FINAL OFFICIAL STATEMENT DATED JUNE 12, 2019

New Issue: Book-Entry-Only

Ratings: S&P Global Ratings ..... "AA+"
Fitch Ratings ..... "AA+"

In the opinion of Bond Counsel, based on existing statutes and court decisions and assuming continuing compliance with certain covenants and procedures relating to requirements of the Internal Revenue Code of 1986, as amended (the "Code"), interest on the Series 2019 Bonds is excluded from gross income for federal income tax purposes and is not treated as an item of tax preference for purposes of computing the federal alternative minimum tax. In the opinion of Bond Counsel, based on existing statutes, interest on the Series 2019 Bonds is excluded from Connecticut taxable income for purposes of the Connecticut income tax on individuals, trusts and estates, and is excluded from amounts on which the net Connecticut minimum tax is based in the case of individuals, trusts and estates required to pay the federal alternative minimum tax. See "Tax Matters" herein.

$15,700,000
City of Stamford, Connecticut
Water Pollution Control System and Facility
Revenue Bonds, Issue of 2019

Dated: Date of Delivery ***Due: As Shown on Inside Cover***

The City of Stamford, Connecticut Water Pollution Control System and Facility Revenue Bonds, Issue of 2019 (the "Series 2019 Bonds"), will be issued as fully registered bonds, registered in the name of Cede & Co., as nominee for The Depository Trust Company, New York, New York ("DTC"). Purchases of the Series 2019 Bonds will be made in book-entry-only form, in the denominations of $5,000 or any integral multiple thereof, and no physical delivery of the Series 2019 Bonds will be made to purchasers. So long as Cede & Co. is the registered owner of the Series 2019 Bonds, principal and interest (payable April 1 and October 1 of each year, commencing October 1, 2019) are payable to DTC by U.S. Bank National Association (as successor to Wachovia Bank, National Association), as Trustee and Paying Agent (the "Trustee"). See "BOOK-ENTRY-ONLY SYSTEM" herein. The Series 2019 Bonds are subject to redemption prior to maturity as described herein.

The Series 2019 Bonds are being issued by the City of Stamford, Connecticut (the "City") to finance various capital projects of the Water Pollution Control Authority of the City of Stamford ("SWPCA") and for financing costs related to the issuance of the Series 2019 Bonds. See "Use of Series 2019 Bond Proceeds" herein.

The Series 2019 Bonds are special limited obligations of the City, payable solely from Revenues and other receipts, funds and moneys pledged therefor pursuant to the Indenture, and are secured on a parity basis with other Bonds (as defined herein) and obligations of the City to the State of Connecticut (the "State") issued pursuant to the Clean Water Fund Act, as provided for in the Indenture (see "SECURITY AND PLEDGE OF THE INDENTURE" herein). The Bonds are not general obligations of the City. Neither the full faith and credit nor the taxing power of the City, the State nor any political subdivision or agency of the State is pledged to the payment of the Bonds.

The Bonds are subject to redemption prior to maturity as more fully described herein. (See Optional Redemption").

The Series 2019 Bonds are offered when, as and if issued, subject to the final approving opinion of Robinson & Cole LLP, Bond Counsel, Hartford, Connecticut, and to certain other conditions referred to herein. Certain legal matters will be passed upon for the Underwriter by its counsel, Pullman & Comley, LLC, Hartford, Connecticut. Phoenix Advisors, LLC, Milford, Connecticut has served as municipal advisor to the City (the "Municipal Advisor") in connection with the issuance of the Series 2019 Bonds. It is anticipated that the Series 2019 Bonds will be available for delivery through the facilities of DTC or its custodial agent on or about June 26, 2019.

RAYMOND JAMES®

$15,700,000
City of Stamford, Connecticut
Water Pollution Control System and Facility
Revenue Bonds, Issue of 2019

Dated: Date of Delivery ***Due: Serially, April 1, as shown below***

Year	*Principal*	*Coupon*	*Yield*	*CUSIP* [1]
2020	$ 505,000	4.000%	1.280%	852660DN6
2021	365,000	4.000%	1.290%	852660DP1
2022	380,000	4.000%	1.300%	852660DQ9
2023	395,000	4.000%	1.330%	852660DR7
2024	410,000	4.000%	1.350%	852660DS5
2025	425,000	4.000%	1.400%	852660DT3
2026	445,000	5.000%	1.470%	852660DU0
2027	465,000	5.000%	1.540%	852660DV8
2028	490,000	5.000%	1.620%	852660DW6
2029	515,000	5.000%	1.710%	852660DX4

Year	*Principal*	*Coupon*	*Yield*	*CUSIP* [1]
2030*	$ 540,000	5.000%	1.800%	852660DY2
2031*	565,000	5.000%	1.910%	852660DZ9
2032*	595,000	5.000%	1.990%	852660EA3
2033*	625,000	5.000%	2.050%	852660EB1
2034*	655,000	5.000%	2.090%	852660EC9
2035*	685,000	5.000%	2.140%	852660ED7
2036*	720,000	4.000%	2.550%	852660EE5
2037*	750,000	4.000%	2.590%	852660EF2
2038*	780,000	4.000%	2.640%	852660EG0
2039*	810,000	4.000%	2.680%	852660EH8

$4,580,000 4.000% Term Bond due April 1, 2044* – Yield 2.850% 852660EJ4

**Priced assuming redemption on April 1, 2029; however any such redemption is at the option of the City.*

[1] Copyright, American Bankers Association. CUSIP® is a registered trademark of the American Bankers Association. CUSIP numbers have been assigned by an independent company not affiliated with the City and are included solely for the convenience of the holders of the Series 2019 Bonds. The City is not responsible for the selection or use of these CUSIP numbers, does not undertake any responsibility for their accuracy, and makes no representation as to their correctness on the Series 2019 Bonds or as indicated above. The CUSIP number for a specific maturity is subject to being changed after the issuance of the Series 2019 Bonds as a result of various subsequent actions including, but not limited to, a refunding in whole or in part of such maturity or as a result of the procurement of secondary market portfolio insurance or other similar enhancement by investors that is applicable to all or a portion of certain maturities of the Series 2019 Bonds.

No dealer, broker, salesperson or other person has been authorized by the City, the Municipal Advisor or the Underwriter to give any information or to make any representations other than those contained in this Official Statement and, if given or made, such information and representations must not be relied upon as having been authorized by the City, the Municipal Advisor or the Underwriter. This Official Statement does not constitute an offer to sell or 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. The information set forth herein has been obtained from the City and other sources which they believe to be reliable, including the information relating to DTC, but neither the City nor the SWPCA makes any representation as to the accuracy or completeness of such information received from other sources. The information and expressions of opinion herein are subject to change without notice, except as described herein under "CONTINUING DISCLOSURE." The delivery of this Official Statement at any time does not imply that the information herein is current as of any time subsequent to its date.

Bond Counsel is not passing upon and does not assume responsibility for the accuracy or adequacy of the statements made in this Official Statement (other than matters expressly set forth as their opinion) and they make no representation that they have independently verified the same.

Raymond James & Associates, Inc. (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 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.

IN MAKING AN INVESTMENT DECISION, INVESTORS MUST RELY ON THEIR OWN EXAMINATION OF THE SWPCA AND THE TERMS OF THE OFFERING, INCLUDING THE MERITS AND RISKS INVOLVED. THESE SECURITIES 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 DOCUMENT. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

This Official Statement contains forecasts, projections and estimates that are based on current expectations. In light of the important factors that may materially affect the financial condition of the City, the SWPCA and other economic and financial matters, the inclusion in this Official Statement of such forecasts, projections and estimates should not be regarded as a representation by the City, the SWPCA, the Municipal Advisor or the Underwriter that such forecasts, projections and estimates will occur. Such forecasts, projections and estimates are not intended as representations of fact or guarantees of results.

If and when included in this Official Statement, the words "expects," "forecasts," "projects," "intends," "anticipates," "estimates" and analogous expressions are intended to identify forward-looking statements as defined in the Securities Act of 1933, as amended, and any such statements inherently are subject to a variety of risks and uncertainties that could cause actual results to differ materially from those projected. Such risks and uncertainties include, among others, general economic and business conditions, factors affecting water consumption rates such as weather, changes in political, social and economic conditions, regulatory initiatives and compliance with governmental regulations, litigation and various other events, many of which are beyond the control of the City and the SWPCA. These forward-looking statements speak only as of the date of this Official Statement. The City and the SWPCA disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any change in the City's expectations with regard thereto or any changes in events, conditions or circumstances on which any such statement is based.

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

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CITY OF STAMFORD, CONNECTICUT

Principal Municipal Officials

Office	*Name*	*Manner of Selection*	*Length of Service*
Mayor	David R. Martin	Elected/4 years	5 ½ years [1]
Chief of Staff	Michael E. Pollard	Appointed/4 years	5 ½ years
Director of Administration	Michael E. Handler	Appointed/4 years	7 years [2]
Director of Operations	Mark McGrath	Appointed/4 years	8 months
Director of Legal Affairs	Kathryn Emmett, Esq.	Appointed/4 years	5 ½ years
Director of Public Safety, Health and Welfare	Thaddeus K. Jankowski, Sr.	Appointed/4 years	7 ½ years [2]
Director of Economic Development ...	Thomas Madden, AICP	Appointed/4 years	5 years
Controller	David A. Yanik	Unclassified/indefinite	7 ½ years
Director of Policy & Management	Jay Fountain	Unclassified	3 ½ years [3]
Superintendent of Schools	Tamu Lucero	Appointed/3 years	0 [4]

[1] David R. Martin was elected Mayor of the City in November 2013, took office on December 1, 2013, and appointed his cabinet members shortly thereafter. Mayor Martin represented the 19th District on Stamford's Board of Representatives for 26 years (from 1987 to 2009) and served as president for 8 years (2001 to 2009). Mayor Martin was elected to the Board of Finance in November of 2011 and served through November of 2013.

[2] Mr. Handler, and Mr. Jankowski served as cabinet members for the previous administration and were appointed by Mayor Martin.

[3] Mr. Fountain was appointed Acting Director of Policy & Management on November 30, 2015 and Director of Policy & Management on August 14, 2017. He is a CPA and CGFM and has been involved in state and local government for the past 45 years, most recently serving as a member of the City's Board of Representatives and as Chair of the Fiscal Committee.

[4] Ms. Lucero was appointed Superintendent of Schools as of April 24, 2019. She was engaged by Stamford Public Schools as Assistant Superintendant in June of 2013 and appointed Deputy Superintendent July 1, 2018.

Source: City of Stamford

WATER POLLUTION CONTROL AUTHORITY

Board of Directors

Name	*Title*
Michael E. Handler	Chairman
Daniel E. Capano	Vice Chairman
Mark McGrath	Member
Monica DiCostanzo	Member
Kieran Ryan	Member
Cristina Andreana	Member
Merritt Nesin	Member
Edward Kelly	Member
Robert Barocas	Member

Management and Staff

Name / Title	*Position*
William P. Brink, P.E., BCEE	Executive Director
Rhudean Bull	Administration Manager
Robert Pudelka	Acting Plant Supervisor
Prakash Chakravati, P.E.	Supervising Engineer
Mark Turndahl	Accountant
Stephen Pietrzyk	Collection System Supervisor

BOND COUNSEL

Robinson & Cole LLP
Hartford, Connecticut

MUNICIPAL ADVISOR

Phoenix Advisors, LLC
Milford, Connecticut

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Official Statement

$15,700,000
City of Stamford, Connecticut
Water Pollution Control System and Facility
Revenue Bonds, Issue of 2019

Introduction

The purpose of this Official Statement is to furnish information regarding the City of Stamford, Connecticut (the "City"), the Water Pollution Control Authority of the City of Stamford (the "SWPCA") and the issuance and security for the $15,700,000 aggregate principal amount of the City's Water Pollution Control System and Facility Revenue Bonds, Issue of 2019 (the "Series 2019 Bonds"), issued pursuant to Chapter 103 of the Connecticut General Statutes (the "Bond Act") and the Indenture of Trust, by and among the City, the SWPCA and U.S. Bank National Association (as successor to Wachovia Bank, National Association), as Trustee and Paying Agent (the "Trustee"), dated as of December 21, 2001 (the "Original Indenture"), as amended and supplemented by the First Supplemental Indenture dated as of October 1, 2003, the Second Supplemental Indenture dated as of February 28, 2006, the Third Supplemental Indenture dated as of September 1, 2006, the Fourth Supplemental Indenture dated as of August 1, 2009, the Fifth Supplemental Indenture dated as of August 1, 2013, the Sixth Supplemental Indenture, dated as of August 1, 2015, and the Seventh Supplemental Indenture, dated as of June 1, 2019, each by and among the City, the SWPCA and the Trustee, and, to be entered into by and among the City, the SWPCA and the Trustee prior to the issuance of the Series 2019 Bonds. The Original Indenture, as amended and supplemented to the date of issuance of the Series 2019 Bonds, is herein referred to as the "Indenture."

