discovered through continued research and investigation. Ongoing pipe and manhole repairs are being completed to provide CCTV access to remaining inaccessible critical/sanitary sewer pipes. Assessment activities for non-critical sewers are to be completed on a longer schedule. The majority of accessible non-critical manholes have been inspected with ongoing efforts to complete any remaining or newly identified. The required Wet Weather Feasibility Study (WWFS) was submitted to the DEP and ACHD on time in July of 2013. This long-term control plan outlined system-wide improvements, including Green Infrastructure (GI) that the Authority would implement over the next 20 years.

As this COA with the DEP expired in March 2015, the U.S. Environmental Protection Agency (USEPA) became the main regulatory body to which the Authority is responsible. On January 21, 2016 the USEPA issued a Clean Water Act Section 308 Information Request to the Authority. The nature of the request is to provide a jurisdictional basis for USEPA to engage the Authority/City in an enforcement action by consent, or a Consent Decree (CD). The Authority intends that through such an action, it can more fully participate in the implementation of interim regional wet weather activities, controls, and improvements. The Authority further understands that such an action will also permit the Authority/City to participate more fully in the identification and implementation of any final wet weather control measures for the region. The USEPA 308 request required the Authority to submit detailed information on past CSO performance and activities. It also required the Authority to conduct a source reduction analysis for the entire service area, followed by GI demonstration projects.

The Authority hired two engineering firms to assess and model the sewer system, fulfilling the first phase of responding to the USEPA 308 request, which was due by March 31, 2016. The second phase of responding to the request was fulfilled by the completion of a source reduction study, which was submitted by the due date of December 1, 2016, and the construction of GI Demonstration Projects and submission of project performance evaluations, which were completed prior to the due date of December 1, 2017. An additional 308 request from the USEPA was received in October 2016 seeking more detailed information and further actions regarding the assessment of the Authority’s sewer system. The response to the October 2016 was delivered, on time, in January 2017.

In addition to the assessment, the USEPA 308 request also requires the Authority and the City to continue implementing the Nine Minimum Controls to reduce combined sewer overflows, and to perform repairs and maintenance of deficiencies revealed by the assessment. The Authority maintains an expedited response to significant structural failures of the sewer system where imminent structural failures are determined by a professional engineer and prioritized for repair. Ongoing sewer line replacement, point repair, lining, point lining, and gunite projects have been implemented to address structural deficiencies. The USEPA 308 request also requires the submission of monthly reports updating the progress of the evaluations and improvements, as well as water quality impacts. These reports are submitted monthly.

The Authority, along with the other impacted local municipalities, are awaiting a response from the USEPA and the DEP on its proposed regional plan. Given the broad scope of a potential CD, the size of the City sewer system, and the various conditions and/or deficiencies that may be discovered by the assessment, it is difficult to predict the total cost of compliance with the CD. Moreover, it is difficult to predict what, if any, largescale and/or regional capital improvements may be required after the completion of the assessment to address wet weather sewer overflows in the City and in the ALCOSAN service area. Costs associated with CD and COA compliance will be reflected in the capital improvement program and funded by proceeds of potential future bond issuances.

15. Subsequent Event

In early 2020, an outbreak of a novel strain of coronavirus was identified and infections have been found in a number of countries around the world, including the United States. The coronavirus and its impact on trade including customer demand, travel, employee productivity, supply chain, and other economic activities has had, and may continue to have, a potentially significant effect on financial markets and business activity. The extent of the impact of the coronavirus on our operational and financial performance is currently uncertain and cannot be predicted. The Authority continues to implement critical infrastructure projects to sustain and improve operations, as well as satisfy our regulatory requirements.

