OFFICIAL STATEMENT

NEW ISSUE RATINGS: See "RATINGS" herein

In the opinion of Wyatt, Tarrant & Combs, LLP, Bond Counsel, (i) under the Internal Revenue Code as presently enacted and construed and subject to the conditions and limitations set forth herein under the caption "TAX TREATMENT," interest on the Series 2019 Bonds is excludable from gross income for Federal income tax purposes and (ii) the Series 2019 Bonds are exempt from ad valorem taxation, and the interest thereon is exempt from income taxation, by the Commonwealth of Kentucky and all of its political subdivisions and taxing authorities. See "TAX TREATMENT" herein.

$30,910,000
LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
SEWER AND DRAINAGE SYSTEM REVENUE REFUNDING BONDS, SERIES 2019

Dated: Date of Delivery Due: See Inside Cover

Interest on the captioned Series 2019 Bonds (herein the "Series 2019 Bonds") will be payable from the dated date, on each May 15 and November 15, commencing November 15, 2019, and the Series 2019 Bonds mature on each May 15, as shown on the inside cover.

The Series 2019 Bonds are being issued pursuant to the provisions of Chapter 76 of the Kentucky Revised Statutes, as amended (the "Act"), a Revenue Bond Resolution adopted by the District on December 7, 1992, as heretofore amended and as further amended by the Twenty-Eighth Supplemental Sewer and Drainage System Revenue Bond Resolution adopted by the District on April 22, 2019 (collectively, the "Resolution"). The holders of the Series 2019 Bonds shall, on a parity with the holders of all other bonds outstanding under the Resolution (collectively, the "Bonds"), have a priority lien on and security interest in the revenues of the District derived from the operation of the District's sewer and drainage system (the "System"). The District reserves the right to issue additional bonds and refunding bonds on a parity with the outstanding Bonds, subject to satisfaction of the conditions set forth in the Resolution. See "SECURITY AND SOURCE OF PAYMENT FOR THE SERIES 2019 BONDS" herein.

The Series 2019 Bonds will be fully registered bonds in denominations of $5,000 or any integral multiple thereof without coupons. The Series 2019 Bonds will be issuable under a book entry system, registered in the name of The Depository Trust Company ("DTC") or its nominee. There will be no distribution of the Series 2019 Bonds to the ultimate purchasers. See "Book-Entry System" and APPENDIX E herein. Principal and interest on the Series 2019 Bonds is payable at the designated office of The Bank of New York Mellon Trust Company, N.A, as Bond Registrar and Paying Agent (the "Paying Agent and Bond Registrar").

The Series 2019 Bonds are not subject to optional redemption prior to maturity.

The Series 2019 Bonds are special and limited revenue obligations of the District and do not constitute a debt, liability or general obligation of the District, the Commonwealth of Kentucky or any political subdivision or taxing authority thereof, including the Louisville/Jefferson County Metro Government or the County of Jefferson, Kentucky, within the meaning of the Constitution and laws of the Commonwealth of Kentucky. See "SECURITY AND SOURCE OF PAYMENT FOR THE SERIES 2019 BONDS" herein.

The Series 2019 Bonds are offered when, as and if issued, subject to the approving legal opinion of Wyatt, Tarrant & Combs, LLP, Bond Counsel, Louisville, Kentucky. Certain legal matters have been passed upon for the District by its General Counsel, Paula M. Purifoy, Esq. The Series 2019 Bonds are expected to be available for delivery on or about August 19, 2019.

Dated: July 10, 2019

$30,910,000

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
SEWER AND DRAINAGE SYSTEM REVENUE REFUNDING BONDS, SERIES 2019

Dated: Date of Delivery   Due: May 15, as shown below

Due May 15	Principal Amount	Interest Rate	Price	Yield	CUSIP* 546589
2020	$6,140,000	5.000%	102.785	1.200%	K35
2021	7,705,000	5.000	106.446	1.240	K43
2022	8,220,000	5.000	110.064	1.250	K50
2023	8,845,000	5.000	113.576	1.270	K68

** CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein is provided by Standard & Poor's, as manager of CUSIP Global Services, and is set forth herein for convenience of reference only and no representations are made as to the correctness of the CUSIP number. The CUSIP numbers for some or all of the Series 2019 Bonds may be changed as a result of various actions occurring after the issuance of the Series 2019 Bonds, including, but not limited to, a refunding in whole or in part of the Series 2019 Bonds or the addition of secondary market portfolio insurance or other credit enhancement applicable to some or all of the Series 2019 Bonds.*

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT

Board Members

Cyndi Caudill, Chair
Daniel Arbough, Vice Chair
Andrew Bailey
Jason Williams
Keith Jackson
J.T. Sims
Marita Willis
Ricky Mason

Executive Director
James A. "Tony" Parrott

Chief Financial Officer and Secretary-Treasurer
Chad Collier

Chief of Operations
Brian Bingham

Chief Engineer
Angela Akridge

General Counsel
Paula M. Purifoy, Esq.

CERTIFIED PUBLIC ACCOUNTANTS

Crowe LLP
Louisville, Kentucky

BOND COUNSEL

Wyatt, Tarrant & Combs, LLP
Louisville, Kentucky

FINANCIAL ADVISOR

J.J.B. Hilliard, W.L. Lyons, LLC, a Baird Company
Louisville, Kentucky

PAYING AGENT AND BOND REGISTRAR

The Bank of New York Mellon Trust Company, N.A
Louisville, Kentucky

REGARDING THIS OFFICIAL STATEMENT

The information set forth herein has been obtained from the Louisville and Jefferson County Metropolitan Sewer District (the "District") and other sources that are believed to be reliable, but is not guaranteed as to accuracy or completeness, and is not to be construed as a representation, by the Underwriter. The information and expressions of opinion contained herein are subject to change without notice, and neither the delivery of this Official Statement nor any sale made hereunder shall, under any circumstances, create any implication that there has been no change in the affairs of the District or that the information or opinions or estimates contained herein are correct as of any date subsequent to the date hereof.

The Underwriter has provided the following sentence for inclusion in this Official Statement. The Underwriter has reviewed the information in this Official Statement in accordance with, and as a part of, its responsibilities to investors under the federal securities laws as applied to the facts and circumstances of this transaction, but the Underwriter does not guarantee the accuracy or completeness of such information.

This Official Statement contains statements which, to the extent they are not recitations of historical fact, constitute "forward-looking statements." In this respect, the words "estimate," "project," "anticipate," "expect," "intend," "believe" and similar expressions are intended to identify forward-looking statements.

No dealer, broker, salesman or other person has been authorized by the District or the Underwriter to give any information or to make any representations with respect to the Series 2019 Bonds offered hereby, other than those contained herein, and if given or made, such other information or representations must not be relied upon as having been authorized by any of the foregoing. This Official Statement does not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of the Series 2019 Bonds by any person in any jurisdiction in which it is unlawful for such person to make such offer, solicitation or sale.

IN CONNECTION WITH THIS OFFERING, THE UNDERWRITER MAY OVERALLOT OR EFFECT TRANSACTIONS THAT STABILIZE OR MAINTAIN THE MARKET PRICE OF THE SERIES 2019 BONDS AT A LEVEL ABOVE THAT WHICH MIGHT OTHERWISE PREVAIL IN THE OPEN MARKET. SUCH STABILIZING, IF COMMENCED, MAY BE DISCONTINUED AT ANY TIME.

IN MAKING AN INVESTMENT DECISION, INVESTORS MUST RELY ON THEIR OWN EXAMINATION OF THE DISTRICT AND THE TERMS OF THE OFFERING, INCLUDING THE MERITS AND RISKS INVOLVED. THE SERIES 2019 BONDS HAVE NOT BEEN RECOMMENDED BY ANY FEDERAL OR STATE SECURITIES COMMISSION OR REGULATORY AUTHORITY. FURTHERMORE, THE FOREGOING AUTHORITIES HAVE NOT CONFIRMED THE ACCURACY OR DETERMINED THE ADEQUACY OF THIS OFFICIAL STATEMENT.

THIS OFFICIAL STATEMENT CONTAINS SUMMARIES BELIEVED TO BE ACCURATE OF CERTAIN DOCUMENTS, BUT REFERENCE IS HEREBY MADE TO THE ACTUAL DOCUMENTS, WHICH ARE INCORPORATED BY REFERENCE, AND ALL SUCH SUMMARIES ARE QUALIFIED IN THEIR ENTIRETY BY THIS REFERENCE. THIS OFFICIAL STATEMENT DOES NOT CONSTITUTE A CONTRACT BETWEEN THE DISTRICT OR THE UNDERWRITER AND ANY OF THE PURCHASERS OR OWNERS OF THE SERIES 2019 BONDS.

References herein to provisions of Kentucky law, whether codified in the Kentucky Revised Statutes ("KRS") or uncodified, or of the Kentucky Constitution, are references to such provisions as they presently exist. Any of those provisions may from time to time be amended, repealed or supplemented.

As used in this Official Statement, "debt service" means principal of, premium, if any, and interest on the obligations referred to, and "Commonwealth" or "Kentucky" means the Commonwealth of Kentucky.

TABLE OF CONTENTS

Appendices

$30,910,000
LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT SEWER AND DRAINAGE SYSTEM REVENUE REFUNDING BONDS, SERIES 2019

INTRODUCTION

The purpose of this Official Statement, which includes the cover pages and appendices hereto, is to provide certain information with respect to the issuance of the $30,910,000 aggregate principal amount of Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Revenue Refunding Bonds, Series 2019 (the "Series 2019 Bonds").

This introduction is not a summary of this Official Statement. It is only a brief description of and guide to, and is qualified by, more complete and detailed information contained in the entire Official Statement, including the cover pages and appendices hereto, and the documents summarized or described herein. A full review should be made of the entire Official Statement. The offering of the Series 2019 Bonds to potential investors is made only by means of the entire Official Statement.

Any capitalized terms not otherwise defined in this Official Statement shall have the meaning ascribed to them in "Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution."

The District

The Series 2019 Bonds are being issued by the Louisville and Jefferson County Metropolitan Sewer District (the "District"), a public body corporate and politic and a political subdivision of the Commonwealth of Kentucky.

The District was created pursuant to the Act in 1946 to provide adequate sewer and drainage facilities and service in and around the City of Louisville, Kentucky (the "City") and within Jefferson County, Kentucky (the "County"). In 1987, the District became the sole local authority for providing flood control and storm water drainage services in a drainage service area which included the City of Louisville, many small incorporated areas of the County, and portions of the unincorporated areas of the County (collectively hereinafter referred to as the "Drainage Service Area"). Substantially all the governmental and corporate functions of the City and the County merged effective January 6, 2003 into a single consolidated local government known as Louisville/Jefferson County Metro Government. The consolidated local government replaced and superseded the governments of the City and the County. The City no longer exists as a separate legal entity.

Purpose of the Series 2019 Bonds

The proceeds of the Series 2019 Bonds will be used to: (i) currently refund the outstanding principal amount of the District's Sewer and Drainage System Revenue Bonds, Series 2009B (the "Refunded Prior Bonds"), the proceeds of which were used to pay, or to refund earlier series of bonds and notes issued to pay, the costs of improvements to the District's sewer and drainage system (the "System"), and (ii) pay the cost of issuance of the Series 2019 Bonds.

Security and Source of Payment for the Series 2019 Bonds

Pursuant to the provisions of Chapter 76 of the Kentucky Revised Statutes, as amended (the "Act"), a Revenue Bond Resolution adopted by the District on December 7, 1992, as amended March 4, 1993, June 30, 1993, December 14, 1994, January 25, 1996, and February 24, 2003, and a Twenty-Eighth Supplemental Sewer and Drainage System Revenue Bond Resolution adopted by the District on April 22, 2019 (collectively, the "Resolution"), the District has pledged to the payment of the principal of, premium, if any, and interest on the Series 2019 Bonds as and when due and payable: (i) the proceeds of the Series 2019 Bonds authorized and directed to be issued under the Twenty-Eighth Supplemental Sewer and Drainage System Revenue Bond Resolution; (ii) all Revenues, (iii) all amounts on deposit in the Funds and Accounts established under the Resolution, (iv) such other amounts as may be pledged from time to time by the District as security for the payment of bonds issued and outstanding under the Resolution (the "Bonds") and (v) all proceeds of the foregoing. The Series 2019 Bonds rank on a parity as to security and source of payment with all other Bonds which have been or may hereafter be issued under the Resolution.

THE SERIES 2019 BONDS DO NOT CONSTITUTE AN INDEBTEDNESS OF THE DISTRICT, THE COMMONWEALTH OF KENTUCKY OR ANY POLITICAL SUBDIVISION OR TAXING AUTHORITY THEREOF, INCLUDING THE LOUISVILLE/JEFFERSON COUNTY METRO GOVERNMENT AND THE COUNTY OF JEFFERSON, KENTUCKY, WITHIN THE MEANING OF THE CONSTITUTION OF THE COMMONWEALTH OF KENTUCKY. THE SERIES 2019 BONDS ARE PAYABLE SOLELY FROM THE REVENUES OF THE SYSTEM AND THE OTHER ASSETS AND REVENUES PLEDGED THEREFOR UNDER THE RESOLUTION. NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE DISTRICT, THE COMMONWEALTH OF KENTUCKY OR ANY POLITICAL SUBDIVISION OR TAXING AUTHORITY THEREOF, INCLUDING THE LOUISVILLE/JEFFERSON COUNTY METRO GOVERNMENT AND THE COUNTY OF JEFFERSON, KENTUCKY, IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, PREMIUM, IF ANY, AND INTEREST ON THE SERIES 2019 BONDS. THE DISTRICT HAS NO TAXING POWER.

Description of the Series 2019 Bonds

Redemption. The Series 2019 Bonds are *not* subject to optional redemption prior to their maturity.

Denominations. The Series 2019 Bonds will be issued in principal amounts of $5,000 and integral multiples thereof.

Book Entry. The Series 2019 Bonds are issuable only as fully registered bonds, without coupons. The Series 2019 Bonds, when issued, will be registered in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York, which will act as securities depository for the Series 2019 Bonds. Purchasers will not receive certificates representing their ownership interest in the Series 2019 Bonds. So long as DTC or its nominee is the registered owner of the Series 2019 Bonds, payments of the principal of, redemption premium, if any, and interest due on the Series 2019 Bonds will be made directly to DTC. Principal of, redemption premium, if any, and interest on the Series 2019 Bonds will be paid directly to DTC by The Bank of New York Mellon Trust Company, N.A, Louisville, Kentucky, as Paying Agent and Bond Registrar (the "Paying Agent" and "Registrar"). See "BOOK-ENTRY SYSTEM" and "APPENDIX E - Book-Entry Only System" herein.

Interest. The Series 2019 Bonds will bear interest at the rates set forth on the inside cover page hereof, payable semi-annually on May 15 and November 15, commencing November 15, 2019.

Tax Treatment

In the opinion of Bond Counsel, under the Internal Revenue Code (the "Code") as presently enacted and construed, interest, including original issue discount, if any, on the Series 2019 Bonds is excludible from gross income for Federal income tax purposes. In rendering this opinion, Bond Counsel has assumed continuing compliance with certain covenants designed to meet the requirements of Section 103 of the Code. Bond Counsel expresses no other opinion as to the federal tax consequences of purchasing, holding or disposing of the Series 2019 Bonds. The Series 2019 Bonds are exempt from ad valorem taxation, and the interest thereon is exempt from income taxation, by the Commonwealth of Kentucky and all of its political subdivisions and taxing authorities.

The District has not designated the Series 2019 Bonds as "qualified tax exempt obligations" under Section 265 of the Code. See Appendix D hereto for the form of the opinion Bond Counsel proposes to deliver in connection with the Series 2019 Bonds.

Parties to the Issuance of the Series 2019 Bonds

The Paying Agent and Bond Registrar for the Series 2019 Bonds is The Bank of New York Mellon Trust Company, N.A. Legal matters incidence to the issuance of the Series 2019 Bonds and with regard to the tax-exempt status of the interest thereon are subject to the approving legal opinion of Wyatt, Tarrant & Combs, LLP, Louisville, Kentucky, Bond Counsel. Certain legal matters will be passed upon for the District by its General Counsel, Paula M. Purifoy, Esq. The financial advisor to the District with regard to the issuance of the Series 2019 Bonds is J.J.B. Hilliard, W.L. Lyons, LLC, a Baird Company, Louisville, Kentucky.

Authority for Issuance

Authority for the issuance of the Series 2019 Bonds is provided by Chapter 76 of the Kentucky Revised Statutes (the "Act") and the Resolution.

Offering and Delivery of the Series 2019 Bonds

The Series 2019 Bonds are offered when, as and if issued by the District. The Series 2019 Bonds will be delivered on or about August 19, 2019 in New York, New York through the Depository Trust Company (DTC).

Disclosure Information

This Official Statement speaks only as of its date, and the information contained herein is subject to completion and change. This Official Statement and the continuing disclosure documents of the District are intended to be made available through one or more repositories. Copies of the basic documentation relating to the Series 2019 Bonds, including the Resolution and the bond form, are available from the District.

The District has deemed this Official Statement to be final for the purposes of Securities and Exchange Commission Rule l5c2-l2.

Additional Information

Additional information concerning this Official Statement, as well as copies of the basic documentation relating to the Series 2019 Bonds, is available from J.J.B. Hilliard, W.L. Lyons, LLC, a Baird Company, Financial Advisor to the District, 500 West Jefferson Street, Suite 700, Louisville, Kentucky 40202, Telephone (502) 588-1124.

Brief descriptions of the Series 2019 Bonds, the source of payment and security for the Series 2019 Bonds, the District, the System and the Resolution are included in this Official Statement. Certain information with respect to the District is included in the Appendices hereto. Capitalized terms not otherwise defined herein shall have the meanings assigned to them in the Resolution. All summaries herein of documents and agreements are qualified in their entirety by reference to such documents and agreements, copies of which are available at the office of the District.

THE SERIES 2019 BONDS

General

The Series 2019 Bonds are to be issued only as fully registered Bonds in denominations of $5,000 or any integral multiple thereof without coupons. The Series 2019 Bonds will be dated their date of delivery, will bear interest from that date, payable semi-annually on May 15 and November 15 of each year commencing November 15, 2019 (each an "Interest Payment Date"), and will mature on May 15, in the years and in the principal amounts set forth on the inside cover page of this Official Statement.

The Series 2019 Bonds shall be payable at the designated office of the Paying Agent and Bond Registrar with respect to principal and premium, if any, in any coin or currency of the United States of America which at the time of payment is legal tender for the payment of public or private debts. Interest will be payable on November 15, 2019, and semiannually thereafter on May 15 and November 15 of each year, by check of the Paying Agent mailed to such registered owner who shall appear as of the close of business on the fifteenth day (or if such day shall not be a business day, the preceding business day) of the calendar month next preceding such interest payment date on the registration books of the District maintained by the Bond Registrar, or if the registered owner shall be the registered owner of Series 2019 Bonds in the aggregate principal amount of $1,000,000 or more, by wire transfer, if the registered owner has requested payment in such manner at such wire address as shall have been furnished by the registered owner on or prior to the fifteenth day next preceding such Interest Payment Date (or if such date shall not be a business day, the next succeeding business day). The record dates for the May 15 and November 15 Interest Payment Dates shall be the preceding April 15 and October 15, respectively.

Each registered Series 2019 Bond shall be transferable only upon the books of the Bond Registrar, at the request of the registered owner thereof or by his authorized attorney upon surrender thereof together with an assignment satisfactory to the Bond Registrar duly executed by the registered owner or his duly authorized attorney. Upon the transfer of any such Series 2019 Bond, the District shall issue in the name of the transferee a new registered Series 2019 Bond of the same aggregate principal amount and maturity as the surrendered Series 2019 Bond. If any Series 2019 Bond is mutilated, lost, stolen or destroyed, the District will execute and deliver a new Series 2019 Bond in accordance with the Resolution.

Redemption

Optional Redemption. The Series 2019 Bonds are not subject to optional redemption prior to their stated maturity.

Book-Entry System

The Series 2019 Bonds initially will be issued solely in book entry form to be held in the book-entry only system maintained by DTC. So long as such book-entry system is used, only DTC will receive or have the right to receive physical delivery of Series 2019 Bonds and Beneficial Owners will not be or be considered to be, and will not have any rights as, owners or holders of the Series 2019 Bonds under the Resolution. For additional information about DTC and the book-entry-only system see "APPENDIX E - Book-Entry Only System."

THE INFORMATION IN THIS SECTION AND IN APPENDIX E CONCERNING DTC AND DTC'S BOOK-ENTRY SYSTEM HAS BEEN OBTAINED FROM SOURCES THAT THE DISTRICT BELIEVES TO BE RELIABLE, BUT THE DISTRICT TAKES NO RESPONSIBILITY FOR THE ACCURACY THEREOF.

Exchange and Transfer

The registration of any Series 2019 Bond may be transferred only upon the books of the District kept by the Bond Registrar, by the owner thereof, in person or by the owner's attorney duly authorized in writing, upon surrender of such Series 2019 Bond at the designated office of the Bond Registrar accompanied by a written instrument of transfer satisfactory to the Bond Registrar and duly executed by the owner or by the owner's duly authorized attorney. Any Series 2019 Bond may be exchanged at the designated office of the Bond Registrar for new Series 2019 Bonds of any authorized denomination and of the same aggregate principal amount and maturity as the surrendered Series 2019 Bond. The Bond Registrar will not charge for any new bond issued upon any transfer or exchange, but may require the owner requesting such exchange to pay any tax, fee or other governmental charge required to be paid with respect to such exchange or transfer. Neither the District nor the Bond Registrar is required (a) to exchange or transfer any Bond during the period commencing on the fifteenth day of the month preceding an interest payment date and ending on such interest payment date, or during the period commencing fifteen days prior to the date of any selection of Series 2019 Bonds to be redeemed and ending on the day after the mailing of the notice of redemption, or (b) to transfer or exchange any Series 2019 Bond called for redemption.

Defeasance

If the District pays or causes to be paid, or there is otherwise paid, to the owners of all outstanding Series 2019 Bonds of a particular maturity or particular Series 2019 Bonds within a maturity, the principal or redemption price, if applicable, and interest due or to become due thereon, at the times and in the manner stipulated therein and in the Resolution, such Series 2019 Bonds will cease to be entitled to any lien, benefit or security under the Resolution, and all covenants, agreements and obligations of the District to the owners of such Series 2019 Bonds will thereupon cease, terminate and become void and be discharged and satisfied.

Subject to the provisions of the Resolution, any outstanding Series 2019 Bonds will be deemed to have been paid within the meaning and with the effect expressed in the foregoing paragraph if (a) in the case of any Series 2019 Bonds to be redeemed on any date prior to their maturity, the District has instructed the Bond Registrar to mail a notice of redemption of such Series 2019 Bonds on said date, (b) there has been deposited with an escrow agent appointed for such purpose either money in an amount which will be sufficient, or Defeasance Obligations the principal of and the interest on which when due will provide money which, together with the money, if any deposited with the escrow agent at the same time, will be sufficient, to pay when due the principal or redemption price, if applicable, and interest due and to become due on such Series 2019 Bonds on or prior to the redemption date or maturity date thereof, as the case may be, and (c) in the event such Series 2019 Bonds are not by their terms subject to redemption within the next succeeding 60 days, the District has given the Bond Registrar instructions in writing to mail a notice to the owners of such Series 2019 Bonds that the deposit required by (b) above has been made with the escrow agent and that such Series 2019 Bonds are deemed to have been paid in accordance with the Resolution, and stating the maturity or redemption date upon which money is expected to be available for the payment of the principal or redemption price, if applicable, on such Series 2019 Bonds. For a description of the types of Defeasance Obligations in which funds may be invested for purposes of clause (b) above, see “Appendix A- Definitions of Certain Terms and Summary of Provisions of the Resolution - Defeasance.”

SECURITY AND SOURCE OF PAYMENT FOR THE SERIES 2019 BONDS

The Series 2019 Bonds will rank on a parity as to source of payment with Bonds previously issued and any Additional Bonds and Refunding Bonds which may be issued from time to time pursuant to the Resolution (collectively, the “Bonds”). The Bonds are secured by and payable solely from pledged revenues derived from the collection of rates, rents and charges for the services rendered by the System as set forth in the Resolution. The Bonds do not constitute an indebtedness of the Commonwealth of Kentucky, the Louisville/Jefferson County Metro Government or the County of Jefferson, Kentucky.

The District has heretofore issued its Sewer and Drainage System Revenue Bonds outstanding in the amounts shown below, each Series of which will rank on a parity as to security and source of payment with the Series 2019 Bonds.

Series	Dated Date	Original Principal Amount	Principal Amount Outstanding[(1)]
Series 2009B[(2)]	August 15, 2009	$225,770,000	$35,155,000
Series 2009C	November 24, 2009	180,000,000	180,000,000
Series 2010A	November 30, 2010	330,000,000	330,000,000
Series 2011A	August 24, 2011	263,360,000	248,440,000
Series 2013A	May 23, 2013	115,790,000	115,790,000
Series 2013B	May 23, 2013	119,515,000	114,100,000
Series 2013C	November 27, 2013	100,000,000	99,375,000
Series 2014A	November 25, 2014	80,000,000	79,800,000
Series 2015A	October 21, 2015	175,000,000	173,360,000
Series 2015B	October 21, 2015	81,750,000	74,160,000
Series 2016A	August 30, 2016	150,000,000	149,530,000
Series 2016B	August 30, 2016	28,315,000	25,825,000
Series 2016C	August 30, 2016	67,685,000	67,685,000
Series 2017A	August 22, 2017	175,000,000	169,270,000
Series 2017B	August 29, 2017	35,725,000	33,670,000
Series 2018A	May 31, 2018	60,380,000	60,380,000
	TOTAL	$2,188,290,000	$1,956,540,000

(1) As of July 1, 2019
(2) Being refunded with the Series 2019 Bonds

Pledged Property

The Series 2019 Bonds are special and limited obligations of the District payable solely from and secured as to the payment of the principal and redemption price thereof, and interest thereon, in accordance with the terms and the provisions of the Resolution solely by the Pledged Property, which is defined by the Resolution to be the proceeds of the sale of the Series 2019 Bonds, all Revenues, all amounts on deposit in the Funds and Accounts established under the Resolution, such other amounts as may be pledged from time to time by the District as security for the payment of bonds, notes or other evidences of indebtedness authenticated and delivered pursuant to the Resolution, and all proceeds of the foregoing. The Series 2019 Bonds rank on a parity as to security and source of payment with Bonds previously issued and outstanding under the Resolution and any Additional Bonds and Refunding Bonds (as such terms are defined in Appendix A) which may be issued from time to time pursuant to the Resolution.

Rate Covenant

The District has covenanted pursuant to the Resolution to fix, establish, maintain and collect rates, fees, rents and charges for services of the System, which, together with other "Available Revenues" (as hereinafter defined) are expected to produce Available Revenues which will be at least sufficient for each Fiscal Year to pay the sum of:

(i) an amount equal to 110% of the Aggregate Net Debt Service for such Fiscal Year;

(ii) the amount, if any, to be paid during such Fiscal Year into the Reserve Account in the Bond Fund (other than amounts required to be paid into such Account out of the proceeds of Bonds);

(iii) all Operating Expenses for such Fiscal Year as estimated in the Annual Budget;

(iv) to the extent not included in the foregoing, an amount equal to the debt service on the Senior Subordinated Debt, any other Subordinated Debt or other debt of the District for such Fiscal Year computed as of the beginning of such Fiscal Year; and

(v) amounts necessary to pay and discharge all charges or liens payable out of the Available Revenues when due and enforceable.

"Available Revenues," as used only for purposes of the above rate covenant, means all revenues and other amounts received by the District and pledged as security for the payment of Bonds, but excludes any interest income which is capitalized pursuant to generally accepted accounting principles. "Operating Expenses" includes all reasonable, ordinary, usual or necessary current expenses of maintenance, repair and operation determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. "Operating Expenses" does not include reserves for extraordinary maintenance or repair such as extraordinary maintenance, administrative and engineering expenses of the District which are necessary or incident to capital improvements for which debt has been issued and which may be paid from the proceeds of such debt. "Aggregate Net Debt Service" means Aggregate Debt Service, excluding (i) interest expense which, in accordance with generally accepted accounting principles, is capitalized and which may be paid from the proceeds of debt and (ii) other amounts, if any, available or expected to be available in the ordinary course for payment of Debt Service. The summary definitions above are not intended to be comprehensive or definitive, and reference is made to the Resolution and Appendix A for more detail. The definitions above are qualified in their entirety by reference to the Resolution. For a table illustrating computation of historical debt service coverage, using these terms as defined in the Resolution, see Table 5-4 of Appendix F.

Additional Bonds

Additional Bonds may be issued on a parity with the Series 2019 Bonds to finance the Cost of Acquisition and Construction of Additional Facilities upon the satisfaction of certain conditions. Refunding Bonds may be issued to refund outstanding Bonds. The conditions for the issuance of Additional Bonds to finance the Acquisition and Construction of Additional Facilities include a certificate of an Authorized Officer of the District setting forth (i) for any period of 12 consecutive calendar months within the 24 calendar months preceding the date of the authentication and delivery, the Net Revenues for such period, and (ii) the Aggregate Net Debt Service during the same period for which Net Revenues are computed, with respect to all Series of Bonds which were then Outstanding (excluding from Aggregate Net Debt Service any Principal Installment or portion thereof which was paid from sources other than Net Revenues), and showing that the amount set forth in (i) is equal to or greater than 110% of the amount set forth in (ii). The conditions for the issuance of Additional Bonds to finance the Acquisition and Construction of Additional Facilities also include a certificate of an Authorized Officer of the District setting forth (i) for the last full Fiscal Year of 12 months (ending June 30) immediately preceding the date of the authentication and delivery, the Net Revenues for such period, or, at the option of the District, for the last 12 consecutive full calendar months immediately preceding the date of the authentication and delivery, the Net Revenues for such period, and (ii) the estimated maximum Aggregate Net Debt Service in the current or any future Fiscal Year with respect to (a) all Series of Bonds which are then Outstanding and the Additional Bonds then proposed to be authenticated and delivered (and for this purpose all Series of Bonds Outstanding plus such proposed Additional Bonds shall be treated as a single Series; that is, the maximum Aggregate Net Debt Service shall be computed collectively with respect to all such Bonds, and not computed cumulatively or separately for each particular Series), and showing that the amount set forth in (i) is equal to or greater than 110% of the amount set forth in (ii). For purposes of computing the amount set forth in (i), Net Revenues may be increased to reflect the following amounts: (a) any increases in the rates, fees, rents and other charges for services of the System made subsequent to the commencement of such period and prior to the date of such certificate, (b) any estimated increases in Net Revenues caused by any Project or Projects having been placed into use and operation subsequent to the commencement of such period and prior to the date of such certificate, as if such Project or Projects had actually been placed into use and operation for the entire period chosen in (i) above and (c) 75% of any estimated increases in Net Revenues which would have been derived from the operation of any Project or Projects with respect to which the Cost of Construction and Acquisition is to be paid from proceeds of the Additional Bonds proposed to be authenticated and delivered, as if such Project or Projects had actually been placed into use and operation for the entire period chosen in (i) above. For additional information relating to the conditions for the issuance of Additional Bonds, see Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution -Additional Bonds".

FUNDS AND ACCOUNTS

The Resolution establishes the following Funds and Accounts which, other than the Bond Fund which is held by the Paying Agent, will be held by the District: (i) Construction and Acquisition Fund; (ii) Revenue Fund; (iii) Bond Fund, consisting of a Debt Service Account and a Reserve Account; (iv) Senior Subordinated Debt Fund; and (v) Renewal and Replacement Account.

Construction and Acquisition Fund

The Resolution provides that the amounts, if any, required by the Resolution will be paid into the Construction and Acquisition Fund and, at the option of the District, any moneys received by the District from any source, unless required to be otherwise applied as provided by the Resolution, may also be paid into this Fund. Amounts in the Construction and Acquisition Fund will be applied to pay the Cost of Construction and Acquisition in the manner provided in the Resolution.

To the extent other moneys are not available therefor, amounts in the Construction and Acquisition Fund will be applied to the payment of Principal Installments of and interest on Bonds when due.

An adequate record of the completion of construction of a Project financed in whole or in part by the issuance of Bonds shall be maintained by an Authorized Officer of the District. The balance in the separate account in the Construction and Acquisition Fund established therefor shall then be transferred to the Reserve Account in the Bond Fund, if and to the extent necessary to make the amount of such Fund equal to the Debt Service Reserve Requirement, and any excess amount shall be paid over or transferred to the District for deposit in the Revenue Fund. For additional information relating to the Construction and Acquisition Fund, see "Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution - Construction and Acquisition Fund."

Flow of Funds

All Revenues shall be promptly deposited by the District upon receipt thereof into the Revenue Fund.

There shall be withdrawn in each month the following amounts, for deposit as set forth below and in the order of priority set forth below.

(i) To the Bond Fund, (a) for credit to the Debt Service Account, the amount, if any, required so that the balance in such Account shall equal the Accrued Aggregate Debt Service as of the last day of the then current month or, if interest or principal are required to be paid to Holders of Bonds during the next succeeding month on a day other than the first day of such month, Accrued Aggregate Debt Service as of the day through and including which such interest or principal is required to be paid and (b) for credit to the Reserve Account, the amount, if any, required for such Account, after giving effect to any surety bond, insurance policy, letter of credit or other similar obligation deposited in such Account pursuant to the Resolution, to equal one-twelfth (1/12) of the difference between (1) the amount then in the Reserve Account immediately preceding such deposit and (2) the actual Debt Service Reserve Requirement as of the last day of the then current month;

(ii) To the Senior Subordinated Debt Fund the amount, if any, required to pay scheduled base and additional rentals when due on the Senior Subordinated Debt and reserves therefor, in accordance with the resolution or other debt instrument authorizing the Senior Subordinated Debt;

(iii) Each month the District shall pay from the Revenue Fund such amounts as are necessary to meet Operating Expenses for such month; and

(iv) To the Renewal and Replacement Account, a sum equal to one-twelfth (1/12) of the amount, if any, provided in the Annual Budget to be deposited in the Renewal and Replacement Account during the then current Fiscal Year; provided that, if any such monthly allocation to the Renewal and Replacement Account shall be less than the required amount, the amount of the next succeeding monthly payment shall be increased by the amount of such deficiency.

The balance of moneys remaining in the Revenue Fund after the above required payments have been made may be used by the District for any lawful purpose relating to the System. The District has covenanted not to make any expenditures from Revenues prior to making the payments out of Revenues required to be made by the Resolution as provided above.

Reserve Account

Amounts in the Reserve Account in the Bond Fund are to be applied to make up any deficiencies in the Debt Service Account in the Bond Fund. The Debt Service Reserve Requirement is defined in the Resolution as the least of (i) ten percent (10%) of the face amount of all Bonds issued under the Resolution, (ii) one hundred percent (100%) of the maximum Aggregate Net Debt Service (as of the computation date) in the current or any future Fiscal Year and (iii) one hundred twenty-five percent (125%) of average Aggregate Net Debt Service (as of the computation date) in the current or any future Fiscal Year. For Variable Interest Rate Bonds, the Debt Service Reserve Requirement shall be the maximum permitted amount with interest calculated at the lesser of the 30-year Revenue Bond Index (published by The Bond Buyer no more than two weeks prior to the date of sale of such Variable Interest Rate Bonds) or the Maximum Interest Rate. If any Variable Interest Rate Bond shall be converted to a fixed rate Bond for the remainder of the term thereof, any resulting deficiency in the Reserve Account shall be satisfied by an additional deposit or deposits into the Reserve Account so that the amount on deposit therein equals the Debt Service Reserve Requirement by the end of the Fiscal Year during which such conversion occurs.

The District's obligations to maintain the Debt Service Reserve Requirement may be satisfied by depositing therein a surety bond, insurance policy or letter of credit. See "Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution - Bond Fund - Reserve Account" for further information regarding the Reserve Account. Upon issuance of the Series 2019 Bonds, a portion of the amount on deposit in the Reserve Account will be released so that the balance then on deposit in the Reserve Account equals to the Debt Service Reserve Requirement.

Senior Subordinated Debt Fund

Amounts in the Senior Subordinated Debt Fund are to be applied to the payment of the amounts required to pay scheduled base and additional rentals when due on the Senior Subordinated Debt and make deposits, if any, for reserves therefor. Amounts in the Senior Subordinated Debt Fund shall also be applied to make up any deficiencies in the Debt Service Account or the Reserve Account. See "Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution - Senior Subordinated Debt Fund" for additional information regarding the Senior Subordinated Debt Fund.

Renewal and Replacement Account

Moneys to the credit of the Renewal and Replacement Account may be applied to the cost of major replacements, repairs, renewals, maintenance, betterments, improvements, reconstruction or extensions of the System or any part thereof as may be determined by the Board. If at any time the moneys in the Debt Service Account, the Reserve Account and the Revenue Fund shall be insufficient to pay the interest and Principal Installments becoming due on the Bonds, then the District shall transfer from the Renewal and Replacement Account for deposit in the Debt Service Account the amount necessary (or all the moneys in said Fund if less than the amount necessary) to make up such deficiency. See "Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution - Renewal and Replacement Account" for additional information regarding the Renewal and Replacement Account.

For additional information relating to the application of Revenues, see "Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution."

Investment of Funds

Moneys held in the Bond Fund, the Revenue Fund, the Senior Subordinated Debt Fund, the Renewal and Replacement Account, and the Construction and Acquisition Fund are required to be invested and reinvested to the fullest extent practicable in Investment Securities, maturing not later than such times as will be necessary to provide moneys when needed for payments to be made from such Fund or Account. The Fiduciaries shall make investments of moneys held by them in accordance with written instructions from time to time received from an Authorized Officer of the District. See "Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution - Investments" for additional information regarding the investment of funds.

SWAPS, SUBORDINATED DEBT, AND OTHER FINANCIAL INSTRUMENTS

The District has entered into interest rate swap agreements with two counterparties as part of the management of its outstanding debt. Generally, each interest rate swap agreement calls for periodic net payments from or to the District depending upon whether a specified market interest rate index is above or below a specified fixed rate or another specified market interest rate index during that period. Each such swap agreement allows the District, at its option, to terminate the agreement at any time. Upon any such termination, a termination payment is to be made, calculated based on the mark-to-market value of the swap agreement plus dealer's spread. The swap agreements provide that under certain circumstances the counterparty to the swap agreement (but not the District) may be required to post collateral, depending upon the credit rating of that counterparty, with the amount of collateral required based on the mark-to-market value of the swap. The interest rate swap agreements entered into by the District provide that the counterparties to the agreements must post collateral if their respective ratings fall below A+/A1. The agreements also provide the counterparties the right to terminate the agreements if the District's unenhanced bond rating is downgraded below BBB/Baa. The District's obligations under all of its outstanding swap agreements are unsecured and subordinate to all Bonds issued and outstanding under the Resolution. Certain provisions of the District's outstanding swap agreements are summarized below.

The Resolution permits the District to issue Senior Subordinated Debt secured by Revenues of the System, subject to the prior and senior lien on such Revenues of all Bonds issued and outstanding under the Resolution. The decision of the District from time to time whether to issue Senior Subordinated Debt or Bonds depends, among other things, upon its assessment of market conditions at the time of issuance.

The District has previously issued Senior Subordinated Debt to provide interim financing for capital projects. Each series of Senior Subordinated Debt previously issued has been retired from the proceeds of Bonds issued under the Resolution.

The District has from time to time entered into agreements with various counterparties to provide for the investment of amounts in various funds established under the Resolution. Generally such agreements provide for the investment of funds at a contractually fixed rate of return to the District during their respective terms and provisions for termination, at the option of the District, based on payment of a termination fee determined based on the mark-to-market value of the contract plus dealer's spread.

The District reserves the right to enter into, amend, and terminate any existing or future interest rate swap transactions or other agreements or derivative transactions, from time to time, as part of its overall debt, investment or general management strategy. See also "APPENDIX A - Definitions of Certain Terms and Summary of Provisions of the Resolution".

Subordinated Revenue Bond Anticipation Notes

On November 9, 2018 the District issued its Subordinated Revenue Bond Anticipation Notes, Series 2018 (the "Series 2018 Notes") for the purpose of currently refunding the District's outstanding Subordinated Revenue Bond Anticipation Notes, Series 2017. The Series 2018 Notes were issued in the original principal amount of $226,340,000 and are currently outstanding in that same principal amount. The principal of and accrued interest on the Series 2018 Notes are payable at maturity on November 1, 2019. The Series 2018 Notes were issued in accordance with, among other things, (i) applicable provisions of Kentucky Revised Statutes Chapters 65, 58 and 76 and Section 56.513 and (ii) a Subordinated Debt Resolution adopted by the District on April 26, 2010 (the "Basic Subordinated Debt Resolution"), as amended by a Subordinated Debt Sale Resolution adopted on August 27, 2018 (the "Series 2018 Subordinated Debt Resolution").

The District presently anticipates authorizing and issuing its Subordinated Revenue Bond Anticipation Notes, Series 2019 (the "Series 2019 Notes") in the aggregate principal amount of $226,340,000 for the purpose of currently refunding the outstanding Series 2018 Notes at their maturity. It is anticipated that the Series 2019 Notes will be sold at advertised, competitive sale in October, 2019 and that the Series 2019 Notes will be issued and delivered in November, 2019. The Series 2019 Notes, when issued, shall be paid (to the extent not paid from other sources) from the proceeds of Additional Bonds issued in accordance with the terms of the Resolution to the extent other funds are not available. The Series 2019 Notes will be payable upon such terms as are described in the Subordinated Debt Resolution; provided, however, that the pledge to be created by the Series 2019 Notes, insofar as it relates to the revenues pledged under the Resolution, will be made subject and subordinate in all respects to the priorities, liens and rights created by and existing under the Resolution for the security and source of payment and protection of all Bonds previously issued, the Series 2019 Bonds and any Additional Bonds and Refunding Bonds (as such terms are defined in "Appendix A - Definitions of Certain Terms and Summary of Provisions of the Resolution") which may be issued from time to time pursuant to the Resolution.

Floating-to-Fixed Swap

In 2001, the District entered into two forward-starting interest rate swaps (the "1999 Swaps") pursuant to which beginning in November 2009 the District would pay a fixed rate of 4.4215% and receive 67% of the 30-day LIBOR index on a notional amount corresponding to the approximate amount needed to refund the District's Series 1999 Bonds. The District's original strategy in entering into the 1999 Swaps was to "lock in" a fixed rate for the variable rate debt that could be issued in 2009 to refund the Series 1999 Bonds. In August 2009, the District decided instead to refund the Series 1999 Bonds with proceeds of its fixed-rate Series 2009B Bonds and its fixed-rate Series 2009A Notes. The Series 2009A Notes have since been refunded by successive series of refunding notes, the latest in such series of refunding notes being the currently outstanding Series 2018 Notes. The Series 2018 Notes are expected to be currently refunded with the proceeds of the Series 2019 Notes.

In August 2009, the District reversed that portion of the 1999 Swaps which corresponded in amount and amortization schedule to the portion of the Series 2009B Bonds used to refund the Series 1999 Bonds. The reversed portion of the 1999 Swaps was terminated in April 2013. The only portion of the 1999 Swaps that remains in effect is the non-reversed portion of the 1999 Swaps, which has a termination date of May 15, 2033 and amortizes in amounts that correspond with the expected maturity structure of a future hypothetical bond issue the District may issue under the Resolution to permanently refinance the Series 2019 Notes. The District's expectation is that variable payments received under the non-reversed portion of the 1999 Swaps will hedge future interest rate movements for any fixed-rate Bonds hereafter issued under the Resolution (or any other fixed-rate renewal notes hereafter issued under the Subordinated Debt Resolution) to refinance the Series 2019 Notes. As of May 31, 2019, the estimated aggregate mark-to-market value of the non-reversed portion of the 1999 Swaps was approximately *negative* $70,634,527.99.

Commercial Paper Program

On May 29, 2018 the District adopted a resolution (the "Program Note Resolution") authorizing the issuance of its Sewer and Drainage System Subordinated Program Notes ("Program Notes"), consisting of Commercial Paper Notes and Direct Purchase Notes, for the purpose of (i) financing the cost of improvements or additions to the System and (ii) refinancing other Program Notes. Program Notes are issued as Senior Subordinated Debt of the District, secured, on a parity with the Series 2018 Notes and any other outstanding or hereafter issued Senior Subordinated Debt of the District, by a subordinate and junior lien on the Revenues of the System, subject to the prior and senior lien on such Revenues of all Bonds issued and outstanding under the Bond Resolution. Program Notes (both Commercial Paper Notes and Direct Purchase Notes) may be issued in an aggregate principal amount not to exceed $500,000,000 at any one time outstanding.

Commercial Paper Notes may be issued and sold, at public or private sale, as taxable or tax-exempt notes, maturing in 270 days or less (but in any event not later than July 1, 2021) as determined by the District, and bearing interest at a rate or rates determined by the District (not in excess of 12% per annum for taxable notes or 10% per annum for tax-exempt notes). Commercial Paper Notes are payable only from (i) proceeds of the sale of other Commercial Paper Notes issued under the Program Note Resolution and used to refund outstanding Commercial Paper Notes, (ii) the proceeds of Direct Purchase Notes or other loans from the Banks (as defined below) used to refund outstanding Commercial Paper Notes, and (iii) the proceeds of Bonds issued to pay outstanding Commercial Paper Notes.

Liquidity support for each subseries of Commercial Paper Notes issued under the Program Note Resolution is provided by a commercial bank (each a "Bank" and collectively the "Banks"). As an alternative to the sale of Commercial Paper Notes to investors, the Program Note Resolution authorizes the District in its discretion to issue and sell to the Banks, as Senior Subordinated Debt of the District under the Program Note Resolution, Direct Purchase Notes, evidencing loans from the Banks to the District. Direct Purchase Notes shall mature (but not later than July 1, 2021) and bear interest as provided in the respective note purchase agreement between the District and each Bank and may be issued only as tax-exempt notes. The note purchase agreement between the District and one of the Banks provides that until the termination of such agreement at no time shall the aggregate principal amount of Direct Purchase Notes held by such Bank be less than $100,000.

As of May 31, 2019, there was issued and outstanding under the Program Note Resolution, in addition to the $100,000 minimum outstanding principal amount of Direct Purchase Notes, $120,000,000 aggregate principal amount of Commercial Paper Notes with a maturity of not more than ninety-one days and an interest rate not in excess of 1.75% per annum. In addition to the $100,000 minimum outstanding principal amount of Direct Purchase Notes, Commercial Paper Notes in the aggregate principal amount of $120,000,000 were issued and outstanding under the Program Note Resolution as of the end of the District's current fiscal year ending June 30, 2019. The District expects to issue Bonds from time to time under the Bond Resolution to retire any Program Notes (Commercial Paper Notes or Direct Purchase Notes) outstanding at maturity and not to be refunded with other Program Notes.

THE DISTRICT

General

The District was created and established pursuant to the Act, as a public body corporate, in 1946, in the interest of the public health and for the purpose of providing adequate sewer and drainage facilities. The District had complete jurisdiction, control, possession, and supervision of the then existing sewer and drainage system in the City and the power and authority to operate, maintain, reconstruct, and improve such system and construct additions, betterments, and extensions thereto within the limits of the District area as defined in the Act. The District assumed jurisdiction over and administration of the then existing sewer and drainage system in the City on November 16, 1946, pursuant to Ordinance No. 90, Series 1946, passed by the Board of Aldermen of the City and approved by the Mayor thereof in accordance with the requirements of the Act.

Administration and Management of the District

The business, activities, and affairs of the District are managed, controlled, and conducted by a board (the "Board"), composed of eight members, not more than five of whom shall be affiliated with the same political party. The members are appointed by the Mayor subject to the approval of the Council of the Louisville/Jefferson County Metro Government ("Metro Council"). All appointments to the Board are made for three-year terms. The present members of the Board and the expiration dates of their respective terms are as follows.

Board Members	Term Expires
Cyndi Caudill (Chair)	August 31, 2020
Daniel Arbough (Vice-Chair)	June 30, 2021
Andrew Bailey	July 31, 2021
Jason Williams	February 28, 2021
Keith Jackson	August 31, 2020
J.T. Sims	August 31, 2020
Marita Willis	June 30, 2022
Ricky Mason	July 31, 2022

The Board has delegated and placed the conduct of the day-to-day business affairs of the District under the direction of an Executive Director supported by administrative, engineering, legal and business staffs. The District's executive staff currently consists of the following individuals:

James A. "Tony" Parrott	Executive Director
Chad Collier	Chief Financial Officer and Secretary-Treasurer
Brian Bingham	Chief of Operations
Angela Akridge	Chief Engineer
John Loechle	Director of Engineering

Paula M. Purifoy, Esq.	General Counsel and Legal Director
Mark (Tom) Luckett	One Water Chief Information Officer
David Johnson	Development and Stormwater Services Director
Lynne Fleming	Human Resources Director
Wes Sydnor	Director of Intergovernmental Relations
Alex Novak	Treatment Facilities Director
Marc Thomas	Collections and Flood Protection Director
Michael Griffith	Wastewater and Drainage Director
Charles Malcolm	One Water Fleet Services Director
Lopez High	Facilities Safety and Security Director
René Thomas	Chief Procurement Officer
Kimberly L. Reed	Chief Innovation Officer
Sharise Horne	Community Benefits Director

On February 26, 2018, the Board unanimously extended the employment agreement with James Parrott to serve as Executive Director of the District through September 13, 2023. Chad Collier and Angela Akridge have employment agreements continuing in effect through September 30, 2019.

Jacobs Engineering Group, Inc., formerly named CH2M Hill Engineers, Inc., Louisville, Kentucky (the "Consulting Engineers") has been retained by the District as its consulting engineering firm. The most recent report of the Consulting Engineers is appended to this Official Statement as Appendix F.

On August 1, 2011 the Auditor of Public Accounts of the Commonwealth of Kentucky (the "State Auditor"), an elected state official, informed the District that her office was undertaking a review and evaluation of the oversight and operation of the District, focusing on the District's policies, internal controls, financial activity, and other aspects of the District's operations, including specifically review of the District's board and committee structure, policies governing the District's internal audit process and reporting to the District's Board by its staff, and the District's policies regarding business conduct, conflicts of interest, ethics, and procurement. The State Auditor offered to make recommendations to strengthen and improve the District's internal controls, oversight, and operations and to ensure the transparent and efficient use of the District's financial resources. On December 16, 2011 the State Auditor issued a report of her examination containing recommendations for the improvement of various areas of the District's governance and operations, including more detailed oversight by the Board of the District's investment policies, practices, and procedures, investment portfolio, and use of interest rate swap agreements and other financial derivatives. The District provided monthly reports to the State Auditor regarding the District's progress in the implementation of the State Auditor's recommendations and has since fully implemented all of the State Auditor's recommendations.

In January, 2012 Mayor Greg Fischer of the Louisville/Jefferson County Metro Government formed the Louisville Utilities and Public Works Advisory Group (the "Advisory Group") to examine the operations of the Louisville Water Company (a Kentucky corporation wholly owned as a public enterprise by the Louisville/Jefferson County Metro Government, "Louisville Water Company", see "LOUISVILLE WATER COMPANY" below), the District, and Metro Government's Department of Public Works & Assets ("DPW") to determine whether synergies exist between the entities that would allow for improved service or reduced costs. The Advisory Group engaged Black & Veatch Corporation, an experienced consultant to the utility industry, to assist the Advisory Group's evaluation of potential business restructuring scenarios ranging from the status quo to a full consolidation of Louisville Water Company, the District, and DPW. On August 1, 2012 the consultant presented a final report to the Advisory Group, concluding that operational efficiencies and savings could be achieved by gradually consolidating the operations and governance of Louisville Water Company, the District, and DPW.

In March of 2013, the District approved a letter of intent with the Louisville Water Company setting forth the due diligence efforts to be conducted by the parties in order to evaluate the governance, financial and environmental implications of a potential consolidation. In April 2013, the District and the Louisville Water Company formed due diligence teams to evaluate the Advisory Group's recommendations and provide recommendations to the District's and Louisville Water Company's respective Boards and to Mayor Fischer. The final Report on Due Diligence Analysis and Recommendation was completed in February 2014. As a result of those efforts, the District and the Board of Waterworks of the Louisville/Jefferson County Metro Government (the "Board of Waterworks") entered into an Interlocal/Cooperation Agreement (the "Original ILA") on March 11, 2014, as approved by the Kentucky Attorney General on March 31, 2014. The Original ILA, effective through June 30, 2033 (unless earlier terminated by either party on six months' notice), provided for, among other items, the joint and/or cooperative development, provision, sharing and management of certain back-office, administrative and/or support services to include one or more of the following ("One Water"):

- Information Technology Services;
- Business Development Services;
- Engineering Services;
- Internal/External Communications Services ;
- Finance Services;
- Risk Management Services;
- Human Resources; and
- Operations.

The goal of the ILA is to create coordinated teams of employees from both entities with the capability of delivering superior customer service at lower costs than the existing two entities combined.

On August 24, 2015, the District and the Board of Waterworks entered into an Amended and Restated Interlocal Cooperation Agreement (the "Amended ILA," and together with the Original ILA, the "ILA"), as approved by the Kentucky Attorney General on September 17, 2015. The Amended ILA was entered into to establish a joint administrative board known as the One Water Board and to provide for more efficient implementation and expansion of the services provided in the Original ILA. The One Water Board consists of two members each from the District's Board and the Board of Waterworks and a member appointed by the Mayor. The One Water Board is responsible for the overall administration of the One Water shared and/or consolidated services program.

The ILA is effective through June 30, 2035 (unless earlier terminated by either party on 180 days' notice) and is being implemented in phases. The first phase ("Phase 1") entails the sharing of services in five functional groups plus one specialty area of focus. The five functional groups are procurement, fleet, human resources, information technology, and customer service. The specialty area of focus is energy savings.

The One Water Initiative seeks to combine or consolidate certain back-office, administrative and support services for cost-savings and revenue opportunities. The District and Louisville Water Company continue as separate entities. However, One Water allows the District and Louisville Water Company to be better stewards of their revenues and expenses. For instance, One Water purchases software for both organizations to obtain lower prices. The District and Louisville Water Company have also achieved savings with joint purchases in other areas of the organization and sharing resources for a customer call center. Both organizations also now share contracts for the procurement of parts and supplies.

Customer History

The District's wastewater sewer system customer history for the past five fiscal years is as follows:

Residential	Number of Customers	Volume (million gallons)	Revenue (in thousands)
FY 2014	219,132	11,203	$89,691
FY 2015	230,504	11,334	96,230
FY 2016	232,534	11,299	101,760
FY 2017	233,837	11,717	108,169
FY 2018	234,324	12,135	117,406
Commercial			
FY 2014	20,588	10,805	$58,812
FY 2015	22,564	10,665	61,950
FY 2016	21,613	9,340	58,117
FY 2017	22,313	10,555	61,592
FY 2018	22,169	9,975	66,658
Industrial			
FY 2014	454	3,305	$19,738
FY 2015	394	2,953	17,289
FY 2016	407	3,311	19,868
FY 2017	423	3,414	21,094
FY 2018	430	3,641	24,439

Source: Metropolitan Sewer District

The Drainage System

Under an interlocal government cooperation agreement effective January 1, 1987, the District became the sole local authority for providing flood control and storm water drainage services in the Drainage Service Area. The District is responsible for the operation, maintenance, replacement, improvements and additions to existing flood control facilities and public storm water drainage facilities within the Drainage Service Area. The stormwater drainage system is comprised of various types of facilities to collect, convey, retain, and discharge stormwater runoff into the sewers, rivers, streams, and creeks, eventually draining into the Ohio River. These facilities include open channels, ditches, streams, ponds, pipes, culverts, conduits, bridge structures, detention basins, retention basins, pump stations, and other facilities.

In fiscal year 2018, the District had approximately 242,044 drainage service accounts and billed total annual drainage charge revenues of $63,868,122.

By having a single authority responsible for drainage services and a dedicated source of revenue, the community benefits by having a more efficient, cost effective drainage service program. The District's consultants have developed a Storm Water Drainage Master Plan which, after public participation and approvals by local governments, will be used by the District for implementing improvements and extensions to the existing drainage facilities.

RECENT AND PENDING TRANSACTIONS OF THE DISTRICT

Since 1996 the District has provided wastewater treatment services for the City of Crestwood, Kentucky, located in Oldham County, Kentucky adjacent to Jefferson County, Kentucky. The 2018 Kentucky General Assembly amended the Act to allow the District to enter into agreements with other public agencies to purchase, operate and maintain sewage, wastewater and storm water facilities outside Jefferson County. Pursuant to an interlocal cooperation agreement among the District, the City of Crestwood, Oldham County, and the Oldham County Environmental Authority, the District purchased the Crestwood wastewater collection system on May 31, 2019 and continues to operate it. As part of its purchase of the Crestwood system, the District assumed a loan payable to the Kentucky Infrastructure Authority in the approximate amount of $1,100,000 and maturing June 1, 2020.

The District has received a conditional commitment from the Kentucky Infrastructure Authority and the Kentucky Energy and Environment Cabinet for a state revolving fund loan in an amount not to exceed $22,000,000 to finance the rehabilitation of aging infrastructure at the District's Hite Creek Water Quality Treatment Center. The capacity of the treatment center will be expanded so as to eliminate sanitary sewer overflows upstream of the treatment center and allow for future growth. The District has approved the execution of an Assistance Agreement between the District and the Authority and it is anticipated that the loan will close in September 2019. Interest will be payable semiannually at a fixed rate of 2% per annum commencing after funds are first drawn on the loan. The loan will be repaid over a period not to exceed 20 years from the date the project is placed in operation.

THE SERVICE AREA

The combined area of the former City and the County ("Louisville Metro") is located in the north-central portion of the Commonwealth on the south bank of the Ohio River. Louisville Metro is the largest city in Kentucky and is the core of the Louisville Metropolitan Statistical Area (MSA), which includes in addition to Louisville Metro the counties of Bullitt, Oldham and Shelby in Kentucky and Clark, Floyd, and Harrison in Indiana. The Louisville MSA has exhibited a nationally familiar pattern of population dispersion from its core urban area to the balance of Louisville Metro, and from Louisville Metro to the adjacent counties in Kentucky and Indiana.

Annual Population Estimates

	Louisville Metro(1)	Louisville MSA(2)
1970	695,000	991,801
1980	684,300	1,054,368
1990	665,200	1,058,425
2000	693,604	1,161,975
2010	741,096	1,267,691
2011	746,906	1,310,945
2014	760,026	1,269,702
2015	763,623	1,278,413

2016	765,352	1,350,207
2017	771,158	1,293,953
2018	770,517	1,297,301

(1)Source: Population Division, U.S. Census Bureau website: www.census.gov (Jefferson County, KY)
(2)Source: Population Division, U.S. Census Bureau website: www.census.gov (Louisville/Jefferson County, KY-IN)

Louisville Metro possesses a diverse economic base which has exhibited the national pattern of a shift away from manufacturing towards services. In 2017 the average per capita personal income in Louisville-Jefferson County as reported by the U.S. Bureau of Economic Analysis was $47,294.

Louisville Metro, Kentucky Largest Private Employers, 2018

Company	Employment
United Parcel Service Inc.	21,233
Ford Motor Company	12,600
Norton Healthcare, Inc.	12,247
Humana, Inc.	12,000
Amazon.com LLC	6,500
Baptist Healthcare Systems, Inc.	6,159
GE Appliances, a Haier Company	6,000
KentuckyOne Health Inc.	6,000
The Kroger Co.	3,079
Spectrum	2,400
Source: *Business First*, December 28, 2018 edition	

RATES AND CHARGES

Wastewater Service and Drainage Service Charges

The District derives its revenue for wastewater service and drainage service from the collection of rates, rentals and charges established in accordance with the provisions of the Act for services rendered within the Service Area to customers served by the District's facilities. The Act provides that the District's Schedule of Rates, Rentals and Charges and any revision thereof shall not become final until approved by Metro Council. The District has no power to levy ad valorem taxes upon any property for any purpose whatsoever. Wastewater Service Rates, based on water consumed, are billed and collected by Louisville Water Company on behalf of the District under terms of an agreement executed in January, 2013 which recently expired. The District and Louisville Water Company expect to have a new agreement in place by June 30, 2019. These rates are billed simultaneously with the water bill on a single statement payable in total for both wastewater and water service rendered, and are subject to a late penalty of 5%. In the event of nonpayment of any such wastewater rates, rentals, or charges for a period of more than 30 days after they become due and payable, Louisville Water Company is required by law to discontinue water service. See “LOUISVILLE WATER COMPANY.”

Louisville Water Company bills and collects the District's wastewater service charges. The bills are rendered bimonthly except for larger industrial/commercial accounts which are billed monthly.

Louisville Water Company also bills and collects all of the District's drainage charges as additions to the water/sewer billings.

The District wastewater service rates include a fixed service charge based on the size of the public water meter serving the property plus a charge for each 1,000 gallons of water consumed on the premises. Each customer has the option of installing private meters to record water usage which does not enter the sewers. Industrial and commercial customers may use this option to obtain credit for water which does not enter the sewers. Drainage service rates are charged based on measured impervious areas with one equivalent service unit assigned for each 2,500 square feet of impervious area (residential unit).

Out of a total of 256,923 wastewater customer accounts, approximately 35 accounts have no public water meter because they are residential accounts served by well water. Such accounts are charged a fixed fee.

Rate Making Process

To amend its Schedule of Rates, Rentals and Charges in effect from time to time, the District adopts and publishes a preliminary rate resolution, receives public comment for a period of 30 days, and then adopts a final rate resolution. The Act provides that the District's Schedule of Rates, Rentals and Charges and any revision thereof shall not become final until approved by Metro Council. The Metro Government's Code of Ordinances provides that, in the event the District's net revenues are less than 1.10 times the debt service on the District's outstanding revenue bonds for any consecutive six-month period, the District's Schedule of Rates, Rentals and Charges shall be amended in order to maintain such 1.10 debt service coverage, provided that the aggregate of the adjustments for any 12-month period shall not generate additional revenue from wastewater service charges in excess of 7% and that an explanation of proposed rate increases in excess of 4% shall be delivered to the Metro Council at least 60 days prior to the approval of the District's Board. "Net revenues" are defined for such purpose as gross revenue from wastewater service charges less operating expenses and debt payments other than debt service payments on the District's outstanding revenue bonds.

[Remainder of this page intentionally left blank.]

Rate History

The following table summarizes the District's revenue and rate adjustments since 1987. Additional revenues from the rate increases are approximate and assume constant water usage.

Date of Rate Increase	%Rate Increase		Annual Additional Revenue from Rate Increase	%Rate Increase		Annual Additional Revenue from Rate Increase	Estimated Revenue EPA Consent Decree Surcharge
1/1/87*				N/A	0	$8,165,000	
7/1/88	4.3%	(A)	$1,496,000				
l/1/91	6.5	(A)	2,731,000				
1/1/92	4.5	(A)	1,973,000				
12/1/92				57.1%	(A)	4,879,000	
8/1/94	5.0	(B)	2,337,000				
8/1/95	7.0	(B)	3,516,000				
8/1/96	5.0	(B)	2,703,000	4.4	(A)	604,000	
8/1/97	5.0	(B)	2,772,000	4.5	(A)	663,000	
8/1/98	5.0	(B)	2,900,000	5.0	(A)	800,000	
8/1/99	5.0	(B)	3,150,000	5.0	(A)	850,000	
8/1/00	5.0	(B)	3,100,000	5.0	(A)	860,000	
8/1/01	5.0	(B)	3,313,000	5.0	(A)	921,000	
8/1/02	6.5	(B)	4,540,000	6.5	(A)	1,326,000	
8/1/03	6.5	(B)	5,012 ,659	6.5	(A)	1,407,505	
8/1/04	6.5	(B)	5,184,032	6.5	(A)	1,526,281	
8/1/05	6.5	(B)	5,655,634	6.5	(A)	1,671,724	
8/1/06	6.9	(B)	6,414,405	6.9	(A)	1,957,887	
8/15/07	0.0		0	0.0		0	$28,875,000(C)
8/1/08	6.5	(B)	8,017,688	6.5	(A)	2,015,401	
8/1/09	6.5	(B)	8,466,545	6.5	(A)	2,095,583	
8/1/10	6.5	(B)	8,683,175	6.5	(A)	2,246,123	
8/1/11	6.5	(B)	9,395,795	6.5	(A)	2,417,718	
8/1/12	6.5	(B)	9,705,399	6.5	(A)	2,627,897	
8/1/13	5.8	(B)	9,320,5 00	5.8	(A)	2,710,500	
8/1/14	5.5	(B)	9,833,128	5.5	(A)	2,859,578	
8/1/15	5.5	(B)	10,373,950	5.5	(A)	3,016,855	
8/1/16	6.9	(B)	10,733,000	6.9	(A)	3,781,000	
8/1/17	6.9	(B)	11,525,000	6.9	(A)	4,342,000	
8/1/18	6.9	(B)	12,258,000	6.9	(A)	4,854,000	

*Initial storm water rate: $1.75 per equivalent service unit.

(A) Across the board adjustment of all rates.
(B) Composite yield of a variety of rate adjustments.
(C) Special surcharge of $6.95 per account per month (plus additional volume charges for some commercial and industrial customers). This surcharge produces revenues equal to approximately 33% of total wastewater charges in the year it was instituted.

Source: Metropolitan Sewer District

HISTORIC AND PROJECTED REVENUES AND EXPENSES AND CAPITAL IMPROVEMENT PROGRAM

Certain historic revenues and expenses of the District for prior fiscal years and projected revenues and expenses of the District for the current and future fiscal years, with accompanying notes, are set forth in "Appendix F - Consulting Engineer's Report" attached hereto. The information on projected revenues and expenses may constitute a "forward looking statement" under federal securities law. Actual revenues, expenses, or both could differ materially from those forecasted and there can be no assurance that such estimates of future results will be achieved. For example, there can be no assurance that the Metro Council will approve any proposed revision of the District's Schedule of Rates, Rentals and Charges. In general, important factors that could cause actual results to differ materially from the revenues or expenses presently estimated include, but are not limited to, material changes in the size and composition of the District's service area, unanticipated changes in law or unanticipated material litigation, efficiency of operations and the capital construction and expenditure plans and results of the District.

The projections shown in "Appendix F - Consulting Engineer's Report" are based, among other things, on the District's Capital Improvement Plan in effect as of the date of such report. Except as specifically described herein, there can be no assurance that the District will not amend or revoke the Capital Improvement Program described in "Appendix F - Consulting Engineer's Report" or that the District will issue or support bonds or other funding for the Capital Improvement Program in its current form or as amended or any substitute therefor.

