METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI
HAMILTON COUNTY

REGULAR AUDIT

FOR THE YEAR ENDED DECEMBER 31, 2018

OHIO AUDITOR OF STATE
KEITH FABER

METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI
HAMILTON COUNTY

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INDEPENDENT AUDITOR'S REPORT

Metropolitan Sewer District of Greater Cincinnati
Hamilton County
1600 Gest Street
Cincinnati, OH 45204

To the Hamilton County Board of Commissioners:

Report on the Financial Statements

We have audited the accompanying financial statements of the Metropolitan Sewer District of Greater Cincinnati, Hamilton County, Ohio (the District), as of and for the years ended December 31, 2018 and December 31, 2017, and the related notes to the financial statements, which collectively comprise the District's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for preparing and fairly presenting these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes designing, implementing, and maintaining internal control relevant to preparing and fairly presenting financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to opine on these financial statements based on our audit. We audited in accordance with auditing standards generally accepted in the United States of America and the financial audit standards in the Comptroller General of the United States' *Government Auditing Standards*. Those standards require us to plan and perform the audit to reasonably assure the financial statements are free from material misstatement.

An audit requires obtaining evidence about financial statement amounts and disclosures. The procedures selected depend on our judgment, including assessing the risks of material financial statement misstatement, whether due to fraud or error. In assessing those risks, we consider internal control relevant to the District's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not to the extent needed to opine on the effectiveness of the District's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of management's accounting policies and the reasonableness of their significant accounting estimates, as well as our evaluation of the overall financial statement presentation.

We believe the audit evidence we obtained is sufficient and appropriate to support our audit opinions.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the Metropolitan Sewer District of Greater Cincinnati, Hamilton County, Ohio, as of December 31, 2018 and December 31, 2017, and the respective changes in financial position and, where applicable, cash flows thereof for the years then ended in accordance with the accounting principles generally accepted in the United States of America.

Emphasis of Matter

As discussed in Note 15 to the financial statements, during 2018, the District adopted new accounting guidance in Governmental Accounting Standards Board (GASB) Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. We did not modify our opinion regarding this matter.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require this presentation to include *management's discussion and analysis* and schedules of net pension and other post-employment benefit liabilities and pension and other post-employment benefit contributions listed in the table of contents, to supplement the basic financial statements. Although this information is not part of the basic financial statements, the Governmental Accounting Standards Board considers it essential for placing the basic financial statements in an appropriate operational, economic, or historical context. We applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, consisting of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, to the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not opine or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to opine or provide any other assurance.

Supplementary and Other Information

Our audit was conducted to opine on the District's basic financial statements taken as a whole.

The statements are management's responsibility, and derive from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. We subjected this information to the auditing procedures we applied to the basic financial statements. We also applied certain additional procedures, including comparing and reconciling this information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves in accordance with auditing standards generally accepted in the United States of America. In our opinion, this information is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

We did not subject the introductory section information to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we express no opinion or any other assurance on it.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated May 29, 2019, on our consideration of the District's internal control over financial reporting and our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters. That report describes the scope of our internal control testing over financial reporting and compliance, and the results of that testing, and does not opine on 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 District's internal control over financial reporting and compliance.

Keith Faber

Keith Faber
Auditor of State

Columbus, Ohio

May 29, 2019

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MANAGEMENT DISCUSSION AND ANALYSIS
(UNAUDITED)

This section of the Metropolitan Sewer District's annual financial report presents our discussion and analysis of the District's financial performance during the fiscal years ended December 31, 2018 and December 31, 2017, as restated. Please read it in conjunction with the District's basic financial statements and footnotes, beginning on page 12.

FINANCIAL HIGHLIGHTS FOR THE YEAR

- Assets and deferred outflows exceeded liabilities and deferred inflows by $1,142 million at the close of the 2018 fiscal year.
- The District's net position increased by $65.4 million in 2018, or 6.1%, and by $128.2 million, 13.5%, during fiscal year 2017.
- During fiscal year 2018, the District's total assets increased $93.7 million to $2,269 million, a 4.3% increase. In 2017 total assets were $2,175 million, an increase of $75.3 million, or 3.6% over the prior year.
- Total long-term liabilities increased $39 million to $1,058 million in fiscal year 2018. Long-term liabilities increased $6 million to $1,019 million in 2017.
- The District's debt service coverage ratio remains strong at 1.8 for fiscal year 2018 and 2.5 in 2017.

FINANCIAL STATEMENTS OVERVIEW

Financial Reporting Entity – The Metropolitan Sewer District of Greater Cincinnati (District) is a Hamilton County enterprise fund managed and operated by the City of Cincinnati. The District is operated pursuant to the authority of the Revised Code authorizing the formation of joint sewer districts, agreements between counties and municipal corporations. The District provides sewage treatment within a service area of approximately 400 square miles and encompasses portions of four counties in southwestern Ohio. The District provides wastewater removal and treatment to over 220,000 residential, commercial and industrial sewer connections and operates and maintains over 3,000 miles of sanitary and combined sewers, seven major wastewater treatment plants and 100 pump stations. As an enterprise fund, operations are reported on the full accrual basis of accounting: revenues are recognized when earned, and expenses are recognized when incurred. The County issues a separate Comprehensive Annual Financial Report which includes the District as a separate enterprise fund of the County. The financial statements of the District report information about the District using accounting methods similar to those used by private-sector companies. These statements provide both long-term and short-term information about the District's overall financial status.

Financial Statement Structure–

In addition to the Independent Auditor's Report, the annual financial report consists of three segments:

- The Management's Discussion and Analysis provides explanations for and analysis of the Department's financial activities based upon currently known facts, conditions, and decisions of the Department's management. While primarily focused on current year results compared with prior years, this discussion also addresses certain long-term issues, which may, in management's opinion, impact the District's financial performance.

- Basic Financial Statements, which depict the District's financial position as of December 31, 2018 and 2017, along with earnings performance and cash flow information. These statements include the Statement of Net Position, the Statement of Revenues, Expenses, and Changes in Net Position and the Statement of Cash Flows.
- The accompanying notes explain some of the financial statement data and provide more detailed information.

Required Basic Financial Statements -- The Statement of Net Position is the first required statement; it includes the District's assets and liabilities and provides information about the nature and amounts of investments in resources (assets) and nature and extent of obligations (liabilities) with the difference being reported as net position. It also provides the basis for computing the rates of return, evaluating the capital structure of the District, and assessing the liquidity and financial flexibility of the District. Over time, increases or decreases in the District's net position is one indicator of whether its financial health is improving or deteriorating. Other non-financial factors such as changes in economic conditions, population growth, and new or changed legislation also need to be considered in assessing the District's financial condition. The Statement of Revenues, Expenses, and Change in Net Position is the second required financial statement which demonstrates the changes in net position from one fiscal period to the next by accounting for revenues and expenditures and measuring the financial results of operations. This statement measures the profitability (i.e. change in net position) of the District's operations over the past year and can be used to determine whether the District has successfully recovered all of its costs through its user fees and other charges. The final required financial statement is the Statement of Cash Flows. The primary purpose of this statement is to provide information about the District's cash receipts, cash payments, and net changes in cash and cash equivalents resulting from operations, investing, and capital and noncapital financing activities. It also provides information regarding sources of cash, uses of cash, and changes in cash balances during the reporting period

Notes to the audited financial statements contain information essential to understanding them, such as the District's significant accounting policies and information about certain financial statement account balances

FINANCIAL ANALYSIS

Table A below shows that in fiscal year 2018, 66.7% or 2/3rds of the District's net position reflects its investment in capital assets (e.g., buildings, sewer laterals, and equipment), less related debt still outstanding used to acquire those assets. These capital assets are used primarily in the collection and treatment of wastewater throughout the District's service area.

- The related liabilities will be repaid with resources provided by system users through rates and fees. Long-term debt (net of the current portion) increased by $15.1 million in 2018, or 1.7%, and $12.0 million in 2017, 1.3%.
- Net position increased $65.4 million in 2018, $128.2 million in 2017. Percentage increases over the two year period of 6.1%, 13.5%, respectively.

Table A
Condensed Summary of Net Position
(In Thousands)

	2018	Percentage Increase (Decrease) over 2017	Restated 2017	Percentage Increase (Decrease) over 2016	2016	Percentage Increase (Decrease) over 2015
Current and other assets	$ 596,332	-0.4%	$ 598,559	4.4%	$ 573,532	7.1%
Capital assets, net	$1,672,436	6.1%	$ 1,576,529	3.3%	$ 1,526,257	1.4%
Total assets	2,268,768	4.3%	2,175,088	3.6%	2,099,789	2.9%
Deferred Outflows	$ 29,889	57.5%	$ 18,983	-38.8%	$ 30,997	-26.9%
Current liabilities	$ 82,403	9.3%	$ 75,425	-24.9%	$ 100,396	7.3%
Noncurrent liabilities	$1,057,773	3.8%	$ 1,018,792	0.6%	$ 1,013,072	-15.9%
Total liabilities	$1,140,176	4.2%	$ 1,094,217	-1.7%	$ 1,113,468	-14.2%
Deferred Inflows	$ 16,650	-29.3%	$ 23,547	-65.9%	$ 69,100	231.0%
Net investment in capital assets	$ 761,989	9.7%	$ 694,743	8.7%	$ 639,364	7.0%
Restricted	$ 7,063	1.3%	$ 6,973	-16.1%	$ 8,313	0.9%
Unrestricted	$ 372,779	-0.5%	$ 374,681	24.7%	$ 300,541	89.6%
Total Net Position	$1,141,831	6.1%	$ 1,076,397	13.5%	$ 948,218	24.1%

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MANAGEMENT DISCUSSION AND ANALYSIS (UNAUDITED)

Table B below shows total operating revenues for fiscal year 2018 of $272.9 million, a decrease of $18.5 million, or -6.4%. Operating revenues were $291.4 million, an increase of 11.7 million, or 4.2%, in 2017 due to a move from quarterly to monthly billing. Meanwhile, total expenses increased $48.0 million, or 26.9%, in 2018 and increased $68.7 million, or 62.5%, in 2017. Increase in total expenses in both those years was due to fluctuations attributable to accounting for pensions.

Table B
Condensed Summary of Revenues
Expenses and Changes in Net Position
(In Thousands)

	2018	Percentage Increase (Decrease) over 2017	Restated 2017	Percentage Increase (Decrease) over 2016	2016	Percentage Increase (Decrease) over 2015
Operating revenues	$ 272,885	-6.4%	$ 291,400	4.2%	$ 279,665	0.5%
Nonoperating revenues	14,495	35.5%	10,695	5.4%	10,146	6.5%
Total revenues	287,380	-4.9%	302,095	4.2%	289,811	0.7%
Depreciation and amortization expense	$ 65,132	10.3%	$ 59,073	4.2%	$ 56,672	2.0%
Other operating expenses	118,355	-0.6%	119,032	1.2%	117,625	2.0%
Pension Expense	6,861	-117.0%	(40,401)	-62.0%	(106,278)	-100.0%
Nonoperating expenses	36,492	-10.9%	40,943	-2.3%	41,926	-36.7%
Total expenses	$ 226,840	27.0%	$ 178,647	62.5%	$ 109,945	-53.6%
Income from operations	$ 60,540	-51.0%	$ 123,448	-31.4%	$ 179,866	255.2%
Capital contributions	$ 4,894	3.4%	$ 4,731	13.4%	$ 4,172	-2.2%
Change in net position	$ 65,434	-49.0%	$ 128,179	-30.4%	$ 184,038	235.2%
Total Net Position, beginning	1,076,397	13.5%	948,218	24.1%	764,180	7.7%
Total Net Position, ending	$1,141,831	6.1%	$ 1,076,397	13.5%	$ 948,218	24.1%

- Operating expenses, excluding depreciation, amortization and net pension expense, decreased by $0.6 million to $118.4 million in 2018 from $119.0 million in 2017. The decrease was due to a reduction in other expenses. 2017 saw an increase of $1.4 million, or 1.2%, over the prior year. The increase was due to purchased services and other expenses.
- Salary and wages were relatively flat at $52.1 million in 2018 compared to $52.3 million in 2017.
- Depreciation expense increased $6 million, or 10.3%, in 2018. Depreciation expense increased $2.4 million, 4.2%, in 2017 compared to the prior year.
- Non-operating expenses for 2018 were $36.4 million in 2018, a decrease of -11.1%. 2017 decreased $1.0M, or -2.3%, due to changes in interest expense and the fair value of investments.
- The City of Cincinnati offered an Early Retirement Incentive Program (ERIP) in 2007. In 2016, MSD paid the City $8,723,061, its share of the remaining liability to the City Retirement System. This

amount represents in full the liability for the years 2015-2023 and is being amortized over 7 years. ERIP amortization expense was $1,250 million in both 2018 and 2017.

Table C reflects year-end capital balances. As of December 31, the District's investment in capital assets (net of accumulated depreciation) amounted to $1,672 million in 2018, $1,577 million in 2017. Capital assets increased $95 million, or 6%, on system improvement projects, land acquired for those projects and equipment replacement in 2018. Capital contributions were $4.9 million and $4.7 million in 2018 and 2017, respectively.

Capital construction and sewer improvement projects were 32% in 2018 and 52% of the program in 2017. Additional information on the District's capital assets can be found in Note 5 to the financial statements.

Table C
Capital Assets
(In Thousands)

	2018	Percentage Increase (Decrease) over 2017	2017	Percentage Increase (Decrease) over 2016	2016	Percentage Increase (Decrease) over 2015
Land	$ 10,188	57.2%	$ 6,481	0.0%	$ 6,481	0.0%
Buildings	355,865	0.7%	353,520	0.0%	353,520	0.5%
Equipment	682,525	15.0%	593,496	8.7%	546,230	11.0%
Sewer Laterals	1,293,287	9.8%	1,177,893	0.7%	1,169,727	6.7%
Construction in progress	315,384	-19.5%	392,004	12.1%	349,606	-15.2%
Subtotal	$2,657,249	5.3%	$ 2,523,394	4.0%	$ 2,425,564	2.8%
Less accumulated depreciation	984,813	4.0%	946,865	5.3%	899,307	5.3%
Net capital assets	$1,672,436	6.1%	$ 1,576,529	3.3%	$ 1,526,257	1.4%

Bond Issuances

The District finances its construction program through a combination of revenue bonds, state revolving loans through the State of Ohio and cash, with the primary source being tax-exempt revenue bonds. The District's revenue bond rates are:

- Moody's Investors Services Aa2
- Standard & Poor's Corporation AA+

Revenue bond service Debt Coverage in 2018 was 272% and 372% in 2017, as restated, compared to an Agency policy of 150% (25% higher than indenture requirements). The total debt coverage for 2018 was 183% and 253% in 2017, as restated compared to the indenture requirement of 125%

Rate Increase - Hamilton County Commissioners have not approved a rate increase of the District's sewer fee for 2016 - 2019. The District's large capital program to meet Federal EPA requirements will likely necessitate a rate increase in the near future.

GASB 68

During 2015, the Metropolitan Sewer District of Greater Cincinnati adopted GASB Statement 68, "Accounting and Financial Reporting for Pensions—an Amendment of GASB Statement 27," which significantly revises accounting for pension costs and liabilities. For reasons discussed below, many end users of this financial statement will gain a clearer understanding of the Metropolitan Sewer District of Greater Cincinnati's actual financial condition by adding deferred inflows related to pension and the net pension liability to the reported net position and subtracting deferred outflows related to pension.

Governmental Accounting Standards Board standards are national and apply to all government financial reports prepared in accordance with generally accepted accounting principles. When accounting for pension costs, GASB 27 focused on a funding approach. This approach limited pension costs to contributions annually required by law, which may or may not be sufficient to fully fund each plan's *net pension liability*. GASB 68 takes an earnings approach to pension accounting; however, the nature of Ohio's statewide pension systems and state law governing those systems requires additional explanation in order to properly understand the information presented in these statements.