The Indenture constitutes a contract among the City, the SWPCA, the Trustee and the holders from time to time of the Bonds (as hereinafter defined). The Series 2019 Bonds are the fifth issuance of bonds to the public under the Indenture. In addition to the Series 2019 Bonds, there is $20,250,000 aggregate principal amount outstanding of Water Pollution Control System and Facility Revenue Bonds, Series 2013, and $28,990,000 aggregate principal amount outstanding of Water Pollution Control System and Facility Revenue Bonds, Series 2015. In addition to bonds, the Indenture also secures the City's obligations issued pursuant to the Clean Water Fund Act. There is approximately $29,936,710 aggregate principal amount of Clean Water Fund obligations outstanding under the Indenture. The Series 2019 Bonds and all bonds of the City issued pursuant to the Indenture on a parity basis with the Series 2019 Bonds and obligations issued pursuant to the Clean Water Fund Act are referred to herein as the "Bonds."

Unless otherwise defined in this Official Statement, all capitalized terms used herein will have the meanings assigned such terms in the Indenture, certain of which are summarized in "Appendix D – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE" herein.

The City of Stamford

The City is located in Fairfield County, Connecticut on Long Island Sound about one hour from New York City by rail or highway transportation. According to the 2017 U.S. Census Bureau statistics, the City has a population of 128,851. The City occupies an area of 39.9 square miles and is governed by a Mayor and a Board of Representatives. See "Appendix A – INFORMATION CONCERNING THE CITY" herein.

Sewer Charges and Benefit Assessments

Sewer Charges and Benefit Assessments are determined by the Board of Directors of the SWPCA in accordance with Chapter 103 of the Connecticut General Statutes. See "Sewer Charges and Benefit Assessments" herein.

Security for the Bonds

The Bonds, including the Series 2019 Bonds, are special limited obligations of the City, payable solely from Revenues (as defined in Appendix D) and other receipts, funds and moneys pledged therefor pursuant to the Indenture. Under the Indenture, the City and the SWPCA have covenanted to fix, charge and collect rates, charges, rents, fees and assessments derived or to be derived from or for the operation, use or services of the Sewerage System and to maintain Revenues available for debt service on the Bonds in each fiscal year that will equal or exceed 115% of the required debt service fund deposits. See "SECURITY AND PLEDGE OF THE INDENTURE" herein. As reflected in Table 4 contained under "Projected Financial Results," the projected debt service coverage for the Bonds, including the Series 2019 Bonds, for fiscal years up to and including 2019-20, will not fall below 1.15 times.

The Bonds are not general obligations of the City. Neither the full faith and credit nor the taxing power of the City, the State nor any political subdivision or agency of the State is pledged to the payment of the Bonds.

Stamford Water Pollution Control Authority

The SWPCA was established pursuant to Ordinance No. 803 adopted on November 28, 1996, pursuant to statutory authority as set forth in Chapter 103, Sections 7-245 through 7-273a inclusive, of the Connecticut General Statutes, Revision of 1958, as amended (the "Connecticut General Statutes"). Prior to that date, the functions of the SWPCA operated under the Office of Operations of the City. The SWPCA was created to (a) operate the Sewerage System including the treatment plant located at One Harbor View Avenue (the "Treatment Plant") and to (b) use, equip, re-equip, repair, maintain, supervise, manage, operate and perform any act pertinent to the collection, transportation, treatment and disposal of sewage. In addition, the SWPCA manages the City-wide stormwater permit monitoring control and implementation. Currently, the average daily flow at the Treatment Plant is about 18 million gallons per day ("MGD"). The Treatment Plant provides the following unit processes: screenings, raw waste pumping, two 130-foot-diameter primary clarifiers, primary sludge degritting, 15 million gallon capacity biological reactors, four 130-foot-diameter secondary clarifiers, gravity thickeners, gravity belt thickeners and belt filter presses. The disinfection of the wastewater is provided by ultraviolet light. It provides such services for the City and for certain portions of the Town of Darien. See "STAMFORD WATER POLLUTION CONTROL AUTHORITY" herein.

Governance and Management

Board Membership and Responsibilities

The SWPCA is governed by a nine-member Board of Directors (the "Board"). By ordinance, the Board includes the Director of Operations, Director of Administration, Chairman of the Board of Finance (or his/her designee from the Board of Finance) and the President of the Board of Representatives (or his/her designee from the Board of Representatives) and five at-large members appointed by the Mayor and approved by the Board of Representatives. At least one of the at-large members must be an accountant or financial manager and at least one must be an engineer. City officials who become members of the WPCA Board of Directors shall retain this responsibility throughout their tenures in their non-WPCA positions as City officials. At-large members shall be appointed for three (3) years. The members of the Board of Directors are shown on the next page:

Name / Title	*Title*	*Appointed By*	*Length of Service*
Michael E. Handler, Chairman.....	Director of Administration, Stamford	Mayor	7 years
Daniel E. Capano, Vice Chairman...	Consultant	Mayor, subject to approval of Board of Representatives	7 years
Mark McGrath.....	Director of Operations, Stamford	Mayor	9 months
Monica DiCostanzo.....	Member, City of Stamford Board of Representatives	Mayor, subject to approval of Board of Representatives	5 years
Kieran Ryan.....	Member, City of Stamford Board of Finance	Mayor, subject to approval of Board of Representatives	1 year
Cristina Andreana.....	Member, (Certified Public Account)	Mayor, subject to approval of Board of Representatives	8 years
Merritt Nesin.....	Member, (Engineer)	Mayor, subject to approval of Board of Representatives	4 years
Edward Kelly.....	Member, Software Implementation Consultant (retired)	Mayor, subject to approval of Board of Representatives	5 years
Robert Barocas.....	Member	Mayor, subject to approval of Board of Representatives	6 months

Management and Staff

The SWPCA is headed by the Executive Director, who is responsible for all technical and administrative operations of the SWPCA and the implementation of programs, policies and procedures at the direction of the Board. Brief resumes of the senior SWPCA management appear below:

William P. Brink, P.E., BCEE, Executive Director – Mr. Brink has more than thirty years progressive experience in engineering and management of large environmental projects, and having a unique combination of skills in business management (MBA in finance from University of Connecticut) leadership, wastewater utility operations, finance and engineering. He holds a P.E. in Connecticut and received his B.S. in Civil Engineering and M.E. in Sanitary Engineering from Drexel University, PA and Cornell University, NY respectively. Prior to the SWPCA, Mr. Brink worked for Stearns and Wheeler (now GHD Inc.) leading multi-disciplinary project teams on large wastewater collection and treatment project including, but not limited to, projects for the Hartford Metropolitan District Commission, Danbury Water Pollution Control Plant, and Bridgeport Water Pollution Control Authority since 1992.

Robert Pudelka, Acting Plant Supervisor – Mr. Pudelka supervises the operation and maintenance of the Stamford Water Pollution Control Facility and is responsible for compliance of the facility with its National Pollution Discharge Elimination System (NPDES) discharge permit. He has eleven years experience in the waste water industry, joining SWPCA in December 2016 as Assistant Plant Supervisor. He became Acting Plant Supervisor in July 2018 upon the retirement of William Degnan, previous Plant Supervisor. Prior to joining SWPCA, Mr. Pudelka was Superintendent of the New Milford, Connecticut Waste Water Treatment Facility, and was a Plant Operator at the Town of Greenwich Water Pollution Control Facility. He has a Class IV (highest level) Wastewater Treatment Plant Operator's license in Connecticut.

Prakash Chakravati, P.E., Supervising Engineer – Mr. Chakravarti assists the Executive Director in planning and managing engineering and capital projects including design, preparation and review of contract plans and specifications, plant and pumping station construction management, sanitary sewer repair and construction management. He also supervises staff and contractual support personnel assigned to the construction function. Mr. Chakravarti holds a master's degree in Civil Engineering from Lehigh University and is a registered professional engineer. Since 1987, he worked as an engineer for the City and has compiled and implemented numerous capital projects including water pollution control related projects such as major pump station upgrades, bar screens, pump controls and sanitary sewer projects. He currently supervises the major upgrades at the WPCF and numerous satellite pump stations.

Rhudean Bull, Administration Manager – Ms. Bull is responsible for planning, developing, analyzing, evaluating and improving various management control systems, policies, work methods and procedures for the efficient operation of the SWPCA as well as day-to-day Plant Management. She assists the Executive Director in identifying its financial, personnel, and material needs and problems. She manages various administrative activities and human resources

functions as well as the Billing function for the SWPCA. Ms. Bull received a B.S. Degree from South Carolina State University and a master's degree in Public Administration with a concentration in Human Resources Management from City University of New York – John Jay College. She has been certified as a Professional in Human Resources by the Society of Human Resources Management since 2001 and has over eighteen years' experience in management and human resources management fields.

Mark Turndahl, Accountant – Mr. Turndahl joined SWPCA in 2012 and is responsible for the financial management of the WPCA - monitoring and recording cash receipts, preparing monthly financial statements including budget variance reports and analysis, reconciling bank accounts, approving invoices for payment and preparing monthly receivable reports. In addition, he insures monthly debt service payments are made, prepares requests for grant and construction loan funding and works with the Auditors preparing the annual financial statement. Mr. Turndahl earned a B.S. degree from the University of Buffalo in Business Administration, a MBA degree from Pace University concentrating in accounting and passed the CPA exam. He has over thirty years of experience having held audit, financial analysis and controller/treasurer positions in local town and school governments, as well as major metropolitan New York firms.

Stephen Pietrzyk, Collection System Supervisor – Mr. Pietrzyk has been with the SWPCA for eight years, and serves as the Collection System Supervisor responsible for the SWPCA's Capacity, Management, Operation and Maintenance (CMOM) program via planning, coordinating, and supervising mechanics to operate and maintain the collection system and pumping stations and the hurricane barrier storm water pumping stations, and the Regulatory Compliance Inspector who inspects food preparation establishments for compliance with the Fats, Oil and Grease (FOG) abatement program. Prior to this he owned and operated two environmental consulting businesses for over 20-years participating in numerous residential, commercial and industrial development projects. Mr. Pietrzyk received his MS and BS Degrees from the University of Connecticut and AS Degree in Landscape Development from State University of New York Cobleskill.

In addition, certain City personnel are responsible for providing key support services for the SWPCA, as follows:

Director of Operations. The Executive Director of the SWPCA reports to the Director of Operations who provides oversight for operating and capital budget, staff assistance for sewer expansion projects and major SWPCA policy decisions.

Director of Administration. The Office of Administration provides purchasing, payroll, accounting and debt management services to the SWPCA.

Director of Legal Affairs. The Office of Legal Affairs provides legal support and human resource services to the SWPCA. The office writes and reviews contracts and acts as legal advisor to the SWPCA.

The SWPCA FY2019 budget includes 48 employees; 47 full-time, and 1 permanent part-time, all of whom are employees of the SWPCA. The number of employees has generally remained consistent since FY2017. In FY2019 the number of employees increased from 45 to 48 employees with the addition of two WPCF Operators (process control) and a new position of Environmental Technician (collection system).

Each of the full-time and part-time employees belongs to one of three collective bargaining units represented within the City. The Municipal Administrators Association (MAA) and United Automobile, Aerospace, and Agricultural Implement Works of America (UAW) collective bargaining contracts are Citywide. The International Union of Operating Engineers (UOE) collective bargaining contract is with the SWPCA. The collective bargaining contracts are negotiated through the City's Office of Legal Affairs.

The collective bargaining agreement between the SWPCA and UOE Local 30 representing the SWPCA operators, mechanics and utility workers expires on June 30, 2021.

The collective bargaining agreement between the City and UAW who represent the SWPCA laboratory and clerical staff and electricians expired on June 30, 2017. The City has been in negotiations with the UAW for a new contract. Based on discussions with the SWPCA, the new agreement is not anticipated to have a significant impact on SWPCA's operations or operating expenses.

The collective bargaining agreement between the City and the Stamford Municipal Supervisory Employees Union Local #2657 of Council #4 of the American Federation of State, County and Municipal Employees, AFL-CIO representing SWPCA administrators and supervisors, including the Executive Director, expired on June 30, 2018, and is currently in negotiations. Based on discussions with the SWPCA, it is not anticipated that the new contract will have a significant impact on SWPCA's operations or operating expenses.