LOUISVILLE WATER COMPANY

The City began purchasing stock in Louisville Water Company in 1857 and had acquired substantially all the 12,571 outstanding shares by 1870, leaving only 51 shares in the hands of individual stockholders, this stock having been originally issued as directors' qualifying shares. By April 1907, all of this stock had been acquired by the City.

The affairs of Louisville Water Company were conducted by directors elected by the stockholders until passage of an act, approved March 6, 1906, creating the Board of Water Works of the City, which since that time (initially as the City, and thereafter through its successor, the Louisville/Jefferson County Metro Government) has had the responsibility for management and control of Louisville Water Company.

Since substantially all customers of the District are also customers of Louisville Water Company and Louisville Water Company already has the facilities, meters, equipment, and administrative organization for the billing and collection of charges for water service, it has proven both expedient and economical that the billing and collection of wastewater and stormwater service charges be accomplished simultaneously with and added as designated items on the bill rendered the water consumer for charges covering water service. Those sewer users who are not consumers of the public water supply are billed directly by the District.

By an agreement dated June 17, 1947, Louisville Water Company initiated billing and collection procedures for the District and has continued to perform such services to the present under subsequent agreements. Pursuant to a subsequent agreement with an effective date of July 13, 1976, as amended on November 24, 1986, such billing and collection procedures were amended to include drainage service charges. The most recent agreement, effective January 1, 2003, has expired and the District and Louisville Water Company expect to have a new agreement in place by June 30, 2019. This agreement increases the priority of drainage fees equivalent to water and sewer fees and includes the requirement that Louisville Water Company discontinue water service to those consumers whose wastewater or drainage service accounts remain unpaid thirty (30) days after the due date and to not re-establish such service until such time as all such service charges have been paid.

PLAN OF FINANCE AND REFUNDING PROJECT

The Series 2019 Bonds are being issued to (i) currently refund the outstanding principal amount of the District's Sewer and Drainage System Revenue Bonds, Series 2009B (the "Refunded Prior Bonds"), the proceeds of which were used to finance or refinance the acquisition, construction and installation of improvements to the District's sewer and drainage system, and (ii) pay the cost of issuance of the Series 2019 Bonds. A portion of the proceeds of the Series 2019 Bonds will be deposited in a special account established with The Bank of New York Mellon, N.A., designated as the "2009B Refunded Bonds Redemption Account," and provide the funds necessary to redeem the Refunded Prior Bonds on November 15, 2019 (the "Prior Bonds Redemption Date") at a redemption price of 100% of the principal amount thereof plus accrued interest on the Refunded Prior Bonds to the Prior Bonds Redemption Date. The refunding of the Refunded Prior Bonds is being undertaken to provide interest costs savings to the District (see "SOURCES AND USES OF FUNDS" below).

SOURCES AND USES OF FUNDS

Sources	
Principal Amount of Series 2019 Bonds	$30,910,000.00
Plus Original Issue Premium	2,695,721.30
Funds on Deposit in the 2009B Bond Fund – Debt Service Account	2,429,437.50
TOTAL	$36,035,158.80
Uses	
Deposit to Redemption Account	$35,873,212.86
Costs of Issuance	143,116.34
Underwriter's Discount	18,829.60
TOTAL	$36,035,158.80

[Remainder of this page intentionally left blank.]

DEBT SERVICE REQUIREMENTS

Bond Year Ending	SERIES 2019 Bond Principal	SERIES 2019 Bond Interest	SERIES 2019 Total Debt Service	Existing Senior Lien Principal (1)	Existing Senior Lien Interest (1)	New Total Senior Lien Bond Debt Service	Direct Payments (2)	Net Senior Lien Bond Debt Service	Subordinated Debt Service (3) (4) (5)	Total Net Debt Service
2020	$6,140,000.00	$1,141,952.78	$7,281,952.78	$34,240,000.00	$91,299,750.06	$132,821,702.84	($10,305,008.70)	$122,516,694.14	$12,939,843.13	$135,456,537.27
2021	7,705,000.00	1,238,500.00	8,943,500.00	35,755,000.00	89,670,100.06	134,368,600.06	(10,305,008.70)	124,063,591.36	12,990,426.55	137,054,017.91
2022	8,220,000.00	853,250.00	9,073,250.00	37,410,000.00	87,885,350.04	134,368,600.04	(10,305,008.70)	124,063,591.34	12,990,426.55	137,054,017.89
2023	8,845,000.00	442,250.00	9,287,250.00	39,060,000.00	86,017,850.04	134,365,100.04	(10,305,008.70)	124,060,091.34	12,986,494.33	137,046,585.67
2024	-	-	-	46,740,000.00	84,066,600.04	130,806,600.04	(10,986,150.00)	119,820,450.04	18,240,581.51	138,061,031.55
2025	-	-	-	49,025,000.00	81,778,150.04	130,803,150.04	(10,986,150.00)	119,817,000.04	18,273,333.79	138,090,333.83
2026	-	-	-	46,565,000.00	79,360,150.04	125,925,150.04	(10,986,150.00)	114,939,000.04	24,670,814.92	139,609,814.96
2027	-	-	-	62,035,000.00	77,167,025.04	139,202,025.04	(10,986,150.00)	128,215,875.04	11,429,388.66	139,645,263.70
2028	-	-	-	58,015,000.00	73,729,675.04	131,744,675.04	(10,220,525.00)	121,524,150.04	18,153,667.77	139,677,817.81
2029	-	-	-	60,890,000.00	71,050,343.78	131,940,343.78	(10,220,525.00)	121,719,818.78	17,994,152.25	139,713,971.03
2030	-	-	-	44,105,000.00	68,165,481.28	112,270,481.28	(10,220,525.00)	102,049,956.28	37,704,561.55	139,754,517.83
2031	-	-	-	24,415,000.00	66,191,025.04	90,606,025.04	(10,220,525.00)	80,385,500.04	59,403,637.97	139,789,138.01
2032	-	-	-	25,255,000.00	65,231,575.04	90,486,575.04	(10,220,525.00)	80,266,050.04	59,756,913.26	140,022,963.30
2033	-	-	-	26,020,000.00	64,267,518.78	90,287,518.78	(10,220,525.00)	80,066,993.78	60,200,895.91	140,267,889.69
2034	-	-	-	87,450,000.00	63,302,193.78	150,752,193.78	(10,220,525.00)	140,531,668.78	-	140,531,668.78
2035	-	-	-	91,620,000.00	59,128,506.28	150,748,506.28	(10,220,525.00)	140,527,981.28	-	140,527,981.28
2036	-	-	-	95,260,000.00	55,489,887.52	150,749,887.52	(10,220,525.00)	140,529,362.52	-	140,529,362.52
2037	-	-	-	97,820,000.00	51,522,375.02	149,342,375.02	(10,220,525.00)	139,121,850.02	-	139,121,850.02
2038	-	-	-	101,655,000.00	47,684,456.26	149,339,456.26	(10,220,525.00)	139,118,931.26	-	139,118,931.26
2039	-	-	-	107,475,000.00	43,661,081.26	151,136,081.26	(10,220,525.00)	140,915,556.26	-	140,915,556.26
2040	-	-	-	111,640,000.00	37,669,286.26	149,309,286.26	(8,393,859.26)	140,915,427.00	-	140,915,427.00
2041	-	-	-	115,965,000.00	31,405,650.00	147,370,650.00	(6,453,125.00)	140,917,525.00	-	140,917,525.00
2042	-	-	-	120,655,000.00	24,644,937.50	145,299,937.50	(4,383,859.38)	140,916,078.12	-	140,916,078.12
2043	-	-	-	125,540,000.00	17,611,162.50	143,151,162.50	(2,233,875.00)	140,917,287.50	-	140,917,287.50
2044	-	-	-	64,840,000.00	10,294,037.50	75,134,037.50	-	75,134,037.50	-	75,134,037.50
2045	-	-	-	67,350,000.00	7,783,787.50	75,133,787.50	-	75,133,787.50	-	75,133,787.50
2046	-	-	-	69,800,000.00	5,334,662.50	75,134,662.50	-	75,134,662.50	-	75,134,662.50
2047	-	-	-	50,935,000.00	2,794,400.00	53,729,400.00	-	53,729,400.00	-	53,729,400.00
2048	-	-	-	23,850,000.00	954,000.00	24,804,000.00	-	24,804,000.00	-	24,804,000.00
	$30,910,000.00	$3,675,952.78	$34,585,952.78	$1,921,385,000.00	$1,545,161,018.20	$3,501,131,970.98	($229,275,653.44)	$3,271,856,317.54	$388,796,770.76	$3,660,653,088.30

Notes:

(1) Existing Senior Lien Principal and Existing Senior Lien Interest excludes the debt service of the Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Revenue Bonds, Series 2009B Bonds.

(2) Due to sequestration, the federal direct payments on the Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Revenue Bonds, Series 2009C Build America Bonds and Louisville and Jefferson County Metropolitan Sewer District Sewer and Drainage System Revenue Bonds, Series 2010A Build America Bonds were reduced by 6.2% for fiscal years 2020 through 2023. For fiscal years 2024 through 2043, the federal direct payments are assumed at the original rate due on the outstanding Series 2009C BABs and 2010A BABs.

(3) Includes estimated net swap payments based on the 1-month LIBOR 5-year average as of June 19, 2019 (1.00975%).

(4) Subordinated debt service for FY 2020 takes into account the original issue premium received on the sale of the 2018 BAN; the net premium of $4,376,192.31 was subtracted from the gross interest of $8,852,408.89, resulting in a net interest payment of $4,476,216.58 for FY 2020.

(5) Does not include the principal of the Series 2018 Bond Anticipation Notes payable at maturity.

LITIGATION INVOLVING DISTRICT

There is no litigation or other legal proceeding pending or, to the knowledge of the District, threatened to restrain or enjoin the issuance, sale or delivery of the Series 2019 Bonds or the implementation of the plan of financing described herein, or in any way contesting or affecting the validity of the Series 2019 Bonds or the plan of financing described herein or any proceedings of the District taken with respect to the issuance or sale of the Series 2019 Bonds, the pledge or application of any moneys or securities provided for the payment of the Series 2019 Bonds or the existence or powers of the District insofar as they relate to the authorization, sale and issuance of the Series 2019 Bonds or such pledge or application of moneys and securities or the implementation of the plan of financing described herein.

There is no litigation or other legal proceeding pending or, to the knowledge of the District, threatened which challenges the authority of the District to operate the System or to collect revenues therefrom or which contests the creation, organization or existence of the District or the title of any of its Board members or executive staff to their respective offices.

On April 10, 2009 the United States District Court for the Western District of Kentucky, Louisville Division (the "Court"), entered an Amended Consent Decree, in Civil Action No.: 3:08-CV-00608-CRS (the "Amended Consent Decree"). The Amended Consent Decree amended, superseded and replaced the original Consent Decree entered by the Court on August 12, 2005 between the Commonwealth of Kentucky, the United States of America and the District. The Amended Consent Decree resolved all pending claims of violations of the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, and the Water Quality Act of 1987 (the "Clean Water Act") pursuant to 33 U.S.C. 1251 et seq. and the regulations promulgated thereunder.

By entering into the Amended Consent Decree the District neither admitted nor denied the alleged violations described therein but did acknowledge that sanitary sewer overflows and unauthorized discharges have occurred and the District accepted the obligations imposed under the Amended Consent Decree. To date, the District has complied with all submittals and reporting requirements contained in the Amended Consent Decree. A copy of the Amended Consent Decree is available at the offices of the District. The District intends to perform all Capital Improvement Programs and other requirements contained in the Amended Consent Decree. The cost of the capital improvements required to be completed under the Amended Consent Decree is currently estimated to be approximately $1.149 billion, of which approximately $820 million has been spent as of December 31, 2018 using proceeds of the District's Sewer and Drainage System Revenue Bonds, Series 2008, Series 2009C, Series 2010A, Series 2013C, Series 2014A, Series 2015A, Series 2016A and Series 2017A. The projected total cost has increased due to budgeted increases for construction contingencies in accordance with industry standards, as well as increases in projected construction costs required to comply with regulatory requirements. MSD continues to diligently monitor costs and does not expect further significant cost increases. The Amended Consent Decree contains stipulated penalties for the District's failure to comply with provisions contained in the Amended Consent Decree.

The Final Sanitary Sewer Discharge Plan and the CSO Long Term Control Plan were submitted concurrently and certified on December 19, 2008, under the title of the Integrated Overflow Abatement Plan (IOAP). The IOAP was accepted by the Court and incorporated by reference into the Amended Consent Decree by an Order signed February 12, 2010, that was entered into the public record February

15, 2010. The IOAP was amended in 2012 and 2014 to improve compliance and adjust capital project schedules.

By letter dated October 25, 2013, the United States Department of the Treasury (the "Treasury") notified the District that the District apparently violated regulations governing the use of State and Local Government ("SLGS") securities by impermissibly using the Treasury's SLGS program to create a cost-free option and invited the District to respond. The District responded by letter dated February 13, 2014. On June 6, 2014, the Treasury issued a final agency decision stating, in effect, that the District had violated the regulations. The Treasury suspended the District from participating in the SLGS program for five years, but it left open the possibility of a waiver with respect to the purchase of certain SLGS securities. The District disagreed with the final agency decision, but elected not to contest the decision in court. By letter dated September 3, 2015, the United States Department of Justice ("DOJ") notified the District that it "has been investigating whether MSD's violations of the SLGS regulations may give rise to civil monetary liability" and that it "is considering initiating civil litigation against MSD." DOJ invited the District to present its position and to explore the possibility of resolving the matter without litigation, and the District has been doing so. At this time the District cannot predict the outcome, including potential monetary consequences, of the DOJ investigation.

There is no litigation or other legal proceeding (other than that relating to the Amended Consent Decree) pending or, to the knowledge of the District, threatened against or affecting the District or its Board wherein an unfavorable decision, ruling or finding would have a materially adverse effect on the operations, properties or financial condition of the District.

The District is a defendant from time to time in various lawsuits. Although the outcome of these lawsuits is not presently determinable, it is the opinion of the District that resolution of these matters will not result in a material adverse effect on the operations, properties or financial condition of the District.

APPROVAL OF LEGAL PROCEEDINGS

The issuance of the Series 2019 Bonds is subject to the approval of Wyatt, Tarrant & Combs, LLP, Louisville, Kentucky, Bond Counsel, whose approving opinion will be delivered with the Series 2019 Bonds. Certain legal matters will be passed upon for the District by its General Counsel, Paula M. Purifoy, Esq.

Bond Counsel has reviewed legal matters incident to those sections of the Official Statement entitled "The Series 2019 Bonds," "Security and Sources of Payment for the Series 2019 Bonds," "Funds and Accounts," "Tax Treatment," and "Appendix A – Definitions of Certain Terms and Summary of Provisions of the Resolution," and is of the opinion that the statements contained in such sections are, as to law and legal conclusions, correct and that such sections fairly summarize the contents of documents therein described. Bond Counsel assumes no responsibility for the accuracy or completeness of other statements or financial information contained in this Official Statement.

TAX TREATMENT

General

In the opinion of Wyatt, Tarrant & Combs, LLP, Bond Counsel, (i) under the Internal Revenue Code (the "Code") as presently enacted and construed, interest on the Series 2019 Bonds is excludable from gross income for federal income tax purposes and (ii) the Series 2019 Bonds are exempt from ad valorem taxation, and the interest thereon is exempt from income taxation, by the Commonwealth of Kentucky and all of its political subdivisions and taxing authorities.

A copy of the form of opinion of Bond Counsel is set forth in Appendix D.

The Code imposes various restrictions, conditions, and requirements relating to the qualification of the Series 2019 Bonds as so-called "tax-exempt" bonds. The District has covenanted to comply with certain restrictions designed to ensure that interest on the Series 2019 Bonds will not be includable in gross income for federal income tax purposes. Failure to comply with these covenants could result in the Series 2019 Bonds not qualifying as "tax-exempt bonds," and thus interest on the Series 2019 Bonds being includable in the gross income of the holders thereof for federal income tax purposes. Such failure to qualify and the resulting inclusion of interest could be required retroactively to the date of issuance of the Series 2019 Bonds. The opinion of Bond Counsel assumes compliance with these covenants. However, Bond Counsel has not undertaken to determine (or to inform any person) whether any actions taken (or not taken) or events occurring (or not occurring) after the date of issuance of the Series 2019 Bonds may adversely affect either the federal or Kentucky tax status of the Series 2019 Bonds.

Certain requirements and procedures contained or referred to in the Resolution and other relevant documents may be changed and certain actions (including, without limitation, defeasance of the Series 2019 Bonds) may be taken or omitted under the circumstances and subject to the terms and conditions set forth in such documents. Bond Counsel expresses no opinion as to any Series 2019 Bonds or the interest thereon if any such change occurs or action is taken or omitted upon the advice or approval of bond counsel other than Wyatt, Tarrant & Combs, LLP.

Although Bond Counsel is of the opinion that interest on the Series 2019 Bonds will be excludable from gross income for federal income tax purposes and the Series 2019 Bonds and the interest thereon will be exempt from taxation in Kentucky, as described above, the ownership or disposition of, or the accrual or receipt of interest on, the Series 2019 Bonds may otherwise affect a Holder's federal, state or local tax liabilities. The nature and extent of these other tax consequences may depend upon the particular tax status of the Holder or the Holder's other items of income, deduction, or credit. Bond Counsel expresses no opinions regarding any tax consequences other than what is set forth in its opinion and each Holder or potential Holder is urged to consult with tax counsel with respect to the effects of purchasing, holding, or disposing of Series 2019 Bonds on the tax liabilities of the Holder.

Receipt of interest on, or ownership or disposition of, Series 2019 Bonds may result in other collateral federal, state, or local tax consequence for certain taxpayers. Such effects may include, without limitation, increasing the federal tax liability of certain foreign corporations subject to the branch profits tax imposed by Section 884 of the Code, increasing the federal tax liability of certain insurance companies under Section 832 of the Code, increasing the federal tax liability and affecting the status of certain S Corporations subject to Sections 1362 and 1375 of the Code, increasing the federal tax liability of certain individual recipients of Social Security or Railroad Retirement benefits under Section 86 of the Code, and limiting the amount of earned income credit under Section 32 of the Code that might otherwise be available. Ownership of any of the Series 2019 Bonds may also result in the limitation of interest and certain other deductions for financial institutions and other taxpayers pursuant to Section 265 of the Code. Residence of the Holder of Series 2019 Bonds in a state other than Kentucky or being subject to tax in a state other than Kentucky may result in income or other tax liabilities being imposed by such states or their political subdivisions based on the interest on or other income from the Series 2019 Bonds.

The District has ***not*** designated the Series 2019 Bonds as "qualified tax-exempt obligations" under Section 265 of the Code.

Original Issue Premium

"Acquisition Premium" is the excess of the cost of a bond over the stated redemption price of such bond at maturity or, for bonds that have one or more earlier call dates, the amount payable at the next earliest call date. The Series 2019 Bonds, having a yield that is lower than their stated interest rate (as shown on the inside cover page hereof), are being initially offered and sold to the public at an Acquisition Premium. For federal income tax purposes, the amount of Acquisition Premium on each bond the interest on which is excludable from gross income for federal income tax purposes ("tax-exempt bonds"), including the Series 2019 Bonds, must be amortized and will reduce the bondholder's adjusted basis in that bond. However, no amount of amortized Acquisition Premium on tax-exempt bonds may be deducted in determining the holder's taxable income for federal income tax purposes. The amount of any Acquisition Premium that must be amortized during any period will be based on the "constant yield" method, using the original bondholder's basis in such bonds and compounding semiannually. This amount is amortized ratably over the semiannual period on a daily basis.

Holders of Series 2019 Bonds should consult their own tax advisors as to the effect of Acquisition Premium with respect to their own tax situation and as to the treatment of Acquisition Premium for state tax purposes.

FINANCIAL STATEMENTS

The financial statements of the District for the fiscal year ended June 30, 2018 included as Appendix B of this Official Statement and an integral part of this Official Statement have been audited by Crowe LLP, independent auditors, as stated in their report.

The interim unaudited financial statements of the District as of May 31, 2019 are included in Appendix C, which is an integral part of this Official Statement.

RATINGS

Moody's Investors Service, Inc. ("Moody's") and Standard & Poor's Ratings Services, a division of The McGraw Hill Companies, Inc. ("S&P") have assigned the ratings of "Aa3" and "AA", respectively, to the Series 2019 Bonds. Such ratings reflects only the views of the respective rating agencies. An explanation of the significance of the rating given by Moody's may be obtained from Moody's at Moody's Investors Service, Inc., 7 World Trade Center, 250 Greenwich Street, Public Finance Group - 23rd Floor, New York, New York 10007, (212) 553-0300; and an explanation of the rating given by S&P may be obtained from Standard & Poor's Ratings Services at 55 Water Street, New York, New York 10041, (212) 438-2124. There is no assurance that such ratings will continue for any given period of time or that they will not be revised downward or withdrawn entirely by such organizations if, in the judgment of such organizations, circumstances so warrant. Any such downward revision or withdrawal of such ratings could have adverse effects on the market price of the Series 2019 Bonds.

UNDERWRITING

The Series 2019 Bonds are being purchased for reoffering by J.P. Morgan Securities LLC (the "Underwriter"). The Underwriter has agreed to purchase the Series 2019 Bonds at an aggregate purchase price of $33,586,891.70 (reflecting the par amount of the Series 2019 Bonds, plus original issue premium of $2,695,721.30, and less underwriter's discount of $18,829.60). The initial public offering prices, which produce the yields set forth on the cover page of this Official Statement, may be changed by the

Underwriter and the Underwriter may offer and sell the Series 2019 Bonds to certain dealers (including dealers depositing Series 2019 Bonds into investment trusts) and others at prices lower than the offering prices which produce the yields set forth on the cover page.

FINANCIAL ADVISOR

J.J.B. Hilliard, W.L. Lyons, LLC, a Baird Company, has been employed as Financial Advisor to the District in connection with the issuance of the Series 2019 Bonds. The Financial Advisor's fee for services rendered with respect to the sale of the Series 2019 Bonds is contingent upon the issuance and delivery thereof. This Official Statement was prepared and distributed by the Financial Advisor. The information set forth herein was obtained from the District and other sources believed to be reliable, but is not guaranteed as to accuracy or completeness by, and is not to be construed as a representation of the Financial Advisor.

On April 1, 2019, Baird Financial Corporation, the parent company of Robert W. Baird & Co. Incorporated ("Baird"), acquired HL Financial Services, LLC, its subsidiaries, affiliates and assigns (collectively "Hilliard Lyons"). As a result of such common control, Baird and Hilliard Lyons are now affiliated. It is expected that Hilliard Lyons will merge with and into Baird later in 2019.

CONTINUING DISCLOSURE

In accordance with Securities and Exchange Commission Rule 15c2-12 (the "Rule"), the District will agree, pursuant to a Continuing Disclosure Certificate to be dated and delivered as of the date of issuance and delivery of the Series 2019 Bonds (the "Disclosure Certificate"), to cause the following information to be provided:

(i) to the Municipal Securities Rulemaking Board (the "MSRB"), certain annual financial information and operating data, including audited financial statements prepared in accordance with generally accepted accounting principles as applied to governmental units, generally consistent with the information contained under the headings "THE DISTRICT - Customer History," "THE DISTRICT- Rate History," and in "Appendix B" of the Official Statement; such information shall be provided on or before the January 1 following the fiscal year ending on the preceding June 30, commencing with the fiscal year ended June 30, 2019; provided that the audited financial statements may not be available by such date, but will be made available immediately upon delivery thereof by the auditor to the obligated person;

(ii) in a timely manner not in excess of ten business days after the occurrence of the events to the MSRB, notice of the occurrence of the following events with respect to the Bonds:

(a) Principal and interest payment delinquencies;
(b) Non-payment related defaults, if material;
(c) Unscheduled draws on debt service reserves reflecting financial difficulties;
(d) Unscheduled draws on credit enhancements reflecting financial difficulties;
(e) Substitution of credit or liquidity providers, or their failure to perform;
(f) Adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701- TEB) or other material notices or determinations with

respect to the tax status of the security, or other material events affecting the tax-exempt status of the security;

(g) Modifications to rights of security holders, if material;

(h) Bond calls, if material, and tender offers (except for mandatory scheduled redemptions not contingent upon the occurrence of an event);

(i) Defeasances;

(j) Release, substitution or sale of property securing repayment of the securities, if material;

(k) Rating changes;

(l) Bankruptcy, insolvency, receivership or similar event of the obligated person (Note: For the purposes of this event, the event is considered to occur when any of the following occur: The appointment of a receiver, fiscal agent or similar officer for an obligated person in a proceeding under the U.S. Bankruptcy Code or in any other proceeding under state or federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the obligated person , or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers in possession but subject to the supervision and orders of a court or governmental authority, or the entry of an order confirming a plan of reorganization, arrangement or liquidation by a court or governmental authority having supervision or jurisdiction over substantially all of the assets or business of the obligated person);

(m) The consummation of a merger , consolidation, or acquisition involving an obligated person or the sale of all or substantially all of the assets of the obligated person , other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material;

(n) Appointment of a successor or additional trustee or the change of name of a trustee, if material;

(o) Incurrence of a financial obligation of the obligated person, if material, or agreement to covenants, events of default, remedies, priority rights, or other similar terms of a financial obligation of the obligated person, any of which affect security holders, if material; and

(p) Default, event of acceleration, termination event, modification of terms, or other similar events under the terms of the financial obligation of the obligated person, any of which reflect financial difficulties.

(iii) in a timely manner, to the MSRB, notice of a failure of the obligated person to provide the required Annual Financial Information on or before the date specified in the Continuing Disclosure Certificate.

The Disclosure Certificate provides holders of the Series 2019 Bonds, including beneficial owners of the Series 2019 Bonds, with certain enforcement rights in the event of a failure by the District to comply with the terms thereof; however, a default under the Disclosure Certificate does not constitute an event of default under the Resolution. The Disclosure Certificate may also be amended or terminated under certain circumstances in accordance with the Rule as more fully described therein. Holders of the Series 2019 Bonds are advised that the Disclosure Certificate, the form of which is obtainable from the Financial Advisor, should be read in its entirety for more complete information regarding its contents.

For purposes of this transaction with respect to events as set forth in the Rule:

(i) the District is the obligated person;

(ii) there are no credit enhancements applicable to the Bonds; and

(iii) there are no liquidity providers applicable to the Bonds.

Pursuant to outstanding continuing disclosure undertakings (the "Existing Undertakings") the District is required to file certain annual financial information with the MSRB by January 1 of each year. The District has filed its annual financial information in accordance with the Existing Undertakings and, to the best of the District's knowledge, is in material compliance with the continuing disclosure undertaking requirements of the Rule in connection with its outstanding obligations that are subject to such requirements. In the past five years, the District has been made aware that there have been changes to the credit ratings on certain obligations of the District resulting from changes to the credit rating of credit enhancers providing bond insurance for those obligations, for which continuing disclosure event notices were not filed. Such changes to the credit ratings were made without any formal notice of the change to the District.

CONCLUDING STATEMENT

The foregoing summaries or descriptions of provisions of the Resolution and all references to other materials not quoted in full are only brief outlines of certain provisions thereof and do not purport to be complete statements of such documents and provisions. Reference is hereby made to the complete documents, copies of which will be furnished by the District upon request, for further information.

Any statements in this Official Statement involving matters of opinion, whether or not expressly so stated, are intended as such and not as representations of fact. This Official Statement is not to be construed as a contract or agreement between the District and the purchasers or holders of any of the Series 2019 Bonds.

This Official Statement has been approved by the District as of the date set forth on the cover hereof.

LOUISVILLE AND JEFFERSON COUNTY
METROPOLITAN SEWER DISTRICT

By: Cyndi Caudill
Chair

By: Chad Collier
Chief Financial Officer and Secretary-Treasurer

[This page intentionally left blank.]

APPENDIX A

DEFINITIONS OF CERTAIN TERMS AND SUMMARY OF PROVISIONS OF THE RESOLUTION

[this page intentionally left blank]

SUMMARY OF PROVISIONS OF THE RESOLUTION

The descriptions and summaries set forth herein are not intended to be comprehensive or definitive, and reference is made to the Resolution for the complete details of all terms and conditions. All statements herein are qualified in their entirety by reference to the Resolution. Copies of the Resolution are available from the District.

Definitions

"Account" means an Account established pursuant to the Resolution.

"Accountant's Certificate" means a certificate of an independent certified public accountant or firm of accountants (who may be the accountant or firm which regularly audits the books of the District) selected by the District.

"Accreted Value" means, with respect to any Capital Appreciation Bond, an amount equal to the principal amount of such Capital Appreciation Bond (determined on the basis of the principal amount per $5,000 at maturity thereof) plus the amount assuming semi-annual compounding of earnings which would be produced on the investment of such principal amount, beginning on the dated date of such Capital Appreciation Bond and ending at the maturity date thereof, at a yield which, if produced until maturity, will produce $5,000 at maturity. As of any Valuation Date, the Accreted Value of any Capital Appreciation Bonds shall mean the amount set forth for such date in the Supplemental Resolution authorizing such Capital Appreciation Bonds and as of any date other than a Valuation Date, the sum of (a) the Accreted Value on the preceding Valuation Date and (b) the product of (1) a fraction, the numerator of which is the number of days having elapsed from the preceding Valuation Date and the denominator of which is the number of days from such preceding Valuation Date to the next succeeding Valuation Date and (2) the difference between the Accredited Values for such Valuation Dates.

"Accrued Aggregate Debt Service" for any period means, as of any date of calculation and with respect to any Series, an amount equal to the sum of the amounts of accrued Debt Service with respect to all Series, calculating the accrued Debt Service with respect to each Series at an amount equal to the sum of [i] interest on the Bonds of such Series accrued and unpaid and to accrue to the end of the then current calendar month and [ii] Principal Installments due and unpaid and that portion of the Principal Installment for such Series next due which would have accrued (if deemed to accrue in the manner set forth in the definition of Debt Service) to the end of such calendar month. The principal and interest portions of the Accreted Value and Appreciated Value of Capital Appreciation Bonds and Capital Appreciation and Income Bonds, respectively, becoming due at maturity or by virtue of a Sinking Fund Installment shall be included in the calculations of accrued and unpaid and accruing interest or Principal Installments in such manner and during such period of time as is specified in the Supplemental Resolution authorizing such Bonds.

"Act" means Kentucky Revised Statutes Chapter 76, including particularly Sections 76.055 et seq., inclusive, as the same may be from time to time amended, and successor provisions.

"Additional Bonds" means Bonds authenticated and delivered upon original issuance pursuant to the Resolution and any Bonds thereafter authenticated and delivered in lieu of or in substitution for such Bonds pursuant to the Resolution.

"Agent Member" shall mean a member of, or participant in, the Securities Depository. "Aggregate Debt Service" for any period means, as of any date of calculation and with respect to all Bonds, the sum of the amounts of Debt Service for such period.

"Aggregate Net Debt Service" for any period means, as of any date of calculation and with respect to all Bonds, the Aggregate Debt Service for such period, less any amounts available or expected to be available in the ordinary course for the payment of Debt Service during such period pursuant to the Resolution (including but not limited to interest or other income available or expected to be available for payment of Debt Service during such period from the Reserve Account).

"Annual Budget" means the budget adopted or in effect for a particular Fiscal Year as provided in the Resolution.

"Appreciated Value" means, with respect to any Capital Appreciation and Income Bond up to the Interest Commencement Date, an amount equal to the principal amount of such Capital Appreciation and Income Bond (determined on the basis of the principal amount per $5,000 at the Interest Commencement Date thereof) plus the amount, assuming semi-annual compounding of earnings which would be produced on the investment of such principal amount, beginning on the dated date of such Capital Appreciation and Income Bond and ending on the Interest Commencement Date, at a yield which, if produced until the Interest Commencement Date, will produce $5,000 at the Interest Commencement Date. As of any Valuation Date, the Appreciated Value of any Capital Appreciation and Income Bond shall mean the amount set forth for such date in the Supplemental Resolution authorizing such Capital Appreciation Bonds and as of any date other than a Valuation Date, the sum of (a) the Appreciated Value on the preceding Valuation Date and (b) the product of (1) a fraction, the numerator of which is the number of days having elapsed from the preceding Valuation Date and the denominator of which is the number of days from such preceding Valuation Date to the next succeeding Valuation Date and (2) the difference between the Appreciated Values for such Valuation Dates.

"Authorized Newspaper" means The Bond Buyer or any other financial newspaper customarily published at least once a day for five days (other than legal holidays) in each calendar week, printed in the English language and of general circulation in the Borough of Manhattan, City and State of New York.

"Authorized Officer of the District" means any person authorized by the District to perform the act or sign the document in question.

"Board" means the Board of the District, or such board, commission or agency as may succeed to the duties and responsibilities of such Board.

"Bond" or "Bonds" means any bonds, notes or other evidences of indebtedness (other than Subordinated Debt), as the case may be, authenticated and delivered pursuant to the Resolution.

"Bond Counsel" means a nationally recognized municipal bond attorney or firm of municipal bond attorneys, acceptable to the District.

"Bond Fund" means the Bond Fund established in the Resolution.

"Bondholder" or "Holder of Bonds" or "Holder" means any person who shall be the registered owner of any Bond or Bonds. Notwithstanding this definition, with respect to any Bonds which are registered in Book-Entry Form , the Paying Agent shall be entitled to rely upon written instructions from a majority of the beneficial owners of the Bonds with reference to consent, if any, required from Bondholders under the Resolution.

"Bond Register" means the form or system or document in which the ownership of Bonds is recorded by the Bond Registrar.

"Bond Registrar" means any bank or trust company organized under the laws of any state of the United States of America or national banking association appointed by the District to perform the duties of Bond Registrar enumerated in the Resolution.

"Book-Entry Form" or "Book-Entry System" means, with respect to the Bonds, a form or system, as applicable, under which (i) the ownership of beneficial interests in Bonds and bond service charges may be transferred only through a book entry and (ii) physical Bond certificates in fully registered form are registered only in the name of a Securities Depository or its nominee as Holder, with the physical Bond certificates in the custody of a Securities Depository.

"Business Day" means any day other than a Saturday, Sunday or legal holiday in the Commonwealth or a day on which either Bond Registrar, the Paying Agent or the District is legally authorized to close.

"Capital Appreciation Bonds" means any Bonds issued under the Resolution as to which interest is payable only at the maturity or prior redemption of such Bonds, as further described in the Resolution.

"Capital Appreciation and Income Bonds" means any Bonds issued under the Resolution as to which interest is deferred prior to the Interest Commencement Date, as further described in the Resolution.

"Chairperson" means the Chairperson of the District, or such Officer of the District as may succeed to the duties and responsibilities of the Chairperson.

"Commonwealth" means the Commonwealth of Kentucky.

"Construction and Acquisition Fund" means the Construction and Acquisition Fund established in the Resolution.

"Cost of Construction and Acquisition" means, with respect to a Project, the District's costs, expenses and liabilities paid or incurred or to be paid or incurred by the District in connection with the planning, engineering, designing, acquiring, constructing, installing and financing, of a Project and the obtaining of all governmental approvals, certificates, permits and licenses with respect thereto, including, but not limited to, all costs relating to the acquisition, construction and installation of a Project and the cost of any demolitions or relocations necessary in connection therewith, any good faith or other similar payment or deposits required in connection with the purchase of a Project, the cost of acquisition by or for the District of real and personal property or any interests therein, and costs of the District incidental to such construction, acquisition or installation all costs relating to injury and damage claims relating to a Project, the cost of any indemnity or surety bonds and premiums on insurance, preliminary investigation and development costs, engineering fees and expenses, contractors' fees and expenses, the costs of labor, materials, equipment and utility services and supplies, legal and financial advisory fees and expenses, interest and financing costs, including, without limitation, bank commitment, line of credit, and letter of credit fees, bond insurance and indemnity premiums, and any other means of providing credit enhancement or credit support, costs incurred in connection with interest rate exchanges, futures contracts or other similar financing arrangements, fees and expenses of the Fiduciaries, including reasonable fees and expenses of counsel to the Fiduciaries, administration and general overhead expense and costs of keeping accounts and making reports required by the Resolution prior to or in connection with the completion of construction of a Project, amounts, if any, required by the Resolution to be paid into the Bond Fund to provide, among other things, for interest accruing on Bonds and to provide for the Debt Service Reserve Requirement or to be paid into the Renewal and Replacement Account for any of the respective purposes thereof, payment when due (whether at the maturity of principal or the due date of interest or upon redemption or purchase) on any indebtedness of the District, including Bonds, notes and Subordinate Debt, incurred in respect of any of the foregoing, and working capital and reserves therefor, and all federal, state and local taxes and payments in lieu of taxes legally required to be paid in connection with a Project and shall include reimbursements to the District for any of the above items theretofore paid by or on behalf of the District. It is intended that this definition of Cost of Construction and Acquisition be broadly construed to encompass all costs, expenses and liabilities of the District related to a Project which on the date of adoption of the Resolution or in the future shall be permitted to be funded with the proceeds of Bonds pursuant to the provisions of the laws of the Commonwealth.

"Credit Facility" means, a letter of credit, surety bond, loan agreement, standby purchase agreement or other credit agreement, facility or insurance or guaranty arrangement which has been rated not lower than "A" by Moody's or S&P's, or which is issued by an entity whose unsecured long term debt or claims paying ability is rated not lower than "A" by Moody's or S&P's, in either case, pursuant to which the District or another person is entitled to obtain funds to pay Bonds and interest thereon tendered to the District or a third party for payment, purchase or redemption in accordance with the Resolution.

"Debt Service" for any period means, as of any date of calculation and with respect to any Series, an amount equal to [i] the interest accruing during such period on Bonds of such Series plus [ii] the portion of each Principal Installment for such Series which would accrue during such period if such Principal Installment were deemed to accrue periodically in equal amounts from the next preceding Principal Installment due date for such Series (or, if there shall be no such preceding Principal Installment due date, from a date one year preceding the due date of such Principal Installment or from the date of issuance of the Bonds of such Series, whichever date is later). For Variable Interest Rate Bonds, the annual interest rate thereon and the resulting Debt Service shall be calculated by an Authorized Officer and evidenced by a certificate from such Authorized Officer of the District in accordance with the following procedure: for any Variable Interest Rate Bonds Outstanding on the date such certificate is delivered, an Authorized Officer of the District shall estimate the Debt Service on such Bonds upon reliance upon a written estimate of such Debt Service by the District's financial advisor which estimate shall include assumptions with respect to the interest rate or rates to be borne by such Bonds and the amounts and due dates of the Principal Installments for such Bonds; provided, however, that the interest rate or rates assumed to be borne by any Variable Interest Rate Bonds shall not be less than the interest rate borne by such Variable Interest Rate Bonds at the time that an Authorized Officer of the District delivers such certificate. The principal and interest portions of the Accreted Value and Appreciated Value of Capital Appreciation Bonds and Capital Appreciation and Income Bonds, respectively, becoming due at maturity or by virtue of a Sinking Fund Installment shall be included in the calculations of accrued and unpaid and accruing interest or Principal Installments in such manner and during such period of time as is specified in the Supplemental Resolution authorizing such Bonds.

"Debt Service Account" means the Debt Service Account of the Bond Fund.

"Debt Service Reserve Requirement" as of a particular date of computation means an amount, computed separately for each Series of Bonds, equal to the least of [i] ten percent (10%) of the face amount of such Series, [ii] one hundred percent (100%) of the maximum Aggregate Net Debt Service (as of the computation date) in the current or any future Fiscal Year and [iii] one hundred twenty-five percent (125%) of average Aggregate Net Debt Service (as of the computation date) in the current or any future Fiscal Year. For Variable Interest Rate Bonds, the Debt Service Reserve Requirement shall be the maximum permitted amount with interest calculated at the lesser of the 30-year Revenue Bond Index (published by The Bond Buyer no more than two weeks prior to the date of sale of such Variable Interest Rate Bonds) or the Maximum Interest Rate. If any Variable Interest Rate Bond shall be converted to a fixed rate Bond for the remainder of the term thereof, and as a result thereof a nominal deficiency shall be created in the Bond Fund, the Debt Service Reserve Requirement shall be adjusted so as to exclude the amount of such deficiency, but the Debt Service Reserve Requirement shall be increased in each Fiscal Year or portion thereof after the date of such conversion by an amount equal to one hundred percent (100%) of the nominal deficiency, until there is no longer a nominal deficiency.

"Defeasance Obligations" means (i) cash, (ii) U.S. Treasury Certificates, Notes and Bonds (including State and Local Government Series - "SLGS"), (iii) direct obligations of the United States Treasury which have been stripped by the Treasury itself (CATS, TIGRS and similar securities), (iv) interest components of obligations of the Resolution Funding Corporation in book-entry form if such obligations have been stripped by request to the Federal Reserve Bank of New York, (v) pre-refunded municipal bonds rated "Aaa" by Moody's and "AAA" by S&P; however, if the issue is only rated by S&P, then the pre-refunded bonds must have been pre-refunded with cash, direct U.S. or U.S. guaranteed obligations, or AAA rated pre-refunded municipals, (vi) obligations issued by the following agencies which are backed by the full faith and credit of the United States: (a) direct obligations or fully guaranteed certificates of beneficial ownership of the U.S. Export-Import Bank (Eximbank), (b) certificates of beneficial ownership of the Farmers Home Administration, (c) obligations of the Federal Financing Bank, (d) participation certificates of the General Services Administration, (e) guaranteed Title XI financings of the U.S. Maritime Administration, (f) United States guaranteed New Community Debentures, (g) United States guaranteed public housing notes and bonds, and (h) project notes and local authority bonds of the U.S. Department of Housing and Urban Development, and (vii) any other investments approved in writing by the Insurer.

"District" means the Louisville and Jefferson County Metropolitan Sewer District, a public body corporate and political subdivision, created and established pursuant to the Act.

"Event of Default" shall have the meaning given to such term herein under the caption "Events of Default."

"Federal Reserve Bank" means any one of the central banks constituting the Federal Reserve System, created by the Federal Reserve Act of 1913, as amended, in order to regulate and aid the member banks in its respective Federal Reserve district.

"Fiduciary" or "Fiduciaries" means the Bond Registrar, the Paying Agents, or any or all of them, as may be appropriate or any bank, trust company, national banking association, savings and loan association, savings bank or other banking association selected by the District as a depositary of monies and securities held under the provisions of the Resolution, and may include the Bond Registrar.

"Fiscal Year" means each twelve (12) month period commencing on July 1 and ending on the succeeding June 30.

"Fund" or "Funds" means, as the case may be, each or all of the Funds established in the Resolution.

"Government Obligations" means (i) any direct obligations of the United States of America (including obligations issued or held in book-entry form on the books of the Department of the Treasury) or obligations the principal and interest on which are unconditionally guaranteed by the United States of America, and (ii) bonds, debentures, notes or other evidences of indebtedness issued or guaranteed by any of the following federal agencies (including stripped obligations thereof if such obligations have been stripped by the issuing agency itself) provided such obligations are backed by the full faith and credit of the United States of America: [1] Farmer's Home Administration; [2] General Services Administration; [3] United States Maritime Administration - Guaranteed Title XI Financing; [4] Federal Financing Bank; [5] United States Department of Housing and Urban Development; [6] U.S. Export - Import Bank; [7] Federal Housing Administration Debentures, and [8] Government National Mortgage Association guaranteed mortgage-backed bonds and guaranteed pass-through obligations.

"Insurer" means any nationally recognized company engaged in the business of insuring bonds which may from time to time insure the payment of the principal of and interest on all or a portion of the Bonds of any Series.

"Interest Commencement Date" means, with respect to any particular Capital Appreciation and Income Bond, the date specified in the Supplemental Resolution authorizing such Bonds, (which date must be prior to the maturity date for such Bonds) after which interest ceases to be deferred and compounds and the interest becomes currently payable.

"Investment Securities" means any of the following securities, to the extent legal for investment of the District's funds: [a] Government Obligations and, to the extent from time to time permitted by law, [b] obligations of [i] Federal Home Loan Banks, senior debt obligations, [ii] Federal Home Loan Mortgage Corporation, participation certificates and senior debt obligations, [iii] Student Loan Marketing Association, senior debt obligations, [iv] Resolution Funding Corporation and [v] Federal National Mortgage Association mortgage-backed securities and senior debt obligations; [c] money market funds registered under the Federal Investment Company Act of 1940, whose shares are registered under the Federal Securities Act of 1933, and having a rating by Standard and Poor's of AAAm-G, AAAm or AAm; [d] certificates of deposit or time deposits of any bank, any branch of any bank, trust company or national banking association or any savings and loan association; provided, however, that such certificates of deposit or time deposits shall be fully secured, to the extent not insured by the Federal Deposit Insurance Corporation or the Federal Savings and Loan Insurance Corporation, by Government Obligations in which the Bond Registrar has a perfected first security interest, [e] investment agreements (for investment of moneys held in the Construction and Acquisition Fund) or other investments approved in writing by the Insurer, [f] commercial paper rated at the time of purchase, "Prime-1" by Moody's and "A-1" or better by S&P, [g] bonds or notes issued by any state or municipality which are rated by Moody's and S&P in one of the two highest rating categories assigned by such agencies, [h] federal funds or banker acceptances with a maximum term of 1 year with a rating of "Prime-1" or "A-3" or better by Moody's and "A-1" or "A" or better by S&P, and [i] any repurchase agreement approved in writing by the Insurer or any repurchase agreement with a term not in excess of 30 days that is a legal investment for public funds under state law (as determined by a written legal opinion delivered to the District) and is with a primary dealer on the Federal Reserve reporting dealer list rated A or better by Moody's and S&P or any bank or trust company (including the Bond Registrar) rated "A" or better by Moody's and S & P for Government Obligations or obligations described in [b] above in which the Bond Registrar shall be given a first security interest and on which no third party shall have a lien. The underlying repurchase obligations must be valued weekly and marked to market at a current market price plus accrued interest of at least 104% (105% if the underlying securities are Federal National Mortgage Association Mortgage-backed securities and senior debt obligations) of the amount of the repurchase obligations of the bank or trust company. All obligations purchased must be transferred to the Bond Registrar or a third party agent by physical delivery or by an entry made on the records of the issuer of such obligations. Any investment in a repurchase agreement shall be considered to mature on the date the obligor providing the repurchase agreement is obligated to repurchase the obligations. Any investment in obligations described in [a] and [b] above may be made in the form of an entry made on the records of the issuer of the particular obligation.

The Bond Registrar, any Paying Agent, other Fiduciaries, or other custodian of funds of the District, respectively, may trade with itself in the purchase and sale of securities for such investment and may charge its ordinary and customary fees for such trades, including cash sweep account fees. In the absence of any direction from the District, the Bond Registrar, any Paying Agent, other Fiduciaries, or other custodian of funds of the District, respectively, shall invest all funds in sweep accounts, money market funds and similar short-term investments, provided that all such investments shall constitute Investment Securities.

"Maximum Interest Rate" means, with respect to any particular Variable Interest Rate Bond, an annual rate of interest, which shall be set forth in the Supplemental Resolution authorizing such Bond, that shall be the maximum rate of interest such Bond may at any time bear.

"Minimum Interest Rate" means, with respect to any particular Variable Interest Rate Bond, an annual rate of interest which may (but need not) be set forth in the Supplemental Resolution authorizing such Bond, that shall be the minimum rate of interest such Bond may at any time bear.

"Moody's" means Moody's Investors Service, Inc., a corporation organized and existing under the laws of the State of Delaware, its successors and their assigns, if any.

"Month" means a calendar month.

"Net Revenues" for any period shall mean Revenues, less Operating Expenses for such period. "Operating Expenses" means the District's reasonable, ordinary, usual or necessary current expenses of maintenance, repair and operation of the System, determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. Operating Expenses shall include, without limiting the generality of the foregoing, [i] expenses not annually recurring, [ii] administrative and engineering expenses (to the extent not paid or reimbursed as a Cost of Construction and Acquisition), payments to pension or retirement funds properly chargeable to the System, insurance premiums, fees and expenses of Paying Agents and legal expenses, [iii] interest on, redemption premium on, or principal of, Subordinated Debt, [iv] any other expenses required to be paid by the District under the provisions of the Resolution or by law and [v] amounts reasonably required to be set aside in reserves for operating items or expenses the payment of which is not then immediately required.

However, Operating Expenses do not include [i] reserves for extraordinary maintenance or repair, or any allowance for depreciation, or any deposits or transfers to the credit of the Bond Fund or the Renewal and Replacement Account, nor any amounts paid or required to be paid to the United States of America pursuant to the Resolution (except to the extent such rebate amounts must be paid from Revenues other than the investment income that generated the liability to the United States), [ii] non-capital Costs of Acquisition and Construction or other costs, to the extent composed of non-capital expenses, salaries, wages and fees that are necessary or incidental to capital improvements for which debt has been issued and which may be paid from proceeds of such debt or [iii] losses from the sale, abandonment, reclassification, revaluation or other disposition of properties of the System nor such property items, including taxes and fuel, which are capitalized pursuant to the then existing accounting practice of the District.

"Opinion of Counsel" means an opinion signed by an attorney or firm of attorneys of nationally recognized standing in the field of law relating to municipal bonds (who may be counsel to the District) selected by the District.

"Option Bonds" means Bonds which by their terms may be tendered by and at the option of the Holder thereof for payment or purchase by the District or a third party prior to the stated maturity thereof, or the maturities of which may be extended by and at the option of the Holder thereof.

"Outstanding" when used with reference to Bonds, means, as of any date, Bonds theretofore or thereupon being authenticated and delivered under the Resolution except:

(i) Bonds cancelled pursuant to the Resolution at or prior to such date;

(ii) Bonds (or portion of Bonds) for the payment or redemption of which monies, equal to the principal amount or Redemption Price thereof, as the case may be, with interest to the date of maturity or redemption date shall be held in trust under the Resolution and set aside for such payment or redemption (whether at or prior to the maturity or redemption date), provided that if such bonds (or portion of Bonds) are to be redeemed, notice of such redemption shall have been given or provision satisfactory to the District shall have been made for the giving of such notice as provided in the Resolution;

(iii) Bonds in lieu of or in substitution for which other Bonds shall have been authenticated and delivered pursuant to the Resolution;

(iv) Bonds deemed to have been paid as provided in the Resolution; and

(v) Option Bonds deemed tendered in accordance with the provisions of the Supplemental Resolution authorizing such Bonds on the applicable adjustment or conversion date if interest thereon shall have been paid through such applicable date and the purchase price thereof shall have been paid or amounts are available for such payment as provided in the Resolution.

"Paying Agent" means any bank or trust company organized under the laws of any state of the United States of America or any national banking association designated as paying agent for the Bonds of any Series, and its successor or successors hereafter appointed in the manner provided in the Resolution.

"Pledged Property" means and includes the following property, as and when received by or for the account of the District, in each case pending the application or expenditure thereof in accordance with the Resolution: [i] the proceeds of sale of Bonds, [ii] all Revenues, [iii] all amounts on deposit in the Funds or Accounts established under the Resolution, [iv] such other amounts as may be pledged from time to time by the District as security for the payment of Bonds and [v] all proceeds of the foregoing.

"Principal Installment" means, as of the date of calculation and with respect to any Series, so long as any Bonds thereof are Outstanding, [i] the principal amount of Bonds of such Series due on a certain future date for which no Sinking Fund Installments have been established (including the principal amount of Option Bonds tendered for payment and not purchased), [ii] the Sinking Fund Installment due on a certain future date for Bonds of such Series and [iii] if such future dates coincide, the sum of such principal amount and such Sinking Fund Installment.

“Project” means any project directly or indirectly related to the facilities provided or to be provided by the District which is to be included as part of the System and is permitted by the Act, and any modification or substitution of such facilities by the District.

“Record Date” means a Regular Record Date or a Special Record Date.

“Redemption Price” means, with respect to any Bond, the principal amount thereof plus the applicable premium, if any, payable upon redemption thereof pursuant to such Bond.

“Refunding Bonds” means all Bonds, whether issued in one or more Series or as part of a Series, authenticated and delivered on original issuance pursuant to the Resolution.

“Renewal and Replacement Account” means the account of that name which is maintained pursuant to the Resolution.

“Reserve Account” means the Reserve Account of the Bond Fund.

“Resolution” means the Sewer and Drainage System Revenue Bond Resolution of the District originally adopted on December 9, 1992 and amended and restated in its entirety on June 30, 1993, as from time to time amended or supplemented.

“Revenue Fund” means the Revenue Fund which is maintained pursuant to the Resolution.

“Revenues” means all revenues, rates, fees, rents, charges and other operating income and receipts, as derived by or for the account of the District from or for the operation, use or services of the System, determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. Revenues shall include, without limiting the generality of the foregoing, [i] revenue from capital charges recovered or reimbursed to the District, capacity charges and service connection fees, [ii] acquisition surcharges and assessments levied by the District (regardless of whether any of the same are allocated or designated by the District for capital expenditures) and [iii] interest or other income received or to be received from any source, including but not limited to interest or other income received or to be received on any monies or securities held pursuant to the Resolution. Revenues shall not include customer deposits and contributions in aid of construction, except to the extent the same would constitute revenues or income in accordance with generally accepted accounting principles.

“S&P’s” means Standard & Poor’s Corporation, a corporation organized and existing under the laws of the State of New York, and its successors and their assigns, if any.

“Secretary-Treasurer” means the Secretary-Treasurer of the District, or such officer of the District as may succeed to the duties and responsibilities of the Secretary-Treasurer.

“Securities Exchange Act” means the Securities Exchange Act of 1934, as amended.

“Securities Depository” means any securities depository that is a “clearing corporation” within the meaning of the New York Uniform Commercial Code and a “clearing agency” registered pursuant to the provisions of Section 17A of the Securities Exchange Act, operating and maintaining, with its participants or otherwise, a Book-Entry System to record ownership of beneficial interests in bonds and bond service charges, and to effect transfers of bonds in Book-Entry Form, and means, initially, The Depository Trust Company (a limited purpose trust company) , New York, New York.

"Securities Depository Nominee" means any nominee of a Securities Depository and shall initially mean Cede & Co., New York, New York, as nominee of The Depository Trust Company.

"Senior Subordinated Debt" means any debt of the District subordinated to the Bonds and payable from the Senior Subordinated Debt Fund, including without limitation, such Notes of the District as may be issued pursuant to the Subordinate Debt Resolution of the District adopted on June 30, 1993, as the same may be amended from time to time.

"Senior Subordinated Debt Fund" means the Senior Subordinated Debt Fund which is maintained pursuant to the Resolution.

"Series" means all of the Bonds authenticated and delivered on original issuance and identified pursuant to the Resolution or any Supplemental Resolution authorizing such Bonds as a separate Series of Bond, and any Bonds thereafter authenticated and delivered in lieu of or in substitution for such Bonds pursuant to the Resolution, regardless of variations in maturity, interest rate, Sinking Fund Installments, or other provisions.

"Sinking Fund Installment" means an amount so designated which is established pursuant to the Resolution.

"Subordinated Debt" means indebtedness of the System which is subordinate to the Bonds issued under the Resolution including the Senior Subordinated Debt.

"Supplemental Resolution" means any resolution supplemental to or mandatory of this Resolution adopted by the District in accordance with the Resolution.

"System" means [i] the sewer facilities, drainage facilities and all appurtenant facilities or any other facilities owned, operated or controlled by the District from time to time, [ii] any Project and [iii] all improvements, additions, extensions and betterments to the foregoing which may be hereafter acquired by the District by any means whatsoever.

"Valuation Date" means with respect to any Capital Appreciation Bonds and Capital Appreciation and Income Bonds, the date or dates set forth in the Supplemental Resolution authorizing such Bonds on which specific Accreted Values or Appreciated Values are assigned to the Capital Appreciation Bonds and Capital Appreciation and Income Bonds, as the case may be.

"Variable Interest Rate" means a variable interest rate to be borne by a Series of Bonds or any one or more maturities within a Series of Bonds.

"Variable Interest Rate Bonds" for any period means bonds which during such period bear a Variable Interest Rate, provided that Bonds the interest rate on which shall have been fixed for the remainder of the term thereof shall no longer be Variable Interest Rate Bonds.

"Vice-Chairperson" means the Vice-Chairperson of the District, or such officer of the District as may succeed to the duties and responsibilities of the Vice-Chairperson.

The Pledge Affected by the Resolution

The Bonds are special and limited obligations of the District payable, solely from and secured as to the payment of the principal and Redemption Price thereof, and interest thereon, in accordance with their terms and the provisions of the Resolution, solely from the Pledged Property. There are by the

Resolution pledged and assigned as security for the payment of the principal and Redemption Price of, and interest on, the Bonds in accordance with their terms and the provisions of the Resolution, subject only to the provisions of the Resolution permitting the application thereof for the purposes and on the terms and conditions set forth in the Resolution, the Pledged Property.

Establishment of Funds and Accounts; Application of Revenues

The Resolution establishes the following Funds and Accounts:

(a) Construction and Acquisition Fund to be held by the District,

(b) Revenue Fund to be held by the District,

(c) Bond Fund to be held by the Paying Agent which shall consist of a Debt Service Account and a Reserve Account,

(d) Renewal and Replacement Account to be held by the District, and

(e) Senior Subordinated Debt Fund to be held by the District.

The District may, for accounting or allocation purposes, [i] establish one or more additional accounts or subaccounts within the Construction and Acquisition Account, the Revenue Fund, the Bond Fund or the Renewal and Replacement Account, or [ii] to the extent not expressly prohibited by other provisions hereof, commingle amounts between or among any or all of such Funds or Accounts, except the Senior Subordinated Debt Fund.

Construction and Acquisition Fund. There shall be paid into the Construction and Acquisition Fund the amounts required to be so paid by the provisions of the Resolution, and there may be paid into the Construction and Acquisition Fund, at the option of the District, any monies received by the District from any source, unless required to be otherwise applied as provided by the Resolution. Amounts in the Construction and Acquisition Fund shall be applied to pay the Cost of Construction and Acquisition in the manner provided in the Resolution and the Supplemental Resolution authorizing a Series of Bonds to finance the Cost and Acquisition of a Project.

There shall be established within the Construction and Acquisition Fund a separate account for a Project.

The proceeds of insurance, if any, maintained pursuant to the Resolution against physical loss of or damage to the System, or of contractors' performance bonds or other assurances of completion with respect thereof, or pertaining to the period of construction thereof, shall be paid into the appropriate separate account in the Construction and Acquisition Fund.

The Secretary-Treasurer of the District shall make payments from the Construction and Acquisition Fund, except payments and withdrawals pursuant to the Resolution as described in the next paragraph, in the amounts, at the times, in the manner, and on the other terms and conditions set forth in the Resolution. The Secretary-Treasurer or other Authorized Officer of the District shall maintain adequate records in respect of all payments made, including [a] the particular account established within the Construction and Acquisition Fund from which such payment is to be made, [b] the name and address of the person, firm or corporation to whom payment is due, [c] the amount to be paid and [d] the particular item of the Cost of Construction and Acquisition to be paid and that the cost or the obligation in the stated amount is a proper charge against the Construction and Acquisition Fund which has not been previously paid. The Secretary-Treasurer shall issue a check for each payment required by such requisition or shall by interbank transfer or other method arrange to make the payment required by such requisition.

Notwithstanding any of the provisions of the Resolution as described under this caption, except as provided below, to the extent that other monies are not available therefor, amounts in the Construction and Acquisition Fund shall be applied to the payment of Principal Installments of and interest on Bonds when due; provided, however, that proceeds (and investment earnings thereon) from the issuance by the District of Senior Subordinated Debt shall not be subject to the priority in favor of the Bonds created by the Resolution, but may instead be pledged by the District as security and a source of payment first for the Senior Subordinated Debt pursuant to the resolution or resolutions of the District authorizing such Senior Subordinated Debt, in which event such amounts shall be applied to the payment of debt service on the Senior Subordinated Debt when due to the extent that other monies are not available therefor, and shall not be used to pay debt service on any Bonds if there is any Senior Subordinated Debt which remains outstanding and unpaid.

An adequate record of the completion of construction of a Project financed in whole or in part by the issuance of Bonds shall be maintained by an Authorized Officer of the District. The balance in the separate account in the Construction and Acquisition Fund established therefor shall be transferred to the Reserve Account in the Bond Fund, if and to the extent necessary to make the amount of such Account equal to the Debt Service Reserve Requirement, and any excess amount shall be paid over or transferred to the District for deposit in the Revenue Fund.

Application of Revenues.

All Revenues shall be promptly deposited by the District upon receipt thereof into the Revenue Fund.

There shall be withdrawn in each month the following amounts, for deposit as set forth below and in the order of priority set forth below.

(i) To the Bond Fund, [i] for credit to the Debt Service Account, the amount, if any, required so that the balance in such Account shall equal the Accrued Aggregate Debt Service as of the last day of the then current month or, if interest or principal are required to be paid to Holders of Bonds during the next succeeding month on a day other than the first day of such month, Accrued Aggregate Debt Service as of the day through and including which such interest or principal is required to be paid and [ii] for credit to the Reserve Account, the amount, if any, required for such Account, after giving effect to any surety bond, insurance policy, letter of credit or other similar obligation deposited in such Account pursuant to the Resolution, to equal one-twelfth (1/12) of the difference between [a] the amount then in the Reserve Account immediately preceding such deposit and [b] the actual Debt Service Reserve Requirement as of the last day of the then current month ; and

(ii) To the Senior Subordinated Debt Fund the amount, if any, required to pay the scheduled base and additional rental payments when due on the Senior Subordinated Debt and make deposits, if any, for reserves therefor, in accordance with the provisions of, and subject to the priorities and limitations and restrictions provided in, the Senior Subordinated Debt; and

(iii) Each month the District shall pay from the Revenue Fund such amounts as are necessary to meet Operating Expenses for such month; and

(iv) To the Renewal and Replacement Account, a sum equal to 1/12 of the amount, if any, provided in the Annual Budget to be deposited in the Renewal and Replacement Account during the then current Fiscal Year; provided that, if any such monthly allocation to the Renewal and Replacement Account shall be less than the required amount, the amount of the next succeeding monthly payment shall be increased by the amount of such deficiency.

The balance of monies remaining in the Revenue Fund after the above required payments have been made may be used by the District for any lawful purpose relating to the System; provided, however, that none of the remaining monies shall be used for any purpose other than those hereinabove specified unless all current payments and including all deficiencies in prior payments, if any, have been made in full and unless the District shall have complied fully with all the covenants and provisions of the Resolution.

So long as there shall be held in the Debt Service Account and the Reserve Account an amount sufficient to pay in full all Outstanding Bonds in accordance with their terms (including principal or applicable sinking fund Redemption Price and interest thereon), no transfers shall be required to be made to the Bond Fund; and provided further, that any deficiency in the Reserve Account, after giving effect to any surety bond, insurance policy or letter of credit deposited in such Account pursuant to the Resolution as described in the fourth paragraph under the caption "Bond Fund - Reserve Account" herein, other than a deficiency attributable to a withdrawal of amounts therefrom pursuant to the Resolution as described in the first paragraph under the caption "Bond Fund - Reserve Account" herein, shall be cured by depositing into the Reserve Account each month during the period commencing with the month following the month in which the determination of the deficiency was made an amount equal to one- twelfth (1/12th) of the deficiency, except that, if a new valuation of Investment Securities held in the Reserve Account is made pursuant to the Resolution during the period that such deposits are required, then the obligation of the District to make deposits during the balance of such period on the basis of the preceding valuation shall be discharged and the deposits, if any, required to be made for the balance of such period shall be determined under this proviso on the basis of the new valuation.

Bond Fund - Debt Service Account.

The Paying Agent, from amounts deposited therein, shall pay out of the Debt Service Account, [i] on or before each interest payment date for any of the Bonds, the amount required for the interest payable on such date, [ii] no later than each Principal Installment due date, the amount required for the Principal Installment payable on such due date and [iii] no later than any redemption date for the Bonds, the amount required for the payment of interest on the Bonds then to be redeemed. In the case of Variable Interest Rate Bonds, the District shall furnish the Paying Agent with a certificate setting forth the amount to be paid on such Bonds on each interest payment date, such certificate shall be furnished on or prior to the appropriate Record Date with respect to any interest payment date. Such amounts shall be applied by the Paying Agents on or after the due dates thereof. The Paying Agent shall also pay out of the Debt Service Account, from amounts deposited therein, the accrued interest included in the purchase price of Bonds purchased for retirement.

Amounts accumulated in the Debt Service Account with respect to any Sinking Fund Installment may be applied on or prior to the 40th day next preceding the due date of such Sinking Fund Installment, to [i] the purchase of Bonds of the Series and maturity for which such Sinking Fund Installment was established or [ii] the redemption at the applicable sinking fund Redemption Price of such Bonds, if then redeemable by their terms. All purchases of any Bonds pursuant to the Resolution as described in this paragraph shall be made at prices not exceeding the applicable sinking fund Redemption Price of such Bonds plus accrued interest. The applicable sinking fund Redemption Price (or principal amount of maturing Bonds) of any Bonds so purchased or redeemed shall be deemed to constitute part of the Debt Service Account until such Sinking Fund Installment date, for the purpose of calculating the amount of such Account. As soon as practicable after the 40th day preceding the due date of any such Sinking Fund Installment, the District shall proceed to call for redemption, by giving notice as provided in the Resolution, on such due date Bonds of the Series and maturity for which such Sinking Fund Installment was established (except in the case of Bonds maturing on a Sinking Fund Installment date) in such amount as shall be necessary to complete the retirement of the unsatisfied balance of such Sinking Fund Installment. The District shall pay out of the Debt Service Account to the appropriate Paying Agents, on or before such redemption date (or maturity date), the amount required for the redemption of the Bonds so called for redemption (or for the payment of such Bonds then maturing), and such amount shall be applied by such Paying Agents to such redemption (or payment).

Unless otherwise provided by the District, upon any purchase or redemption pursuant to the Resolution of Bonds of any Series and maturity for which Sinking Fund Installments shall have been established, there shall be credited, in increments of $5,000 to the extent practicable, toward each succeeding Sinking Fund Installment thereafter to become due on Bonds, of the same series and maturity (other than the Sinking Fund Installment next coming due) an amount bearing the same ratio, to the Sinking Fund Installment, as the total principal amount of Bonds purchased or redeemed bears to the total principal amount of all the Sinking Fund Installments to be credited. The portion of any principal Sinking Fund Installment remaining after the deduction of any such amounts are credited toward the same shall constitute the unsatisfied balance of such Sinking Fund Installment for the purpose of calculation of Sinking Fund Installments due on a future date.

The amount, if any, deposited in the Debt Service Account from the proceeds of each Series of Bonds shall be set aside in such Account and applied to the payment of interest on Bonds as provided in the Resolution or in accordance with certificates of the District delivered pursuant to the Resolution or, if the District shall modify or amend any such certificate by a subsequent certificate signed by an Authorized Officer of the District, then in accordance with the most recent amended certificate.