Under the standards required by GASB 68, the net pension liability equals the Metropolitan Sewer District of Greater Cincinnati's proportionate share of each plan's collective:

1. Present value of estimated future pension benefits attributable to active and inactive employees' past service
2 Minus plan assets available to pay these benefits

GASB notes that pension obligations, whether funded or unfunded, are part of the "employment exchange" – that is, the employee is trading his or her labor in exchange for wages, benefits, and the promise of a future pension. GASB noted that the unfunded portion of this pension promise is a present obligation of the government, part of a bargained-for benefit to the employee, and should accordingly be reported by the government as a liability since they received the benefit of the exchange. However, the Metropolitan Sewer District of Greater Cincinnati is not responsible for certain key factors affecting the balance of this liability. The Metropolitan Sewer District of Greater Cincinnati employees are covered by two pension systems. They are the City of Cincinnati Retirement System (CRS), and the Ohio Public Employees Retirement System (OPERS). The City of Cincinnati Retirement System (CRS) is accounted for as a single employer defined benefit pension plan. For CRS, the employee shares the obligation of funding pension benefits with the employer. Both employer and employee contribution rates are set by the City of Cincinnati ordinance. The CRS system provides retirement and disability benefits, annual cost of living adjustments, and death benefits to plan members and beneficiaries. The City of Cincinnati makes employer contributions based on a percentage of covered payroll of all CRS members. For Ohio PERS, the employee shares the obligation of funding pension benefits with the employer. Both employer and employee contribution rates are capped by State statute. A change in these caps requires action of both

Houses of the General Assembly and approval of the Governor. Benefit provisions are also determined by State statute. The employee enters the employment exchange with the knowledge that the employer's promise is limited not by contract but by law. The employer enters the exchange also knowing that there is a specific, legal limit to its contribution to the pension system. In Ohio, there is no legal means to enforce the unfunded liability of the pension system *as against the public employer.* State law operates to mitigate/lessen the moral obligation of the public employer to the employee, because all parties enter the employment exchange with notice as to the law. The pension system is responsible for the administration of the plan.

Most long-term liabilities have set repayment schedules or, in the case of compensated absences (i.e. sick and vacation leave), are satisfied through paid time-off or termination payments. There is no repayment schedule for the net pension liability. As explained above, changes in pension benefits, contribution rates, and return on investments affect the balance of the net pension liability, but are outside the control of the local government. In the event that contributions, investment returns, and other changes are insufficient to keep up with required pension payments, State statute does not assign/identify the responsible party for the unfunded portion. Due to the unique nature of how the net pension liability is satisfied, this liability is separately identified within the long-term liability section of the statement of net position.

In accordance with GASB 68, the Metropolitan Sewer District of Greater Cincinnati's statements prepared on an accrual basis of accounting include an annual pension expense for their proportionate share of each plan's *change* in net pension liability not accounted for as deferred inflows/outflows.

For fiscal year 2018, MSD implemented Governmental Accounting Standards Board (GASB) Statement No. 85, *Omnibus 2017*, Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, and related guidance from GASB Implementation Guide No. 2017-3, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (and Certain Issues Related to OPEB Plan Reporting).*

For additional information on the Management Discussion and Analysis please contact:

Metropolitan Sewer District of Greater Cincinnati
Office of the Director
1600 Gest Street
Cincinnati, OH 45204

Metropolitan Sewer District
Statement of Net Position
For The Periods Ended December 31, 2018 And December 31, 2017
(All amounts expressed in thousands)

	2018	Restated 2017
ASSETS		
Current assets:		
Cash, cash equivalents and pooled investments held by the City of Cincinnati (Note 2)	21,073	10,566
Accounts receivable (Note 3)	39,656	57,601
Prepaid expenses and other (Note 14)	6,141	6,571
Total current assets	66,870	74,738
Noncurrent assets:		
Restricted assets:		
Cash, cash equivalents, and pooled investments held by the City of Cincinnati		
Construction account (Note 2)	156,891	102,575
Amount to be transferred to surplus account (Note 2)	82,711	50,697
Held by trustee: (Note 4)		
Cash and cash equivalents (Note 2)	7,824	93,077
Investments - Held to maturity (Note 2)	281,854	277,316
Total restricted assets	529,280	523,665
Other assets:		
Other	182	156
Total other assets	182	156
Capital assets: (Note 5)		
Land	10,188	6,481
Buildings	355,865	353,520
Sewer Laterals	1,293,287	1,177,893
Equipment	682,525	593,496
Construction in progress	315,384	392,004
Total capital assets	2,657,249	2,523,394
Less:		
Accumulated depreciation	(984,813)	(946,865)
Net capital assets	1,672,436	1,576,529
Total noncurrent assets	2,201,898	2,100,350
Total assets	2,268,768	2,175,088
Deferred outflow of resources		
Deferred charges on refunding	10,002	11,329
Deferred Pension Outflows	19,887	7,654
Total Deferred Outflow of Resources	29,889	18,983

The notes to the financial statements are an integral part of the financial statements

Metropolitan Sewer District
Statement of Net Position
For The Periods Ended December 31, 2018 And December 31, 2017
(All amounts expressed in thousands)

	2018	Restated 2017
LIABILITIES		
Current liabilities:		
Payable from current assets:		
Current portion of long-term debt (Note 6)	52,187	49,615
Current portion of compensated absences (Note 8)	4,512	4,240
Accounts payable	7,625	9,296
Accrued payroll expenses	2,146	1,936
Total current liabilities payable from current assets	66,470	65,087
Payable from restricted assets:		
Construction accounts payable	13,411	7,698
Accrued interest payable	2,522	2,640
Total current liabilities payable from restricted assets	15,933	10,338
Total current liabilities	82,403	75,425
Noncurrent liabilities:		
Accrued compensated absences (Note 8)	5,520	6,311
Long-term debt (Note 6)	922,190	907,069
Net Pension Liability CRS	111,483	95,384
Net Pension Liability OPERS	2,680	3,923
Net Other Post Employment Benefit Liability (Note 15)	15,900	6,105
Total noncurrent liabilities	1,057,773	1,018,792
Total liabilities	1,140,176	1,094,217
Deferred Inflow of resources		
Deferred Pension Inflows (Note 15)	16,650	23,457
Net position:		
Net investment in capital assets	761,989	694,743
Restricted	7,063	6,973
Unrestricted (Note 15)	372,779	374,681
Total Net Position	1,141,831	1,076,397

The notes to the financial statements are an integral part of the financial statements

Metropolitan Sewer District
Statement of Revenue, Expenses and Changes in Fund Net Position
For The Periods Ended December 31, 2018 And December 31, 2017
(All amounts expressed in thousands)

	2018	Restated 2017
REVENUES		
Operating revenues:		
Sewerage service charges	252,474	269,243
Sewer surcharges	16,800	18,351
All other revenues	3,611	3,806
Total operating revenues	272,885	291,400
EXPENSES		
Operating expenses:		
Personnel services:		
Salary and Wages	52,190	52,299
Pension Expense	6,861	(40,401)
Purchased services	34,912	32,744
Utilities, fuel and supplies	18,820	18,910
Depreciation and amortization	65,132	59,073
Other expenses	12,433	15,079
Total operating expenses	190,348	137,704
Operating income	82,537	153,696
NONOPERATING		
Nonoperating revenues (expenses):		
Interest income	14,386	10,695
Change in fair value of investments	109	(1,822)
Interest expense	(36,492)	(39,121)
Total nonoperating revenues (expenses)	(21,997)	(30,248)
Income before contributions	60,540	123,448
Capital contributions	4,894	4,731
Change in net position	65,434	128,179
Total net position, beginning	1,076,397	948,218
Total net position, ending (Note 15)	1,141,831	1,076,397

The notes to the financial statements are an integral part of the financial statements

Metropolitan Sewer District
Statement of Cash Flow
For The Periods Ended December 31, 2018 And December 31, 2017

	2018	Restated 2017
Cash flows from Operating Activities:		
Cash received from customers	285,801	276,749
Cash payments for goods and services	(69,396)	(76,783)
Cash payments for personnel costs	(52,452)	(51,351)
Other operating revenues	3,197	2,964
Net Cash Provided by Operating Activities	167,150	151,579
Cash Flows from Capital and Related Financing Activities:		
Principal and interest payments on long-term debt	(81,323)	(98,541)
Acquisition and construction of capital assets	(97,726)	(75,303)
Loan proceeds	15,439	33,792
Transfer into construction account from trustee investment account	136,377	50,000
Transfer from operating cash account to trustee investment account	(50,697)	(85,680)
Transfer to trustee investment account from operating cash	0	86,000
Tap-in fees	3,761	4,045
Proceeds from the sale of capital assets	50	219
Net Cash (Used) by Capital and Related Financing Activities	(74,119)	(85,468)
Cash Flows from Investing Activities:		
Purchase of government securities	(85,361)	8,899
Net increase (decrease) in fair value of cash and investments	109	(1,822)
Interest earned on investments	3,805	2,390
Net Cash Provided (Used) by Investing Activities	(81,447)	9,467
Net Increase (Decrease) in Cash and Cash Equivalents	11,584	75,578
Cash and Cash Equivalents at January 1	256,915	181,337
Cash and Cash Equivalents at December 31	268,499	256,915
Reconciliation of Operating Income to Net Cash Provided by Operating Activities:		
Income from operations	82,537	153,696
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation and amortization	65,132	59,073
Capital Expenses moved to Operating	406	98
Operating Expenses moved to Capital	908	0
Changes in assets and liabilities:		
Net change in customer accounts receivable	17,945	(7,751)
Net change in prepaid assets	(820)	(123)
Net change in other assets	(26)	0
Net change in operating accounts payable	(1,671)	(9,855)
Net change in accrued payroll and related expenses	(495)	760
Net Pension Liability	14,856	(3,437)
Net Other Post Employment Benefit Liability (Note 15)	9,795	(3,258)
Net Change in cash received from customers	93	(10)
Net Change in Deferred Charges on Refunding Outflows	1,327	1,327
Net Change in Deferred Pension Outflows	(12,233)	10,687
Net Change in Deferred Pension Inflows (Note 15)	(6,807)	(45,643)
Net Change in Capital Expenses 7600 moved to Fixed Assets in Fund 701	(3,797)	(3,985)
Net Cash Provided by Operating Activities	167,150	151,579
Non-cash Transactions:		
Structures donated as contributed capital in aid of construction	2,945	2,726
Acquisition and construction of capital asset paid directly by WPCLF loan proceeds	52,800	27,660
Construction accounts payable related to acquisition of capital assets	13,411	7,698

The notes to the financial statements are an integral part of the financial statements

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NOTE 1 - ACCOUNTING POLICIES

A summary of the significant accounting policies applied in the accompanying financial statements follows:

Organization

The Metropolitan Sewer District of Greater Cincinnati (MSD), an enterprise fund of the County of Hamilton, Ohio, collects and treats industrial and residential wastewater for municipalities and unincorporated areas of Hamilton County. MSD was formed on April 10, 1968, pursuant to resolutions of the Board of County Commissioners of Hamilton County and Ordinances of the City of Cincinnati, providing for a consolidation of the City Sewer Department and the County Sewer District. The two entities executed an agreement with an initial 50-year term. Per the agreement, the city is responsible for operational management. The original agreement was set to expire in April 2018 but has since been extended indefinitely by the Federal District Court. The parties remain in mediation in Federal District Court to resolve their remaining disputes.

Under a contract with the City of Cincinnati, the Board designated the City as its agent for the maintenance and operation of MSD. The annual budget, prepared on a non-GAAP budgetary basis of accounting, is approved by the Board and administered by the City. Budgetary control is exercised at the divisional level, and between personnel and all other costs. The County issues a separate Comprehensive Annual Financial Report which includes MSD as a separate enterprise fund of the County.

Basis of Accounting

The accompanying financial statements were prepared on the accrual basis of accounting, whereby revenues and expenses are recognized in the period earned or incurred.

Use of Estimates

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

Statement of Cash Flows

For purposes of the Statements of Cash Flows, all highly liquid investments with a maturity of three months or less when purchased are considered to be cash equivalents. Pooled cash and investments held by the City of Cincinnati are considered cash equivalents by MSD.

Investments

MSD is required by Ohio law to invest in only United States obligations; federal agency securities; Ohio bonds and other obligations or such obligations of political subdivisions of the state, provided that the subdivisions are located within Hamilton County; time certificates of deposit or deposit accounts in an eligible institution; and no load money market mutual funds consisting only of investments mentioned above. Investments are required to mature within five years from the date of settlement, unless the investment is matched to a specific obligation or debt of MSD.
GASB Statement No. 72, *Fair Value Measurement and Application*, addresses accounting and financial reporting issues related to fair value measurements. This Statement provides guidance for determining a fair value measurement for financial reporting purposes for applying fair value to certain investments and disclosures related to all fair value measurements.

Prepaids

Payments made for services that will benefit periods beyond fiscal year end December 31, 2018, are recorded as prepaids using the consumption method. A current asset for the prepaid amount is recorded at the time of the purchase and an expense is reported in the year in which services are consumed.

Inventory

Supplies and materials are stated at the lower cost or market on a first-in, first-out (FIFO) basis.

Capital Assets

Capital assets include land, construction in progress, buildings, sewer laterals, studies, and equipment. Capital assets are defined as assets with an initial, individual cost of more than $5,000.

Capital assets are stated at historical cost for assets acquired after MSD's inception in 1968. Assets which were acquired prior to 1968 and not identifiable with specific historical costs are not included in the capital assets balance. Assets acquired by MSD through contributions, such as contributions from land developers and federal and state grants, are capitalized and recorded in the plant records at the contributors' reported cost. Construction costs include the cost of in-force labor. See note 5 for more information on capital assets.

Land acquired for MSD's use is titled to either the City of Cincinnati or Hamilton County. The cost of this land has been recorded on the books of MSD since it has the full benefit of the land as an economical resource.

Depreciation expense is computed on the straight-line method over the estimated useful lives of the respective assets. The estimated lives are as follows:

Building	40 years
Sewer Laterals	40 years
Equipment	5-25 years

Any gain or loss arising from the disposal of capital assets has been credited or charged to income.

Unamortized Financing Costs

The unamortized financing costs include insurance, consulting and attorney fees incurred in connection with the revenue bond obligations. These amounts are being amortized on the straight-line method over the lives of the revenue bonds. Bond premiums and discounts are being amortized on the interest method over the lives of the revenue bonds.

Deferred Outflows/Inflows of Resources

In addition to assets, the statement of financial position will sometimes report a separate section for deferred outflows of resources. Deferred outflows of resources represent a consumption of net position that applies to a future period and will not be recognized as an outflow of resources (expense) until then. For MSD, deferred outflows of resources are reported on the statement of net position for deferred charges on refunding, pension and other postemployment benefits (OPEB). A deferred charge on refunding results from the difference in the carrying value of refunded debt and its reacquisition price. This amount is deferred and amortized over the shorter of the life of the refunded or refunding debt. The deferred outflows of resources related to pension and OPEB are explained in Notes 9 and 10.

In addition to liabilities, the statement of financial position reports a separate section for deferred inflows of resources. Deferred inflows of resources represent an acquisition of net position that applies to a future period and will not be recognized until that time. For MSD, deferred inflows of resources have been recorded in the statement of net position for pension and OPEB, as explained in Notes 9 and 10.