SUPPLEMENTARY INFORMATION

PITTSBURGH WATER AND SEWER AUTHORITY

COMBINING STATEMENT OF NET POSITION

(Dollars expressed in thousands)

DECEMBER 31, 2019

	Water	Sewer	Sewer Treatment	Total
Assets				
Current assets	$ 61,233	$ 30,159	$ -	$ 91,392
Noncurrent assets	573,883	282,659	-	856,542
Total Assets	635,116	312,818	-	947,934
Deferred Outflows of Resources				
Deferred charge on refunding	66,338	32,674	-	99,012
Accumulated decrease in fair value of hedging derivatives	8,945	4,406	-	13,351
Total Deferred Outflows of Resources	75,283	37,080	-	112,363
Liabilities				
Current liabilities	53,175	26,191	-	79,366
Noncurrent liabilities	682,957	284,287	12,152	979,396
Total Liabilities	736,132	310,478	12,152	1,058,762
Net Position				
Net investment in capital assets	(10,295)	(5,070)	-	(15,365)
Restricted	12,944	6,376	-	19,320
Unrestricted	(28,382)	38,114	(12,152)	(2,420)
Total Net Position	$ (25,733)	$ 39,420	$ (12,152)	$ 1,535

PITTSBURGH WATER AND SEWER AUTHORITY

COMBINING STATEMENT OF REVENUES, EXPENSES, AND
CHANGES IN NET POSITION

(Dollars expressed in thousands)

YEAR ENDED DECEMBER 31, 2019

	Water	Sewer	Sewer Treatment	Total
Operating Revenues	$ 110,610	$ 67,469	$ 70,970	$ 249,049
Operating Expenses:				
Direct operating expenses	59,973	29,539	-	89,512
Wastewater treatment	-	-	72,389	72,389
Reimbursement for City of Pittsburgh services	1,991	-	-	1,991
Expense of water provided by other entities:				
Subsidy of customers located in the City	1,338	-	-	1,338
Depreciation	12,067	5,944	-	18,011
Total operating expenses	75,369	35,483	72,389	183,241
Operating Income (Loss)	35,241	31,986	(1,419)	65,808
Non-operating Revenues (Expenses):				
Federal grants	4,638	2,284	-	6,922
Donated property	74	36	-	110
Interest revenue	482	237	-	719
Investment income - change in fair value of swap	(2,801)	(1,379)	-	(4,180)
Interest and amortization	(25,956)	(12,784)	-	(38,740)
Bond issuance costs	(1,650)	(812)	-	(2,462)
Total non-operating revenues (expenses)	(25,213)	(12,418)	-	(37,631)
Net Income (Loss) before Special Item	10,028	19,568	(1,419)	28,177
Special Item:				
Private lead line replacement	(22,283)	-	-	(22,283)
Net Income (Loss)	(12,255)	19,568	(1,419)	5,894
Net Position:				
Beginning of year	(13,506)	19,880	(10,733)	(4,359)
End of year	$ (25,761)	$ 39,448	$ (12,152)	$ 1,535

PITTSBURGH WATER AND SEWER AUTHORITY

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS

YEAR ENDED DECEMBER 31, 2019

Federal Grantor/Pass-Through Grantor/Program Title	Federal CFDA Number	Pass through Grantor's Number	Expenditures	Amounts Provided to Subrecipients
United States Environmental Protection Agency:				
Passed through the Pennsylvania Department of Environmental Protection:				
Drinking Water State Revolving Fund Cluster:				
Capitalization Grants for Drinking Water State Revolving Funds	66.468	81091	$ 21,985,519	$ -
Total Expenditures of Federal Awards			$ 21,985,519	$ -

See accompanying notes to schedule of expenditures of federal awards.

1. Basis of Presentation

The accompanying schedule of expenditures of federal awards (schedule) of the Pittsburgh Water and Sewer Authority (Authority) is presented on the accrual basis of accounting. The information in this schedule is presented in accordance with the requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Because the schedule presents only a selected portion of the operations of the Authority, it is not intended to and does not present the net position, changes in net position, or cash flows of the Authority.

2. Summary of Significant Accounting Policies

Expenditures reported on the schedule are reported on the accrual basis of accounting. Such expenditures are recognized following the cost principles contained in the Uniform Guidance, wherein certain types of expenditures are not allowable or are limited as to reimbursement. The Authority has elected to not use the 10-percent de minimis indirect cost rate allowed under the Uniform Guidance.