The Service Area

The City of Stamford is divided into four geographic taxing districts, based upon municipal services furnished to the jurisdiction. As the City extends sanitary sewer lines into previously unsewered areas, municipal garbage collection is also extended, and the tax district classification is changed accordingly.

The service area of the SWPCA includes the two City taxing districts that are served by sanitary sewer lines, namely taxing districts A (1) and C/S (4). Within the City, the service area is bounded by the Merritt Parkway to the north, the Noroton River (constituting the border line with Darien) to the east, Old Greenwich to the west, and the Long Island Sound to the south. The service area includes residential, commercial, government and non-profit customers. The SWPCA also provides transmission and treatment services to areas within the Town of Darien, as noted previously. Pump stations owned and operated by the Town of Darien convey wastewater to the east side of the City where the wastewater is then conveyed through the SWPCA's collection system to Stamford's wastewater treatment plant.

The areas north of the Merritt Parkway are predominantly served by septic systems. The City's current Master Plan (2015-2025) focuses on encouraging new housing units and developments to utilize existing sewer main. Although the current Master Plan makes no mention of extending the sanitary sewer system into areas currently not served by public sewers, the discussions with SWPCA executive staff and a review of the SWPCA capital improvement plan (CIP) (as discussed in Section 5) indicate that a number of sewer extension projects have recently been completed, are currently underway, or are planned for the relatively near future. According to SWPCA staff, once these sewer extension projects are complete, almost all of the service area will be sewered.

The customer base served by the SWPCA consists of a diverse mix of residential and commercial customers. In Stamford, approximately 88% of customers are residential (including home owners, condominium owners and renters) and 12% of customers are commercial and industrial in nature. In the recently completed fiscal year ended June 30, 2018, the top ten customers, their total user fees and user fees as a percentage of SWPCA's total operating revenues are set forth in Table 1 below:

TABLE 1

Overall Top Ten Customers

	2018		
Name	***Annual Billed Consumption (100 CCF)***	***Revenue Billed***	***Percent of Total Consumption***
Stamford Hospital	$ 61,470	$ 299,974	1.47%
City of Stamford	52,760	257,469	1.27%
Stamford Town Center	40,668	198,460	0.98%
Rippowan Park Associates LP	39,368	192,116	0.94%
Stamford Housing Authority	33,912	165,491	0.81%
Cornerstone Apartments	28,722	140,163	0.69%
Hilton Stamford Hotel	27,504	134,220	0.66%
Hoyt Bedford Apartments	25,106	122,517	0.60%
SLC Operating LLC	24,316	118,662	0.58%
Stamford Marriott Hotel	21,920	106,970	0.53%
Total	$ 355,746	$ 1,736,040	8.53%

[1]*Based on the Fiscal Year 2018 Total Consumption of $4,169,897.*

Service Contracts and Agreements

Sludge Processing Agreement with Synagro – The SWPCA provides sludge thickening and dewatering, and contracts with Synagro for sludge drying, transportation and disposal services. Synagro is responsible for processing the sludge received from the WPCF to produce a marketable product, testing of the product, marketing the product, and disposing of processing residuals. Ultimate disposal of the sludge by Synagro is through land application, incineration at one of Connecticut's permitted facilities (e.g., Naugatuck, Waterbury, or Hartford), or landfill (e.g., York, PA). Sludge processing costs accounted for approximately 16 percent of the SWPCA's annual operating costs for FY2017-2018 and are currently budgeted at 16.1 percent of operating costs for FY2018-2019. As part of the agreement, Synagro is responsible for making a capital contribution in an amount up to $300,000 toward the cost of one or more capital modifications at the sludge drying facility and/or the wastewater treatment plant over the five-year contract term. The agreement with Synagro expired on March 2, 2019. In lieu of initiating a procurement process for a new Sludge Management Contract, the SWPCA negotiated an amendment (Second Amendment) to the contract with Synagro, which became effective March 3, 2019 and extends the contract for an additional five years. The driver for this decision was the tightening of the market for sludge management in Connecticut as well as the SWPCA's satisfaction with Synagro's performance under the current agreement. The First Amendment to the contract was executed on September 21, 2016, retroactive to July 1, 2016, which increased the hours of dryer operation from 16-hours, five days a week to 24-hours, five days a week, in addition to an increase in dry tons of sludge per year (4,560 to 6,000 dry tons per year) and the addition of an 'additional base operating charge' ($231,500). There were no public objections to the change in hours of operation. The Second Amendment to the contract increased the following: the SWPCA's maximum sludge delivery from 6,000 to 6,240 dry tons per year, the cost of disposal of sludge cake from a fixed price of $73.97 per wet ton to a varied price per disposal facility of $84 to $118 per wet ton, and the base operating charge from $1,431,375.00 to $1,776,241.62, but removed the additional base operating charge of $231,500.

Billing and Collection Agreement with Computil – The SWPCA contracts with Computil to provide billing and collection service assistance as well as consumption data analysis, customer service and reporting. The contract expires on February 9, 2020. According to the terms of the contract, the SWPCA is to pay Computil a lump sum fee of $405,834 for each contract year for the duration of this agreement (including any extensions).

Darien Interlocal Agreement – The City provides wholesale treatment and discharge services to the Town of Darien via an Interlocal Agreement dated December 3, 2013. The agreement includes both capital reimbursement and operation and maintenance cost share components. The capital reimbursement and operation and maintenance cost share is based primarily on measured wastewater flow contribution (by volume). Under the current agreement, the Town of Darien is limited to an average annual daily flow of not more than 3.0 million gallons per day (MGD) and a combined peak flow of not more than 7.5 MGD. However, if flows from Darien exceed the allowable maximum, the SWPCA shall be held harmless from liability, cost, or expense resulting from any incurred penalties, cleanup, and repair costs. If a regulatory agency takes action against the SWPCA in connection with flow discharges above the limits, payment of costs, fines, penalties, or damages will be apportioned between the SWPCA and Darien. Additionally, the Town of Darien will share nitrogen trading credits generated through the operation of SWPCA's treatment plant, based on the greater of 12.5 percent or the percentage by volume represented by Darien's flow. The Agreement provides a formula for compensation to the SWPCA for operation and maintenance costs and for capital improvements of SWPCA's treatment plant and collection sewers which convey Darien's wastewater. Darien contracted revenue (including both capital and operation and maintenance components) for FY2018, accounts for approximately 8.7 percent of SWPCA's total revenue. The current Darien Interlocal Agreement expired on June 30, 2018. A mutual agreement between the SWPCA and Darien has been reached extending the Darien Interlocal Agreement an additional five years and will include flow metering at two interlocal connections (Heather Lane and Lake Drive) from Darien. The agreement is expected to be executed by June 1, 2019. The two interlocal connections were not metered previously due to reportedly low and/or intermittent flow; however, it was identified during the flow metering program for the Infiltration and Inflow Study that the flows are higher than expected. The FY2019 flow charges to Darien will be retroactive to October 1, 2018. Based upon the total flow increase, the SWPCA estimates a 20% increase in annual revenue from Darien.

Aquarion Agreement – The City accepts water treatment plant sludge from the Aquarion Water Company's (Aquarion) Stamford Water Treatment Plant (SWTP) pursuant to the terms and conditions of Aquarion's agreement with the SWPCA. Aquarion's residual sludge revenue is approximately $300,000 annually to the SWPCA. Historically, this has represented approximately 1 percent of the SWPCA's total income. In October 2017, the SWPCA identified significant solids buildup in the gravity sewer line to which the SWTP discharges residual sludge, which required the SWPCA to increase collection system inspection and preventative maintenance cleaning. The SWPCA contacted Aquarion to discuss the increase in solids buildup, in addition to aluminum content in the sludge. It was identified that the observed increase in solids buildup occurred during Aquarion's pilot use of powder activated carbon, and was therefore ceased upon the SWPCA's request. Another item that was discussed was the aluminum

content in the SWTP sludge from the use of alum in the water treatment process, which increases the final dewatered sludge aluminum content. According to Synagro, the aluminum content in the dewatered sludge has prevented disposal at, at least, one incineration plant. Incineration is only utilized when the volume of dewatered sludge exceeds the capacity of the sludge dryer, or the sludge dryer is out of service for maintenance or repair. There are other incinerator plants that have accepted the sludge, and disposal at landfills is also an option. In December 2017, the SWPCA sent a letter to Aquarion outlining the solids buildup and aluminum content issues, and requested that Aquarion evaluate alternatives to mitigate these issues. In response, Aquarion hired a consultant to evaluate alternatives for long-term mitigation, and it was recommended that Aquarion install centrifuges at the SWTP. The SWPCA reported that Aquarion agreed to install centrifuges at the SWTP. The SWPCA has notified Aquarion that a condition to Aquarion's General Permit is that the centrifuges are installed and the discharge of SWTP sludge to the SWPCA sanitary sewer be discontinued as soon as possible, but no later than April 1, 2021. The SWPCA noted that Aquarion in on track to meet the deadline. In the meantime, the SWPCA monitors the gravity sewer lines and has implemented preventative maintenance cleaning to mitigate surcharging events, which is billed to Aquarion. In addition, any additional disposal costs to the SWPCA related to aluminum content in the sludge will be charged to Aquarion, but has not occurred at the time of this Report.

City Pooled Cash Arrangement – Under a long-standing agreement with the City, the SWPCA shares in a pooled cash account controlled by, and in the name of, the City. The SWPCA draws from this account to fund unexpected or not yet funded capital improvements and to cover operating costs during the periods when its on hand cash balances are not sufficient to meet its operating needs. The SWPCA's share of this pooled cash account had historically been in a deficit. The total deficiency in FY2013 was approximately $8.0 million. Pursuant to the MOA dated May 13, 2014 between the City and the SWPCA, the SWPCA agreed to repay the City over a five-year period with interest at the Connecticut State Treasurer's Investment Fund rate. However, the SWPCA accelerated their repayment schedule to the City and effectively paid the City back in FY2016, which was less than three years versus the five year period established in the MOA. In addition to paying back the City, the SWPCA, at the end of FY2018, has approximately $17.2 million in the operating, capital reserve, and surplus fund accounts. In FY2018, the SWPCA maintained a positive pooled cash balance and did not require any cash advances from the City to cover short-term cash needs.

Sewer Charges and Benefit Assessments

In addition to the establishment of water pollution control authorities, the Bond Act vests authorities with the power to acquire property by purchase, condemnation or otherwise, to prepare a water pollution control plan, to acquire, construct and operate a sewerage system, and to establish and revise rules and regulations for the supervision, management, control, operation and use of the sewerage system, including regulations regarding discharge into the sewerage system.

The Bond Act also grants water pollution control authorities with the power to levy benefit assessments upon the land and buildings in the community which, in its judgment, are benefited by the sewerage system. Assessments may include a proportionate share of the cost of any part of the sewerage system, including preliminary studies and surveys, the cost of acquiring land, construction costs, interest during construction and related legal and other expenses. Revenues from the assessment of benefits may only be used for the acquisition and construction of the sewerage system providing such benefits or for the payment of principal and interest on bonds or notes issued to finance such acquisition or construction. Assessments may not exceed the value of the special benefit to accrue to the property and are due and payable on the date and at the time fixed by the authority. Assessments may be paid in annual installments, plus interest, not exceeding thirty years. Assessments not paid within thirty days are delinquent and subject to interest at statutory rates applicable to unpaid property taxes. Any unpaid assessment and interest due is considered a lien on the real estate against which it was levied. Each such lien shall take precedence over all other liens and encumbrances except taxes and may be enforced in the same manner as property tax liens. Liens for benefit assessments may be assigned by municipalities to a third party for collection.

Whenever a municipality has pledged revenue to be derived from charges for connection with or for the use of a sewerage system to the payment of principal or interest on bonds or notes, the Bond Act requires the water pollution control authority to establish and revise charges at rates sufficient to produce revenues for the punctual payment of the principal and interest on such bonds or notes. The Bond Act authorizes municipalities to finance the acquisition and construction of any part of a sewerage system through the issuance of bonds, notes or other obligations secured by (a) the full faith and credit of the municipality, (b) revenues derived from the sewerage system use charges and/or benefit assessments, or (c) both. The Bond Act provides for the other terms and particulars for the issuance of bonds, notes or other indebtedness, including a maximum maturity of thirty years.

Operating Budget

The SWPCA operating budget is prepared by the Executive Director and submitted to the SWPCA Board for review and approval. Typically the budget is approved at the February Board meeting. The approved budget is then forwarded to the Board of Finance as part of the City's budget package. Unlike other City departments, the Mayor cannot amend the SWPCA budget. The Board of Finance and the Board of Representatives can approve or reject the SWPCA budget, but cannot cut individual line items. If they choose to reject the budget, it is then sent back to the SWPCA Board with recommendations and comments. The SWPCA can then resubmit an amended or revised budget to the Board of Finance and the Board of Representatives for approval. By ordinance, all budgets must be approved by no later than May.