Pension/OPEB Plans

Employees participate in either the City of Cincinnati's Retirement System or the Ohio Public Employees Retirement System. For purposes of measuring the net pension and OPEB liabilities, deferred outflows of resources and deferred inflows of resources related to pension and OPEB, and pension and OPEB expense, information about the fiduciary net position of the pension and OPEB plans and additions to/deductions from their fiduciary net position have been determined on the same basis as they are reported by the retirement systems. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. The retirement systems report investments at fair values.

Compensated Absences

Compensated absences include accrued vacation time, sick leave, compensatory time and other related payments. Compensatory time and vacation time are paid out in full upon termination and are expensed in the year earned. Sick leave is paid out at various levels. The liability for sick leave is computed with the Termination Payment Method using an historical average of total years worked and total amount paid. The current amounts are an average of the annual expenditures. The entire compensated absence liability is reported on the financial statements.

Net Position

Net positions are the difference between assets, deferred outflows, deferred inflows, and liabilities. Net investment in capital assets are capital assets less accumulated depreciation and any outstanding long-term debt related to the acquisition, construction or improvement of those assets. Net positions are reported as restricted when there are legal limitations that are imposed on their use by county legislation or external restrictions by other governments, creditors or grantors. Restricted net positions of the MSD relate to debt service.

MSD applies restricted resources when an expense is incurred for purposes for which both restricted and unrestricted net positions are available. MSD does not have net position restricted by enabling legislation.

Operating Revenues and Expenses

Operating revenues are those revenues that are generated directly from the primary activity of the proprietary fund. For the District, these revenues are charges for services for wastewater treatment. Operating expenses are necessary costs incurred to provide the service that is the primary activity of the fund.

Contributions of Capital

Contributions of capital arise from outside contributions of capital assets or outside contributions of resources restricted to capital acquisition and construction.

NOTE 2 - DEPOSITS AND INVESTMENTS

Deposits

State statues classify monies held by the District into three categories.

Active deposits are public deposits necessary to meet current demands on the treasury. Such monies must be maintained either as cash in the District's Treasury, in commercial accounts payable or withdrawable on demand, including negotiable order of withdrawal (NOW) accounts, or in money market deposit accounts.

Inactive deposits are public deposits that the District has identified as not required for use within the current two-year period of designation of depositories. Inactive deposits must either be evidenced by certificates of deposit maturing not later than the end of the current period of designation of depositories, or by savings or deposit accounts including, but not limited to, passbook accounts.

Interim deposits are deposits of interim monies. Interim monies are those monies which are not needed for immediate use but which will be needed before the end of the current period of designation of depositories. Interim deposits must be evidenced by time certificates of deposit maturing not more than one year from the date of deposit or by savings or deposit accounts including passbook accounts.

Protection of the District's deposits is provided by the Federal Deposit Insurance Corporation (FDIC), by eligible securities pledged by financial institution as security for repayment, by surety company bonds deposited with the finance director by the financial institution or by a single collateral pool established by the financial institution to secure the repayment of all public monies deposited with the institution.

Custodial credit risk is the risk that in the event of a bank failure, the government's deposits may not be returned to it. The District's policy for deposits is collateral is required for demand deposits and certificates of deposit at 105 percent, or 102 percent if the financial institution participates in the Treasurer of State's Ohio Pooled Collateral System, of all deposits not covered by federal deposit insurance. Obligations that may be pledged as collateral are obligations of the United States and its agencies and obligations of the State and its municipalities, school districts, and district corporations. Obligations pledged to secure deposits must be delivered to a bank other than the institution in which the deposit is made. Written custodial agreements are required. The District is required to categorize deposits and investments according to GASB Statement No. 3 *Deposits with Financial Institutions, Investments, and Reverse Purchase Agreements*. The carrying value of the District's deposits was $260,675,000 and $163,838,000 at December 31, 2018 and 2017, respectively.

Amounts held by the City of Cincinnati are invested on MSD's behalf in accordance with the Cincinnati Municipal Code. Amounts held by the City are collateralized as part of the City's cash and investment balances. For GASB 40 disclosure requirements, refer to the financial statements as of June 30, 2018 for the City of Cincinnati.

Although the pledging bank has an investment and securities pool used to collateralize all public deposits, which are held in the financial institution's name, noncompliance with federal requirements could potentially subject the District to a successful claim by the FDIC. The deposits not covered by federal depository insurance are considered uninsured and uncollateralized and subject to custodial credit risk.

Investments

State Statute, board of county commissioners resolutions, and the 1985 Trust Indenture as amended authorize the District to invest in obligations of U. S. Treasury, agencies and instrumentalities, certificates of deposit, repurchase agreements, money market deposit accounts, municipal depository funds, super NOW accounts, sweep accounts, separate trading of registered interest and principal of securities, mutual funds, bonds and other obligations of this State, and the State Treasurer's investment pool. Repurchase agreements are limited to 30 days and the market value of the securities must exceed the principal value of the agreement by at least 2 percent and be marked to market daily. Investments in stripped principal or interest obligations reverse repurchase agreements and derivatives are prohibited. The issuance of taxable notes for the purpose of arbitrage, the use of leverage and short selling are also prohibited. An investment must mature within five years from the date of purchase unless matched to a specific obligation or debt of the District, and must be purchased with the expectation that it will be held to maturity. Investments may only be made through specified dealers and institutions. Payment for investments may be made only upon delivery of the securities representing the investments to the finance director or, if the securities are not represented by a certificate, upon receipt of confirmation of transfer from the custodian. The District has no investment policy that addresses interest rate risk.

Custodial Credit Risk – For an investment, custodial credit risk is the risk that, in the event of the failure of the counterparty the District will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. The Federal National Mortgage Association Notes, Federal Home Loan Mortgage Corporation Notes, and the Federal Home Loan Bank Notes are exposed to custodial credit risk in that they are uninsured, unregistered, and held by the counterparty's trust department or agent but not in the District's name. The District has no investment policy dealing with investment custodial risk beyond the requirement in state statute that prohibits payment for investments prior to the delivery of the securities representing such investments to the Treasurer or qualified trustee.

Funds held by the trustee are eligible investments as defined by the Trust Agreement and are in the name of the trustee for the benefit of MSD.

Investments made by MSD are summarized below. Trustee account investments are categorized according to credit risk into the following categories: (1) insured or registered, or securities held by MSD or its agent (bank trust department) in the MSD's name; or (2) uninsured and unregistered, with securities held by the counterparty's trust department or agent in the MSD's name; or (3) uninsured, unregistered securities held by the counterparty, or its trust department or agent but not in MSD's name. Money market funds are unclassified investments since they are not evidenced by securities that exist in physical or book entry form. As stated in GASB Statement No. 40, obligations of the U. S. government or obligations explicitly guaranteed by the U. S. government are not considered to have credit risk and do not require disclosure of credit quality.

The money market funds are invested in a treasury obligation fund with a Moody's credit rating of Aaa.

Concentration of Credit Risk: The Metropolitan Sewer District uses the City of Cincinnati's Investment Policy which addresses concentration of credit risk by requiring investments to be diversified to reduce risk of loss resulting from over concentration of assets in a specific issue or class of security. The following table includes the percentage of each investment type held by MSD at December 31, 2018.

Investment Type	Fair Value	% of Total
Deposits held by the City of Cincinnati	$260,675	47.37
U.S. Agency Securities	107,429	19.52
U.S. Treasury Securities	174,425	31.69
Money Market Funds	7,824	1.42
	$550,353	100.00

The classification of cash and cash equivalents and investments on the financial statements is based on criteria set forth in GASB Statement No. 9. A reconciliation between the classifications of cash and investments of the financial statements and the classification per GASB Statement No. 3 is as follows:

(all amounts in thousands)

December 31, 2018	Cash and Cash Equivalents	Investments
GASB Statement No. 9	$268,506	$281,854
Money Market Funds	(7,831)	7,831
Total	$260,675	$289,685

(all amounts in thousands)

December 31, 2017	Cash and Cash Equivalents	Investments
GASB Statement No. 9	$256,915	$277,316
Money Market Funds	(93,077)	93,077
Total	$163,838	$370,393

Fair Value Measurements: MSD categorizes its fair value measurements within the fair value hierarchy establish by GASB Statement No. 72. MSD has the following recurring fair value measurements as of December 31, 2018:

		Fair Value Measurements Using *(amounts in thousands)*		
Investments by Fair Value Level	Fair Value	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Deposits held by City of Cincinnati	$ 260,675			260,675
U.S. Treasury Securities	174,425	174,425		
U.S. Agency Securities	107,429		$ 107,429	
	$ 542,529	$ 174,425	$ 107,429	$ 260,675

U.S. Treasury securities classified in Level 1 of the fair value hierarchy are valued using quoted market prices. U.S. Agency securities classified in Level 2 of the fair value hierarchy are valued using pricing sources as provided by the investment managers. Investments held by city of Cincinnati classified in Level 3 of the fair value hierarchy are valued using pricing provided by the city of Cincinnati's investment managers.

NOTE 3 - ACCOUNTS RECEIVABLE

Accounts receivable consist of the following:

(all amounts in thousands)

Sewer charges and surcharges:	2018	2017
Unbilled amount	$ 23,545	$ 40,215
Billed amount	20,385	21,948
Less Allowance for doubtful accounts	(5,330)	(5,461)
Other	1,056	899
Total	$ 39,656	$ 57,601

NOTE 4 - RESTRICTED ASSETS

The Trust Agreement for the Series A Revenue Bonds (see Long-Term Debt Note) requires the establishment of certain trust accounts including a Bond Account, Bond Reserve Account, and a Surplus Account to be held by the Trustee. The Bond Account will be used to accumulate periodic principal and interest payments. The Bond Reserve Account will be funded in an amount equal to the highest annual future debt service requirement. The Surplus Account is available to be used for any other Sewer System purpose. The Trust Agreement also requires the creation of a Construction Account to be held by the City to pay for project costs. At December 31, 2018 and 2017 the following balances (at fair value) were maintained in the trust accounts:

(all amounts in thousands)

Held by trustee:	2018	2017
Reserve	$ 54,391	$ 63,568
Bond retirement	7,824	6,973
Surplus	227,463	299,852
Total	$ 289,678	$ 370,393

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NOTE 5 - CAPITAL ASSETS

(all amounts in thousands)

December 31, 2018	Beginning Balance	Increase	Decrease	Ending Balance
Capital Assets, not being depreciated:				
Land	$ 6,481	$ 3,707		$ 10,188
Construction in progress	392,004	156,238	(232,858)	315,384
	$ 398,485	$ 159,945	$ (232,858)	$ 325,572
Capital Assets, being depreciated:				
Buildings	353,520	2,345	-	355,865
Equipment	593,496	105,809	(16,780)	682,525
Sewer Laterals	1,177,893	125,808	(10,414)	1,293,287
	2,124,909	233,962	(27,194)	2,331,677
Total Capital Assets	2,523,394	393,907	(260,052)	2,657,249
Less accumulated depreciation:				
Buildings	148,542	7,347		155,889
Equipment	328,399	16,835	(16,769)	328,465
Sewer Laterals	469,924	30,535		500,459
Total Accumulated Depreciation	946,865	54,717	(16,769)	984,813
Net Capital Assets	$ 1,576,529	$ 339,190	$ (243,283)	$ 1,672,436

In 2018, Capital Assets depreciation expense was $54,717,649 and Study Assets amortization expense was $10,414,475, for a total depreciation and amortization expense of $65,132,124 for the year. Accordingly in 2017, depreciation expense was $48,612,888 and amortization expense was $10,460,374, for a total depreciation and amortization expense of $59,073,262.

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(all amounts in thousands)

December 31,2017	Beginning Balance	Increase	Decrease	Ending Balance
Capital Assets, not being depreciated:				
Land	$ 6,481	$ -		$ 6,481
Construction in progress	349,606	104,540	(62,142)	392,004
	$ 356,087	$ 104,540	$ (62,142)	$ 398,485
Capital Assets, being depreciated:				
Buildings	353,520	-	-	353,520
Equipment	546,230	48,321	(1,055)	593,496
Sewer Laterals	1,169,727	18,626	(10,460)	1,177,893
	2,069,477	66,947	(11,515)	2,124,909
Total Capital Assets	2,425,564	171,487	(73,657)	2,523,394
Less accumulated depreciation:				
Buildings	140,932	7,610		148,542
Equipment	315,898	13,555	(1,054)	328,399
Sewer Laterals	442,477	27,447		469,924
Total Accumulated Depreciation	899,307	48,612	(1,054)	946,865
Net Capital Assets	$ 1,526,257	$ 122,875	$ (72,603)	$ 1,576,529

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NOTE 6 - LONG-TERM DEBT

Long-term debt consisted of the following:

(all amounts in thousands)

	Principal Issue	Interest Rate %	Year of Maturity	2018	2017
Revenue Bonds					
2015	52,520	3.00-5.00	2025	$ 20,565	$ 24,845
2014	162,650	4.00-5.00	2032	147,685	155,360
2013 (a)	258,695	0.45-5.00	2038	157,120	160,210
2010 (c)	130,675	2.00-5.37	2035	109,105	116,890
2009 (b)	149,815	4.00-6.50	2034	136,805	143,025
2007 (f)	72,385	3.50-5.25	2032	-	-
				571,280	600,330
Ohio Water and Sewer Rotary Commission	-	-	-	50	50
Ohio Public Works Commission	-	0.00-3.00	2041	672	858
Water Pollution Control Loan Fund	-	2.50-3.50		343,868	292,588
Capital Lease Payable	15,000	2.00-5.00	2029	9,560	10,230
Total obligations				925,430	904,056
Bond Premiums				48,947	52,627
Deferred loss on defeasance				(10,002)	(11,329)
Current maturities				(52,187)	(49,615)
Long-term portion				$ 912,188	$ 895,739

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Principal and interest payments on long-term debt for the next five years and thereafter are as follows:

(all amounts in thousands)

	Revenue Bonds		WPCLF		OPWC		Capital Lease	
Year	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
2019	$ 30,475	$ 30,260	$ 20,864	$ 7,202	$ 158	$ 9	$ 690	$ 423
2020	31,500	28,774	18,110	6,766	161	6	720	395
2021	33,100	27,213	20,256	7,157	73	3	755	359
2022	34,270	25,554	22,108	7,502	39	2	795	321
2023	35,730	23,817	22,658	6,987	39	1	830	281
2024-2028	198,535	89,699	115,964	26,794	67	1	4,705	867
2029-2033	146,830	39,686	103,422	13,436	52	-	1,065	48
2034-2038	60,840	7,485	20,486	2,511	52	-	-	-
2039-2043	-	-	-	-	31	-	-	-
	$571,280	$ 272,488	$ 343,868	$ 78,355	$ 672	$ 22	$ 9,560	$ 2,694

This represents the WPCLF loan balances outstanding at 12/31/2018. The total WPCLF loan availability is $427,694.