3. Determination of Federal Expenditures

The amount of federal expenditures for the United States Environmental Protection Agency loans represents the expenditures incurred under the loan during the year ended December 31, 2019 in addition to expenditures funded by grant proceeds. The United States Environmental Protection Agency requires that the current year expenditures incurred under the loan be reported on the schedule rather than the beginning balance of the loans.

Pittsburgh Water and Sewer Authority

Independent Auditor's Reports
Required by the Uniform Guidance

Year Ended December 31, 2019

MaherDuessel

Independent Auditor's Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

Board of Directors
Pittsburgh Water and Sewer Authority

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the Pittsburgh Water and Sewer Authority (Authority), a component unit of the City of Pittsburgh (City), Pennsylvania, as of and for the year ended December 31, 2019, and the related notes to the financial statements, which collectively comprise the Authority's basic financial statements, and have issued our report thereon dated April 17, 2020.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the Authority's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control. Accordingly, we do not express an opinion on the effectiveness of the Authority's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected, on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Authority’s financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity’s internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity’s internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Maher Duessel

Pittsburgh, Pennsylvania
April 17, 2020

Independent Auditor's Report on Compliance for the Major Program and on Internal Control over Compliance Required by the Uniform Guidance

Board of Directors
Pittsburgh Water and Sewer Authority

Report on Compliance for the Major Federal Program

We have audited Pittsburgh Water and Sewer Authority's (Authority), a component unit of the City of Pittsburgh (City), Pennsylvania, compliance with the types of compliance requirements described in the *OMB Compliance Supplement* that could have a direct and material effect on the Authority's major federal program for the year ended December 31, 2019. The Authority's major federal program is identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs.

Management's Responsibility

Management is responsible for compliance with federal statutes, regulations, and the terms and conditions of its federal awards applicable to its federal programs.

Auditor's Responsibility

Our responsibility is to express an opinion on compliance for the Authority's major federal program based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Those standards and the Uniform Guidance require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the Authority's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for the major federal program. However, our audit does not provide a legal determination of the Authority's compliance.

Opinion on the Major Federal Program

In our opinion, the Authority complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on its major federal program for the year ended December 31, 2019.

Report on Internal Control over Compliance

Management of the Authority is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered the Authority's internal control over compliance with the types of requirements that could have a direct and material effect on each major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing an opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the Authority's internal control over compliance.

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A material weakness in internal control over compliance is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A significant deficiency in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Maher Duessel

Pittsburgh, Pennsylvania
April 17, 2020

PITTSBURGH WATER AND SEWER AUTHORITY

SCHEDULE OF FINDINGS AND QUESTIONED COSTS

YEAR ENDED DECEMBER 31, 2019

I. Summary of Audit Results

1. Type of auditor's report issued: Unmodified, prepared in accordance with Generally Accepted Accounting Principles

2. Internal control over financial reporting:

   Material weakness(es) identified? ☐ yes ☒ no
   Significant deficiencies identified that are not considered to be material weakness(es)?
   ☐ yes ☒ none reported

3. Noncompliance material to financial statements noted? ☐ yes ☒ no

4. Internal control over major programs:

   Material weakness(es) identified? ☐ yes ☒ no
   Significant deficiencies identified that are not considered to be material weakness(es)?
   ☐ yes ☒ none reported

5. Type of auditor's report issued on compliance for major programs: Unmodified

6. Any audit findings disclosed that are required to be reported in accordance with 2 CFR Section 200.516(a)? ☐ yes ☒ no

7. Major Programs:

CFDA Number(s)	Name of Federal Program or Cluster
	DWSRF Cluster:
66.468	Capitalization Grants for Drinking Water State Revolving Funds

8. Dollar threshold used to distinguish between type A and type B programs: $750,000

9. Auditee qualified as low-risk auditee? ☐ yes ☒ no

II. Findings related to the financial statements which are required to be reported in accordance with GAGAS.

No matters were reported.

III. Findings and questioned costs for federal awards

No matters were reported.

PITTSBURGH WATER AND SEWER AUTHORITY

SUMMARY SCHEDULE OF PRIOR AUDIT FINDINGS

YEAR ENDED DECEMBER 31, 2019

NO SINGLE AUDIT IN THE PRIOR YEAR