The SWPCA, through its Board of Directors, is responsible for setting and imposing sewer user rates and charges for all customers in the Service Area (which includes Darien and residential and commercial users directly billed by the SWPCA within Stamford). The Board requires that rates be maintained at levels sufficient to pay operating and maintenance expenses for the collection and treatment system, to pay debt service on bonds and provide for reserves. The primary source of Revenues is from user fees.

Historical Financial Results

The SWPCA was established as a Special Revenue Fund of the City of Stamford beginning July 1, 1997, and remained a Special Revenue Fund through fiscal year 2001. Beginning July 1, 2001, the City converted the SWPCA to an Enterprise Fund of the City. As an Enterprise Fund, the financial activity of the SWPCA is accounted for on a full accrual basis of accounting, like a private commercial entity. Revenues are recognized when earned (net of uncollectible allowances), and expenses are recognized when incurred, regardless of when the cash transaction related to the expense occurs. The Indenture became effective December 21, 2001 and provides for the deposit of Revenues into a Revenue Fund held by the City. The Debt Service Reserve Fund and other Funds and Accounts established under the Indenture (except for the Revenue Fund, the Operating Fund and the Rebate Fund) will be held by the Trustee. See "SECURITY AND PLEDGE OF THE INDENTURE – Flow of Funds" herein. Table 2 below presents audited financial results for fiscal year 2014 through fiscal year 2018 summarized from the audited financial statements of the SWPCA.

TABLE 2

	Actual 6/30/2018	*Actual 6/30/2017*	*Actual 6/30/2016*	*Actual 6/30/2015*	*Actual 6/30/2014*
Operating Revenues:					
Charges for Services	$23,556,163	$23,044,678	$22,175,292	$21,736,649	$22,346,154
Intergovernmental	1,152,017	1,090,238	2,293,233	1,682,146	8,368
Total	$24,708,180	$24,134,916	$24,468,525	$23,418,795	$22,354,522
Operating Expenditures:					
Salarie, Benefits, and Claims	$ 6,553,256	$ 6,019,180	$ 6,356,199	$ 5,949,916	$ 5,476,462
Operations and Supplies	6,704,378	6,453,729	7,151,720	7,152,750	7,227,505
Depreciation	5,971,043	5,713,812	5,582,832	5,507,366	5,372,558
Total	$19,228,677	$18,186,721	$19,090,751	$18,610,032	$18,076,525
Operating Income	$ 5,479,503	$ 5,948,195	$ 5,377,774	$ 4,808,763	$ 4,277,997
Nonoperating Revenues (Expenses):					
Interest Income	193,801	(29,921)	83,011	17,789	34,167
Interest Expense	(3,319,771)	(3,322,638)	(3,045,171)	(3,226,653)	(3,148,656)
Other Income (Expense)	-	8,040	42,068	-	-
Special Assessments	3,398,245	4,013,718	2,820,959	3,911,081	2,515,652
Total Nonoperating Revenues (Expenses)	$ 272,275	$ 669,199	$ (99,133)	$ 702,217	$ (598,837)
Income Before Capital Contributions	$ 5,751,778	$ 6,617,394	$ 5,278,641	$ 5,510,980	$ 3,679,160
Transfers In	-	-	-	350,520	-
Transfers Out	(454,666)	(398,132)	(324,414)	(348,604)	-
Capital Contributions	191,031	66,077	390,150	-	288,238
Change in Position	5,488,143	6,285,339	5,344,377	5,512,896	3,967,398
Net Position, Beginning of Year	77,858,141	71,572,802[1]	69,359,019	63,846,123[1]	61,723,960
Net Position, End of Year	$83,346,284	$77,858,141	$74,703,396	$69,359,019	$65,691,358

[1] *As Restated.*

Operating revenues in fiscal 2018 were $24.7 million, compared to $24.1 million in the prior year, primarily reflecting increased sewer use charges. Operating expenses were $19.2 million versus $18.2 million the prior year,

resulting in operating income of approximately $5.5 million compared to $5.9 million in the prior year. The decrease in operating income primarily reflects higher expenditures from the increase in salaries, benefits, and claims. Unrestricted Net Position was 109% of Operating Revenue, an improvement of approximately 28 percentage points from the prior year.

As of June 30, 2018 the assets ($189.6 million) of the SWPCA exceeded its liabilities ($107.8 million), resulting in total net assets at the end of the fiscal year of $83.3 million. Net assets increased $2.5 million versus the prior year-end period primarily due to the increase in Unrestricted Assets ($7.4 million). Unrestricted net assets total $7.8 million, and that is an increase of $4.4 million over the prior year.

Table 3 below sets forth the Statement of Net Assets as of June 30 for the fiscal years ended June 30, 2014 through 2018.

TABLE 3

Assets:	***Actual 6/30/2018***	***Actual 6/30/2017***	***Actual 6/30/2016***	***Actual 6/30/2015***	***Actual 6/30/2014*** [1]
Currents Assets					
Cash and Cash Equivalents	$ 17,244,050	$ 11,106,083	$ 6,321,634	$ 4,480,371	$ 2,746,129
Accounts Receivable	10,353,755	7,649,761	5,456,643	4,685,715	5,039,733
Other	9,902	9,902	9,902	9,902	9,902
Total Current Assets	27,607,707	18,765,746	11,788,179	9,175,988	7,795,764
Non-Currents Assets					
Capital Assets, Net of Depreciation	$131,753,605	$132,042,927	$134,797,557	$137,934,381	$139,672,598
Capital Assets, not being depreciated	3,325,455	3,308,562	3,202,489	4,187,322	4,162,787
Restricted Assets	18,925,036	23,979,821	26,503,891	13,357,545	15,733,786
Special Assessments, net	7,996,588	7,046,936	9,105,897	9,101,044	7,867,615
Deferred Charges, net	-	-	-	-	-
Total Non-Current Assets	$162,000,684	$166,378,246	$173,609,834	$164,580,292	$167,436,786
Total Assets	$189,608,391	$185,143,992	$185,398,013	$173,756,280	$175,232,550
Deferred Outflows of Resources					
Deferred Amounts on Refunding	1,123,048	1,165,888	1,208,070	222,779	-
Changes in Projection	902,614	660,315	1,617,659	815,165	-
Total Deferred Outflows of Resources	$ 2,025,662	$ 1,826,203	$ 2,825,729	$ 1,037,944	$ -
Deferred Inflows of Resources					
Deferred Amounts on Refunding	$ 527,377	$ 435,488	$ 471,094	$ 667,381	$ 237,984
Liabilities:					
Currents Liabilities:					
Accounts Payable & Accrued Exp.	$ 1,807,304	$ 2,560,280	$ 2,611,205	$ 2,246,704	$ 2,117,920
Bonds Payable - Current	2,627,797	2,559,859	2,392,392	2,149,550	2,423,391
Notes Payable - Current	4,077,555	3,996,881	3,943,011	3,883,503	3,864,423
Due to Other Funds	-	-	-	3,762,950	4,681,577
Compensated Absences	230,308	214,122	192,170	21,699	30,960
Unearned Revenue	94,974	185,121	162,903	69,910	152,139
Total Current Liabilities	8,837,938	9,516,263	9,301,681	12,134,316	13,270,410
Non-Currents Liabilities:					
Bonds Payable	$ 66,119,397	$ 62,616,338	$ 65,341,816	$ 51,440,732	$ 53,832,327
Notes Payable	25,859,155	29,936,710	33,933,591	37,876,602	41,760,105
Compensated Absences	126,306	139,894	135,620	285,298	254,634
Net Pension Liability	3,028,099	2,539,385	3,431,544	2,163,038	2,013,166
OPEB Obligations payable	3,789,497	904,000	905,000	867,838	661,700
Total Non-Current Liabilities	$ 98,922,454	$ 96,136,327	$103,747,571	$ 92,633,508	$ 98,521,932
Total Liabilities	$107,760,392	$105,652,590	$113,049,252	$104,767,824	$111,792,342
Net Position:					
Net Investment in Capital Assets	$ 45,195,754	$ 50,217,370	$ 49,195,235	$ 50,754,609	$ 48,395,278
Restricted for Debt Service	11,247,486	11,170,040	10,905,962	9,597,031	9,531,631
Unrestricted	26,903,044	19,494,707	14,602,199	9,007,379	5,919,214
Total Net Position	$ 83,346,284	$ 80,882,117	$ 74,703,396	$ 69,359,019	$ 63,846,123
Total Liabilities and Net Position	$191,106,676	$186,534,707	$187,752,648	$174,126,843	$175,638,465

[1] *As Restated.*

Projected Financial Results

While the City and the SWPCA believe that the assumptions that underlie its projections are appropriate, achieving the amounts projected are dependent on the occurrence of future events which cannot be assured. Thus actual results achieved may vary from the projections, and such variances may be materially adverse. *The amounts presented below, including projected Revenues and Expenses, have not been audited or reviewed by Blum Shapiro & Co. the independent auditors for the SWPCA.*