Bond discount, premium, and loss on defeasance activity for the year:

December 31, 2018	Beginning Balance	Amortized	Refunded	Issued	Ending Balance
Bond Premium	$ 52,627	$ (3,680)	$ -	$ -	$ 48,947
Loss on defeasance	(11,329)	1,327	-	-	(10,002)
Total	$ 41,298	$ (2,353)	$ -	$ -	$ 38,945

December 31, 2017	Beginning Balance	Amortized	Refunded	Issued	Ending Balance
Bond Premium	$ 56,340	$ (3,713)	$ -	$ -	$ 52,627
Loss on defeasance	(12,656)	1,327	-	-	(11,329)
Total	$ 43,684	$ (2,386)	$ -	$ -	$ 41,298

Long-term debt activity for the year:

(all amounts in thousands)

December 31, 2018	Beginning Balance	Additions	Reductions	Ending Balance
Revenue Bonds	$ 600,330		$ 29,050	$ 571,280
Ohio Water and Sewer Rotary Commission	50	-	-	$ 50
Ohio Public Works Commission	858	-	186	$ 672
Water Pollution Control Loan Fund	292,588	68,955	17,675	$ 343,868
Capital Lease Payable	10,230	-	670	9,560
Total	$ 904,056	$ 68,955	$ 47,581	$ 925,430

December 31, 2017	Beginning Balance	Additions	Reductions	Ending Balance
Revenue Bonds	$ 645,195		$ 44,865	$ 600,330
Ohio Water and Sewer Rotary Commission	50	-	-	$ 50
Ohio Public Works Commission	1,110	-	252	$ 858
Water Pollution Control Loan Fund	247,783	61,833	17,028	$ 292,588
Capital Lease Payable	10,880	-	650	10,230
Total	$ 905,018	$ 61,833	$ 62,795	$ 904,056

Revenue Bonds

a) Effective March 3, 2015, MSD issued $52,520,000 Series A, Sewer System Refunding Revenue Bonds dated March 3, 2015. The proceeds from the 2015 Series A Bonds were used to defease portions of the 2005A revenue bonds and pay for the cost of issuance. The 2015A bonds are special obligations of the District, payable solely from the net revenues of the District and were issued on parity with the 1997, 2000, 2001, 2003A, 2003B, 2004, 2005A, 2005B, 2006, 2007, 2009A, and 2009B bonds, secured equally and ratably under the Trust Agreement.

A portion of the proceeds was used to purchase U.S. Government Securities which were deposited in an irrevocable trust with an escrow agent to provide for all future debt service to refund $60,360,000 of outstanding 2005A Bonds. As a result, these bonds are considered defeased and the liability for those bonds removed from the balance sheet.

Although the refunding resulted in the recognition of an accounting loss of $1,464,000 in accordance with GASB 23, Accounting and Financial Reporting for Refunding of Debt Reported by Proprietary Activities, MSD has, in effect, reduced its aggregate debt service payments by $16,845,000, and obtained a present value of savings of $6,363,000.

b) Effective November 19, 2014, MSD issued $162,650,000 Series A, Sewer System Refunding Revenue Bonds dated November 19, 2014. The proceeds from the 2014 Series A Bonds were used to defease portions of the 2003, 2005, and 2006 revenue bonds and pay for the cost of issuance. The 2014A bonds are special obligations of the District, payable solely from the net revenues of the District and were issued on parity with the 1997, 2000, 2001, 2003A, 2003B, 2004, 2005A, 2005B, 2006, 2007, 2009A, and 2009B bonds, secured equally and ratably under the Trust Agreement.

A portion of the proceeds was used to purchase U.S. Government Securities which were deposited in an irrevocable trust with an escrow agent to provide for all future debt service to refund $750,000 of outstanding 2003 Series A Bonds, $61,190,000, of outstanding 2005 Series B Bonds, $60,620,000 of outstanding 2006 Series A Bonds, $52,505,000 of outstanding 2007 Series A Bonds, and $6,790,000 of outstanding 2009 Series A Bonds. As a result, these bonds are considered defeased and the liability for those bonds removed from the balance sheet.

Although the refunding resulted in the recognition of an accounting loss of $14,949,000 in accordance with GASB 23, Accounting and Financial Reporting for Refunding of Debt Reported by Proprietary Activities, MSD has, in effect, reduced its aggregate debt service payments by $70,966,000, and obtained a present value of savings of $24,543,000.

c) Effective July 31, 2013, MSD issued $178,760,000 Series A, Sewer System Refunding Revenue Bonds and $79,935,000 Series B, Sewer System Refunding Revenue Bonds dated July 31, 2013. A portion of the proceeds from the 2013 Series A and 2013 Series B Bonds were used to defease portions of the 2003 and 2004 revenue bonds and pay for the cost of issuance. The 2013A bonds are special obligations of the District, payable solely from the net revenues of the District and were issued on parity with the 1997, 2000, 2001, 2003A, 2003B, 2004, 2005A, 2005B, 2006, 2007, 2009A, 2009B, 2010A, and 2010B bonds, secured equally and ratably under the Trust Agreement.

A portion of the proceeds was used to purchase U.S. Government Securities which were deposited in an irrevocable trust with an escrow agent to provide for all future debt service to refund $112,720,000 of outstanding 2003 Series A Bonds, and $28,470,000 of outstanding 2004 Series A Bonds. As a result, these bonds are considered defeased and the liability for those bonds removed from the balance sheet.

The remaining proceeds from the 2013 Series A and 2013 Series B bonds were used to permanently fund certain previous capital expenditures and fund the new bond reserve requirements.

d) Effective November 3, 2010, MSD issued $43,595,000 Series A, Sewer System Refunding Revenue Bonds dated November 3, 2010. The proceeds from the 2010 Series A Bonds were used to defease portions of the 2000, 2001, and 2003 revenue bonds and pay for the cost of issuance. The 2010A bonds are special obligations of the District, payable solely from the net revenues of the District and were issued on parity with the 1997, 2000, 2001, 2003A, 2003B, 2004, 2005A, 2005B, 2006, 2007, 2009A, and 2009B bonds, secured equally and ratably under the Trust Agreement.

A portion of the proceeds was used to purchase U.S. Government Securities which were deposited in an irrevocable trust with an escrow agent to provide for all future debt service to refund $2,730,000 of outstanding 2000 Series A Bonds, $25,290,000 of outstanding 2001 Series A Bonds, and $17,035,000 of outstanding 2003 Series A Bonds. As a result, these bonds are considered defeased and the liability for those bonds removed from the balance sheet.

Although the refunding resulted in the recognition of an accounting loss of $3,379,000 in accordance with GASB 23, the District in effect reduced its aggregate debt service payments by $8,824,000 and obtained and economic gain (difference between the present values of the old and new debt service payments) of $5,304,000.

Effective November 3, 2010, MSD issued $87,080,000 Series B Sewer System Improvement Revenue Bonds (Build America Bonds) dated November 3, 2010. The proceeds from the 2010 Series B bonds were used to permanently fund certain previous capital expenditures, fund the new bond reserve requirements and pay the cost of issuance. The 2010 Series B bonds are special obligations of the District, payable solely from the net revenues of the District and were issued on a parity with the 1997, 2000, 2001, 2003A, 2003B, 2004, 2005A, 2005B, 2006, 2007, 2009A, and 2009B bonds, secured equally and ratably under the Trust Agreement.

e) Effective August 25, 2009, MSD issued $19,515,000 Series A Sewer System Improvement Revenue Bonds dated August 11, 2009, and $130,300,000 Series B Sewer System Improvement Revenue Bonds (Build America Bonds) dated August 11, 2009. The proceeds from the 2009 Series A bonds and 2009 Series B bonds were used to permanently fund certain previous capital expenditures, fund the new bond reserve requirements and pay the cost of issuance. The 2009 Series A bonds and 2009 Series B bonds are special obligations of the District, payable solely from the net revenues of the District and were issued on a parity with the 1993, 1995, 1997, 2000, 2001, 2003A, 2003B, 2004, 2005A, 2005B, 2006, and 2007 bonds, secured equally and ratably under the Trust Agreement.

The 2010, 2009 bonds may be redeemed prior to their maturities in accordance with provisions of the bond resolutions. The redemption process for the bonds includes declining premiums up to 2 percent of principal.

At December 31, 2018, and December 31, 2017 the amount of defeased debt outstanding was $168,250,000 and $180,205,000, respectively.

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Maturities for bonds over the next five years and thereafter are shown below:

(all amounts in thousands)

Year	2015 Bonds	2014 Bonds	2013 Bonds	2010 Bonds	2009 Bonds	Total
2019	4,560	8,065	3,240	8,105	6,505	$ 30,475
2020	4,545	15,255	3,415	8,285	-	$ 31,500
2021	3,670	8,895	7,765	5,635	7,135	$ 33,100
2022	1,810	9,330	8,155	7,590	7,385	$ 34,270
2023	1,900	9,795	8,560	7,815	7,660	$ 35,730
2024-2028	4,080	57,595	59,640	34,090	43,130	$ 198,535
2029-2033		38,750	29,150	25,920	53,010	$ 146,830
2034-2038			37,195	11,665	11,980	$ 60,840
	$20,565	$147,685	$ 157,120	$ 109,105	$ 136,805	$ 571,280

Under the terms of the amended revenue bond trust indenture, MSD has agreed to certain covenants, among other things, to restrict additional borrowing, maintain rates sufficient to meet debt service requirements, and maintain specified fund balances under trust agreements.

The Revenue bond issues as discussed above contain covenants which require the MSD to maintain a level of debt service coverage. The following calculation reflects MSD's debt service coverage.

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(all amounts in thousands)

	2018	Restated 2017
Revenues:		
Total operating revenues	$ 272,885	$ 291,400
Interest income	14,386	10,695
Tap-in/connection fees	2,945	2,726
Total pledged revenue	290,216	304,821
Total operating and maintenance expenses less depreciation and amortization	125,216	78,631
Net income available for debt service (a)	$ 165,000	$ 226,190
Principal and interest requirement on revenue bonds (b)	$ 60,735	$ 60,735
Principal and interest requirements on obligations (c)	$ 90,081	$ 89,397
Debt service coverage		
Revenue bonds (a) divided by (b)	272%	372%
All obligations (a) divided by (c)	183%	253%
Maximum debt service coverage required on revenue bonds	125%	125%

Ohio Water Development Authority Contracts

All contracts between the Ohio Water Development Authority (OWDA) and the Metropolitan Sewer District require MSD to prescribe and charge such rates for sewer usage which are sufficient (after expenses of operation and maintenance) to pay principal and interest on OWDA contracts. The principal is repayable in equal semi-annual installments to maturity.

Ohio Water and Sewer Rotary Commission

Advances from Ohio Water and Sewer Rotary Commission represent tap-in fees and acreage assessments to be forwarded to the Commission upon collection from customers. Such advances do not bear interest unless they are determined to be in default.

Ohio Public Works Commission

The MSD has entered into agreements with the Ohio Public Works Commission (OPWC) for financing of certain qualified capital projects. As the projects progress the commitments are drawn down as funds are paid by OPWC directly to the contractors. The principal is repayable in semi-annual installments to the date of maturity for each project.

Water Pollution Control Loan Fund

The MSD has received low interest loan commitments from the Ohio Water Pollution Control Loan fund for certain qualified projects. As the projects progress the commitments are drawn down. The principal is repayable in semi-annual installments to the date of maturity for each project.

Interest on Long-Term Obligations

The following interest costs were incurred and expensed or capitalized as part of the cost of MSD's additions to capital assets.

(all amounts in thousands)

	2018	2017
Interest incurred	$ 36,492	$ 39,121
Less interest capitalization	-	(233)
Interest expense	$ 36,492	$ 38,888

MSD has implemented the GASB 89 Accounting for Interest Cost incurred before the end of a construction period in 2018.

NOTE 7 – CAPITAL LEASE

The District entered into a capital lease for a new engineering building in 2010. The lease obligation meets the criteria of a capital lease. The leased asset was capitalized at the amount of the present value of the minimum lease payments at inception of the lease. Capital asset acquired under capital lease is as follows:

Buildings	$15,000,000

The following is a schedule of the future minimum lease payments required under the capital lease and the present value of the minimum lease payments as of fiscal year end.

(all amounts in thousands)

Fiscal Year Ending December 31,	Long-Term Debt
2019	$ 1,113
2020	1,115
2021	1,114
2022	1,116
2023	1,111
2024-2028	5,572
2029-2033	1,113
Total Minimum Lease Payments	12,254
Less: Amount Representing Interest	(2,694)
Present value of Minimum Lease Payments	$ 9,560

NOTE 8 – COMPENSATED ABSENCES

Compensated Absences

Compensated absences consist of vacation time, sick pay and compensatory time. The following is a summary of activity for 2018 and 2017. $4,512 is considered due within one year for compensated absences as of December 31, 2018.

(all amounts in thousands)

	Beginning Balance	Increase	Decrease	Ending Balance
2018	$ 10,551	$ 4,873	$ 5,392	$ 10,032
2017	$ 9,738	$ 4,896	$ 4,083	$ 10,551

NOTE 9 – DEFINED BENEFIT PENSION PLANS

MSD employees are covered by one of two pension systems: the Ohio Public Employees Retirement System (OPERS) and the City of Cincinnati Retirement System (CRS). OPERS is a cost-sharing multi-employer defined benefit pension plan. CRS is accounted for as a single-employer defined benefit plan.

Net Pension Liability

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

The net pension liability reported on the statement of net position represents a liability to employees for pensions. Pensions are a component of exchange transactions, between an employer and its employees, of salaries and benefits for employee services. Pensions are provided to an employee, on a deferred-payment basis, as part of the total compensation package offered by an employer for employee services each financial period. The obligation to sacrifice resources for pensions is a present obligation because it was created as a result of employment exchanges that already have occurred.

The net pension liability represents the MSD's actuarial present value (or with the OPERS cost-sharing, multiple-employer plan, MSD's proportionate share of the pension plan's collective actuarial present value) of projected benefit payments attributable to past periods of service, net of each pension plan's fiduciary net position. The net pension liability calculation is dependent on critical long-term variables, including estimated average life expectancies, earnings on investments, cost of living adjustments and other variables. While these estimates use the best information available, unknowable future events require adjusting this estimate annually. MSD's share of each plan's unfunded benefits is presented as a long-term *net pension liability* on the accrual basis of accounting.

A. Ohio Public Employees Retirement System (OPERS)

Ohio Revised Code limits the MSD's obligation for liabilities to OPERS to annually required payments. The MSD cannot control benefit terms or the manner in which pensions from the cost-sharing, multiple-employer plan is financed; however, the MSD does receive the benefit of employees' services in exchange for compensation including pension.

GASB Statement No. 68 assumes the liability is solely the obligation of the employer, because (1) they benefit from employee services; and (2) State statute requires all funding to come from these employers. All contributions to date have come solely from these employers (which also includes costs paid in the form of withholdings from employees). State statute requires the pension plan to amortize unfunded liabilities within 30 years. If the amortization period exceeds 30 years, the pension plan's board must propose corrective action to the State legislature. Any resulting legislative change to benefits or funding could significantly affect the net pension liability. Resulting adjustments to net pension liability would be effective when the changes are legally enforceable.

Plan Description – OPERS

A limited number of the MSD employees participate in the Ohio Public Employees Retirement System (OPERS). OPERS administers three separate pension plans. The Traditional Pension Plan is a cost-sharing, multiple-employer defined benefit pension plan. The Member-Directed Plan is a defined contribution plan and the Combined Plan is a cost-sharing, multiple-employer defined benefit pension plan with defined contribution features. While members (e.g., MSD employees) may elect the Member-Directed Plan or the Combined Plan, most employee members are in OPERS' Traditional Pension Plan; therefore, the following disclosures focus on the Traditional Pension Plan.

OPERS provides retirement, disability, survivor and death benefits, and annual cost of living adjustments to members of the Traditional Pension Plan. Authority to establish and amend benefits is provided by Chapter 145 of the Ohio Revised Code (ORC). OPERS issues a stand-alone financial report that includes financial statements, required supplementary information and detailed information about OPERS' fiduciary net position that may be obtained by visiting https://www.opers.org/financial/reports.shtml, by writing to Ohio Public Employees Retirement System, 277 East Town Street, Columbus, OH 43215-4642, or by calling 800-222-7377.