In the event of the refunding of any Bonds, the District may withdraw from the Debt Service Account in the Bond Fund all, or any portion of, the amounts accumulated therein with respect to Debt Service on the Bonds being refunded and deposit such amounts with itself to be held for the payment of the principal or Redemption Price, if applicable, and interest on the Bonds being refunded; provided that such withdrawal shall not be made unless (a) immediately thereafter Bonds being refunded shall be deemed to have been paid pursuant to the Resolution as described herein under the caption "Defeasance," and (b) the amount remaining in the Debt Service Account in the Bond Fund, after giving effect to the issuance of Refunding Bonds and the disposition of the proceeds thereof, shall not be less than the requirement of such Account pursuant to the Resolution in the second paragraph under this caption. In the event of such refunding, the District may also withdraw from the Debt Service Account in the Bond Fund all, or any portion of, the amounts accumulated therein with respect to Debt Service on the Bonds being refunded and deposit such amounts in any fund or Account under the Resolution; provided, however, that such withdrawal shall not be made unless items (a) and (b) referred to hereinabove have been satisfied and provided, further, that, at the time of such withdrawal, there shall exist no deficiency in any Fund or Account held under the Resolution, as confirmed in writing to the Bond Registrar by the Secretary-Treasurer.

Bond Fund - Reserve Account.

If five days prior to any interest or Principal Installment due date with respect to any Series of Bonds payment for such interest or Principal Installment in full has not been made or provided for, the

District shall forthwith withdraw from the Reserve Account an amount not exceeding the amount required to provide or such payment in full and deposit such amount in the Debt Service Account for application to such payment.

Whenever the amount in the Reserve Account shall exceed the Debt Service Reserve Requirement, after giving effect to any surety bond, insurance policy or letter of credit deposited in such Account pursuant to the Resolution as described in the fourth paragraph under this caption, such excess shall be deposited in the Debt Service Account.

Whenever the amount in the Reserve Account (exclusive of any surety bond, letter of credit or insurance policy therein), together with the amount in the Debt Service Account is sufficient to pay in full all Outstanding Bonds in accordance with their terms (including principal or applicable sinking fund Redemption Price and interest thereon), the funds on deposit in the Reserve Account shall be transferred to the Debt Service Account. Prior to said transfer, all investments held in the Reserve Account shall be liquidated to the extent necessary in order to provide for the timely payment of principal and interest (or Redemption Price) on the Bonds.

In lieu of the required transfers or deposits to the Reserve Account, the District may cause to be deposited into the Reserve Account a surety bond or an insurance policy for the benefit of the holders of the Bonds or a letter of credit in an amount equal to the difference between the Debt Service Reserve Requirement and the sums then on deposit in the Reserve Account, if any, after the deposit of such surety bond, insurance policy or letter or credit. Such difference may be withdrawn by the District and be deposited in the Revenue Fund. The surety bond, insurance policy or letter of credit shall be payable (upon the giving of notice as required thereunder) on any due date on which monies will be required to be withdrawn from the Reserve Account and applied to the payment of a Principal Installment of or interest on any Bonds and such withdrawal cannot be met by amounts on deposit in the Reserve Account. If a disbursement is made pursuant to a surety bond, an insurance policy or a letter of credit provided pursuant to this subsection, the District shall be obligated either (i) to reinstate the maximum limits of such surety bond, insurance policy or letter of credit or (ii) to deposit into the Reserve Account, funds in the amount of the disbursement made under such surety bond, insurance policy or letter of credit, or a combination of such alternatives, as shall provide that the amount in the Reserve Account equals the Debt Service Reserve Requirement. Any other provision under this caption to the contrary notwithstanding, for each particular Series of Bonds or portion thereof which is insured by an Insurer, the right of the District under the Resolution to cause a surety bond or an insurance policy to be deposited into the Reserve Account in lieu of the required transfers or deposits thereto shall be subject to the condition that the District obtain the prior written consent of the Insurer as to the structure and the issuer of such surety bond or insurance policy.

In the event of the refunding of any Bonds, the District may withdraw from the Reserve Account in the Bond Fund all, or any portion of, the amounts accumulated therein with respect to the Bonds being refunded and deposit such amounts with itself to be held for the payment of the principal or Redemption Price, if applicable, and interest on the Bonds being refunded; provided that such withdrawal shall not be made unless (a) immediately thereafter the Bonds being refunded shall be deemed to have been paid pursuant to the Resolution as described in the second paragraph under the caption “Defeasance” herein, and (b) the amount remaining in the Reserve Account in the Bond Fund, after giving effect to the issuance of the Refunding Bonds and the disposition of the proceeds thereof, shall not be less than the Debt Service Reserve Requirement.

If any withdrawals are made from the Reserve Account pursuant to the Resolution, the resulting deficiency, if any, shall be remedied by the application of monthly payments into the Reserve Account as set forth in the Resolution, or by transfers from the Renewal and Replacement Account or both, until the amount on deposit in the Reserve Account is equal to the Debt Service Reserve Requirement, whereupon such deposits shall be discontinued until such time, if any, that there is again a deficiency.

Renewal and Replacement Account.

Monies to the credit of the Renewal and Replacement Account may be applied to the cost of major replacements, repairs, renewals, maintenance, betterments, improvements, reconstruction or extensions of the System or any part thereof as may be determined by the Board.

If at any time the monies in the Debt Service Account, the Reserve Account and the Revenue Fund shall be insufficient to pay the interest and Principal Installments becoming due on the Bonds, then the District shall transfer from the Renewal and Replacement Account for deposit in the Debt Service Account the amount necessary (or all the monies in said Fund if less than the amount necessary) to make up such deficiency.

Any balance of monies and securities in the Renewal and Replacement Account not required to meet a deficiency as set forth above or for any of the purposes for which the Renewal and Replacement Account was established, may, on direction of the District, be transferred from the Renewal and Replacement Account to the Reserve Account, if and to the extent necessary to make the amount in such Account equal to the Debt Service Reserve Requirement, and any balance may be deposited in the Debt Service Account or the Revenue Fund.

Senior Subordinated Debt Fund.

Subject to the provisions of the Resolution described in the next paragraph, the District shall apply amounts in the Senior Subordinated Debt Fund to the payment of debt service or the scheduled base and additional rental payments when due on the Senior Subordinated Debt and make deposits, if any, for reserves therefor in accordance with the provisions of, and subject to the priorities and limitations and restrictions provided in, the Senior Subordinated Debt.

Notwithstanding any of the other provisions of the Resolution described under this caption, if at any time the amount on deposit in the Reserve Account shall be less than the Debt Service Reserve Requirement, the District shall forthwith transfer from the Senior Subordinated Debt Fund for deposit in the Reserve Account the amount necessary (or all moneys in said Senior Subordinated Debt Fund, if necessary) to make up such deficiency.

Amounts in the Senior Subordinated Debt Fund which the District at any time determines to be in excess of the requirements of such fund may, at the discretion of the District, be transferred to the Debt Service Account or the Renewal and Replacement Account.

Investments

In making any investment in any Investment Securities with monies in any Fund or Account established under the Resolution, the District may combine, to the extent permitted by law, or instruct such Fiduciary to combine, such monies with monies in any other Fund or Account, but solely for purposes of making such investment in such Investment Securities.

Monies held in the Bond Fund, the Revenue Fund, the Renewal and Replacement Account, the Senior Subordinated Debt Fund and the Construction and Acquisition Fund shall be invested and reinvested to the fullest extent practicable in Investment Securities, maturing not later than such times as shall be necessary to provide monies when needed for payments to be made from such Fund or Account. The Fiduciary, shall make all such investments of monies held by it in accordance with written instructions from time to time received from an Authorized Officer of the District.

Interest (net of that which represents a return of accrued interest) or gain realized on investments in such Funds and Accounts other than the Reserve Account of the Bond Fund, shall be paid into the Revenue Fund, provided that gain realized from the liquidation of an investment shall be governed by the provisions described below. Interest earned or gain realized on investments in the Reserve Account shall be transferred to the Debt Service Account, provided that gain realized from the liquidation of an investment shall be governed by the provisions of the Resolution as described in the first paragraph under the caption "Valuation and Sale of Investments" herein.

Nothing in the Resolution shall prevent any Investment Securities acquired as investments of or security for funds held under the Resolution from being issued or held in book-entry form on the books of the Department of the Treasury of the United States.

Nothing in the Resolution shall preclude any Fiduciary from investing or reinvesting monies through its respective trust department; provided, however, that the District may, in its discretion, direct that such monies be invested or reinvested in a manner other than through such respective trust department.

Valuation and Sale of Investments

Obligations purchased as an investment of monies in any Fund or Account created under the provisions of the Resolution shall be deemed at all times to be a part of such Fund or Account. Any profit realized from the liquidation of such investment shall be credited to such Fund or Account, and any loss resulting from the liquidation of such investment shall be charged to the respective Fund or Account.

In computing the amount in any Fund or Account created under the provisions of the Resolution for any purpose provided in the Resolution, investments shall be valued at the then market price (as of the time of valuation) thereof. The accrued interest paid in connection with the purchase of an investment shall be included in the value thereof until interest on such investment is paid. Such computation shall be determined on June 30 and December 31 in each Fiscal Year and at such other times as the District shall determine.

Additional Bonds

One or more Series of Additional Bonds may be authenticated and delivered upon original issuance at any time or from time to time for the purpose of paying all or a portion of the Cost of Construction and Acquisition of a Project. The proceeds, including accrued interest, of the Additional Bonds of each Series shall be applied simultaneously with the delivery of such Bonds as provided in the Supplemental Resolution authorizing such Series. The conditions for the issuance of Additional Bonds to finance the Acquisition and Construction of Additional Facilities include a certificate of an Authorized Officer of the District setting forth (A) for any period of 12 consecutive calendar months within the 24 calendar months preceding the date of the authentication and delivery, the Net Revenues for such period, and (B) the Aggregate Net Debt Service during the same period for which Net Revenues are computed, with respect to all Series of Bonds which were then Outstanding (excluding from Aggregate Net Debt Service any Principal Installment or portion thereof which was paid from sources other than Net Revenues), and showing that the amount set forth in (A) is equal to or greater than 110% of the amount set forth in (B). The conditions for the issuance of Additional Bonds to finance the Acquisition and Construction of Additional Facilities include a certificate of an Authorized Officer of the District setting forth (A) for the last full Fiscal Year of 12 months (ending June 30) immediately preceding the date of the authentication and delivery, the Net Revenues for such period, or, at the option of the District, for the last 12 consecutive full calendar months immediately preceding the date of the authentication and delivery, the Net Revenues for such period, and (B) the estimated maximum Aggregate Net Debt Service in the current or any future Fiscal Year with respect to [i] all Series of Bonds which are then Outstanding and [ii] the Additional Bonds then proposed to be authenticated and delivered (and for this purpose all Series of Bonds Outstanding plus such proposed Additional Bonds shall be treated as a single Series; that is, the maximum Aggregate Net Debt Service shall be computed collectively with respect to all such Bonds, and not computed cumulatively or separately for each particular Series), and showing that the amount set forth in (A) is equal to or greater than 110% of the amount set forth in (B). For purposes of computing the amount set forth in (A), Net Revenues may be increased to reflect the following amounts: [i] any increases in the rates, fees, rents and other charges for services of the System made subsequent to the commencement of such period and prior to the date of such certificate, [ii] any estimated increases in Net Revenues caused by any Project or Projects having been placed into use and operation subsequent to the commencement of such period and prior to the date of such certificate, as if such Project or Projects had actually been placed into use and operation for the entire period chosen in (A) above and [iii] 75% of any estimated increases in Net Revenues which would have been derived from the operation of any Project or Projects with respect to which the Cost of Construction and Acquisition is to be paid from proceeds of the Additional Bonds proposed to be authenticated and delivered, as if such Project or Projects had actually been placed into use and operation for the entire period chosen in (A) above.

Refunding Bonds

One or more Series of Refunding Bonds may be issued at any time to refund [i] Outstanding Bonds of one or more Series or [ii] one or more maturities within a Series of any Bonds. Refunding Bonds shall be issued in a principal amount sufficient, together with other monies available therefor, to accomplish such refunding and to make the deposits in the Funds and Accounts under the Resolution required by the provisions of the Supplemental Resolution authorizing such Bonds.

Refunding Bonds of each Series shall be authenticated and delivered by the Bond Registrar only upon satisfaction of the following conditions (in addition to the other documents required by the Resolution) of: [i] Instructions to the Bond Registrar, satisfactory to it, to give due notice of redemption, if applicable, of all the Bonds to be refunded on a redemption date or dates specified in such instructions, subject to the provisions of the Resolution described hereinafter under the caption "Defeasance"; [ii] if the Bonds to be refunded are not by their terms subject to redemption or will not be redeemed within the next succeeding 60 days, instructions to the escrow agent described in the Resolution, satisfactory to it, to mail the notice provided for in the Resolution described hereinafter under the caption "Defeasance" to the Holders of the Bonds being refunded; [iii] either (a) cash (including cash withdrawn and deposited pursuant to the Resolution as described herein under the captions "Bond Fund - Debt Service Account" and "Bond Fund - Reserve Account," respectively) in an amount sufficient to effect payment at the applicable Redemption Price of the Bonds to be refunded, together with accrued interest on such Bonds to the redemption date, which monies shall be held by the escrow agent described in the Resolution or any one or more of the Paying Agents in a separate account irrevocably in trust for and assigned to the respective Holders of the Bonds to be refunded or (b) Investment Securities in such principal amounts, of such maturities, bearing such interest, and otherwise having such terms and qualifications and any monies, as shall be necessary to comply with the provisions of the Resolution as described herein under the caption "Defeasance", which Investment Securities and monies shall be held in trust and used only as provided in the Resolution described hereinafter under the caption "Defeasance"; and [iv] such further documents and monies as are required by the provisions of the Resolution or any Supplemental Resolution adopted pursuant to the Resolution.

The proceeds, including accrued interest, of the Refunding Bonds of each Series shall be applied simultaneously with the delivery of such Bonds for the purposes of making deposits in such Funds and Accounts under the Resolution as shall be provided by the Supplemental Resolution authorizing such Series of Refunding Bonds and shall be applied to the refunding purposes thereof in the manner provided in such Supplemental Resolution.

Subordinated Debt

The District may, at any time, or from time to time, issue debt or enter into a contract, lease, installment sale agreement or other instrument or lend credit to or guarantee debts, claims or other obligations of any person for any of its corporate purposes payable out of, and which may be secured by a pledge of, such amounts as may from time to time be available for the purpose of payment thereof; provided, however, that such pledge shall be, and shall be expressed to be, subordinate and junior in all respects to the pledge and lien created by the Resolution as security for the Bonds.

Creation of Liens; Sale and Lease of Property

The District shall not issue any bonds, notes, debentures or other evidences of indebtedness of similar nature, other than the Bonds, payable out of or secured by a pledge or assignment of the Pledged Property and shall not create or cause to be created any lien or charge on the Pledged Property; provided, however, that nothing contained in the Resolution shall prevent the District from issuing, if and to the extent permitted by law [i] evidences of indebtedness (a) payable out of monies in the Construction and Acquisition Fund as part of the Cost of Construction and Acquisition of the System or (b) payable out of, or secured by a pledge or assignment of, Revenues to be received on and after such date as the pledge of the Pledged Property provided in the Resolution shall be discharged and satisfied as provided in the Resolution or [ii] Subordinated Debt.

Facilities of the System shall not be sold, leased, mortgaged or otherwise disposed of, except as follows: A. The District may sell or exchange at any time and from time to time any property or facilities constituting part of the System, at such consideration as the District in its sole discretion deems reasonable or appropriate under all the circumstances, but only if it shall determine that ownership by the District of such property or facilities is not necessary or is not material for the purposes of the District in the operation of the System as a whole; or B. The District may lease or make contracts or grant licenses for the operation of, or make arrangements for the use of, or grant easements or other rights with respect to, any part of the System, provided that any such lease, contract, license, arrangement, easement or right [i] does not materially impede the operation by the District or its agents of the System and [ii] does not materially impair or adversely affect the rights or security of the Bondholders under the Resolution.

Operation and Maintenance of System

The District shall at all times use its best efforts to operate or cause to be operated the System properly and in an efficient and economical manner, and shall use its best efforts to maintain, preserve and keep the same or cause the same to be so maintained, preserved and kept, with the appurtenances and every part and parcel thereof, in good repair, working order and condition, and shall from time to time make or cause to be made, all necessary and proper repairs, replacements and renewals so that at all times the operation of the System may be properly and advantageously conducted. In rendering any report, certificate or opinion requested pursuant to the Resolution, an Authorized Officer of the District may rely upon information, certificates, opinions or reports required to be provided by others pursuant to the Resolution, and upon other sources which an Authorized Officer of the District considers reliable, and other considerations and assumptions as deemed appropriate by an Authorized Officer of the District.

Annual Budget

On or before the first day of each Fiscal Year commencing with the Fiscal Year beginning July 1, 1993, the District shall prepare and adopt an Annual Budget for operating purposes for the ensuing Fiscal Year and will furnish copies thereof to any holder of any Bond. Said Annual Budget shall set forth in reasonable detail the estimated Revenues and Operating Expenses and other anticipated expenditures relating to the System for such Fiscal Year. Following the end of each fiscal quarter and at such other times as the District shall determine, the District shall review its estimates set forth in the Annual Budget for such Fiscal Year, and if a material change has occurred in such estimates, the District also may at any time adopt an amended Annual Budget for the remainder of the then current Fiscal Year.

Rents, Rates, Fees and Charges

The District shall fix, establish, maintain and collect rates, fees, rents and charges for services of the System, which, together with other "Available Revenues" (as hereinafter defined) are expected to produce Available Revenues which will be at least sufficient for each Fiscal Year to pay the sum of: [a] an amount equal to 110% of the Aggregate Net Debt Service for such Fiscal Year; and [b] the amount, if any, to be paid during such Fiscal Year into the Reserve Account in the Bond Fund (other than amounts required to be paid into such Account out of the proceeds of Bonds); and [c] all Operating Expenses for such Fiscal Year as estimated in the Annual Budget; and [d] to the extent not included in the foregoing, an amount equal to the debt service on the Senior Subordinated Debt, any other Subordinated Debt or other debt of the District for such Fiscal Year computed as of the beginning of such Fiscal Year; and [e] amounts necessary to pay and discharge all charges or liens payable out of the Available Revenues when due and enforceable.

For purposes of the preceding paragraph, "Available Revenues" means (i) revenues from all rates, rents and charges and other operating income derived or to be derived by the District from or for the operation, use or services of the System, (ii) any other amounts received from any other source by the District and pledged by the District as security for the payment of Bonds and (iii) interest received or to be received on any moneys or securities held pursuant to the Resolution and paid or required to be paid into the Revenue Fund or required to be retained in the Debt Service Account in the Bond Fund or transferred to the Debt Service Account in the Bond Fund. "Available Revenues" will exclude, however, any interest income which is capitalized pursuant to generally accepted accounting principles and the enterprise basis of accounting for governmental enterprises, as promulgated by the Governmental Accounting Standards Board, and governmental grants, in-kind contributions of assets and any assessments levied by the District to the extent that such grants, in-kind contributions and assessments are not recognized as operating revenues, other revenues or extraordinary gains pursuant to generally accepted accounting principles for governmental enterprises, as promulgated by the Governmental Accounting Standards Board. Nothing herein under this caption or in the definition of "Available Revenues" for purposes of the covenant described in the preceding paragraph, shall be construed so as to prohibit the District from taking into account interest earned on moneys or securities held under the Resolution, and other income available or expected to be available in the ordinary course for the payment of Debt Service pursuant to the Resolution, in calculating Aggregate Net Debt Service on the Bonds for any calculation period for purposes hereof or otherwise, nor prohibit the District from taking into account interest earned on moneys or securities held under any Resolution or indenture or similar document adopted or entered into in connection with an issuance of Subordinated Debt, and other income available or expected to be available in the ordinary course for the payment of debt service on Subordinated Debt, in calculating debt service payable on Subordinated Debt for any calculation period for purposes hereof or otherwise.

Promptly upon [i] any material decrease in the Revenues anticipated to be produced by any rates, fees, rents or charges or any later review thereof, [ii] any material increase in expenses of operation of the System not contemplated at the time of adoption of the rates, fees, rents and charges then in effect or any later review thereof or [iii] any other material change in the circumstances which were contemplated at the time such rates, fees, rents and charges were most recently reviewed, but not less frequently than once every 12 months, the District shall review the rates, fees, rents and charges so established and shall promptly establish or revise such rates, fees, rents and charges as necessary to comply with the foregoing requirements, provided that such rates, fees, rents and charges shall in any event produce Revenues sufficient, together with other Revenues, if any, available therefor, to enable the District to comply with all its covenants under the Resolution.

In estimating Aggregate Debt Service or Aggregate Net Debt Service on any Variable Interest Rate Bonds for purposes of the first paragraph under this caption, the District shall be entitled to assume that such Variable Interest Rate Bonds will bear such interest rate or rates as the District shall determine; provided, however, that the interest rate or rates assumed shall not be less than the interest rate borne by such Variable Interest Rate Bonds at the time such estimate is made.

Insurance

Maintenance of Insurance.

The District shall provide protection for the System to the extent necessary to properly conduct the business of the System. Said protection may consist of insurance, self-insurance and indemnities. Any insurance shall be in the form of policies or contracts for insurance with insurers of good standing, shall be payable to the District and may provide for such deductibles, exclusions, limitations, restrictions and restrictive endorsements customary in policies for similar coverage issued to entities operating properties similar to the properties of the System.

Application of Insurance Proceeds.

In the event of any loss or damage to the System covered by insurance, the District will, with respect to each such loss, promptly repair, reconstruct or replace the parts of the System affected by such loss or damage to the extent necessary to the proper conduct of the operation of the business of the System, shall cause the proceeds of such insurance to be applied for that purpose to the extent required therefor, and pending such application shall hold the proceeds of any insurance policy covering such damage or loss in trust to be applied for that purpose to the extent required therefor. Any excess insurance proceeds received by the District shall be transferred to the Revenue Fund.

Accounts and Reports

The District shall keep or cause to be kept proper books of record and account (separate from all other records and accounts) in which complete and correct entries shall be made of its transactions relating to the System and each Fund and Account established under the Resolution and which, together with all other books and papers of the District, including insurance policies, relating to the System, shall at all times be subject to the inspection of the Bondholders and the Holders of an aggregate of not less than ten percent (10%) in principal amount of the Bonds then Outstanding or their representatives duly authorized in writing .

The District shall annually, within 180 days after the close of each Fiscal Year commencing with the Fiscal Year ending June 30, 1993, prepare an audit for such Fiscal Year, accompanied by a certificate of an Accountant relating to the System which shall include the following statements in reasonable detail: a statement of assets and liabilities as of the end of such Fiscal Year; and a statement of Revenues and Operating Expenses for such Fiscal Year. Such Certificate shall state whether or not, to the knowledge of the signer, the District is in default with respect to any of the covenants, agreements or conditions on its part contained in the Resolution, and if so, the nature of such default.

The reports, statements and other documents required pursuant to any provisions of the Resolution shall be available for the inspection of Bondholders and shall be mailed to each Bondholder who shall file a written request therefor with the District. The District may charge for such reports, statements and other documents, a reasonable fee to cover reproduction, handling and postage.

Tax Covenants Relating to the Internal Revenue Code

The District shall do the following with respect to Bonds which, when initially issued, are the subject of an Opinion of Counsel to the effect that interest thereon is excluded from gross income for Federal income tax purposes pursuant to the Internal Revenue Code of 1986 or any successor thereto (the "Code"): [a] in order to maintain the exclusion of interest on the Bonds from gross income for Federal income tax purposes, and for no other purpose, the District shall comply with the Code; [b] in furtherance of the covenant contained in the preceding paragraph, the District shall make any and all payments required to be made to the United States Department of the Treasury in connection with the Bonds pursuant to Section 148(f) of the Internal Revenue Code; and [c] Notwithstanding any other provision of the Resolution to the contrary, so long as necessary in order to maintain the exclusion from gross income of interest on the Bonds for Federal income tax purposes, the covenants contained in this Section thereon, including any payment or defeasance thereof pursuant to the Resolution as described under the caption "Defeasance" herein.

Events of Default

Each of the following events (being those provided by Section 76.160 of the Kentucky Revised Statutes) is hereby declared an "event of default"; that is, if: [a] payment of the principal of any of the Bonds is not made on the date therein specified for payment thereof, nor within thirty (30) days thereafter, or payment of any installment of interest is not made on the date specified for such payment, nor within thirty (30) days thereafter, or [b] default shall be made in the due and punctual observance or performance of any of the covenants, conditions and agreements on the part of the District, in the Bonds or in the Resolution, or in any pertinent law contained, and such default shall continue for a period of thirty (30) days.

Rights Arising Upon Occurrence of Event of Default

That upon the happening of any event of default specified in the Resolution as described immediately above, the provisions of said Section 76.160 of Kentucky Revised Statutes shall become operative, and the holder or holders of twenty percent (20%) in principal amount or more of the Bonds then Outstanding pursuant to the Resolution may, by an instrument or instruments filed in the office of the County Clerk of Jefferson County, Kentucky, and approved or acknowledged in the same manner as a deed to be recorded, apply to a Judge in the Circuit Court of such County to appoint a trustee to represent all of the Bondholders. Upon such application, such Judge shall appoint a trustee and such trustee may, and upon the written request of the holder or holders of twenty percent (20%) in principal amount or more of the Bonds Outstanding under the Resolution, shall, in his or its name, (a) by mandamus or other suit, action or proceeding at law, or in equity, including mandatory injunction, enforce all rights of the District to collect rates, rentals and other charges adequate to carry out any agreement as to, or pledge of, the revenues and income of the District, and to require the District and its officers to carry out any other agreement with the Bondholders and to perform its and their duties imposed by law; (b) bring suit upon the Bonds; (c) by action or suit in equity require the District to account as if it were the trustee of an express trust for the Bondholders; (d) by action or suit in equity enjoin any acts or things which may be unlawful or in violation of the rights of Bondholders; (e) declare all Bonds due and payable; and (f) pursue any other rights or remedies available at law or in equity. For any Bonds registered in Book-Entry Form, notwithstanding the above definition of "Bondholder," the Paying Agent shall be entitled to rely upon written instructions from a majority of the beneficial owners of the Bonds with reference to consent, if any, required from Holders pursuant to the terms of the Resolution.

Any such trustee, whether or not all Bonds have been declared due and payable, shall be entitled as of right upon application to such Court to the appointment of a receiver, who may enter upon and take possession of the System, or any part or parts thereof, and operate and maintain the same, and collect and receive all rentals, rates, and other charges, and other revenues and income, of the District, thereafter arising therefrom, in the same manner as the District and its officers might do, and shall deposit all such monies in a separate account and apply the same in such manner as such Court shall direct. In any suit, action or proceeding, by the trustee, the fees, counsel fees and expenses of the trustee and of the receiver, if any, shall constitute disbursements taxable as costs. All costs and disbursements allowed by the Court shall be a first charge on any revenue and income derived from the System. Such trustee shall, in addition to the foregoing, have and possess all of the powers necessary or appropriate for the exercise of any functions specifically set forth herein or incident to the general representation of the Bondholders in the enforcement and protection of their rights.

Rights of Insurer

Any other provision of the Resolution to the contrary notwithstanding, and to the extent permitted by law (including the Act), for each particular Series of Bonds or portion thereof that is insured by an Insurer, the exercise by the court appointed trustee or the Bondholders of any rights, powers or privileges granted thereto in the Resolution shall require the written consent of the Insurer, if the Insurer is not then in breach or default of its obligations under its insurance policy.

Bond Registrar; Paying Agents

The Resolution permits the appointment by the District of a Bond Registrar and one or more Paying Agents. Any Paying Agent or Bond Registrar may at any time resign and be discharged of the duties and obligations created by the Resolution by giving at least 60 days written notice to the District and the other Paying Agents or Bond Registrars. Any Paying Agent or Bond Registrar may be removed at any time by an instrument filed with such Paying Agent or Bond Registrar and signed by an Authorized Officer of the District. Any successor Paying Agent or Bond Registrar shall be appointed by the District and shall be a bank or trust company organized under the laws of any state of the United States or a national banking association, having capital stock, surplus and undivided earnings aggregating at least $10,000,000, and willing and able to accept the office on reasonable and customary terms and authorized by law to perform all the duties imposed upon it by the Resolution.

Amendments and Supplemental Resolutions

Any modification or amendment of the Resolution and of the rights and obligations of the District and of the Holders of the Bonds thereunder, in any particular, may be made by a Supplemental Resolution, with the written consent given as provided in the Resolution of [i] the Holders of at least a majority in principal amount of the Bonds Outstanding at the time such consent is given and [ii] if less than all of the Series of Bonds then Outstanding are affected by the modification or amendment, the Holders of at least a majority in principal amount of the Bonds of each Series so affected and Outstanding at the time such consent is given; provided that if such modification or amendment will, by its terms, not take effect so long as any Bonds of any specified like Series and maturity remain Outstanding, the consent of the Holders of such Bonds shall not be required and such Bonds shall not be deemed to be Outstanding for the purpose of any calculation of Outstanding Bonds under this Section. No such modification or amendment shall permit a change in the terms of redemption (including Sinking Fund Installments) or maturity of the principal of any Outstanding Bond or of any installment of interest thereon or a reduction in the principal amount or the Redemption Price thereof or in the rate of interest thereof without the consent of the Holder of such Bond, or shall reduce the percentages or otherwise affect the classes of Bonds the consent of the Holders of which is required to effect any such modification or amendment, or shall change or modify any of the rights or obligations of any Fiduciary without its written assent thereto. For the purpose of this caption, a Series shall be deemed to be affected by a modification or amendment of the Resolution if the same adversely affects or diminishes the rights of the Holders of Bonds of such Series. The District may in its sole discretion determine whether or not, in accordance with the foregoing powers of amendment, Bonds of any particular Series or maturity would be affected by any modification or amendment of the Resolution and any such determination shall be binding and conclusive on the District and all Holders of Bonds.

For any one or more of the following purposes and at any time or from time to time, a Supplemental Resolution of the District may be adopted, which, when adopted, shall be fully effective in accordance with its terms: [l] to close the Resolution against, or provide limitations and restrictions in addition to the limitations and restrictions contained in the Resolution on, the authentication and delivery of Bonds or the issuance of other evidences of indebtedness; or [2] to add to the covenants and agreements of the District in the Resolution, other covenants and agreements to be observed by the District which are not contrary to or inconsistent with the resolutions as theretofore in effect; or [3] to add to the limitations and restrictions in the Resolution, other limitations and restrictions to be observed by the District which are not contrary to or inconsistent with the Resolution as theretofore in effect; or [4] to authorize Bonds of a Series; or [5] to authorize one or more series of Subordinated Debt; or [6] to authorize, in compliance with all applicable law, Bonds of each Series to be issued in the form of coupon Bonds; or [7] to authorize, in compliance with all applicable law, Bonds of each Series to be issued in the form of Bonds issued and held in book-entry form on the books of the District or any Fiduciary appointed for that purpose by the District; or [8] notwithstanding any other provisions of the Resolution, to authorize Bonds of a Series having terms and provisions different than the terms and provisions theretofore provided in the Resolution; or [9] to confirm, as further assurance, any pledge or assignment under, and the subjection to any security interest, pledge or assignment created or to be created by, the Resolution of the Pledged Property and Credit Facilities or other agreements; or [10] to comply with the provisions of any federal or state securities law, including, without limitation, the Trust Indenture Act of 1939, as amended or comply with Section 103 of the Internal Revenue Code of 1986 or 1954, as applicable, as amended, or successor provisions; or [11] to modify any of the provisions of the Resolution in any other respect whatever, provided that [i] such modification shall be, and be expressed to be, effective only after all Bonds of each Series Outstanding at the date of the adoption of such Supplemental Resolution shall cease to be Outstanding and [ii] such Supplemental Resolution shall be specifically referred to in the text of all Bonds of any Series authenticated and delivered after the date of the adoption of such Supplemental Resolution and of Bonds issued in exchange therefore or in place thereof; or [12] to cure any ambiguity, defect or inconsistency provided that there is no material adverse impact on Bondholders.

Consent of the Insurer When Consent of Bondholder Required; Notice

The Insurer, and not the registered Holders thereof, shall be deemed to be the Holder of Bonds of any Series as to which it is the Insurer at all times for the purpose of giving any approval or consent to the execution and delivery of any Supplemental Resolution or any amendment, change or modification of the Resolution which, as specified in the Resolution, requires the written approval or consent of the Holders of at least a majority in aggregate principal amount of Bonds of such Series at the time Outstanding. In such cases where the consent of the Insurer shall be necessary pursuant to the Resolution for the execution of a particular amendment, the District shall be required to send a copy of such amendment to S&P's. In addition, in such cases where the consent of the Insurer shall not be necessary pursuant to the Resolution for the execution of a particular amendment, the District shall provide the Insurer with written notice of such amendment prior to or within a reasonable time after the execution thereof.

Defeasance

If the District shall pay or cause to be paid, or there shall otherwise be paid, to the Holders of all Bonds the principal or Redemption Price, if applicable, and interest due or to become due thereon, at the times and in the manner stipulated in the Bonds and in the Resolution, then the pledge of the Pledged Property and all covenants, agreements and other obligations of the District to the Bondholders, shall thereupon cease, terminate and become void and be discharged and satisfied.

Bonds or interest installments, or portions thereof, for the payment or redemption of which monies shall have been set aside and shall be held in trust by the Paying Agents (through deposit by the District of funds for such payment or redemption or otherwise) at the maturity or redemption date thereof shall be deemed to have been paid within the meaning and with the effect expressed in the Resolution. Subject to the provisions of the Resolution, any Outstanding Bonds shall prior to the maturity or redemption date thereof be deemed to have been paid within the meaning and with the effect expressed in the Resolution if the following conditions are met: (a) if any of such Bonds are to be redeemed on any date prior to their maturity, the District shall have instructed the Bond Registrar to mail as provided in the Resolution notice of redemption of such Bonds (other than Bonds which have been purchased or otherwise acquired by the District and delivered to the Bond Registrar as hereinafter provided prior to the mailing of notice of redemption), (b) there shall have been deposited with an escrow agent either cash (including amounts, if any, withdrawn and deposited pursuant to the Resolution as described herein under the captions "Bond Fund--Debt Service Account" and "Bond Fund--Reserve Account") in an amount which shall be sufficient, or Defeasance Obligations (including any Defeasance Obligations issued or held in book-entry form on the books of the Department of the Treasury of the United States) the principal of and the interest on which when due will provide cash which, together with any other cash on deposit with the escrow agent, shall be sufficient, to pay when due the principal or Redemption Price, if applicable, and interest due and to become due on the Bonds on or prior to the redemption date or maturity date thereof, as the case may be and (c) if the Bonds are not by their terms subject to redemption within the next succeeding 60 days, the District shall have instructed the Bond Registrar to mail a notice to the Holders of such Bonds to be paid or redeemed, that the deposit required by (b) above has been made and that the Bonds are deemed to have been paid in accordance with this Section and stating the maturity or redemption date upon which monies are expected to be available for the payment.

Such escrow agent shall, as and to the extent necessary, apply amounts held by it pursuant to this Section to the retirement of Bonds in amounts equal to the unsatisfied balances (determined as provided in the Resolution as described herein under the caption "Bond Fund--Debt Service Account") of any Sinking Fund Installments with respect to such Bonds, all in the manner provided in the Resolution. The escrow agent shall, if so directed by the District prior to the maturity or redemption date, as applicable, of Bonds deemed to have been paid in accordance with the provisions of the Resolution described under this caption, apply cash, redeem or sell Defeasance Obligations so deposited with such escrow agent and apply the proceeds thereof, together with any cash on deposit with the escrow agent, to the purchase of such Bonds (and the Bond Registrar shall immediately thereafter cancel all such Bonds so purchased and delivered to it); provided, however, that the cash and Defeasance Obligations remaining on deposit with such escrow agent after the purchase and cancellation shall be sufficient to pay when due the principal or Redemption Price, as applicable, and interest due or to become due on all remaining Bonds in respect of which such cash and Defeasance Obligations are being held by such escrow agent on or prior to the redemption date or maturity date thereof, as the case may be. Except as otherwise provided in the Resolution, neither Defeasance Obligations nor cash deposited with such escrow agent pursuant to the Resolution nor principal or interest payments on any such Defeasance Obligations shall be withdrawn or used for any purpose other than, and shall be held in trust for, the payment of the principal or Redemption Price, as applicable, and interest on the Bonds with respect to which such cash and Defeasance Obligations have been deposited. Any excess cash received from such principal or interest payments on such Defeasance Obligations shall be paid over to the District as received by such escrow agent, free and clear of any trust, lien or pledge.

Notwithstanding any of the provisions of the Resolution regarding Defeasance, no forward supply contract shall constitute a "Defeasance Obligation" or otherwise be used to refund all or any portion of Bonds which are insured as to the payment of principal and interest by an Insurer, without first obtaining the prior written consent of such Insurer.

APPENDIX B

AUDITED FINANCIAL STATEMENTS FOR THE FISCAL YEAR ENDED JUNE 30, 2018

[This page intentionally left blank.]

Louisville and Jefferson County
Metropolitan Sewer District

COMPREHENSIVE ANNUAL FINANCIAL REPORT

Fiscal Years Ended June 30, 2018 and 2017

msd
Safe, clean waterways

COMPREHENSIVE ANNUAL FINANCIAL REPORT

Louisville/Jefferson County Metropolitan Sewer District
Louisville, Kentucky

A Component Unit of Louisville/Jefferson County Metro Government
Commonwealth of Kentucky

msd
Safe, clean waterways

Fiscal Years Ended June 30, 2018 and 2017

Prepared by the Department of Finance, Louisville MSD
Chad Collier, CFO, Secretary/Treasurer

msd

Safe, clean waterways

TABLE OF CONTENTS

Introductory Section

Financial Section

Statistical Section

Construction continues on the Portland Combined Sewer Overflow Basin located in Lannan Memorial Park.

INTRODUCTORY SECTION

Safe, clean waterways

700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

October 31, 2018

Letter of Transmittal

To the customers and investors of Louisville and Jefferson County Metropolitan Sewer District,

As Controller of Louisville and Jefferson County Metropolitan Sewer District (MSD) it is my pleasure to present the Comprehensive Annual Financial Report (CAFR) for the fiscal year ended June 30, 2018.

Responsibility for the accuracy, completeness and fairness of the data presented herein, including all disclosures, rests with MSD. To provide a reasonable basis for making these representations, the management of MSD has established a comprehensive internal control framework that is designed to both protect its assets from loss, theft, or misuse and to compile sufficient reliable information for the preparation of MSD's financial statements in conformity with Generally Accepted Accounting Principles (GAAP).

MSD's comprehensive framework of internal controls has been designed to provide reasonable rather than absolute assurance that the financial statements will be free from material misstatement. To the best of MSD's knowledge and belief, the accompanying data is accurate in all material respects and is reported in a manner designed to present fairly the financial position and results of the operations of MSD. All disclosures necessary to enable the reader to understand MSD's financial activities have been included. GAAP requires that management provide a narrative to accompany the basic financial statements in the form of Management's Discussion and Analysis which is found beginning on page 3. This letter of transmittal is intended to be read in conjunction with that analysis.

MSD was created in 1946 as a public body corporate and subdivision of the Commonwealth of Kentucky. MSD has complete control, possession and supervision of the sewer and drainage systems within the majority of Louisville Metro, which now comprises all of Jefferson County, Kentucky. Chapter 76 of the Kentucky Revised Statutes authorizes MSD to construct additions, betterments, and extensions within its service area and to recover the cost of its services in accordance with rate schedules adopted by its Board.

MSD is considered a component unit of the Louisville/Jefferson County Metro Government. The Louisville Metro Mayor appoints, with the approval of the Louisville Metro Council, the members to MSD's governing Board, its Executive Director, Chief Engineer and Secretary/Treasurer. The Board, which has statutory authority to enter into contracts and agreements for the management, regulation and financing of MSD, manages its business and activities. The Board has full statutory responsibility for approving and revising MSD's annual budgets, for financing deficits and for disposition of surplus funds. MSD has no special financial relationship with the Louisville Metro Government; however, effective July 1, 2006, MSD began providing free sewer and drainage services to the Metro government. The value of these services in fiscal year 2018 was $6.5 million.

MSD is required by law and by its Revenue Bond Resolution to undergo an annual independent audit of its financial statements. The goal of the independent audit is to provide reasonable assurance that the financial statements of MSD for the fiscal years ended June 30, 2018 and 2017 are free of material misstatement. The independent audit involved examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; assessing the accounting principles used and significant estimates made by management; and evaluating the overall financial statement presentation. The independent auditor's report can be found at the beginning of the financial section of this report.

During fiscal year 2018 one new individual joined MSD's Board of Directors. On November 27, 2017 the Board unanimously confirmed Louisville Metro Mayor Greg Fischer's appointment of Keith Jackson to the MSD Board. Jackson represents Senatorial District 14. Jackson replaced Joyce Horton Mott whose term expired August 31, 2017. His term expires August 31, 2020.

MSD implemented a new Strategic Business Plan in 2014. This Plan marked a transition point for MSD – from a single strategic focus during the past decade on our amended Consent Decree – to a broader focus designed to move us toward our new Vision, Mission, and Core Values as follows:

Our Vision:
Achieving Clean, Safe Waterways for a healthy and vibrant community.

Our Mission:
Providing exceptional wastewater, drainage and flood protection services for our community.

Our Core Values:

Employees: We will work in a safe and respectful manner that promotes collaboration, trust, diversity, quality of work and continuous learning.

Customer Service: We will achieve a premium level of customer satisfaction by serving our customer promptly in a responsive and respectful manner.

Public Education: We will enhance public knowledge of our Mission and responsibilities through open, honest communication with our customers and community stakeholders.

Accountability: We will maintain the highest levels of integrity to ensure the public trust through transparency, financial responsibility and stewardship.

Environment: We will continually improve the environmental quality of our waterways through collaboration with the community and by maintaining infrastructure.

Community: We will advocate on behalf of our community for public health, safety and protection in accordance with our Mission.

Customer Base:
MSD's revenue is derived from sewer and stormwater service charges collected from residential, commercial, and industrial customers. Sewer service charges are distributed to respective customer classes on the basis of actual costs incurred to collect and treat wastewater. For fiscal 2018, 55% of MSD's sewer service charge revenue came from residential customers, 33% came from commercial customers and 12% from industrial customers. MSD also bills for stormwater services using equivalent service units (ESUs). An ESU is defined by MSD as 2,500 square feet of impervious area. For fiscal 2018, 37% of MSD's stormwater service charge revenue came from residential customers, 57% came from commercial customers and 6% from industrial customers.

Louisville Area Employment (numbers in thousands)	June 2018	12-Month % Change
Mining, logging, and construction	28.9	-2.00%
Manufacturing	82.3	0.50%
Trade, transportation, and utilities	151.3	1.10%
Information	9.5	0.00%
Financial activities	45.8	-0.90%
Professional and business services	88.8	4.10%
Education and health services	91.7	-2.30%
Leisure and hospitality	74	0.70%
Other service	28.4	6.80%
Government	74.7	-0.50%
Total nonfarm	675.4	0.60%

Source: U.S. BLS, Current Employment Statistics.

Local Economy:
A study by the University of Louisville Urban Studies Institute (USI) projects Jefferson County will grow by 131,135 people, or 18%, between 2010 and 2040. USI predicts an increase in population within MSD's service area of nearly 12%. This translates to an approximate increase in wastewater flows of 7% during the next 20 years although growth is not expected to be uniform. Population growth outside the core market area (generally defined as the areas surrounding downtown that were not part of the original City of Louisville) is projected to continue at a faster pace than growth inside the core. Jefferson County is projected to gain 65,425 households, a 21% increase, between 2010 and 2040.

Trade and transportation are central to the Louisville economy. Louisville sits at the crossroads of three major Interstate highways, I-64, I-65, and I-71 and is home to the UPS Worldport air hub.

The United States Department of Labor's Bureau of Labor Statistics listed the unemployment rate for Jefferson County as 4.0% in June 2018 which was equal to the United States overall unemployment rate of 4.0% for the same time period. The latest published U.S. Census Bureau statistics lists median household income in Jefferson County as $54,546 (2016 dollars). Additional information on demographic and economic conditions for Louisville can be found in the Statistical Section of this report.

Major Initiatives:

- *Consent Decree work:* Twelve years ago MSD began a $979 million effort to eliminate sanitary sewer overflows and reduce combined sewer overflows by 98% in a typical rainfall year. Because much of Louisville's sewer system was installed nearly 100 years ago, rainwater can mix with wastewater and overwhelm the pipes. Rain can cause a combination of wastewater and stormwater to overflow into the Ohio River and our local streams. MSD's Consent Decree work addresses this issue and will be complete by the end of 2024.

  Underground storage basins and the Waterway Protection Tunnel are part of MSD's larger endeavor to prevent sewage from overflowing into Louisville's waterways. The basins and tunnel are designed to capture rainwater and sewage which would otherwise overwhelm the sewer system during rain events and flow untreated into our waterways. These underground storage areas retain the mixture of rainwater and sewage until the rain subsides and system capacity is available. Water is then conveyed to one of MSD's Water Quality Treatment Centers, treated, and returned to our local streams or the Ohio River.

- *Waterway Protection Tunnel Expansion:* MSD's project to build a tunnel 18 stories underground to keep millions of gallons of sewage out of the Ohio River and Beargrass Creek will be expanded to capture even more wastewater and stormwater overflow. The Waterway Protection Tunnel was initially planned to be 2.5 miles long. On July 23, 2018 the MSD Board of Directors approved a change order which will extend the tunnel to about 4 miles total. The total storage capacity of the tunnel will increase to 55 million gallons. The extension of the tunnel will replace the planned 8.5 million gallon storage basin at Lexington and Grinstead. When the tunnel project is complete the above-ground "leave behind" will include a new public green space to serve as a trailhead for the Beargrass Creek Trail, complete with parking, paths, trails, rain garden and a wetland preservation area.

- *Emergency Repair Work:* MSD maintains more than 3,300 miles of sewer lines and many date back 100 years or more. In the past 12 months MSD has responded to more than 1,100 cave-ins across the community. Following a cave-in of the Ohio River Interceptor (ORI) at Main and Hancock streets in 2016, MSD conducted extensive video and laser inspections of the ORI pipe. The ORI carries 40 percent of the city's daily wastewater flow to MSD's Morris Forman Water Quality Treatment Center. The inspection revealed significant portions of the concrete and rebar in the Fourth to Seventh street section had worn away due to corrosion by sewer gases, reducing the structural integrity of the pipe. As a result, a $20 million repair project was started in June 2018 to build a "pump-around" system to remove wastewater flow from the damaged section of the pipe so that workers can go underground and make repairs from within the 7-foot wide pipe. The interior of the pipe will be lined with corrosion-resistant PVC panels fit together by hand and sealed to the unique shape of the pipe itself eliminating the need to close and excavate Main Street.

  Concurrently to work on the ORI, a section of the sewer running under Broadway collapsed. This pipe has experienced similar failures in different locations as recently as 2015, 2014 and 2009. Large portions of the sewer under Broadway, in the heart of downtown, are made of brick dating back to 1866. The structure begins to unravel when just one or two bricks start to fail. Work is also underway to repair this broken section of pipe.

  MSD must address the safety and health hazards presented by the types of emergencies described above and strives to do so in a manner that minimizes disruption to the area. MSD has an annual fund to help cover emergency work but it is not enough for these 2 major projects. That means other non-essential projects are postponed. Despite the improvements underway, Louisville still has pressing needs for public health and safety. In 2017 MSD completed an extensive analysis of the wastewater, stormwater and flood protection systems that protect the community and identified the critical needs in these areas in our 20-year Critical Repair and Reinvestment Plan (CRRP). These solutions come with a big price tag - $4.3 billion over the next 20 years. Until the federal requirements for the Consent Decree projects are completed, MSD is unable to start the CRRP work without additional funding.

- *2018 Flooding Event*: On February 12, 2018, the Ohio River level started to climb. By February 23rd all 16 of MSD's flood pumping stations were in full service and 150 floodgates had been closed. On February 24th the Louisville area was inundated with heavy rains. River levels rose 2.3 feet over the span of 12 hours. The resulting flooding ranked among the 10 worst floods in Louisville's history. Forty billion gallons of rain fell across the city over a five day period. While all of MSD's flood pumping stations remained in operation during the flooding event, some pumps experienced damage due to their age and the extreme amount of stormwater. Other stations sustained damage due to flooding in their lower levels. Evaluation and repair of the flood protection system is ongoing and MSD is working both with its insurance provider and FEMA on claims for the damages.

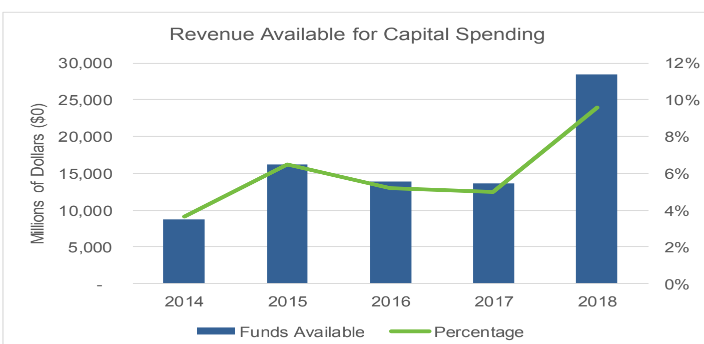
- *Rate Increase:* MSD's Board approved a 9.9% rate increase on May 29, 2018 to support the CRRP improvements for community health and safety. However, Louisville's Metro Council approval is required for any rate increase greater than 7%. MSD was unable to obtain a sponsor from Metro Council for this increase which marked the third year in a row MSD has pursued a rate increase larger than 7% and the third time Metro Council has not taken up the issue.

  On July 25, 2018 the MSD Board approved a rate increase of 6.9 percent for wastewater, drainage and EPA surcharges fees on all bills effective August 1, 2018. The average monthly residential wastewater bill (based on 5,000 gallons per month) increased by \$3.23 from \$46.87 to \$50.10. Monthly stormwater drainage fees increased by \$0.64 from \$9.26 to \$9.90. On the same date the Board approved MSD's capital budget for fiscal 2019 of \$202 million. This budget is scaled to meet MSD's Consent Decree requirements and address other infrastructure needs within the financial constraints of the current rate increase.

- *One Water Initiative:* In 2015 the Board of MSD and the Board of Waterworks of the Louisville Water Company (LWC) entered into an inter-local agreement (ILA) which was approved by the Kentucky Attorney General. This ILA is known as One Water and its purpose is to capitalize on synergies between MSD and LWC. One Water's major initiatives center on cost reduction, revenue enhancement and service improvement. The ILA established a One Water Board of Directors comprised of two members of the Board of Waterworks, two members of the MSD Board of Directors, and one member of Louisville/Jefferson County Metro Government. In fiscal 2018, LWC and MSD shared services in the following departments: Information Technology, Fleet, Customer Service, Procurement, Communications, Education and Engineering. A strategic plan for the One Water effort was developed in the summer of 2018 to provide direction for the future of One Water. The strategic plan will be focused on people, innovation, revenue and efficiency.

Financial Planning:
MSD is focused on continuously strengthening its financial position through planning and analysis in order to meet its short-term and long-term operational and infrastructure plans.

MSD's short-term plan looks forward five years at a time. Formalized budgets are developed and approved annually by the Board for operating and capital spending. Budgets are developed with an eye toward maintaining operational efficiency and achieving incremental improvement of MSD's critical debt service coverage and debt to operating ratios.



Funding for the capital program consists of proceeds from issuance of debt along with funds available from operations (total revenue less operating expenses and debt service payments). MSD has focused for the last several years on increasing the amount of funds available from operations to increase capital spending. The chart to the right highlights the success of this effort and illustrates MSD's operational efficiency.

MSD's long term financial planning window is 20 years and is supported by the 20 year CRRP and a 20 year comprehensive financial model. The financial model enables MSD to analyze alternative scenarios in order to optimize resources in the face of competing priorities. Rate adjustments are carefully considered in conjunction with bond issues and other financing options with an eye toward maintaining affordability for the ratepayer. Key long term considerations are debt service coverage, maintaining level debt service payments, and maintaining adequate cash reserves.

Awards
The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to MSD for its comprehensive annual financial report (CAFR)

for the fiscal year ended June 30, 2017. This was the 28th consecutive year that MSD has achieved this prestigious award. In order to be awarded a Certificate of Achievement, MSD must publish an easily readable and efficiently organized CAFR. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current CAFR continues to meet the Certificate of Achievement Program's requirements and we will submit it to GFOA to determine its eligibility for another certificate.

Acknowledgements

The Finance department of Louisville MSD has worked hard to produce the 2018 CAFR and I would like to thank them for their individual contributions. I would also like to take this opportunity to thank the MSD Board of Directors and the Executive Leadership Team for their continued support.

Respectfully Submitted,

Brad Good
Controller

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

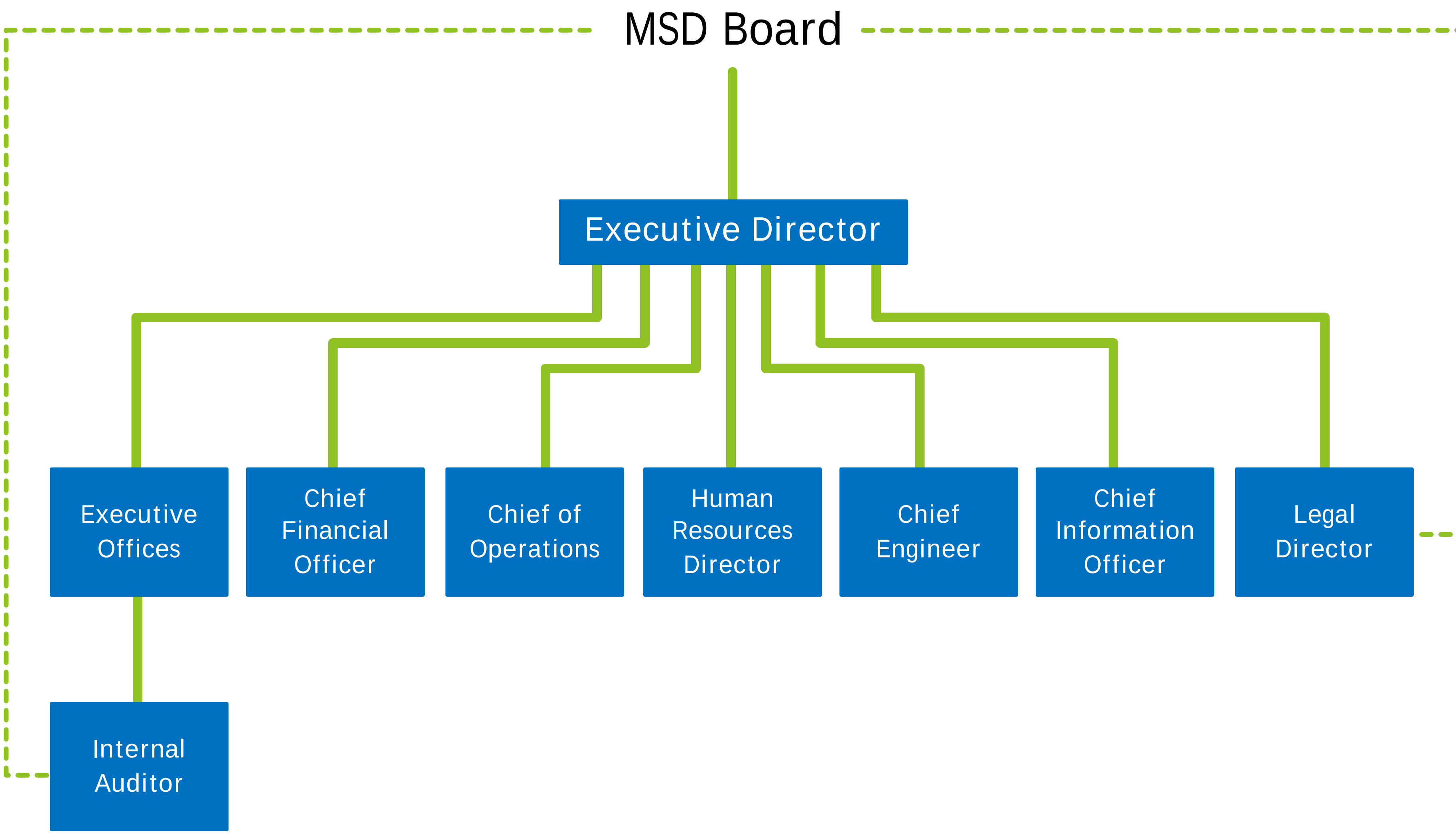
Louisville and Jefferson County
Metropolitan Sewer District
Kentucky

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

June 30, 2017

Christopher P. Morrill

Executive Director/CEO


MSD Board
Executive Director
Executive Offices
Chief Financial Officer
Chief of Operations
Human Resources Director
Chief Engineer
Chief Information Officer
Legal Director
Internal Auditor

Cyndi Caudill
Chair

Dan Arbough
Vice Chair

Andrew Bailey

Keith Jackson

John Phelps

JT Sims

Jason Williams

Marita Willis

James A. Parrott
Executive Director

Angela Akridge
Chief Engineer

Brian Bingham
Chief of Operations

Chad Collier
Chief Financial Officer
Secretary/Treasurer

Lynne Fleming
Human Resources
Director

M. Tom Luckett
One Water
Chief Information Officer

Paula Middleton Purifoy
General Counsel and
Legal Director

Financial Section

The sun rises over MSD's Floyds Fork Water Quality Treatment Facility, which is located in Beckley Creek Park.

FINANCIAL SECTION

Crowe LLP
Independent Member Crowe Global

INDEPENDENT AUDITOR'S REPORT

Board of Directors
Louisville and Jefferson County Metropolitan Sewer District
Louisville, Kentucky

Report on Financial Statements

We have audited the accompanying financial statements of the Louisville and Jefferson County Metropolitan Sewer District, a component unit of the Louisville-Jefferson County Metro Government, as of and for the years ended June 30, 2018 and 2017, and the related notes to the financial statements, which collectively comprise the Louisville and Jefferson County Metropolitan Sewer District's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

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

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Louisville and Jefferson County Metropolitan Sewer District, as of June 30, 2018 and 2017, and the changes in financial position and cash flows thereof for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matter

As discussed in Note 1 to the financial statements, during the year ended June 30, 2018, the Board adopted new accounting guidance, GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits other than Pensions*, which resulted in a restatement of the Louisville and Jefferson County Metropolitan Sewer District's July 1, 2017 net position in the amount of ($23,201,301). Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis on pages 3 through 11, the Schedule of Proportionate Share of the Net Pension Liability on page 48, and the Schedule of Pension Contributions on page 49, the Schedule of Proportionate Share of the Net OPEB Liability on page 50, and the Schedule of OPEB Contributions on page 51 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Louisville and Jefferson County Metropolitan Sewer District's basic financial statements. The introductory and statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements. The introductory and statistical sections have not been subjected to the auditing procedures applied in the audits of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by Governmental Auditing Standards

In accordance with *Government Auditing Standards,* we have also issued our report dated October 31, 2018 on our consideration of the Louisville and Jefferson County Metropolitan Sewer District's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the 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 Louisville and Jefferson County Metropolitan Sewer District's internal control over financial reporting and compliance.

Crowe LLP

Crowe LLP

Louisville, Kentucky
October 31, 2018

The management of Louisville and Jefferson County Metropolitan Sewer District (MSD) present this Management's Discussion and Analysis (MD&A) for the fiscal year ended June 30, 2018 and 2017. This narrative provides the reader with condensed comparative financial data, an analysis of the results of our operations, a description of capital asset and long term debt activity, and a discussion of future economic factors that will impact our operations. This MD&A is intended to be read in conjunction with the financial statements immediately following this section.

FINANCIAL HIGHLIGHTS

- Total net position increased from fiscal 2017 to fiscal 2018 by $40.2 million, or 6.0%, including an increase in unrestricted net position of $32.9 million.

- Total assets and deferred outflows of resources increased $244.7 million, or 8.0%, from fiscal 2017 to fiscal 2018.

- Operating revenues increased in fiscal 2018 by $19.5 million, or 7.5% primarily due to a rate increase of 6.9% effective August 1, 2017.

- Service and Administrative expenses increased in fiscal 2018 by $6.1 million, or 7% excluding the impact of GASB Statement No. 68 and GASB Statement No. 75. This increase was driven by higher electric expenses and labor costs.

- MSD refunded $106.3 million in long-term debt in fiscal 2018 reducing future debt service payments by $18 million over the next 20 years.

OVERVIEW OF THE FINANCIAL STATEMENTS

MSD uses the accrual basis of accounting to prepare its financial statements wherein revenues are recorded when earned and expenses are recorded at the time a liability is incurred. MD&A serves as a narrative introduction to the financial statements which consist of the following parts:

Statement of Net Position: This statement includes all of MSD's assets, liabilities and deferred outflow and inflow of resources. It provides information about the nature and amounts of investments in assets and the obligations to creditors. In addition, it provides the basis for computing rate of return, evaluating the capital structure of MSD and assessing the liquidity and financial flexibility of the organization.

Statement of Revenues, Expenses and Changes in Net Position: This statement identifies the revenues generated and expenses incurred during the fiscal year and helps the user to assess the financial efficiency of MSD during the time period for which the statement relates.

Statement of Cash Flows: This statement provides information related to MSD's cash receipts and cash expenditures during the fiscal year. It reports cash receipts, cash payments, and net changes in cash resulting from operations, investing, and financing activities.

Notes to the Financial Statements: The notes contain descriptions of the policies underlying the amounts displayed in the financial statements along with other information that is essential to a full understanding of the data provided in the financial statements.

Required Supplementary Information: Information is presented related to MSD's pension and Other Post-Employment Benefits (OPEB) including annual contributions made to the plans and annual investment returns.

Other supplemental information is presented for comparative analysis and is not part of the basic financial statements:

Statistical Section: Ten years of financial statement information, operating indicators, and demographic information is presented for comparative analysis.

STATEMENT OF NET POSITION

MSD's net position increased $40.2 million, or 6.0%, in fiscal 2018 (see Figure 1). The largest portion of MSD's net position is its net investment in capital assets. Capital asset construction and acquisitions were funded by a $175 million 2017 bond issue[1], cash generated from operations, and Contributions in Aid of Construction from developers. Funds restricted for a specific purpose by bond covenants are classified as restricted net position. MSD is required to make monthly transfers to its Debt Service Accounts sufficient to meet the semi-annual debt service payments on outstanding bonds. MSD also maintains Debt Reserve Accounts equal to the maximum annual debt service requirements on its senior lien obligations. Restricted net position decreased $10.2 million from fiscal 2017 to fiscal 2018 due to an increase in liabilities associated with restricted debt service. The remaining balance of MSD's net position is unrestricted and may be used for any allowable purpose. Unrestricted net position increased $32.9 million from fiscal 2017 to fiscal 2018 primarily from funds provided by operations.

Total assets and deferred outflows of resources increased by $244.7 million in fiscal 2018. This overall increase can be attributed primarily to additions to plant, lines and other facilities which were financed by the issuance of $175 million in revenue bonds.

Total liabilities and deferred inflows of resources increased by $204.5 million due to the senior debt issued in fiscal 2018 and an increase in the net pension and OPEB liabilities.

FIGURE 1 - CONDENSED NET POSITION INFORMATION				2018-2017		2017-2016	
(amounts in thousands)	FY 2018	FY 2017	FY 2016	Increase (Decrease)	% Change	Increase (Decrease)	% Change
Unrestricted current assets	$ 109,940	$ 83,085	$ 103,529	$ 26,855	32.3%	$ (20,444)	(19.7%)
Restricted current assets	29,987	42,129	20,378	(12,142)	(28.8%)	21,751	106.7%
Capital assets	2,925,982	2,742,037	2,573,262	183,945	6.7%	168,775	6.6%
Restricted non-current assets	152,438	124,192	149,447	28,246	22.7%	(25,255)	(16.9%)
Other non-current assets	32,221	32,768	29,457	(547)	(1.7%)	3,311	11.2%
Total assets	3,250,568	3,024,211	2,876,073	226,357	7.5%	148,138	5.2%
Deferred outflows of resources	54,267	35,911	23,708	18,356	51.1%	12,203	51.5%
Total assets and deferred outflows	3,304,835	3,060,122	2,899,781	244,713	8.0%	160,341	5.5%
Current liabilities	16,342	16,550	17,420	(208)	(1.3%)	(870)	(5.0%)
Current liabilities from restricted assets	108,978	82,654	85,186	26,324	31.8%	(2,532)	(3.0%)
Non-current liabilities	2,401,015	2,208,378	2,087,962	192,637	8.7%	120,416	5.8%
Total liabilities	2,526,335	2,307,582	2,190,568	218,753	9.5%	117,014	5.3%
Deferred inflows of resources	69,826	84,052	108,633	(14,226)	(16.9%)	(24,581)	(22.6%)
Total liabilities and deferred outflows	2,596,161	2,391,634	2,299,201	204,527	8.6%	92,433	4.0%
Invested in capital assets, net	580,275	562,784	501,675	17,491	3.1%	61,109	12.2%
Restricted, net	73,447	83,667	84,639	(10,220)	(12.2%)	(972)	(1.1%)
Unrestricted	54,952	22,037	14,266	32,915	149.4%	7,771	54.5%
Total net position	708,674	668,488	600,580	40,186	6.0%	67,908	11.3%
Total liabilities , deferred inflows & net position	$ 3,304,835	$ 3,060,122	$ 2,899,781	$ 244,713	8.0%	$ 160,341	5.5%

2017 Compared to 2016:

The change in MSD's net position was $67.9 million, or 11.3%, in fiscal 2017. The largest portion of MSD's net position is its net investment in capital assets. Capital asset construction and acquisitions were funded by a $150 million 2016 bond issue[2], cash generated from operations, and Contributions in Aid of

[1] See Note 7 – Long-Term Debt
[2] See Note 7 – Long-Term Debt

Construction from developers. Restricted net position decreased $972 thousand from fiscal 2016 to fiscal 2017. Unrestricted net position increased $7.8 million from fiscal 2016 to fiscal 2017.

Total assets and deferred outflow of resources increased by $160.3 million in fiscal 2017. This overall increase can be attributed primarily to additions to plant, lines and other facilities.
Total liabilities and deferred inflow of resources increased by $92.4 million due to the senior debt issued in fiscal 2017[3] and an increase in the net pension and OPEB liabilities. This increase was partially offset as the negative value of the swaps in MSD's portfolio improved during fiscal 2017.

STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION

Operating revenues as of June 30, 2018 were $279.1 million (see Figure 2). This represents an increase of $19.5 million, or 7.5%, in fiscal 2018. The increase in operating revenues was driven by a Board-approved rate increase of 6.9% effective August 1, 2017. Wastewater service charges totaled $210.6 million as of June 30, 2018. This represents an increase of $15.7 million, or 8.0%, from a year ago. The majority of MSD's wastewater customers are billed based on the volume of water used. Because substantially all of MSD's customers are also customers of the Louisville Water Company, all service charges are billed and collected by the Louisville Water Company on behalf of MSD. Stormwater service charges were $63.8 million as of June 30, 2018. This represents an increase of $4.8 million, or 8.3%, from the same period one year ago. Other operating income was $4.6 million in fiscal 2018, which is $1.0 million less than fiscal 2017.

Service and administrative costs[4] increased by $6.1 million in fiscal 2018 from their fiscal 2017 level. Labor cost was 49.0% of gross service and administrative costs in fiscal 2018 compared to 49.5% in fiscal 2017. MSD incurred approximately $500 thousand in additional overtime expenses responding to a February flooding event. Merit increases and reorganizations account for the balance of the labor increase from fiscal 2017 to fiscal 2018. All of MSD's pump stations were placed in service for the flooding event which increased electrical expenses $2 million year over year. Bad Debt expense totaled 1.43% of revenue for fiscal 2018 compared to 1.38% for fiscal 2017. The composition of gross service and administrative costs by major classification for the past three fiscal years is shown in Figure 3 below.

[3] See Note 7 – Long-Term Debt
[4] Excludes GASB 68 Pension Expense and GASB 75 OPEB Expense

FIGURE 2 - CONDENSED STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION INFORMATION

(amounts in thousands)	FY 2018	FY 2017	FY 2016	2018-2017 Increase (Decrease)	2018-2017 % Change	2017-2016 Increase (Decrease)	2017-2016 % Change
Service charges	$274,504	$253,943	$238,480	$ 20,561	8.1%	$ 15,463	6.5%
Other operating income	4,645	5,691	4,810	(1,046)	(18.4%)	881	18.3%
Total operating revenues	279,149	259,634	243,290	19,515	7.5%	16,344	6.7%
Investment income	16,529	14,273	17,891	2,256	15.8%	(3,618)	(20.2%)
Total revenues	295,678	273,907	261,181	21,771	7.9%	12,726	4.9%
Depreciation & amortization expense	77,954	77,156	62,820	798	1.0%	14,336	22.8%
Service and administrative costs	93,800	87,637	87,155	6,163	7.0%	482	0.6%
GASB 68/75 pension expense	10,852	2,512	4,003	8,340	332.0%	(1,491)	(37.2%)
Non-operating expenses	78,728	77,655	73,779	1,073	1.4%	3,876	5.3%
Change in fair value - swaps	(16,317)	(26,072)	22,951	9,755	(37.4%)	(49,023)	(213.6%)
Total expenses	245,017	218,888	250,708	26,129	11.9%	(31,820)	(12.7%)
Income before capital contributions	50,661	55,019	10,473	(4,358)	(7.9%)	44,546	425.3%
Capital contributions	12,726	12,889	5,037	(163)	(1.3%)	7,852	155.9%
Increase (decrease) in net position	63,387	67,908	15,510	(4,521)	(6.7%)	52,398	337.8%
Net position - begininng	668,488	600,580	585,070	67,908	11.3%	15,510	2.7%
Restatement for GASB 75 implementation	(23,201)	-	-	(23,201)	(100.0%)	-	0.0%
Net position - begininng of year, as restated	645,287	600,580	585,070	44,707	7.4%	15,510	2.7%
Net Position - ending	$708,674	$668,488	$600,580	$ 40,186	6.0%	$ 67,908	11.3%

2017 Compared to 2016:

Operating revenues as of June 30, 2017 were $259.6 million. This represents an increase of $16.3 million, or 6.7%, in fiscal 2017. The increase in operating revenues was driven by a Board-approved rate increase of 6.9% effective August 1, 2016. Wastewater service charges totaled $195.0 million as of June 30, 2017. This represents an increase of $11.3 million, or 7.3%, from a year ago. Stormwater service charges were $58.9 million as of June 30, 2017. This represents an increase of $4.0 million, or 7.4%, from the same period one year ago. Other operating income was $5.7 million in fiscal 2017, which is $881 thousand more than fiscal 2016.

Service and administrative costs[5] increased by $482 thousand in fiscal 2017 from their fiscal 2016 level. MSD's employee count, including vacant positions, increased from 607 in fiscal 2016 to 629 full-time equivalent positions in fiscal 2017. Labor cost was 49.5% of gross service and administrative costs in fiscal 2017 compared to 46.9% in fiscal 2016.

[5] Excludes GASB 68 Pension Expense and GASB 75 OPEB Expense

FIGURE - 3 SERVICE AND ADMINISTRATIVE COSTS INFORMATION			
(amounts in thousands)	**FY 2018**	**FY 2017**	**FY 2016**
Labor	$ 64,718	$ 59,183	$ 55,229
Utilities	16,640	14,427	18,256
Materials and supplies	8,647	7,976	4,183
Professional services	3,985	4,127	4,169
Maintenance and repairs	7,208	9,116	10,007
Billing and collections	5,755	5,467	4,853
Chemicals and fuel	5,706	6,375	5,697
Biosolids disposal	2,616	2,651	2,245
All other	17,665	11,142	13,960
Service & administrative costs	132,940	120,464	118,599
Capitalized overhead	(38,147)	(31,949)	(30,516)
Revenue Recoveries	(993)	(878)	(928)
Net service and administrative costs	$ 93,800	$ 87,637	$ 87,155

STATEMENT OF CASH FLOWS

Cash and cash equivalents were $81.7 million at the end of fiscal 2018 which is a decrease of $17.8 million from fiscal 2017 or 18.0% (see Figure 4). Cash flows from operating activities increased as revenue and customer receipts grew. Cash used by financing activities in fiscal 2018 increased primarily as a result of higher proceeds from the bond issue and related bond premiums compared to fiscal 2017. Cash provided by investing activities in fiscal 2018 decreased as investments in in money market funds were reinvested in U.S. agency and treasury securities.

FIGURE 4 - CONDENDSED STATEMENT OF CASH FLOWS INFORMATION				2018-2017		2017-2016	
(amounts in thousands)	**FY 2018**	**FY 2017**	**FY 2016**	**Increase (Decrease)**	**% Change**	**Increase (Decrease)**	**% Change**
Cash flows from:							
Operating activities	$181,561	$173,755	$155,000	$ 7,806	4.5%	$ 18,755	12.1%
Capital and related financing activites	(147,727)	(197,246)	(139,454)	$ 49,519	(25.1%)	$ (57,792)	41.4%
Investing activities	(51,717)	18,941	(9,421)	$ (70,658)	(373.0%)	$ 28,362	(301.1%)
Change in cash and cash equivalents	(17,883)	(4,550)	6,125	(13,333)	293.0%	(10,675)	(174.3%)
Cash and cash equivalents, Beginning of year	99,545	104,095	97,970	$ (4,550)	(4.4%)	$ 6,125	6.3%
Cash and cash equivalents, End of year	$ 81,662	$ 99,545	$104,095	$ (17,883)	(18.0%)	$ (4,550)	(4.4%)

2017 Compared to 2016:

Cash and cash equivalents were $99.5 million at the end of fiscal 2017 which is a decrease of $4.5 million from fiscal 2016 or 4.4%. Cash flows from operating activities increased as revenue and customer receipts grew. Cash used by financing activities in fiscal 2017 increased primarily as a result of debt service payments. Cash provided by investing activities is fiscal 2017 increased as investments in U.S. Agency discount notes were converted to money market funds.

CAPITAL ASSETS

MSD's total capital assets net of depreciation increased by $183.9 million in fiscal 2018 (see Figure 5). Construction in progress contained the biggest increase with $230.8 million of additions offset by $100.3 million of assets placed in service. For more detailed information, see Note 5, Capital Assets – Plant, Lines and Other Facilities, in the accompanying notes to the financial statements.

Depreciation expense was $77.9 million or $797 thousand more than fiscal 2017.

FIGURE 5 - CAPITAL ASSETS NET OF DEPRECIATION

(amounts in thousands)	FY 2018	FY 2017	Increase (Decrease) 2018-2017	FY 2016	Increase (Decrease) 2017-2016
Sewer lines	$ 1,159,110	$ 1,120,151	$ 38,959	$ 1,076,071	$ 44,080
Wastewater treatment facilities	229,950	244,482	(14,532)	262,369	(17,887)
Stormwater drainage facilities	410,390	401,729	8,661	385,410	16,319
Pumping and lift stations	111,902	103,085	8,817	83,979	19,106
Administrative facilities	11,827	13,411	(1,584)	13,652	(241)
Maintenance facilities	1,941	2,119	(178)	2,351	(232)
Machinery and equipment	10,015	7,580	2,435	2,674	4,906
Miscellaneous	2,357	4,150	(1,793)	6,422	(2,272)
Capitalized interest	276,835	264,108	12,727	252,660	11,448
Construction in progress	711,655	581,222	130,433	487,674	93,548
Total	$ 2,925,982	$ 2,742,037	$ 183,945	$ 2,573,262	$ 168,775

2017 Compared to 2016:

MSD's total capital assets net of depreciation increased by $168.8 million in fiscal 2017 (see Figure 5). Construction in progress contained the biggest increase with $215.8 million of additions offset by $122.3 million of assets placed in service. $61.2 million worth of sewer lines were placed into service offset by $17.1 million of additional depreciation.

Depreciation expense was $77.2 million or $14.3 million more than fiscal 2016. This increase was due to $377.9 million in total assets placed into service at the end of fiscal 2016.

DEBT ADMINISTRATION

On August 22, 2017, MSD issued $175 million of revenue bonds, series 2017A. The proceeds of the series 2017A bonds were used to: (i) pay the costs of issuing the series 2017A bonds; (ii) make a deposit to the reserve account; and (iii) make a deposit to the construction and acquisition fund to pay the costs of improvements to MSD's sewer and drainage system.

On August 22, 2017, MSD issued $35.7 million of revenue refunding bonds, series 2017B. The proceeds of the series 2017B bonds, together with certain amounts in the reserve account, were used to: (i) currently refund $42.9 million of outstanding principal amount on MSD's sewer and drainage system revenue bonds, series 2007A, maturing May 15, 2018 through May 15, 2025, the proceeds of which were used to finance the costs of improvements to MSD's sewer and drainage system, and (ii) pay the cost of issuance of the series 2017B bonds. The refunding reduced debt service payments over the next 8 years by $9.5 million and resulted in a net present value savings of $7.8 million.

On May 31, 2018, MSD issued $60.3 million of revenue refunding bonds, series 2018A. The proceeds of the series 2018A bonds, together with certain amounts in the reserve account, were used to: (i) currently refund $63.3 million of outstanding principal amount on MSD's sewer and drainage system revenue bonds, series 2007A, maturing May 15, 2037 through May 15, 2038, the proceeds of which were used to finance the costs of improvements to MSD's sewer and drainage system, and (ii) pay the cost of issuance of the series 2018A bonds. The refunding reduced debt service payments over the next 20 years by $8.4 million and resulted in a net present value savings of $4.5 million.

MSD ended fiscal 2018 with $2.2 billion in outstanding long-term debt compared to $2.1 billion in outstanding long-term debt at the end of fiscal 2017. Additional information on MSD's long-term debt can be found in Note 7 – Long-Term Debt.

Short term debt outstanding payable from restricted assets at the end of fiscal 2018 totaled $108.9 million compared to $82.6 million at the end of fiscal 2017.

Net interest expense totaled $78.7 million in fiscal 2018, an increase of $1.0 million from fiscal 2017.

FIGURE 6 - SCHEDULE OF BONDS AND OTHER FINANCING

(amounts in thousands)	FY 2018	FY 2017	Increase (Decrease) 2018-2017	FY 2016	Increase (Decrease) 2017-2016
Senior Revenue Bonds					
Series 2007A	$ -	$ 42,965	$ (42,965)	$ 44,425	$ (1,460)
Series 2008A	-	65,520	(65,520)	97,860	(32,340)
Series 2009A	6,640	13,040	(6,400)	41,485	(28,445)
Series 2009B	52,975	69,725	(16,750)	136,115	(66,390)
Series 2009C	180,000	180,000	-	180,000	-
Series 2010A	330,000	330,000	-	330,000	-
Series 2011A	250,565	252,610	(2,045)	254,590	(1,980)
Series 2013A	115,790	115,790	-	115,790	-
Series 2013B	115,550	116,940	(1,390)	118,255	(1,315)
Series 2013C	99,500	99,625	(125)	99,750	(125)
Series 2014A	79,850	79,900	(50)	79,950	(50)
Series 2015A	173,735	174,280	(545)	175,000	(720)
Series 2015B	76,685	79,085	(2,400)	81,350	(2,265)
Series 2016A	149,760	150,000	(240)	-	150,000
Series 2016B	28,095	28,095	-	-	28,095
Series 2016C	67,685	67,685	-	-	67,685
Series 2017A	175,000	-	175,000	-	-
Series 2017B	34,520	-	34,520	-	-
Series 2018A	60,380	-	60,380	-	-
Bond Anticipation Notes					
Series 2015A	-	-	-	226,340	(226,340)
Series 2016A	-	226,340	(226,340)	-	226,340
Series 2017A	226,340	-	226,340	-	-
KIA Loan	1,871	1,973	(102)	2,071	(98)
	$ 2,224,941	$ 2,093,573	$ 131,368	$ 1,982,981	$ 110,592

Excludes bond premiums/discounts

2017 Compared to 2016:

On August 30, 2016, MSD issued $150 million of revenue bonds (series 2016A). The proceeds of the series 2016A bonds, net of issuance cost, were used to pay the costs of improvements to MSD's sewer and drainage system.

On August 30, 2016, MSD issued $28.3 million of revenue refunding bonds (series 2016B). The proceeds of the series 2016B bonds net of issuance costs and together with certain amounts in the reserve account, were used to refund in advance of maturity $30.2 million of outstanding principal on MSD's sewer and drainage system revenue bonds, series 2008A. The refunded bonds are considered defeased and the liability was removed from MSD's statement of net position. The refunding will reduce debt service payments over the next 20 years by $7.7 million and resulted in a net present value savings of $5.3 million.

On August 30, 2016 MSD issued $67.7 million of revenue refunding bonds (series 2016C). The proceeds of the series 2016C bonds net of issuance costs and together with certain amounts in the reserve account, were used to refund in advance of maturity $22.3 million of outstanding principal on MSD's sewer and drainage system revenue bonds, series 2009A and $50.6 million of the outstanding principal amount on MSD's sewer and drainage system revenue bonds, series 2009B. The refunded bonds are considered defeased and the liability was removed from MSD's statement of net position. The refunding reduced debt service payments over the next 7 years by $7.7 million and resulted in a net present value savings of $4.7 million.

MSD ended fiscal 2017 with $2.1 billion in outstanding long-term debt compared to $2.0 billion in outstanding long-term debt at the end of fiscal 2016.

Short term debt outstanding payable from restricted assets at the end of fiscal 2017 totaled $82.6 million compared to $85.1 million at the end of fiscal 2016.

Net interest expense totaled $77.7 million in fiscal 2017, an increase of $3.9 million from fiscal 2016.

Debt Service Ratio: Although net operating income is the most significant component of determining MSD's debt service coverage ratio, other sources, including investment income and current period payments of property owner assessments, are also included in "available revenues" and "net revenues" for purposes of demonstrating MSD's compliance with debt service ratio tests from the 1993 Sewer and Drainage System Revenue Bond Resolution.

The 1993 resolution and its supplements require MSD to provide available revenues sufficient to pay 110% of each year's aggregate net debt service on revenue bonds and 100% of operating expenses. Available revenues, as used for purposes of the resolution, means all revenues and other amounts received by MSD and pledged as security for payment of bonds issued pursuant to the resolution, but excludes interest income which is capitalized in accordance with generally accepted accounting principles.

Net operating expenses include all reasonable, ordinary, usual or necessary current expenses of maintenance, repair, and operation determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. Operating expenses do not include reserves for extraordinary maintenance and repair or administrative and engineering expenses of MSD which are necessary or incidental to capital improvements for which debt has been issued and which may be paid from proceeds of such debt.

Aggregate net debt service is debt service on all bonds issued pursuant to the resolution including principal payments, excluding (i) interest expense which, in accordance with generally accepted accounting principles, is capitalized and which may be paid from the proceeds of debt and (ii) other amounts, if any, available or expected to be available in the ordinary course of business for payment of debt service.

MSD's debt service coverage ratio[6], calculated on the foregoing basis, was 190% in 2018, 181% in 2017 and 187% in 2016 (see Figure 7).

[6] Excludes GASB 68 Pension Expense and GASB 75 OPEB Expense

FIGURE 7 - DEBT SERVICE COVERAGE

(amounts in thousands)	FY 2018	FY 2017	Increase (Decrease) 2018-2017	FY 2016	Increase (Decrease) 2017-2016
Total available revenues	$296,912	$275,282	7.9%	$270,025	1.9%
Total net operating expenses	93,800	87,637	7.0%	87,155	0.6%
Net revenue	203,112	187,645	8.2%	182,870	2.6%
Aggregate net debt service	$107,088	$103,699	3.3%	$ 97,592	6.3%
Debt service coverage ratio	190%	181%	4.8%	187%	(3.4%)

FUTURE ECONOMIC FACTORS

The MSD Board approved a 6.9% rate increase for wastewater and stormwater volume and service charges as well as optional and quality charge rates that are assessed to commercial and industrial wastewater customers effective August 1, 2018.

On June 27, 2018 Moody's Investors Service affirmed its Aa3 rating on MSD's outstanding senior revenue bonds. The outlook is stable. According to Moody's, the Aa3 rating reflects the district's large service area and customer base, stable debt service coverage ratio and liquidity levels and high debt burden that will increase with additional borrowing under a new $500 million commercial paper program and remain elevated for the near-to medium-term because of MSD's considerable future capital needs.

On April 24, 2018, S&P Global ratings assigned its AA rating and stable outlook to MSD's series 2018A sewer and drainage system revenue refunding bonds. At the same time they affirmed their AA ratings on MSD's outstanding debt as well as their SP-1+ rating on MSD's series 2017 Bond Anticipation Notes (BANS). According to S&P, these ratings reflect a broad and diverse metropolitan statistical area (MSA), low industry risk, and good operational management practices and policies.

On October 3, 2017 Moody's assigned a MIG 1 rating to MSD's $226.3 million sewer and drainage system subordinated bond anticipation notes, series 2017. Concurrently, Moody's maintained the Aa3 long-term rating and stable outlook on MSD's outstanding debt.

On October 4, 2017 S&P assigned its SP-1+ short-term rating to MSD's $226.3 million sewer and drainage system subordinated bond anticipation notes, series 2017. At the same time, they affirmed their AA long-term rating on MSD's outstanding debt.

CONSENT DECREE

In April 2009, MSD agreed to enter into an amended Consent Decree with the Commonwealth of Kentucky's Environmental and Public Protection Cabinet (KEPPC) and the U.S. Environmental Protection Agency (EPA). The agreement calls for MSD to design and implement projects within specified deadlines that will eliminate sewer overflows in its service area. The cost of the projects is estimated to be $979 million. MSD has submitted plans to finance the projects through additional bonds and future rate increases. In a letter dated June 6, 2014, MSD requested approval from the KEPPC and the EPA for the Integrated Overflow Abatement Plan (IOAP) 2012 Modifications, dated May 2014. The IOAP 2012 Modifications represents a revision to 28 separate projects set forth in the original IOAP, dated September 30, 2009. The IOAP modifications were approved and will supersede and replace the 2009 IOAP. To date, MSD has complied with all submittals and reports requirements contained in the amended Consent Decree. For additional information on the Consent Decree see Note 11 to the financial statements.

REQUESTS FOR ADDITIONAL INFORMATION

This report is intended to provide readers with a general overview of MSD's finances and to provide information regarding the receipts and uses of funds. If you need clarification regarding a statement(s) made in the report or need additional information, please contact the Louisville and Jefferson County Metropolitan Sewer District, 700 West Liberty Street, Louisville Kentucky 40203. You can also submit a request for additional information via MSD's website, www.msdlouky.org.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF NET POSITION
AS OF JUNE 30,
DOLLARS IN THOUSANDS

	2018	2017
Current Assets		
Unrestricted cash and cash equivalents	$ 50,276	$ 42,449
Unrestricted investments	25,080	10,095
Restricted cash and cash equivalents	29,987	19,454
Restricted investments	-	22,675
Accounts receivable, less allowance for doubtful accounts of $1,030 (2018), $1,145 (2017)	26,332	23,480
Inventories	4,407	4,184
Accrued interest receivable	1,116	1,066
Prepaid expenses and other current assets	2,729	1,811
Total current assets	139,927	125,214
Non-current Assets		
Restricted cash and cash equivalents	1,399	37,642
Restricted investments	151,039	86,550
Capital assets - plant, lines and other facilities, net	2,925,982	2,742,037
Other non-current assets	32,221	32,768
Total non-current assets	3,110,641	2,898,997
Total Assets	3,250,568	3,024,211
Deferred Outflow of Resources		
Deferred outflow - pension contributions	27,541	16,499
Deferred outflow - OPEB contributions	9,392	-
Unamortized loss on refunding	17,334	19,412
Total deferred outflow of resources	54,267	35,911
Total Assets and Deferred Outflow of Resources	**$ 3,304,835**	**$ 3,060,122**
Current Liabilities		
Current liabilities (payable from unrestricted assets):		
Accounts payable and accrued expenses	$ 16,342	$ 16,550
Current liabilities (payable from restricted assets):		
Accounts payable and accrued expenses (capital), includes contractor retainage of $14,818 (2018), $14,630 (2017)	47,472	30,764
Accrued interest payable	18,455	15,935
Refundable deposits	2,861	2,300
Current maturities of bonds payable	40,190	33,655
Total current liabilities	125,320	99,204
Non-current Liabilities		
Bonds payable, net	2,047,168	1,905,933
Subordinated debt	228,211	228,313
Net pension liability	93,517	74,132
Net OPEB liability	32,119	-
Total non-current liabilities	2,401,015	2,208,378
Total Liabilities	2,526,335	2,307,582
Deferred Inflow of Resources		
Interest rate swaps	59,443	75,760
Deferred inflow - pension liability	3,832	2,529
Deferred inflow - OPEB liability	1,682	-
Other deferred inflows	4,869	5,763
Total deferred inflow of resources	69,826	84,052
Total Liabilities and Deferred Inflow of Resources	**$ 2,596,161**	**$ 2,391,634**
Net Position		
Net investment in capital assets	$ 580,275	$ 562,784
Restricted net position	73,447	83,667
Unrestricted net position	54,952	22,037
Total net position	708,674	668,488
Total Liabilities, Deferred Inflow of Resources and Net Position	**$ 3,304,835**	**$ 3,060,122**

See the accompanying notes to the financial statements.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
FOR THE YEARS ENDED JUNE 30,
DOLLARS IN THOUSANDS

	2018	2017
Operating Revenues		
Service charges	$ 274,504	$ 253,943
Other operating income	4,645	5,691
Total operating revenues	279,149	259,634
Operating Expenses		
Service and administrative costs	93,800	87,637
GASB 68 pension/GASB 75 OPEB expense	10,852	2,512
Depreciation and amortization	77,954	77,156
Total operating expenses	182,606	167,305
Income from Operations	96,543	92,329
Non-operating Revenue (Expenses)		
Investment income	6,280	4,047
Build America bond refund	10,249	10,226
Interest expense - bonds	(95,041)	(90,117)
Interest expense - swaps	(7,724)	(8,926)
Interest expense - other	(9,873)	(9,317)
Amortization of debt discount / premium	15,198	13,701
Amortization of loss on refunding	(3,147)	(3,070)
Capitalized interest	21,859	20,074
Change in fair value - swaps	16,317	26,072
Total non-operating revenue (expenses) - net	(45,882)	(37,310)
Income before capital contributions	50,661	55,019
Capital contributions	12,726	12,889
Increase in net position	63,387	67,908
Net position, beginning of year	668,488	600,580
Restatement for GASB 75 implementation	(23,201)	-
Net position, beginning of year, as restated	645,287	600,580
Net position, end of year	$ 708,674	$ 668,488

See the accompanying notes to the financial statements.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF CASH FLOWS
FOR THE YEARS ENDED JUNE 30,
DOLLARS IN THOUSANDS

	2018	2017
Cash Flows from Operating Activities		
Cash received from customers	$ 276,711	$ 262,055
Cash paid to suppliers	(49,429)	(48,449)
Cash paid to employees	(45,721)	(39,851)
Net Cash Provided by Operating Activities	181,561	173,755
Cash Flows from Capital and Related Financing Activities		
Proceeds from issuance of debt	401,340	376,340
Premium from sale of bonds	21,894	15,715
Build America bond refund	10,248	10,226
Principal paid on debt	(263,395)	(271,064)
Interest and fees paid on debt	(102,394)	(103,919)
Interest paid on swaps	(7,724)	(8,926)
Proceeds from capital grants	7,183	6,386
Proceeds from sale of capital assets	3	10
Payments for capital assets	(216,503)	(220,892)
Proceeds from assessments	1,621	1,254
Assessments extended	-	(2,376)
Net Cash Provided (Used) by Capital and Related Financing	(147,727)	(197,246)
Cash Flows from Investing Activities		
Change in investments	(56,798)	15,990
Investment income	5,081	2,951
Net Cash Provided (Used) by Investing Activities	(51,717)	18,941
Net Increase (Decrease) in Cash and Cash Equivalents	(17,883)	(4,550)
Cash and Cash Equivalents, Beginning of Year	99,545	104,095
Cash and Cash Equivalents, End of Year	$ 81,662	$ 99,545
Reconciliation of Operating Income to Net Cash provided by Operating Activities		
Income from operations	$ 96,543	$ 92,329
Adjustments to reconcile operating income to net cash provided by operating activities		
Depreciation and amortization	77,954	77,156
Accounts receivable	(2,999)	2,678
Inventories	(223)	26
Prepaid expense	(918)	180
Accounts payable	123	(812)
Customer deposits	561	(257)
Accrued liabilities	(332)	(57)
Pension liability	9,646	2,512
OPEB liability	1,206	-
Net Cash Provided by Operating Activities	$ 181,561	$ 173,755
Non-Cash Capital Financing and Investing Activities		
Contribution of plant, lines and other facilities by developers and property owners	$ 5,542	$ 6,503
Construction costs in accounts payable	47,472	30,764
Change in fair value of investments	1,777	1,924
Decrease in interest rate swap deferred revenue	918	918
Change in fair value - swap agreements	16,317	26,072
Bonds issued for refunding of debt	94,900	96,000

See the accompanying notes to the financial statements.

NOTE 1 – SIGNIFICANT ACCOUNTING POLICIES

The financial statements of the Louisville and Jefferson County Metropolitan Sewer District (MSD), a component unit of Louisville/Jefferson County Metro Government, are prepared in conformity with accounting principles generally accepted in the United States of America as applied to government units. The Governmental Accounting Standards Board (GASB) is the accepted standard-setting body for establishing governmental accounting and financial reporting principles. MSD follows GASB Pronouncements as codified under GASB 62, including electing to report as a regulated operation. MSD uses proprietary fund accounting (enterprise fund). Due to the election as a regulated operation under GASB 62, to meet industry accounting standards and follow transactional intent, MSD uses, as applicable, ASC 980, Regulated Accounting.

Reporting Entity: MSD is a public body corporate, and political subdivision of the Commonwealth of Kentucky. MSD was created in 1946 pursuant to Chapter 76 of the Kentucky Revised Statutes, in the interest of the public health and for the purpose of providing adequate sewer and drainage facilities in the urbanized area of the Louisville Metropolitan Area. Pursuant to Chapter 76, MSD is governed by a Board which consists of eight members who are appointed by the Mayor of Louisville Metro Government, subject to approval of Louisville Metro Council. Not more than five Board members may be of the same political party. However, there is not a continuing supervisory relationship exercised by Louisville Metro Government over MSD with respect to MSD's statutory public functions.

Chapter 76 authorizes MSD to provide sewer and drainage facilities and services. MSD is further authorized by the statute to establish and collect service charges and to budget accordingly for operations and maintenance, capital outlays and debt service on obligations it is authorized by the statute to incur. No special financing relationship exists between Louisville Metro Government and MSD, nor is Louisville Metro Government empowered by law or custom to approve MSD’s operating or capital budgets; nor are they responsible for financing deficits or disposing of surplus funds.

MSD has complete control, possession and supervision of the sewer and drainage system in large portions of Jefferson County, and has statutory authority to construct additions, betterments and extensions within its service area. Additionally, MSD has statutory responsibility for approval of the design and proper construction of sewer and drainage facilities within the County's boundaries. There are cities within the County that, by statute, have the option of using MSD sewer services on a contractual basis. Third and fourth class cities also have the option of obtaining drainage services from MSD. MSD’s enterprise business activities are managed by its Board, which has statutory authority to elect officers, enact bylaws and enter into agreements and contracts for the management and regulation of MSD's affairs.

MSD's revenue is derived from sewer and drainage service charges which are collected from residential, commercial and industrial customers. MSD controls the collection of all revenue, disbursement of payables and title to all sewer and drainage assets. Sewer service charges are distributed among customer classes on the basis of actual costs incurred to collect and treat wastewater. Drainage service charges are distributed among customer classes on the basis of actual costs of drainage services per equivalent unit of impervious surface.

Changes in MSD's service charges are implemented by MSD's Board, but no change in the service charge schedule is final within the Louisville Metro area until approval by Louisville Metro Council. However, the statute provides that such approval may not be arbitrarily withheld and that the schedule shall be sufficient to provide revenues for the operation and maintenance of the system and for debt service. By ordinance, Louisville Metro Government has provided that MSD’s Board may amend its service charge schedule to maintain a debt service ratio of 1.10 for MSD’s sewer and drainage revenue bonds, and that such amendments will be effective within the metropolitan area when adopted by MSD's Board, so long as the amended rates do not generate additional revenue from service charges in excess of 7% during the twelve months succeeding the period in which the deficiency was identified.

Chapter 76 permits MSD to finance sewer and drainage system construction, acquisition and other capital improvements through the issuance of its revenue bonds and with the proceeds of governmental grants, property owner contributions in aid of construction and bonds and loans for which pledge of repayment is subordinated to the pledge of all revenues given by MSD for the security of its revenue bond holders. MSD indebtedness does not constitute indebtedness of Louisville Metro Government or the Commonwealth, but Louisville Metro Government must authorize by ordinance the issuance by MSD of revenue bonds to finance projects within the Metropolitan area.

Basis of Accounting: The sewer and drainage system owned and operated by MSD is accounted for using a flow of economic resources measurement focus. With this measurement focus, all assets and all liabilities associated with the operation of the system are included on the statement of net position. Total net position is segregated into net investment in capital assets, restricted for payment of bond principal and interest and unrestricted. Operating statements present increases (e.g., revenues) and decreases (e.g., expenses) in net position. MSD utilizes the accrual basis of accounting wherein revenues are recorded when earned and expenses are recorded at the time the liability is incurred.

Cash and Cash Equivalents: For purposes of the Statements of Cash Flows, MSD includes repurchase agreements and other investments with an original maturity of three months or less in cash and cash equivalents.

Restricted and Unrestricted Funds: Restricted funds are reserved for the purpose of bond debt service, funding of capital construction, cost of issuance, and debt service reserves. Unrestricted funds, generated from service fees and other operating income, are used to pay for operating expenses. When an expense or outlay is incurred for which both restricted and unrestricted net position is available, it is MSD’s practice is to use revenue from operations to finance construction, then to reimburse from restricted net position for construction as it is needed.

Investment Securities***:*** Investments are stated at fair value. Investment income consists of interest income and the change in fair value of investments[1]. Investment income is reduced by estimated federal arbitrage liability.[2]

Revenues, Expenses and Receivables: Operating revenues are those revenues that are generated directly from the primary activity of MSD. These revenues are wastewater and stormwater service charges and other operating income. The Louisville Water Company is responsible for the billing and collection of these charges on behalf of MSD on a monthly basis. Operating expenses are expenses incurred through the activities of operating and maintaining MSD facilities.

Non-operating revenues and expenses are comprised of investment and financing earnings and costs, changes in the fair value of derivatives, as well as contributions from outside sources.

Accounts receivable are stated at the amount management expects to collect from outstanding customer accounts. Accounts are considered past due 30 days from the invoice date. Management provides an allowance for doubtful account that is based on historical collection experience and a review of the current status of individual accounts. Accounts that remain outstanding after management has exerted reasonable collection efforts are written off through a charge to allowance for doubtful accounts and a credit to accounts receivable.

Assessment receivables represent amounts billed to residents to have sewer lines installed in their neighborhood. Assessment receivables are considered past due once the balance is 90 days in arrears. Management considers all amounts collectible on the basis that liens are placed on properties at the time of assessment.

Inventories: Inventories are stated at the lower of cost (principally weighted average cost) or market. They consist of supplies and parts used in the operation of MSD's treatment plants and for the maintenance of sewers, fleet vehicles and other related equipment.

[1] See Note 2 – Deposits and Investments
[2] See Note 7 – Long-Term Debt

Contributed Capital and Construction Grants: MSD finances construction of sewer and drainage plant, lines and other facilities, in part, through government grants and contributions from property owners and developers. Governmental grants in aid of construction represent the estimated portion of construction costs incurred for which grants are expected to be paid to MSD by the governmental grantor. These amounts are recorded as a receivable and revenues from contributions at the time the related expenditures are incurred. The revenues from contributions are part of the change in net position.

Capital Assets - Plant, Lines and Other Facilities: Plant, lines and other facilities are recorded at historical cost or, if contributed, at acquisition value as determined by engineering estimates on the date the contribution is received. It is MSD's policy to depreciate the costs of these assets over their estimated useful lives on a straight line basis[3].

Estimated useful lives on depreciable assets are as follows:

Buildings and other structures	30 - 50 years
Land improvements	10 - 30 years
Miscellaneous machinery	10 - 20 years
Vehicles	6 - 12 years
Equipment, heavy	15 - 30 years
Equipment, light	5 - 15 years
Sewer lines and drainage channels	80 years

Costs incurred for capital construction and acquisition are carried in construction in progress until disposition or completion of the related projects. The major components of construction in progress are sewer lines, wastewater treatment and stormwater facilities. Costs relating to projects not pursued are expensed, while costs relating to completed projects are capitalized as plant, lines and other facilities.

Capitalized Interest: Interest capitalized on projects funded from bond proceeds is recorded as the average cumulative expenditures multiplied by the weighted average borrowing rate.[4] Interest is not capitalized on project costs that are reimbursed by contributions of capital from government, property owners and developers.

Impairment of Capital Assets: In accordance with GASB Statement No. 42, *Accounting and Financial Reporting for Impairment of Capital Assets and for Insurance Recoveries*, management evaluates prominent events or changes in circumstances affecting capital assets to determine whether impairment of a capital asset has occurred. Such events or changes in circumstances that may be indicative of impairment include evidence of physical damage, enactment or approval of laws or regulations, other changes in environmental factors, technology changes or evidence of obsolescence, changes in the manor of duration of use of a capital asset, and construction stoppage. A capital asset is generally considered impaired if both (a) the decline in service utility of the capital asset is large in magnitude and (b) the event or change in circumstance is outside the normal life cycle of the capital asset. No impairment losses were recognized in the years ended June 30, 2018 and 2017.

Bonds Payable: Bonds payable are recorded at the principal amount outstanding, net of any applicable premium or discount[5].

Bonds outstanding, which have been refunded and economically defeased, are not included in long-term debt. The related assets are not included in investments. Any loss on refunding, which is the difference between the reacquisition price and the net carrying amount of the old debt, is deferred outflow of resources and amortized as a component of interest expense over the shorter of either 1) the original life of the refunded debt or 2) the life of the refunding debt.

[3] See Note 5 – Capital Assets – Plant, Lines, and Other Facilities
[4] See Note 6 – Capitalized Interest
[5] See Note 7 – Long-Term Debt

MSD enters into interest rate swap agreements to modify interest rates on outstanding debt. MSD records the net interest expenditures resulting from these agreements and amortizes gains/losses resulting from the termination of these agreements until the original termination date of the agreement. Derivative instruments are reported at fair value as deferred inflow of resources. Changes in fair value of derivative instruments are reported in non-operating revenue (expenses) on the Statement of Revenues, Expenses and Changes in Net Position.

Bond issue costs are capitalized and amortized over the life of the respective bond issue using the straight-line method, which approximates the effective interest method, pursuant to the election of regulatory operation under GASB 62, as they are deemed recoverable through future rates.

Original issue discounts and premiums on bonds are amortized as a component of interest expense using the straight-line method, which approximates the effective interest method, over the lives of the bonds to which they relate.

Compensated Absences: Vacation and personal pay benefits are accrued as accumulated and vested by MSD employees.

Allocation of Overhead: MSD allocates overhead costs to its core business processes: operations and maintenance; design, construction and acquisition of plant lines and other facilities; and subsidiary business enterprises.

Use of Estimates: The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make assumptions and estimates 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.

Income Tax Status: MSD is exempt from federal income tax under the Internal Revenue Code as a political subdivision of the Commonwealth of Kentucky.

Adoption of New Accounting Pronouncements: Effective July 1, 2017, MSD adopted the following GASB pronouncements:

- Statement No. 75: *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*
- Statement No. 81: *Irrevocable Split-Interest Agreements*
- Statement No. 85: *Omnibus 2017*
- Statement No. 86*: Certain Debt Extinguishment Issues*

The objective of GASB Statement No. 75: *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions* is to improve financial report by state and local governments for postemployment benefits other than pensions (other postemployment benefits or OPEB). It also improves information provided by state and local government employers about financial support for OPEB that is provided by other entities[6].

The objective of GASB Statement No. 81: *Irrevocable Split-Interest Agreements* is to improve accounting and financial reporting for irrevocable split-interest agreements by providing recognition and measurement guidance for situations in which a government is a beneficiary of the agreement.[7]

---

[6] Government Accounting Standards Board, Statement No, 75, page 3, from the Government Accounting Standards Board website,
https://www.gasb.org/jsp/GASB/Document_C/DocumentPage?cid=1176166144750&acceptedDisclaimer=true, accessed August 21, 2018

[7] Government Accounting Standards Board, Statement No. 81, page 1, from the Government Accounting Standards Board website,

The objective of GASB Statement No. 85: *Omnibus 2017* is to address practice issues that have been identified during implementation and application of certain GASB Statements.[8]

The objective of GASB Statement No. 86: *Certain Debt Extinguishment Issues* is to improve consistency in accounting and financial reporting for in-substance defeasance of debt by providing guidance for transactions in which cash and other monetary assets acquired with only existing resources are placed in an irrevocable trust for the sole purpose of extinguishing debt.[9]

Adoption of statement GASB Statement No. 75 had a significant impact on MSD's financial position. The cost sharing plan, County Employee Retirement System (CERS), did not provide information for participating employers to implement GASB 75 for the earliest period reported. Therefore, restatement was applied to the opening balance at July 1, 2017. MSD restated the July 1, 2017 net position in the amount of $23,201 as outlined below:

(dollars in thousands)	Beginning Balance	As Restated	GASB 75 Adjustment
Statement of net position			
Net OPEB liability	$ -	$ (25,193)	$ (25,193)
Deferred outflows	-	1,992	1,992
Statement of revenues, expenses and changes in net position			
Net position, July 1, 2017	$ 668,488	$ 645,287	$ (23,201)

GASB Statements Nos. 81, 85, and 86 do not impact on MSD's financial reporting at this time.

Recent Accounting Pronouncements: GASB has issued additional guidance that is not yet effective. MSD is currently reviewing the provisions of the following GASB Statements to determine the impact of implementation in future periods.

- Statement No. 83*: Certain Asset Retirement Obligations (fiscal 2019)*
- Statement No. 84*: Fiduciary Activities (fiscal 2020)*
- Statement No. 87: *Leases (fiscal 2021)*
- Statement No. 88: *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements (fiscal 2019)*
- Statement No. 89: *Accounting for Interest Cost Incurred Before The End of a Construction Period (fiscal 2020)*
- Statement No. 90: *Majority Equity Interests – An Amendment of GASB Statements No 14 and No. 61 (fiscal 2020)*

---

http://www.gasb.org/cs/ContentServer?c=Pronouncement_C&pagename=GASB%2FPronouncement_C%2FGASBSummaryPage&cid=1176168022710, accessed June 15, 2017.

[8] Government Accounting Standards Board, Statement No. 85, page 1, from the Government Accounting Standards Board website, https://www.gasb.org/cs/ContentServer?c=Pronouncement_C&cid=1176168952756&d=&pagename=GASB%2FPronouncement_C%2FGASBSummaryPage, accessed on September 24, 2018

[9] Government Accounting Standards Board, Statement No. 86, page 3, from the Government Accounting Standards Board website, https://www.gasb.org/jsp/GASB/Document_C/DocumentPage?cid=1176169037804&acceptedDisclaimer=true, accessed on August 21, 2018

Reclassifications: Prior period financial statement amounts have been reclassified to conform to current period presentation. These reclassifications had no effect on the changes in net position or total net position.

NOTE 2 – CASH DEPOSITS AND INVESTMENTS

A reconciliation of cash, cash equivalents and investments as shown on the Comparative Statement of Net Position for MSD is as follows:

(dollars in thousands)	June 30, 2018	June 30, 2017
Reported in Statements of Net Position:		
Cash and cash equivalents		
Unrestricted	50,276	42,449
Restricted - current	29,987	19,454
Restricted - noncurrent	1,399	37,642
Total cash and cash equivalents	81,662	99,545
Investments		
Unrestricted	25,080	10,095
Restricted - current	-	22,675
Restricted - noncurrent	151,039	86,550
Total investments	176,119	119,320
Total Cash, Cash Equivalents and Investments	257,781	218,865

The following comparative schedule presents the cash, cash equivalents and investments in MSD's portfolio at fair value with investment maturities and credit risk ratings from Moody's Investors Service.

June 30, 2018 *(dollars in thousands)*		Reported Value	Weighted Average Maturity in Years	Credit Rating
U.S. treasuries	$	41,898	2.44	Aaa
U.S. agency securities		47,315	2.52	Aaa
Municipal bonds		61,826	16.12	Aa
Money market funds		34,303	0.03	Aaa
Commercial paper		49,908	0.14	Prime-1
Repurchase agreement/cash		22,431		
Certificate of Deposit		100	0.67	
Total cash, cash equivalents and investments	$	257,781	5.24	
Accrued interest	$	1,116		

June 30, 2017 *(dollars in thousands)*		Reported Value	Weighted Average Maturity in Years	Credit Rating
U.S. agency discount notes	$	-		
U.S. agency securities		27,820	1.53	Aaa
Municipal bonds		81,405	20.36	Aa
Money market funds		71,405	0.18	Aaa
Commercial paper		9,995	0.04	Prime-1
Repurchase agreement/cash		28,140		
Certificate of deposit		100	0.67	
Total cash, cash equivalents and investments	$	218,865	9.90	
Accrued interest	$	1,066		

Section 66.480 of the Kentucky Revised Statutes and MSD's bond resolutions authorize MSD to invest money subject to its control in, among other securities, (i) obligations of the United States and of its agencies and instrumentalities, including obligations subject to repurchase agreements, (ii) certificates of deposit or other interest-bearing accounts of any bank or savings and loan institution which are insured by the Federal Deposit Insurance Corporation or, to the extent not so insured, collateralized by obligations described in clause (i) above, (iii) securities issued by a state or local government, or any instrumentality or agency thereof, in the United States, and rated in either of the two highest categories by a nationally recognized rating agency, and (iv) money market mutual funds investing in any of the securities described above. MSD bond resolutions and covenants contain similar restrictions.

Investments are made based upon prevailing market conditions at the time of the transaction with the intent to hold the instrument until maturity. With this strategy, investments would be expected to reach maturity with limited realized gains or losses. If the yield of the portfolio can be improved upon by the sale of an investment, prior to its maturity, with the reinvestment of the proceeds, then this provision is also allowed.

Concentration of Credit Risk: MSD's Investment Policy (The Policy) requires that investments be diversified to eliminate the risk of loss resulting from over-concentration of assets in a specific maturity, a specific issuer, or a specific class of securities. Section 4.4.1 of The Policy limits the amount of money invested at any time in one or more categories of the investments authorized by KRS 66.480 shall not exceed 20% of the total amount invested.

Interest Rate Risk: MSD minimizes interest rate risk by structuring the investment portfolio so that securities mature to meet cash requirements for ongoing operations, thereby avoiding the need to sell securities on the open market prior to maturity. The weighted average maturity in years represents the interest rate risk for MSD.

Custodial Credit Risk: This is the risk that, in the event of the failure of the counterparty, MSD would not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. The collateral provided by financial institutions is considered adequate to cover all balances in excess of limits set forth by the Federal Deposit Insurance Corporation. All of MSD's investments are held by MSD or in the name of MSD by a Trustee.

Foreign Currency Risk: This risk relates to any potential adverse effects on the fair value of an investment from changes in exchange rates. MSD did not hold any foreign currency as of June 30, 2018 and 2017.

Fair Value Measurement: GASB 72 requires MSD to disclose how we measure the fair value of investments and the underlying valuation techniques. Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for these securities or repurchase agreements. Debt securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing approach. Matrix pricing is used to value securities based on the securities' relationship to the benchmark quoted prices. A comparative statement of investments subject to fair value measurements and valuation techniques follows:

June 30, 2018 *(dollars in thousands)*	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Investments by fair value level:				
Commercial paper	$ -	$ 49,908	$ -	$ 49,908
U.S. treasuries	-	41,898	-	41,898
U.S. agencies	-	47,315	-	47,315
State and municipal obligations	-	61,826	-	61,826
Total investments by fair value level	$ -	$ 200,947	$ -	$ 200,947

June 30, 2017 *(dollars in thousands)*	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Investments by fair value level:				
Commercial paper	$ -	$ 9,995	$ -	$ 9,995
U.S. agencies	-	27,820	-	27,820
State and municipal obligations	-	81,405	-	81,405
Total investments by fair value level	$ -	$ 119,220	$ -	$ 119,220

NOTE 3 - RESTRICTED CASH, CASH EQUIVALENTS, AND INVESTMENTS

MSD's revenue bond resolution provides that MSD shall maintain in a debt service reserve account a balance equal to the maximum annual aggregate gross principal and interest due on all outstanding revenue bonds; or, in lieu of cash and investments in that amount, a letter of credit or policy of bond insurance payable in that amount. Cash, cash equivalents and investments segregated as accounts restricted for authorized construction include proceeds from issuance of MSD bonds. Total restricted cash, cash equivalents, and investments at June 30, 2018 and June 30, 2017 was $182,425,207 and $166,321,339, respectively.

NOTE 4 - SCHEDULE OF NET POSITION

A comparative schedule of net position follows:

(dollars in thousands)	June 30, 2018	June 30, 2017
Net investment in capital assets:		
Plant, lines and other facilities net of depreciation	$ 2,925,982	$ 2,742,037
Outstanding debt that applies to plant, lines and other facilities	(2,315,569)	(2,167,901)
Accounts payable and accrued expenses (capital)	(47,472)	(30,764)
Deferred outflows and inflows of resources	17,334	19,412
Total	580,275	562,784
Restricted for:		
Assets restricted for debt service	174,880	166,321
Assets restricted for construction	7,545	-
Liabilities associated with restricted debt service	(108,978)	(82,654)
Net position, restricted	73,447	83,667
Unrestricted net position	54,952	22,037
Total net position	$ 708,674	$ 668,488

NOTE 5 - CAPITAL ASSETS - PLANT, LINES AND OTHER FACILITIES

A comparative schedule of plant, lines and other facilities follows:

June 30, 2018 *(dollars in thousands)*	Beginning Balance	Transfers In/ Additions	Retirements / Reclassifications	Ending Balance
Capital assets:				
Sewer lines	$ 1,440,360	$ 5,785	$ 50,945	$ 1,497,090
Wastewater treatment facilities/goodwill	638,048	415	10,040	648,503
Stormwater drainage facilities	542,271	414	18,656	561,341
Pumping and lift stations	166,158	-	17,637	183,795
Administrative facilities	50,818	-	-	50,818
Maintenance facilities	8,504	-	-	8,504
Machinery and equipment	66,169	187	(35)	66,321
Miscellaneous	31,086	-	-	31,086
Capitalized interest	363,437	21,859	-	385,296
Total capital assets	3,306,851	28,660	97,243	3,432,754
Less accumulated depreciation and amortization:				
Sewer lines	(320,209)	(17,771)	-	(337,980)
Wastewater treatment facilities/goodwill	(393,566)	(24,987)	-	(418,553)
Stormwater drainage facilities	(140,542)	(10,409)	-	(150,951)
Pumping and lift stations	(63,073)	(8,820)	-	(71,893)
Administrative facilities	(37,407)	(1,584)	-	(38,991)
Maintenance facilities	(6,385)	(178)	-	(6,563)
Machinery and equipment	(58,589)	(1,993)	4,276	(56,306)
Miscellaneous	(26,936)	(1,793)	-	(28,729)
Capitalized interest	(99,329)	(9,132)	-	(108,461)
Total accumulated depreciation/amortization	(1,146,036)	(76,667)	4,276	(1,218,427)
Construction in progress	581,222	232,041	(101,608)	711,655
Net capital assets	$ 2,742,037	$ 184,034	$ (89)	$ 2,925,982

Capital assets include non-depreciable assets for land related to the facilities and pumping and lift stations. The carrying value was $16,337,982 and $14,732,674 at June 30, 2018 and 2017 respectively.

June 30, 2017 *(dollars in thousands)*	Beginning Balance	Transfers In/ Additions	Retirements / Reclassifications	Ending Balance
Capital assets:				
Sewer lines	$ 1,379,153	$ 4,663	$ 56,544	$ 1,440,360
Wastewater treatment facilities/goodwill	629,083	420	8,545	638,048
Stormwater drainage facilities	515,898	2,252	24,121	542,271
Pumping and lift stations	139,651	1,408	25,099	166,158
Administrative facilities	49,342	17	1,459	50,818
Maintenance facilities	8,504	-	-	8,504
Machinery and equipment	60,043	-	6,126	66,169
Miscellaneous	30,659	-	427	31,086
Capitalized interest	343,363	20,074	-	363,437
Total capital assets	3,155,696	28,834	122,321	3,306,851
Less accumulated depreciation and amortization:				
Sewer lines	(303,082)	(17,127)	-	(320,209)
Wastewater treatment facilities/goodwill	(366,714)	(26,852)	-	(393,566)
Stormwater drainage facilities	(130,488)	(10,054)	-	(140,542)
Pumping and lift stations	(55,672)	(7,401)	-	(63,073)
Administrative facilities	(35,690)	(1,717)	-	(37,407)
Maintenance facilities	(6,153)	(232)	-	(6,385)
Machinery and equipment	(57,369)	(1,220)	-	(58,589)
Miscellaneous	(24,237)	(2,699)	-	(26,936)
Capitalized interest	(90,703)	(8,626)	-	(99,329)
Total accumulated depreciation/amortization	(1,070,108)	(75,928)	-	(1,146,036)
Construction in progress	487,674	215,869	(122,321)	581,222
Net capital assets	$ 2,573,262	$ 168,775	$ -	$ 2,742,037

NOTE 6 - CAPITALIZED INTEREST

A comparative schedule of capitalized interest and net interest expense reported in non-operating expenses follows:

(dollars in thousands)	June 30, 2018	June 30, 2017
Interest incurred	$ 100,587	$ 97,728
Less interest capitalization	(21,859)	(20,074)
Interest expense, net	$ 78,728	$ 77,654

NOTE 7 - LONG-TERM DEBT

A comparative schedule of long-term debt outstanding at June 30, 2018 and 2017 follows:

(dollars in thousands) Revenue Bonds	Original Issue Amount	Interest Rates	Final Payment In	Outstanding as of June 30: 2018	2017
2007A Series Revenue Bonds	61,125	4.00% - 5.00%	2025	-	42,965
2008A Series Revenue Bonds	105,000	4.00% - 5.00%	2038	-	65,520
2009A Series Revenue Bonds	76,275	5.00%	2022	6,640	13,040
2009B Series Revenue Bonds	225,770	2.00% - 5.00%	2023	52,975	69,725
2009C Series Revenue Bonds	180,000	5.98%	2040	180,000	180,000
2010A Series Revenue Bonds	330,000	6.25%	2043	330,000	330,000
2011A Series Revenue Bonds	263,360	3.00% - 5.00%	2034	250,565	252,610
2013A Series Revenue Bonds	115,790	4.00%	2036	115,790	115,790
2013B Series Revenue Bonds	119,515	4.00% - 5.00%	2038	115,550	116,940
2013C Series Revenue Bonds	100,000	3.00% - 5.00%	2044	99,500	99,625
2014A Series Revenue Bonds	80,000	4.00% - 5.00%	2045	79,850	79,900
2015A Series Revenue Bonds	175,000	3.125% - 5.00%	2046	173,735	174,280
2015B Series Revenue Bonds	81,750	2.00% - 5.00%	2038	76,685	79,085
2016A Series Revenue Bonds	150,000	3.00% - 5.00%	2047	149,760	150,000
2016B Series Revenue Bonds	28,315	2.00% - 5.00%	2036	28,095	28,095
2016C Series Revenue Bonds	67,685	5.00%	2023	67,685	67,685
2017A Series Revenue Bonds	175,000	3.00% - 5.00%	2048	175,000	-
2017B Series Revenue Bonds	35,725	5.00%	2025	34,520	-
2018A Series Revenue Bonds	60,380	4.00%	2038	60,380	-
Total long-term debt				1,996,730	1,865,260
Less: current maturities				(40,190)	(33,655)
Add : unamortized premium/discount				90,628	74,328
Total long-term debt, net				$ 2,047,168	$ 1,905,933

A schedule of future debt service requirements after June 30, 2018 follows:

(dollars in thousands)	Revenue Bonds		
	Principal	Interest	Total
Year ending June 30,			
2019	$ 40,190	$ 94,963	$ 135,153
2020	42,200	93,058	135,258
2021	44,230	91,030	135,260
2022	46,435	88,821	135,256
2023	48,755	86,503	135,258
2024-2028	262,380	396,102	658,482
2029-2033	180,685	334,906	515,591
2034-2038	473,805	277,127	750,932
2039-2043	581,275	154,992	736,267
2044-2048	276,775	26,207	302,982
	$ 1,996,730	$ 1,643,709	$ 3,640,439

A comparative summary of current and long-term revenue bond activity follows:

(dollars in thousands)	June 30,	
	2018	2017
Revenue bonds - beginning of year, net	$ 1,865,260	$ 1,754,570
Bonds issued	271,105	246,000
Principal paid on bonds and bond refunding	(139,635)	(135,310)
Revenue bonds - end of year, net	$ 1,996,730	$ 1,865,260

MSD long-term debt is issued to provide sufficient funding for sewer and drainage projects approved for construction. MSD has pledged all revenues to the payment of principal and interest on its outstanding revenue bonds.

Federal tax regulations generally require the periodic payment to the U.S. Treasury of investment earnings on the proceeds of an issue of tax-exempt municipal bonds to the extent those earnings exceed the yield on the bonds. Such payments, known as arbitrage rebate, are normally payable every fifth year following the issuance of a series of bonds and upon the retirement of the bond issue. MSD has arbitrage calculations performed as needed by an independent third party to comply with these regulations. As of June 30, 2018 and 2017, MSD's accrued liability for arbitrage rebate was $369,019 and $294,685, respectively.

Fiscal Year 2018 Significant Debt Transactions: On May 31, 2018, MSD issued $60,380,000 of revenue refunding bonds, series 2018A. The proceeds of the series 2018A bonds, together with certain amounts in the reserve account, were used to: (i) currently refund $63,335,000 of outstanding principal amount on MSD's sewer and drainage system revenue bonds, series 2007A, maturing May 15, 2037 through May 15, 2038, the proceeds of which were used to finance the costs of improvements to MSD's sewer and drainage system, and (ii) pay the cost of issuance of the series 2018A bonds. The refunding reduced debt service payments over the next 20 years by $8,452,933 and resulted in a net present value savings of $4,514,627.

On August 22, 2017, MSD issued $175,000,000 of revenue bonds, series 2017A. The proceeds of the series 2017A bonds were used to: (i) pay the costs of issuing the series 2017A bonds; (ii) make a deposit to the reserve account; and (iii) make a deposit to the construction and acquisition fund to pay the costs of improvements to MSD's sewer and drainage system.

On August 22, 2017, MSD issued $35,725,000 of revenue refunding bonds, series 2017B. The proceeds of the series 2017B bonds, together with certain amounts in the reserve account, were used to: (i) currently refund $42,965,000 of outstanding principal amount on MSD's sewer and drainage system revenue bonds, series 2007A, maturing May 15, 2018 through May 15, 2025, the proceeds of which were used to finance the costs of improvements to MSD's sewer and drainage system, and (ii) pay the cost of issuance of the series 2017B bonds. The refunding reduced debt service payments over the next 8 years by $9,570,028 and resulted in a net present value savings of $7,860,700.

Fiscal Year 2017 Significant Debt Transactions: On August 30, 2016, MSD issued $150,000,000 of revenue bonds, series 2016A. The proceeds of the series 2016A bonds were used to: (i) pay the costs of issuing the series 2016A bonds; (ii) make a deposit to the reserve account; and (iii) make a deposit to the construction and acquisition fund to pay the costs of improvements to MSD's sewer and drainage system.

On August 30, 2016, MSD issued $28,315,000 of revenue refunding bonds, series 2016B. The proceeds of the series 2016B bonds, together with certain amounts in the reserve account, were used to: (i) refund in advance of maturity $30,250,000 of outstanding principal amount on MSD's sewer and drainage system revenue bonds, series 2008A, maturing May 15, 2019 through May 15, 2026, the proceeds of which were used to finance the costs of improvements to MSD's sewer and drainage system, and (ii) pay the cost of issuance of the series 2016B bonds. The refunded bonds are considered defeased and the liability was removed from MSD's statement of net position. The refunding reduced debt service payments over the next 20 years by $7,789,668 and resulted in a net present value savings of $5,349,969.

On August 30, 2016 MSD issued $67,685,000 of revenue refunding bonds, series 2016C. The proceeds of the series 2016C bonds, together with certain amounts in the reserve account, were used to: (i) refund in advance of maturity $22,350,000 of outstanding principal on MSD's sewer and drainage system revenue bonds, Series 2009A, maturing May 15, 2020 through May 15, 2022 and $50,665,000 of the outstanding principal amount on MSD's sewer and drainage system revenue bonds, series 2009B, maturing May 15, 2020 through May 15, 2023, the proceeds of which were used to refund an earlier series of bonds, which in turn were used to finance or refinance the costs of improvements to MSD's sewer and drainage system and (ii) pay the cost of issuance of the series 2016C bonds. The refunded bonds are considered defeased and the liability was removed from MSD's statement of net position. The refunding reduced debt service payments over the next 7 years by $7,754,573 and resulted in a net present value savings of $4,774,821.

Debt Service Covenant: A debt service coverage ratio covenant has been established under the 1993 Sewer and Drainage System Revenue Master Bond Resolution. MSD was in compliance with the ratio covenant as of June 30, 2018 and 2017.

Refunded Debt: The portion of the 2009A and 2009B Series revenue bonds that were advance refunded with the 2016C Series revenue bonds are being paid from an escrow account. As of June 30, 2018, the amount outstanding on the Series 2009A is $22,350,000 maturing on May 15, 2019 and the amount outstanding on the Series 2009B is $50,665,000 maturing on November 15, 2019.

Line of Credit: MSD secured an uncommitted $25,000,000 line of credit in October 2015. As of June 30, 2018 and 2017 MSD does not owe anything on its line of credit. There was no activity on the line of credit in fiscal Year 2018 or 2017.

Derivatives: At June 30, 2018 and 2017 MSD had the following derivative instruments outstanding:

(dollars in thousands)

Item	Counter-Party	Initial Notional Amount	Current Notional Amount	MSD Payment Terms	Fair Value as of June 30 2018	Fair Value as of June 30 2017	Bond Issue to which Swap Relates	Change in Fair Value
A	Wells Fargo	$180,716	$180,716	4.4215%	$ (47,545)	$ (60,594)	BAN	$ 13,049
B	Bank of America	56,433	45,284	4.4215%	(11,898)	(15,166)	BAN	3,268
	Total	$237,149	$226,000		$ (59,443)	$ (75,760)		$ 16,317

Both swaps have termination dates of May 15, 2033. Payments are due on the fifteenth of each month. MSD receipt terms are 67% of 30-day LIBOR.

A comparative summary of the change in fair value of the swaps for the years ended June 30, 2018 and 2017 follows:

(dollars in thousands)	June 30, 2018	June 30, 2017
Fair value - beginning of year	$ (75,760)	$(101,832)
Change in fair value	16,317	26,072
Fair value - end of year	$ (59,443)	$ (75,760)

MSD's swaps are measured at fair value using significant other observable inputs (level 2) with a mid-market derivative valuation using a 67% of LIBOR Fixed Payer Swap rate.

MSD originally entered into these interest rate swaps as a hedging derivative instrument in anticipation of refinancing the 1999 series bonds at their call date. The swaps remain in the portfolio to lower interest rate risk associated with the Bond Anticipation Note (BAN). The total of investment derivatives is reported as interest rate swaps on the Statement of Net Position. All changes in fair value of the derivatives are recorded as a separate component of non-operating revenue (expense). MSD's two outstanding swaps are structured so that the notional amount of the swap decreases over time corresponding to the proposed payoff of the BAN.

MSD has implemented steps to safeguard it against the risks associated with the aforementioned swap transactions. If the counter-party does not maintain A1/A+ ratings from Moody's and Standard and Poor's, the swaps contain provisions that require them to be marked to market weekly with monthly statements sent to MSD and the value will be collateralized with U.S. Treasury and Agency securities with the securities held by a tri-party custodian approved by MSD.

All costs of collateralization will be borne by the downgraded party who must post the collateral. In addition, the swaps were awarded to multiple firms to further mitigate the credit risk associated with the transactions. The credit ratings as of June 30th, 2018 for the counter-parties are as follows:

	Credit Ratings: Moody's	Credit Ratings: Standard & Poor's
Bank of America, N.A.	P-1	A-1
Wells Fargo Bank, N.A.	P-1	A-1+

The agreements also provide for automatic termination if MSD's unenhanced bond rating is downgraded below BBB/Baa. MSD's obligations under all of its outstanding swap agreements are unsecured and subordinate to all bonds issued and outstanding. The positive and negative fair values of the swap agreements were provided by a third-party financial advisor. The net swap payments made in fiscal 2018 and fiscal 2017 were $7,724,335 and $8,926,139, respectively.

Swap Terminations: MSD entered into swaps and other derivative contracts to lock in long term rates in advance of issuing long term debt to create and manage variable rate exposure in its debt portfolio and to take advantage of market opportunities to hedge embedded interest rate risk and tax regulation risk that exists on its statement of net position.

Upon a termination of a swap, any termination receipt or payment is amortized into income or expense until the original expiration date of that swap. Any unamortized portion of the receipt or payment is recorded as a deferred debit or credit in long-term liabilities. MSD has swap agreement terminations with deferred inflow of resources balances accreting to non-operating revenue as follows:

- On January 24, 2001, MSD terminated a nineteen-year interest rate swap agreement for $100,000,000 of its fixed-rate 1999 series sewer and drainage revenue bonds. The termination of this swap agreement resulted in the receipt of a payment in the amount of $7,935,000. This payment will be amortized annually into income until 2019, the original termination date on the agreement.

- In April 2006, MSD entered into a swap agreement with Deutsche Bank AG for an initial notional amount of $171,405,000 which provided that beginning May 15, 2006, a net payment will be made based on MSD paying 78.78% of the 3-month LIBOR index on the notional amount and receiving 73.45% of the 5-year LIBOR Index on the notional amount. On January 23, 2008, MSD terminated this swap agreement and received a termination payment of $4,170,000 that will be amortized until 2023, the original termination date of the agreement.

- On January 25, 2008, MSD terminated a twenty-seven year floating to floating (basis) interest rate swap agreement with a notional amount of $282,165,000. MSD entered into this agreement with Morgan Stanley in April 2006 and paid 67% of the 1-month LIBOR index and received 62.2% of the 5-year LIBOR index. The termination of this swap agreement resulted in the receipt of a payment in the amount of $5,756,000. This payment will be amortized annually into income until 2033, the original termination date of the agreement.

- In May and June of 2013, MSD terminated two floating to fixed interest rate swap agreements, two basis swap agreements and three reversal swap agreements. Additionally, MSD partially terminated two floating to fixed interest rate swap agreements. The termination value of all swap agreements resulted in a net payment by MSD of $152,000. This action will result in a savings of $13,500,000 over the next ten years.

NOTE 8 – BOND ANTICIPATION NOTES

On November 14, 2017 MSD issued $226,340,000 of sewer and drainage system subordinated bond anticipation notes (BAN), series 2017, with a coupon rate of 5.0% and an effective interest rate of 1.04%. The proceeds of the notes were used to refinance the 2016 notes. The 2017 notes mature on November 12, 2018.

On November 15, 2016 MSD issued $226,340,000 of sewer and drainage system subordinated bond anticipation notes (BAN), series 2016, with a coupon rate of 3.5% and an effective interest rate of 0.89%. The proceeds of the notes were used to refinance the 2015 notes. The 2016 notes mature on November 15, 2017.

A comparative summary of subordinated debt follows:

(dollars in thousands)	June 30, 2018		June 30, 2017	
Subordinated debt - beginning of year	$	228,313	$	228,412
Debt incurred		226,340		226,340
Principal paid on debt		(226,442)		(226,439)
Subordinated debt - end of year	$	228,211	$	228,313

Under GASB 62, the BAN is considered a noncurrent liability because MSD intends to replace the series 2017 BAN with a new BAN in November 2018 which will extend the debt to November 2019. The BAN is used to finance capital projects.

NOTE 9 - RISK MANAGEMENT

MSD is exposed to various risks of loss related to torts; theft of, damage to and destruction of assets; errors and omissions; natural disasters; and injuries to MSD's employees. These risks are provided through the insurance programs described below.