TABLE 4

Projected Revenue and Expenses
Fiscal Years 2019 through 2024

		FY19	FY20	FY21	FY22	FY23	FY24
	I. SYSTEM REVENUES:						
	A. BILLING REVENUES						
1	Number of Customers	19,794	19,893	19,992	20,092	20,192	20,293
2	Billable Metered Water Use (Ccf)	4,256,900	4,314,680	4,373,206	4,432,487	4,492,532	4,553,352
	Wastewater User Charge Revenue						
3	Sewer Use Rate ($/Ccf)	5.00	5.05	5.18	5.28	5.33	5.38
4	Annual Rate Increase (%)	2.46%	1.00%	2.50%	2.00%	1.00%	1.00%
5	***TOTAL BILLING REVENUES***	$ 21,284,498	$ 21,789,134	$ 22,636,808	$ 23,402,534	$ 23,956,754	$ 24,523,892
	B. MISCELLANEOUS REVENUES						
6	Interest Income	$ 201,000	$ 208,000	$ 224,000	$ 248,000	$ 268,000	$ 291,000
7	Special Assessment and Connection Fees	2,229,000	2,229,000	2,229,000	2,229,000	2,229,000	2,229,000
8	Interlocal Agreement (Darien) User Charges	1,787,292	1,830,110	2,245,997	2,327,751	2,411,933	2,499,196
9	Darien Capital Reimbursement	1,069,314	1,127,408	1,198,594	1,296,467	1,330,604	1,329,992
10	Septic Tank Revenue	341,000	341,000	341,000	341,000	341,000	341,000
11	Regional Lab Revenue	38,000	38,000	38,000	38,000	38,000	38,000
12	Groundwater Fees	1,000	1,000	1,000	1,000	1,000	1,000
13	Permit Fees	1,000	1,000	1,000	1,000	1,000	1,000
14	Sewer Use - Lien Fees	125,000	125,000	125,000	125,000	125,000	125,000
15	Sewer Use - Delinquent Interest	448,000	448,000	448,000	448,000	448,000	448,000
16	Aquarion User Charges	305,000	305,000	305,000	305,000	305,000	305,000
17	Rebates - Build America Bonds	110,221	0	0	0	0	0
18	Miscellaneous/Other	82,000	82,000	82,000	82,000	82,000	82,000
19	Nitrogen Trading Exchange Credits	600,000	2,545,733	500,000	450,000	400,000	400,000
20	City Stormwater Reimbursement	448,000	461,000	475,000	489,000	504,000	519,000
21	***TOTAL MISCELLANEOUS REVENUES***	7,785,797	9,742,251	8,213,591	8,379,218	8,484,537	8,600,190
22	***C. RECEIVABLE MANAGEMENT COSTS***	(532,000)	(545,000)	(566,000)	(585,000)	(599,000)	(613,000)
23	Billing Collection Rate	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%
24	**TOTAL SYSTEM REVENUES**	$ 28,538,295	$ 30,986,385	$ 30,284,398	$ 31,196,752	$ 31,842,291	$ 32,511,081
	II. SYSTEM EXPENSES:						
	D. OPERATIONS & MAINTENANCE						
25	WPCA Admin (Less Depreciation and Interest)	$ 4,672,074	$ 4,851,887	$ 5,006,290	$ 5,165,812	$ 5,330,630	$ 5,500,925
26	Process Control	3,293,888	3,459,099	3,578,284	3,701,700	3,829,501	3,961,847
27	Laboratories	465,479	362,731	373,098	383,763	394,735	406,022
28	Sludge Process	2,779,077	2,927,503	3,011,843	3,098,814	3,188,507	3,281,017
29	Regulatory Compliance	93,639	95,936	98,674	101,491	104,388	107,369
30	Building Maintenance	288,000	297,225	308,711	320,687	333,176	346,200
31	Equipment Maintenance	1,155,515	1,221,528	1,254,113	1,287,574	1,321,935	1,357,220
32	Pump Station Maintenance	760,171	779,180	803,098	827,776	853,240	879,515
33	Sewer Maintenance	487,841	486,695	500,704	515,118	529,950	545,212
34	Barrier Maintenance	135,100	136,955	141,758	146,737	151,897	157,246
35	Billing Services	453,054	543,802	557,397	571,332	585,615	600,256
36	**TOTAL SYSTEM O&M EXPENSES**	$ 14,583,837	$ 15,163,640	$ 15,633,970	$ 16,126,805	$ 16,623,674	$ 17,143,829
37	**TOTAL NET REVENUES FOR DEBT SERVICE**	$ 13,974,458	$ 15,823,845	$ 14,650,428	$ 15,075,947	$ 15,218,717	$ 15,368,253
	III. DEBT SERVICE PAYMENTS:						
38	Series 2013 Revenue Bonds	$ 1,635,300	$ 1,634,450	$ 1,631,500	$ 1,631,300	$ 1,633,550	$ 1,635,050
39	Series 2015 Revenue Bonds	1,959,519	1,956,144	1,960,769	1,963,144	1,963,269	1,961,144
40	Repayment of Existing CWF Loans	4,639,047	4,639,047	4,424,089	4,424,089	4,424,089	4,424,089
41	Series 2019 Revenue Bonds	0	1,027,347	1,028,600	1,029,000	1,028,800	1,028,000
42	Projected Series 2020 Revenue Bonds	0	0	1,288,889	1,283,750	1,288,250	1,286,750
43	Projected Series 2021 Revenue Bonds	0	0	0	580,660	580,750	583,750
44	Projected Series 2024 Revenue Bonds	0	0	0	0	0	0
45	*Subtotal Senior Lien Debt*	$ 8,233,866	$ 9,256,988	$ 10,333,847	$ 10,911,943	$ 10,918,708	$ 10,918,783
46	Existing GO Bonds	1,719,897	1,325,266	1,112,520	835,820	823,645	765,145
47	***TOTAL DEBT SERVICE***	$ 9,953,763	$ 10,582,254	$ 11,446,367	$ 11,747,763	$ 11,742,353	$ 11,683,928
48	**SENIOR LIEN DS COVERAGE**	1.69	1.70	1.41	1.38	1.39	1.40
49	**TOTAL DS COVERAGE FROM NET REVENUES**	1.40	1.49	1.27	1.28	1.29	1.31
	IV. SWPCA OPERATING CASH FUND SUMMARY						
50	Beginning Balance	$ 10,116,456	$ 13,137,151	$ 18,378,742	$ 20,282,804	$ 22,310,988	$ 24,487,352
51	Transfers In	4,020,695	5,241,591	3,204,062	3,328,185	3,476,364	3,684,325
52	Transfers Out to Capital Reserve	(1,000,000)	0	(1,300,000)	(1,300,000)	(1,300,000)	(1,300,000)
53	Transfers Out to DSRF	0	0	0	0	0	0
54	Ending Balance	$ 13,137,151	$ 18,378,742	$ 20,282,804	$ 22,310,988	$ 24,487,352	$ 26,871,678
	V. CAPITAL RESERVE FUND SUMMARY						
55	Beginning Balance	$ 7,127,594	$ 8,127,594	$ 7,672,594	$ 8,172,594	$ 8,972,594	$ 9,772,594
56	Transfers In	1,000,000	0	1,300,000	1,300,000	1,300,000	1,300,000
57	Cash Capital Projects	0	(455,000)	(800,000)	(500,000)	(500,000)	(500,000)
58	Other Transfers Out	0	0	0	0	0	0
59	Capital Reserve Ending Balance	$ 8,127,594	$ 7,672,594	$ 8,172,594	$ 8,972,594	$ 9,772,594	$ 10,572,594
60	***TOTAL DS COVERAGE INCLUDING OPERATING AND CAPITAL RESERVE FUNDS***	3.54	3.95	3.76	3.94	4.21	4.52

Presented in Table 4 are financial projections for the SWPCA for the period of FY2019 through FY2024. These financial projections were prepared based on a review of historic performance, audited financial statements, SWPCA budgets, and guidance provided by SWPCA staff, including a review of capital financing requirements.

Based on the projection of revenues, O&M expenses, existing and projected debt service, and associated assumptions, it is anticipated that the SWPCA will achieve its debt service coverage requirements over the forecast period with the adoption of the identified sewer user rate increases seen on Line 4. SWPCA implemented sewer rate increases in FY2019 of approximately 2.46 percent (from $4.88 per CCF to $5.00 per CCF) consistent with its adopted Financial Policies to provide rate payers with predictable rates and moderate increases in rates on an annual basis. For FY2020, SWPCA currently estimates that it will seek a modest rate increase of 1% as it received a higher than expected amount of revenue from State Nitrogen Trading Exchange Credits (see Line 19 for FY2020). In FY 2021, Arcadis projects that SWPCA would then continue to implement moderate rate increases to build sufficient reserves in anticipation of future capital projects.

These projections reflect the SWPCA's views and assumptions with respect to future events as of the date of this Report and are subject to future economic conditions and other risks and uncertainties. However, actual and future results and trends could differ materially from those presented herein. Based on the projection of revenues and expenses and associated assumptions, it is anticipated that the SWPCA will achieve its debt service coverage requirements over the forecast period with the adoption of the identified sewer user rate increases.

The SWPCA has approved significant rate increases since 2012 in order to build capital and operating reserves and pay-off the balances due to the City for advances from the City's pooled cash account. In addition, water consumption rates have stabilized after having seen a decline from 2008-2011 and significant immediate growth is planned in the service area. Through conservative budgeting and improved management practices, the SWPCA has increased cash balances from about $750,000 in May 2015 to approximately $21 million in May 2019.

The SWPCA has contracted with Computil to perform the billing, customer service and some collection service. In July of each year, it obtains the water meter readings from the water supply company for the period of the last quarter of the previous year and the first quarter of the current year. This consumption number is used by the SWPCA Board to set the user charge rates for the year. Historically, since the April 2000 billing period the SWPCA collects greater than 61% of all bills within the first 30 days of billing, greater than 79% within 60 days of billing and between 88 and 98% within 150 days of billing. As a budgeting procedure, the SWPCA sets user fees at a level that assumes that 95% of billings are collected within the course of each fiscal year, which is in keeping with historic norms. Typically, on average between 97% and 99% of billings are ultimately collected by the end of the next succeeding fiscal year.

Capital Improvement Program

The SWPCA completed a $105 million upgrade of the Treatment Plant in 2006. The upgrade was financed primarily by grants and loans under the Clean Water Fund program of the State of Connecticut.

Many of the recently-completed and ongoing CIP projects were and are currently being funded through proceeds from the 2015 bond issue. In total, approximately $11.2 million of the 2015 bond issue have been used to fund a variety of SWPCA CIP projects. On average, over the past six years the SWPCA had been investing approximately $8 million annually into the system. The FY2020-2025 CIP increases the level of investment to approximately $10.3 million annually, on average. Some of the larger, recently-completed CIP projects are highlighted below.

- Primary Clarifier – Replaced the mechanisms, drives and valves on Primary Clarifier #2. The project was completed in 2017 and cost approximately $325,000, which was completely funded through 2015 bond proceeds.

- Degritting – Replaced and increased the size of the two 6-inch glass lined discharge pipes from the primary pumps to degritting system with two10-inch glass lined pipes to account for planned degritting system capacity upgrade project. The pipe replacement was completed in 2017 and cost approximately $300,000, which was mostly funded through 2015 bond proceeds.

- Aeration Tanks/Secondary Clarifiers – Added a common distribution box to combine effluent flow from the aeration tanks and distribute to the secondary clarifiers via four separate weir gates. The project was completed in November 2017 and cost approximately $4.3 million, which was completely funded through 2015 bond proceeds. This project also included the effluent water pump discharge piping modifications and secondary clarifier effluent launder cover installation described below.

- Effluent Water Pumps – Modified configuration of discharge piping to increase pump capacity and provide system redundancy during peak flow conditions. This project was completed in conjunction with the aeration/secondary clarifier distribution box project.

- Secondary Clarifier – Installed effluent launder cover in secondary clarifier #3 to reduce algae growth, as part of the aeration/secondary clarifier distribution box project. The ducking skimmer system was also replaced on secondary clarifier #3 in 2017 and cost approximately $75,000, which was partially funded through 2015 bond proceeds.

- SCADA – Comprehensive SCADA system upgrade and integration of WPCF and collection system into new platform. The upgrade was competed in 2017 and cost approximately $1.1 million, which was completely funded through 2015 bond proceeds.

- Thickener System Motor Controls – Replaced the outdated motor control centers in the thickener building. The project was completed in 2016 and cost approximately $100,000, which was completely funded through 2015 bond proceeds.

In addition, as discussed above, the SWPCA's current CIP includes a number of planning and ongoing projects in various stages of completion. Ongoing CIP projects are discussed in detail in Section 5.2 of the Consulting Engineer's Report (see "Appendix C – Engineer's Report" hereto). and include the following:

- Mapping - Citywide computerized mapping of the sanitary sewer systems using GIS – ongoing, sanitary sewers are reported 99 percent mapped as of end of calendar year 2018 (approximately $275,000 funded through 2013 bond proceeds).

- CMOM – Continuation of CMOM program, with a variety of initiatives as discussed in Section 4 and 6. (approximately $1.5 million and $230,000 funded through 2013 and 2015 bond proceeds, respectively).

- Sewer Rehabilitation and I/I Program – Work includes the rehabilitation and replacement of sanitary sewer lines and manholes as part of annual sewer work and I/I program to reduce I/I in the system (approximately $3.3 and $1.4 million funded through 2013 and 2015 bond proceeds, respectively).

- Preliminary Treatment/Headworks – Engineering design for the preliminary treatment upgrade was completed in December 2018 (approximately $790,000 funded through 2015 bond proceeds).

- Secondary Treatment – Engineering design for the aeration system upgrades was completed in December 2018 (approximately $660,000 funded through 2015 bond proceeds).

- UV System – Engineering design for the UV system was completed in December 2018 (approximately $50,000 and $580,000 funded through 2013 and 2015 bond proceeds, respectively).

- Grit System – Engineering design for the grit system upgrade is ongoing and is anticipated to be completed in June 2019 (approximately $380,000 funded through 2015 bond proceeds).

- Sewer Extensions – Sewer extensions for Perna Lane and Wedgemere Road areas have been designed (approximately $250,000 and $350,000 funded through 2013 and 2015 bond proceeds, respectively). Perna Lane sewer extension project was recently put out to bid, but the received bids were higher than expected. Therefore, project construction is being postponed at least a year in order to evaluate design options.

A summary of the SWPCA's six-year capital plan is provided in Table 5. The capital plan includes replacement or upgrade of various components of the Treatment Plant including replacement of the plant water and return activated sludge pumps, rehabilitation of the gravity belt thickeners and belt filter presses, and upgrade of the Treatment Plant's headworks, secondary treatment, UV disinfection, and degritting systems. Collection system projects that are planned include sewer extension projects to serve the Perna Lane and Wedgemere Road areas; sewer system Infiltration and Inflow Identification and Removal Program and sewer rehabilitation. The capital plan includes relatively minor rehabilitation of the pumping stations, except for a major upgrade of the Alvord Lane Pump Station, generator projects at Greenwich Avenue and Clay Hill Pump Stations, and electrical upgrades at six pump stations.