Senate Bill (SB) 343 was enacted into law with an effective date of January 7, 2013. In the legislation, members were categorized into three groups with varying provisions of the law applicable to each group. The following table provides age and service requirements for retirement and the retirement formula applied to final average salary (FAS) for the three-member groups under the Traditional Pension Plan as per the reduced benefits adopted by SB 343 (see OPERS' CAFR referenced above for additional information):

Group A Eligible to retire prior to January 7, 2013 or five years after January 7, 2013	Group B 20 years of service credit prior to January 7, 2013 or eligible to retire ten years after January 7, 2013	Group C Members not in other Groups and members hired on or after January 7, 2013
State and Local	**State and Local**	**State and Local**
Age and Service Requirements: Age 60 with 60 months of service credit or Age 55 with 25 years of service credit	**Age and Service Requirements:** Age 60 with 60 months of service credit or Age 55 with 25 years of service credit	**Age and Service Requirements:** Age 57 with 25 years of service credit or Age 62 with 5 years of service credit
Formula: 2.2% of FAS multiplied by years of Service for the first 30 years and 2.5% for service years in excess of 30	**Formula:** 2.2% of FAS multiplied by year of service for the first 30 years and 2.5% for service years in excess of 30	**Formula:** 2.2% of FAS multiplied by years of service for the first 35 years and 2.5% for service years in excess of 35

Final average salary (FAS) represents the average of the three highest years of earnings over a member's career for Groups A and B. Group C is based on the average of the five highest years of earnings over a member's career.

Members who retire before meeting the age and years of service credit requirement for unreduced benefits receive a percentage reduction in the benefit amount.
When a benefit recipient has received benefits for 12 months, an annual cost of living adjustment (COLA) is provided. This COLA is calculated on the base retirement benefit at the date of retirement and is not compounded. For those retiring prior to January 7, 2013, the COLA will continue to be a 3% simple annual COLA. For those retiring subsequent to January 7, 2013, beginning in calendar year 2019, the COLA will be based on the average percentage increase in the Consumer Price Index, capped at 3%.

Funding Policy—The ORC provides statutory authority for member and employer contributions. For fiscal year 2018, member contribution rates were 10% of salary and employer contribution rates were 14%. Employer contribution rates are actuarially determined and are expressed as a percentage of covered payroll. The MSD's contractually required contribution was $316,000 for 2018.

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related – OPERS

The net pension liability for OPERS was measured as of December 31, 2017 and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of that date. The MSD's proportion of the net pension liability was based on the MSD's share of contributions to the pension plan relative to the contributions of all participating entities. The MSD's proportion, change in proportion and proportionate share of the net pension liability was 0.01708312%, a decrease of 0.000193%, and $2,680,000, respectively. Pension expense for the MSD was $452,000.

At December 31, 2018, the MSD reported deferred outflows of resources and deferred inflows of resources related to pension from the following sources (amounts in thousands):

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net
MSD contributions subsequent to the measurement date	$ 316	$ -	$ 316
Net difference between projected and actual investment earnings	-	(574)	(574)
Difference between expected and actual experience	3	(52)	(49)
Change in assumptions	320	-	320
Change in MSD's proportionate share	13	(143)	(130)
	$ 652	$ (769)	$ (117)

$316,000 reported as deferred outflows of resources related to pension resulting from MSD contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ending December 31, 2019. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pension will be recognized in pension expense as follows:

Year Ended December 31:	Net Deferred Outflows/ (Inflows) of Resources	Deferred Outflows of Resources	Deferred Inflows of Resources
2019	$ 174	$ 310	$ (136)
2020	(118)	26	(144)
2021	(253)	-	(253)
2022	(236)	-	(236)
	$ (433)	$ 336	$ (769)

Actuarial Assumptions – OPERS

Actuarial valuations of an ongoing plan involve estimates of the values of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality and cost trends. Actuarially determined amounts are subject to continual review or modification as actual results are compared with past expectations and new estimates are made about the future.

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employers and plan members) and include the types of benefits provided at the time of each valuation. The total pension liability in the December 31, 2017 actuarial valuation was determined using the following actuarial assumptions:

Wage inflation	3.25%
Future salary increases, Including inflation	3.25% to 10.75%
COLA or Ad Hoc COLA	Pre 1/7/2013 retirees: 3% simple; Post 1/7/2013 retirees: 3% simple through 2018, then 2.15% simple
Investment rate of return	7.50%
Actuarial cost method	Individual entry age
Mortality tables	RP-2014

Pre-retirement mortality rates are based on the RP-2014 Employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates are based on the RP-2014 Health Annuitant mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates for disabled retirees are based on the RP-2014 Disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to all of the above described tables.

The most recent experience study was completed for the five-year period ended December 31, 2015.

The long-term rate of return on defined benefit investment assets was determined using a building-block method in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected real rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adjusted for inflation.

During 2017, OPERS managed investments in three investment portfolios: the Defined Benefit portfolio, the Health Care portfolio, and the Defined Contribution portfolio. The Defined Benefit portfolio contains the investment assets for the Traditional Pension Plan, the defined benefit component of the Combined Plan and the annuitized accounts of the Member-Directed Plan. Within the Defined Benefit portfolio, contributions into the plans are all recorded at the same time, and benefit payments all occur on the first of the month. Accordingly, the money-weighted rate of return is considered to be the same for all plans within the portfolio. The annual money-weighted rate of return expressing investment performance, net of investment expenses and adjusted for the changing amounts actually invested, for the Defined Benefit portfolio is 16.82% for 2017.

The allocation of investment assets with the Defined Benefit portfolio is approved by the Board of Trustees as outlined in the annual investment plan. Plan assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided through the defined benefit pension plans. The table below displays the Board-approved asset allocation policy for 2017 and the long-term expected real rates of return:

Asset Class	Target Allocation	Weighted Average Long-Term Expected Real Rate of Return (Arithmetic)
Fixed Income	23.00%	2.20%
Domestic Equities	19.00%	6.37%
Real Estate	10.00%	5.26%
Private Equity	10.00%	8.97%
International Equities	20.00%	7.88%
Other Investments	18.00%	5.26%
Total	100.00%	5.66%

Discount Rate. The discount rate used to measure the total pension liability was 7.50%. The projection of cash flows used to determine the discount rate assumed that contributions from plan members and those of the contributing employers are made at the statutorily required rates. Based on those assumptions, the pension plan’s fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the MSD’s Proportionate Share of the Net Pension Liability to Changes in the Discount Rate. The following table represents the MSD’s proportionate share of the net pension liability calculated using the current period discount rate assumption of 7.50%, as well as what the MSD’s proportionate share of the net pension liability would be if it were calculated using a discount rate that is one-percentage point lower (6.50%) and one-percentage point higher (8.50%) than the current rate (amounts in thousands):

	1% Decrease (6.50%)	Current Discount Rate (7.50%)	1% Increase (8.50%)
MSD's proportionate share of the net pension liability	$ 4,759	$ 2,680	$ 947

B. City of Cincinnati Retirement System (CRS)

Plan Description – CRS

Employees who do not participate in OPERS participate in CRS. CRS is accounted for as a single-employer defined benefit pension plan. CRS provides retirement and disability benefits, annual cost of living adjustments, and death benefits to plan members and beneficiaries. CRS is considered part of the City of Cincinnati's financial reporting entity and is included in the City's financial report as a pension trust fund.

The financial report that includes financial statements, required supplementary information and detailed information about CRS' fiduciary net position may be obtained by visiting http://www.cincinnati-oh.gov/finance/cafr/. Article XV of the Administrative Code of the City of Cincinnati provides the statutory authority vesting the general administration and responsibility for the proper operation of the System in the Board of Trustees of the City of Cincinnati Retirement System.

Information in the remainder of this footnote is provided for the MSD's portion, being reported as an agency fund of the City, which also participates in and contributes to CRS, with a measurement date of June 30, 2018.

A major plan revision was approved by the City Council on March 16, 2011 and adopted by the CRS's Board. The plan allows for a two and half year transition period from July 1, 2011 to January 1, 2014. Active members who are eligible or become eligible to retire and elect to retire during this transition period can retire with 30 years of creditable service or at age 60 with at least five years of creditable service and will receive benefits according to the current plan as described below.

A Collaborative Settlement Agreement (CSA) was executed on May 7, 2015 and approved by the United States District Court on October 5, 2015. The CSA impacts employees who were retired on or before July 1, 2011 and employees who were in service on July 1, 2011 and who were vested (had 5 years' service credit) on that date. Employees who are members of the CRS who did not meet those criteria remained subject to the plan provisions adopted in Ordinances No 84-2011 and 85-2011.

The CSA implemented a number of changes to the CRS, including, but not limited to:

- Normal retirement eligibility;
- Early retirement eligibility;
- Retiree healthcare eligibility;
- Cost of living adjustments payable to retirees;
- Establishment of a Deferred Retirement Option Program (DROP);
- Creation of a 115 Trust for retiree healthcare benefits;
- Changes to the composition of the Board of Trustees; and
- Payoff of the 2007 Early Retirement Incentive Program (ERIP) liability.

Groups C& D Eligible to retire on or before July 1, 2011; or December 31, 2013	Group E Eligible to retire on or before December 31, 2013	Group F Hired before January 1, 2010 and not eligible for other groups	Group G Hired on or after January 1, 2010
Normal Retirement:	**Normal Retirement:**	**Normal Retirement:**	**Normal Retirement:**
Age 60 with 5 years of service, or any age with 30 years of service	Age 60 with 5 years of service, or any age with 30 years of service	Age 60 with 5 years of service, or any age with 30 years of service	Age 67 with 5 years of service, or age 62 with 30 years of service
Early Retirement:	**Early Retirement:**	**Early Retirement:**	**Early Retirement:**
Age 55 with 25 years of service	Age 55 with 25 years of service	Age 55 with 25 years of service	Age 57 with 15 years of service
Benefit Formula:	**Benefit Formula:**	**Benefit Formula:**	**Benefit Formula:**
2.5% of FAS times years of service	2.5% of FAS times years of service up to greater of 20 years or years of service as of July 1, 2011, and 2.2% thereafter	2.5% of FAS times years of service up to greater of 20 years or years of service as of July 1, 2011, and 2.2% thereafter	2.2% of FAS times years of service

Final average salary (FAS) represents the average of the highest three consecutive years of earnings for Groups C and D. Group E will have a FAS with two separate components based upon the average of the highest three consecutive years of earnings for service through December 31, 2013 and the highest five consecutive years of earnings for service after January 1, 2014. Group F will have a FAS with two components based upon the average of the highest three consecutive years of earnings for service through June 30, 2011 and the highest five consecutive years of earnings for service after July 1, 2011. Group G is based on the average of the highest five consecutive years of earnings. Upon retirement, members will not receive a cost-of-living-adjustment (COLA) for the first three retirement anniversary dates. Thereafter, a 3% simple COLA benefit will be provided. A COLA poverty exception is available for members who meet certain financial requirements.

Membership in CRS as of the December 31, 2017 valuation date was as follows:

Retired participants and beneficiaries currently receiving benefits	4,233
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	211
Inactive participants	8,472
Active participants:	
Full-time	3,029
Part-time	742
Total	16,687

Funding Policy—Each member contributes at a rate of 9.0% of his pensionable wages for 2018. The percent contributed by employees is provided by Chapter 203 Section 73 of the Cincinnati Municipal Code.

The MSD makes employer contributions based on a percentage of the covered payroll of all CRS members. For 2018, the contribution rate was 16.25%. The MSD's contributions to the City of Cincinnati Retirement System's Pension Fund for the year ending December 31, 2018 were $6,226,000.

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

The net pension liability was measured as of June 30, 2018, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of December 31, 2017. The MSD reported a net pension liability of $111,483,000 and pension expense of $7,557,000.

At December 31, 2018, the MSD reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources (amounts in thousands):

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net
MSD contributions subsequent to the measurement date	$ 3,160	$ -	$ 3,160
Differences between expected and actual experience	2,990	-	2,990
Net difference between projected and actual investment earnings	-	(25)	(25)
Change in proportion	128	(1,040)	(912)
Change in assumptions	5,009	-	5,009
	$ 11,287	$ (1,065)	$ 10,222

$3,160,000 reported as deferred outflows of resources related to pension resulting from MSD contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended December 31, 2019. Other amounts reported as deferred outflows and inflows of resources related to pension will be recognized in pension expense as follows (amounts in thousands):

Year Ended December 31:	Net Deferred Outflows/ (Inflows) of Resources
2019	$ 9,642
2020	1,839
2021	(3,888)
2022	(531)
	$ 7,062

Actuarial Assumptions: Total pension liability was determined by the following actuarial valuations, using the following actuarial assumptions, applied to applicable periods included in the measurement:

	December 31, 2017	December 31, 2016
Inflation	2.75%	3.00%
Salary increases, including inflation	3.75% to 7.50%	4.00% to 7.50%
Long-term investment rate of return, net of pension plan investment expense, including inflation	7.50%	7.50%
Municipal bond index rate		
Prior measurement date	3.56%	3.01%
Measurement date	3.89%	3.56%
Single equivalent interest rate, net of pension plan investment expense, including inflation	7.50%	7.50%
Mortality tables	RP-2014	RP-2000

Pre-retirement mortality rates were based on the RP-2014 Employees Mortality Table with a generational approach using the MP-2017 projection scale. Post-retirement mortality rates were based on the RP-2014 Mortality Table with a generational approach using the MP-2017 projection scale and set forward two years for both males and females. Post-disability mortality rates were based on the RP-2014 Disabled Retiree Mortality Table with a generational approach using the MP-2017 projection scale.

The actuarial assumptions used in the December 31, 2017 valuation were based on the results of the last actuarial experience study, dated February 28, 2018.

Long Term Expected Rate of Return. The long-term expected rate of return on pension plan investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target asset allocation and best estimates of arithmetic real rates of return for each major class are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Core Bonds	14.00 %	2.80 %
High Yield Bonds	3.00 %	4.90 %
Large-Cap Value Equity	7.00 %	7.20 %
Large-Cap Growth Equity	5.00 %	7.10 %
Mid-Cap Value Equity	4.00 %	7.50 %
Mid-Cap Core Equity	4.00 %	7.50 %
Small-Cap Value Equity	7.50 %	8.00 %
Non-U.S. Developed Large Cap	10.00 %	7.40 %
Non-U.S. Small Cap	5.00 %	8.10 %
Emerging Markets All-Cap	5.00 %	8.50 %

EM Small-Cap	3.00 %	8.50 %
Real Estate Core Equity	10.00 %	7.40 %
Infrastructure	7.50 %	7.80 %
Risk Parity	5.00 %	4.10 %
Private Equity	10.00 %	11.10 %
Total	100.00 %	

* Geometric mean

Discount Rate. The discount rate used to measure the total pension liability was 7.50% as of June 30, 2018. The projection of cash flows used to determine the discount rate assumed that employee contributions will be made at the current contribution rate and that employer contributions will be made as set out in the CSA. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current active and inactive employees. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Employer's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate: The following chart represents the MSD financial reporting entity's proportionate share of the net pension liability calculated using the current period discount rate assumption of 7.50%, as well as the sensitivity to a 1% increase and 1% decrease in the current discount rate (amounts in thousands):

	1% Decrease (6.50%)	Current Discount Rate (7.50%)	1% Increase (8.50%)
MSD's Net Pension Liability	$ 157,214	$ 111,483	$ 72,656

Change in the Net Pension Liability: Changes in the MSD financial reporting entity's net pension liability for the measurement year ended June 30, 2018 were as follows (amounts in thousands):

	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
Balances at June 30, 2017	$ 401,763	$ 306,379	$ 95,384
Changes for the year:			
Service cost	4,260	-	4,260
Interest	30,471	-	30,471
Difference between expected and actual experience	5,577	-	5,577
Change in assumptions	9,402	-	9,402
Contributions - employer	-	6,080	(6,080)
Contributions - employee	-	3,521	(3,521)
Net investment income	-	26,180	(26,180)
Benefit payments, including refunds of employee contributions	(31,436)	(31,436)	-
Administrative expense	-	(277)	277
Other changes	-	(1,893)	1,893
Net changes	18,274	2,175	16,099
Balances at June 30, 2018	$ 420,037	$ 308,554	$ 111,483

The date of the actuarial valuation upon which the total pension liability (TPL) is based on is December 31, 2017. The TPL is determined as of June 30, 2018 using standard roll forward techniques. The roll forward calculation adds the normal cost for the first half of 2018 (also called the service cost), subtracts the actual benefit payments and refunds for the six months, and then applies the expected single equivalent interest rate (SEIR) for the period. This procedure was used to determine the TPL as of June 30, 2018, as shown in the following table. In addition, an expected TPL as of June 30, 2018 is determined by rolling forward the June 30, 2017 TPL using similar techniques. The difference between this expected TPL and the actual TPL as of June 30, 2018 is the experience gain or loss for the period. The impact of the assumption changes adopted by the Board on March 1, 2018 are shown as an assumption change loss.