Self-Insurance – Group Liability: MSD participates in the Louisville Area Governmental Self-Insurance Trust (LAGIT). LAGIT, which is certified by the Kentucky Department of Insurance to practice as a group liability self-insurance trust, was created on January 1, 1987. LAGIT members currently include Louisville Metro Government, six smaller cities, and six government agencies. LAGIT was formed to provide better risk protection and lower cost liability insurance by sharing the risk with all of its members. MSD's payments to LAGIT are reflected on the financial statements as an expense. LAGIT provides, after a $300,000 deductible, various liability coverages up to $5,000,000 per occurrence. Excess insurance may provide an additional $2,000,000 of coverage, above the LAGIT $5,000,000, to MSD. The amount of coverage available to MSD could be limited by the total assets of LAGIT and/or claims of other Members under the excess insurance policy. For fiscal 2018, LAGIT did not make any MSD claim payments.

MSD maintained additional excess liability coverage for fiscal 2018. Hallmark Specialty Insurance Company (A-) provided $5,000,000 of excess liability coverage beyond the $7,000,000 provided through LAGIT. Gemini Insurance Company (A+) provided another $15,000,000 of excess liability coverage beyond $12,000,000. In total, MSD maintained liability coverage of $27,000,000.

For fiscal 2017, LAGIT provided, after a $300,000 deductible, various liability coverages up to $5,000,000 per occurrence. Excess insurance provided an additional $2,000,000 of coverage, above the LAGIT $5,000,000 to MSD. The amount of coverage available to MSD was limited by the total assets of LAGIT and/or claims of other Members under the excess insurance policy. For fiscal 2017, LAGIT did not make any MSD claim payments.

MSD maintained in fiscal 2017 two additional excess liability policies that covered the period of January 2017 through June 2017. Arch Specialty Insurance Company (A+) provided $10,000,000 of excess liability coverage beyond the $7,000,000 provided through LAGIT. Gemini Insurance Company (A+) provided another $10,000,000 of excess liability coverage beyond $17,000,000. In total, MSD maintained liability coverage of $27,000,000.

Workers Compensation Insurance: MSD has chosen to self-insure the basic worker's compensation insurance. Claims administration is handled by a third-party administrator and includes claims monitoring check issuance, settlement negotiations and loss control services. Liabilities are reported when it is probable that a loss has occurred and the amount of the loss can be reasonably estimated. A separate insurance policy provides maximum coverage of $1,000,000 per occurrence and aggregate.
A roll forward of worker's compensation claims follows:

(dollars in thousands)	June 30, 2018	2017	2016
Liability - beginning of year	$ 1,701	$ 1,270	$ 1,755
Claims and changes in estimates	755	1,207	474
Payments	(899)	(776)	(959)
Liability - end of year	$ 1,557	$ 1,701	$ 1,270

Self-Insurance – Property: MSD joined the Louisville Area Governmental General Insurance Trust (LAGGIT) in September 2002. LAGGIT was created to provide lower cost to participants and broader coverage for property risks. MSD is responsible for covered property damage up to $100,000 except for flood and vehicle collision coverage, which have separate deductibles. LAGGIT provides coverage for the next $1,000,000 per occurrence, except for Flood Zone A locations. An excess insurance policy with a third-party carrier covers claims in excess of $1,100,000.

In the past three fiscal years LAGGIT paid $1,000,000 on a lightning/flood claim which exceeded MSD's deductibles under the Trust. Additionally, FM Global (excess carrier) paid $6,760,000 on a lightning/flood claim. MSD was affected by a flood event in February of 2018 and is working with LAGGIT and FM Global on the claim. At this time the final cost of damages has not been determined.

NOTE 10 - DEFERRED COMPENSATION

MSD offers its employees deferred compensation plans created in accordance with Internal Revenue Service Code Sections 401(k) and 457. These plans, available to all MSD employees, permit them to defer the payment of a portion of their salary until future years. Participation in these plans is voluntary and MSD makes no contributions to these plans on behalf of the employee. The deferred compensation is not available to employees until termination, retirement, death, or unforeseen emergency. All amounts of compensation deferred, including the investments and earnings thereon, vest with the employee and are not subject to the claims of MSD's general creditors.

NOTE 11 - COMMITMENTS AND CONTINGENCIES

Sale of Sewer Assessments*:* MSD has entered into agreements to sell sanitary sewer assessments to a local bank. These assessments reflect the portion of the cost that residents pay to have sewer lines installed in their neighborhood. Residents are given the opportunity to pay the assessment in full or to finance it over a twenty-year period at 7% interest per annum. The original agreement called for the bank to accept up to $25,000,000 of outstanding assessments and for MSD to receive 104% of the face value of the assessments.

The subsequent agreement allows an additional $5,000,000 of assessments to be sold to the bank at face value. These agreements give the bank the option to place the assessments back with MSD if the property owner's payments are 90 days in arrears or the property owner does not respond to the bank's demand for payment within a 90-day period after the issuance of the assessment. Sales to the bank are net of any subsequent repurchases of warrants by MSD. The unpaid principal balance of loans held by the bank at June 30, 2018 and 2017 was $964,127 and $1,337,636, respectively.

EPA Consent Decree: In August 2005, MSD agreed to enter into a Consent Decree with the Commonwealth of Kentucky's Environmental and Public Protection Cabinet (The Cabinet) and the U.S. Environmental Protection Agency (EPA). The Consent Decree called for MSD to submit a final Long-Term Control Plan (LTCP) to The Cabinet/EPA for review and joint approval by December 31, 2008, which was completed. The final LTCP includes schedules, deadlines, and timetables for projects to be completed by December 31, 2020. In addition, a Sanitary Sewer Discharge Plan (SSDP) was due by December 31, 2008, which was completed. The SSDP includes schedules and deadlines for capital projects to be completed by the end of 2024. The cost of the projects is estimated to be $979,000,000. Also, MSD agreed to pay a civil penalty to the Commonwealth of Kentucky in the amount of $1,000,000 to resolve the violations alleged in The Cabinet's and EPA's complaints up through the date of entry of the Consent Decree. The agreement also calls for MSD to perform supplemental environmental projects (SEPS) at an amount of not less than $2,250,000. MSD neither admitted nor denied the alleged violations but acknowledged that discharges occurred and accepted the obligations imposed in the Consent Decree. The Consent Decree, as negotiated, was entered by the U.S. District Court Judge on August 12, 2005.

In April 2009, MSD agreed to enter into an Amended Consent Decree with the Commonwealth of Kentucky's Environmental and Public Protection Cabinet (KEPPC) and the EPA. The agreement called for MSD to design and implement projects within specified deadlines that will eliminate sewer overflows in its service area. In a letter dated June 6, 2014, MSD requested approval from the KEPPC and the EPA for the IOAP 2012 Modifications, dated May 2014. The IOAP 2012 Modifications represent a revision to 28 separate projects set forth in the original IOAP, dated September 30, 2009. The IOAP Modifications were approved and will supersede and replace the 2009 IOAP. To date, MSD has complied with all submittals and reports requirements contained in the Amended Consent Decree. The enforcement actions initiated by the EPA are not unique in the wastewater treatment industry. Several wastewater utilities have signed, or are in the process of signing, Consent Decrees. In the opinion of MSD, the resolution of any violations will not result in material adverse effect on the operation, property or finances of MSD.

Claims and Litigation: Whittenberg Construction Company v. MSD; In the Jefferson County Circuit Court; Case No. 13-CI-000742. This is a breach of contract case stemming from the construction of a wastewater pump station and screening building at the Derek R. Guthrie Water Quality Treatment Center. Among other claims, Whittenberg contends MSD violated the terms of the construction contract pertaining to withholding of superior knowledge and that MSD's contract violates Kentucky's Fairness in Construction Act, KRS 371.425. Extensive discovery has been conducted and is on-going. Although the outcome is not certain, MSD has accrued a loss contingency as of June 30, 2018 and 2017.

MSD is a defendant in various other lawsuits. Although the outcome of these lawsuits is not presently determinable, it is the opinion of the MSD's management that resolution of these matters will not have a material adverse effect on the financial statements of MSD.

Construction Commitments: The value of construction contracts signed where work has not yet been performed amounted to $164,846,843 at June 30, 2018 and was $169,708,000 at June 30, 2017.

NOTE 12 - SUBSEQUENT EVENTS

Commercial Paper Program: On July 10, 2018 MSD introduced its Sewer and Drainage System Subordinated Program Notes Series 2018 Commercial Paper Sub-Series consisting of $250,000,000 Commercial Paper Notes, Series 2018A-1 and $250,000,000 Commercial Paper Notes Series 2018A-2. Notes issued under the program cannot exceed maturities of 270 days. The commercial paper notes will be used to provide funds for the interim financing of a portion of MSD's capital program.

Liquidity support for the Commercial Paper Series 2018A-1 is provided by Bank of America, N.A (BANA) pursuant to a 3-year Revolving Credit Agreement dated July 1, 2018. BANA has provided a commitment of $250,000,000 for the payment of the principal of and interest on the Commercial Paper Notes Series 2018A-1 which is the maximum amount available to be drawn under the BANA Revolving Credit Agreement. MSD and BANA entered into a Note Purchase Agreement dated July 1, 2018 providing for the purchase of Direct Purchase Notes by BANA up to the aggregate principal amount of $250,000,000. The BANA Revolving Credit Agreement and the BANA Note Purchase Agreement provided that the aggregate principal amount of Commercial Paper Notes Series 2018A-1 and the BANA Direct Purchase Notes shall not exceed $250,000,000. Merrill Lynch, Pierce, Fenner & Smith Inc. is acting as dealer for the Commercial Paper Notes Series 2018A-1.

Liquidity support for the Commercial Paper Series 2018A-2 is provided by JPMorgan Chase Bank (JPMCB) pursuant to a 3-year revolving credit agreement dated July 1, 2018. JPMCB has provided a commitment of $250,000,000 for the payment of the principal of and interest on the Commercial Paper Notes Series 2018A-

1 which is the maximum amount available to be drawn under the JPMCB Revolving Credit Agreement. MSD and JPMCB entered into a Note Purchase Agreement dated July 1, 2018 providing for the purchase of Direct Purchase Notes by JPMCB up to the aggregate principal amount of $250,000,000. The JPMCB Revolving Credit Agreement and the JPMCB Note Purchase Agreement provided that the aggregate principal amount of Commercial Paper Notes Series 2018A-1 and the JPMCB Direct Purchase Notes shall not exceed $250,000,000. J.P. Morgan Securities is acting as dealer for the Commercial Paper Notes Series 2018A-2.

Moody's Investors Service, Inc. and Standard and Poor's Ratings Services have assigned ratings of P-1 and A-1+, respectively, to the Commercial Paper Notes.

Commercial paper notes of $30,000,000 are outstanding as of October 31, 2018 in accordance with the respective Revolving Credit Agreements. Interest rates on the notes outstanding range from 1.77% to 1.83% and maturities range from 16 to 78 days. MSD intends to reissue maturing commercial paper in accordance with the refinancing terms of the Revolving Credit Agreements and periodically refund such maturities with proceeds from the issuance of long-term revenue bonds.

Direct purchase notes of $100,000 are outstanding as of October 31, 2018 in accordance with the terms of the JPMCB Note Purchase Agreement.

Rate Increase: On August 1, 2018, MSD's rates for wastewater and stormwater service charges increased by 6.9%.

2018 BAN Sale: On October 9, 2018, MSD sold $226,340,000 of sewer and drainage system subordinated bond anticipation notes (BAN), Series 2018, with a coupon rate of 4.0% and an effective interest rate of 2.08%. The proceeds of the notes will be used to refund the 2017 notes. The 2018 notes close on November 9, 2018 and mature on November 1, 2019.

NOTE 13 - DEFINED BENEFIT PENSION AND OTHER POSTEMPLOYMENT BENEFITS PLAN – COST SHARING - CERS

General Information about the Pension Plan and OPEB: All full-time and eligible part-time employees of MSD participate in County Employee Retirement System (CERS), a cost-sharing, multiple-employer defined benefit pension plan administered by the Kentucky Retirement System (KRS), an agency of the Commonwealth. Under the provisions of Kentucky Revised Statute Section 78.520, the Board of Trustees (the Board) of KRS administers CERS, Kentucky Employee Retirement System, and State Police Retirement System. Although the assets of the systems are invested as a whole, each system's assets are used only for the payment of benefits to members of that plan, and a pro rata share of administrative costs.

The plan provides for retirement, disability and death benefits to plan members. Retirement benefits may also be extended to beneficiaries of plan members under certain circumstances. Under the provisions of Kentucky Revised Statute Section 61.701, the Board of KRS also administers the Kentucky Retirement Systems Insurance Fund. The statutes provide for a single insurance fund to provide group hospital and medical benefits to retirees drawing a benefit from the three pension funds administered by KRS. The assets of the insurance fund are invested as a whole. KRS and the Commonwealth have statutory authority to determine Plan benefits and employer contributions.

KRS issues a publicly available financial report that includes financial statements and required supplementary information for CERS. The report may be obtained by writing to Kentucky Retirement System, Perimeter Park West, 1260 Louisville Road, Frankfort, Kentucky 40601, or it may be found at the KRS website at www.kyret.ky.gov.

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

Pension Benefits Provided:

The information below summarizes the major retirement benefit provisions of CERS-Nonhazardous. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Members whose participation began before 8/1/2004:

Age and Service Requirement: Age 65 with at least one month of Nonhazardous duty service credit, or at any age with 27 or more years of service credit.

Benefit: If a member has at least 48 months of service, the monthly benefit is 2.20% times final average compensation times years of service depending on participation and retirement dates. Final compensation is calculated by taking the average of the highest five (5) fiscal years of salary. If the number of months of service credit during the five (5) year period is less than forty-eight (48), one (1) or more additional fiscal years shall be used. If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 8/1/2004, but before 9/1/2008:

Age and Service Requirement: Age 65 with at least one month of Nonhazardous duty service credit, or at any age with 27 or more years of service credit.

Benefit: If a member has at least 48 months of service, the monthly benefit is 2.00% multiplied by final average compensation, multiplied by years of service. Final compensation is calculated by taking the average of the highest five (5) fiscal years of salary. If the number of months of service credit during the five (5) year period is less than forty-eight (48), one (1) or more additional fiscal years shall be used. If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member's contributions with interest.

Members whose participation began on or after 9/1/2008 but before 1/1/2014:

Age and Service Requirement: Age 65 with 60 months of Nonhazardous duty service credit, or age 57 if age plus service equals at least 87.

Benefit: The monthly benefit is the following benefit factor based on service credit at retirement plus 2.00% for each year of service greater than 30 years, multiplied by final average compensation, multiplied by years of service.

Service Credit	Benefit Factor
10 years or less	1.10%
10+ - 20 years	1.30%
20+ - 26 years	1.50%
26+ - 30 years	1.75%

Final compensation is calculated by taking the average of the last (not highest) five (5) complete fiscal years of salary. Each fiscal year used to determine final compensation must contain twelve (12) months of service credit.

Members whose participation began on or after 1/1/2014:

Age and Service Requirement: Age 65 with 60 months of Nonhazardous duty service credit, or age 57 if age plus service equals at least 87.

Benefit: Each year that a member is an active contributing member to the System, the member contributes 5% of creditable compensation, and the member's employer contributes 4.00% of creditable compensation, which is a portion of the total employer contribution, into a hypothetical account. The hypothetical account will earn interest annually on both the member's and employer's contribution at a minimum rate of 4%. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year. Upon retirement the hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or annuitized into a single life annuity option.

OPEB Benefits Provided:

The information below summarizes the major retirement benefit provisions of CERS-Nonhazardous. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Insurance Tier 1: Participation began before 7/1/2003

Benefit Eligibility**:** Recipient of a retirement allowance

Benefit: The percentage of member premiums paid by the retirement system are dependent on the number of years of service. Benefits also include duty disability retirements, duty death in service, non-duty death in service and surviving spouse of a retiree.

Insurance Tier 2: Participation began on or after 7/1/2003, but before 9/1/2008

Benefit Eligibility: Recipient of a retirement allowance with at least 120 months of service at retirement

Benefit: The system provides a monthly contribution subsidy of $10 for each year of earned service. The monthly contribution is increased by 1.5% each July 1. Benefits also include duty disability retirements, duty death in service and non-duty death in service.

Insurance Tier 3: Participation began on or after 9/1/2008

Benefit: Tier 3 insurance benefits are identical to Tier 2, except Tier 3 members are required to have at least 180 month of service in order to be eligible.

Contributions*:* MSD was required to contribute at an actuarially determined rate determined by Statute. Per Kentucky Revised Statute Section 78.545(33) normal contribution and past service contribution rates shall be determined by the KRS Board on the basis of an annual valuation last preceding July 1 of a new biennium. The KRS Board may amend contribution rates as of the first day of July of the second year of a biennium, if it is determined on the basis of a subsequent actuarial valuation that amended contribution rates are necessary to satisfy requirements determined in accordance with actuarial bases adopted by the KRS Board.

For the fiscal years ended June 30, 2018 and 2017, participating employers contributed 19.18% (14.48% allocated to pension and 4.70% allocated to OPEB) and 18.68% (13.95% allocated to pension and 4.73% allocated to OPEB) as set by KRS, respectively, of each Nonhazardous employee's creditable compensation. These percentages are inclusive of both pension and insurance payments for employers. Administrative costs of KRS are financed through employer contributions and investments earnings.

MSD has met 100% of the contribution funding requirement for the fiscal years ended June 30, 2018 and 2017. Total current year contributions recognized by the Plan were $8,207,009 ($6,195,907 related to pension and $2,011,102 related to OPEB) and $7,069,613 ($5,279,502 related to pension and $1,790,111 related to OPEB) for the years ended June 30, 2018 and 2017, respectively. The OPEB contribution amounts do not include the implicit subsidies reported in the amount of $392,546 and $201,532, respectively.

MSD has met 100% of the contribution funding requirement for the fiscal years ended June 30, 2016 and 2015. Total contributions recognized by the Plan were $4,767,402 ($3,470,758 related to pension and $1,296,644 related to OPEB) and $4,576,000 ($3,301,868 related to pension and $1,274,132 related to OPEB) for the years ended June 30, 2016 and 2015, respectively.

Members whose participation began before 9/1/2008:

Nonhazardous member contributions equal 5% of all creditable compensation. Interest paid on the members' accounts is currently 2.5%; and per statute shall not be less than 2.0%. Members are entitled to a full refund of contributions with interest.

Members whose participation began on or after 9/1/2008:

Nonhazardous member contributions equal to 6% of all creditable compensation, with 5% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Interest paid on the members' accounts will be set at 2.5%. Members are entitled to a full refund of contributions and interest in their individual account, however, the 1% contributed to the insurance fund is non-refundable.

Members whose participation began on or after 1/1/2014

Nonhazardous member contributions equal to 6% of all creditable compensation, with 5% being credited to the member's account and 1% deposited to the KRS 401(h) Account. Members are entitled to a full refund of contributions and interest on the member's portion of the hypothetical account, however, the 1% contributed to the insurance fund is non-refundable.

Pension Plan Information for June 30, 2018 Financial Statements:

Total Pension Liability: The total pension liability was determined by an actuarial valuation as of June 30, 2017, using the following actuarial assumptions, applied to all periods included in the measurement:

Price Inflation	2.30%
Salary increases	3.05%, average, including inflation
Investment rate of return	6.25%, net of pension plan investment expense, including inflation

The mortality table used for active members is RP-2000 Combined Mortality Table projected with Scale BB to 2013 (multiplied by 50% for males and 30% for females). For healthy retired members and beneficiaries, the mortality table used is the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (set back 1 year for females). For disabled members, the RP-2000 Combined Disabled Mortality Table projected with Scale BB to 2013 (set back 4 years for males) is used for the period after disability retirement. There is some margin in the current mortality tables for possible future improvement in mortality rates and that margin will be reviewed again when the next experience investigation is conducted. The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period July 1, 2008 – June 30, 2013.

Discount rate assumptions:

(a) Discount Rate: The discount rate used to measure the total pension liability was 6.25%, which was reduced from the 7.50% discount rate used in the prior year.

(b) Projected Cash Flows: The projection of cash flows used to determine the discount rate assumed the local employers and plan members would contribute the statutorily determined contribution rate of projected compensation over the remaining 26-year amortization period of the unfunded actuarial accrued liability. The actuarial determined contribution rate is adjusted to reflect the phase-in of anticipated gains on actuarial value of assets over the first four years of the projection period.

(c) Long-Term Rate of Return: The long-term expected return on plan assets is reviewed as part of the regular experience studies prepared every five years for the System. The most recent analysis, performed for the period covering fiscal years 2008 through 2013 is outlined in a report dated April 30, 2014. However, the Board of KRS has the authority to review the assumptions on a more frequent basis and adopt new assumptions prior to the next scheduled experience study. The long-term expected rate of return was determined by using a building-block method in which best-estimate ranges of expected future real rate of returns are developed for each asset class. The ranges are combined by weighting the expected future real rate of return by the target asset allocation percentage.

(d) Municipal Bond Rate: The discount rate determination does not use a municipal bond rate.

(e) Periods of Projected Benefit Payments: The long-term assumed rate of return was applied to all periods of projected benefit payments to determine the total pension liability.

(f) Assumed Asset Allocation: The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
US equity	17.50%	5.97%
International equity	17.50%	7.85%
Global bonds	4.00%	2.63%
Global credit	2.00%	3.63%
High yield	7.00%	5.75%
Emerging market debt	5.00%	5.50%
Private credit	10.00%	8.75%
Real estate	5.00%	7.63%
Absolute return	10.00%	5.63%
Real return	10.00%	6.13%
Private equity	10.00%	8.25%
Cash	2.00%	1.88%
	100.00%	6.56%

The long-term expected rate of return on pension plan assets was established by the KRS Board of Trustees at 6.25% based on a blending of the factors described above.

(g) Sensitivity Analysis: This paragraph requires disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents MSD's allocated portion of the net pension liability of the System, calculated using the discount rate of 6.25%, as well as what MSD's allocated portion of the net pension liability would be if it were calculated using a discount rate that is 1 percentage-point lower (5.25%) or 1 percentage-point higher (7.25%) than the current rate:

(dollars in thousands)	1% Decrease (5.25%)	Current Discount Rate (6.25%)	1% Increase (7.25%)
MSD's net pension liability	$ 117,945	$ 93,517	$ 73,083

Employer's Portion of the Collective Net Pension Liability: MSD's proportionate share of the net pension liability, as indicated in the prior table, is $93,516,713 or approximately 1.6%. The net pension liability was distributed based on 2017 actual employer contributions to the plan.

Measurement Date: June 30, 2017 is the actuarial valuation date and measurement date upon which the total pension liability is based.

Changes in Assumptions and Benefit Terms: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total pension liability have been updated as follows:

- The assumed investment rate of return was decreased from 7.50% to 6.25%.
- The assumed rate of inflation was reduced from 3.25% to 2.30%.
- Payroll growth assumption was reduced from 4.00% to 3.05%.

Changes Since Measurement Date: There were no changes between the measurement date of the collective net pension liability and the employer's reporting date.

Pension Expense: MSD was allocated pension expense of $15,988,493 related to the CERS for the year ending June 30, 2018.

Deferred Outflows and Deferred Inflows: Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce pension expense they are labeled as deferred inflows. If they will increase pension expense they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five-year period. Deferred inflows and outflows as of the Measurement Date include:

(dollars in thousands)	Deferred Outflow of Resources	Deferred Inflow of Resources
Difference between expected and actual experience	$ 116	$ 2,374
Change of assumptions	17,256	-
Changes in proportion and differences between employer contributions and proportionate shares of contributions	2,816	1,458
Differences between expected and actual investment earning on plan investments	1,157	-
	21,345	3,832
Contributions subsequent to the measurement date	6,196	-
Total	$ 27,541	$ 3,832

Deferred outflows of resources resulting from employer contributions subsequent to the measurement date of $6,195,907 will be recognized as a reduction of net pension liability in the year ending June 30, 2019. The remainder of the deferred outflows and deferred inflows of resources are amortized over three to five years with remaining amortization as follows:

(dollars in thousands)	
Year Ending June 30:	
2019	$ 7,232
2020	7,782
2021	3,700
2022	(1,201)
	$ 17,513

Pension Plan Fiduciary Net Position: Detailed information about the pension plans' fiduciary net position is available in the separately issued pension plan financial reports.

OPEB Information for June 30, 2018 Financial Statements:

Total OPEB Liability: The total OPEB plan was determined by an actuarial valuation as of June 30, 2017, using the following actuarial assumptions, applied to all periods included in the measurement:

Price inflation	2.30%
Payroll growth rate	2.00%
Salary increases	3.05%, average
Investment rate of return	6.25%
Healthcare trend rates	
Pre-65	Initial trend starting at 7.25% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years.
Post-65	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 11 years.

The mortality table used for active members is RP-2000 Combined Mortality Table projected with Scale BB to 2013 (multiplied by 50% for males and 30% for females). For healthy retired members and beneficiaries, the mortality table used is the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (set back 1 year for females). For disabled members, the RP-2000 Combined Disabled Mortality Table projected with Scale BB to 2013 (set back 4 years for males) is used for the period after disability retirement. There is some margin in the current mortality tables for possible future improvement in mortality rates and that margin will be reviewed again when the next experience investigation is conducted. The actuarial assumptions used in the June 30, 2017 valuation were based on the results of an actuarial experience study for the period July 1, 2008 – June 30, 2013.

Discount rate assumptions:

(a) Discount Rate: The discount rate used to measure the total OPEB liability was 5.84%, which was reduced from the 6.89% discount rate used in the prior year.

(b) Projected Cash Flows: The projection of cash flows used to determine the discount rate assumed the local employers and plan members would contribute the actuarially determined contribution rate of projected compensation over the remaining 26-year amortization period of the unfunded actuarial accrued liability.

(c) Long-Term Rate of Return: The long-term expected return on plan assets is reviewed as part of the regular experience studies prepared every five years for the System. The most recent analysis, performed for the period covering fiscal years 2008 through 2013 is outlined in a report dated April 30, 2014. However, the Board of KRS has the authority to review the assumptions on a more frequent basis and adopt new assumptions prior to the next scheduled experience study. The long-term expected rate of return was determined by using a building-block method in which best-estimate ranges of expected future real rate of returns are developed for each asset class. The ranges are combined by weighting the expected future real rate of return by the target asset allocation percentage.

(d) Municipal Bond Rate: The discount rate determination used a municipal bond rate of 3.56% as reported in Fidelity Index's "20 – Year Municipal GO AA Index" as of June 30, 2017.

(e) Period of Projected Benefit Payments: Current assets, future contributions, and investment earnings are projected to be sufficient to pay the projected benefit payments from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the system's actuarial determined contributions, and it is the actuary's understanding that any cost associated with the implicit subsidy will not be paid out of the system's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

(f) Assumed Asset Allocations: The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
US equity	17.50%	5.97%
International equity	17.50%	7.85%
Global bonds	4.00%	2.63%
Global credit	2.00%	3.63%
High yield	7.00%	5.75%
Emerging market debt	5.00%	5.50%
Private credit	10.00%	8.75%
Real estate	5.00%	7.63%
Absolute return	10.00%	5.63%
Real return	10.00%	6.13%
Private equity	10.00%	8.25%
Cash	2.00%	1.88%
	100.00%	6.56%

The long-term expected rate of return on pension plan assets was established by the KRS Board of Trustees at 6.25% based on a blending of the factors described above.

(g) Sensitivity Analysis: This paragraph requires disclosure of the sensitivity of the net OPEB liability to changes in the discount rate and changes in the healthcare cost trend rate.

The following presents MSD's allocated portion of the net OPEB liability of the System, calculated using the discount rate of 5.84%, as well as what the MSD's allocated portion of the System's net

OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower (4.84%) or 1-percentage-point higher (6.84%) than the current rate for Nonhazardous:

(dollars in thousands)	1% Decrease (4.84%)	Current Discount Rate (5.84%)	1% Increase (6.84%)
MSD's net OPEB liability	$ 40,869	$ 32,119	$ 24,387

The following presents the MSD's allocated portion of the net OPEB liability of the System, calculated using the healthcare cost trend rate of percent, as well as what the MSD's allocated portion of the System's net OPEB liability would be if it were calculated using a healthcare cost trend rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate for Nonhazardous:

(dollars in thousands)	1% Decrease	Current Healthcare Cost Trend Rate	1% Increase
MSD's net OPEB liability	$ 24,637	$ 32,119	$ 41,845

Employer's Portion of the Collective OPEB Liability: MSD's proportionate share of the net OPEB liability, as indicated in the prior table, is $32,118,692 or approximately 1.6%. The net OPEB liability was distributed based on 2017 actual employer contributions to the plan.

Measurement Date: June 30, 2017 is the actuarial valuation date and measurement date upon which the total pension liability is based.

Changes in Assumptions and Benefit Terms: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total OPEB liability have been updated as follows:

- The assumed investment rate of return was decreased from 7.50% to 6.25%.
- The assumed rate of inflation was reduced from 3.25% to 2.30%.
- Payroll growth assumption was reduced from 4.00% to 3.05%.

Changes Since Measurement Date: There were no changes between the measurement date of the collective net OPEB liability and the employer's reporting date.

OPEB Expense: MSD was allocated OPEB expense of $3,660,044 related to the CERS for the year ending June 30, 2018.

Deferred Outflows and Deferred Inflows: Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce OPEB expense they are labeled as deferred inflows. If they will increase OPEB expense they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five-year period. Deferred inflows and outflows as of the Measurement Date include:

(dollars in thousands)	Deferred Outflow of Resources	Deferred Inflow of Resources
Difference between expected and actual experience	$ -	$ 89
Change of assumptions	6,989	-
Changes in proportion and differences between employer contributions and proportionate shares of contributions	-	75
Differences between expected and actual investment earning on plan investments	-	1,518
	6,989	1,682
Contributions subsequent to the measurement date	2,404	-
Total	$ 9,393	$ 1,682

Deferred outflows of resources resulting from employer contributions subsequent to the measurement date of $2,403,648 which include the implicit subsidy reported of $392,546, will be recognized as a reduction of net OPEB liability in the year ending June 30, 2019. The remainder of the deferred outflows and deferred inflows of resources are amortized over three to five years with remaining amortization as follows:

(dollars in thousands)	
Year Ending June 30:	
2019	$ 913
2020	913
2021	913
2022	913
2023	1,293
Thereafter	362
	$ 5,307

OPEB Plan Fiduciary Net Position: Detailed information about the OPEB plans' fiduciary net position is available in the separately issued OPEB plan financial reports.

Pension Plan Information for June 30, 2017 Financial Statements:

Total Pension Liability: The total pension liability was determined by an actuarial valuation as of June 30, 2016, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.25%
Salary increases	4.00%, average, including inflation
Investment rate of return	7.50%, net of pension plan investment expense, including inflation

The mortality table used for active members is RP-2000 Combined Mortality Table projected with Scale BB to 2013 (multiplied by 50% for males and 30% for females). For healthy retired members and beneficiaries, the mortality table used is the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (set back 1 year for females). For disabled members, the RP-2000 Combined Disabled Mortality Table projected with Scale BB to 2013 (set back 4 years for males) is used for the period after disability retirement. There is some margin in the current mortality tables for possible future improvement in mortality rates and that margin will be reviewed again when the next experience investigation is conducted. The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period July 1, 2008 – June 30, 2013.

Discount rate assumptions:

(a) Discount rate: The discount rate used to measure the total pension liability was 7.50%.

(b) Projected cash flows: The projection of cash flows used to determine the discount rate assumed that local employers would contribute the actuarially determined contribution rate of projected compensation over the remaining 27-year amortization period of the unfunded actuarial accrued liability. The actuarial determined contribution rate is adjusted to reflect the phase in of anticipated gains on actuarial value of assets over the first four years of the projection period.

(c) Long-term rate of return: The long-term expected return on plan assets is reviewed as part of the regular experience studies prepared every five years for the System. The most recent analysis, performed for the period covering fiscal years 2008 through 2013 is outlined in a report dated April 30, 2014. Several factors are considered in evaluating the long-term rate of return assumption including long term historical data, estimates inherent in current market data, and a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected return, net of investment expense and inflation) were developed by the investment consultant for each major asset class. These ranges were 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 then adding expected inflation. The capital market assumptions developed by the investment consultant are intended for use over a 10-year horizon and may not be useful in setting the long-term rate of return for funding pension plans which covers a longer timeframe. The assumption is intended to be a long term assumption and 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.

(d) Municipal bond rate: The discount rate determination does not use a municipal bond rate.

(e) Periods of projected benefit payments: Projected future benefit payments for all current plan members were projected through 2117. The long-term assumed investment rate of return was applied to all periods of projected benefit payments to determine the total pension liability.

(f) Assumed Asset Allocation: The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long Term Expected Real Rate of Return
Combined equity	44.00%	5.40%
Combined fixed income	19.00%	1.50%
Real return (diversified inflation strategies)	10.00%	3.50%
Real estate	5.00%	4.50%
Absolute return (diversified hedge funds)	10.00%	4.25%
Private equity	10.00%	8.50%
Cash equivalent	2.00%	-0.25%
	100.00%	

The long-term expected rate of return on pension plan assets was established by the KRS Board of Trustees at 7.50% based on a blending of the factors described above.

(g) Sensitivity Analysis: This paragraph requires disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents MSD’s allocated portion of the net pension liability of the System, calculated using the discount rate of 7.50%, as well as what MSD's allocated portion of the net pension liability would be if it were calculated using a discount rate that is one percentage point lower (6.50 %) or one percentage-point higher (8.50 %) than the current rate:

(dollars in thousands)	1% Decrease (6.5%)	Current Discount Rate (7.5%)	1% Increase (8.5%)
MSD's net pension liability	$ 92,380	$ 74,132	$ 58,489

Employer's Portion of the Collective Net Pension Liability: MSD's proportionate share of the Plan's net pension liability, as indicated in the prior table, is $74,131,895. MSD's proportionate share of the CERS plan was approximately 1.506% for Nonhazardous service employees. The liability was distributed based on 2016 actual employer contributions to the plan.

Measurement Date: June 30, 2016 is the actuarial valuation date and measurement upon which the total pension liability is based.

Changes Since the Prior Measurement Date: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total pension liability have not been updated.

Changes Since Measurement Date: The following changes in the Plan's assumptions and benefit terms will be comprehended at the next measurement date of June 30, 2017. The impact on the District's financial statements from these changes is not known.

- The assumed investment rate of return was decreased from 7.50% to 6.25%.
- The salary increase assumption was decreased from 4.00% to 0.00%.
- The inflation assumption was decreased from 3.25% to 2.3%.

Pension Expense: MSD's proportionated share of Plan pension expense was $9,029,292 for Nonhazardous service employees.

Deferred Outflows and Deferred Inflows: Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce pension expense they are labeled as deferred inflows. If they will increase pension expense they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average remaining service life of the active and inactive System members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five-year period. The table below provides a summary of the deferred inflows and outflows as of the Measurement Date.

For year ending June 30, 2017:

(dollars in thousands)	Deferred Outflow of Resources	Deferred Inflow of Resources
Difference between expected and actual experience	$ 324	$ -
Change of assumptions	3,927	-
Changes in proportion and differences between employer contributions and proportionate shares of contributions	-	2,529
Differences between expected and actual investment earning on plan investments	6,969	-
	11,220	2,529
Contributions subsequent to the measurement date	5,279	-
Total	$ 16,499	$ 2,529

Deferred outflows of resources resulting from employer contributions subsequent to the measurement date will be recognized as a reduction of net pension liability in the year ending June 30, 2018. The remainder of the deferred outflow of resources is amortized over five years with remaining amortization as follows:

(dollars in thousands)	
Year Ending June 30:	
2018	$ 3,227
2019	2,161
2020	2,104
2021	1,199
	$ 8,691

Pension Plan Fiduciary Net Position: Detailed information about the pension plans' fiduciary net position is available in the separately issued pension plan financial reports.

Louisville and Jefferson County Metropolitan Sewer District
Schedule of Proporationate Share of the Net Pension Liability
For the Years Ended June 30,
(dollars in thousands)

	2018	2017	2016	2015
MSD's proportion of the net pension liability	1.60%	1.51%	1.60%	1.60%
MSD's proportionate share of the net pension liability	$93,517	$74,132	$68,653	$51,988
MSD's covered payroll	43,084	39,596	37,900	37,100
MSD's proportion of the net pension liability as a percentage of its covered payroll	217.1%	187.2%	181.1%	140.1%
Plan fiduciary net postion as a percentage of the total pension liability	53.32%	55.50%	59.97%	66.80%

Notes:

1) The amounts presented for each fiscal year were determined as of the prior year end.
2) This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, governments should present information for those years that information is available.

Changes in Assumptions and Benefit Terms:

2015: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total pension liability have been updated as described in Schedule D of the CERS actuary report. The changes are noted below:

- The assumed investment rate of return was decreased from 7.75% to 7.50%.
- The assumed rate of inflation was reduced from 3.50% to 3.25%.
- The assumed rate of wage inflation was reduced from 1.00% to 0.75%.
- Payroll growth assumption was reduced from 4.50% to 4.00%.
- The mortality table used for active members is RP-2000 Combined Mortality Table projected with Scale BB to 2013 (multiplied by 50% for males and 30% for females).
- For healthy retired members and beneficiaries, the mortality table used is the RP-2000 Combined Mortality Table projected with Scale BB to 2013 (set back 1 year for females). For disabled members, the RP-2000 Combined Disabled Mortality Table projected with Scale BB to 2013 (set back 4 years for males) is used for the period after disability retirement. There is some margin in the current mortality tables for possible future improvement in mortality rates and that margin will be reviewed again when the next experience investigation is conducted.
- The assumed rates of Retirement, withdrawal and disability were updated to more accurately reflect experience.

2016: There were no changes in assumptions and benefit terms since the prior measurement date.

2017: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total pension liability have been updated as follows:

- The assumed investment rate of return was decreased from 7.50% to 6.25%.
- The assumed rate of inflation was reduced from 3.25% to 2.30%.
- Payroll growth assumption was reduced form 4.00% to 3.05%.

Louisville and Jefferson County Metropolitan Sewer District
Schedule of Employer Contributions - Pension
For the Years Ended June 30,
(dollars in thousands)

	2018	2017	2016	2015
Statutorily required contribution for pension	$ 6,196	$ 5,279	$ 4,767	$ 4,576
Contribution in relation to the statutorily required contribution	(6,196)	(5,279)	(4,767)	(4,576)
Annual contribution deficiency (excess)	$ -	$ -	$ -	$ -
MSD contributions as a percentage of statutorily required contribution for pension	100%	100%	100%	100%
MSD covered payroll	$45,859	$43,084	$39,596	$37,900
Contributions as a percentage of MSD's covered payroll	13.51%	12.25%	12.04%	12.07%

Notes:

1) This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, governments should present information for those years that information is available.

Louisville and Jefferson County Metropolitan Sewer District
Schedule of Proporationate Share of the Net OPEB Liability
For the Years Ended June 30,
(dollars in thousands)

	2018
MSD's proportion of the net OPEB liability	1.60%
MSD's proportionate share of the net OPEB liability	$32,119
MSD's covered payroll	43,084
MSD's proportion of the net OPEB liability as a percentage of its covered payroll	74.55%
Plan fiduciary net position as a percentage of the total OPEB liability	52.40%

Notes:

1) This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, governments should present information for those years that information is available.

Changes in Assumptions and Benefit Terms:

2017: Since the prior measurement date, the demographic and economic assumptions that affect the measurement of the total OPEB liability have been updated as follows:

- The assumed rate of return was decreased form 7.5% to 6.25%.
- The assumed rate of inflation was reduced from 3.25% to 2.3%.
- Payroll growth assumption was reduced from 4.0% to 3.05%.

Louisville and Jefferson County Metropolitan Sewer District
Schedule of Employer Contributions - OPEB
For the Years Ended June 30,
(dollars in thousands)

	2018
Statutorily required contribution	$ 2,011
Contributions in relation to the statutorily required contribution	(2,011)
Annual contribution deficiency (excess)	$ -
MSD contributions as a percentage of statutorily required contribution for OPEB	100%
MSD covered payroll	$ 45,859
Contributions as a percentage of MSD's covered paryoll	4.39%

Notes:

1) This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, governments should present information for those years that information is available.

STATISTICAL SECTION

This section of the Louisville & Jefferson County Metropolitan Sewer District's (MSD) Comprehensive Annual Financial Report presents detailed information as a supplement to the information presented in the financial statements and note disclosures to assist readers in assessing MSD's overall financial health.

This schedule presents information to help readers assess MSD's debt burden and MSD's ability to issue additional debt in the future.

These schedules contain trend information to help readers understand how MSD's financial performance and position have changed over time. The information presented includes changes in net assets, an analysis of revenues and expenses and a comparative statement of cash flows

This schedule contains information to help readers assess MSD's most significant revenue sources.

These schedules contain service and infrastructure data to help the reader understand how the information in MSD's financial report relates to the services that it provides. The information provided includes service and administration costs, project schedules, and water treatment capacity.

These schedules offer demographic and economic indicators to help readers understand the environment within which MSD operates.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE SCHEDULE OF DEBT SERVICE COVERAGE
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Revenues:										
Service charges	$ 274,504	$ 253,943	$ 238,480	$ 225,462	$ 214,056	$ 205,222	$ 190,482	$ 183,297	$ 168,610	$ 163,004
Other operating income	4,645	5,691	4,810	4,407	2,576	4,823	1,756	2,379	2,980	4,552
Assessments	1,232	1,375	9,457	1,901	2,129	2,392	2,405	2,740	7,093	4,387
Investment income	16,531	14,273	17,278	17,623	20,330	20,119	40,687	33,700	36,045	25,568
Less: capitalized investment income	-	-	-	-	-	(3,817)	(1,851)	(12,134)	(5,990)	-
Total revenues	296,912	275,282	270,025	249,393	239,091	228,739	233,479	209,982	208,738	197,511
Operating expenses:										
Service and administrative costs[1]	131,948	119,586	117,671	106,301	108,814	108,041	108,325	107,307	101,068	93,935
Less: capitalized overhead	(38,148)	(31,949)	(30,516)	(30,056)	(33,568)	(33,110)	(33,200)	(30,308)	(28,129)	(25,257)
Capitalization Rate	29%	27%	26%	28%	31%	31%	31%	28%	28%	27%
Total operating expenses	93,800	87,637	87,155	76,245	75,246	74,931	75,125	76,999	72,939	68,678
Net revenues	203,112	187,645	182,870	173,148	163,845	153,808	158,354	132,983	135,799	128,833
Aggregate debt service:										
Current maturities of long-term debt	33,906	33,655	31,825	29,415	28,525	27,035	25,740	24,840	23,785	23,105
Interest expense - senior lien	95,041	90,117	86,818	83,404	80,613	92,616	89,243	78,954	69,949	72,776
Less: capitalized interest expense	(21,859)	(20,074)	(21,051)	(20,511)	(19,103)	(26,358)	(26,384)	(25,195)	(13,910)	-
Aggregate net debt service	$ 107,088	$ 103,698	$ 97,592	$ 92,308	$ 90,035	$ 93,293	$ 88,599	$ 78,599	$ 79,824	$ 95,881
Debt service coverage ratio[2]	190%	181%	187%	188%	182%	165%	179%	169%	170%	134%

[1]Excludes GASB 68 pension expense and GASB 75 OPEB expense

[2]Excludes GASB 68 pension expense and GASB 75 OPEB expense

This table has been prepared using the definitions of revenue, expense and debt service contained in MSD's 1993 Sewer & Drainage System Revenue Bond Resolution.

The 1993 Resolution and its supplements require MSD to provide "Available Revenues", as defined in the Resolution, sufficient to pay 110% of each fiscal year's "Aggregate Net Debt Service" on Revenue Bonds and 100% of "Operating Expenses". "Available Revenues", as used only for purposes of the Resolution, means all revenues and other amounts received by MSD and pledged as security for payment of Bonds issued pursuant to the Resolution, but excludes any interest income which is capitalized in accordance with generally accepted accounting principles. "Operating Expenses" includes all reasonable, ordinary, usual or necessary current expenses of maintenance, repair and operation determined in accordance with generally accepted accounting principles and the enterprise basis of accounting. "Operating Expenses" does not include reserves for extraordinary maintenance and repair, nor does it include administrative and engineering expenses of MSD which are necessary or incidental to capital improvements for which debt has been issued and which may be paid from the proceeds of such debt. "Aggregate Net Debt Service" is aggregate current principal and interest requirements on all Bonds issued pursuant to the Resolution, excluding (i) interest expense, which in accordance with generally accepted accounting principles, is capitalized and which may be paid from the proceeds of debt, and (ii) other amounts, if any, available, or expected to become available in the ordinary course for payment of principal and interest, and not included in "Available Revenues".

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF NET POSITION
ASSETS AND DEFERRED OUTFLOW OF RESOURCES
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Current Assets:										
Unrestricted cash and cash equivalents	$ 50,276	$ 42,449	$ 69,481	$ 63,013	$ 84,780	$ 66,376	$ 12,040	$ 34,508	$ 24,700	$ 22,552
Unrestricted investments	25,080	10,095	100	100	100	100	100	100	100	7,733
Restricted cash and cash equivalents	29,987	19,454	5,379	16,342	27,886	62,249	227,327	112,559	58,923	35,988
Restricted investments	-	22,675	14,999	-	-	90,574	94,639	294,868	394,880	61,303
Accounts receivable	26,332	23,480	26,696	23,787	21,809	18,465	16,666	17,789	15,779	18,065
Inventories	4,407	4,184	4,210	3,981	3,808	3,579	3,484	3,435	3,110	3,027
Prepaid expenses and other current assets	3,845	2,877	3,184	2,880	2,636	2,110	1,862	2,841	2,513	1,965
Total current assets	**139,927**	**125,214**	**124,049**	**110,103**	**141,019**	**243,453**	**356,118**	**466,100**	**500,005**	**150,633**
Plant, Lines and Other facilities:										
Completed projects	3,432,754	3,306,851	3,155,696	2,777,788	2,753,762	2,702,448	2,560,403	2,498,355	2,445,755	2,314,406
Less: Accumulated depreciation	(1,218,427)	(1,146,036)	(1,070,108)	(1,008,503)	(946,427)	(884,199)	(825,205)	(768,423)	(734,552)	(680,380)
	2,214,327	2,160,815	2,085,588	1,769,285	1,807,335	1,818,249	1,735,198	1,729,932	1,711,203	1,634,026
Construction in progress	711,655	581,222	487,674	623,181	463,167	371,816	370,350	272,850	140,134	182,711
Net plant, lines and other facilities	2,925,982	2,742,037	2,573,262	2,392,466	2,270,502	2,190,065	2,105,548	2,002,782	1,851,337	1,816,737
Other non-current assets	184,659	156,960	178,762	169,587	167,537	36,262	35,876	36,611	35,945	99,623
Total non-current assets	**3,110,641**	**2,898,997**	**2,752,024**	**2,562,053**	**2,438,039**	**2,226,327**	**2,141,424**	**2,039,393**	**1,887,282**	**1,916,360**
Total assets	**3,250,568**	**3,024,211**	**2,876,073**	**2,672,156**	**2,579,058**	**2,469,780**	**2,497,542**	**2,505,493**	**2,387,287**	**2,066,993**
Deferred outflow of resources	54,267	35,911	23,708	20,407	22,863	13,511	15,176	16,842	18,507	14,743
Total assets and deferred outflows	**$ 3,304,835**	**$ 3,060,122**	**$ 2,899,781**	**$ 2,692,563**	**$ 2,601,921**	**$ 2,483,291**	**$ 2,512,718**	**$ 2,522,335**	**$ 2,405,794**	**$ 2,081,736**

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENT OF NET POSITION
LIABILITIES, DEFERRED INFLOW OF RESOURCES AND NET POSITION
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Liabilities:										
Current liabilities (payable from current assets):										
Accounts payable and accrued expenses	$ 16,342	$ 16,550	$ 17,420	$ 14,936	$ 13,653	$ 12,693	$ 16,470	$ 15,732	$ 11,141	$ 11,035
Total current liabilities (payable from current assets)	16,342	16,550	17,420	14,936	13,653	12,693	16,470	15,732	11,141	11,035
Current liabilities (payable from restricted assets):										
Accounts payable and accrued expenses	47,472	30,764	33,271	30,607	14,712	16,168	12,656	15,105	13,692	7,735
Accrued interest	18,455	15,935	17,533	13,036	12,834	12,458	13,959	12,360	14,701	8,143
Current maturities of bonds payable	40,190	33,655	31,825	29,415	28,525	27,035	25,740	24,840	23,785	23,105
Refundable Deposits	2,861	2,300	2,557	1,639	1,568	1,137	1,013	1,341	1,622	3,478
Total current liabilities (payable from restricted assets)	108,978	82,654	85,186	74,697	57,639	56,798	53,368	53,646	53,800	42,461
Non-current liabilities:										
Bonds payable	1,956,540	1,831,605	1,722,745	1,583,390	1,549,700	1,478,225	1,536,770	1,591,670	1,302,000	1,385,185
Subordinated Debt	228,211	228,313	228,412	228,508	228,601	228,691	226,340	226,340	452,680	-
Unamortized debt premium/discount	90,628	74,328	67,462	60,797	60,263	56,764	45,841	25,646	9,562	8,912
Net Pension Liability and OPEB Liability	125,636	74,132	68,653	51,988	58,825	-	-	-	-	-
Other long-term liabilities	-	-	690	944	761	973	5,663	5,561	1,630	2,114
Total long-term debt	2,401,015	2,208,378	2,087,962	1,925,627	1,898,150	1,764,653	1,814,614	1,849,217	1,765,872	1,396,211
Total liabilities	2,526,335	2,307,582	2,190,568	2,015,260	1,969,442	1,834,144	1,884,452	1,918,595	1,830,813	1,449,707
Deferred inflow of resources	69,826	84,052	108,633	92,233	82,293	82,233	119,680	67,948	82,185	74,942
Net position:										
Net investment in capital assets	580,275	562,784	501,675	506,187	418,784	365,225	313,575	363,334	450,753	470,445
Restricted for payment of bond principal & interest	73,447	83,667	84,639	80,424	148,451	136,939	157,002	141,217	334,186	100,225
Unrestricted	54,952	22,037	14,266	(1,541)	(18,249)	64,750	38,009	31,241	(292,143)	(13,583)
Total net assets	708,674	668,488	600,580	585,070	548,986	566,914	508,586	535,792	492,796	557,087
Total liabilities, deferred inflows and net position	**$ 3,304,835**	**$ 3,060,122**	**$ 2,899,781**	**$ 2,692,563**	**$ 2,600,721**	**$ 2,483,291**	**$ 2,512,718**	**$ 2,522,335**	**$ 2,405,794**	**$ 2,081,736**

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Operating revenue:										
Wastewater service charges	$ 210,636	$ 194,965	$ 183,592	$ 173,895	$ 165,599	$ 159,791	$ 149,626	$ 145,880	$ 133,853	$ 130,661
Stormwater service charges	63,868	58,978	54,888	51,567	48,457	45,431	40,856	37,417	34,757	32,343
Other operating income	4,645	5,691	4,810	4,407	2,576	4,823	1,756	2,379	2,980	4,552
Total operating revenue	279,149	259,634	243,290	229,869	216,632	210,045	192,238	185,676	171,590	167,556
Operating expenses:										
Service and administrative costs	142,711	122,098	121,674	106,174	108,814	108,041	108,326	107,307	101,068	93,935
Capitalization/recovery of cost	(38,147)	(31,949)	(30,516)	(30,056)	(33,568)	(32,200)	(30,860)	(30,472)	(28,129)	(24,401)
Capitalized overhead (over) under applied	88	-	-	-	-	(910)	(2,340)	164	(2,988)	(856)
Depreciation and amortization	77,954	77,156	62,820	63,321	63,516	60,335	60,527	58,741	58,513	56,727
Total operating expenses	182,606	167,305	153,978	139,439	138,762	135,266	135,653	135,740	128,464	125,405
Income (loss) from operations	96,543	92,329	89,312	90,430	77,870	74,779	56,585	49,936	43,126	42,151
Non-operating revenue (expense):										
Investment income	6,280	4,047	7,559	7,527	10,234	3,695	29,682	25,722	33,785	25,504
Build America bond refund	10,249	10,226	10,332	10,096	10,096	10,986	10,986	7,978	2,260	-
Interest expense - bonds	(95,041)	(90,117)	(86,818)	(83,404)	(80,613)	(92,616)	(89,243)	(78,954)	(69,949)	(69,893)
Interest expense - swaps	(7,724)	(8,926)	(9,514)	(9,737)	(9,733)	(10,200)	(11,235)	(11,627)	(8,815)	(2,883)
Interest expense - other	(9,873)	(9,317)	(8,601)	(4,611)	(4,629)	(4,829)	(6,595)	(4,896)	(6,819)	-
Amortization of debt discount/premium	15,198	13,701	12,052	7,887	7,296	6,735	7,032	3,063	3,096	-
Amortization of loss on refunding	(3,147)	(3,070)	(1,949)	(1,980)	(2,552)	-	-	-	-	-
Capitalized interest	21,859	20,074	21,051	20,511	19,103	26,358	26,384	25,195	13,910	-
Decrease upon hedge termination	-	-	-	-	-	-	-	-	(58,556)	-
Change in fair values - swaps	16,317	26,072	(22,951)	(5,240)	(1,222)	36,286	(52,897)	22,638	(19,889)	-
Total non-operating revenue (expenses), net	(45,882)	(37,310)	(78,839)	(58,951)	(52,020)	(23,585)	(85,886)	(10,881)	(110,977)	(47,272)
Net income / (loss) before contributions	50,661	55,019	10,473	31,479	25,850	51,194	(29,301)	39,055	(67,851)	(5,121)
Contributions										
Property owner assessments	-	2,376	-	-	-	-	-	334	(545)	2,239
All other	12,726	10,513	5,037	4,605	8,103	7,134	2,095	3,413	4,105	9,450
Increase (decrease) in net position	63,387	67,908	15,510	36,084	33,953	58,328	(27,206)	42,802	(64,291)	6,568
Net position, beginning of year	668,488	600,580	585,070	548,986	515,033	508,586	535,792	492,796	557,087	550,519
Restatement for GASB 75 implementation	(23,201)	-	-	-	-	-	-	-	-	-
Net Position, beginning of year, as restated	645,287	600,580	585,070	548,986	515,033	508,586	535,792	492,796	557,087	550,519
Net position, end of year	$ 708,674	$ 668,488	$ 600,580	$ 585,070	$ 548,986	$ 566,914	$ 508,586	$ 535,598	$ 492,796	$ 557,087

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT

COMPARATIVE STATEMENTS OF CASH FLOWS

YEARS ENDED JUNE 30

DOLLARS IN THOUSANDS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Cash flows from operating activities:										
Cash received from customers	$ 276,711	$ 262,055	$ 240,202	$ 227,976	$ 213,215	$ 207,905	$ 193,446	$ 182,976	$ 171,641	$ 166,123
Cash paid to suppliers and employees	(95,150)	(88,300)	(85,202)	(75,258)	(73,175)	(79,926)	(76,077)	(72,566)	(72,426)	(66,297)
Net cash provided by operating activities	181,561	173,755	155,000	152,718	140,040	127,979	117,369	110,410	99,215	99,826
Cash flows from capital and related financing activities:										
Proceeds from issuance of revenue bonds	175,000	150,000	175,000	80,000	100,000	115,790	263,360	330,000	405,770	76,275
Proceeds from subordinated debt	226,340	226,340	226,340	226,340	226,340	228,735	226,340	226,340	452,680	-
Premium from sale of bonds	21,894	15,715	16,887							
Build America bond refund	10,248	10,226	10,332	10,096	10,096	10,986	10,986	7,978	2,260	-
Principal paid on debt	(263,395)	(271,064)	(255,291)	(271,853)	(253,465)	(399,424)	(543,700)	(491,955)	(488,275)	(95,045)
Interest and fees paid on debt	(102,394)	(103,919)	(92,246)							
Interest paid on swaps	(7,724)	(8,926)	(9,514)	(9,737)	(9,733)	(10,200)	(11,235)	(11,627)	(8,832)	(4,166)
Proceeds from capital grants	7,183	6,386	91							
Proceeds from sale of capital assets	3	10	614							
Payments for capital assets	(216,503)	(220,892)	(213,996)							
Proceeds from assessments	1,621	1,254	2,329							
Assessments extended	-	(2,376)	-							
Capital contributed by governments, property owners & developers	-	-	-	4,605	8,103	7,134	2,095	3,747	3,560	11,689
Assessments receivable	-	-	-	2,050	1,695	1,833	1,930	1,676	2,998	557
Interest income - assessments	-	-	-	340	687	731	852	994	1,588	1,471
Interest paid on revenue bonds	-	-	-	(87,813)	(91,719)	(98,944)	(94,240)	(86,191)	(70,192)	(69,063)
Acquisition and construction of capital assets	-	-	-	(147,842)	(121,237)	(113,144)	(119,988)	(167,816)	(86,590)	(75,970)
Acquisition of non-operating property	-	-	-	(247)	(211)	(223)	(213)	(221)	(484)	(261)
Net cash provided (used) by capital and related financing activities	(147,727)	(197,246)	(139,454)	(194,061)	(129,444)	(256,726)	(263,813)	(187,075)	214,483	(154,513)
Cash flows from investing activities:										
Change in investments	(56,798)	15,990	(15,047)	1,052	(30,642)	4,064	200,229	100,012	(325,944)	(27,455)
Investment income	5,081	2,951	5,626	13,974	15,708	13,941	38,515	40,097	37,329	24,859
Net cash provided (used) by investing activities	(51,717)	18,941	(9,421)	15,026	(14,934)	18,005	238,744	140,109	(288,615)	(2,596)
Net increase (decrease) in cash and cash equivalents	(17,883)	(4,550)	6,125	(26,317)	(4,338)	(110,742)	92,300	63,444	25,083	(57,283)
Cash and cash equivalents, beginning of year	99,545	104,095	97,970	124,287	128,625	239,367	147,067	83,623	58,540	115,823
Cash and cash equivalents, end of year	$ 81,662	$ 99,545	$ 104,095	$ 97,970	$ 124,287	$ 128,625	$ 239,367	$ 147,067	$ 83,623	$ 58,540

Presentation and classification of items in the Cash flows from capital and related financing activities section was changed to provide better clarity beginning with the 2017 CAFR. Prior years were not reclassified and are shown as originally presented.