TABLE 5

*Summary of Six-Year Capital Plan by Category ($ Millions)**

DESCRIPTION	ESTIMATED COST	FY19-20	FY20-21	FY21-22	FY22-23	FY23-24	FY24-25	FUNDED BY 2015 REVENUE BONDS	FUNDED BY 2019 REVENUE BONDS	FUNDED BY 2020 REVENUE BONDS	FUNDED BY CASH RESERVES	FUNDED BY FUTURE BONDS
Treatment Plant												
WPCF MAJOR REPLACEMENT AND REPAIRS												
MISC WPCF EQUIPMENT REPLACEMENTS	$ 1,900,000	$ 350,000	$ 350,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 350,000		$ 350,000		$ 1,200,000
REHAB BFP's	$ 500,000	$ 250,000	$ 250,000								$ 500,000	
REPLACE PLANT WATER PUMPS	$ 1,500,000		$ 1,500,000							$ 1,500,000		
FINAL CLARIFIER LAUNDER COVERS	$ 340,000	$ 340,000						$ 340,000				
SUBTOTAL WPCF MAJOR REPLACEMENT AND REPAIRS	$ 4,240,000	$ 940,000	$ 2,100,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 690,000	$ -	$ 1,850,000	$ 500,000	$ 1,200,000
UPGRADE PLANT HEADWORKS												
b Construction phase engineering servcices	$ 1,000,000	$ 500,000	$ 500,000						$ 500,000	$ 500,000		
c Construction costs	$ 11,280,000	$ 4,880,000	$ 6,400,000					$ 80,000	$ 4,800,000	$ 6,400,000		
AERATION BLOWERS AND EMERGENCY POWER GENERATOR												
b Construction phase engineering sevices	$ 800,000	$ 400,000	$ 400,000						$ 400,000	$ 400,000		
c Construction costs	$ 8,615,000	$ 5,515,000	$ 3,100,000					$ 15,000	$ 5,500,000	$ 3,100,000		
REPLACE UV SYSTEM												
b Construction Phase Engineering	$ 500,000	$ 400,000	$ 100,000						$ 400,000	$ 100,000		
b Construction costs	$ 7,155,000	$ 5,855,000	$ 1,300,000					$ 2,055,000	$ 3,800,000	$ 1,300,000		
SLUDGE DEGRITTING SYSTEM UPGRADE												
b Construction Phase Engineering	$ 400,000			$ 400,000								$ 400,000
b Construction costs	$ 3,800,000			$ 3,800,000								$ 3,800,000
SUBTOTAL WPCF MAJOR REPAIRS AND UPGRADE PROJECTS	$ 33,550,000	$ 17,550,000	$ 11,800,000	$ 4,200,000	$ -	$ -	$ -	$ 2,150,000	$ 15,400,000	$ 11,800,000	$ -	$ 4,200,000
SUBTOTAL TREATMENT PLANT	$ 37,790,000	$ 18,490,000	$ 13,900,000	$ 4,500,000	$ 300,000	$ 300,000	$ 300,000	$ 2,840,000	$ 15,400,000	$ 13,650,000	$ 500,000	$ 5,400,000
Pump Station Upgrades												
ELECTRICAL UPGRADES AT PUMP STATIONS	$ 620,000	$ 120,000	$ 250,000	$ 250,000					$ 120,000	$ 250,000		$ 250,000
ALVORD LANE PUMP STATION UPGRADE	$ 2,750,000		$ 50,000	$ 200,000	$ 2,500,000						$ 50,000	$ 2,700,000
GREENWICH AVE PUMP STATION UPGRADE	$ 370,000	$ 370,000						$ 190,000	$ 180,000			
MISC PUMP STATION EQUIP REPLACEMENTS	$ 585,000	$ 85,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000				$ 585,000	
SUBTOTAL PUMP STATION UPGRADES	$ 4,325,000	$ 575,000	$ 400,000	$ 550,000	$ 2,600,000	$ 100,000	$ 100,000	$ 190,000	$ 300,000	$ 250,000	$ 635,000	$ 2,950,000
VEHICAL REPLACEMENTS	$ 300,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000				$ 300,000	
Sewer Rehabilitation												
MISC SEWER REPLACEMENT AND REPAIRS	$ 900,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000			$ 750,000	
MANHOLE COVERS	$ 300,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000			$ 250,000	
SEWER LINING, JOINT SEALING AND POINT REPAIRS	$ 1,950,000	$ 400,000	$ 400,000	$ 400,000	$ 250,000	$ 250,000	$ 250,000	$ 400,000		$ 400,000		$ 1,150,000
New Sewer Extension												
WEDGEMERE ROAD SEWERS	$ 3,700,000			$ 3,700,000								$ 3,700,000
PERNA LANE AREA SEWERS	$ 11,015,000	$ 115,000	$ 5,700,000		$ 2,600,000	$ 2,600,000		$ 115,000		$ 5,700,000		$ 5,200,000
CMOM (45% SSES and 100% design funded by rev bonds)	$ 900,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 80,000			$ 820,000	
CMOM (55% SSES funded by CWF grant)	$ 690,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000					
SUBTOTAL COLLECTION SYSTEM	$ 19,455,000	$ 980,000	$ 6,565,000	$ 4,565,000	$ 3,315,000	$ 3,315,000	$ 715,000	$ 795,000	$ -	$ 6,100,000	$ 1,820,000	$ 10,050,000
TOTAL	**$ 61,870,000**	**$ 20,095,000**	**$ 20,915,000**	**$ 9,665,000**	**$ 6,265,000**	**$ 3,765,000**	**$ 1,165,000**	$ 3,825,000	$ 15,700,000	$ 20,000,000	$ 3,255,000	$ 18,400,000
FUNDED BY:												
Cash	$ 3,255,000.00	$ 455,000	$ 800,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000					
2015 Revenue Bonds	$ 3,825,000.00	$ 3,825,000										
2019 Revenue Bonds	$ 15,700,000.00	$ 15,700,000										
2020 Revenue Bonds	$ 20,000,000.00		$ 20,000,000									
Future Revenue Bonds	$ 18,400,000.00			$ 9,050,000	$ 5,650,000	$ 3,150,000	$ 550,000					
CWF Grant	$ 690,000.00	$ 115,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000					
TOTAL	**$ 61,870,000.00**	**$ 20,095,000**	**$ 20,915,000**	**$ 9,665,000**	**$ 6,265,000**	**$ 3,765,000**	**$ 1,165,000**					

THE SERIES 2019 BONDS

General

The Series 2019 Bonds will be issued as fully registered bonds in the aggregate principal amounts as set forth on the inside cover page hereof, will be dated and will bear interest from that date to their respective maturities as set forth on the inside cover page hereof, subject to optional redemption prior to maturity as described below. Ownership interests in the Series 2019 Bonds will be available in denominations of $5,000 and integral multiples thereof. Interest on the Series 2019 Bonds will be payable on October 1, 2019 and semiannually thereafter on April 1 and October 1, in each year until maturity or earlier redemption. Interest will be calculated on the basis of twelve 30-day months and a 360-day year and will be payable to the registered owner of the Bonds as of the close of business on the fifteenth day of March and September in each year, or preceding business day if such fifteenth day is not a business day.

So long as Cede & Co. is the registered owner of the Series 2019 Bonds, all payments of principal and interest on the Series 2019 Bonds are payable by wire transfer by U.S. Bank National Association, as Trustee and Paying Agent (the "Trustee") to Cede & Co. as nominee for The Depository Trust Company ("DTC"), New York, New York, which will, in turn, remit such amounts to the DTC Participants for subsequent disposition to Beneficial Owners. See "BOOK-ENTRY-ONLY METHOD" herein.

Optional Redemption

The Series 2019 Bonds maturing on or after April 1, 2030 are subject to optional redemption prior to maturity commencing April 1, 2029, as a whole or in part, at any time, at the option of the City, at the applicable redemption price (expressed as a percentage of the principal amount redeemed), plus accrued interest to the date of redemption as follows:

Period During Which Redeemed	Redemption Price
April 1, 2029 and thereafter	100%

Mandatory Sinking Fund Redemption

The Series 2019 Bonds maturing on April 1, 2044 are subject to mandatory redemption from moneys in the Debt Service Fund, in the principal amounts specified below, plus accrued interest thereon.

The Trustee shall cause to be deposited in the Debt Service Account, in accordance with the Indenture, an amount sufficient to pay Sinking Fund Installments, and the Trustee shall redeem or pay from the Debt Service Account (subject to any crediting of such Sinking Fund Installments in accordance with the Indenture) the Series 2019 Bonds maturing on April 1, 2044, in the manner therein provided as follows:

Term Bond Due April 1, 2044

Year	***Sinking Fund Installment***
2040	$845,000
2041	880,000
2042	915,000
2043	950,000
2044†	990,000

† *Final maturity.*

Notice of Redemption

Notice of redemption shall be given by the City or its agent by mailing a copy of the redemption notice by first-class mail not less than thirty (30) days prior to the redemption date to the registered owner of the Series 2019 Bonds at the address of such registered owner as the same shall last appear on the registration books for the Series 2019 Bonds kept for such purpose. Failure to give such notice by mailing to any registered owner, or any defect therein, shall not affect the validity of the redemption of any other Series 2019 Bonds. Upon the giving of such notice, if sufficient funds available solely for redemption are on deposit with the Paying Agent, the Series 2019 Bonds or portions thereof so called for redemption will cease to bear interest after the specified redemption date.

If less than all of the Series 2019 Bonds of any one maturity shall be called for redemption, the particular Series 2019 Bonds or portions of Series 2019 Bonds of such maturity to be redeemed shall be selected by lot in such manner as the City in its discretion may determine; provided, however, that the portion of any Series 2019 Bonds to be redeemed shall be in the principal amount of $5,000 or a multiple thereof and that, in selecting Series 2019 Bonds for redemption, each Bond shall be considered as representing that number of Series 2019 Bonds which is obtained by dividing the principal amount of such Series 2019 Bonds by $5,000.

The City, so long as Cede & Co., as nominee of The Depository Trust Company ("DTC"), is the registered owner of the Series 2019 Bonds, pursuant to a book-entry registration system, will send any notice of redemption only to DTC (or a successor securities depository) or its nominee. Any failure of DTC to advise any DTC Participant, or of any DTC Participant or Indirect Participant to notify any Indirect Participant or Beneficial Owner, of any such notice and its content or effect will not affect the validity of the redemption of such Series 2019 Bonds called for redemption. Redemption of a portion of the Series 2019 Bonds of any maturity by the City will reduce the outstanding principal amount of Series 2019 Bonds of such maturity held by DTC. In such event it is the current practice of DTC to allocate by lot, through its book-entry system, among the interest held by DTC Participants in the Series 2019 Bonds to be redeemed, the interest to be reduced by such redemption in accordance with its own rules or other agreements with DTC Participants. The DTC Participants and Indirect Participants may allocate reductions of the interests in the Series 2019 Bonds to be redeemed held by the Beneficial Owners. Any such allocation of interests in the Series 2019 Bonds to be redeemed will not be governed by the determination of the City authorizing the issuance of the Series 2019 Bonds and will not be conducted by, or be the responsibility of, the City, the Registrar, or Paying Agent.

Use of Series 2019 Bond Proceeds

A portion of the proceeds of the Series 2019 Bonds will be used to finance the following projects:

Project	*The Series 2019 Bonds*
Upgrade of UV Disinfection	$ 4,200,000
Aeration Blowers Upgrade	5,900,000
Upgrade Plant Headworks	5,300,000
Sanitary Pumping Station Upgrade	300,000
Total	$ 15,700,000

Sources and Uses of Funds

The proceeds of the Series 2019 Bonds are expected to be applied as follows:

Sources:	***Total***
Par Amount of the Series 2019 Bonds	$ 15,700,000.00
Net Original Issue Premium	2,486,627.70
Total Sources	$ 18,186,627.70
Uses:	
Deposit to Capital Project Fund	$ 15,700,000.00
Deposit to Debt Service Fund	1,192,215.20
Debt Service Reserve Fund	1,029,600.00
Costs of Issuance[1]	264,812.50
Total Uses	$ 18,186,627.70

[1] *Includes underwriter's discount.*

Book-Entry-Only System

The Depository Trust Company ("DTC"), New York, NY, will act as securities depository for the Bonds. including the Series 2019 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 for each maturity of the Bonds, in the aggregate principal amount of such maturity, and will be deposited with DTC.

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.

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 the Bonds, except in the event that use of the book-entry system for the Bonds is discontinued.

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.

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.

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.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to Bonds unless authorized by a Direct Participant in accordance with DTC's MMI Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to the City 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 Bonds are credited on the record date (identified in a listing attached to the Omnibus Proxy).

Principal and interest payments on, and redemption premium, if any, with respect to 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 City or Paying 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, Paying Agent, or the City, subject to any statutory or regulatory requirements as may be in effect from time to time. Payment of principal and interest, and redemption premium, if any, to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) is the responsibility of the City or Paying 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.

DTC may discontinue providing its services as depository with respect to the Bonds at any time by giving reasonable notice to the City or Paying Agent. Under such circumstances, in the event that a successor depository is not obtained, Bond certificates are required to be printed and delivered.

The City 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.

The information in this section concerning DTC and DTC's book-entry system has been obtained from sources that the City believes to be reliable, but the City takes no responsibility for the accuracy thereof.

DTC Practices

The City can make no assurances that DTC, DTC Participants, Indirect Participants or other nominees of the Beneficial Owners of the Bonds will act in a manner described in this Official Statement. DTC is required to act according to rules and procedures established by DTC and its Participants which are on file with the Securities and Exchange Commission.