MSD's portion of CRS TPL Rollforward (amounts in thousands)

	(1)	New Assumptions (2)
(a) Interest Rate (SEIR)	7.50%	7.50%
(b) TPL as of December 31, 2017	$ 428,880	$ 437,893
(c) Entry Age Normal Cost for the period January 1, 2018 - June 30, 2018	2,209	2,266
(d) Actual Benefit Payments and Refunds for January 1, 2018 - June 30, 2018	15,718	15,718
(e) TPL as of June 30, 2018 $= [(b) \times (1+(a))^{1/2}] + (c) - [(d) \times (1+(a))^{1/4}]$	430,876	440,278
(f) June 30, 2017 TPL Rolled Forward to June 30, 2018	425,299	
(g) Experience (Gain)/Loss: (1e) - (1f)	$ 5,577	
(h) Assumption (Gain)/Loss: (2e) - (1e)		$ 9,402

NOTE 10 – DEFINED BENEFIT OTHER POSTEMPLOYMNET BENEFIT (OPEB) PLANS

The two retirement systems MSD employees participate in provide defined benefit postemployment benefits other than pension. The Ohio Public Employees Retirement System (OPERS) is a cost-sharing multiple-employer defined benefit OPEB plans. The City of Cincinnati Retirement System (CRS) is accounted for as a single-employer defined benefit OPEB plan.

Net OPEB Liability

For purposes of measuring the net OPEB liability, deferred outflows of resources and deferred inflows of resources related to OPEB, and OPEB expense, information about the fiduciary net position of the OPEB plans and additions to/deductions from their fiduciary net position have been determined on the same basis as they are reported by the retirement systems. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. The retirement systems report investments at fair value.

The net OPEB liability reported on the statement of net position represents a liability to employees for OPEB. OPEB is a component of exchange transactions—between an employer and its employees—of salaries and benefits for employee services. OPEB is provided to an employee—on a deferred-payment basis—as part of the total compensation package offered by an employer for employee services each financial period. The obligation to sacrifice resources for OPEB is a present obligation because it was created as a result of employment exchanges that already have occurred.

The net OPEB liability represents the MSD's actuarial present value (or with the OPERS cost-sharing, multiple-employer plan, MSD's proportionate share of the OPEB plan's collective actuarial present value) of projected benefit payments attributable to past periods of service, net of each OPEB plan's fiduciary net position. The net OPEB liability calculation is dependent on critical long-term variables, including estimated average life expectancies, earnings on investments, cost of living adjustments, cost trends and other variables. While these estimates use the best information available, unknowable future events require adjusting this estimate annually.

The MSD's share of each plan's unfunded benefits is presented as a long-term *net other post-employment benefit liability* on the accrual basis of accounting.

A. Ohio Public Employees Retirement System (OPERS)

Ohio Revised Code limits the MSD's obligation for liabilities to OPERS to annual required payments. The MSD cannot control benefit terms or the manner in which OPEB from the cost-sharing, multiple-employer plan is financed; however, the MSD does receive the benefit of employees' services in exchange for compensation including OPEB.

GASB Statement No. 75 assumes the liability is solely the obligation of the employer, because they benefit from employee services. OPEB contributions come from these employers and health care plan enrollees which pay a portion of the health care costs in the form of a monthly premium. The Ohio Revised Code permits but does not require the cost-sharing, multiple-employer retirement system to provide health care to eligible benefit recipients. Any change to benefits or funding could significantly affect the net OPEB liability. Resulting adjustments to the net OPEB liability would be effective when the changes are legally enforceable. The retirement systems may allocate a portion of the employer contributions to provide for these OPEB benefits.

Plan Description— OPERS

The MSD contributes to the health care plans administered by OPERS. OPERS is a cost-sharing, multiple-employer public employee retirement system comprised of three separate pension plans; the Traditional Pension Plan, a defined benefit plan; the Combined Plan, a combination defined benefit/defined contribution plan; and the Member-Directed Plan, a defined contribution plan.

OPERS maintains a cost-sharing, multiple-employer defined benefit post-employment health care trust, which funds multiple health care plans including medical coverage, prescription drug coverage and deposits to a Health Reimbursement Arrangement to qualifying benefit recipients of both the traditional pension and combined plans. This trust is also used to fund health care for member-directed plan participants, in the form of a Retiree Medical Account (RMA). At retirement or refund, member-directed plan participants may be eligible for reimbursement of qualified medical expenses for their vested RMA balance.

In order to quality for postemployment health care coverage, age and service retirees under the traditional pension and combined plans must have twenty or more years of qualifying Ohio service credit.

Health care coverage for disability benefit recipients and qualified survivor benefit recipients is available. The health care coverage provided by OPERS meets the definition of another post-employment benefit (OPEB) as described in GASB Statement No. 75. See OPERS' CAFR referenced below for additional information.

The Ohio Revised Code permits, but does not require OPERS to provide health care to its eligible benefit recipients. Authority to establish and amend health care coverage is provided to the Board in Chapter 145 of the Ohio Revised Code.

Disclosures for the health care plan are presented separately in the OPERS financial report. Interested parties may obtain a copy by visiting https://www.opers.org/financial/reports.shtm, by writing to OPERS, 277 East Town Street, Columbus, Ohio 43215-4642, or by calling (614) 222-5601 or 800-222-7377.

Funding Policy—The Ohio Revised Code provides the statutory authority requiring public employers to fund postemployment health care through their contributions to OPERS. When funding is approved by OPERS' Board of Trustees, a portion of each employer's contribution to OPERS is set aside to fund OPERS health care plans. Beginning in 2018, health care is not being funded.

Employer contribution rates are expressed as a percentage of the earnable salary of active members. In 2018, state and local employers contributed at a rate of 14% of earnable salary. These are the maximum employer contribution rates permitted by the Ohio Revised Code. Active member contributions do not fund health care.

Each year, the OPERS Board determines the portion of the employer contribution rate that will be set aside to fund health care plans. The portion of employer contributions allocated to health care for members in the Traditional Pension Plan and Combined Plan was 1% during calendar year 2017. As recommended by OPERS' actuary, the portion of employer contributions allocated to health care beginning January 1, 2018 decreased to 0% for both plans. The OPERS Board is also authorized to establish rules for the retiree or their surviving beneficiaries to pay a portion of the health care provided. Payment amounts vary depending on the number of covered dependents and the coverage selected. The employer contribution as a percentage of covered payroll deposited into the RMA for participants in the Member-Directed Plan for 2017 was 4%.

OPEB Liabilities, OPEB Expense, and Deferred Outflows and Inflows of Resources Related to OPEB—OPERS

The net OPEB liability and total OPEB liability for OPERS were determined by an actuarial valuation as of December 31, 2016, rolled forward to the measurement date of December 31, 2017, by incorporating the expected value of health care cost accruals, the actual health care payment, and interest accruals during the year. The MSD's proportion of the net OPEB liability was based on the MSD's share of contributions to the respective retirement system relative to the contributions of all participating entities. The MSD's proportion, change in proportion and proportionate share of the net OPEB liability was 0.01664978%, a decrease of 0.00121160%, and $1,808,000, respectively. OPEB expense for the MSD was $90,000.

At December 31, 2018, the MSD reported deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources (amounts in thousands):

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net
Net difference between projected and actual investment earnings	$ -	$ (136)	$ (136)
Difference between expected and actual experience	2	-	2
Change in assumptions	132	-	132
Change in MSD's proportionate share	-	(84)	(84)
	$ 134	$ (220)	$ (86)

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

Year Ended December 31:	Net Deferred Outflows/ (Inflows) of Resources	Deferred Outflows of Resources	Deferred Inflows of Resources
2019	$ (10)	$ 64	$ (74)
2020	(10)	64	(74)
2021	(32)	6	(38)
2022	(34)	-	(34)
	$ (86)	$ 134	$ (220)

Actuarial Assumptions—OPERS

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and cost trends. Actuarially determined amounts are subject to continual review or modification as actual results are compared with past expectations and new estimates are made about the future.

Projections of health care costs for financial reporting purposes are based on the substantive plan and include the types of coverages provided at the time of each valuation and the historical pattern of sharing of costs between OPERS and plan members. The total OBEB liability was determined by an actuarial valuation as of December 31, 2016, rolled forward to the measurement date of December 31, 2017. The actuarial valuation used the following actuarial assumptions applied to all prior periods included in the measurement in accordance with the requirements of GASB Statement No. 74:

Actuarial cost method	Individual entry age normal
Actuarial Assumptions:	
Single discount rate	
Current measurement date	3.85%
Prior measurement date	4.23%
Investment rate of return	6.50%
Municipal bond rate	3.31%
Wage inflation	3.25%
Projected salary increases	3.25% - 10.75% (includes wage inflation at 3.25%)
Health care cost trend rate	7.5% initial, 3.25% ultimate in 2028

Pre-retirement mortality rates are based on the RP-2014 Employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates are based on the RP-2014 Healthy Annuitant mortality table for males and females, adjusted for improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Post-retirement mortality rates for disabled retirees are based on the RP-2014 Disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The base year for males and females was then established to be 2015 and 2010, respectively. Mortality rates for a particular calendar year are determined by applying the MP-2015 mortality improvement scale to all of the above tables.

The most recent experience study was completed for the five-year period ended December 31, 2015.

The long-term expected rate of return on health care investment assets was determined using a building-block method in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected real rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adjusted for inflation.

During 2017, OPERS managed investments in three investment portfolios: the Defined Benefit portfolio, the Health Care portfolio and the Defined Contribution portfolio. The Health Care portfolio includes the assets for health care expenses for the Traditional Pension Plan, Combined Plan and Member-Directed Plan eligible members. Within the Health Care portfolio, contributions into the plans are assumed to be received continuously throughout the year based on the actual payroll payable at the time contributions are made, and health care-related payments are assumed to occur mid-year. Accordingly, the money-weighted rate of return is considered to be the same for all plans within the portfolio. The annual money-weighted rate of return expressing investment performance, net of investment expenses and adjusted for the changing amounts actually invested, for the Health Care portfolio is 15.2% for 2017.

The allocation of investment assets within the Health Care portfolio is approved by the OPERS Board as outlined in the annual investment plan. Assets are managed on a total return basis with a long-term objective of continuing to offer a sustainable health care program for current and future retirees. OPERS' primary goal is to achieve and maintain a fully funded status for benefits provided through the defined pension plans. Health care is a discretionary benefit. The table below displays the OPERS Board-approved asset allocation policy for 2017 and the long-term expected real rates of return.

Asset Class	Target Allocation	Weighted Average Long-Term Expected Real Rate of Return (Arithmetic)
Fixed Income	34.00%	1.88%
Domestic Equities	21.00%	6.37%
REITs	6.00%	5.91%
International Equities	22.00%	7.88%
Other Investments	17.00%	5.39%
Total	100.00%	4.98%

Discount Rate. A single discount rate of 3.85% was used to measure the OPEB liability on the measurement date of December 31, 2017. A single discount rate of 4.23% was used to measure the OPEB liability on the measurement date of December 31, 2016. Projected benefit payments are required to be discounted to their actuarial present value using a single discount rate that reflects (1) a long-term expected rate of return on OPEB plan investments (to the extent that the health care fiduciary net position is projected to be sufficient to pay benefits), and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate are not met). This single discount rate was based on an expected rate of return on the health care investment portfolio of 6.50% and a municipal bond rate of 3.31%. The projection of cash flows used to determine this single discount rate assumed that employer contributions will be made at rates equal to the actuarially determined contribution rate. Based on these assumptions, the health care fiduciary net position and future contributions were sufficient to finance health care costs through 2034. As a result, the long-term expected rate of return on health care investments was applied to projected costs through the year 2034, and the municipal bond rate was applied to all health care costs after that date.

Sensitivity of the MSD's Proportionate Share of the Net OPEB Liability to Changes in the Discount Rate and Changes in the Health Care Cost Trend Rates. The following table present the net OPEB liability calculated using the single discount rate of 3.85% and the expected net OPEB liability if it were calculated using a discount rate that is 1.0% lower or 1.0% higher than the current rate (amounts in thousands):

	1% Decrease (2.85%)	Current Discount Rate (3.85%)	1% Increase (4.85%)
MSD' proportionate share of the net OPEB liability	$ 2,402	$ 1,808	$ 1,327

Retiree health care valuations use a health care cost-trend assumption that changes over several years built into the assumption. The near-term rates reflect increases in the current cost of health care; the trend starting in 2018 is 7.50%. If this trend continues for future years, the projection indicates that years from now virtually all expenditures will be for health care. A more reasonable alternative is that in the not-too-distant future, the health plan cost trend will decrease to a level at, or near, wage inflation. On this basis, the actuaries' project premium rate increases will continue to exceed wage inflation for approximately the next decade, but by less each year, until leveling off at an ultimate rate, assumed to be 3.25% in the most recent valuation.

Changes in the health care cost trend rate may also have a significant impact on the net OPEB liability. The following table presents the net OPEB liability calculated using the assumed trend rates, and the expected net OPEB liability if it were calculated using a health care cost trend rate that is 1.0% lower or 1.0% higher than the current rate (amounts in thousands):

	1% Decrease	Current Health Care Cost Trend Rate	1% Increase
MSD' proportionate share of the net OPEB liability	$ 1,730	$ 1,808	$ 1,889

B. City of Cincinnati Retirement System (CRS)

Plan Description – CRS

CRS provides health care coverage to eligible retirees, their spouse and dependent children and is accounted for as a single-employer defined benefit OPEB plan. Active members in Group C who have earned fifteen years of membership service at the time of termination are eligible upon retirement. Other active members are eligible for retiree health care upon their retirement after reaching age 60 with 20 years of membership service, or any age with 30 years of service of which 20 years must be earned with CRS. Active members whose most recent membership enrollment date is on or after January 1, 2016 are not eligible for retiree health care benefits upon retirement.

CRS offers medical and prescription benefits to retirees before and during Medicare eligibility. Prescription benefits for Medicare eligible participants are provided through a Medicare Part D Employer Group Waiver Plan. CRS administers three health care plans that differ by deductibles, co-pays and out-of-pocket maximums. Two plans are closed groups. The third plan for eligible members who retire on or after January 1, 2016 follows the most advantageous plan offered to active MSD employees.

Membership in CRS as of the December 31, 2017 valuation date was as follows:

Retired members and surviving spouses currently receiving retiree health benefits	3,684
Terminated vested members and retired members eligible for retiree helath benefits, not currently receiving benefits but may elect to enroll for coverage in the future	270
Active participants:	
Full-time and part-time employees	2,993
DROP participants	108
Total	7,055

CRS is considered part of the City of Cincinnati's financial reporting entity and is included in the City's financial report as part of the pension trust fund. The financial report that includes the financial statements, required supplementary information and detailed information about CRS' fiduciary net position may be obtained by visiting http://cincinnati-oh.gov/finance/cafr/. Information in the remainder of this footnote is provided for the MSD's portion, being reported as an agency fund of the City, which also participates in and contributes to the CRS, with a measurement date of June 30, 2018.