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE SUMMARIES OF OPERATING REVENUE
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Service charges:										
Wastewater service charges:										
Residential	$ 116,458	$ 108,809	$ 101,405	$ 96,563	$ 89,691	$ 86,409	$ 80,779	$ 78,552	$ 73,228	$ 71,159
Commercial	66,651	61,860	58,343	62,257	58,812	57,192	53,116	46,598	42,741	42,312
Industrial	24,439	21,218	19,878	17,605	19,738	19,536	18,063	21,498	18,948	18,216
Other - net	7,517	6,853	8,186	2,806	2,611	2,267	2,219	1,847	1,756	1,601
Free sewer to Metro Government	(4,429)	(3,775)	(4,220)	(5,336)	(5,253)	(5,613)	(4,551)	(2,615)	(2,820)	(2,627)
Total wastewater service charges	210,636	194,965	183,592	173,895	165,599	159,791	149,626	145,880	133,853	130,661
Stormwater service charges:										
Residential	23,811	22,111	20,439	20,090	18,522	17,372	15,907	14,776	13,613	12,709
Commercial	35,778	35,372	32,971	28,936	27,910	26,123	23,017	20,862	19,433	18,012
Industrial	3,864	3,445	3,219	3,030	3,112	2,956	2,575	2,351	2,189	2,064
Other - net	2,533	-	-	-	-	-	-	-	-	-
Free drainage to Metro Government	(2,118)	(1,950)	(1,741)	(489)	(1,087)	(1,020)	(643)	(572)	(478)	(442)
Total stormwater service charges	63,868	58,978	54,888	51,567	48,457	45,431	40,856	37,417	34,757	32,343
Total service charges	274,504	253,943	238,480	225,462	214,056	205,222	190,482	183,297	168,610	163,004
Other operating income:										
Capacity charges	3,132	3,318	2,087	2,667	1,620	1,624	335	446	564	820
Connection fees	76	(723)	1,118	379	133	93	64	71	68	47
Regional facilities fees	-	-	16	34	-	-	-	-	-	-
Reserve capacity charges	-	-	-	-	-	64	-	-	11	28
Wastewater miscellaneous	1,437	3,096	1,589	1,327	823	2,984	1,299	1,804	2,279	3,599
Stormwater miscellaneous	-	-	-	-	-	58	58	58	58	58
Total other operating income	4,645	5,691	4,810	4,407	2,576	4,823	1,756	2,379	2,980	4,552
Total operating revenue	$ 279,149	$ 259,634	$ 243,290	$ 229,869	$ 216,632	$ 210,045	$ 192,238	$ 185,676	$ 171,590	$ 167,556

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE SUMMARIES OF SERVICE AND ADMINISTRATIVE COSTS
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Service and administrative costs:										
Labor	$ 64,718	$ 59,183	$ 55,229	$ 54,378	$ 57,249	$ 55,028	$ 55,010	$ 56,358	$ 52,945	$ 49,354
Utilities	16,640	14,427	18,256	13,817	14,563	12,821	14,555	13,853	11,879	10,818
Materials and supplies	8,647	7,976	4,183	9,706	8,151	8,990	8,972	9,043	9,031	8,742
Professional services	3,985	4,127	4,169	2,839	1,932	3,942	2,416	2,624	2,363	2,730
Maintenance and repairs	7,208	9,116	10,007	7,915	9,096	10,866	11,090	10,054	8,847	9,675
Billing and collections	5,755	5,467	4,853	4,327	4,095	4,904	4,309	4,318	4,461	3,623
Chemicals and fuel	5,706	6,375	5,697	5,297	5,143	5,907	5,714	5,702	6,099	5,687
Biosolids disposal	2,616	2,651	2,245	1,967	1,795	1,709	1,759	2,035	2,186	2,063
All other	17,665	11,142	13,960	6,520	7,238	4,369	4,901	3,694	3,638	2,817
Service and administrative costs[1]	132,940	120,464	118,599	106,766	109,262	108,536	108,726	107,681	101,449	95,509
Less: Recovery of cost										
Capitalized project cost	(38,147)	(31,949)	(30,516)	(30,056)	(33,568)	(33,110)	(33,200)	(30,472)	(28,129)	(24,401)
Revenue recoveries	(993)	(878)	(928)	(465)	(448)	(495)	(400)	(374)	(381)	(1,574)
Recovery of cost	(39,140)	(32,827)	(31,444)	(30,521)	(34,016)	(33,605)	(33,600)	(30,846)	(28,510)	(25,975)
Net service and administrative costs	$ 93,800	$ 87,637	$ 87,155	$ 76,245	$ 75,246	$ 74,931	$ 75,126	$ 76,835	$ 72,939	$ 69,534

[1]Excludes GASB 68 pension expense and GASB 75 OPEB expense

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
COMPARATIVE SCHEDULES OF PLANT, LINES AND OTHER FACILITIES
YEARS ENDED JUNE 30
DOLLARS IN THOUSANDS

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Completed projects										
Sewer lines	$ 1,497,090	$ 1,440,360	$ 1,379,153	$ 1,277,745	$ 1,274,180	$ 1,265,437	$ 1,179,685	$ 1,159,437	$ 1,134,637	$ 1,042,742
Wastewater treatment facilities	648,503	637,166	629,083	489,292	489,289	479,998	479,226	471,190	470,527	459,238
Stormwater drainage facilities	561,341	542,271	515,898	448,853	448,899	443,577	437,139	434,943	427,431	400,118
Pumping and lift stations	183,795	166,158	139,651	96,812	96,819	89,503	73,023	71,122	70,643	69,301
Administrative facilities	50,818	50,817	49,342	49,342	49,342	49,317	46,068	46,078	45,561	45,561
Maintenance facilities	8,504	8,504	8,504	8,037	8,037	8,037	8,037	8,037	7,827	7,827
Machinery, equipment and other	97,407	98,138	90,702	85,395	85,395	83,882	77,068	71,923	93,240	74,975
Capitalized interest	385,296	363,437	343,363	322,312	301,800	282,697	260,157	235,624	222,564	214,644
Total completed projects	3,432,754	3,306,851	3,155,696	2,777,788	2,753,761	2,702,448	2,560,403	2,498,354	2,472,430	2,314,406
Less accumulated depreciation	(1,218,427)	(1,146,036)	(1,070,108)	(1,008,503)	(946,426)	(884,199)	(825,205)	(768,423)	(734,552)	(680,380)
Total completed projects - net	2,214,327	2,160,815	2,085,588	1,769,285	1,807,335	1,818,249	1,735,198	1,729,931	1,737,878	1,634,026
Total construction in progress	711,655	581,222	487,674	623,181	463,167	371,816	370,350	272,850	140,134	182,711
Total net plant, lines and other facilities	$ 2,925,982	$ 2,742,037	$ 2,573,262	$ 2,392,466	$ 2,270,502	$ 2,190,065	$ 2,105,548	$ 2,002,781	$ 1,878,012	$ 1,816,737

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
MISCELLANEOUS OPERATING INDICATORS
YEARS ENDED JUNE 30

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Miscellaneous Operating Indicators										
Miles of sewers	3,463	3,322	3,293	3,240	3,263	3,240	3,332	3,200	3,207	3,197
Number of treatment plants	5	5	5	16	19	19	20	20	21	21
Number of service connections	283,936	280,489	280,063	253,462	240,174	239,334	235,136	230,240	228,580	226,711
Daily average treatment (MGD)	150	112	139	143	141	131	145	142	143	127
Daily treatment capacity (MGD)	200	170	170	177	177	177	173	173	174	174

MGD - millions of gallons per day

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
WASTEWATER TREATMENT PLANT CAPACITY
2018

Plant	Design Capacity MGD	Avg Daily Flow MGD	Eventual Capacity MGD	Customer Base Residential	Customer Base Commercial	Customer Base Industrial	Customer Base Total	Year Built	Treatment Process
Morris Forman	120.0	97.0	120.0	131,304	15,594	365	147,263	1958	Secondary added in 1972.
Derek R. Guthrie*	60.0	38.9	65.0	65,530	3,933	24	69,487	1986	Secondary
Hite Creek	6.0	4.4	9.0	10,427	630	8	11,065	1970	Tertiary: sand filter
Cedar Creek	7.5	5.6	11.3	17,248	1,119	9	18,376	1995	Tertiary: sand filter
Floyd's Fork	6.5	3.6	9.8	8,337	378	1	8,716	2001	Tertiary: sand filter
Total treatment system	200.0	149.5	215.1	232,846	21,654	407	254,907		

*Formerly known as the West County WTP
Source: MSD Engineering Department

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
GREATER LOUISVILLE, KENTUCKY / INDIANA
EMPLOYERS OF 1,000 EMPLOYEES OR MORE

	2018		2017		2016		2015		2014		2013		2012		2011		2010		2009		
Employers	Rank	Employees	Rank	Employees	Rank	Employees	Rank	Employees	Rank	Employees	Rank	Employees	Rank	Employees	Rank	Employees	Rank	Employees	Rank	Employees	Type of business
United Parcel Service, Inc.	1	21,233	1	22,354	1	22,080	1	22,189	1	20,931	1	20,047	1	20,117	1	20,388	1	20,125	1	20,513	P Air cargo transport and distribution
Jefferson County, KY Public Schools	2	14,476	2	14,553	2	14,739	2	14,719	2	14,676	2	14,269	2	14,366	2	13,840	2	13,964	2	13,326	G Primary and secondary education
Ford Motor Company	3	12,600	3	12,600	3	12,990	5	9,028	5	8,987	6	8,512	5	8,696	11	3,847	9	5,397	8	5,624	P Vehicle manufacturing
Norton Healthcare (formerly Alliant Health)	4	12,247	5	11,944	5	11,389	4	10,739	4	10,245	4	9,666	4	9,658	4	9,421	4	8,698	4	8,142	N Hospital and health care facilities
Humana, Inc.	5	12,000	4	12,500	4	12,500	3	12,900	3	12,371	3	11,235	3	11,000	3	10,017	3	9,400	3	10,096	P Group health insurance/HMOs
University of Louisville	6	6,933	6	7,065	7	6,375	6	6,264	7	6,161	7	6,187	6	6,273	6	5,746	5	6,352	6	6,135	G Higher education
Amazon.com	7	6,500	8	6,500	6	6,500	7	6,000	-	-	-	-	-	-	-	-	-	-	-	-	P Logistics & Customer Service
Louisville-Jefferson County Metro Government	8	6,226	9	6,192	8	6,095	8	5,584	8	5,654	9	5,651	8	5,689	7	5,706	7	5,765	7	5,811	G City/County Government
Baptist Healthcare System	9	6,159	7	6,786	10	4,995	9	5,116	11	5,339	11	4,854	11	4,219	12	3,752	12	3,889	12	3,305	N Hospital and health care facilities
Kentucky One Health Inc (formerly Jewish Hosp)	10	6,000	10	6,000	9	6,000	7	6,000	9	5,602	5	8,893	7	5,898	5	5,819	6	5,782	5	6,500	N Hospital and health care facilities
General Electric Company	10	6,000	10	6,000	9	6,000	7	6,000	6	6,230	8	6,000	9	5,000	10	3,988	11	4,100	11	4,000	P Appliance manufacturing
The Kroger Company	12	3,079	12	3,079	11	4,626	10	4,892	10	5,417	10	5,152	-	-	-	-	-	-	-	-	P Grocery Retailer
Spectrum (formerly Charter Communications)	13	2,400	15	2,400	33	1,200	35	1,131	34	1,200	-	-	-	-	-	-	-	-	-	-	P Call Center
Manna Inc	14	2,300	14	2,600	12	3,120	13	2,400	16	2,250	-	-	-	-	-	-	-	-	-	-	P Food service provider
Roman Catholic Archdiocese of Louisville	15	2,252	13	2,660	17	2,263	17	2,237	14	2,260	14	2,345	13	2,352	15	2,416	17	2,142	17	2,343	N Religious, educational, social services
LG&E and KU Energy (formerly EON)	16	2,162	17	2,201	18	2,211	18	1,993	18	2,178	16	2,131	16	2,066	19	1,976	19	1,976	20	1,902	P Gas & Electric Utility
ResCare Inc	17	1,948	19	1,948	14	2,435	28	1,312	35	1,054	-	-	-	-	-	-	-	-	-	-	P Health care provider
Robley Rex VA Medical Center	18	1,816	21	1,800	21	1,900	19	1,800	20	1,703	18	1,799	18	1,728	22	1,671	24	1,596	-	-	N Hospital and health care facilities
Bullitt County Public Schools	19	1,736	22	1,718	22	1,739	21	1,671	22	1,633	21	1,629	-	-	-	-	-	-	-	-	G Primary and secondary education
U.S. Postal Service	20	1,691	20	1,896	23	1,659	12	2,401	13	2,546	13	2,509	-	-	14	2,653	18	1,991	14	2,626	G Mail distribution
New Albany - Floyd County Schools	21	1,652	26	1,405	25	1,600	22	1,622	21	1,648	20	1,640	-	-	-	-	-	-	-	-	G Primary and secondary education
Papa John's International	22	1,626	18	2,088	19	2,088	30	1,279	25	1,503	35	1,143	-	-	-	-	-	-	-	-	P Quick service restaurant
Kindred Healthcare (formerly Vencor Inc.)	23	1,571	16	2,216	16	2,381	16	2,244	17	2,249	17	2,130	15	2,252	18	2,297	16	2,224	18	2,153	P Long-term health care, facilities
Oldham County Public Schools	24	1,567	23	1,638	24	1,604	15	2,300	23	1,576	22	1,602	19	1,690	21	1,689	28	1,500	25	1,568	G Primary and secondary education
Churchill Downs Inc.	25	1,515	25	1,526	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P Racing, gaming and online entertainment
Texas Roadhouse Inc.	26	1,500	29	1,320	35	1,179	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P Food service provider
Samtec Inc.	26	1,500	35	1,200	29	1,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P Electronic connectors & microelectronics products
Greater Clark County, IN School Corp.	28	1,447	32	1,295	32	1,247	24	1,447	24	1,303	30	1,357	27	1,346	28	1,364	30	1,395	27	1,409	G Primary and secondary education
Rawlings Group	29	1,440	28	1,332	30	1,211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P Insurance subrogation
Brown-Forman Corp.	30	1,300	31	1,304	29	1,300	31	1,266	31	1,256	32	1,244	31	1,196	34	1,184	37	1,240	37	1,081	P Distilled spirits manufacturing
Centerstone of Kentucky (formerly Seven Counties)	31	1,284	27	1,340	36	1,165	34	1,168	33	1,129	36	1,111	30	1,215	32	1,202	40	1,187	36	1,118	N Health care provider
Anthem, Inc.	32	1,269	34	1,238	29	1,300	26	1,350	32	1,139	37	1,100	34	1,122	35	1,150	36	1,276	29	1,358	P Health Insurance sales and services
US Census Bureau	33	1,209	38	1,185	38	1,037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N Government
LSC Communications (formerly Publisher's Printing)	34	1,200	35	1,200	27	1,400	25	1,413	28	1,432	24	1,516	24	1,450	27	1,367	27	1,500	23	1,600	P Trade, professional, special printing
JBS USA	34	1,200	37	1,189	34	1,180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P Pork Products
Faurecia	34	1,200	40	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P Exhaust systems, interiors & seat systems
PNC Bank	37	1,175	39	1,175	26	1,500	23	1,569	-	-	-	-	-	-	-	-	-	-	-	-	P Financial Services
Horseshoe Southern IN (formerly Caesars')	38	1,160	33	1,239	31	1,252	29	1,303	29	1,404	26	1,418	25	1,437	31	1,244	26	1,540	22	1,697	P Gaming and entertainment resort
Clark Memorial Hospital	39	1,060	-	-	33	1,225	33	1,225	30	1,270	-	-	-	-	-	-	-	-	-	-	P Health care provider
Mortenson Dental Partners	40	1,047	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P Dental Services
Commonwealth of Kentucky	-	-	-	-	13	2,514	11	3,794	12	4,042	12	4,161	10	4,232	9	4,488	10	4,361	10	4,253	G General purpose government
U.S. Federal Government	-	-	-	-	15	2,406	14	2,397	15	2,252	15	2,191	12	2,676	13	2,855	13	3,575	13	2,985	G General purpose government
Yum! Brands Inc. (formerly Tricon)	-	-	30	1,314	28	1,343	32	1,226	30	1,270	23	1,544	22	1,558	23	1,640	21	1,757	19	2,076	P Food service provider
Floyd Memorial Hospital & Health Services	-	-	-	-	20	1,950	20	1,756	19	1,769	19	1,711	20	1,612	24	1,546	29	1,473	32	1,338	P Hospital and health services provider
Securitas Security Services USA Inc.	-	-	-	-	-	-	27	1,328	26	1,476	25	-	21	1,598	33	1,191	41	1,150	35	1,150	P Security Services
Signature Healthcare	-	-	24	1,558	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N Post-acute and long-term care provider
Shelby County Public Schools	-	-	40	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	G Primary and secondary education
Al J Schneider Co	-	-	40	1,000	37	1,047	37	1,000	36	1,050	-	-	-	-	-	-	-	-	-	-	P Hotel / Restaurants
American Commercial Lines	-	-	-	-	-	-	36	1,100	-	-	-	-	-	-	-	-	-	-	-	-	P Marine Transportation Service
Total employees		156,680		162,558		164,045		155,163		144,205		134,747		120,446		114,457		115,355		114,109	

P=for-profit organization N=not-for-profit organization G=governmental organization

Source: Business First of Louisville, KY

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
ROLE OF OUTSTANDING DEBT AND MISCELLANEOUS DEMOGRAPHIC INFORMATION

Fiscal Year	Revenue Bonds *(In 000's)*	Population*	Personal Income***	Percentage of Personal Income	Unemployment Rate**	# of MSD Employees	# of MSD Service Connections	Miles of Sewer Line
2009	$ 1,408,290	736,705	$ 29,191,601	4.82%	10.4%	633	226,711	3,197
2010	$ 1,325,785	742,324	$ 29,921,911	4.43%	9.8%	651	228,580	3,207
2011	$ 1,616,510	746,372	$ 31,154,544	5.19%	9.9%	655	230,240	3,200
2012	$ 1,562,510	750,828	$ 32,592,092	4.79%	8.4%	666	235,136	3,232
2013	$ 1,505,260	756,832	$ 33,314,513	4.52%	8.2%	649	239,334	3,240
2014	$ 1,578,225	760,026	$ 34,609,792	4.56%	6.4%	606	240,174	3,263
2015	$ 1,612,805	763,623	$ 34,575,582	4.66%	4.9%	591	253,462	3,288
2016	$ 1,754,570	765,352	N/A	N/A	4.6%	617	280,063	3,293
2017	$ 1,865,260	N/A	N/A	N/A	4.6%	626	280,489	3,322
2018	$ 1,996,730	N/A	N/A	N/A	4.3%	632	283,936	3,463

*Source: U.S. Census Bureau (https://www.census.gov/quickfacts/fact/table/jeffersoncountykentucky/PST045216)
**Source: Workforce Kentucky Website (www.workforcekentucky.ky.gov)
***Source: Bureau of Economic Analysis website (www.bea.gov)

LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
TOP 10 WASTEWATER AND STORMWATER CUSTOMERS

Rank	Customer Name		FY '18 Wastewater Billed	Percent Total Wastewater Revenue
1	Heaven Hill Distilleries	$	5,291,400.74	2.51%
2	Swift Pork Co.	$	2,824,202.94	1.34%
3	Lubrizol Advanced Material**	$	2,335,162.41	1.11%
4	Early Times Distillery	$	998,463.76	0.47%
5	Ford Motor Co.	$	917,546.32	0.44%
6	Haier US Appliance Solutions	$	880,308.90	0.42%
7	Rohm & Haas	$	646,917.51	0.31%
8	Ford Motor Co.	$	643,713.38	0.31%
9	Louisville Metro Housing Authority	$	634,232.29	0.30%
10	Dean Milk	$	580,607.73	0.28%
	Total	**$**	**15,752,556**	**7.48%**
	Total FY 18 Wastewater Revenue:	$	210,635,803	

Rank	Customer Name		FY '17 Wastewater Billed	Percent Total Wastewater Revenue
1	Swift & Company	$	3,275,551.18	1.68%
2	Heaven Hill Distilleries	$	2,895,242.74	1.49%
3	Early Times Distillery	$	2,346,981.08	1.20%
4	Lubrizol Advanced Material**	$	2,233,568.89	1.15%
5	General Electric (Haier)	$	1,547,456.87	0.79%
6	Ford Motor Co.	$	1,026,321.51	0.53%
7	Louisville Metro Housing Authority	$	582,277.60	0.30%
8	Rohm & Haas	$	503,873.29	0.26%
9	Dean Milk	$	502,837.53	0.26%
10	Parralel Products	$	431,279.08	0.22%
	Total	**$**	**15,345,390**	**7.87%**
	Total FY 17 Wastewater Revenue:	$	194,965,047	

Rank	Customer Name		FY '18 Stormwater Billed	Percent Total Stormwater Revenue
1	Regional Airport Authority - Standiford	$	1,258,666	1.97%
2	United Parcel Service	$	610,278	0.96%
3	Ford Motor Co	$	359,114	0.56%
4	Lit Industrial Limited Partner	$	275,407	0.43%
5	Regional Airport Authority - Bowman	$	251,264	0.39%
6	Kentucky State Fair	$	250,477	0.39%
7	The U of L Campus	$	230,236	0.36%
8	Seaboard Systems	$	217,057	0.34%
9	Churchill Downs	$	208,239	0.33%
10	Lou Jeff City Redev Auth	$	198,156	0.31%
	Total	**$**	**3,858,894**	**6.04%**
	Total FY 18 Stormwater Revenue:	$	63,868,122	

Rank	Customer Name		FY '17 Stormwater Billed	Percent Total Stormwater Revenue
1	Regional Airport Auth	$	1,144,524	1.94%
2	United Parcel Service	$	567,604	0.96%
3	Ford Motor Co	$	437,886	0.74%
4	Lit Industrial Limited Partner	$	238,337	0.40%
5	Kentucky State Fair	$	233,353	0.40%
6	The U of L Campus	$	214,726	0.36%
7	Seaboard Systems	$	201,299	0.34%
8	Churchill Downs	$	193,808	0.33%
9	Lou Jeff City Redev Auth	$	182,589	0.31%
10	Norfolk Southern	$	154,154	0.26%
	Total	**$**	**3,568,280**	**6.05%**
	Total FY 17 Stormwater Revenue:	$	58,978,108	

* LIT Industrial Limited was formerly known as Trammell Crow Co.
**Lubrizol Advanced Material was formerly known as Oxy Vinyls

Safe, clean waterways

700 West Liberty Street
Louisville, KY 40203-1911
LouisvilleMSD.org
24/7 Customer Relations
502.587.0603

A publication of MSD Finance Department.

[This page intentionally left blank.]

APPENDIX C

UNAUDITED INTERIM FINANCIAL STATEMENTS FOR THE PERIOD ENDED MAY 31, 2019

[This page intentionally left blank.]

Louisville and Jefferson County Metropolitan Sewer District
Preliminary and Unaudited Financial Information
Statement of Net Position, May 31, 2019

	FY 2019	FY 2018
Current Assets		
Unrestricted Cash & Cash Equivalents	$ 40,330,073	$ 86,737,268
Sewer & Drainage Receivable	18,654,466	18,015,399
Assessment Warrants Receivable	287,039	319,889
Miscellaneous Receivables	3,393,399	1,434,587
Inventories	4,544,193	4,352,529
Prepaid Expenses	3,119,399	1,403,615
Restricted Funds	168,234,601	178,660,266
Accrued Interest Receivable	1,115,489	1,066,274
Total Current Assets	239,678,658	291,989,826
Non-Current Assets		
Utility Plant in Service	3,656,351,110	3,425,555,840
Accumulated Depreciation	(1,289,211,658)	(1,212,044,619)
Construction in Progress	697,012,417	653,679,972
Net Fixed Assets	3,064,151,869	2,867,191,193
Non-Current Receivables	30,406,712	32,415,326
Total Assets	3,334,237,239	3,191,596,345
Total Deferred Outflow of Resources	51,635,776	34,096,598
Total Assets & Deferred Outflow of Resources	$ 3,385,873,015	$ 3,225,692,943
Current Liabilities		
Miscellaneous Accounts Payable	$ 8,063,587	$ 7,590,913
Accounts Payable - Construction	7,555,386	1,490,221
Contract Retainage	12,273,300	13,030,532
Accrued Interest Payable	9,301,442	9,611,958
Current Maturities of Bonds Payable	42,200,000	40,190,000
Subordinate Debt	349,097,587	228,211,440
Deposits Payable	3,042,254	2,387,874
Accrued Salaries & Wages	1,108,488	2,106,526
Accrued Workers' Comp Insurance	1,620,288	1,392,946
Employee Comp Absences Payable	3,454,974	3,274,888
Total Current Liabilities	437,717,307	309,287,299
Non-Current Liabilities		
Long-Term Debt Payable	1,914,340,000	1,956,540,000
Unamortized Debt Premium	81,425,453	92,021,382
Other Long-Term Liabilities	125,635,402	74,131,895
Total Non-Current Liabilities	2,121,400,855	2,122,693,277
Total Liabilities	2,559,118,161	2,431,980,575
Total Deferred Inflow of Resources	80,199,272	68,121,483
Total Assets & Deferred Outflow of Resources	$ 2,639,317,433	$ 2,500,102,058
Net Position	$ 746,555,582	$ 725,590,885

Source: Louisville/Jefferson County Metropolitan Sewer District June 24, 2019

Louisville and Jefferson County Metropolitan Sewer District
Preliminary and Unaudited Financial Information
Statement of Revenues, Expense and Changes in Net Position, May 31, 2019

	FY 2019 YTD	FY 2018 YTD
Sewer Charges		
Residential	$ 111,584,680	$ 105,883,002
Commercial	65,842,525	61,709,036
Industrial	21,041,260	22,572,676
Other	6,318,150	6,891,403
Free Sewer Charges	(4,040,602)	(3,951,518)
Total Sewer Charges	200,746,013	193,104,599
Drainage Charges	63,533,186	58,146,244
Total Service Charges	264,279,199	251,250,843
Other Operating Income	4,734,719	4,353,735
Total Operating Revenues	$ 269,013,918	$ 255,604,578
Operating Expenses		
Salaries & Wages	$ 44,086,230	$ 41,623,243
Labor Related Overhead	19,553,558	17,026,110
Utilities	17,166,021	14,175,680
Materials & Supplies	7,752,654	7,587,247
Contractual Services	25,716,434	24,313,962
Chemicals	4,288,903	3,851,961
Fuel	1,246,492	1,145,300
Insurance Premiums & Claims	1,862,601	2,228,213
Bad Debt	3,601,184	3,550,000
Other Operating Expense	1,862,505	1,745,416
Mapping & Insurance Recovery	(949,794)	(784,183)
Capitalized Overhead	(31,461,783)	(30,690,474)
Capital Expenses (over)/under applied	-	-
Total Service and Administrative Costs	94,725,005	85,772,475
Depreciation	71,171,285	70,224,919
Amortization	1,368,249	1,242,443
Total Depreciation/Amortization	72,539,534	71,467,362
Total Operating Expenses	$ 167,264,539	$ 157,239,837
Net Operating Income	$ 101,749,379	$ 98,364,741
Non-Operating Revenue (Expenses)		
Gain/Loss Disposal of Assets	(662,836)	2,903
Investment Income	$ 17,494,659	$ 15,382,387
Interest Expense	(74,049,515)	(73,895,406)
Total Non-Operating Revenue (Expenses)	(57,217,692)	(58,510,116)
Contributions	4,541,012	2,224,012
Change in Net Position before change in Swaps	49,072,699	42,078,637
Change in Fair Value of Swaps	(11,191,604)	15,111,732
Change in Net Position after change in Swaps	$ 37,881,095	$ 57,190,369

Source: Louisville/Jefferson County Metropolitan Sewer District June 24, 2019

Louisville and Jefferson County Metropolitan Sewer District
Preliminary and Unaudited Financial Information
Statement of Revenues, Expense and Changes in Net Position, May 31, 2019

	FY 2019 YTD	FY 2018 YTD
Sewer Charges		
Residential	$ 111,584,680	$ 105,883,002
Commercial	65,842,525	61,709,036
Industrial	21,041,260	22,572,676
Other	6,318,150	6,891,403
Free Sewer Charges	(4,040,602)	(3,951,518)
Total Sewer Charges	200,746,013	193,104,599
Drainage Charges	63,533,186	58,146,244
Total Service Charges	264,279,199	251,250,843
Other Operating Income	4,734,719	4,353,735
Total Operating Revenues	$ 269,013,918	$ 255,604,578
Operating Expenses		
Salaries & Wages	$ 44,086,230	$ 41,623,243
Labor Related Overhead	19,553,558	17,026,110
Utilities	17,166,021	14,175,680
Materials & Supplies	7,752,654	7,587,247
Contractual Services	25,716,434	24,313,962
Chemicals	4,288,903	3,851,961
Fuel	1,246,492	1,145,300
Insurance Premiums & Claims	1,862,601	2,228,213
Bad Debt	3,601,184	3,550,000
Other Operating Expense	1,862,505	1,745,416
Mapping & Insurance Recovery	(949,794)	(784,183)
Capitalized Overhead	(31,461,783)	(30,690,474)
Capital Expenses (over)/under applied	-	-
Total Service and Administrative Costs	94,725,005	85,772,475
Depreciation	71,171,285	70,224,919
Amortization	1,368,249	1,242,443
Total Depreciation/Amortization	72,539,534	71,467,362
Total Operating Expenses	$ 167,264,539	$ 157,239,837
Net Operating Income	$ 101,749,379	$ 98,364,741
Non-Operating Revenue (Expenses)		
Gain/Loss Disposal of Assets	(662,836)	2,903
Investment Income	$ 17,494,659	$ 15,382,387
Interest Expense	(74,049,515)	(73,895,406)
Total Non-Operating Revenue (Expenses)	(57,217,692)	(58,510,116)
Contributions	4,541,012	2,224,012
Change in Net Position before change in Swaps	49,072,699	42,078,637
Change in Fair Value of Swaps	(11,191,604)	15,111,732
Change in Net Position after change in Swaps	$ 37,881,095	$ 57,190,369

Source: Louisville/Jefferson County Metropolitan Sewer District June 24, 2019

[This page intentionally left blank.]

APPENDIX D

FORM OF BOND COUNSEL OPINION

[This page intentionally left blank.]

August 19, 2019

Louisville and Jefferson County
Metropolitan Sewer District
Louisville, Kentucky 40203

The Bank of New York Mellon
Trust Company, N.A., as Registrar and Paying Agent
Louisville, Kentucky 40222

Re: $30,910,000 Louisville and Jefferson County Metropolitan Sewer District (Commonwealth of Kentucky) Sewer and Drainage System Revenue Refunding Bonds, Series 2019

Ladies and Gentlemen:

As Bond Counsel we have examined a copy of the transcript of proceedings relating to the original issuance by the Louisville and Jefferson County Metropolitan Sewer District (the "District"), a public body corporate and political subdivision of the Commonwealth of Kentucky (the "Commonwealth"), of the District's above-referenced Series 2019 Bonds in the aggregate principal amount of $30,910,000 (the "Refunding Bonds").

The Refunding Bonds are being issued pursuant to the provisions of [i] Chapter 76 of the Kentucky Revised Statutes, as amended (the "Act"), [ii] a Sewer and Drainage System Revenue Bond Resolution of the District adopted on December 7, 1992, as heretofore amended and supplemented (the "Resolution") and [iii] a Twenty-Eighth Supplemental Sewer and Drainage System Bond Resolution adopted by the District on April 22, 2019 (the "Supplemental Resolution", and the Resolution as amended and supplemented by the Supplemental Resolution, the "Bond Resolution") in order to currently refund the District's outstanding Sewer and Drainage System Revenue Bonds, Series 2009B.

The Refunding Bonds are dated on their original issuance as of August 19, 2019, mature or are subject to redemption through sinking fund installments on May 15 in each of the years and in the amounts, are subject on certain dates to redemption at the option of the District prior to maturity, and bear interest payable on May 15 and November 15 of each year commencing November 15, 2019, at the respective rates per annum, as have been established by the District pursuant to the Supplemental Resolution.

The Refunding Bonds and the interest thereon do not constitute a general obligation or indebtedness of the District, Louisville/Jefferson County Metro Government ("Metro Government"), the County of Jefferson, Kentucky (the "County") or the Commonwealth within the meaning of the Constitution and laws of the Commonwealth and are not a charge against the general credit or taxing power of the District, Metro Government, the County, the Commonwealth or any other political subdivision of the Commonwealth, but are a limited obligation of the District secured solely by and payable solely from the gross revenues derived from the collection of rates, rentals and charges for the services rendered by the District's sewer and drainage system. The District has no taxing power.

In our capacity as Bond Counsel we have examined such documents and matters and conducted such research as we have deemed necessary to enable us to express the opinions set forth below. We have also relied on an opinion dated as of even date herewith of Paula M. Purifoy, General Counsel to the District, with respect to the valid creation, organization and existence of the District and the due adoption by the Board of the District of the Bond Resolution. As to certain questions of fact, we have relied on statements and certifications of certain officers, employees and agents of the District and other public officials. Terms which are capitalized and not defined herein are defined in the Bond Resolution.

In rendering our opinions set forth below, we have assumed the authenticity of all documents submitted to us as originals, the legal capacity of natural persons and the conformity to the originals of all documents submitted to us as copies. We have assumed that parties other than the District had the requisite power and authority to enter into and perform all obligations of all documents to which they are parties. We have assumed the due authorization by all requisite action, and the execution and delivery by such other parties of such documents, and the validity and binding effect thereof on such other parties. We have relied for purposes of the opinions set forth below on the representations and warranties made in such documents by all parties thereto.

Based on the foregoing, and in reliance thereon, and on the basis of our examination of such other matters of fact and questions of law as we have deemed relevant in the circumstances, it is our opinion that:

1. The District is a public body corporate and political subdivision of the Commonwealth, validly existing under the provisions of the Constitution and laws of the Commonwealth, including the Act, with the right and power under the Act to adopt the Bond Resolution.

2. The Bond Resolution has been duly and lawfully adopted by the Board of the District.

3. The Bond Resolution is the valid and binding special limited obligation of the District enforceable in accordance with its respective terms.

4. The Refunding Bonds have been duly and validly authorized, executed and delivered by the District in accordance with law and the Bond Resolution and are the valid and binding special limited obligations of the District as provided in the Bond Resolution, enforceable in accordance with their terms and entitled to the benefit and security of the Bond Resolution and the Act as amended to the date hereof.

5. Under the laws of the Commonwealth as presently enacted and construed, the Refunding Bonds are exempt from ad valorem taxation, and the interest thereon is exempt from income taxation, by the Commonwealth and all of its political subdivisions and taxing authorities.

6. Under the Internal Revenue Code (the "Code") as presently enacted and construed, interest on the Refunding Bonds is excluded from gross income for federal income tax purposes.

7. The Bond Resolution creates the valid pledge which it purports to create of the Pledged Property, subject to the provisions of the Bond Resolution permitting the application thereof for the purposes and on the conditions set forth in the Bond Resolution.

For the purpose of rendering the opinion set forth in paragraph 6 above, we have assumed compliance by the District with the requirements of the Code that must be met subsequent to the issuance of the Refunding Bonds in order that the interest thereon be and remain excludable from gross income for federal income tax purposes. Failure to comply with such requirements could cause the interest on the Refunding Bonds to be included in gross income retroactive to their date of issuance. The District has covenanted to comply with such requirements.

The foregoing opinions are qualified to the extent that the enforceability of the Refunding Bonds and the Bond Resolution, including the rights and remedies thereunder, may be limited by equitable principles and by bankruptcy, insolvency, reorganization, moratorium or similar laws heretofore or hereafter enacted relating to or affecting the enforcement of creditors' rights or remedies. We also express no opinion as to the availability of equitable rights or remedies.

We are not expressing an opinion on the investment quality of the Refunding Bonds. We are members of the Bar of the Commonwealth and do not purport to be experts on the laws of any jurisdiction other than the Commonwealth and the United States of America, and we express no opinion as to the laws of any jurisdiction other than those specified. Our opinion relates solely to the questions set out herein and does not consider other questions of law.

Sincerely,

WYATT, TARRANT & COMBS, LLP

61855147.6

APPENDIX E

BOOK-ENTRY ONLY SYSTEM

[This page intentionally left blank.]

BOOK ENTRY SYSTEM

THE INFORMATION PROVIDED BELOW IN THIS APPENDIX E HAS BEEN PROVIDED BY DTC. NO REPRESENTATION IS MADE BY THE BOARD OR THE CORPORATION AS TO THE ACCURACY OR ADEQUACY OF SUCH INFORMATION PROVIDED BY DTC OR AS TO THE ABSENCE OF MATERIAL ADVERSE CHANGES IN SUCH INFORMATION SUBSEQUENT TO THE DATE HEREOF.

1. The Depository Trust Company ("DTC"), New York, NY, will act as securities depository for the securities (the "Bonds"). The Bonds will be issued as fully-registered securities registered in the name of Cede & Co. (DTC's partnership nominee) or such other name as may be requested by an authorized representative of DTC. One fully-registered Bond certificate will be issued in the aggregate principal amount of each maturity of Bonds and will be deposited with DTC.

2. DTC, the world's largest securities depository, is a limited-purpose trust company organized under the New York Banking Law, a "banking organization" within the meaning of the New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Securities Exchange Act of 1934. DTC holds and provides asset servicing for over 3.5 million issues of U.S. and non-U.S. equity issues, corporate and municipal debt issues, and money market instruments (from over 100 countries) that DTC's participants ("Direct Participants") deposit with DTC. DTC also facilitates the post-trade settlement among Direct Participants of sales and other securities transactions in deposited securities, through electronic computerized book-entry transfers and pledges between Direct Participants' accounts. This eliminates the need for physical movement of securities certificates. Direct Participants include both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations. DTC is a wholly-owned subsidiary of The Depository Trust & Clearing Corporation ("DTCC"). DTCC is the holding company for DTC, National Securities Clearing Corporation and Fixed Income Clearing Corporation, all of which are registered clearing agencies. DTCC is owned by the users of its regulated subsidiaries. Access to the DTC system is also available to others such as both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, and clearing corporations that clear through or maintain a custodial relationship with a Direct Participant, either directly or indirectly ("Indirect Participants"). DTC has a Standard & Poor's rating of AA+. The DTC Rules applicable to its Participants are on file with the Securities and Exchange Commission. More information about DTC can be found at www.dtcc.com.

3. Purchases of Bonds under the DTC system must be made by or through Direct Participants, which will receive a credit for the Bonds on DTC's records. The ownership interest of each actual purchaser of each Bond ("Beneficial Owner") is in turn to be recorded on the Direct and Indirect Participants' records. Beneficial Owners will not receive written confirmation from DTC of their purchase. Beneficial Owners are, however, expected to receive written confirmations providing details of the transaction, as well as periodic statements of their

holdings, from the Direct or Indirect Participant through which the Beneficial Owner entered into the transaction. Transfers of ownership interests in the Bonds are to be accomplished by entries made on the books of Direct and Indirect Participants acting on behalf of Beneficial Owners. Beneficial Owners will not receive certificates representing their ownership interests in Bonds, except in the event that use of the book-entry system for the Bonds is discontinued.

4. To facilitate subsequent transfers, all Bonds deposited by Direct Participants with DTC are registered in the name of DTC's partnership nominee, Cede & Co., or such other name as may be requested by an authorized representative of DTC. The deposit of Bonds with DTC and their registration in the name of Cede & Co. or such other DTC nominee do not effect any change in beneficial ownership. DTC has no knowledge of the actual Beneficial Owners of the Bonds; DTC's records reflect only the identity of the Direct Participants to whose accounts such Bonds are credited, which may or may not be the Beneficial Owners. The Direct and Indirect Participants will remain responsible for keeping account of their holdings on behalf of their customers.

5. Conveyance of notices and other communications by DTC to Direct Participants, by Direct Participants to Indirect Participants, and by Direct Participants and Indirect Participants to Beneficial Owners will be governed by arrangements among them, subject to any statutory or regulatory requirements as may be in effect from time to time. Beneficial Owners of Bonds may wish to take certain steps to augment the transmission to them of notices of significant events with respect to the Bonds, such as redemptions, tenders, defaults, and proposed amendments to the Bond documents. For example, Beneficial Owners of Bonds may wish to ascertain that the nominee holding the Bonds for their benefit has agreed to obtain and transmit notices to Beneficial Owners. In the alternative, Beneficial Owners may wish to provide their names and addresses to the Bond Registrar and request that copies of the notices be provided directly to them.

6. Redemption notices shall be sent to DTC. If less than all of the Bonds within an issue are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such issue to be redeemed.

7. Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to the Bonds unless authorized by a Direct Participant in accordance with DTC's MMI Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to Issuer as soon as possible after the record date. The Omnibus Proxy assigns Cede & Co.'s consenting or voting rights to those Direct Participants to whose accounts the Bonds are credited on the record date (identified in a listing attached to the Omnibus Proxy).

8. Redemption proceeds, distributions, and dividend payments on the Bonds will be made to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC. DTC's practice is to credit Direct Participants' accounts upon DTC's receipt of funds and corresponding detail information from Issuer or Agent, on payable date in accordance with their respective holdings shown on DTC's records. Payments by Participants to Beneficial Owners will be governed by standing instructions and customary practices, as is the case with securities held for the accounts of customers in bearer form or registered in "street

name," and will be the responsibility of such Participant and not of DTC, Agent, or Issuer, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of redemption proceeds, distributions, and dividend payments to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) is the responsibility of Issuer or Agent, disbursement of such payments to Direct Participants will be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners will be the responsibility of Direct and Indirect Participants.

9. DTC may discontinue providing its services as depository with respect to the Bonds at any time by giving reasonable notice to Issuer or Agent. Under such circumstances, in the event that a successor securities depository is not obtained, Bond certificates are required to be printed and delivered to DTC.

10. Issuer may decide to discontinue use of the system of book-entry-only transfers through DTC (or a successor securities depository). In that event, Bond certificates will be printed and delivered to DTC.

11. The information in this section concerning DTC and DTC's book-entry system has been obtained from sources that Issuer believes to be reliable, but Issuer takes no responsibility for the accuracy thereof.

Neither the Issuer nor the Bond Registrar shall have any responsibility or obligation to participants or to any beneficial owner with respect to (i) the accuracy of any records maintained by DTC or any participant; (ii) the payment by DTC or any participant of any amount with respect to the principal of or interest or compound accreted value on the Bonds; (iii) the delivery or timeliness of delivery by any participant or any notice to any beneficial owner which is required or permitted under the terms of the resolution or ordinance to be given to Bondholders; or (iv) any consent given or action taken by DTC or Cede & Co., as bondholder.

[This page intentionally left blank.]

APPENDIX F

CONSULTING ENGINEER'S REPORT

[This page intentionally left blank.]

FINAL REPORT

Series 2017 Sewer and Drainage Revenue Bonds Engineer's Report

Prepared for

Louisville & Jefferson County Metropolitan Sewer District

June 21, 2017

(Revised July 21, 2017)

ch2m

June 21, 2017
(Revised July 21, 2017)

Mr. Chad Collier
Chief Financial Officer
Louisville and Jefferson County MSD
700 West Liberty Street
Louisville, KY 40203-1911

Dear Mr. Collier:

Subject: Louisville & Jefferson County Metropolitan Sewer District Sewer and Drainage Revenue Bonds Series 2017 Engineer's Report

CH2M HILL Engineers, Inc. (CH2M) is pleased to submit this Bonds Engineer's Report to be included in the Official Statement prepared by the Louisville & Jefferson County Metropolitan Sewer District (MSD) in connection with the issuance of approximately $216 million in aggregate principal amount of Sewer and Drainage System Revenue Bonds, Series 2017 (the "Series 2017 Bonds"). The Series 2017 Bonds include Series 2017A ($175 million), which will fund wastewater and drainage infrastructure improvements, and Series 2017B ($40.525 million), which will refund MSD's outstanding 2007A bonds. The purpose of this report is to present the findings of an evaluation of MSD's existing sewer and drainage system and to present financial factors associated with the sale of the Series 2017 Bonds. This report is based on an analysis of MSD's records, reports, and Capital Improvement Program (CIP), as well as discussions with MSD personnel. Unless otherwise noted, or unless the context provides otherwise, capitalized terms used in this report shall have the meaning assigned to such terms in the Official Statement.

The evaluation of MSD's sewer and drainage system includes a discussion of the system's history and organization; service area; wastewater collection, transmission, and treatment system; drainage collection, transmission, and treatment system. This report also includes a review of historical operating results and presents projected outcomes for Fiscal Year (FY) 2017 through FY 2022, with the projected debt service. Projected debt service includes all of the outstanding bonds, including estimated debt service for the Series 2017 Bonds.

MSD's CIP consists of improvements that have been identified in several plans that have been developed for MSD, including most recently the Critical Repair and Reinvestment Plan (formerly called the 20-Year Comprehensive Facility Plan) currently being finalized following an extensive public review and outreach program conducted in 2017. These plans include improvements that are needed to comply with regulatory requirements, such as the Federal Consent Decree, Kentucky Pollution Discharge Elimination System (KPDES), and Municipal Separate Storm Sewer (MS4) Program, as well as other improvements that are needed for system expansion, redundancy, resiliency, and improved efficiency.

CH2M has been engaged by MSD on numerous wastewater and drainage engineering studies and improvements, as well as financial and rate-related studies for more than 35 years. CH2M led the team that developed the Integrated Overflow Abatement Plan in response to MSD's Federal Consent Decree. CH2M is also currently serving as MSD's Consent Decree Program Consultant, and the Project Manager for development of MSD's Critical Repair and Reinvestment Plan. Because of these earlier studies and ongoing program management responsibilities, CH2M has detailed knowledge of and experience with MSD's wastewater collection, transmission, and treatment system (the "Sewer System"); the drainage collection, transmission, and storage system (the "Drainage System"); and collectively the Sewer and Drainage System (the "System"); System operations, finances, and rates, and MSD's operating procedures.

Based on CH2M's evaluation and analysis and the assumptions stated in this Bond Engineer's Report, the following findings are noted:

1. MSD's Sewer System and Drainage System are well-maintained, well-managed, and generally in good operating condition. While the System currently operates well, it is aging and requires periodic renewal, rehabilitation, and expansion to ensure continued reliable service for their intended purpose. MSD's Critical Repair and Reinvestment Plan and current 5-year CIP include improvements to address these needs. MSD is in the process of inspecting the entire sewer system, and defects identified through that process are being addressed. Effective planning policies provide for the inspection, repair, improvement, and replacement of facilities and have enabled MSD to consistently meet state and federal regulations.

2. MSD provides drainage and flood protection for all of Jefferson County, except for four communities that operate their own drainage system, but are co-permittees under the MS4 program that MSD administers. Drainage and flood protection service is provided essentially to all of the developed area in the Louisville metro area.

3. MSD's drainage system consists of two components: an interior drainage system that collects and conveys stormwater across the County to the Ohio River; and the Ohio River Flood Protection System that holds back rising waters in the Ohio River during flood events, and to pump drainage from the interior of the County into the Ohio River.

4. MSD assumed responsibility for the drainage system in Jefferson County in 1987, which included a large backlog of problems and deferred maintenance. MSD has since conducted several studies and undertaken nearly $200 million in stormwater improvements to cost effectively address drainage issues. More recently, the drainage system has been dealing with an increased frequency of extreme storms and a higher percentage of impervious area as the community grows, leading to increased runoff. The Critical Repair and Reinvestment Plan has recommended changes in stormwater design and construction standards to mitigate these issues, and help manage the size and frequency of storms anticipated in the future.

5. The U.S. Army Corps of Engineers (USACE) completed a Levee Safety Evaluation in 2015 and found that the floodwalls, levees, and flood pumping stations in the Ohio River Flood Protection System met all applicable standards and was acceptable under the Federal Emergency Management Agency (FEMA) flood protection and insurance program. MSD has taken a proactive approach to improving its flood pumping stations beyond the minimums required to comply with FEMA requirements. The floodwalls and levees continue to be well-maintained, and are not expected to need expansion or to be raised, as they are already set several feet above the maximum flood elevation of record.

6. The wastewater flow projections presented herein were based on the projections that were prepared as part of the Facility Plans being prepared for both MSD and the Louisville Water Company (LWC). Population projections were prepared by the Urban Studies Institute (USI) of the University of Louisville, and were used in preparing the wastewater flow projections. Current population estimates and projections and anticipated impacts of the projected growth in population on wastewater volumes have been considered regarding the need for and timing of major facility expansions. These revised population and wastewater flow projections have also been considered in the system revenue projections.

7. The sewer system extends throughout much of the developed portions of Jefferson County, and through inter-local agreements, MSD also provides these services to portions of Oldham County and small parts of Bullitt County.

8. The sewer system, including MSD's five water quality treatment centers (WQTCs), either have the capacity to handle projected flows or will have with the planned capital improvement projects throughout the Critical Repair and Reinvestment Facility Plan forecast period (through 2035). Flows from growth areas in southeastern Jefferson County are anticipated to be treated in existing WQTCs, though consideration is being given to constructing a new WQTC in the Floyds Fork sub-basin of the Salt River.

9. MSD is consistently meeting regulatory requirements for its sewer and drainage system and is planning for regulatory requirements that MSD anticipates may be imposed on the system within the next 20 years. MSD's CIP includes improvements to address these anticipated requirements, and the financial plan presented herein incorporates plans for funding of these improvements. Note that a weather-related electrical failure at the Morris Forman WQTC caused several permit violations in 2015, but the damage has been corrected and the plant was returned to compliance quickly. Work is ongoing at the Morris Forman WQTC to completely replace an aging oxygen generation system that is limiting treatment effectiveness under some conditions. Permit violations at the Derek R. Guthrie WQTC in 2016 and 2017 were primarily caused by a delay in obtaining a revised KPDES permit reflecting the capacity of the facility after a recent expansion. MSD has been working with the Kentucky Department for Environmental Quality on the paperwork necessary to support a new permit appropriate for the expanded facilities.

10. Key staff are well-qualified and capable of managing current responsibilities. They are planning for implementation of future improvements.

11. In 2012, the Louisville Utility and Public Works Advisory Group (the "Advisory Group") was formed by the Louisville Metro Mayor, and was tasked with examining the operations of the LWC, MSD, and Louisville Metro Department of Public Works and Assets (DPW), to identify whether synergies exist between the entities that would allow for improved service or reduce costs. The Advisory Group found that there were potential savings in consolidating services of MSD and LWC. After a due diligence review conducted by both MSD and LWC, a Comprehensive Inter-Local Agreement (ILA) was developed to create coordinated teams of employees from both agencies with the capability of delivering superior customer service at lower costs than the existing two agencies combined. The ILA, as amended on August 24, 2015, is effective through June 30, 2035.

12. The financial model presented in this Bond Engineer's Report uses wastewater sales forecasts based in part on MSD's ongoing financial planning, and independent analyses by CH2M. The financial projections use historical wastewater sales results as the basis for its demand and revenue projections, adjusted for assumed rate adjustments, growth, and elasticity of demand impacts resulting from assumed rate increases. Note that the list of outstanding bonds in Table 6-8 was updated on July 21, 2017, based on updated information from MSD's financial advisor. No other changes have been made to the June 21, 2017 version of this report previously issued.

13. The findings herein assume that MSD will continue to adjust its sewer and drainage rates based on its past practice of increasing its wastewater and drainage rates annually to meet operating cost increases and capital needs, and as required to meet other financial needs or commitments. The future rate adjustments (FY 2019 and beyond) presented herein have been discussed with the MSD Board, but must be adopted annually by the MSD Board.

14. Under the assumptions described in this report, revenues under the projected rates presented herein will be sufficient to meet operating and other expenses, including debt service payments, bond debt service reserve requirements, and coverage requirements for FY 2017 through FY 2022 (the "Study Period"). The projected rates will also provide sufficient funds for planned capital improvement expenditures that are expected to be funded from current revenues. MSD's current sewer and drainage system rates are well within the range of those charged by many other municipalities in Kentucky, and similarly-sized cities throughout the nation.

15. The projected expenses of the sewer and drainage system, revenues to be generated by the sewer and drainage system, and the sources of funds projected to be available to fund scheduled or anticipated improvements throughout the Study Period of this Bond Engineer's Report are reasonable.

16. The financial plan presented herein provides sufficient funding for the MSD's adopted CIP in part through the issuance of bond issues in FY 2018 and in each of the subsequent fiscal years during the Study Period. These bond issues have been discussed with the MSD Board, but must be individually approved by both the MSD Board and the Louisville Metro Council.

17. A Critical Repair and Reinvestment Plan, including a comprehensive cost-of-service evaluation, is currently being prepared for MSD's Systems. CIP projections for long-term infrastructure needs have been provided to MSD as part of the Draft Critical Repair and Reinvestment Plan. The Draft Critical Repair and Reinvestment Plan was completed and released for public review and comment in January 2017. MSD conducted an extensive community outreach program between January 2017 and June 2017, to explain the benefits and costs of the long-term CIP and other operating program recommendations. This outreach program has been successful in facilitating a broad stakeholder and community dialog on the implementation approach and schedule of the proposed infrastructure improvements. MSD has presented the results of this outreach program to the MSD Board in support of a proposed 20 percent rate increase for FY 2018. The MSD Board approved this rate increase on May 22, 2017. The MSD Board-approved increase is greater than the 6.9 percent increase that the MSD Board can authorize without approval from the Louisville Metro Council. MSD is planning to present the increase for Metro Council approval. Since approval is not certain at the time of this report preparation, all the revenue and cost information presented herein have been based on an assumed FY 2018 rate increase of 6.9 percent, the amount that the MSD Board can implement without needing Metro Council approval. If a rate increase greater than 6.9 percent is approved by Metro

Council, it will have an immediate and positive impact on all the financial parameters presented in this report.

18. The improvements to be made to the sewer and drainage system have been or are expected to be designed in accordance with usual and customary engineering practices and involve proven technology and proven configurations of that technology.

19. In the opinion of CH2M, MSD's issuance of the Series 2017 Bonds in the aggregate principal amount of approximately $216 million for the purposes described in this Bond Engineer's Report on the MSD System, is both necessary to sustain MSD's record of regulatory compliance and customer service, and financially sound based on anticipated revenues.

Sincerely,

Gary J. Swanson, P.E.
Vice President
CH2M HILL Engineers, Inc.

Contents

Tables

Figures

Acronyms and Abbreviations

ADF	average daily flow
Advisory Group	Louisville Utility and Public Works Adivsory Group
Agreement	1986 Inter-local Cooperation Agreement
BAB	Build America Bonds
BOD	Biochemical Oxygen Demand
CH2M	CH2M HILL Engineers, Inc.
CIP	Capital Improvement Program
CMOM	Capacity, Management, Operations and Maintenance
Commonwealth	Commonwealth of Kentucky
CRS	Community Rating System
CSO	combined sewer overflow
DPW	Louisville Metro Department of Public Works and Assets
Drainage System	drainage collection, transmission, and storage system
DRI	Drainage Response Initiative
DSCR	debt service coverage ratio
ESU	equivalent service unit
Facility Plan	20-Year Comprehensive Facility Plan
FEMA	Federal Emergency Management Agency
FY	Fiscal Year
GE	General Electric
GIS	geographic information system
I&I	infiltration and inflow
ILA	Inter-Local Agreement
IOAP	Integrated Overflow Abatement Plan
KDEP	Kentucky Department for Environmental Protection
KPDES	Kentucky Discharge Elimination System
KRS	Kentucky Revised Statutes
LOJIC	Louisville & Jefferson County Information Consortium
LWC	Louisville Water Company
MGD	million gallons per day
MS4	Municipal Separate Storm Sewer
MSD	Louisville & Jefferson County Metropolitan Sewer District
NFIP	National Flood Insurance Program
NMC	Nine Minimum Controls
O&M	operations and maintenance
PDF	peak daily flow
Series 2017 Bonds	Sewer and Drainage System Revenue Bonds, Series 2017
Sewer System	MSD's wastewater colleciton, transmission, and treatment system
Study Period	FY 2017 through FY 2022
SWMP	Stormwater Master Plan
System	collectively the Sewer and Drainage System
TSS	Total Suspended Solids
UPS	United Parcel Service
USI	Urban Studies Institute (University of Louisville)
WQTC	water quality treatment center

SECTION 1

Introduction

1.1 Authorization and Purpose

The Louisville & Jefferson County Metropolitan Sewer District (MSD) authorized CH2M HILL Engineers, Inc. (CH2M) to prepare this Bonds Engineer's Report to analyze the feasibility of MSD issuing approximately $216 million in Sewer and Drainage System Revenue Bonds, Series 2017 (the "Series 2017 Bonds"). MSD is proposing to issue the Series 2017 Bonds to provide funds to pay the cost of issuance of the Series 2017 Bonds, make a deposit to the bond reserve account, provide funds for planned improvements to MSD's sewer and drainage system, and refund MSD's outstanding Series 2007A Sewer and Drainage System Revenue Bonds (the "Refunded 2007A Prior Bonds). The purpose of this report is to provide information pertinent to the issuance of the Series 2017 Bonds for inclusion in the Official Statement for the Series 2017 Bonds.

This Bond Engineer's Report describes the organization and management of MSD and the sewer and drainage system's respective service areas, facilities, operations, capital improvement program (CIP), and historical and projected financial performance. MSD's fiscal year (FY) 2017 is from July 1, 2016, to June 30, 2017. Historical operating results are presented for FY 2014 through FY 2016, with forecasted results for FY 2017, and projected operating results are presented for the Study Period (FY 2018 through FY 2022). Descriptions of the principal assumptions and limitations of the analysis are also included.

CH2M has been engaged by MSD on numerous wastewater and drainage engineering studies and improvements as well as financial and rate-related studies for more than 35 years. CH2M led the team that developed the Integrated Overflow Abatement Plan (IOAP) in response to MSD's Federal Consent Decree. CH2M is also currently serving as MSD's Consent Decree Program Consultant, and the Project Manager for development of MSD's Critical Repair and Reinvestment Plan (formerly referred to as the 20-Year Comprehensive Facility Plan). Because of these earlier studies and ongoing program management responsibilities, CH2M has detailed knowledge of and experience with MSD's wastewater collection, transmission, and treatment system (the "Sewer System"); the drainage collection, transmission, and storage system (the "Drainage System"), and collectively the Sewer and Drainage System (or the "System"); System operations, finances, and rates; and MSD's operating procedures.

1.2 Study Assumptions

In preparing this Bond Engineer's Report, CH2M relied on information provided by MSD and other sources. While offering no assurances with respect to this information, which has not been independently verified, CH2M believes that this information is valid for the purpose of this report. The following sources of information were used to prepare this report:

- Comprehensive annual financial reports for MSD for FY 2014 through FY 2016
- Financial reports and work papers for FY 2014 through FY 2017
- MSD's annual operating budgets for FY 2014 through FY 2018
- Integrated Overflow Abatement Plan
- Draft Critical Repair and Reinvestment Plan
- Stormwater Drainage Master Plan (1988)
- Sewer and Drainage System Revenue Bonds, Series 2016, Engineer's Report
- Financial, billing and operating data
- Discussions with MSD staff, consultants, and advisers

This report is based on the following assumptions and information:

- The population and wastewater flow projections for MSD's Wastewater System service area, and population projections for MSD's Drainage Service Area, which are based on the Urban Studies Institute (USI) of the University of Louisville projections, are reasonable for purposes of projecting the financial results of operations.
- MSD's FY 2017 revenue projections provided by MSD staff are reasonable for purposes of projecting future sewer and drainage revenues.
- Debt service information provided to MSD by its financial advisor for the Series 2017 Bonds is understood to be estimates reasonable for the purposes of this report. Existing debt service, based on data provided by MSD, is also included in projected debt service coverage included in this report.
- Historical financial and operating results are reasonable for the purposes of projecting future financial and operating results.

In preparing this Bond Engineer's Report, CH2M also made assumptions about future conditions; however, actual conditions may differ from those assumed. To the extent that future conditions differ from those assumed, results will vary from those forecasted. The principal assumptions regarding future conditions are as follows:

- The local economy will remain relatively stable, growing moderately in accordance with the projected rate of population growth (approximately 0.5 percent annually) through FY 2022.
- The forecasted annual escalation in the system's cash operating expenses during the 5-year Study Period reflects anticipated system growth, inflation, and the anticipated increase in depreciable capital assets requiring maintenance and repair. The average annual escalation in system cash operating expenses is projected to be 3 percent during the Study Period, which is higher than MSD has experienced over the past 5 years.
- Capital outlays will occur in general accordance with the schedules and cost estimates outlined in the capital improvements section of this report.
- Any future changes in management and/or administration within MSD will provide managerial skills comparable to those of the present MSD staff.
- MSD is making an investment of approximately $420 million during the 5-year Study Period to complete projects required by the IOAP prepared in response to MSD's Federal Consent Decree. In addition, MSD is planning for an additional investment of more than $51 million annually for renewal and replacement projects in wastewater, drainage, and support facilities. It is expected that one outcome of these rehabilitation projects is a reduction in infiltration and inflow (I&I) levels in MSD's sewer system. I&I levels have declined because the ambitious sewer rehabilitation program that MSD has undertaken in past periods, and I&I levels are expected to remain at or below these reduced levels.
- Wastewater discharge characteristics of future customers will be comparable to those of existing customers. Wastewater volume sales will be comparable to those observed in FY 2015 and FY 2016.
- Uncollected service billings as a percent of total sewer and drainage system service revenue billed will remain at or below historical levels.[1]
- The projected sources of funding for MSD's CIP will be available in the approximate amounts and terms assumed herein throughout the Study Period.

---

[1] Uncollected service billings were reported to have been approximately 1.0 percent of total sewer utility billings in FY 2015, and 1.5 percent of total drainage utility billings in 2015.

- MSD will, at a minimum, adopt the wastewater and drainage rate adjustments presented herein. Note that the rate adjustment shown for FY 2018 is less than what has been approved by the MSD Board, but represents the maximum rate increase the MSD Board can authorize without approval from the Louisville Metro Council. If a rate increase greater than that presented herein is eventually approved by the MSD Board and Louisville Metro Council, an immediate and positive impact will result in improved financial conditions. The financial analysis presented herein assumes future rate increases are projected to be within the MSD Board's authority to authorize without needing approval from Louisville Metro Council or any other elected or regulatory body.
- MSD may, in future years, request higher rate increases than those presented herein, for the purpose of accelerating the rate of implementation of the recommendations of the Critical Repair and Reinvestment Plan. Higher rates than those presented herein will require the approval of the Louisville Metro Council. If those higher rates are not approved by the Louisville Metro Council, the rate of implementation of the Critical Repair and Reinvestment Plan recommendations will not be accelerated, but will remain generally as presented herein.
- MSD will connect new customers to the sewer and drainage systems in general accordance with the projected system growth forecast herein.
- MSD will comply with its debt covenants, as set forth in the Resolutions of MSD authorizing the issuance of MSD's outstanding Sewer and Drainage System Revenue Bonds, and Proposed Series 2017 Bonds.

Note that in August 2005, MSD entered into a joint Consent Decree agreement with the federal government and the Commonwealth of Kentucky. The Consent Decree created the framework for a 19-year program to manage and mitigate combined sewer overflows (CSOs), and eliminates sanitary sewer overflows (up to a certain storm event). In 2009, the Consent Decree was to address recordkeeping and WQTC bypasses and treatment performance. For the purpose of this report the term "Consent Decree" will be used to refer to the 2009 Amended Consent Decree. If the August 2005 Consent Decree is being referred to, it will be referenced using the August 2005 date.

Metropolitan Sewer District

MSD is responsible for the operation of the sewer and drainage system serving most of Louisville Metro, which encompasses the City of Louisville and all of Jefferson County.[2] MSD is authorized by Chapter 76 of the Kentucky Revised Statutes (KRS) to construct additions, betterments, and extensions within its service area and to recover the cost of its services in accordance with rate schedules adopted by its MSD Board.

2.1 History

Beginning at or around 1850, the initial sewers in Louisville were constructed, with the initial combined storm and sanitary sewers constructed in 1860. MSD was formed in 1946 as a public body corporate and subdivision of the Commonwealth of Kentucky (the "Commonwealth"). MSD was created to operate and maintain the existing City of Louisville sewer and drainage system, and expand the system throughout Jefferson County.

In 1986, an Inter-local Cooperation Agreement (the "Agreement") was executed between MSD, the City of Louisville, and Jefferson County to improve and enhance flood control and stormwater drainage services in the City of Louisville and Jefferson County.[3] The Agreement transferred all drainage and flood control facilities and property to the custodianship of MSD and mandated MSD to be the responsible agency for providing flood and stormwater drainage services. The Agreement supplemented, as needed, the powers MSD already possessed, pursuant to the provisions of KRS Chapter 76. MSD also has separate agreements with the third-class and some fourth-class cities in Jefferson County to provide drainage services and be charged the same rates as charged to customers in the rest of MSD's drainage service area. These separate agreements are necessary, as KRS 76.172 does not allow MSD to uni-laterally annex into its drainage service area, cities of the fourth class or higher. (Section 156 of the Kentucky Constitution describes third class cities as having populations between 8,000 and 19,000, while fourth class cities are defined as having populations between 3,000 and 7,999.)

Under the Agreement, MSD leases the drainage facilities that were owned by the City of Louisville and Jefferson County. MSD has subsequently added many drainage facilities to the drainage system, which MSD owns. The MSD lease of the original facilities is scheduled to expire in 2036. It is expected that the lease of the original facilities will either be extended or ownership of the original facilities will be transferred to MSD, in due course of business.

2.2 MSD Board

The business, activities, and affairs of MSD are directed, managed, and controlled by an eight-member board (the "Board") that is appointed by the Louisville Metro Mayor, subject to the approval of the Louisville Metro Council. No more than five of the board members can belong to the same political party. Each board member is appointed for a 3-year term. Table 2-1 presents the current board members and the dates their current terms expire. Cyndi Caudill currently serves as Chairperson of the MSD Board, and Daniel Arbough, currently serves as MSD Board Vice-Chairperson.

---

[2] The Communities of Anchorage, Jeffersontown, Shively, and St. Matthews own and operate the drainage systems serving their communities. However, MSD continues to provide flood protection services that benefit these communities through the Ohio River Flood Protection System of floodwalls, levees, and flood pump stations. These communities are also co-permittees under the MS4 Program, which the MSD administers.

[3] The City of Louisville and Jefferson County have subsequently merged to form Louisville Metro.

Table 2-1. List of MSD Board Members

MSD Board Members	Term Expires
Cyndi Caudill (Chair)	August 31, 2017
Daniel Arbough (Vice-Chair)	June 30, 2018
Andrew Bailey	July 31, 2018
Jason Williams	February 28, 2018
Joyce Horton Mott	August 31, 2017
John Phelps	Pending
J.T. Sims	July 31, 2017
Marita Willis	June 30, 2019

2.3 Organizational Structure

MSD's staff, who are responsible for the day-to-day operations of the MSD, are organized into seven divisions:

- Executive Offices
- Legal
- Human Resources
- Information Technology
- Finance
- Engineering
- Operations

MSD currently employs approximately 620 personnel, with an additional 62.5 vacant positions that have been budgeted. More than half of these vacant positions are in the Engineering and Operations Divisions. MSD is actively pursuing filling these vacant positions.

MSD reorganized in early 2014 to better meet both MSD's strategic objectives as well as its operational requirements. The main changes under this new organizational structure were that engineering activities were placed in a single Engineering Division under the oversight of a Chief Engineer, and the Operations Division was organized into Treatment, Collections, and Drainage and Flood Protection Departments under the direction of a Chief Operator. MSD believes this new alignment will help it:

- Transition from 18 wastewater plants to 5 regional facilities (completed during 2016)
- Optimize its operations
- Help ensure compliance with its Consent Decree[4]
- Provide partnering opportunities with the Louisville Water Company (LWC) under the Mayor's One Water Initiative

Figure 2-1 provides an overview of the organization of MSD. The divisions and departments composing the divisions are also shown on the chart.

[4] The Commonwealth of Kentucky, Plaintiff, and the United States of American, Plaintiff-Intervener, v. Louisville and Jefferson County Metropolitan Sewer District, Defendant, in the United States District Court, Western District of Kentucky, Louisville Division. Amended Consent Decree, Case 3-08-cv-00608-CRS. Filed April 15, 2009. Available at http://www.msdprojectwin.org/Portals/0/Library/Consent%20Decree/Agreement/Commonwealth%20of%20KY%20vs%20MSD%20%20Amended%20Consent%20Decree.pdf.

Executive Offices Division
Executive Offices

DIVISION BUDGET STATUS	
Actual	34
Vacant	7
Authorized	41
Exempt	17
Non-Exempt	24
Unit	0
Total	41

BUDGET STATUS	
Actual	5
Vacant	1
Authorized	6
Exempt	5
Non-Exempt	1
Unit	0
Total	6

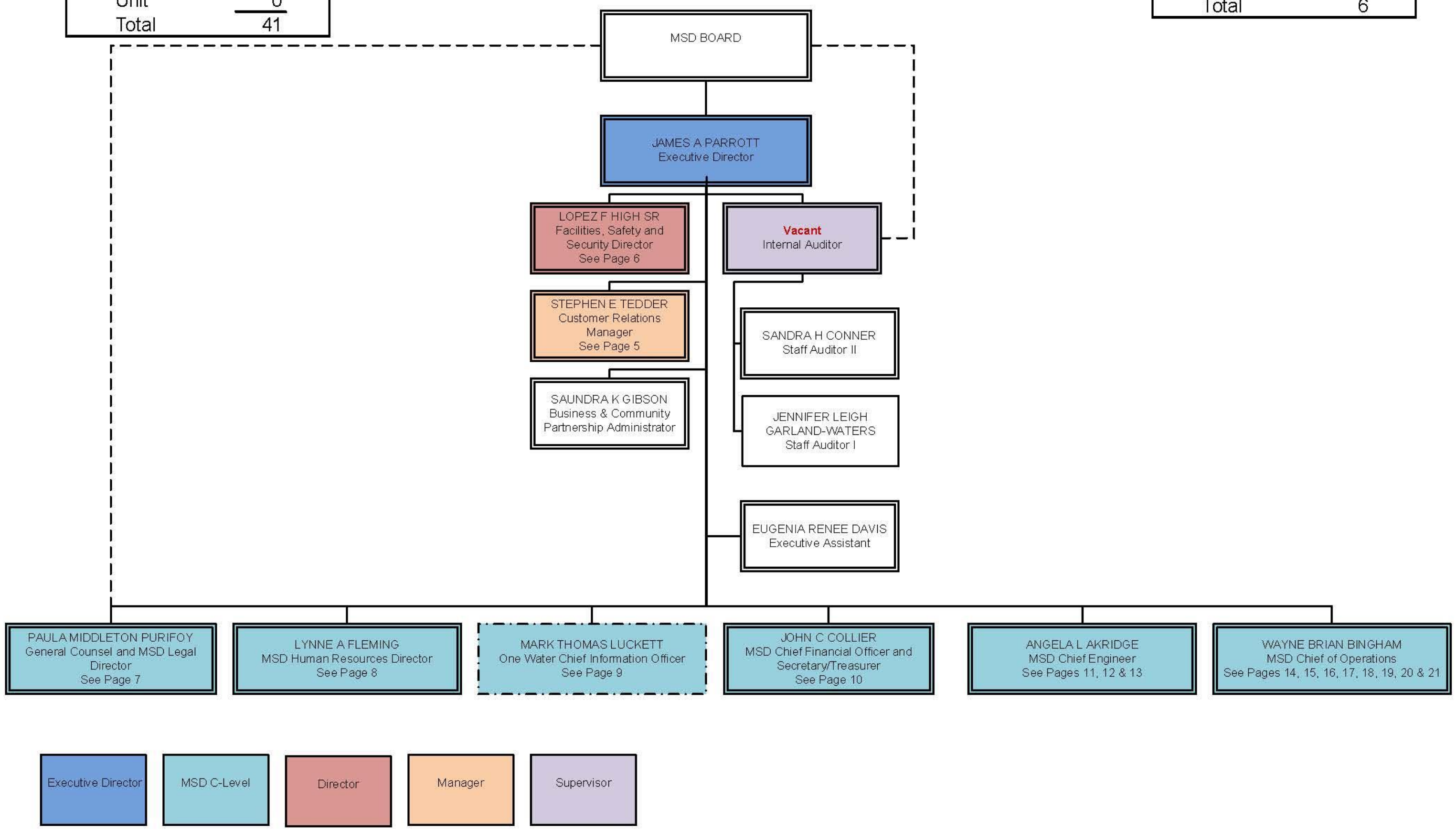


Figure 2-1. MSD Organizational Chart

The current Executive Director of MSD is Mr. James A. "Tony" Parrott. Mr. Parrott has been full time Executive Director of MSD since September 2015. Mr. Parrot has more than 30 years of experience working for public utilities. Before directing MSD, Mr. Parrott was Joint Utility Director of the Cincinnati Water Works and Metropolitan Sewer District of Greater Cincinnati for 10 years, and before that was Executive Director of the Department of Environmental Services for Butler County Ohio.

Mr. Parrott leads an executive leadership team comprised of each of the Division heads. MSD's seven divisions are described as follows:

- The Executive Offices Division includes the Executive Director and supporting staff, as well as internal auditors; facilities management; health, safety, and security; and customer relations staff. There are currently 34 staff in this Division, with seven vacancies.
- The Legal Division includes seven staff members including the General Counsel and other legal professionals, with three vacancies.
- The Human Resources Division consists of 15 staff members involved in training, human relations (including payroll and benefits), with one vacancy.
- The Information Technology Division provides technical support for data bases and personal computers, as well as for networks and applications, and for the Louisville & Jefferson County Information Consortium (LOJIC) System that MSD manages and maintains. LOJIC is a geographic information system (GIS) mapping cooperative that is made up of MSD, the LWC, and Metro to provide accurate data collection and storage of physical assets and attributes within Jefferson County. There are currently 30 staff members in this Division, with three vacancies.
- The Finance Division includes departments responsible for coordinating the budget, purchasing, supplier diversity, revenue, the office of the controller, and policy administrator. There are currently 31 staff in the Finance Division, with three vacancies.
- The Engineering Division is responsible for planning, design, and construction management/inspection of the sewer and drainage system's CIP. The Engineering Division is organized into departments responsible for Technical Services (primarily design and construction); Development and Stormwater; and Administrative, Regulatory Services, and GIS. There are currently 85 staff members in this Division, with 15 vacancies.
- The Operations Division is responsible for the operations and maintenance (O&M) of the sewer and drainage facilities. This Division is grouped into departments that are responsible for operations administration, operation of the wastewater treatment facilities, maintenance of the treatment facilities, sanitary sewer collection systems, drainage and flood protection, support services, and performance metrics. This Division currently employs 418 personnel, with 30 vacancies.

Mr. Parrott, as well as the Chief Financial Officer and Secretary Treasurer (John "Chad" Collier), and the Chief Engineer (Angela Akridge) are appointed by the Louisville Metro Mayor, and have employment contracts with MSD. Mr. Parrott's contract expires in September 2018. Mr. Collier's and Ms. Akridge's appointments are subject to annual renewal for a period of 4 years from initial appointment to their respective positions.