Security and Pledge of the Indenture

All Bonds issued pursuant to the Indenture, including the Series 2019 Bonds, shall be special limited obligations of the City. Pursuant to the granting clauses set forth in the Indenture, the City and the SWPCA have pledged the Trust Estate (as defined in Appendix D) as security for the payment of the Bonds and the performance of any other obligation of the City and the SWPCA under the Indenture or any supplemental indenture, in accordance with the terms and the provisions of the Indenture, subject only to the provisions of the Indenture permitting the application thereof for or to the purposes and on the terms and conditions set forth in the Indenture. It is the intention of the City and the SWPCA that, to the fullest extent permitted by law, including, but not limited to, the Clean Water Fund Act and the Uniform Commercial Code, the pledge of the Indenture shall be valid and binding from the time when it is made, that the Revenues, moneys, securities and other funds so pledged and then or thereafter received by the City or the SWPCA shall immediately be subject to the lien of such pledge without physical delivery thereof or further act and the lien of such pledge and obligation to perform the contractual provisions herein contained shall be valid and binding as against all parties having claims of any kind in tort, contract or otherwise against the City or the SWPCA.

Flow of Funds

All revenues received by the City and the SWPCA shall be deposited in the Revenue Fund. There shall also be deposited in the Revenue Fund all other amounts required by the Indenture to be so deposited. On the third Business Day preceding the end of each month, the Trustee shall, from the amounts in the Revenue Fund, make the following deposits in the following order of priority:

FIRST: to the Operating Fund, the amount set forth in a Certificate of an Authorized Representative of the City or the SWPCA as being deemed necessary to provide for (taking into account amounts on deposit therein and expenses incurred and unpaid for the current month) the payment of the next succeeding month's Operating Expenses;

SECOND: to each Debt Service Account, the amount necessary so that the total on deposit therein at the end of such month equals the Accrued Aggregate Debt Service on the applicable Series of Bonds for such month, and to such payees as are designated in writing to the Trustee by the City, an amount equal to the Accrued Aggregate Debt Service on all Parity Indebtedness for such month; provided however, if Revenues are insufficient for such purpose, then pro rata to each such Debt Service Account and payee;

THIRD: from the balance, if any, remaining after making the deposits required by paragraphs FIRST and SECOND, to the Debt Service Reserve Fund, first, to the credit of the Common Account therein, the amount, if any, necessary to make the total on deposit in the Common Account equal to the Debt Service Reserve Fund Requirement for the Bonds secured by the Common Account, or the entire balance if less than sufficient, second, from the balance of such deposit, if any, remaining after crediting the Common Account as aforesaid, to the credit of each Special Account, the amount, if any, necessary to make the total amount on deposit in each such Special Account equal to the portion of the Debt Service Reserve Fund Requirement for the Series of Bonds to which such Special Account relates that is required to be funded as of that month as set forth in Section 401(b) of the Indenture; provided, however, that if the balance remaining is less than sufficient to credit in full each Special Account, credit shall be made pro rata among all Special Accounts in the same ratio as the portion of the Debt Service Reserve Fund Requirement related to each Special Account and required to be funded as of that month bears to the sum of the Debt Service Reserve Fund Requirements for all the Bonds related to Special Accounts, and third, from the balance of such deposit, if any, remaining after crediting the Common Account and the Special Accounts as aforesaid, to the credit of each debt service reserve fund as are designated in writing to the Trustee by the City for Parity Indebtedness, the amount, if any, necessary to make the total amount on deposit in each such debt service reserve fund equal to the portion of the debt service reserve fund requirement for the series of Parity Indebtedness to which such debt service reserve fund relates that is required to be funded as of that month; provided, however, that if the balance remaining is less than sufficient to credit in full each debt service reserve fund, credit shall be made pro rata among all debt service reserve funds in the same ratio as the portion of the debt service reserve fund requirement related to each debt service reserve fund and required to be funded as of that month bears to the sum of the debt service reserve fund requirements for all Parity Indebtedness related to such debt service reserve funds;

FOURTH: from the balance, if any, remaining after making the deposits required by paragraphs FIRST, SECOND and THIRD, to the Rebate Fund the amount, if any, set forth in a Certificate of an Authorized Representative of the City as being required to be deposited in such Fund and the Accounts thereunder in accordance with the Indenture or a Tax Regulatory Agreement;

FIFTH: from the balance, if any, remaining after making the deposits required by paragraphs FIRST, SECOND, THIRD and FOURTH, to the Subordinated Indebtedness Fund amounts required to be deposited in such Fund for such month in accordance with the Sewer Budget or the entire balance if less than sufficient; and

SIXTH: from the balance, if any, remaining after making the deposits required by paragraphs FIRST, SECOND, THIRD, FOURTH and FIFTH, to the Surplus Fund, the balance.

Debt Service Reserve Fund

The Series 2019 Bonds are additionally secured by the Common Account of the Debt Service Reserve Fund. Under the Indenture, if a Supplemental Indenture provides that on the date of issuance of the particular Series of Bonds authorized thereby, the Debt Service Reserve Fund Requirement for such Series of Bonds shall be fully funded on the same basis as all other Series of Bonds secured by the Common Account of the Debt Service Reserve Fund, such Series of Bonds shall also be secured by the Common Account of the Debt Service Reserve Fund once such funding shall have occurred. Amounts on deposit in the Common Account of the Debt Service Reserve Fund shall be applied, to the extent other funds are not available therefor pursuant to the Indenture, to pay the Principal Installments of, and interest on the Bonds secured by the Common Account. Amounts on deposit in Special Accounts in the Debt Service Reserve Fund shall be applied solely to the Bonds for which such Accounts have been established and such Bonds shall not be entitled to amounts on deposit in the Common Account. Amounts on deposit in debt service reserve funds for Parity Indebtedness shall be applied solely to the Parity Indebtedness for which such funds have been established and such Parity Indebtedness shall not be entitled to amounts on deposit in the Common Account.

If, as of January 1 or July 1 of each year or on any date on which the Trustee receives the written direction of the City under the Indenture, the amount in any Account in the Debt Service Reserve Fund exceeds the applicable Debt Service Reserve Fund Requirement, the Trustee shall withdraw from such Account the amount of any excess therein over the applicable Debt Service Reserve Fund Requirement as of the date of such withdrawal and deposit the moneys so withdrawn into the Surplus Fund. If, as of January 1 or July 1 of each year the amount in any Account in the Debt Service Reserve Fund is less than the applicable Debt Service Reserve Fund Requirement and, to the extent that such deficiency has not been made up by the date of adoption of the Sewer Budget for the next Fiscal Year by deposits pursuant to the Indenture, the SWPCA shall, in its Sewer Budget for the ensuing Fiscal Year, include the amount necessary to fund such deficiency.

In the event of the refunding of any Bonds, the Trustee shall, upon the written direction of the City, withdraw from the Account of the Debt Service Reserve Fund related to the Bonds to be refunded all or any portion of amounts accumulated therein with respect to the Bonds to be refunded and deposit such amounts as provided in such written direction provided that such withdrawal shall not be made unless (i) immediately thereafter the Bonds being refunded shall be deemed to have been paid pursuant to Section 1201 of the Indenture, and (ii), after giving effect to any amounts being simultaneously deposited therein the amount remaining in each Account after such withdrawal shall not be less than the applicable Debt Service Reserve Fund Requirement.

Pro-Forma Debt Service Reserve Fund Balance as of May 1, 2019

	DSRF Requirement	***DSRF Requirement ($)***	***Current DSRF Balance ($)***	***Excess / (Deficit)***
Clean Water Fund Loans	Max P&I	$ 4,424,089	$ 4,424,089	$ (0)
2013 Series A Revenue Bonds	Max P&I	1,639,600	1,672,852	33,252
2015 Series A Revenue Bonds	Max P&I	1,964,519	2,016,608	52,089
2019 Series	Max P&I	1,029,600	1,029,600	-

Subordinated Indebtedness Fund

Amounts on deposit in the Subordinated Indebtedness Fund shall be applied by the Trustee solely to the maintenance of reserves for, or the payment of, Subordinated Indebtedness, or as otherwise provided by the resolution of the City authorizing each issue of Subordinated Indebtedness.

If at any time the amounts in any Debt Service Account, any debt service fund for Parity Indebtedness (the deficiency in which is identified in writing to the Trustee by the City) or in any Account in the Debt Service Reserve Fund or any debt service reserve fund for Parity Indebtedness (the deficiency in which is identified in writing to the Trustee by the City) shall be less than the current requirements thereof (after any transfers thereto made pursuant to the Indenture), the Trustee shall withdraw from the Subordinated Indebtedness Fund and deposit in such Debt Service Account, debt service fund for Parity Indebtedness, Account of the Debt Service Reserve Fund or debt service reserve fund for Parity Indebtedness, as the case may be, the amount necessary (or all the moneys in said Fund on a pro rata basis, if less than the amount necessary) to make up such deficiency.

Surplus Fund

The Trustee shall, on each Bond Payment Date, apply moneys credited to the Surplus Fund in the following amounts: (i) on a pro rata basis, to the Debt Service Fund the amount, if any, necessary (or all the moneys in the Surplus Fund if less than the amount necessary) to make up any deficiency in the amount required to be on deposit in such Fund and to any debt service fund for Parity Indebtedness identified in writing to the Trustee by the City the amount, if any, necessary (or all the moneys in the Surplus Fund if less than the amount necessary) to make up any deficiency in the amount required to be on deposit in such fund, as identified in writing to the Trustee by the City, (ii) to the Debt Service Reserve Fund the amount, if any, necessary (or all the moneys in the Surplus Fund if less than the amount necessary) to make up any deficiency in the amount required to be on deposit in any Account in such Fund and (iii) on a pro rata basis, to any debt service reserve funds for Parity Indebtedness identified in writing to the Trustee by the City the amount, if any, necessary (or all the moneys in the Surplus Fund if less than the amount necessary) to make up any deficiency in the amount required to be on deposit in such funds, as identified in writing to the Trustee by the City. Such transfer shall be made notwithstanding any other provisions of the Indenture requiring deposits in such Funds. Moneys remaining on deposit in the Surplus Fund after the transfers set forth in Section 511 of the Indenture may also be transferred by the Trustee to the City or the SWPCA, at the direction of the City or the SWPCA, to pay Operating Expenses or for any other lawful purpose related to the SWPCA or the Sewerage System, including but not limited to, the funding of a capital fund from which the City or the SWPCA may pay for capital improvements to the Sewerage System or to reimburse the City for expenses relating to the SWPCA; following any such transfer, the moneys transferred shall not be considered pledged moneys hereunder.

Rate Covenant

Pursuant to the Indenture, the SWPCA covenants that it will fix, charge and collect rates, charges, rents, fees and assessments, including but not limited to use and connection charges and benefit assessments, which shall produce Revenues which, together with amounts capitalized from proceeds of Bonds or otherwise made available and reserved and not already taken into account hereunder by reduction of the obligations which are to be paid from Revenues, and the amount to be withdrawn from the Surplus Fund other than to pay Capital Costs for such Fiscal Year, shall be sufficient in each Fiscal Year to provide for:

(A) a Debt Service Coverage Ratio at least equal to the Debt Service Coverage Ratio Requirement (115%);

(B) any amount necessary to restore any Account within the Debt Service Reserve Fund to its required deposit level; and

(C) any amount necessary to restore any debt service reserve fund for Parity Indebtedness to its required deposit level.

The SWPCA covenants that each Fiscal Year, it will budget for rates, charges, rents, fees and assessments, including but not limited to use and connection charges and benefit assessments, which shall produce Revenues which, together with amounts capitalized from proceeds of Bonds or otherwise made available and reserved and not already taken into account hereunder by reduction of the obligations which are to be paid from Revenues and the amount to be withdrawn from the Surplus Fund other than to pay Capital Costs for such Fiscal Year, shall be sufficient in each Fiscal Year to provide for an amount equal to 100% of the aggregate debt service for such Fiscal Year with respect to Subordinated Indebtedness, which aggregate debt service shall be computed on the same basis and with the same assumptions as "Aggregate Debt Service" for Bonds hereunder; provided however, that failure to collect such Revenues and other amounts under this clause shall under no circumstances be treated as an Event of Default.