Funding Policy — Most retirees are subject to premiums that range from 0% to 10%. Other retiree premiums range from 5% to 75% depending on their date of hire, years of service and age at retirement. All members electing to participant in the dental and/or vision plan are required to pay the full cost of coverage. As such, it was assumed that CRS has no liability under GASB Statement No. 74 for these benefits.

OPEB Liabilities, OPEB Expense, and Deferred Outflows and Inflows of Resources Related to OPEB—CRS

The MSD's net OPEB liability was measured as of June 30, 2018, and the total OPEB liability used to calculate the net OPEB liability was determined by an actuarial valuation as of December 31, 2017. The MSD reported a net OPEB liability of $14,092,000 and a negative OPEB expense of $2,488,000.

At December 31, 2018, the MSD reported deferred inflows of resources related to OPEB from the following sources (amounts in thousands):

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net
Differences between expected and actual experience	$ 2,321	$ -	$ 2,321
Net difference between projected and actual investment earnings	-	594	594
Change in assumptions	5,492	-	5,492
	$ 7,813	$ 594	$ 8,407

Amounts reported as deferred inflows of resources will be recognized in OPEB expense as follows (amounts in thousands):

Year Ended December 31:	Net Deferred Outflows/ (Inflows) of Resources
2019	$ 2,637
2020	2,637
2021	2,637
2022	496
	$ 8,407

Actuarial Assumptions. The total OPEB liability in the following actuarial valuations were determined using the following actuarial assumptions, applied to the applicable periods included in the measurement:

	December 31, 2017	December 31, 2016
Inflation	2.75%	3.00%
Salary increases, including wage inflation	3.75% - 7.50%	4.00% - 7.50%
Long-term investment rate of return	7.50%	7.50%
Municipal bond index rate:		
Measurement date	3.89%	3.56%
Prior measurement date	3.56%	3.01%
Year of projected depletion:		
Measurement date	2047	2050
Prior measurement date	2050	2038
Single equivalent interest rate, net of OPEB plan investment expense, including price inflation		
Measurement date	6.13%	6.31%
Prior measurement date	6.31%	4.57%
Health care cost trends:		
Medicare supplement claims		
Pre-Medicare	7.75% for 2018, decreasing to an ultimate rate of 4.75% by 2028.	7.75% for 2017, decreasing to an ultimate rate of 5.00% by 2023.
Post-Medicare	5.50% / 5.80% for Non-Model and Model Plans for 2018, decreasing to an ultimate rate of 4.75% by 2024 and 2025, respectively.	5.75% for 2017, decreasing to an ultimate rate of 5.00% by 2020.
Mortality table	RP-2014	RP-2000

The demographic actuarial assumptions used in the December 31, 2017 valuation were based on the results of the most recent actuarial experience study, adopted by the Board on March 1, 2018.

Pre-retirement mortality rates were based on RP-2014 healthy employee dataset mortality with fully generational projected mortality improvements using MP-2017. RP-2014 healthy employee dataset mortality rates for males and females have been set forward 2 years. Post-retirement mortality rates for health lives were based on RP-2014 total dataset mortality with fully generational projected mortality improvements using MP-2017. RP-2014 total dataset mortality rates for males and females have been set

forward 2 years. For disabled lives, RP-2014 disabled retiree mortality with fully generational projected mortality improvements using MP-2017.
The remaining actuarial assumptions (e.g., initial per capita costs, health care cost trends, DROP participation, part-time employees, plan participation, rates of plan election, etc.) used in the December 31, 2017 valuation were based on a review of recent plan experience done concurrently with the December 31, 2017 valuation.

Long Term Expected Rate of Return. Several factors were considered in evaluating the long-term rate of return assumption, including CRS' current asset allocations and a log-normal distribution analysis using the best-estimate ranges of expected future real rates of return (expected return, net of investment expense and inflation) for each major asset class compiled by Horizon Actuarial Services, LLC in its *"Survey of Capital Market Assumptions, 2017 Edition"*. The long-term expected rate of return was determined by weighting the expected future real rates of return by the target asset allocation percentage and then adding expected inflation. The assumption is not expected to change absent a significant change in the asset allocation, a change in the inflation assumption, or a fundamental change in the market that alters expected returns in future years.

The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized as follows:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return*
Core Bonds	14.00 %	2.80 %
High Yield Bonds	3.00 %	4.90 %
Large-Cap Value Equity	7.00 %	7.20 %
Large-Cap Growth Equity	5.00 %	7.10 %
Mid-Cap Value Equity	4.00 %	7.50 %
Mid-Cap Core Equity	4.00 %	7.50 %
Small-Cap Value Equity	7.50 %	8.00 %
Non-U.S. Developed Large Cap	10.00 %	7.40 %
Non-U.S. Small Cap	5.00 %	8.10 %
Emerging Markets All-Cap	5.00 %	8.50 %
EM Small-Cap	3.00 %	8.50 %
Real Estate Core Equity	10.00 %	7.40 %
Infrastructure	7.50 %	7.80 %
Risk Parity	5.00 %	4.10 %
Private Equity	10.00 %	11.10 %
Total	100.00 %	

* Geometric mean

Discount Rate (SEIR). The discount rate used to measure the total OPEB liability as of June 30, 2018 was 6.13%. The projection of cash flows used to determine the discount rate was performed in accordance with GASB Statement No. 75. The projection's basis was an actuarial valuation performed as of December 31, 2017. In addition to the actuarial methods and assumptions of the December 31, 2017 actuarial valuation, the following actuarial methods and assumptions were used in the projection of cash flows:

- No future employee contributions were assumed to be made.
- No future employer contributions were assumed to be made.

Based on these assumptions, CRS' fiduciary net position was projected to be depleted in 2047 and, as a result, the municipal bond index rate was used in the determination of the single equivalent interest rate (SEIR). Here, the long-term expected rate of return of 7.50% on CRS investments was applied to period through 2047, and the municipal bond index rate at the measurement date (3.89%) was applied to periods on and after 2047 resulting in a SEIR at the measurement date (6.13%).

Sensitivity of the net OPEB liability to changes in the discount rate and healthcare cost trend rates. The following presents the net OPEB liability of the MSD, as well as what the MSD's net OPEB liability would be if it were calculated using a discount rate that is 1% lower or 1% higher than the current discount rate. Similarly, the following also presents what the MSD's net OPEB liability would be if it were calculated using a healthcare cost trend rate that is 1% lower or 1% higher than the current rate (amounts in thousands):

	Healthcare Cost Trend Rates		
MSD' Net OPEB Liability	1% Decrease	Current Rate	1% Increase
1% Increase (7.13%)		$ 3,406	
Current Discount Rate (6.13%)	$ 2,601	$ 14,092	$ 27,932
1% Decrease (5.13%)		$ 26,832	

Change in Net OPEB Liability. Changes in the MSD's financial reporting entity's net OPEB liability for the measurement year ended June 30, 2018 were as follows (amounts in thousands):

	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability
Balances at June 30, 2017	$ 93,325	$ 89,024	$ 4,301
Changes for the year:			
Service cost	945	-	945
Interest	5,841	-	5,841
Difference between expected and actual experience	3,030	-	3,030
Change in assumptions	7,173	-	7,173
Net investment income	-	7,354	(7,354)
Benefit payments, including refunds of employee contributions	(4,962)	(4,962)	-
Administrative expense	-	(78)	78
Other changes	-	(78)	78
Net changes	12,027	2,236	9,791
Balances at June 30, 2018	$ 105,352	$ 91,260	$ 14,092

The total OPEB liability as of June 30, 2018 is based on the actuarial valuation results as of December 31, 2017. The total OPEB liability as of June 30, 2018 was determined using standard projection (roll forward) techniques. The roll forward calculation adds the normal cost (also called the service cost) for the projection period—for experience and assumption changes, the first half of 2018, subtracts the expected net benefit payments for the period, and then applies the SEIR used to measure the total OPEB liability as of the valuation date. The roll forward calculation for the expected change is determined using a similar procedure, except that the total OPEB liability and service cost are based on GASB Statement No. 75 results as of the prior measurement date, one year projection period used, and actual net benefit payments are subtracted. These procedures are shown in the table below. The difference between this expected total OPEB liability and the projected total OPEB liability as of June 30, 2018 before reflecting any changes of assumptions or other inputs is the experience (gain) or loss for the period. The impact of measuring the liabilities after reflecting these changes—including but not limited to (a) using a discount rate of 6.13% as opposed to the 6.31% used at the beginning of the period, (b) updating health care cost trend rates, and (c) including part-time employees in the valuation—relative to the experience change total OPEB liability is shown as an assumption (gain) or loss for the period.

MSD's portion of CRS TOL Rollforward (amounts in thousands)

	Expected Change (1)	Experience Change (2)	Assumption Change (3)
(a) Measurement Date	6/30/2017	12/31/2017	12/31/2017
(b) Project Period	1 year	1/2 year	1/2 year
(c) Discount Rate (SEIR)	6.31%	6.31%	6.13%
(d) TOL as of (a)	$ 95,010	$ 99,566	$ 106,519
(e) Entry Age Normal Cost during the period from (a) to June 30, 2018*	945	455	550
(f) Actual / Expected Benefit Payments during the period from (a) to June 30, 2018	4,962	3,200	3,200
(g) TOL as of June 30, 2018 $= [(d) \times (1 + (c))^{(b)}] + (e) - [(f) \times (1 + (c))^{(b)/2}]$	$ 96,835	99,865	107,037
(h) Experience (Gain)/Loss: (2g) - (1g)		$ 3,030	
(i) Assumption Change (Gain)/Loss: (3g) - (2g)			$ 7,173

NOTE 11 - RELATED PARTY TRANSACTIONS

Cincinnati Water Works provides billing and collection services on customers' accounts for MSD. Fees for these services for 2018 and 2017 were $5,874,277 and $5,880,482 respectively. Fees are also paid to other municipalities and villages within Hamilton County for collection of sewerage bills.

The City of Cincinnati provides "overhead" services to MSD, such as check disbursement, investment and legal services, etc. The fees for these services for 2018 and 2017 were $2,559,188, and $2,234,875 respectively. In addition, the City's Municipal Garage provides gasoline and repairs vehicles for MSD. Fees for these services were $1,802,904 and $1,442,665 for 2018 and 2017, respectively.

NOTE 12 - COMMITMENTS AND CONTINGENCIES

The City of Cincinnati and the Board of County Commissioners of Hamilton County, Ohio are parties to a Global Consent Decree, which was lodged, in 2003, with the U.S. District Court for the Southern District of Ohio, Western Division. This decree focuses on combined sewer overflows, the implementation of the Sanitary Sewer Overflow Correction plan established in the Interim Partial Consent Decree, and other wet weather issues. The court approved the decrees on June 9, 2004. In August 2010, MSD's Revised Wet Weather Improvement Plan was approved by the federal government. The Plan commits MSD to complete a Phase 1 group of projects totaling $1.145 billion (in 2006 dollars and including $526 million that MSD has already spent on projects) by 2018 before scheduling future work (Phase 2). The consent decree documents are posted on the MSD web site, msdgc.org, under consent decree.

As part of MSD's capital improvement program, MSD has entered into a number of contracts for construction, design, and other services. Commitments under these contracts aggregate approximately $100.2 million as of December 31, 2018.

NOTE 13 - RISK MANAGEMENT

MSD is part of the City of Cincinnati Risk Management Program. The City purchases commercial insurance to cover losses due to: theft of, damage to, or destruction of assets and purchases general liability insurance for specific operations and professional liability insurance for certain operations. All other risks of loss are self-insured. Separately, MSD carries property insurance pursuant to an all-risk policy on MSD's buildings and equipment per the revenue bond trust agreement. There has been no reduction in insurance coverage from coverage in 2003. Insurance settlements for claims resulting from risks covered by commercial insurance have not exceeded the insurance coverage in any of the past four years.

NOTE 14 – PREPAID EXPENSES AND OTHER

The City of Cincinnati offered an Early Retirement Incentive Program (ERIP) in 2007. The City Retirement System was paid MSD's share of the remaining liability in the amount of $8,723,061. This amount represents in full the liability for 2015-2023 years. The payment was processed in March 2016.
The remaining prepaid expense balance is $3,773,061 at December 31, 2018.

NOTE 15 – CHANGE IN ACCOUNTING PRINCIPLE AND RESTATEMENT

For fiscal year 2018, the MSD implemented Governmental Accounting Standards Board (GASB) Statement No. 85, *Omnibus 2017*, Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, and related guidance from GASB Implementation Guide No. 2017-3, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (and Certain Issues Related to OPEB Plan Reporting).*

GASB Statement No. 85 addresses a variety of topics including issues related to blending component units, goodwill, fair value measurement and application, and postemployment benefits (pension and other postemployment benefits (OPEB)). These changes were incorporated in MSD's fiscal year 2018 financial statements; however, there was no effect on beginning net position.

GASB Statement No. 75 establishes standards for measuring and recognizing postemployment benefit liabilities, deferred outflows of resources, deferred inflows of resources and expense. The implementation of this pronouncement had the following effect on net position as reported December 31, 2017 (amounts in thousands):

Net Position December 31, 2017	$ 1,091,150
Adjustments:	
Net OPEB liability adjustments	4,308
Deferred inflows - change in assumptions	(15,389)
Deferred inflows - investment differences	(3,672)
Restated Net Position December 31, 2017	$ 1,076,397

MSD made no restatement for deferred inflows/outflows of resources related to OPERS, as the information needed to generate these restatements was not available.

NOTE 16 - SUBSEQUENT EVENTS

The Hamilton County Board of Commissioners did not approve a rate increase in 2019 of the District sewer fee. The latest rate study suggests annual sewer rate increases of 1% for the next four years (2020-2023).

The State of Ohio Auditor's office released a Special Audit for the years 2009-2015. The Findings for Recovery amounted to $779,164, of which $212,635 was recovered in 2018. The balance owed to MSD was turned over to the Hamilton County Prosecutor's office for review and disposition in 2019.

A Customer Assistance Program (CAP) was approved by the Board of Commissioners in April, 2019 to take effect on July 31, 2019. This program is a 25% discount on sewer bills offered to low income seniors over the age of 65. Depending on the number of customers that apply, the District estimates this could affect revenue in the amount of $250,000 up to $2.2 million, with 100% participation.

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Metropolitan Sewer District (MSD), Hamilton County, Ohio
Required Supplementary Information
Schedule of MSD's Proportionate Share of the Net Pension Liability
Ohio Public Employees Retirement System - Traditional Pension Plan
Last Five Years (1) (2)
Table 1
(Amounts in thousands)

	MSD's Proportion of the Net Pension Liability	MSD's Proportionate Share of the Net Pension Liability	MSD's Covered Payroll	MSD's Proportionate Share of the Net Pension Liability as a Percentage of its Covered Payroll	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability
2014	0.01499479%	$ 1,766	$ 2,443	72.29%	86.36%
2015	0.01517751%	1,825	2,479	73.62%	86.45%
2016	0.01475990%	2,541	2,336	108.78%	81.08%
2017 (3)	0.01727562%	3,923	2,200	178.32%	77.25%
2018	0.01708312%	2,680	2,377	112.75%	84.66%

(1) Amounts presented for each year were determined as of MSD's measurement date, which is the prior year-end.
(2) Information prior to 2014 is not available.
(3) 2017's proportion percentage was updated to the appropriate amount.