2.4 Service Area Population and Wastewater Flow Projections

In support of the Water and Wastewater Facility Plans being prepared for LWC and Louisville MSD, respectively, the USI of the University of Louisville prepared population projections for LWC's and Louisville MSD's service areas (see Table 2-2). Figure 2-2 graphically depicts population change both in terms of number and in percent.

Table 2-2. Population Projections 2010–2040 Louisville Metro and Market Areas
Source: University of Louisville Urban Studies Institute

	2010	2015	2020	2025	2030	2035	2040	Change 2010–2040	
								Numeric	**Percent**
Airport	2,536	2,521	2,503	2,533	2,553	2,608	2,658	122	4.8%
Central Bardstown	78,975	82,536	85,980	89,187	92,069	93,777	95,316	16,341	20.7%
Central Preston	54,027	56,243	58,379	60,202	61,805	63,399	64,880	10,853	20.1%
Central Taylorsville	52,977	55,536	58,016	60,456	62,675	63,839	64,888	11,911	22.5%
Downtown	13,291	13,405	13,501	13,716	13,880	14,120	14,335	1,044	7.9%
East Core	36,092	36,523	36,902	37,925	38,810	40,011	41,142	5,050	14.0%
East Metro	76,833	80,293	83,640	87,250	90,543	93,158	95,606	18,773	24.4%
Iroquois Park	51,891	52,113	52,261	53,412	54,367	55,836	57,204	5,313	10.2%
Jefferson Forest	22,522	23,058	23,560	24,438	25,226	26,162	27,051	4,529	20.1%
McNeely Lake	30,057	33,249	36,394	38,418	40,302	41,545	42,715	12,658	42.1%
North Floyds Fork	33,806	37,895	41,930	44,078	46,064	47,265	48,382	14,576	43.1%
Northeast Core	15,054	14,955	14,834	14,914	14,938	15,068	15,172	118	0.8%
Northeast Metro	16,305	17,714	19,098	20,119	21,066	21,720	22,335	6,030	37.0%
Northwest Core	32,005	30,725	29,402	28,551	27,596	26,787	25,931	-6,074	-19.0%
Parklands of Floyds Fork	13,040	15,524	17,985	19,149	20,244	20,940	21,598	8,558	65.6%
Riverport	14,902	15,412	15,899	16,602	17,243	17,855	18,434	3,532	23.7%
South-Central Dixie	54,600	56,643	58,607	60,855	62,882	64,751	66,504	11,904	21.8%
Southeast Core	49,229	48,637	47,976	47,807	47,464	47,457	47,366	-1,863	-3.8%
Southwest Core	44,210	44,333	44,394	45,298	46,036	47,335	48,549	4,339	9.8%
University	20,000	21,218	22,407	22,148	21,809	21,524	21,201	1,201	6.0%
West Core	28,744	29,466	30,147	30,370	30,482	30,751	30,966	2,222	7.7%
Louisville Metro	**741,096**	**768,000**	**793,817**	**817,427**	**838,053**	**855,909**	**872,231**	**131,135**	**17.7%**

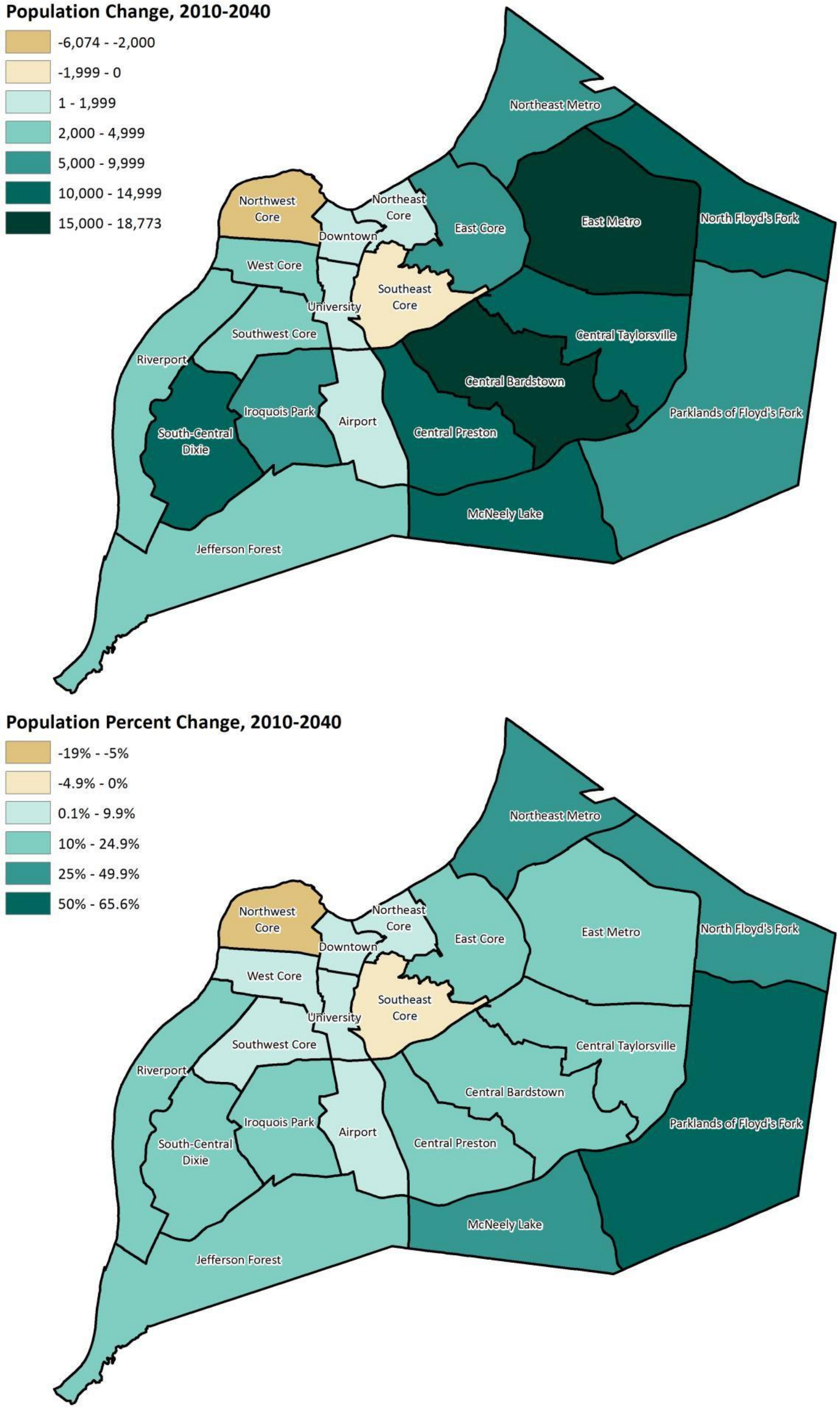


Figure 2-2. Projected Population Change (2010–2040) Louisville Metro
Source: University of Louisville Urban Studies Institute

Jefferson County is projected to grow by 131,135 people—an 18-percent increase—between 2010 and 2040. During the next 20 years, USI predicted an increase in population within MSD's service area of nearly 12 percent. This translates to an approximate increase in wastewater flows of 7 percent during the next 20 years. Growth is not projected to be uniform across MSD's service area. Population growth outside of the Core market areas (generally defined as the areas surrounding Downtown and the University that made up the main residential and commercial area of the original City of Louisville) is projected to continue at a faster pace than growth inside the Core. The largest numeric growth is expected to be in areas outside the Watterson Expressway and inside the Gene Snyder Freeway, in the East Metro and Central Bardstown market areas. Other large numeric gains (more than 10,000) are forecast in the North Floyds Fork, McNeely Lake, Central Taylorsville, South-Central Dixie, and Central Preston market areas. The largest population decline is projected in the Northwest Core market area. The Southeast Core market area is also forecast to experience a small population decline.

Market areas in eastern Jefferson County outside of the Gene Snyder are projected to see sizeable percentage gains in population. North Floyds Fork, McNeely Lake, and Northeast Metro are each projected to gain more than 25 percent of their current populations by 2040. Except for the East Core, market areas in the Core are forecast to see smaller percentage gains (less than 10 percent) or minor declines in population.

Jefferson County is projected to gain 65,425 households, a 21-percent increase, between 2010 and 2040. Because market areas within the Core are generally projected to have decreasing household sizes, several market areas within the Core are projected to experience a larger percentage change in households than in total population. Regardless, the largest numeric gain of households will be outside of the Core, in the East Metro market area. Other large numeric gains of households (more than 5,000) are projected in the Central Bardstown, North Floyds Fork, Central Taylorsville, McNeely Lake, South-Central Dixie, and Central Preston market areas, all of which are outside of the Core.

The largest percentage growth in households is expected in the Parklands of Floyds Fork and North Floyds Fork, both of which are projected to experience a larger than 50-percent increase in households between 2010 and 2040. The Southeast Core, University, and Northwest Core market areas are projected to experience minor declines in the number of households between 2010 and 2040. Though the University market area is projected to gain population during the coming decades, students living in University housing are classified as residing in group quarters rather than households, and are therefore not reflected in household change.

According the latest published U.S. Census Bureau statistics, the median household income in Jefferson County is $48,695 (2015 dollars).

Table 2-3 lists total household projections prepared by the University of Louisville USI for LWC's and Louisville MSD's service areas. Figure 2-3 graphically depicts the change both in terms of number and in percent.

Table 2-3. Projections of Total Households 2010–2040 (Louisville Metro and Market Areas)
Source: University of Louisville Urban Studies Institute

								Change 2010–2040	
	2010	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**Numeric**	**Percent**
Airport	960	967	973	990	1,001	1,031	1,058	98	10.2%
Central Bardstown	32,655	34,421	36,139	37,579	38,791	39,534	40,140	7,485	22.9%
Central Preston	22,124	23,218	24,280	25,169	25,905	26,623	27,249	5,125	23.2%
Central Taylorsville	22,069	23,440	24,778	26,062	27,187	27,749	28,215	6,146	27.8%
Downtown	5,785	6,023	6,252	6,515	6,739	6,994	7,224	1,439	24.9%
East Core	16,666	17,060	17,430	18,065	18,590	19,212	19,767	3,101	18.6%
East Metro	33,790	35,993	38,145	40,272	42,154	43,677	45,050	11,260	33.3%
Iroquois Park	21,031	21,241	21,422	21,940	22,326	22,948	23,490	2,459	11.7%
Jefferson Forest	8,530	8,948	9,353	9,861	10,308	10,774	11,204	2,674	31.3%
McNeely Lake	11,321	12,713	14,088	14,970	15,760	16,321	16,825	5,504	48.6%
North Floyds Fork	12,996	14,896	16,775	17,815	18,746	19,208	19,604	6,608	50.8%
Northeast Core	7,904	7,929	7,943	8,011	8,029	8,121	8,185	281	3.6%
Northeast Metro	6,364	7,123	7,871	8,385	8,848	9,104	9,328	2,964	46.6%
Northwest Core	12,358	12,153	11,930	11,667	11,332	11,005	10,640	-1,718	-13.9%
Parklands of Floyds Fork	4,951	6,016	7,072	7,566	8,013	8,224	8,407	3,456	69.8%
Riverport	5,797	6,061	6,316	6,662	6,968	7,209	7,426	1,629	28.1%
South-Central Dixie	21,684	22,705	23,694	24,714	25,583	26,288	26,903	5,219	24.1%
Southeast Core	23,215	23,167	23,086	23,106	22,986	22,988	22,910	-305	-1.3%
Southwest Core	18,132	18,262	18,366	18,758	19,036	19,485	19,867	1,735	9.6%
University	9,884	9,733	9,568	9,474	9,322	9,194	9,035	-849	-8.6%
West Core	10,959	11,119	11,264	11,510	11,686	11,900	12,072	1,113	10.2%
Louisville Metro	**309,175**	**323,189**	**336,744**	**349,090**	**359,312**	**367,590**	**374,600**	**65,425**	**21.2%**

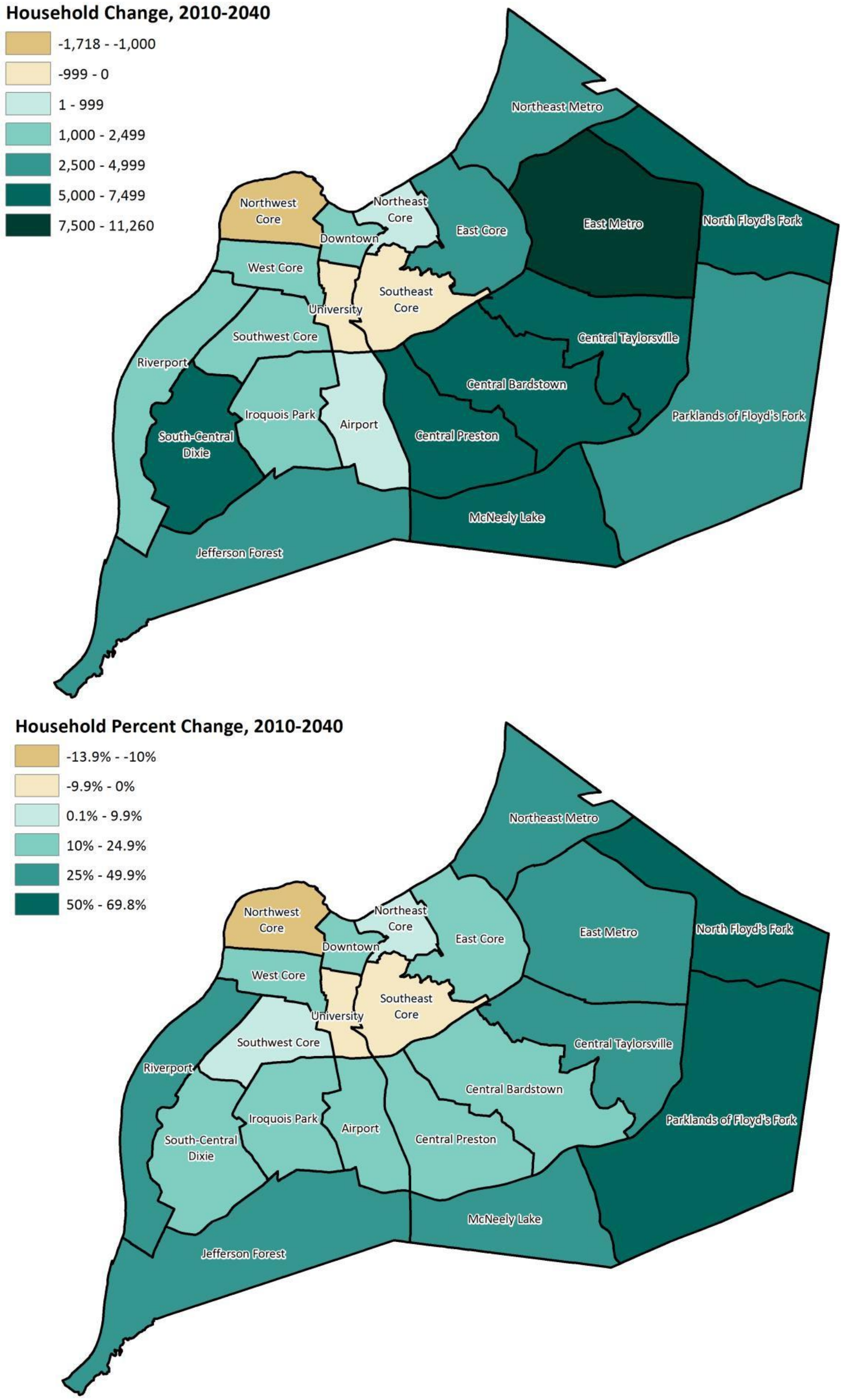


Figure 2-3. Projected Household Change 2010–2040
Source: University of Louisville Urban Studies Institute

2.5 Local Economy

The Louisville area experienced significant economic prosperity during the 1990s. Louisville's growth was driven primarily by the manufacturing and service sectors. In the 1990s, Louisville saw major investments at the two Ford Motor plants and at General Electric's (GE's) Appliance Park. Other notable developments in the 1990s included an expanded airport, several new industrial parks, an expanded convention center, a new football stadium, a large riverboat casino in nearby Harrison County, Indiana, a new minor league baseball stadium, a revived downtown, a redeveloped riverfront, and a thriving real estate market.

While the national trend of economic expansion stalled, local economic investment continued, but at a slower pace than in previous years. Investment in the service sector is still ongoing. The service sector includes healthcare, insurance, restaurants, and the like, and the distribution industry, which may be the single most important economic growth industry in Louisville Metro today and for the foreseeable future. The most notable local example is United Parcel Service (UPS). UPS completed a $1.1-billion, automated sorting facility, UPS Worldport, at Louisville International Airport in September 2002. Worldport is UPS's all-points, worldwide sorting facility for express mail packages. Continued UPS expansion of Worldport for an additional $1+ billion was completed in May 2010. This expansion included the addition of two aircraft load/unload "wings" to the hub, followed by the installation of a high-speed conveyor and computer control system, and increased Worldport by 1.2 million square feet to 5.2 million square feet.

The local transportation infrastructure and distribution network continues to attract other businesses to the area. Louisville International Airport ranked third in 2015 among U.S. airports for air cargo volume and seventh worldwide. The airport handled more than 2.35 million metric tons of cargo, freight, and mail in 2015, an increase of 60,000 metric tons from 2014 levels.[5]

The following are examples of recent and continuing local development activities and accomplishments:

- In September 2016, the International Trade Administration released its 2015 rankings for U.S. metropolitan area exports. Exports amounted to $8 million in 2015. Louisville ranked 40th overall for total exports.[6]
- Greater Louisville, Inc. the Metro Chamber of Commerce, tracks how Louisville Metro is viewed from the outside. Several notable observations are as follows:[7]
  - Louisville ranks 7th in the top 10 Cities for Job Creation, as compiled by Gallup.
  - Smart Asset Ranks Louisville No. 8 on their "Top 10 Cities for First-Time Homebuyers".
  - Louisville Ranks No. 9 in Site Selection's "2014 Top Metros by Number of Projects".
  - Louisville was listed among the top places to travel in Fodor's Travel, "Where to Go in 2015".
  - Louisville Ranks 8th in Forbes', "2015 America's Most Affordable Cities", and 4th in its "Big Cities Leading a U.S. Manufacturing Revival".
  - Association of American Retired Persons named Louisville One of the "10 Best Cities to Retire".
  - Louisville ranked 22nd out of 373 metropolitan statistical areas on "Area Development Magazine's" Leading Locations for 2015 list after coming in at 120 the previous year.

---

[5] Preliminary World Airport Traffic and Rankings 20152015. Airports Council International – North America. April 4, 2016.

[6] Exports from U.S. Metropolitan Areas. International Trade Association, U.S. Department of Commerce. Accessed May 18, 2017, from http://tse.export.gov/metro/SelectReports.aspx?DATA=Metro

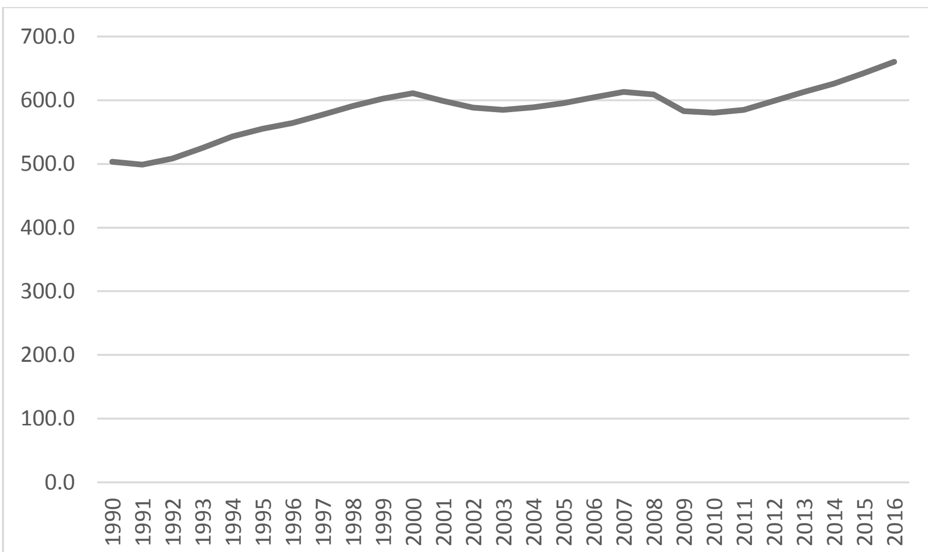
[7] http://www.greaterlouisville.com/Templates/ED/ed_2rows.aspx?pageid=1286

  - *National Geographic Traveler* named Louisville one of its "Best of the World destinations"; *Zagat Restaurant Digest* named Louisville's NuLu as one of the "Top 20 Hot Food Neighborhoods."
  - The State Entrepreneurship Index ranked Kentucky No. 4 in 2014 for its ability to create new businesses, and *Site Selection Magazine* placed Kentucky 14th in the country in its 2016 Top State Business Climate ranking.
  - In 2013, *Rolling Stone Magazine* ranked Louisville's KFC Yum! Center as the seventh-best arena or stadium for concerts in America, and Louisville Slugger Field ranked #2 in *USA Today Travel's* "10 Best Minor League Ballparks in U.S.".

- In June 2016, GE announced it would sell its appliance division located in Louisville's Appliance Park to Chinese appliance manufacturer Haier.[8] As part of the purchase, Haier pledged to keep the GE Appliances headquarters in Louisville and retain the executive leadership team. Haier also committed to a 3-year strategic plan to build market share for GE Appliances.

2.5.1 Employment Overview

While employment is cyclical, declining during economic downturns and increasing during economic booms, the Louisville/Jefferson County MSA has exhibited relatively steadily over the last 26 years (Figure 2-4).



Jefferson County Full and Part-Time Employment1969–2016
Source: U.S. Department of Labor. Bureau of Labor Statistics

8"GE Announces Sale to Haier." *Louisville Courier-Journal*. June 6, 2016.

2.5.1.1 Employment by Industry

Trade, Transportation, and Utilities in the Louisville/Jefferson County, KY-IN MSA is the largest industry sector by employment comprising approximately 22.1 percent of the total non-farm economy.

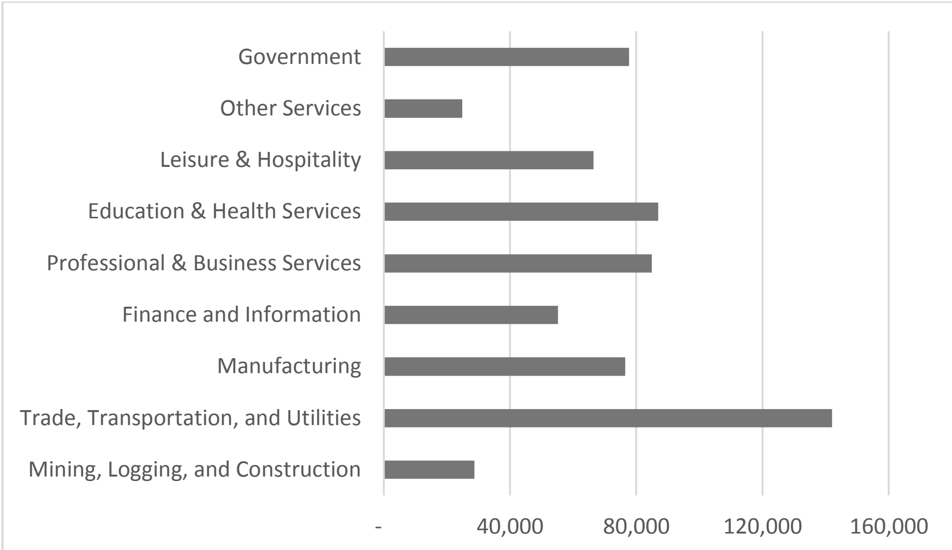


Figure 2-5. Jefferson County Full and Part Time Employment (2014)
Source: U.S. Department of Labor. Bureau of Labor Statistics

In 2015, the Louisville/Jefferson County MSA had approximately 227,000 workers in a grouping of industries denoted as "professional" in this report. The sector includes finance and information, professional and business services, and education and health services. It is also a sector subject to undercount based on the number of self-employed or contract workers in the included industries. Presumably, many of the workers in this sector have attained some level of post-secondary education.

Approximately 76,500 workers, or nearly 12% of the total employee in the MSA are employed in the manufacturing sector. A similar number of employees are employed in the Government sector.

2.5.1.2 Nonemployers

Nonemployer businesses are firms or establishments that do not have paid employees, but have annual receipts more than $1,000 and pay federal taxes. The U.S. Census Bureau uses the terms "firm" and "establishment" interchangeably. For example, a husband-and-wife team would be considered one establishment or firm. They may have family members that participate in the business, but who not do not appear as paid employees for tax purposes (that is, no one working in the firm is issued a W-2).

2.5.2 Employment Forecast

The University of Louisville Population Study forecasts that Jefferson County will continue to experience growth in the professional grouping, health care and social assistance, transportation and warehousing, and hospitality sectors (see Table 2-4).[9]

[9] Urban Studies Institute (USI). 2015. Louisville Metro Demographic and Economic Forecasts 2010 – 2040, Final Report December, 2015. Prepared by The University of Louisville. February 2015.

Table 2-4. Jefferson County Employment Forecasts, 2020–2040
Source: University of Louisville Urban Studies Institute (2015)

	2020	2025	2030	2035	2040
Manufacturing	31,767	26,139	20,510	20,000	20,000
Construction	22,178	19,521	16,863	14,206	11,548
Trade	67,621	64,464	61,307	58,150	54,992
Transportation and Warehousing	35,303	35,912	36,521	37,129	37,738
Professional	163,087	172,308	181,530	190,751	199,973
Education	13,909	14,997	16,086	17,174	18,262
Health Care and Social Assistance	75,688	81,813	87,938	94,063	100,188
Hospitality and Tourism	54,835	57,488	60,140	62,793	65,445
Other Private Sector	27,423	26,844	26,266	25,687	25,109
Public Administration	52,078	52,551	53,024	53,497	53,969
Subtotal	***543,889***	***552,037***	***560,185***	***573,450***	***587,224***
Nonemployers	57,654	62,129	66,604	71,079	75,553
Total	**601,543**	**614,166**	**626,789**	**644,529**	**662,777**

2.6 Utilities Operations Review

In 2012, the Louisville Utility and Public Works Advisory Group (the “Advisory Group”) was formed by the Louisville Metro Mayor, and was tasked with examining the operations of the LWC, MSD, and Louisville Metro Department of Public Works and Assets (DPW) to identify whether synergies exist between the entities that would allow for improved service or reduce costs. The Advisory Group found that there were potential savings in consolidating services of MSD and LWC. After a due diligence review conducted by both MSD and LWC, a Comprehensive Inter-Local Agreement (ILA) was developed to create coordinated teams of employees from both agencies with the capability of delivering superior customer service at lower costs than the existing two agencies combined. The first phase of ILA implementation focused on procurement, fleet services, human resources, information technology, and customer service. It is estimated that the One Water Initiative produced more than $1 million in savings in 2015. These savings came through sharing resources and consolidating jobs. For example, LWC and MSD now have a joint Fleet Manager, and a common Chief Information Officer. MSD and LWC now have common contracts for fuel, vehicle parts and supplies, and other consumables common to both agencies. The ILA, as amended on August 24, 2015, is effective through June 30, 2035.

Drainage System

3.1 General Description

Louisville MSD through ILAs with the City of Louisville and Jefferson County assumed responsibility for drainage and flood protection (from the Ohio River) in 1987 for all of Jefferson County, except for the Cities of Anchorage, Jeffersontown, Shively, and St. Matthews. Those cities do not participate in MSD's drainage program except as co-permittees under the MS4 program that MSD administers. MSD is responsible for maintenance and operation of approximately 4,700 miles of drainage system components (for example, ditches, culverts, and storm sewers), 870 miles of inland streams, 16 flood pumping stations, and 29.5 miles of floodwalls/levees.

MSD's combined sewer system provides storage, conveyance, and treatment of both sanitary sewage and storm water. During dry weather, the system carries only sanitary sewage to the Morris Forman Water Quality Treatment Center (WQTC) for treatment and discharge. During wet weather events, the combined sewers also convey urban runoff in the same pipe system. Figure 3-1 shows the boundaries of the combined sewer system.

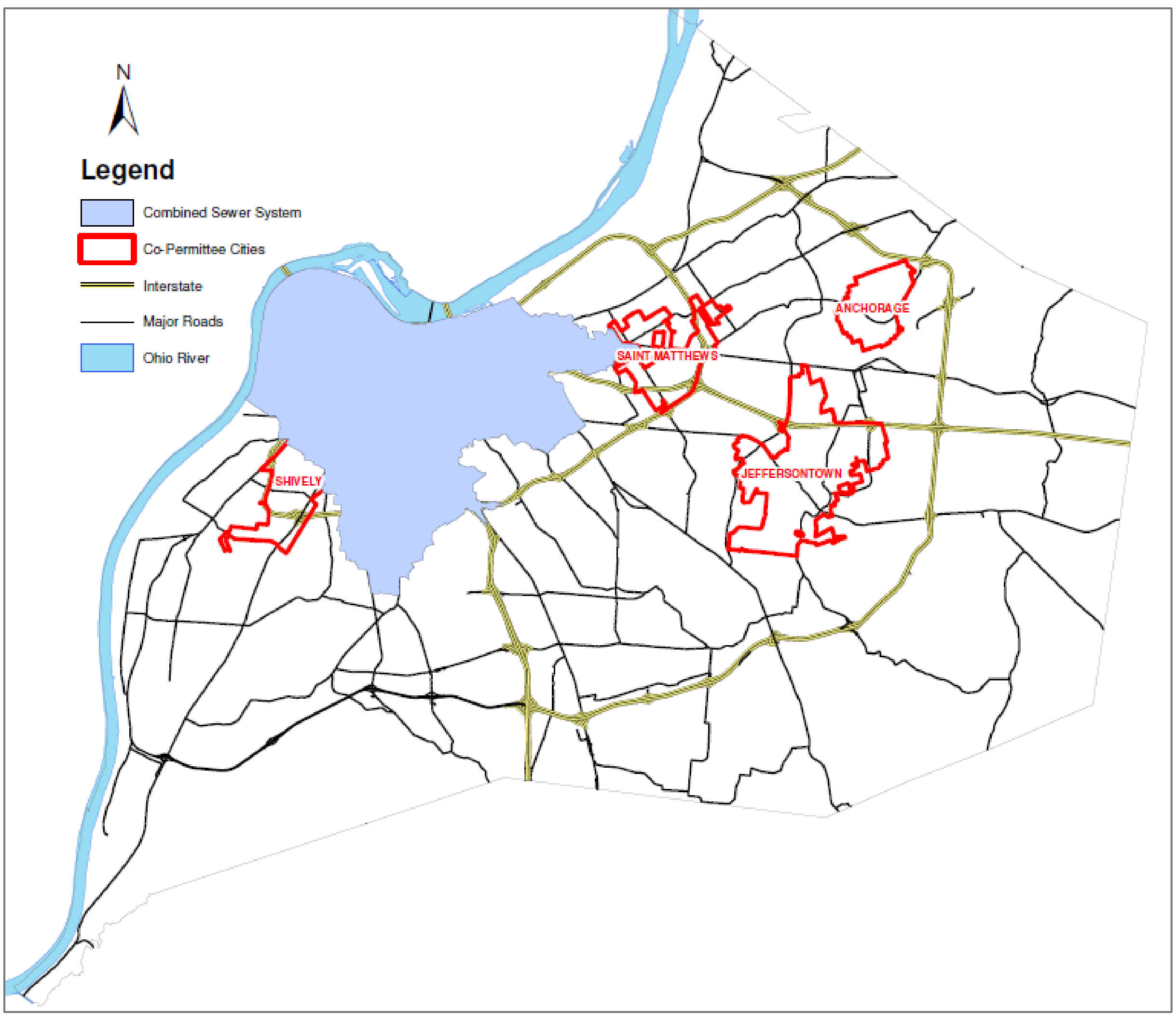


Figure 3-1. Stormwater and MS4 Service Areas

3.1.1 Service Area and Customer Base

Drainage service is provided essentially to all of the developed area in the Louisville metro area (note that the City of Louisville and Jefferson County merged in 2003 and now have the same boundaries). This includes several smaller cities within the service area, as shown in Figure 3-1. Opportunities for growing the service area are limited to adding the Cities of Anchorage, Jeffersontown, Shively, and/or St. Matthews fully into MSD's drainage system.

Currently MSD serves a population of approximately 650,000 and bills for stormwater services using equivalent service units (ESUs). MSD currently has approximately 581,000 ESUs, in total, from the four classifications it uses: residential, commercial, industrial, and city-owned.

3.2 Stormwater Drainage Permitting Requirements

The permit to operate a drainage system and discharge stormwater to waterways of the Commonwealth is administered by the Division of Water of the Kentucky Department of Environmental Protection (KDEP). Specifically, the drainage system is regulated through an MS4 permit, which sets out minimum requirements that must be met to protect water quality in the Commonwealth. These conditions apply to the small cities within the County that MSD provides stormwater service to, and to the four cities that provide their own stormwater system. These communities are co-permittees with MSD, and they pay an annual fee to compensate MSD for a portion of the costs to administer the countywide program.

Plans for drainage improvements must be coordinated with the U.S. Army Corps of Engineers (USACE), if they impact waters of the United States, and the Federal Emergency Management Agency (FEMA), or if they may affect floodplains. USACE also has inspection authority for the Ohio River Flood Protection System.

Operation of the combined sewer system and its associated storage and treatment facilities is authorized through the Kentucky Discharge Elimination System (KPDES) permit for the Morris Forman WQTC.

3.3 Facility Description and Evaluation

MSD's stormwater system can generally be separated into two components:

- **Interior Drainage System –** This includes the infrastructure to collect and convey drainage across the County via pipes, ditches, streams, and channels to the Ohio River.
- **Ohio River Flood Protection System –** This includes the flood pumping stations, floodwalls, and levees that hold back rising waters from the Ohio River and pump drainage from the interior of the County into the Ohio River when the floodwalls and levees are closed.

The combined sewer system is described as part of the sewer system in Section 4.

3.3.1 Interior Drainage System

The Interior Drainage System is composed a variety of facilities including 1,080 miles of storm sewer pipe (including culverts under roads), 3,616 miles of channels and ditches, and 870 miles of creeks (both natural and improved). Runoff during rain events is collected and either stored, retained, and/or conveyed to sewers, rivers, streams, creeks, channels, and ditches for eventual discharge to the Ohio River, either directly or through one of its tributaries. The system is operated by MSD and maintained through a combination of MSD staff and contractors.

MSD assumed responsibility for the drainage systems in Jefferson County in 1987. When it did, it inherited a large backlog of challenges and deferred maintenance that had been accumulating for decades. The preparation and execution of the Stormwater Drainage Master Plan and Watershed Master Plan, in 1988, began the process of addressing these issues and raising the level of service throughout the County. Subsequent studies and plans identified additional improvements; and in 2003, MSD initiated the Drainage Response Initiative (DRI) program to review customer service requests, develop solutions, and allocate resources to execute remedies in an efficient manner. Since taking over responsibility for the system, in 1987, MSD has invested nearly $200 million in stormwater improvements through the DRI program.

More recently, the drainage system has faced increasing challenges because of both an elevated frequency of extreme storms, which brings heavier rains more often, and by a greater percentage of impervious area, providing additional stormwater runoff as the community develops and expands. The additional impervious area causes a higher portion of stormwater to collect in the stormwater system rather than being absorbed in the ground. The net results of these factors are flooding and other stormwater issues, such as excessive ponding, erosion of streambanks, and water in homes occurring more often and in areas that had historically not been problematic. To address these issue, in part, MSD began the process of creating the Critical Repair and Reinvestment. While still in development, the Critical Repair and Reinvestment Plan has recommended changes in stormwater design and construction standards that will mitigate these issues and prepare Louisville to manage the size and frequency of storms projected in the future. These recommendations are in the process of being considered for adoption and implementation. Additionally, the Critical Repair and Reinvestment Plan recommends that MSD develop an updated stormwater-drainage master plan based on Critical Repair and Reinvestment Plan recommendations. This plan will develop projects throughout the County to meet the changing needs of the next 20 years, and will include an early-action component made up of projects that can be implemented while the remainder of the Critical Repair and Reinvestment Plan is written.

3.3.1.1 Community Rating System

The National Flood Insurance Program (NFIP) Community Rating System (CRS) is a voluntary incentive program encouraging community floodplain management activities that exceed the minimum NFIP requirements. Communities taking part in this program are awarded points for participating in public information, mapping and regulation, flood damage reduction, and flood preparedness.

Through MSD's participation in the program, Louisville Metro was moved from a CRS Class 4 to a Class 3 community. This earns an additional 5 percent in flood insurance savings, granting the community a 35-percent discount on flood insurance premiums. This new level of discount became effective October 2015. The community saves approximately $2 million each year in flood insurance premiums because it is ranked as a Class 3 community. Besides Louisville, only six communities in the U.S. have a Class 3 CRS rating or better.

3.3.2 Ohio River Flood Protection System

When the elevation level of the Ohio River rises, MSD's service area is protected from flooding through a network of 29.5 miles of floodwalls and levees. The 185 street crossings, pipe openings, and gates that allow creeks to pass through are sealed and the river is held back. With the creeks and storm sewer system prevented from discharging into the Ohio River, MSD relies on 16 flood pumping stations to pump drainage over the floodwall and levee to prevent stormwater from backing up and causing flooding within the area. It is important to understand that the operation of the flood pumping stations is intermittent and infrequent, only occurring when both the Ohio River is in flood stage and there is a rain event within the drainage system. Many of the pumping stations operate only once every few years.

The USACE completed the *Levee Safety Evaluation* in the summer of 2015. This report evaluated the operations, maintenance, and condition of the entire flood-protection system. It found that the system of floodwalls, levees, and flood pumping stations met all of the applicable standards and was acceptable under the FEMA flood protection and insurance program to reasonably reduce the risk of flooding to the point where there is a 1-percent chance or less that the flood protection system would be overwhelmed in any given year.

The Ohio River flood-protection portion of the drainage system faces the same challenges of increasing impervious area and more frequent extreme storms. That, plus the age of most of the flood pumping stations (most were built in the 1950s), has led MSD to take a proactive approach to improving the flood pumping stations. The Western Flood Pump Station was rehabilitated in 2010 to 2013, and several stations are undergoing upgrades to their electrical and control systems. The Critical Repair and Reinvestment Plan has outlined a prioritized approach to update technology and increase pumping capacities to continue to protect the community in the future. The floodwalls and levees will continue to be maintained but are not expected to need expansion or raising. They are already set several feet above the flood elevation of record (the Great Flood of 1937).

3.4 Ohio River Flood Protection Permitting Requirements

As previously noted, the interior drainage system is regulated by MSD's MS4 permit. The Ohio River flood-protection system is not regulated by a single agency or permit, but rather through a series of requirements and standards established by multiple state and federal agencies such as FEMA, USACE, the Code of Federal Regulations, and the Flood Control Act. Currently, there are no anticipated or expected regulatory changes that would affect the Ohio River flood-protection system. However, the MS4 permit requirements are anticipated to become more stringent in the coming years. This potential change has been expected, and MSD has already taken steps to prepare for this higher level of compliance. In addition, the Critical Repair and Reinvestment Plan has forecast budgetary requirement to maintain compliance both for the next 5 years and for the rest of the planning period.

SECTION 4

Sewer System

4.1 General Description

MSD's sewer system extends throughout much of the developed portions of Jefferson County. It includes approximately 600 miles of combined sewers (which carry sanitary wastewater during dry weather and a combination of stormwater and sanitary wastewater during wet periods), 2,700 miles of sanitary sewers, more than 260 pumping stations, five regional WQTCs, and an estimated 1,400 miles of lateral connections to buildings. Responsibility for laterals is shared with the property owner; MSD is solely responsible for the laterals within the right-of-way.

4.1.1 Service Area and Customer Base

By Kentucky state statute, MSD is authorized to provide wastewater collection, treatment, and disposal services in Jefferson County. Through inter-local agreements, MSD also provides these services to portions of Oldham County and small parts of Bullitt County, as shown on Figure 4-1. The area includes approximately 270 square miles and serves approximately 254,000 customers.

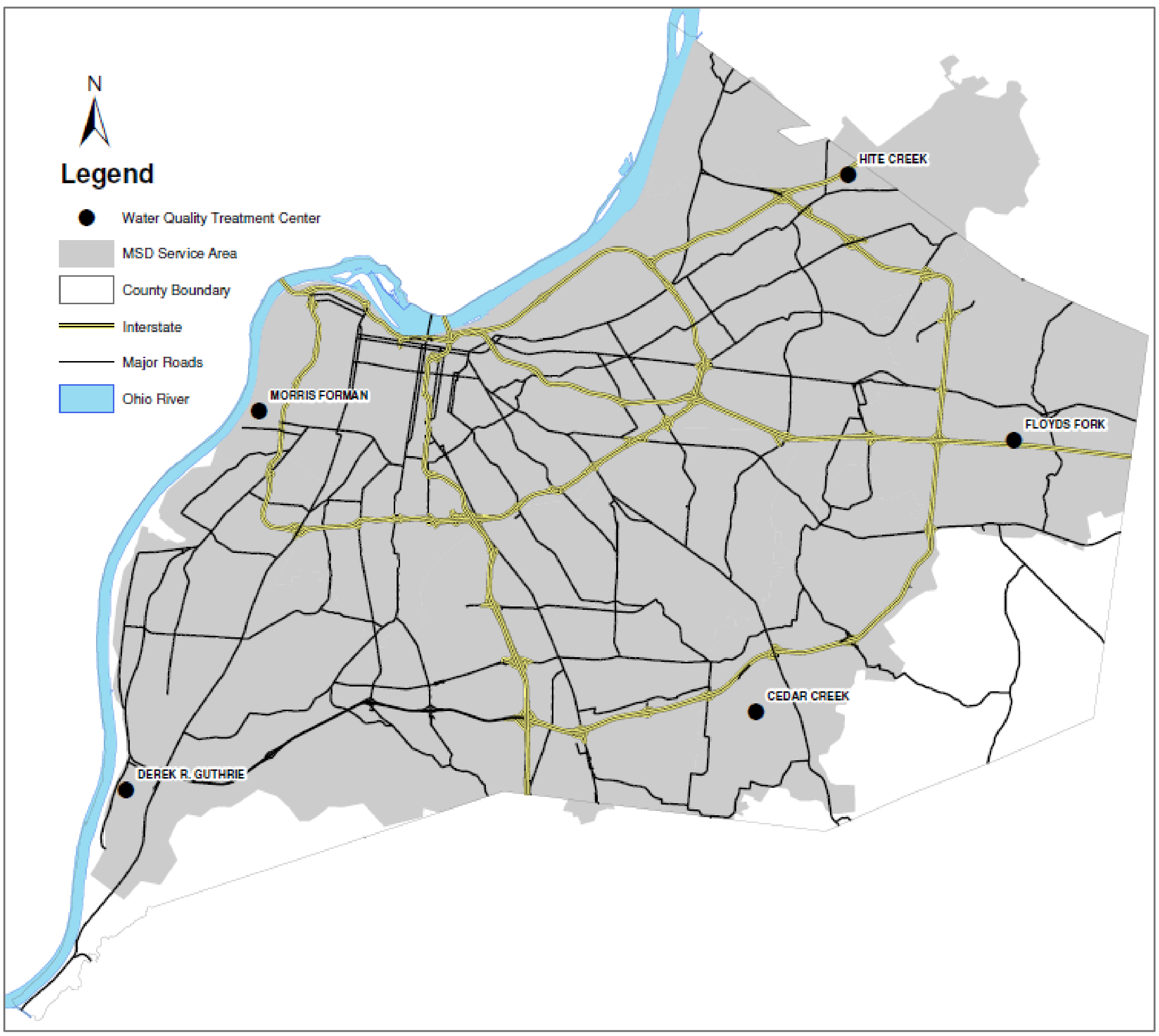


Figure 4-1. Wastewater Service Area

4.2 Wastewater Flows

In support of the Facility Plans being prepared for both MSD and LWC, the USI of the University of Louisville developed population projections for LWC and MSD's service areas. As wastewater flows are closely tied to water consumption, a joint approach that incorporated both organizations' data and inputs was determined to be more effective than developing flow projections independently.

Population projections were prepared for MSD's service area (including portions that are not being served now) and organized into sewersheds for each WQTC. Table 4-1 summarizes flow projections (including residential, commercial, and industrial flows). For planning purposes, flows from Southeastern Jefferson County, which is currently not sewered, but could be in the future, were included in the projections. Overall, an increase in flows of almost 13 percent is expected between 2015 and 2035.

Table 4-1. Annual Average Flow Projections (MGD)
Source: University of Louisville Urban Studies Institute

Year	Morris Forman	Derek R. Guthrie	Hite Creek	Floyds Fork	Cedar Creek	SE Jefferson County	Total
2015	109.90	42.36	5.22	4.65	5.62	0.84	168.59
2020	109.76	46.87	5.90	5.47	6.61	0.99	175.6
2025	109.72	53.34	6.37	6.46	7.75	1.21	184.85
2030	108.93	54.14	6.87	7.43	8.88	1.42	187.67
2035	108.53	54.77	7.22	8.59	9.49	1.73	190.33

Note: MGD=million gallons per day

As seen in Table 4-2, MSD's WQTCs either have the capacity to handle the projected 2035 flows or will achieve the required capacity through planned projects. Flows from Southeastern Jefferson County may be treated at a new WQTC that is being discussed as part of long-term development discussion, when or if it is constructed. Currently, flows from that area are being handled by onsite systems, such as septic tanks.

Table 4-2. Comparison of Projected Flows to Existing and Planned Capacity in 2035 (MGD)
Source: University of Louisville Urban Studies Institute

WQTC	2035 Projected Flows	Existing Capacity	Planned Capacity in 2035	Percentage of Excess Capacity in 2035
Morris Forman	108.53	120	120	111%
Derek R. Guthrie	54.77	45	60	110%
Hite Creek	7.22	6	9	125%
Floyds Fork	8.59	6.5	9.75	114%
Cedar Creek	9.49	7.5	11.25	119%

Modeling of MSD's collection and conveyance system has confirmed that the capacity necessary to transport the projected flows exists in the system now or will with the completion of planned projects.

4.3 Wastewater Collection and Transmission

MSD wastewater collection and transmission system is comprised of a network of nearly 3,300 miles of mainline pipe, 1,400 miles of laterals, and 264 pump stations. The service area is divided into five sewersheds that collect and convey wastewater to one of five WQTCs for treatment. Table 4-3 provides a breakdown of the system components by sewershed.

Table 4-3. Summary of Wastewater Collection and Transmission Infrastructure by WQTC Sewershed

WQTC Sewershed	Miles of Gravity Sewer	Number of Pump Stations
Morris Forman	1,751	95
Derek R. Guthrie	948	40
Hite Creek	211	57
Floyds Fork	178	34
Cedar Creek	190	38

Portions of MSD's collection system date back to the Civil War era and are still in service today. The O&M of such a large and dated system can present challenges because of the condition of assets and the materials with which they were constructed. MSD is currently in the process of inspecting their entire sewer system. Significant defects are being addressed in the system following inspection. The inspection process is nearly complete and will result in a long-term plan to manage the future inspection and renewal of the collections system. MSD has found that many areas, especially where polyvinyl chloride pipe has been used in constructing the sewers, will not need significant attention for decades. Providing a level of service consistent with established MSD targets is still necessary in all areas of the system. Substantial improvements in I&I have already been documented in areas post-rehabilitation to substantiate the efficacy of MSD's efforts. Critical pieces of infrastructure, such as large-diameter interceptor sewers, will continue to be evaluated and renewed as necessary through annual budgets recommended in the Critical Repair and Reinvestment Plan CIP.

4.4 Wastewater Treatment Facilities

MSD has consolidated its treatment facilities into five regional WQTCs. A summary of the five WQTC follows.

4.4.1 Morris Forman Water Quality Treatment Center

The Morris Forman WQTC was originally constructed in 1956 for preliminary and primary treatment. It was designed to receive a maximum daily flow of 105 MGD and a maximum hourly flow of 338 MGD. Secondary treatment facilities installed during plant upgrades in 1970s and plant upgrades in the late 1990s and early 2000s improved performance and increased treatment capacity to its current level of 120 MGD with a peak flow capacity of 350 MGD. It is the largest WQTC in MSD's system and its most valuable single asset.

In 2015, Morris Forman's power supply was impacted by a voltage surge assumed to be caused by a lightning strike on the incoming power lines. The damage to the electrical equipment was so severe that it impacted the back-up power supply equipment and prevented the plant from running on utility power. At the time of this incident, the Ohio River was at an elevated stage that required pumping the WQTC's effluent to the river. Without power to run the effluent pumps, the WQTC quickly flooded and was submerged until crews could drain the facility. The damage to the facility was extensive and prompted MSD to initiate a comprehensive evaluation of the Morris Forman WQTC and its future for a 50-year period. This study is ongoing and will define long-term plans for the facility.

Before the electrical equipment failure, the Morris Forman plant consistently met all regulatory and permit requirements. Damage to the plant has mostly been repaired, and plant performance is returning to compliance with the discharge permit. Ongoing electrical distribution and standby generator projects will protect the facility from similar incidents. As a large facility, ongoing capital needs are required to keep the WQTC operating at the level of performance required. A current project is replacing the aging and inefficient high-purity oxygen generation equipment with a system that provides additional capacity and improved reliability. Equipment renewal and repair budgets have been recommended in the Critical Repair and Reinvestment Plan for the next 20 years to plan for preventative and predictive repair and replacement. Additionally, MSD is in the process of evaluating its solids-handling process and strategy. Future investment needs for solids will be defined as part of that study. The study, pilot testing, and other evaluations necessary to make an informed decision will take approximately 5 years.

4.4.2 Derek R. Guthrie Water Quality Treatment Center

The original facilities at the Derek R. Guthrie WQTC site consisted of a screening chamber and a raw sewage pump station brought online in 1979. The first secondary treatment facilities, collectively termed Phase 11, at what was then known as the West County Wastewater Treatment Plant, were brought online in 1986 with a rated hydraulic capacity of 15 MGD average daily flow (ADF) and 30-MGD peak daily flow (PDF). In 2001, the Phase 2 Expansion increased the capacity to 19.5-MGD ADF. In 2004, the Phase 3 Expansion increased the capacity to 30 MGD ADF.

In 2012, additional facilities enabled the Derek R. Guthrie WQTC to treat up to 200 MGD of wet weather flow using a modified contact stabilization process. Normal flows continue to be handled by the existing contact stabilization treatment process for flows up to 200 MGD. Further improvements in pumping and flow equalization have been constructed that allow the Derek R. Guthrie WQTC to receive peak elevated flows more than 300 MGD for short durations. Because of these new facilities, MSD is in the process of obtaining a new KPDES permit increasing the annual average flow capacity to 60 MGD with associated changes in discharge parameters appropriate for the increased flows.

Much of the mechanical equipment has an average 15 years of useful life remaining, while most of the structures have more than 20 years of useful life remaining. Older treatment process equipment that was not addressed during the expansion has approximately 5 years of useful life remaining. Equipment renewal and repair budgets have been recommended in the Critical Repair and Reinvestment Plan for the next 20 years to plan for preventative and predictive repair/replacement.

4.4.3 Hite Creek Water Quality Treatment Center

The Hite Creek WQTC is currently rated at 6.0-MGD ADF and 16.0-MGD peak hourly flow capacity. Because of the conveyance of wastewater flows from Oldham County to the Hite Creek WQTC, the peak hourly flow capacity is in the process of being increased to 24 MGD to better manage short periods of high flows. The projected wastewater flows will exceed the average treatment capacity by the year 2019, and an expansion to 9-MGD ADF capacity is under design currently, with construction scheduled to begin in 2018. Most the equipment has an average 5 to 10 years of useful life remaining, while most of the structures have more than 20 years of useful life remaining. Equipment renewal and repair budgets have been recommended in the Critical Repair and Reinvestment Plan for the next 20 years to plan for preventative and predictive repair and replacement.

4.4.4 Floyds Fork Water Quality Treatment Center

The Floyds Fork WQTC went through a major expansion in 2012 in which the treatment capacity was increased and sludge holding tanks were added. Through this expansion, many of the plant's mechanical needs were addressed, leaving much of the equipment with an average of 15 to 20 years of useful life remaining and most of the structures more than 20 years of useful life remaining. Equipment renewal and repair budgets have been recommended in the Critical Repair and Reinvestment Plan for the next 20 years to plan for preventative and predictive repair and replacement.

4.4.5 Cedar Creek Water Quality Treatment Center

There are several small projects underway at the Cedar Creek WQTC. However, much of the plant has remained untouched since the last expansion in 2005. This has left the plant with many of the mechanical processes with 5 to 10 years of useful life remaining. While many of the structures are 20 years in age, they are still sufficient in providing a level of service consistent with MSD targets, meeting the facility’s needs, and are likely to have an additional 20 years of useful life remaining if maintained in the same manner. Equipment renewal and repair budgets have been recommended in the Critical Repair and Reinvestment Plan for the next 20 years to plan for preventative and predictive repair/replacement; these identified needs are included in the capital plan detailed in Section 5.

4.5 Wastewater Regulatory Impacts

The collection, treatment, and disposal of wastewater is one of the most heavily regulated industries in the U.S. MSD is regulated and monitored by the following agencies: the Commonwealth of Kentucky Energy and Environment Cabinet; the U.S. Environmental Protection Agency; the Ohio River Valley Water Sanitation Commission; and the Louisville Metro Health Department.

Currently, two primary regulatory drivers for investment in the system are the various KPDES permits issued to MSD and the Consent Decree addressing sewer overflows and treatment plant bypassing and recordkeeping.

In the future, several regulatory changes are being considered that could affect MSD. In particular, potential increased nutrient removal standards and modification of the water quality criteria for recreation could impact MSD’s operations within the next 20 years (changes to nutrient removal standards are not expected for at least 10 years). MSD has developed plans to meet these and other anticipated changes to continue operating in compliance with minimal disruption. Additionally, MSD has made plans for other potential regulatory changes that are not expected in the next 20 years but that could be costly to comply with if adopted, and would warrant advanced planning further into the future at a point where their adoption is deemed likely. Potential requirements to remove micro-constituents, such as pharmaceuticals and personal care by-products, would necessitate substantial expansions of MSD’s treatment processes. The removal of micro-constituents from wastewater effluent is not anticipated for at least 20 or more years, giving MSD more than ample time to prepare if such regulations are adopted.

SECTION 5

Capital Improvements

This section discusses the planned and proposed capital improvements included in MSD's CIP for 2017 to 2035, with a focus on improvements planned to be implemented within the next 5 years. MSD's Critical Repair and Reinvestment Plan scope was developed to identify long-term capital project needs and associated operating programs to improve and sustain the wastewater, stormwater, and Ohio River flood protection system. The projects and programs required by the Consent Decree are to be completed, as are any other projects needed for compliance, with applicable regulations.

However, most of the recommendations of the Critical Repair and Reinvestment Plan are based on the community's desire for sustained reliability of service and improvements in the level of protection provided for stormwater drainage, floodplain management, and Ohio River flood protection. Implementation of these locally-driven projects and programs depend on the community's willingness to fund the improvements. The Critical Repair and Reinvestment Plan recommendations represent a road map to achieve a reliable and consistent level of service across the County for all MSD's service offerings. <u>The actual timing of recommended actions will be determined by the availability of funds to complete them.</u>

A summary of key projects planned or already underway is presented in the following subsections.

5.1 Drainage and Sewer System Master Plan Update Improvements

5.1.1 Proposed Capital Improvements

Proposed capital improvements are organized into drainage and sewer system sections. Drainage projects include stormwater improvements to reduce nuisance ponding, mitigate flooding, protect against Ohio River and interior flooding, and enhance water quality in Jefferson County. Sewer system projects include projects related to the collection, conveyance, and treatment of sanitary and combined wastewater. Projects related to MSD's Consent Decree are addressed separately in Section 5.2.

5.1.1.1 Proposed Drainage Capital Improvements

As part of the development of the Critical Repair and Reinvestment Plan, an extensive review of previous drainage studies and planning was conducted. The conclusion of the planning team was that MSD had successfully executed the vast majority of the projects identified previously and had shifted its focus to resolving smaller, neighborhood- to site-level drainage issues. To respond to changes in land use, development, and extreme storm frequency in a holistic manner, the Critical Repair and Reinvestment Plan team recommended a watershed-scale stormwater master plan to address stormwater and drainage needs across Jefferson County. This plan will identify larger-scale improvements to MSD's drainage system, and is recommended for completion in the first 5 years of the Critical Repair and Reinvestment Plan. Projects have been prioritized for the next 5 years to conform to MSD's cash flow based on an assumed rate increase of 6.9 percent per year for FY 2018 through FY 2022. Under these revenue projections, drainage capital improvements for the next 5 years total $41.5 million.

These drainage system improvements are included in the approved CIP based on the assumed 6.9 percent rate increase.

- **MS4 Program.** Discharges from storm sewer systems in metropolitan areas are permitted under the MS4 permit. This permit sets requirements that MSD must meet to mitigate pollution of waters from stormwater discharges. The requirements of this permit are expected to grow in scope and scale in the next 20 years. To meet these anticipated new standards, capital projects in the form of retrofits to the existing system, systems to remove pollutants from stormwater, green infrastructure installations, greater public outreach/education, and additional support will be needed. The 5-year CIP includes $9.7 million to support this program.

- **Drainage Response Initiative.** The DRI program was developed to address Louisville's problematic drainage areas. This highly successful program has eliminated a significant backlog of issues and continues to be a critical component of the overall drainage program. As a mature program, projects tend to be smaller and are focused on resolving repeat problem areas. A total of $16 million has been budgeted in the 5-year CIP to continue this program.
- **Viaduct Flooding Solutions.** Numerous viaducts in MSD's service area can become inundated during heavy rains leading to transportation disruptions and potential dangers to residents. Conceptual solutions have been identified to address all the problematic viaducts through improvements to the existing drainage system. A total of $15 million has been budgeted in the 5-year CIP to start work on four critical viaduct locations.

Recommendations from the Critical Repair and Reinvestment Plan that may not be funded if the assumed 6.9 percent rate increase is implemented are as follows:

- **Stormwater Master Plan (SWMP**). The Critical Repair and Reinvestment Plan recommendations include $4 million to develop a detailed master plan to direct long-term improvements to Louisville's drainage system. The SWMP will develop holistic, watershed-based solutions to address lingering issues and prepare the system for increased frequency of extreme storm events. Under the constraints imposed by the assumed 6.9 percent rate increase, this project and any short-term follow-up projects are not scheduled to be initiated in the current 5-year CIP but will be addressed in the future or as funds become available.
- **Floodplain Buyout.** MSD has been successful at leveraging funding from the federal government, particularly FEMA, to remove homes and businesses from the floodplain. This is often substantially more cost-effective than infrastructure solutions and provides a higher level of protection. Given the budget limitations imposed by a 6.9 percent rate increase, no funding is proposed in the current 5-year CIP has been allocated to support grant coordination/administration, local share contributions, and flood proofing. MSD may resume these activities in the future as funds become available.
- **Basin Retrofit Projects.** These projects will modify existing stormwater basins to infiltrate water into the ground and remove pollutants before discharging to community streams. These retrofits will improve the functionality of the basins both in runoff flow reduction and runoff water quality. Under the constraints imposed by the assumed 6.9 percent rate increase, these projects are not scheduled to be initiated in the current 5-year CIP but will be addressed in the future or as funds become available.

5.1.1.2 Ohio River Flood Protection System

A key focus of the Critical Repair and Reinvestment Plan was to enhance MSD's asset management program by formalizing a proactive renewal and replacement component. Within MSD's drainage system, this is most applicable to the Ohio River flood protection system that generally consists of the floodwall, levees, and flood pumping stations. Total capital expenditures in the next five years for the Ohio River flood protection system are estimated to be $68.3 million and are as follows:

- **Floodwall and Levee Projects.** MSD is responsible for the O&M of the 29.5 miles of floodwall and levees that protect Louisville from flooding from the Ohio River. Maintaining the integrity of this system is critical to preventing a catastrophic loss of life and/or property. The USACE recently evaluated MSD's flood protection system, and found that the floodwall and levees meet all applicable FEMA requirements. As the floodwall and levees have been constructed and are not anticipated to need to be expanded, the focus is on continued renewal and replacement. Annual budget allocations have been developed to keep the system operable and reliable by repairing and/or replacing gates, closures, and panels; keeping the levees free of encroachments and settlement; improving the efficiency of the system; and additional risk assessments to identify critical areas. During the next 5 years, these projects and allocations total $12.9 million.

- **Flood Pumping Stations.** MSD's 16 flood-pumping stations pump stormwater drainage from the interior of the service area into the Ohio River when the river's elevation requires the floodwall and levees to be sealed. A total of 10 of the 16 stations were constructed in the 1950s and still contain equipment from the original construction. At the same time, changes in land use, development, and the increased frequency of extreme storms are creating the need for the stations to pump at higher capacities in the future. To prepare for this, projects have been developed to renovate, expand, and/or improve all flood-pumping stations to meet the anticipated needs in 2035. A total of $55.4 million has been budgeted for the next 5 years to begin the implementation of these projects.

5.1.1.3 Proposed Sewer System Capital Improvements

In response to the 2005 Consent Decree, MSD prepared the IOAP. Since the IOAP was approved in 2009, MSD's focus has been on implementing the projects outlined in the IOAP. To continue to meet the level of performance required by the Consent Decree, additional capital improvements will be necessary after the IOAP is completed. At the same time, changes in regulations, opportunities for enhanced efficiencies, and the evolving needs of the community require capital investments that have been documented by the Critical Repair and Reinvestment Plan. A summary of key projects planned or already underway including the following:

- **System Expansion.** To meet the needs of a growing community, projects have been defined to expand sanitary sewers to developed areas without sewers and undeveloped areas that are expected to grow. The costs of development-related projects would be offset through capacity development charges and/or other mechanisms that will recoup expenses over time. This also includes land acquisitions to provide space to expand WQTCs as necessary to increase capacity.
- **System Redundancy**. As the wastewater flows and loads increase over time, the importance of fully functional infrastructure increases. To this end, critical pump stations and treatment processes have been identified that must maintain a minimum level of performance at all times. To achieve this, improvements have been developed to provide secondary power, redundant systems, or backup equipment for these key pieces of equipment throughout the service area.
- **System Resiliency.** The increased frequency of extreme storm events puts the functionality of sewer systems at a higher risk of being inundated and thus inoperable or possibly permanently damaged. Assets potentially vulnerable to being impacted by rising floodplains have been determined and budgets established to mitigate the risks to them.
- **System Efficiency.** As part of the extensive review of MSD's sewer system by the Critical Repair and Reinvestment Plan team, opportunities to enhance efficiencies were discovered. The elimination of pump stations, replacement of inefficient processes, and installation of automated systems will eventually repay the initial costs in O&M savings.

A total of $254 million has been included in the current 5-year CIP to implement these projects.

Additionally, needs have been identified that are beyond the 20-year planning horizon of the CIP but have been documented for long-term planning needs. These are primarily related to expected changes in regulations and permits that will require higher levels of nutrient treatment, the removal of micro-constituents (such as, personal care chemicals and pharmaceutical traces), and the eventual replacement or reconfiguration of the Morris Forman WQTC, MSD's largest and most valuable asset. The complete replacement or reconfiguration of the Morris Forman WQTC is not anticipated to be required during the 20-year planning horizon of the Critical Repair and Reinvestment Plan, but the road map to stepwise implementation will allow MSD to make short-term improvements that are consistent with the long-term vision for this facility.

5.1.1.4 Renewal and Replacements

A substantial portion of the Critical Repair and Reinvestment Plan's sewer system recommendations are focused on the timely, proactive renewal and replacement of assets to allow for the continued operation of the system at a high level of performance. Within the overall $254 million provided for in the sewer system capital program, specific recommendations and budgets have been established to create the following renewal and replacement projects:

- **WQTC Equipment Renewal and Replacement.** To plan and implement an orderly renewal and/or replacement of equipment at MSD's five regional WQTCs that does not disrupt operations, projects have been created to address equipment needs in 5-year intervals. This will allow for a phased approach to minimize stress on the treatment process while making certain that critical assets are replaced/renewed before their useful life is exhausted. A total of $38.7 million has been included in the current 5-year CIP for these projects at the Morris Forman WQTC, and $30.5 million included in the 5-year CIP for the other four regional WQTCs.
- **Pump Replacement Program**. Most MSD's pump stations are smaller stations intended to serve a limited area. Rather than allow these pumps to run to failure, guidelines for the proactive replacement of pumps before they exhibit deteriorated performance have been established and a budget determined for implementation. This will remove a substantial maintenance burden on staff to keep aged pumps operating. Funding for this program is included in the current 5-year CIP for a total of $1.5 million.
- **Major Interceptor Rehabilitation.** The backbone supports of MSD's wastewater collection system are the larger-diameter sewers that transport wastewater to the five regional WQTCs. Some interceptors that date back to the Civil War period are made of outdated materials, such as dry-laid brick, and are in highly developed, urban areas, which make maintenance activities challenging. MSD has recently completed the internal condition assessment of the major interceptors. A program has been developed to begin systematically rehabilitating this infrastructure over time, using risk-based criteria to prioritize improvements helping to ensure continued operation for the next 100-plus years. A total of $16 million has been included in the current 5-year CIP to begin implementing this program.

5.2 Consent Decree

In August 2005, MSD entered into a joint Consent Decree agreement with the federal government and the Commonwealth of Kentucky. The Consent Decree created the framework for a 19-year program to manage and mitigate combined sewer overflows (CSOs), and eliminates sanitary sewer overflows (up to a certain storm event). In 2009, the Consent Decree was amended to address recordkeeping and WQTC bypasses and treatment performance. For the purpose of this report the term "Consent Decree" will be used to refer to the Amended Consent Decree. If the August 2005 Consent Decree is being referred to, it will be referenced using the August 2005 date.

To meet the requirements of the Consent Decree, MSD developed the IAOP, which has been incorporated into the Critical Repair and Reinvestment Plan. Total capital costs for the Consent Decree in the next 5 years are anticipated to be $419.9 million. Key capital projects from the IOAP include:

- **CSO Storage Basins.** Large storage basins are under design or construction at strategic locations in MSD's combined sewer system to temporarily store flows during rain events. When capacity is available, these stored flows will be released back into the collection system for treatment. These basins are a foundation of MSD's CSO control strategy and must be operational by state and federally-enforced deadlines.
- **Green Infrastructure Projects.** Green infrastructure works by capturing stormwater flows in natural systems before they can enter the underground pipe network and thus creates additional capacity within the sewer system. Additionally, these systems remove pollutants through natural filtration systems so that any flows that must pass through them carry a reduced pollutant load. MSD is committed to integrating green infrastructure as part of its overflow control strategy, and has implemented an innovative system of cost-sharing with other public agencies and private developers to leverage MSD's investment in green infrastructure to the extent it furthers MSD's service offerings.
- **Capacity, Management, Operations and Maintenance (CMOM) Projects.** An essential component to the long-term success of the IOAP is an effective CMOM program that makes sure the wastewater collection system operates effectively. Elements of this program include capital investment, sewer inspection and cleaning, repair of defects found in sewers, and removal of illicit and illegal connections to the system.
- **Nine Minimum Controls (NMC) Projects**. Reporting requirements for the NMC program will be phased out after the completion of MSD's obligations under the Consent Decree. The NMC principles related to optimizing operation of the combined sewer system will remain in full force and effect, with the enforcement mechanism shifted from the Consent Decree to the Morris Forman WQTC discharge permit. One critical item that will continue after the IOAP is completed is the continued implementation and optimization of MSD's Real Time Control system that maximizes storage in the collection system through a series of automated dams and gates.

5.3 Total Proposed Capital Improvements

The Critical Repair and Reinvestment Plan scope was developed to identify long-term capital project needs and associated operating costs to improve and sustain the sewer, drainage, and Ohio River flood protection systems. The projects and programs required by the Consent Decree are required to be complete, as are any other projects needed for compliance with applicable regulations. Most of the recommendations of the Critical Repair and Reinvestment Plan are based on the community's desire for sustained reliability of service and improvements in the level of protection provided for stormwater drainage, floodplain management, and Ohio River flood protection. Implementation of these projects and programs depend on the community's willingness to fund the improvements. The Critical Repair and Reinvestment Plan recommendations represent a road map to achieve a reliable and consistent level of service across the County for all MSD's service offerings. The actual timing of recommended actions will be determined by the availability of funds to complete them.

Figure 5-1 provides an overview of the proposed road map of capital expenditures for the next 5 years. Table 5-1 summarizes the planned capital expenditure across each budget category and year for the first 5 years.

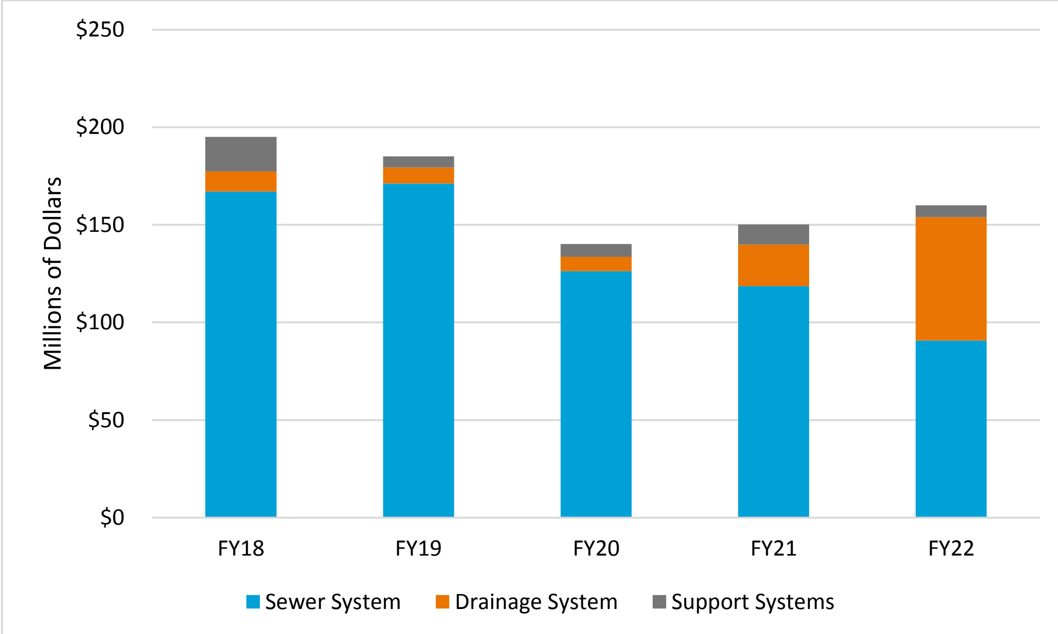


Figure 5-1. Planned Capital Expenditures Through FY 2022

Table 5-1. MSD FY2017–FY2021 Capital Improvement Plan

	FY18	FY19	FY20	FY21	FY22	Total
Sewer System						
CMOM	$22.0	$11.1	$26.5	$78.3	$62.8	**$200.8**
Consent Decree (IOAP)	$128.9	$153.6	$95.6	$32.9	$8.0	**$419.9**
Development	$1.1	$1.1	$1.1	$1.1	$6.2	**$10.6**
NMC	$15.1	$5.4	$2.2	$6.3	$13.7	**$42.6**
Total Sewer System Improvements	**$167.2**	**$171.2**	**$126.2**	**$118.6**	**$90.6**	**$673.9**
Drainage System						
Drainage	$2.8	$2.8	$2.8	$3.2	$20.2	**$31.8**
Floodplain Management	$0.4	$0.0	$0.0	$0.0	$0.0	**$0.4**
Ohio River Flood Protection	$4.8	$4.1	$2.7	$16.4	$40.3	**$68.3**
Stormwater Quality (MS4)	$2.3	$1.3	$1.8	$1.7	$2.7	**$9.7**
Total Drainage System Improvements	**$10.2**	**$8.2**	**$7.3**	**$21.3**	**$63.3**	**$110.3**
Support Systems						
Capital Equipment	$2.3	$1.8	$2.8	$2.8	$2.8	**$12.3**
Facilities	$14.3	$3.4	$3.0	$6.9	$2.3	**$29.9**
IT	$0.7	$0.3	$0.3	$0.3	$0.6	**$2.1**
LOJIC	$0.4	$0.1	$0.5	$0.3	$0.4	**$1.6**
Total Support System Improvements	**$17.6**	**$5.6**	**$6.5**	**$10.1**	**$6.1**	**$45.88**

SECTION 6

Financial Analysis

6.1 Financial Evaluation of the System

To evaluate the adequacy of planned rate increases in accordance with the requirements identified in the official statement, the bond covenants for the 2017 bonds stipulate that revenues for each fiscal year be at least sufficient:

- To equal 110 percent of the sum of principal and interest due on all issued and outstanding revenue bonds and indebtedness of the district for such fiscal year.
- To pay all operating expenses for such fiscal year.
- To pay and discharge all charges or liens payable out of revenues of MSD.

Based on the MSD rates effective August 1, 2016, projected rate increases for FY 2018–FY 2022, 2018 approved operating budget, projected operating expenses assuming 3 percent growth, debt service on the 2017A and 2017B bonds, and anticipated future bond issues to fund the adopted CIP, the debt service coverage ratio (DSCR) for FY 2017 to FY 2022 is greater than the required DSCR of 110 percent. Based on potential rate increases, revenues are expected to meet the projected revenue requirements for debt service coverage. The typical residential combined sewer and drainage bill for FY 2017 is approximately $52.50 per month. The typical residential sewer bill (excluding drainage) for MSD for FY 2017 is approximately $43.84 per month. With the assumed 6.9 percent rate increase (effective August 1, 2017), the typical residential combined sewer and drainage bill for FY 2018 is estimated to be $56.13. The typical residential sewer bill (excluding drainage) for MSD for FY 2018 is approximately $46.87 per month.

6.2 Customer and Usage Growth

There are 254,758 customers and 302,000 service connections (meters) within MSD’s service area. Some customers have more than one meter. Figure 6-1 provides a historical summary for the total number of customer connections. The customer base within MSD’s service area is predominately residential. Figure 6-2 shows the breakdown of the number of meters by customer class for FY 2016. Approximately 90 percent of the meters are residential and 10 percent commercial. Less than 1 percent of the meters are industrial. The meters within MSD’s service area are predominately less than 1-inch connections. (that is, 5/8-inch, 3/4-inch, or 5/8-inch by 3/4-inch). Figure 6-3 shows the breakdown of the number of meters by connection size for FY 2016. While the number of meters is predominantly residential, water consumption and sewer flows are predominantly from commercial and industrial customers. Figure 6-4 shows the historical trend and breakdown in water consumption from 1985 to 2016. The 10-year (2007 to 2016) trend in water consumption has been a 2.4 percent annual rate of decline. Water consumption patterns for the past 3 years shows a leveling off in the historical rate of decline.

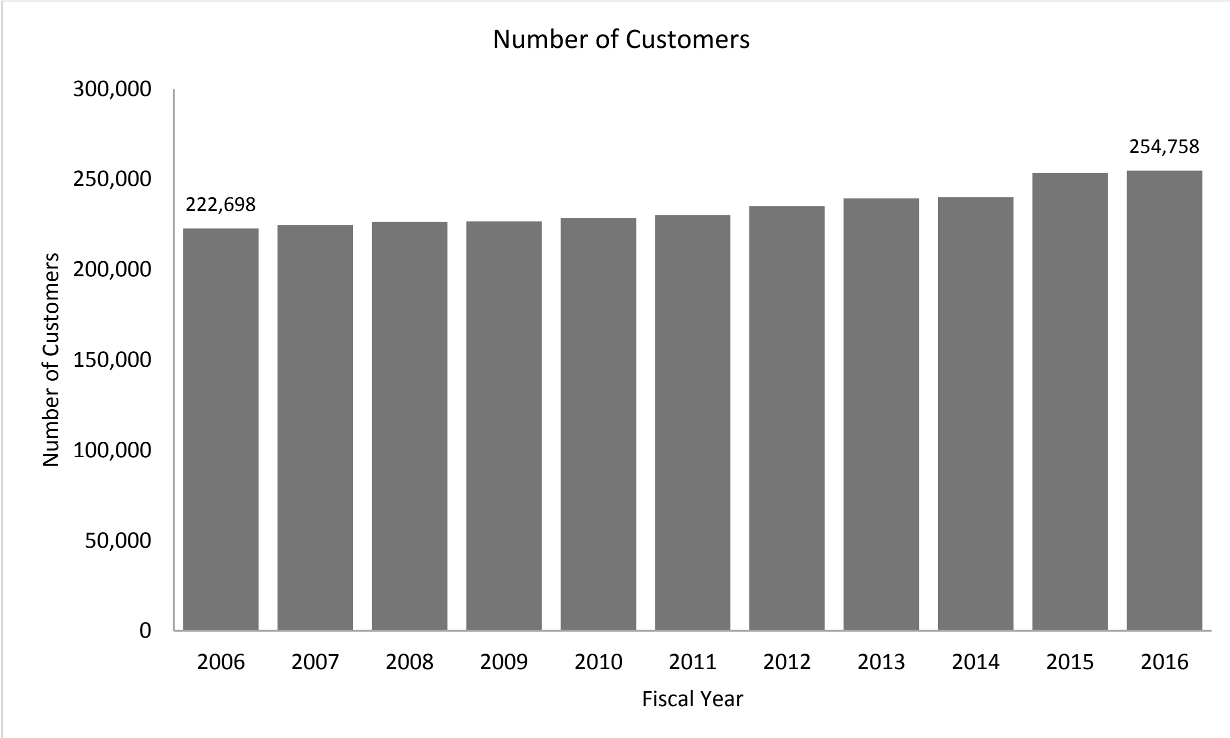


Figure 6-1. Estimated Number of Customers (FY 2006–FY 2016)

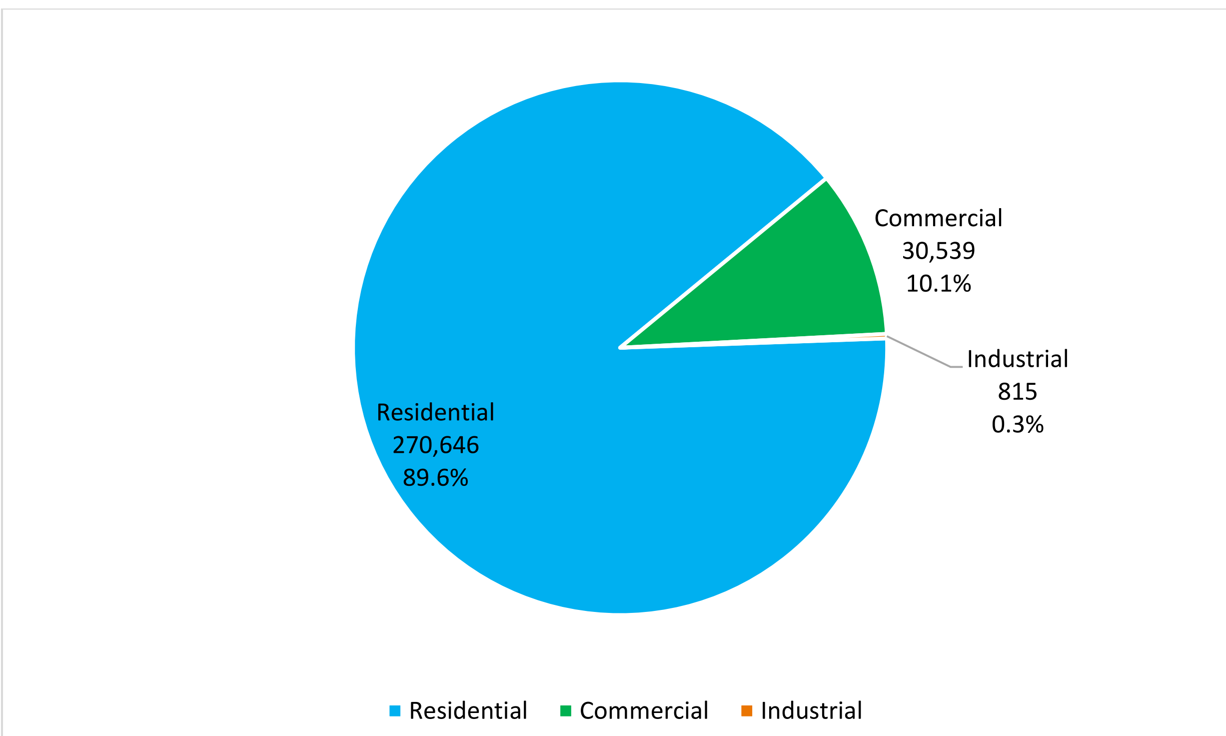


Figure 6-2. Estimated Number of Meters (FY 2016) by Customer Class

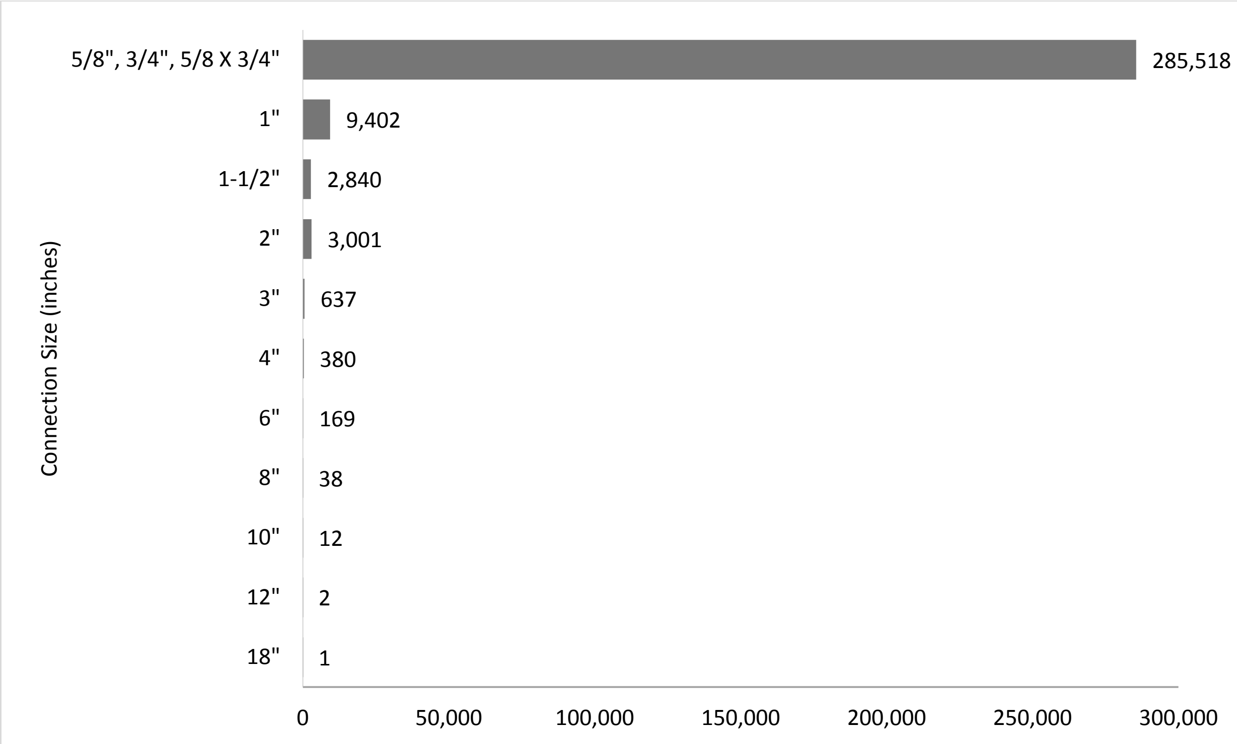


Figure 6-3. Estimated Number of Meters (FY 2016) by Connection Size

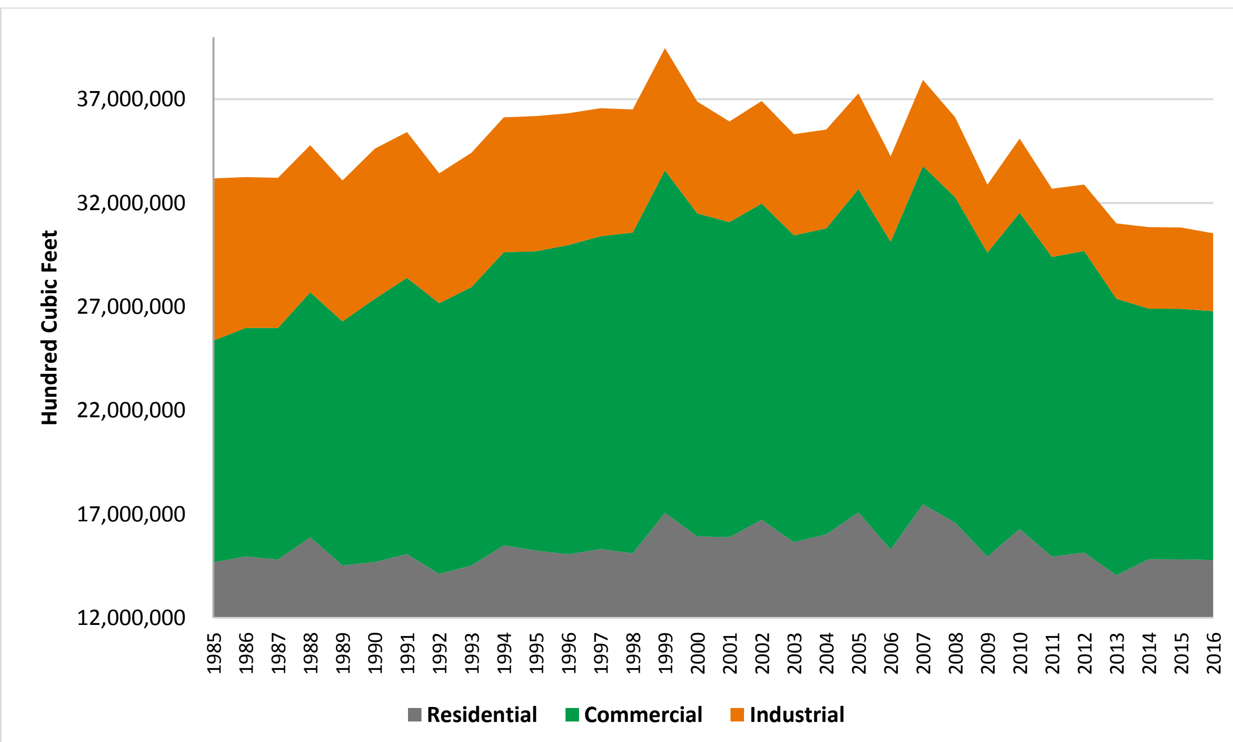


Figure 6-4. Billed Water Consumption (CCF) from 1985–2016

6.3 Billing and Collection

LWC provides billing and revenue collection services for MSD and bills their customers on a monthly or a bimonthly basis. Figure 6-5 shows the breakdown of customers that are bimonthly (89 percent) versus monthly (11 percent). Table 6-1 provides a tabular summary of bill frequency by customer class for FY 2016.

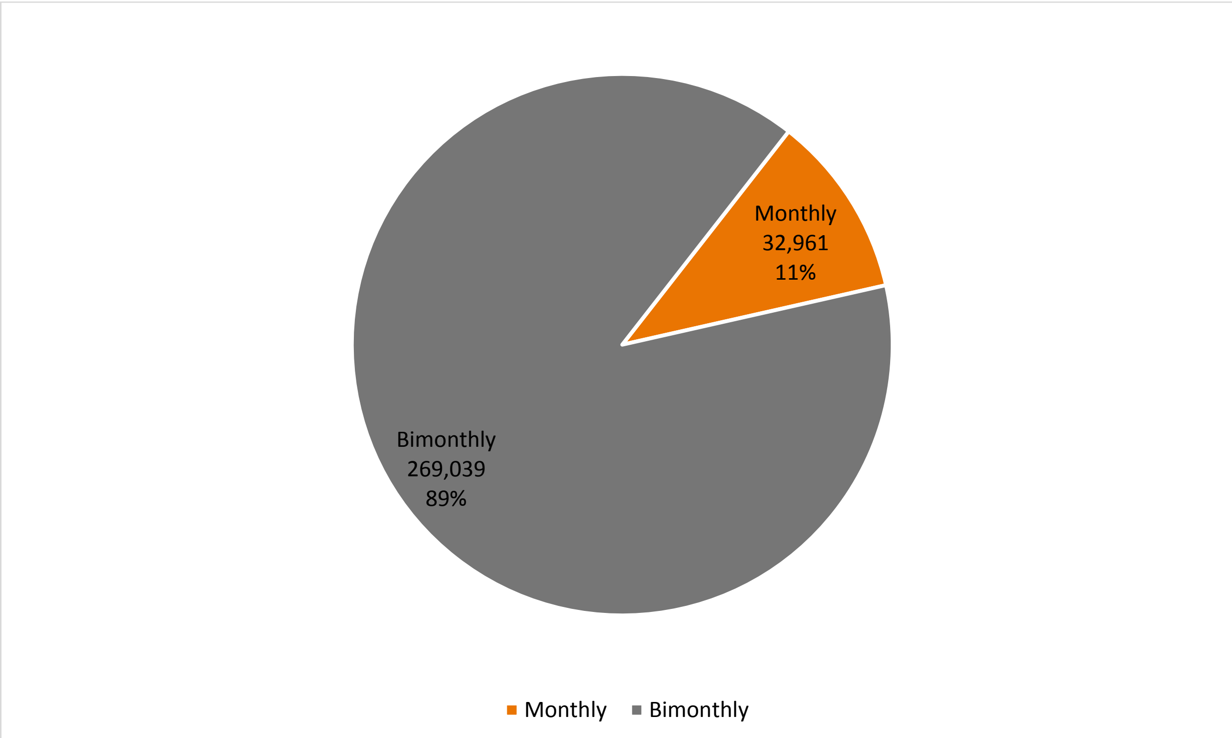


Figure 6-5. Estimated Number of Meters (FY 2016) by Billing Frequency

Table 6-1. Estimated Number of Meters by Bill Frequency by Customer Class (FY 2016)

Customer Class	Monthly	Percent	Bimonthly	Percent	Total
Residential	29,179	11%	241,467	89%	270,646
Commercial	3,346	11%	27,193	89%	30,539
Industrial	436	53%	379	47%	815
Total	**32,961**	**11%**	**269,039**	**89%**	**302,000**

6.4 Top 10 Customers

Figure 6-6 provides a historical summary of the percent of total billed wastewater service to total sales for the top 10 customers. Since FY 2008, the percentages for wastewater sales to those customers decreased from approximately 12 percent to 6.5 percent. The percentages for drainage (stormwater) sales to the top drainage customers decreased from 9 percent in FY 2008 to 6.7 percent in FY 2016. Table 6-2 provides a list of the top customers for billed wastewater sales. Table 6-3 lists the top customers for billed drainage (stormwater) sales. The top wastewater customers include distilleries, chemical manufacturers, auto manufacturing, and shipping. The top drainage customers include the Airport Authority, a shipping company, the Jefferson County Board of Education, and an auto manufacturer.

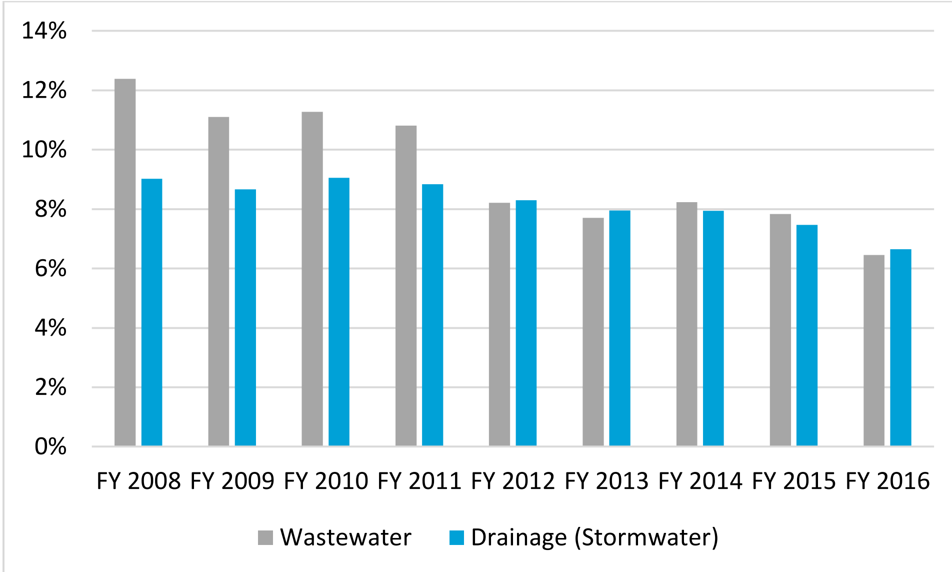


Figure 6-6. Top 10 Customers: Percent of Billed to Total Sales

Table 6-2. Top 10 Billed Wastewater Customers

Customer	FY 2016 Wastewater Billed	Percent of Total
Lubrizol Advanced Material	$ 2,619,739	1.43%
Heaven Hill Distilleries	$ 2,238,317	1.22%
Ford Motor Company	$ 1,437,109	0.78%
Early Times Distillery	$ 1,280,739	0.70%
General Electric	$ 1,126,387	0.61%
Swift Pork Company	$ 921,314	0.50%
UPS	$ 646,401	0.35%
Rohm & Haas	$ 550,815	0.30%
Louisville Metro Housing Authority	$ 513,223	0.28%
Parallel Products	$ 499,133	0.27%
Total	$ 11,833,177	6.45%

Source: Louisville MSD FY 2016 Comprehensive Annual Financial Report.

Table 6-3. Top 10 Billed Drainage (Stormwater) Customers

Customer	FY 2016 Drainage (Stormwater) Billed	Percent of Total
Regional Airport Authority	$ 1,282,627	2.34%
UPS	$ 571,955	1.04%
Ford Motor Co	$ 412,279	0.75%
Lit Industrial Limited Partner	$ 260,106	0.47%
Kentucky State Fair	$ 221,565	0.40%
Seaboard System	$ 220,606	0.40%
The University of Louisville Campus	$ 199,824	0.36%
Louisville Jefferson County Redevelopment Authority	$ 172,925	0.32%
UPS Supply Chain	$ 163,223	0.30%
Norfolk Southern	$ 145,622	0.27%
Total	$ 3,650,733	6.65%

Source: Louisville MSD FY 2016 Comprehensive Annual Financial Report.

6.5 Historical and Projected Costs and Revenues

Table 6-4 provides a tabular summary of historical and projected operating costs. The increase in operating costs in FY 2016 is mostly attributed to a flood at the Morris Forman WQTC that resulted in approximately $9 million in repairs and upgrades to the plant. MSD has or anticipates recovering a total of $6 million of these costs through insurance. The FY 2017 operating budget is projected to be $117.28 million, which is a slight increase above the FY 2016 budget. Note that the $117.28 million does not include a $5 million Contingency Reserve that MSD budgets for emergencies. For planning purposes, operating cost projections assume 3 percent annual rate of growth.

Table 6-5 provides a tabular summary of the debt service for senior obligations through FY 2022, before refunding obligations as part of the Series 2017B bonds. The debt service amounts for Series 2009C and 2010A bonds excludes Build America Bonds (BAB) refunds, which are accounted for as investment income.

Table 6-6 provides a tabular summary of historical and projected revenues. Available revenues include operating and non-operating revenues.

Table 6-7 provides a tabular summary of operating costs, debt service (after refunding by Series 2017B bonds), and revenues. MSD plans to structure future bond issues to maintain a level aggregate debt service, while maintaining full compliance with MSD's Bond Covenants. The Projected Debt Service estimates in Table 6-5 reflect this strategy. Based on the projected costs and revenues, the debt service coverage ratio is above the 110 percent required by the Bond Covenants stipulated in the bond document.

Table 6-4. Historical and Projected Operating Costs (Millions of Dollars)

	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Operating Expenses[a]	**Actual[b]**	**Actual[b]**	**Actual[b]**	**Forecast[c]**	**Budget[d]**	**Projected[e]**	**Projected[e]**	**Projected[e]**	**Projected[e]**
Labor	$57.25	$54.38	$55.23	$56.80	$59.53	$61.31	$63.15	$65.04	$67.00
Utilities	$14.56	$13.82	$18.26	$14.31	$14.74	$15.18	$15.63	$16.10	$16.59
Materials and supplies	$8.15	$9.71	$4.18	$4.81	$7.63	$7.86	$8.10	$8.34	$8.59
Professional services	$1.93	$2.84	$4.17	$11.44	$18.58	$19.13	$19.71	$20.30	$20.91
Maintenance and repairs	$9.10	$7.92	$10.01	$6.11	$5.75	$5.92	$6.10	$6.28	$6.47
Billing and collections	$4.10	$4.33	$4.85	$5.34	$5.68	$5.85	$6.02	$6.21	$6.39
Chemicals	$3.31	$3.40	$3.66	$5.26	$4.17	$4.30	$4.43	$4.56	$4.70
Fuel	$1.84	$1.89	$2.04	$1.15	$1.31	$1.35	$1.39	$1.43	$1.48
Biosolids disposal	$1.80	$1.97	$2.25	$2.46	$2.22	$2.28	$2.35	$2.42	$2.50
All other	$7.24	$6.52	$13.96	$9.59	$6.03	$6.21	$6.39	$6.58	$6.78
Total operating expenses	**$109.26**	**$106.77**	**$118.60**	**$117.28**	**$125.62**	**$129.39**	**$133.27**	**$137.27**	**$141.39**
Percent change	-	**-2%**	**11%**	**-1%**	**7%**	**3%**	**3%**	**3%**	**3%**

Notes:
a. Does not include $5 million Contingency Reserve
b. Louisville MSD FY 2016 Comprehensive Annual Financial Report
c. Louisville MSD March 2017 Financial Report
d. Louisville MSD 2018 Approved Budget
e. Assumes 3 percent inflation

Table 6-5. Debt Service for Senior Obligations Prior to Series 2017 Refunding (Millions of Dollars)

Senior Obligations	FY 2014 Actual	FY 2015 Actual	FY 2016 Actual	FY 2017 Forecast	FY 2018 Budget	FY 2019 Projected	FY 2020 Projected	FY 2021 Projected	FY 2022 Projected
Series 2006A	--	--	$2.20	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Series 2007A	--	--	$3.68	$3.68	$3.67	$3.77	$3.66	$3.67	$3.65
Series 2008A	--	--	$6.51	$5.00	$4.99	$2.69	$2.69	$2.69	$2.69
Series 2009A	--	--	$8.16	$7.05	$7.05	$6.97	$0.00	$0.00	$0.00
Series 2009B	--	--	$22.33	$20.00	$20.24	$20.47	$9.72	$9.83	$9.96
Series 2009C	--	--	$10.76	$10.76	$10.76	$10.76	$10.76	$10.76	$10.76
Series 2010A	--	--	$20.63	$20.63	$20.63	$20.63	$20.63	$20.63	$20.63
Series 2011A	--	--	$14.62	$14.61	$14.57	$14.55	$14.53	$14.52	$14.50
Series 2013A (Ref 2001A)	--	--	$4.63	$4.63	$4.63	$4.63	$4.63	$4.63	$4.63
Series 2013B (Ref 2004A & partial 2005A)	----	--	$6.34	$6.33	$6.34	$6.33	$6.34	$6.34	$6.35
Series 2013C	----	--	$4.74	$4.74	$4.73	$4.73	$4.72	$4.72	$4.72
Series 2014A	----	--	$3.43	$3.43	$3.43	$3.43	$3.43	$3.42	$3.42
Series 2015A	----	--	$4.03	$7.83	$7.62	$7.43	$7.24	$8.01	$7.76
Series 2015B (Ref 2006A)	--	--	$2.29	$5.58	$5.60	$5.60	$5.60	$5.60	$5.60
Series 2016A	--	--	$0.00	$3.38	$5.01	$4.99	$4.99	$5.61	$5.61
Series 2016B (Refund 2008A)	--	--	$0.00	$1.04	$1.14	$3.41	$2.94	$2.89	$2.89
Series 2016C (Refund 2009A and 2009B)	--	--	$0.00	$2.40	$3.38	$3.38	$20.55	$20.74	$20.93
Total	**$109.10**	**$112.10**	**$114.36**	**$121.08**	**$123.81**	**$123.79**	**$122.43**	**$124.08**	**$124.09**

Table 6-6. Historical and Projected Revenues for FY 2014–FY 2022 (Millions of Dollars)

	FY 2014 Actual	**FY 2015 Actual**	**FY 2016 Actual**	**FY 2017 Forecast**	**FY 2018 Budget**	**FY 2019 Projected**	**FY 2020 Projected**	**FY 2021 Projected**	**FY 20222 Projected**
Rate Increase:	*5.8%*	*5.5%*	*5.5%*	*6.9%*	*6.9%*	*6.9%*	*6.9%*	*6.9%*	*6.9%*
Operating Revenues									
Wastewater service charges[a]	$165.60	$173.90	$183.59	$196.50	$208.02	$220.23	$233.14	$246.82	$261.29
Stormwater service charges[b]	$48.50	$51.60	$54.89	$59.30	$63.31	$67.59	$72.16	$77.04	$82.25
Other operating income	$2.60	$4.40	$4.81	$4.20	$4.25	$4.25	$4.25	$4.25	$4.25
Total Operating Revenues	**$216.70**	**$229.90**	**$243.29**	**$260.00**	**$275.58**	**$292.07**	**$309.55**	**$328.11**	**$347.79**
Percent Change	3%	6%	6%	7%	6%	6%	6%	6%	6%
Non-Operating Revenues (expenses)									
Assessments	$2.10	$1.90	$9.46	$3.40	$2.00	$2.00	$2.00	$2.00	$2.00
Investment Income	$10.20	$7.50	$6.95	$7.17	$7.45	$7.87	$8.19	$8.52	$8.86
BAB Refund	$10.10	$10.10	$10.33	$10.24	$10.99	$10.99	$10.99	$10.99	$10.99
Capitalized Investment Income	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Non-Operating Revenues	**$22.40**	**$19.50**	**$26.73**	**$20.80**	**$20.44**	**$20.86**	**$21.18**	**$21.50**	**$21.84**
Total Available Revenues	**$239.10**	**$249.40**	**$270.02**	**$280.80**	**$296.02**	**$312.93**	**$330.73**	**$349.61**	**$369.64**

Notes:
a. Assumes 85 percent adjustment/elasticity factor for FY 2018 to FY 2022.
b. Assumes 98 percent adjustment/elasticity factor for FY 2018 to FY 2022.

Table 6-7. *Pro Forma* Summary for FY 2013–FY 2021 (Millions of Dollars)

	FY 2014 Actual	FY 2015 Actual	FY 2016 Actual	FY 2017 Forecast	FY 2018 Budget	FY 2019 Projected	FY 2020 Projected	FY 2021 Projected	FY 2022 Projected
Rate Increase:	*5.80%*	*5.50%*	*5.50%*	*6.90%*	*6.90%*	*6.90%*	*6.90%*	*6.90%*	*6.90%*
Operating Revenues	$216.70	$229.90	$243.29	$260.00	$275.58	$292.07	$309.55	$328.11	$347.79
Non-Operating Revenues (expenses)	$22.40	$19.50	$26.73	$20.80	$20.44	$20.86	$21.18	$21.50	$21.84
Total Available Revenues	**$239.10**	**$249.40**	**$270.02**	**$280.80**	**$296.02**	**$312.93**	**$330.73**	**$349.61**	**$369.64**
Operating Expenses	$109.26	$106.77	$118.60	$117.28	$125.62	$129.39	$133.27	$137.27	$141.39
Capitalized Cost	($33.57)	($30.06)	($30.52)	($30.38)	($32.66)	($33.64)	($33.32)	($32.94)	($32.52)
Net Operating Expense	**$75.69**	**$76.71**	**$88.08**	**$86.89**	**$92.96**	**$95.75**	**$99.95**	**$104.32**	**$108.87**
Revenues Available for Debt Service and Capital Expenditures	$163.41	$172.69	$181.94	$193.91	$203.06	$217.18	$230.78	$245.29	$260.77
Debt Service (Principal and Interest)									
Existing Senior Obligations[a]	$109.10	$112.10	$114.36	$121.08	$120.14	$120.02	$118.77	$120.41	$120.44
Series 2007A (portion not refunded by 2017B)	–	–	–	–	–	–	–	–	–
Projected Series 2017A (new money)	–	–	–	–	$5.97	$13.49	$14.85	$13.21	$13.20
Projected Series 2017B (refunding)	–	–	–	–	$2.89	$2.99	$2.88	$2.88	$2.86
Projected Debt Service to Fund FY18-FY22 CIP[b]	–	–	–	–	–	$3.94	$14.29	$23.25	$30.44
Total Senior Obligations	**$109.10**	**$112.10**	**$114.36**	**$121.08**	**$129.00**	**$140.44**	**$150.79**	**$159.75**	**$166.95**
Subordinate	$15.00	$14.30	$14.30	$13.58	$13.58	$14.08	$14.08	$14.08	$14.08
Capitalized Interest	($26.36)	($19.10)	($20.51)	($19.59)	($20.93)	($19.93)	($20.62)	($21.06)	($21.43)
Total Debt Service	$97.74	$107.30	$108.15	$115.07	$121.64	$134.59	$144.25	$152.77	$159.59
Debt Service Coverage Ratio[c]									
Senior Obligations	1.63	1.84	1.88	1.91	1.88	1.80	1.77	1.77	1.79
Senior and Subordinate Obligations	1.41	1.59	1.63	1.69	1.67	1.61	1.60	1.61	1.63
Annual Change in Working Capital				$2.90	$14.75	$0.05	$5.39	$2.55	$2.33
Year-end Working Capital				$87.87	$102.62	$102.67	$108.06	$110.61	$112.95
Equity (cash) Funded CIP				$0	$28.08	$43.25	$45.70	$55.70	$65.50

Notes:

Red numbers in parentheses are negative numbers.
a. Gross of BAB Refund, which are included in non-operating revenues. Does not include Series 2007A
b. Estimated based on anticipated bond structure strategy
c. Coverage Ratio calculated in accordance with Bond Covenant approach

6.6 Projected Debt Issues and Coverage

6.6.1 Prior Bond and Bond Anticipation Note Issues

From its inception, MSD has maintained a schedule of rates, rentals, and charges to produce revenue sufficient to finance the operation, maintenance, repair, and expansion of the System. Revenue bonds were issued in 1949, 1952, 1954, 1956, 1960, and 1965 pursuant to a resolution adopted on July 7, 1949, (the “1949 Bond Resolution”) to provide capital for system expansion. Under a resolution adopted on June 7, 1971, (the “1971 Bond Resolution”), bonds were issued to finance water quality treatment plant improvements. Two series of bonds were issued in 1989 under the 1971 Bond Resolution (“Bond Resolution”) to refund issues outstanding under the 1949 and 1971 Bond Resolutions and to finance both sewer system expansion and drainage improvements.

The purpose of the Bond Resolution was to create one new revenue bond resolution that would provide MSD needed flexibility for funding capital projects associated with wastewater and stormwater drainage services. The Series 1993 Bonds were structured to achieve level debt service during the remaining 26 years of MSD’s outstanding debt. MSD had approximately $158.3 million in bonds and other long-term debt outstanding at the time of issuance of the Series 1993 Bonds. MSD was intent on creating a unified planning, financing, development, and management framework to promote more efficient and effective use of its capital and operating funds. Consolidating all existing non-operating funds created one “Construction and Acquisition Fund.” One “Revenue Fund” was created to receive all MSD revenue and income.

MSD has heretofore issued under the Bond Resolution, its System Revenue Bonds outstanding in the amounts shown on Table 6-8.

Table 6-8. MSD Outstanding Bonds[a]

Series	Issue Date	Original Principal Amount	Principal Amount Outstanding[a]
Series 2007A[b]	November 15, 2007	$61,125,000	$42,965,000
Series 2008A[c]	May 1, 2008	$105,000,000	$65,520,000
Series 2009A[d]	May 15, 2009	$76,275,000	$13,040,000
Series 2009B[e]	August 15, 2009	$225,770,000	$69,725,000
Series 2009C	November 24, 2009	$180,000,000	$180,000,000
Series 2010A	November 30, 2010	$330,000,000	$330,000,000
Series 2011A	August 24, 2011	$263,360,000	$252,610,000
Series 2013A	May 23, 2013	$115,790,000	$115,790,000
Series 2013B	May 23, 2013	$119,515,000	$116,940,000
Series 2013C	November 27, 2013	$100,000,000	$99,625,000
Series 2014A	November 25, 2014	$80,000,000	$79,900,000
Series 2015A	October 21, 2015	$175,000,000	$174,280,000
Series 2015B	October 21, 2015	$81,750,000	$79,085,000
Series 2016A	August 30, 2016,	$150,000,000	$150,000,000
Series 2016B	August 30, 2016,	$ 28,315,000	$28,095,000
Series 2016C	August 30, 2016,	$67,685,000	$67,685,000
Total		**$2,159,585,000**	**$1,865,260,000**

Note:
a. As of July 1, 2017 – Updated July 21, 2017
b. The remaining principle amount will be refunded by the Series 2017B Bonds
c. Principle maturities from May 15, 2019, through May 15, 2036, were refunded with Series 2016B Bonds
d. A portion of principle maturities from May 15 2020, through May 15, 2022, were refunded with series 2016C Bonds
e. A portion of principle maturities from May 15 2020, through May 15, 2023, were refunded with series 2016C Bonds

The following describes the purpose of the Revenue Bonds:

- 2007A Revenue Bonds refunded certain of MSD's outstanding Sewer and Drainage System Revenue Bonds, Series 1997B.
- 2008A Revenue Bonds financed MSD's Capital Improvement Program (CIP).
- 2009A Revenue Bonds refunded a portion of MSD's outstanding Sewer and Drainage System Revenue Bonds, Series 1998A.
- 2009B Revenue Bonds refunded certain of MSD's outstanding Sewer and Drainage System Revenue Bonds, Series 1999A, Series 2003A, and Series 2003B.
- Series 2009C Revenue Bonds funded sewer and drainage projects of MSD's CIP that were approved for construction.
- Series 2010A Revenue Bonds funded obligations contained in MSD's Consent Decree, in addition to other initiatives including Project DRI, the Western Flood Pumping Station rehabilitation, WQTC modifications, sewer assessments, and capital equipment purchases, and to fund a debt service reserve account in an amount not to exceed $30 million.
- Series 2011A Bonds refunded a portion of MSD's outstanding Series 2001A Bonds and Series 1998A Bonds.
- Series 2013A Bonds refunded MSD's outstanding Sewer and Drainage System Revenue Bonds, Series 2001A.
- Series 2013B Bonds refunded MSD's outstanding Sewer and Drainage System Revenue Bonds, Series 2004A and certain MSD's outstanding Sewer and Drainage System Revenue Bonds, Series 2005A Bonds.
- Series 2013C Bonds financed MSD's CIP.
- Series 2014A Bond issue financed MSD's CIP.
- Series 2015A Bond issue financed MSD's CIP
- Series 2015B Bond issue refunded Series 2006A bonds, in advance of maturity.
- Series 2016A Bond paid for improvements to the MSD's sewer and drainage system including: wastewater and drainage system expansion and improvements; improvements to wastewater treatment facilities; rehabilitation of combined sewer overflow systems; improvements to flood control and drainage facilities; drainage and MSD improvements; construction of collector sewers; construction and improvements of detention and retention basins; construction of interceptor sewers; combined sewer overflow and sanitary overflow abatement projects; construction and improvements to force mains; repairs and improvements to District pumping stations; construction of regional storage facilities; and miscellaneous improvements and acquisition of equipment and mapping hardware and software.
- Series 2016B Bond issue refunded in advance Series 2008A maturing May 15, 2019 through May 15, 2036.
- Series 2016C Bond refunded in advance Series 2009A maturing May 15, 2020 through May 15, 2022 and a portion of the outstanding principal amount of Series 2009B maturing May 15, 2020 through May 15, 2023.

6.6.2 Series 2017 Bonds

The projected debt issuances include two Series: 2017A and 2017B. These are senior obligations and are being issued on parity with other senior obligations outstanding. Series 2017A bond proceeds will be used for improvements to the sewer and drainage system. Series 2017B bond proceeds will be used to refund maturities May 15, 2018, and thereafter of the Series 2007A Bonds. Table 6-9 summarizes the annual debt service for the Series 2017A and 2017B bonds, which are included as line items in Table 6-7.

Based on the assumptions previously listed, Table 6-10 summarizes the capital requirements based on the current 5-year CIP (FY 2017–FY 2022), including the projected equity-funded portion of the CIP and the projected debt service for the bond funded portion of the CIP. MSD plans to structure future bond issues to maintain a level aggregate debt service while maintaining full compliance with MSD's Bond Covenants. The equity funded CIP and projected debt service are included as line items in Table 6-7.

Table 6-9. Debt Service for Series 2017A, 2017B Bonds

	Item 1	Item 2	Item 3	Item 4	Item 5
Fiscal Year	**Current Payments for 2007A**	**Estimated Annual Payments for 2017B**	**Total Annual Payments from Refunding (Item 2)**	**Projected Annual Savings of Refinancing (Item 1 minus Item 3)**	**Estimated Annual Payments for 2017A**
2018	$3,673,250	$2,887,688	$2,887,688	$785,562	$5,971,349
2019	$3,772,000	$2,990,175	$2,990,175	$781,825	$13,490,598
2020	$3,662,000	$2,879,600	$2,879,600	$782,400	$14,849,098
2021	$3,668,250	$2,884,200	$2,884,200	$784,050	$13,210,348
2022	$3,645,000	$2,861,400	$2,861,400	$783,600	$13,200,098
2023	$3,723,500	$2,942,200	$2,942,200	$781,300	$12,590,098
2024	$19,448,500	$18,662,400	$18,662,400	$786,100	$11,649,598
2025	$15,377,250	$14,591,200	$14,591,200	$786,050	$11,615,848
2026	--	--	--	--	$11,605,098
2027	--	--	--	--	$10,810,598
2028	--	--	--	--	$7,965,848
2029	--	--	--	--	$7,864,598
2030	--	--	--	--	$7,845,498
2031	--	--	--	--	$7,791,698
2032	--	--	--	--	$7,533,723
2033	--	--	--	--	$7,470,998
2034	--	--	--	--	$6,591,998
2035	--	--	--	--	$6,593,398
2036	--	--	--	--	$6,511,960
2037	--	--	--	--	$6,064,560
2038	--	--	--	--	$6,001,360
2039	--	--	--	--	$4,637,560
2040	--	--	--	--	$4,478,105
2041	--	--	--	--	$4,454,240
2042	--	--	--	--	$4,405,375
2043	--	--	--	--	$4,232,585
2044	--	--	--	--	$14,906,245
2045	--	--	--	--	$14,735,235
2046	--	--	--	--	$14,571,110
2047	--	--	--	--	$33,588,010
2048	--	--	--	--	$24,875,550
Total	**$60,651,000**	**$50,698,863**	**$50,698,863**	**$6,270,887**	**$322,112,376**

Table 6-10. Projected Capital Requirements and Debt Service for Approved CIP 2017-2021 (Millions of Dollars)

		FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Consent Decree (IOAP)		$128.9	$153.6	$96.5	$32.9	$8.0
NMC		$15.1	$5.4	$2.2	$6.3	$13.7
CMOM		$22.0	$11.1	$26.5	$78.3	$62.8
Development		$1.1	$1.1	$1.1	$1.1	$6.2
Drainage		$2.8	$2.8	$2.8	$3.2	$20.2
Floodplain Management		$0.4	$0	$0	$0	$0
Stormwater Quality (MS4)		$2.3	$1.3	$1.8	$1.7	$2.7
Ohio River Flood Protection		$4.8	$4.1	$2.7	$16.4	$40.3
Capital Equipment		$2.3	$1.8	$2.8	$2.8	$2.8
Facilities		$14.3	$3.4	$3.0	$6.9	$2.3
IT		$0.7	$0.3	$0.3	$0.3	$0.6
LOJIC		$0.4	$0.1	$0.5	$0.3	$0.4
Total (2017 Dollars)		**$195.1**	**$185**	**$140.2**	**$150.2**	**$160**
Equity Funded (Percent)		14%	23%	33%	37%	41%
Bond Funded (Percent)		86%	77%	67%	63%	59%
Equity Funded CIP		$28.08	$43.25	$45.7	$55.7	$65.5
Bond Funded CIP		$167.02	$141.75	$94.5	$94.5	$94.5
Cost of Issuance (COI) (1.5% of projected bond amount)*		$3.9	$2.25	$1.5	$1.5	$1.5
Change in Bond Reserve (4% of projected bond amount)*		$4	$6	$4	$4	$4
Projected Par Value		$175	$150	$100	$100	$100
Projected Debt Service						
Series 2017A	4.11%	$6.0	$13.5	$14.9	$13.2	$13.2
Series 2017B	4.11%	$2.9	$3.0	$2.9	$2.9	$2.9
Series 2018	4.5%		$3.9	$11.7	$12.9	$11.5
Series 2019	4.5%			$2.6	$7.8	$8.6
Series 2020	4.5%				$2.6	$7.8
Series 2021	4.5%					$2.6
Total estimated debt service		**$8.9**	**$20.4**	**$32.0**	**$39.4**	**$46.5**

* FY 2018 amounts based on 2017A MSD POS Numbers (Updated 4.21.17). Projections based on percent of projected par value of future bond issue

Figure 6-7 provides a graphical summary of the debt service coverage ratios including the proposed Series 2017 A & B bonds and projected debt service on future anticipated bonds to fund planned capital expenditures in FY2017 to FY 202 (based on the 5-year CIP).

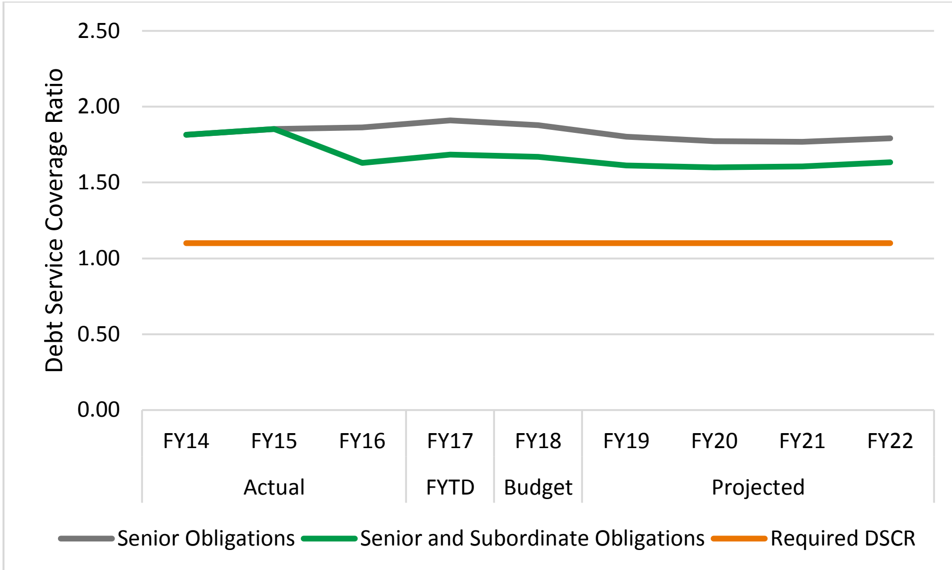


Figure 6-7. Historical and Projected Debt Service Coverage Ratio

6.7 Drainage and Sewer Rates

The MSD Board has been delegated the responsibility for establishing MSD's rates rentals and charges. The MSD Board can authorize rate increases of up to 7 percent in any 12-month period. Metro Ordinance Section 50.24, Debt Service Adjustments, requires Metro Council notification for any proposed rate increase greater than 4 percent, and Metro Council approval for any rate increase generating revenues greater than 7 percent. The 6.9-percent rate increase proposed for FY 2017 was presented to the Metro Council Budget Committee on June 15, 2016, in accordance with this ordinance. MSD has presented the results of an extensive public outreach program to the MSD Board in support of a proposed 20-percent rate increase for FY 2018. The MSD Board approved this rate increase on May 22, 2017. The MSD Board-approved increase is greater than the 6.9 percent increase that the MSD Board can authorize without approval from the Louisville Metro Council. MSD is planning to present the 20 percent increase for Metro Council approval. Since approval is not certain at the time of this report preparation, all the revenue and cost information presented herein have been based on an assumed FY 2018 rate increase of 6.9 percent, the amount that the MSD Board can implement without needing Metro Council approval. If a rate increase greater than 6.9 percent is approved by Metro Council, it will have an immediate and positive impact on all the financial parameters presented in this report.

MSD's rates, rentals, and charges for wastewater and drainage service recognize several parameters, including the following:

- Connection (meter) size
- Customer class
- Regular (domestic strength) flows
- Optional (clean) flows
- Excess strength flows
- Sewer-only service
- Impervious area

Table 6-11 lists the wastewater service charge schedule (effective August 1, 2016 and assumed rates effective August 1, 2017, reflecting a 6.9% rate increase for FY 2018) for the MSD service area. The service charge is a monthly or bimonthly charge based on meter size.

Table 6-11. Wastewater Service Charges

Meter Size (inches)	Monthly Billing ($/bill) (Effective 8/1/2016)	Monthly Billing ($/bill) (Assumed 6.9% increases effective 8/1/2017)	Bimonthly Billing ($/bill) (Effective 8/1/2016)	Bimonthly Billing ($/bill) (Assumed 6.9% increases effective 8/1/2017)
Residential				
⅝ or ¾	$13.78	$14.73	$27.56	$29.46
1	$27.68	$29.59	$55.35	$59.17
1.5	$46.05	$49.23	$92.09	$98.44
2	$63.15	$67.51	$126.30	$135.01
3	$140.78	$150.49	$281.56	$300.99
4	$227.62	$243.33	$455.24	$486.65
Commercial / Industrial				
⅝ or ¾	$21.16	$22.62	$27.56	$29.46
1	$36.89	$39.44	$55.35	$59.17
1.5	$55.35	$59.17	$92.09	$98.44
2	$71.08	$75.98	$126.30	$135.01
3	$150.33	$160.70	$281.56	$300.99
4	$236.88	$253.22	$455.24	$486.65
6	$455.16	$486.57	$894.54	$956.26
8	$684.10	$731.30	$1,341.84	$1,434.43
10	$894.54	$956.26	$1,762.86	$1,884.50
12	$1,298.73	$1,388.34	$2,597.46	$2,776.68
15 or 16	$1,574.23	$1,682.85	$3,148.38	$3,365.62
18 or 20	$2,066.14	$2,208.70	$4,132.28	$4,417.41

MSD maintains volume charges that recognizes categories of wastewater flows. Table 6-12 lists volume charges by customer class.

Table 6-12. Wastewater Volume Charges

Customer Class	Regular ($/1,000 gallons)	Optional (clean) ($/1,000 gallons)	Sewer Only ($/1,000 gallons)	Sewer Only (optional) ($/1,000 gallons)
(Effective 8/1/2016)				
Residential	$3.76	N/A	$4.34	N/A
Commercial	$4.35	$2.58	$4.86	$2.76
Industrial	$4.53	$2.58	$4.90	$2.76
With Assumed 6.9% Rate increase Effective 8/1/2017				
Residential	$4.02	N/A	$4.64	N/A
Commercial	$4.65	$2.76	$5.20	$2.95
Industrial	$4.84	$2.76	$5.24	$2.95

MSD implemented a surcharge that recovers the costs associated with the EPA Consent Decree. Residential customers pay a fixed fee (either monthly or bimonthly). Commercial and industrial customers pay based on the greater value of a fixed fee or volume based fee. Table 6-13 lists surcharges by customer class.

Table 6-13. EPA Consent Decree Surcharges

	Billing Basis (Effective 8/1/2016)		**Billing Basis with Assumed 6.9% Rate Increase (Effective 8/1/2017)**	
Customer Class	**Monthly**	**Bimonthly**	**Monthly**	**Bimonthly**
Residential	$11.26	$22.52	$12.04	$24.07
	Greater of…		**Greater of…**	
	Monthly	**$/1,000 gallons**	**Monthly**	**$/1,000 gallons**
Condominium complexes	$11.26	$1.88	$12.04	$2.01
Commercial (regular)	$11.26	$1.35	$12.04	$1.44
Commercial (sewer only)	$11.26	$1.50	$12.04	$1.60
Industrial (regular)	$11.26	$1.40	$12.04	$1.50
Industrial (sewer only)	$11.26	$1.50	$12.04	$1.60
Optional (clean)	$11.26	$0.80	$12.04	$0.86
Optional (sewer only)	$11.26	$0.86	$12.04	$0.92

MSD assesses a strength-based charge for flows that exceed normal domestic-strength flows. MSD has two categories of excess strength charges, the first is for regular rate customers (Excess Quality) and the second is for optional rate customers (Total Quality). Table 6-14 shows the excess strength charges effective August 1, 2016 and proposed rates effective August 1, 2017.

Table 6-14. Excess Strength Charges

	Excess Quality (regular) ($/mg/L)	**Total Quality (optional) ($/mg/L)**
(Effective 8/1/2016)		
BOD Concentration	$0.003588	$0.003588
TSS Concentration	$0.001478	$0.001478
With Assumed 6.9% rate increase effective 8/1/2017		
BOD Concentration	$0.003836	$0.003836
TSS Concentration	$0.001580	$0.001580

Note:
mg/L=milligram per liter

In addition to wastewater service, MSD also charges for drainage or stormwater services. MSD tracks two classes of properties for the drainage charge. Class A properties are residential customers, which pay a fixed fee for 1 ESU (average imperious area for single family properties). Class B properties are all other properties, which pay based on actual impervious area. Table 6-15 lists the drainage charges by property class.

Table 6-15. Drainage Charges

Property Class	Drainage Charge Rate (Effective 8/1/2016)	Drainage Charge Rate with assumed 6.9% rate increase (Effective 8/1/2017)
Class A Properties (single family)	$8.66/month	$9.26/month
Class B Properties (not single family)	$8.66/ESU	$9.26/ESU

6.8 Impact on Typical User Bills

Table 6-16 summaries the typical residential bill for different levels of bimonthly consumption. Table 6-17 summarizes typical commercial bill for different levels of bimonthly consumption and 10 ESUs (drainage charge).

Table 6-16. Typical Residential Bill Based on MSD with Assumed 6.9% Rate Increases Effective 8/1/20177
5/8-inch meter, Regular (domestic-strength), Bimonthly billing

Bimonthly Consumption (1,000 gallons)	Service Charge	Volume Charge	EPA Surcharge	Drainage Charge	Total
1	$29.46	$4.02	$24.07	$18.52	$76.07
2	$29.46	$8.04	$24.07	$18.52	$80.09
3	$29.46	$12.06	$24.07	$18.52	$84.11
4	$29.46	$16.08	$24.07	$18.52	$88.13
5	$29.46	$20.10	$24.07	$18.52	$92.15
6	$29.46	$24.12	$24.07	$18.52	$96.17
7	$29.46	$28.14	$24.07	$18.52	$100.19
8	$29.46	$32.16	$24.07	$18.52	$104.21
9	$29.46	$36.17	$24.07	$18.52	$108.23
10	$29.46	$40.19	$24.07	$18.52	$112.25
15	$29.46	$60.29	$24.07	$18.52	$132.34

Table 6-17. Typical Commercial Bill Based on MSD with Assumed 6.9% Rate Increase Effective 8/1/2017
5/8-inch meter, Regular (domestic-strength), Bimonthly billing, 10 ESUs

Bimonthly Consumption (1,000 gallons)	Service Charge	Volume Charge	EPA Surcharge	Drainage Charge	Total
1	$29.46	$4.65	$24.07	$92.58	$150.76
5	$29.46	$23.25	$24.07	$92.58	$169.36
10	$29.46	$46.50	$24.07	$92.58	$192.61
15	$29.46	$69.75	$24.07	$92.58	$215.86
20	$29.46	$93.00	$28.86	$92.58	$243.90
25	$29.46	$116.25	$36.08	$92.58	$274.37
30	$29.46	$139.50	$43.29	$92.58	$304.84
35	$29.46	$162.76	$50.51	$92.58	$335.30
40	$29.46	$186.01	$57.73	$92.58	$365.77
45	$29.46	$209.26	$64.94	$92.58	$396.24

6.9 Comparison to Bills in Other Communities

Table 6-18 summarizes the average residential wastewater charge for comparable communities across the U.S. The typical monthly wastewater bill for MSD is $46.87 (excludes drainage fee). The maximum for the communities evaluated is Atlanta, GA at $87.37 per month for 5,000 gallons. The U.S. average is $42.33. Figure 6-8 provides a graphical summary of the average monthly wastewater charges.

Table 6-18. Average Wastewater Charges Based on 5,000 Gallons per Month

Community	Monthly Residential Wastewater Fee based on 5,000 gallons
Lexington, KY	$33.67
Owensboro, KYKY	$38.85
Bowling Green, KYKY	$41.41
U.S. Average	$42.33
Louisville, KY (6.9% effective 8/1/17)	$46.87
St. Louis, MO	$47.55
Boston, MA	$48.08
Nashville, TN	$48.22
Columbus, OHOH	$49.17
New Albany, ININ	$49.87
Northern, KY	$51.72
Frankfort, KYKY	$52.62
Indianapolis, IN	$59.02
Knoxville, TN	$74.32
Kansas City, MOMO	$75.88
Birmingham, AL	$76.48
Cincinnati, OH	$78.37
Atlanta, GA	$87.37

Source: MSD – projected to Fiscal Year 2018

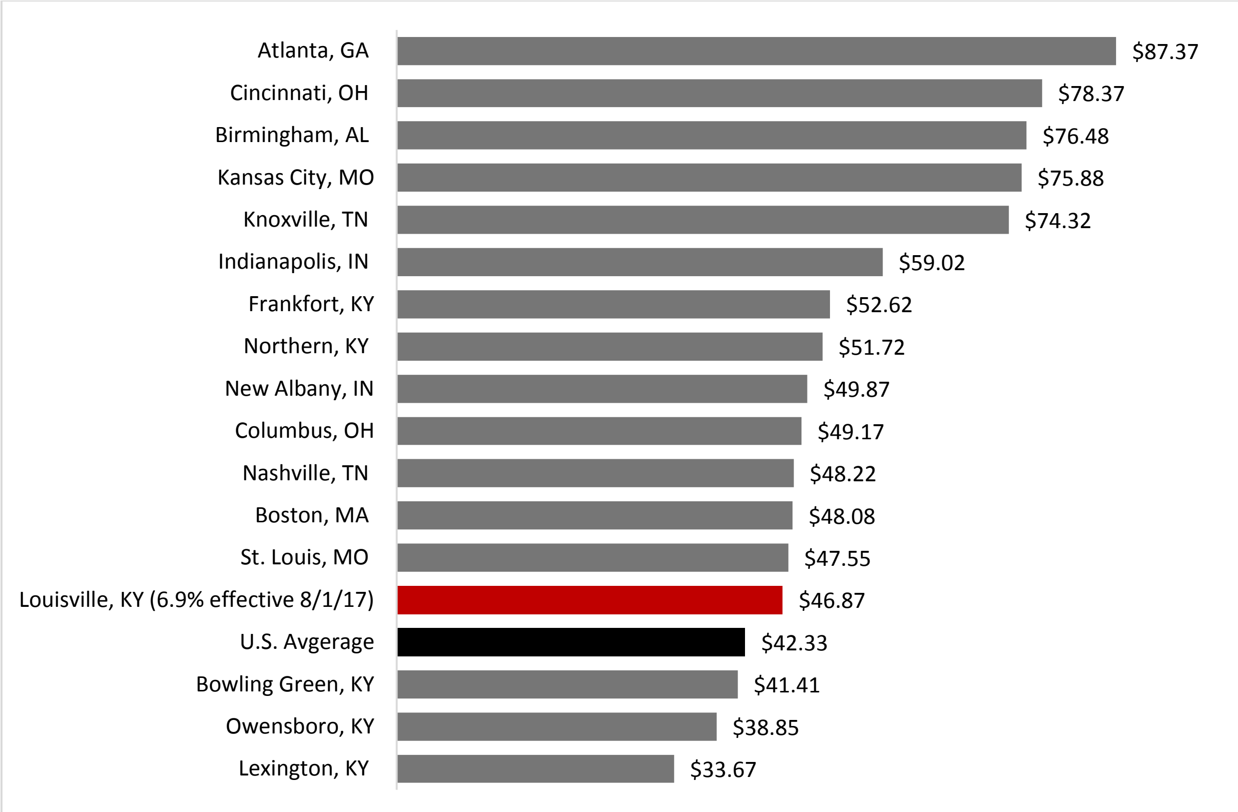


Figure 6-8. Average Wastewater Charges Based on 5,000 Gallons per Month
Source: MSD – Projected to Fiscal Year 2018