Notes to Schedule:

Change in assumptions . In 2017, changes in assumptions were made based upon an updated experience study that was completed for the five-year period ended December 31, 2015. Significant changes included a reduction of the discount rate from 8.0% to 7.5%, a reduction in the wage inflation rate from 3.75% to 3.25%, and transition from the RP-2000 mortality tables to the RP-2014 mortality tables.

Metropolitan Sewer District (MSD), Hamilton County, Ohio
Required Supplementary Information
Schedule of MSD's Pension Contributions
Ohio Public Employees Retirement System - Traditional Pension Plan
Last Ten Calendar Years
Table 2
(Amounts in thousands)

	Contractually Required Contributions	Contributions in Relation to the Contractually Required Contributions	Contribution Deficiency (Excess)	MSD's Covered Payroll	Contributions as a Percentage of Covered Payroll
2009	$ 156	$ (156)	$ -	$ 1,893	8.24%
2010	196	(196)	-	2,200	8.91%
2011	237	(237)	-	2,371	10.00%
2012	275	(275)	-	2,750	10.00%
2013	318	(318)	-	2,443	13.00%
2014	297	(297)	-	2,479	12.00%
2015	280	(280)	-	2,336	12.00%
2016	264	(264)	-	2,200	12.00%
2017	309	(309)	-	2,377	13.00%
2018	316	(316)	-	2,257	14.00%

Metropolitan Sewer District (MSD), Hamilton County, Ohio
Required Supplementary Information
Schedule of MSD's Proportionate Share of the Net OPEB Liability
Ohio Public Employees Retirement System - Traditional Pension Plan
Last Two Years (1) (2)
Table 3
(Amounts in thousands)

	MSD's Proportion of the Net OPEB Liability	MSD's Proportionate Share of the Net OPEB Liability	MSD's Covered Payroll	MSD's Proportionate Share of the Net OPEB Liability as a Percentage of its Covered Payroll	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability
2017	0.01786139%	$ 1,804	$ 2,200	82.00%	54.05%
2018	0.01664978%	1,808	2,377	76.06%	54.14%

(1) Amounts presented for each year were determined as of MSD's measurement date, which is the prior year-end.
(2) Information prior to 2017 is not available.

Metropolitan Sewer District (MSD), Hamilton County, Ohio
Required Supplementary Information
Schedule of MSD's OPEB Contributions
Ohio Public Employees Retirement System - Traditional Pension Plan
Last Ten Calendar Years
Table 4
(Amounts in thousands)

	Contractually Required Contributions	Contributions in Relation to the Contractually Required Contributions	Contribution Deficiency (Excess)	MSD's Covered Payroll	Contributions as a Percentage of Covered Payroll
2009	$ 109	$ (109)	$ -	$ 1,893	5.75%
2010	112	(112)	-	2,200	5.08%
2011	95	(95)	-	2,371	4.00%
2012	110	(110)	-	2,750	4.00%
2013	24	(24)	-	2,443	1.00%
2014	50	(50)	-	2,479	2.00%
2015	47	(47)	-	2,336	2.00%
2016	44	(44)	-	2,200	2.00%
2017	24	(24)	-	2,377	1.00%
2018	-	-	-	2,257	0.00%

Metropolitan Sewer District (MSD),Hamilton County, Ohio
Required Supplementary Information
Schedule of MSD's Changes in Net Pension Liability and Related Ratios
Cincinnati Retirement System
Last Five Years (1) (2)
Table 5
(Amounts in thousands)

	2018	2017	2016	2015	2014
Total pension liability					
Service cost	$ 4,260	$ 3,764	$ 5,639	$ 5,346	$ 4,919
Interest	30,471	29,256	25,454	28,680	28,146
Benefit changes	-	5,344	(13,545)	-	-
Difference between expected and actual experience	5,577	649	734	(2,698)	-
Changes of assumptions	9,403	-	(111,431)	30,007	(3,381)
Benefit payments	(31,093)	(30,368)	(28,777)	(30,628)	(29,614)
Refunds of contributions	(343)	(244)	(325)	(429)	(339)
Other	-	-	(35,654)	-	-
Net change in total pension liability	18,275	8,401	(157,905)	30,278	(269)
Total pension liability - beginning	401,763	393,362	551,267	520,989	521,258
Total pension liability - ending (a)	420,038	401,763	393,362	551,267	520,989
Plan net position					
Contributions - employer	6,080	5,647	4,639	5,596	7,252
Contributions - member	3,521	3,246	1,599	3,115	2,761
Contributions - ERIP payoff	-	-	8,723	-	-
Net investment income	26,180	38,292	(2,065)	9,455	49,002
Benefit payments	(31,093)	(30,368)	(28,777)	(30,628)	(29,614)
Administrative expense	(277)	(288)	(962)	(302)	(262)
Refunds of contributions	(343)	(244)	(325)	(429)	(333)
Other	(2,168)	(3,065)	24,110	-	-
Net change in plan net position	1,900	13,220	6,942	(13,193)	28,806
Plan net position - beginning	306,379	293,159	286,217	299,410	270,609
Plan net position - ending (b)	308,555	306,379	293,159	286,217	299,410
Net pension liability - ending (a) - (b)	$ 111,483	$ 95,384	$ 100,203	$ 265,050	$ 221,579
Ratio of plan net position to total pension liability	73.46%	76.26%	74.53%	51.92%	57.47%
Covered payroll	$ 37,809	$ 34,942	$ 31,809	$ 31,232	$ 30,550
Net pension liability as a percentage of covered payroll	294.86%	272.98%	315.01%	848.65%	725.30%

(1) Information prior to 2014 was not available. MSD will continue to present information for years available until a full ten-year trend is available.
(2) The measurement year is from July 1 through June 30.

See Notes to the Required Supplementary Pension Information.

Metropolitan Sewer District (MSD),Hamilton County, Ohio
Required Supplementary Information
Schedule of MSD's Pension Contributions
Cincinnati Retirement System
Last Ten Calendar Years
Table 6
(Amounts in thousands)

	Actuarially Determined Employer Contributions	Actual Employer Contributions	Contribution Deficiency (Excess)	MSD's Covered Payroll	Contributions as a Percentage of Covered Payroll
2009	$ 7,765	$ (4,805)	$ 2,960	$ 29,549	16.26%
2010	15,289	(5,676)	9,613	30,976	18.32%
2011	10,792	(6,128)	4,664	31,651	19.36%
2012	9,923	(6,676)	3,247	33,671	19.83%
2013	13,051	(6,179)	6,872	31,369	19.70%
2014	16,087	(5,303)	10,784	30,550	17.36%
2015	13,756	(4,328)	9,428	31,232	13.86%
2016	12,356	(5,169)	7,187	31,809	16.25%
2017	8,541	(5,941)	2,600	34,942	17.00%
2018	10,879	(6,226)	4,653	38,536	16.16%

See Notes to the Required Supplementary Pension Information.

Metropolitan Sewer District (MSD),Hamilton County, Ohio
Required Supplementary Information
Notes to the Required Pension Information
Cincinnati Retirement System
Table 7

Actuarial Assumptions:

Actuarially determined contribution rates are calculated as of June 30, one year prior to the end of the fiscal year in which contributions are reported.

Actuarial cost method	Entry age
Amortization method	Level dollar
Amortization period	Open 30 year period
Asset valuation method	Five-year smoothed market value
Inflation	3.00%
Salary increases, including wage inflation	4.00% to 7.00%, including inflation
Investment rate of return	7.50%, net of pension plan investment expense, and including inflation

Changes of Benefit Terms:

In 2017, there were several changes in benefit provisions as a result of Ordinance 336-2016 adopted by the City Council on October 26, 2016. In addition to incorporating many of the changes mandated by the Collaborative Settlement Agreement (CSA), the Ordinance also:

- Established benefit and eligibility provisions for Group E and F members not covered under the CSA similar to employees who are covered under the CSA.
- Established a universal cost-of-living adjustment (COLA) suspension period for all members.
- Established a universal 3% simple COLA rate for all members

In 2016, there were several changes in benefit provisions as a result of the Collaborative Settlement Agreement (CSA) between the City and various plaintiff groups representing certain active and retired members of CRS as approved by the Court on October 5, 2015 and generally effective January 1, 2016.

Changes in Actuarial Assumptions and Methods:

In 2018, actuarial assumptions and methods were changed based on the results of the actuarial experience study dated February 28, 2018. These changes include updating the retirement, withdrawal and disability rates, updating the mortality rates for all members to a generational approach using the RP-2014 mortality tables, updating the merit salary scale; increasing the assumed administrative expense as a percentage of payroll added to the normal cost from 0.75% to 0.80%; updating the assumed proportion of deferred vested members who elect to receive a deferred benefit and who will elect to withdraw their contributions; and updating the assumed percentage of members who are married for the purpose of valuing pre-retirement benefits.

Metropolitan Sewer District (MSD),Hamilton County, Ohio
Required Supplementary Information
Schedule of MSD's Changes in Net OPEB Liability and Related Ratios
Cincinnati Retirement System
Current Year (1) (2)
Table 8
(Amounts in thousands)

	2018
Total OPEB liability	
Service cost	$ 945
Interest	5,841
Difference between expected and actual experience	3,030
Changes of assumptions	7,173
Benefit payments	(4,962)
Net change in total OPEB liability	12,027
Total OPEB liability - beginning	93,325
Total OPEB liability - ending (a)	105,352
Plan net position	
Net investment income	7,354
Benefit payments	(4,962)
Administrative expense	(78)
Other	(78)
Net change in plan net position	2,236
Plan net position - beginning	89,024
Plan net position - ending (b)	91,260
Net OPEB liability - ending (a) - (b)	$ 14,092
Ratio of plan net position to total OPEB liability	86.62%
Covered employee payroll	$ 33,158
Net OPEB liability as a percentage of covered employee payroll	42.50%

(1) Information prior to 2018 was not available. MSD will continue to present information for years available until a full ten-year trend is available.
(2) The measurement year is from July 1 through June 30.

See Notes to the Required Supplementary OPEB Information.

Metropolitan Sewer District (MSD),Hamilton County, Ohio
Required Supplementary Information
Schedule of MSD's OPEB Contributions
Cincinnati Retirement System
Last Three Calendar Years (1)
Table 9
(Amounts in thousands)

	Actuarially Determined Employer Contributions	Actual Employer Contributions	Contribution Deficiency (Excess)	MSD's Covered Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
2016	248	-	248	31,384	0.00%
2017	714	-	714	32,369	0.00%
2018	534	-	534	32,440	0.00%

(1) Information prior to 2016 is not available.

See Notes to the Required Supplementary OPEB Information.

Metropolitan Sewer District (MSD),Hamilton County, Ohio
Required Supplementary Information
Notes to the Required OPEB Information
Cincinnati Retirement System
Table 10

Actuarial Assumptions:

Actuarially determined contribution rates are calculated as of June 30, one year prior to the end of the fiscal year in which contributions are reported.

Actuarial cost method	Entry age
Amortization method	Level dollar
Amortization period	Open 30 year period
Asset valuation method	Five-year smoothed market value
Inflation	3.00%
Salary increases, including wage inflation	4.00% to 7.50%
Investment rate of return	7.50%, net of pension plan investment expense, and including inflation
Initial health care cost trend rates	
Pre Medicare	7.75%
Medicare	5.75%
Ultimate health care cost trend rates	
Pre Medicare	5.00%
Medicare	5.00%
Year ultimate health care cost trend rates reached	
Pre Medicare	2023
Medicare	2020

Change of Benefit Terms:

In 2017, the Plan changes included in Ordinance 336-2016 were adopted by the City Council on October 26, 2016. In addition to incorporating many of the changes mandated by the CSA, the Ordinance also:

- Excluded members hired after December 31, 2015 from eligibility to receive retiree health benefits;
- Established benefit and eligibility provisions for Group E and F members, not covered under the CSA, similar to employees who are covered under the CSA.
- Specified eligibility and postemployment contribution requirements for the retiree health benefits payable to members and beneficiaries entitled to deferred benefits.
- Modified eligibility and postemployment contribution requirements to retiree health benefits paid as the result of an in-service death.

In 2016, there were several changes in benefit provisions as a result of the Collaborative Settlement Agreement (CSA) between the City and various plaintiff groups representing certain active and retired members of CRS as approved by the Court on October 5, 2015 and generally effective January 1, 2016.

Changes in Actuarial Assumptions and Methods:

In 2018, actuarial assumptions and methods were changed based on recent plan experience done concurrently with the December 31, 2017 valuation, including a change in the Municipal Bond Index Rate from 3.56% to 3.89%; a decrease in the discount rate (SEIR) from 6.31% to 6.13%, an update of the retirement, withdrawal and disability rates; an update of the mortality rates for all members to a generational approach using the RP-2014 mortality tables; an update of the merit salary scales and updates to the following to better reflect the anticipated experience of the plan: assumed rates of health care inflation, assumed rates of health benefit plan participation, contribution rates for the Select Plan and the Model Plan, and DROP participation rates.

In 2017, future contribution rates for retiree health benefit recipients are now based upon the projected retiree health care costs associated with each projection year's closed group of participants.

OHIO AUDITOR OF STATE
KEITH FABER

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INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS REQUIRED BY *GOVERNMENT AUDITING STANDARDS*

Metropolitan Sewer District of Greater Cincinnati
Hamilton County
1600 Gest Street
Cincinnati, OH 45204

To the Hamilton County Board of Commissioners:

We have audited, in accordance with auditing standards generally accepted in the United States and the Comptroller General of the United States' *Government Auditing Standards*, the financial statements of the business-type activities of the Metropolitan Sewer District of Greater Cincinnati, Hamilton County, (the District) as of and for the year ended December 31, 2018, and the related notes to the financial statements, which collectively comprise the District's basic financial statements and have issued our report thereon dated May 29, 2019, wherein we noted that the District adopted new accounting guidance in Governmental Accounting Standards Board (GASB) Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions.*

Internal Control Over Financial Reporting

As part of our financial statement audit, we considered the District's internal control over financial reporting (internal control) to determine the audit procedures appropriate in the circumstances to the extent necessary to support our opinion on the financial statements, but not to the extent necessary to opine on the effectiveness of the District's internal control. Accordingly, we have not opined on it.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, when performing their assigned functions, to prevent, or detect and timely correct misstatements. A *material weakness* is a deficiency, or combination of internal control deficiencies resulting in a reasonable possibility that internal control will not prevent or detect and timely correct a material misstatement of the District's financial statements. 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 internal control deficiencies that might be material weaknesses or significant deficiencies. Given these limitations, we did not identify any deficiencies in internal control that we consider material weaknesses. However, unidentified material weaknesses may exist.

Compliance and Other Matters

As part of reasonably assuring whether the District's financial statements are free of material misstatement, we tested its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could directly and materially affect the determination of financial statement amounts. However, opining on compliance with those provisions was not an objective of our audit and accordingly, we do not express an opinion. The results of our tests disclosed no instances of noncompliance or other matters we must report under *Government Auditing Standards*.

Purpose of this Report

This report only describes the scope of our internal control and compliance testing and our testing results, and does not opine on the effectiveness of the District's internal control or on compliance. This report is an integral part of an audit performed under *Government Auditing Standards* in considering the District's internal control and compliance. Accordingly, this report is not suitable for any other purpose.

Keith Faber
Auditor of State

Columbus, Ohio

May 29, 2019

OHIO AUDITOR OF STATE
KEITH FABER

METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI

HAMILTON COUNTY

CLERK'S CERTIFICATION

This is a true and correct copy of the report which is required to be filed in the Office of the Auditor of State pursuant to Section 117.26, Revised Code, and which is filed in Columbus, Ohio.

Susan Babbitt

CLERK OF THE BUREAU

CERTIFIED
JUNE 18, 2019