Additional Bonds Test

In order to issue additional Bonds secured on a parity with other Bonds, the Indenture requires a Certificate of an Authorized Representative of the City and the SWPCA setting forth for the last full Fiscal Year immediately preceding the Fiscal Year in which such Bonds are to be issued, (i) the Revenues, adjusted as hereinafter provided, (ii) the Aggregate Debt Service on the Bonds then Outstanding and all Parity Indebtedness then outstanding and the maximum Aggregate Debt Service on the additional Bonds then proposed to be issued, (iii) the total Operating Expenses, (iv) the amount withdrawn from the Surplus Fund other than to pay Capital Costs, and (v) showing that the Debt Service Coverage Ratio is at least equal to the Debt Service Coverage Ratio Requirement (115%); provided that (A) if an increase in the rates, fees and charges for services of the Sewerage System shall have been approved prior to the delivery of such Certificate, such that no further legal requirements need to be met to effectuate such increase, the Revenues shall be adjusted to the amount of Revenues which would have been derived from the Sewerage System for said full Fiscal Year if such increased rates, fees and charges for services of the Sewerage System had been in effect

for the full Fiscal Year, and (B) if the SWPCA shall have obtained one or more new customers after such Fiscal Year but before the delivery of such certificate, such that the Revenues for the last full Fiscal Year should, in the opinion of the SWPCA, be adjusted to reflect such additional customer or customers, then the Revenues of the Sewerage System for the full Fiscal Year immediately preceding the issuance of said additional Bonds shall be increased by the least amount which said customer or customers are legally obligated to pay in any one year for the furnishing of said services by the Sewerage System, after deducting therefrom the Operating Expenses estimated by the SWPCA as attributable in such year to such customer or customers.

In addition, except in the case of any Series of Refunding Bonds, in order to issue a new Series of Bonds, the Indenture also requires a Certificate of an Authorized Representative of the City and the SWPCA setting forth for each of the five (5) Fiscal Years following the issuance of such Series of Bonds, plus the Fiscal Year in which such Bonds are issued, (i) the estimated Revenues after giving effect to any increases or decreases in rates, fees and charges projected, (ii) the estimated Operating Expenses, (iii) the estimated amount to be withdrawn from the Surplus Fund other than to pay Capital Costs, (iv) the projected Aggregate Debt Service on the Bonds then Outstanding, all Parity Indebtedness then outstanding and the additional Bonds then proposed to be issued, and (v) showing that the Debt Service Coverage Ratio will be at least equal to the Debt Service Coverage Ratio Requirement (115%).

Refunding Bonds may be issued pursuant to the Indenture at any time to refund any Outstanding Bonds or outstanding Parity Indebtedness provided that (i) average annual Debt Service on such Series of Refunding Bonds or outstanding Parity Indebtedness shall not exceed the average annual Debt Service on the Bonds to be refunded and (ii) the maximum Debt Service in any Fiscal Year on such Series of Refunding Bonds or Parity Indebtedness (excluding any one-twentieth (1/20th) principal payment required by the Project Loan and Grant Agreement), shall not exceed the maximum Debt Service in any Fiscal Year on the Bonds or Parity Indebtedness to be refunded, (excluding any one-twentieth (1/20th) principal payment on Clean Water Obligations required by the Project Loan and Grant Agreement all as shown in a Certificate signed by an Authorized Representative of the Municipality and delivered to the Trustee prior to the authentication and delivery of such Series of Refunding Bonds. Refunding Bonds shall be issued in a principal amount sufficient, together with other moneys available therefor, to accomplish such refunding and to make the deposits in the Funds and Accounts required by the provisions of the Supplemental Indenture authorizing such Bonds. Refunding Bonds that do not meet the requirements of the Indenture for Refunding Bonds may be issued by meeting the requirements of Bonds.

Other Indebtedness

Under the Indenture, the City shall not issue any bonds, notes or other evidences of indebtedness, other than the Bonds, Parity Bond Anticipation Notes, Parity Reimbursement Obligations and Parity Indebtedness, secured by a pledge of or other lien or charge on the Revenues and shall not create or cause to be created any lien or charge on such Revenues or on any amounts held by any Fiduciary, under the Indenture. However, the Indenture shall not prevent the City or the SWPCA from issuing bonds or notes or other obligations for the corporate purposes of the City or the SWPCA payable out of, or secured by a pledge of, Revenues to be derived on and after such date as the pledge of the Revenues provided in the Indenture shall be discharged and satisfied as provided in Section 1201 of the Indenture, or from issuing Subordinated Indebtedness for the corporate purposes of the City or the SWPCA which are payable out of or secured by the pledge of amounts available therefor in the Subordinate Indebtedness Fund and which recite on their face that such pledge of said amounts is and shall be in all respects subordinate to the provisions of the Indenture and the lien and pledge created by the Indenture.

Debt Service

The following table sets forth the debt service requirements as of June 26, 2019 for each fiscal year ending June 30 for the Bonds and Parity Indebtedness of the City incurred on behalf of the SWPCA to make capital improvements to the Sewerage System. The payment of debt service on general obligation bonds of the City, which proceeds were used for Sewerage System improvements, is subordinate to the payment of debt service on the Bonds and the Parity Indebtedness and is not included in this table.

Fiscal Year	*Senior Lien Parity Debt* [2]				*This Issue*	*Subordinated Debt* [1]
Ended	*2013 Series*	*2015 Series*	*CWF (414C, 414D)*	*Total D/S*	*Principal*	*Existing GO Bond D/S*
2020	$ 1,634,450	$ 1,956,144	$ 4,639,047	$ 8,229,641	$ 505,000	$ 1,325,266
2021	1,631,500	1,960,769	4,424,089	8,016,358	365,000	1,112,520
2022	1,631,300	1,963,144	4,424,089	8,018,533	380,000	835,820
2023	1,633,550	1,963,269	4,424,089	8,020,908	395,000	823,645
2024	1,635,050	1,961,144	4,424,089	8,020,283	410,000	765,145
2025	1,637,975	1,961,644	4,424,089	8,023,708	425,000	803,345
2026	1,635,725	1,964,519	737,348	4,337,592	445,000	658,295
2027	1,636,350	1,959,769	-	3,596,119	465,000	655,820
2028	1,639,600	1,957,394	-	3,596,994	490,000	657,945
2029	1,635,475	1,962,019	-	3,597,494	515,000	652,820
2030	1,633,975	1,963,394	-	3,597,369	540,000	650,760
2031	1,634,850	1,961,519	-	3,596,369	565,000	-
2032	1,637,850	1,959,113	-	3,596,963	595,000	-
2033	1,637,850	1,961,066	-	3,598,916	625,000	-
2034	849,975	1,959,488	-	2,809,463	655,000	-
2035	848,825	1,955,238	-	2,804,063	685,000	-
2036	849,950	1,959,063	-	2,809,013	720,000	-
2037	849,425	1,954,819	-	2,804,244	750,000	-
2038	847,250	901,438	-	1,748,688	780,000	-
2039	848,288	905,375	-	1,753,663	810,000	-
2040	848,238	903,281	-	1,751,519	845,000	-
2041	847,144	905,156	-	1,752,300	880,000	-
2042	849,081	901,000	-	1,750,081	915,000	-
2043	848,919	905,719	-	1,754,638	950,000	-
2044	846,656	904,219	-	1,750,875	990,000	-
2045	-	901,594	-	901,594	-	-
Total……	$ 32,229,250	$ 42,511,291	$ 27,496,840	$ 102,237,381	$ 15,700,000	$ 8,941,381

[1] *Includes the 2009 Taxable Build America Bonds, which then replaced with 2017 Series D Subordinated GO Bonds per SWPCA.*

[2] *Excludes two Project Loan Obligations ("PLOs") between the City and the State of Connecticut, as follows: PLO 414-D (original amount of loan $3,574,208.37 and current principal amount outstanding $230,177); a second PLO 414-C (original amount of loan $73,561,480.55 and current principal amount outstanding $25,971,895). Each PLO bears interest at the rate of 2% per annum, with payments of principal and interest made on a monthly basis.*

Tax Matters

The Internal Revenue Code of 1986, as amended (the "Code"), imposes certain requirements which must be met at and subsequent to delivery of the Series 2019 Bonds in order that interest on the Series 2019 Bonds be and remains excluded from gross income for federal income tax purposes. Noncompliance with such requirements could cause interest on the Series 2019 Bonds to be included in gross income retroactive to the date of issuance of the Series 2019 Bonds. The Tax Regulatory Agreement, which will be executed and delivered by the City concurrently with the Series 2019 Bonds, contains representations, covenants and procedures relating to the use, expenditure and investment of proceeds of the Series 2019 Bonds in order to comply with such requirements of the Code. Pursuant to the Tax Regulatory Agreement, the City also covenants and agrees that it shall perform all things necessary or appropriate under any valid provision of law to ensure interest on the Series 2019 Bonds shall be excluded from gross income for federal income tax purposes under the Code.

In the opinion of Bond Counsel, based on existing statutes and court decisions and assuming continuing compliance by the City with its covenants and the procedures contained in the Tax Regulatory Agreement, interest on the Series 2019 Bonds is excluded from gross income for federal income tax purposes and is not treated as an item of tax preference for purposes of computing the federal alternative minimum tax.

Ownership of the Series 2019 Bonds may also result in certain collateral federal income tax consequences to certain taxpayers, including, without limitation, financial institutions, property and casualty insurance companies, certain foreign corporations doing business in the United States, certain S corporations with excess passive income, individual recipients of Social Security and Railroad Retirement benefits, taxpayers utilizing the earned income credit and taxpayers who have or are deemed to have incurred indebtedness to purchase or carry tax exempt obligations, such as the Series 2019 Bonds. Prospective purchasers of the Series 2019 Bonds, particularly those who may be subject to special rules, are advised to consult their own tax advisors regarding the federal tax consequences of ownership and disposition of, or receipt of interest on, the Series 2019 Bonds.

In the opinion of Bond Counsel, based on existing statutes, interest on the Series 2019 Bonds is excluded from Connecticut taxable income for purposes of the Connecticut income tax on individuals, trusts and estates, and is excluded from amounts on which the net Connecticut minimum tax is based in the case of individuals, trusts and estates required to pay the federal alternative minimum tax.

Legislation affecting the exclusion from gross income of interest on State or local bonds, such as the Series 2019 Bonds, is regularly under consideration by the United States Congress. There can be no assurance that legislation enacted or proposed after the date of issuance of the Series 2019 Bonds will not reduce or eliminate the benefit of the exclusion from gross income of interest on the Series 2019 Bonds or adversely affect the market price of the Series 2019 Bonds.

The opinions of Bond Counsel are rendered as of their date and are based on existing law, which is subject to change. Bond Counsel assumes no obligation to update or supplement its opinions to reflect any facts or circumstances that may come to their attention, or to reflect any changes in law that may thereafter occur or become effective.

Prospective purchasers of the Series 2019 Bonds are advised to consult their own tax advisors regarding other State and local tax consequences of ownership and disposition of and receipt of interest on the Series 2019 Bonds.

Original Issue Premium

The initial public offering price of certain maturities of the Series 2019 Bonds may be greater than the principal amount payable on such Series 2019 Bonds at maturity. The excess of the initial public offering price at which a substantial amount of these Series 2019 Bonds are sold over the principal amount payable at maturity or on earlier call date constitutes original issue premium. The offering prices relating to the yields set forth on the inside cover page of this Official Statement are expected to be the initial public offering prices at which a substantial amount of the Series 2019 Bonds were ultimately sold to the public.

Under Sections 1016 and 171 of the Code, the amount of original issue premium treated as amortizing with respect to any Series 2019 Bond during each day it is owned by a taxpayer is subtracted from the owner's adjusted basis for purposes of determining gain or loss upon the sale or other disposition of such Series 2019 Bonds by such owner. Amortized original issue premium on the Series 2019 Bonds is not treated as a deduction from gross income for federal income tax purposes. Original issue premium on any bond is treated as amortizing on the basis of the taxpayer's yield to maturity using the taxpayer's cost basis and a constant semiannual compounding method. Prospective purchasers of the Series 2019 Bonds should consult their own tax advisors with respect to the federal, state and local income tax consequences of the disposition of and receipt of interest on the Series 2019 Bonds.

Ratings

S&P Global Ratings has assigned a rating of "AA+" to the Series 2019 Bonds. Fitch Ratings has assigned a rating of "AA+" to the Series 2019 Bonds. The City furnished to the rating agencies certain information and materials, some of which may not have been included in this Official Statement. The ratings reflect only the view of each rating agency and are subject to revision or withdrawal, which could affect the market price of the Series 2019 Bonds. Each rating agency should be contacted directly for its rating on the Series 2019 Bonds and the explanation of such rating.

Underwriting

Subject to the terms and conditions of the Bond Purchase Agreement, the City has agreed to sell to Raymond James & Associates, Inc. (the "Underwriter"), and the Underwriter has agreed to purchase, the Series 2019 Bonds at the net aggregate purchase price of $18,096,815.20 (consisting of the principal amount of $15,700,000.00, plus net original issue premium of $2,486,627.70, less underwriter's discount of $89,812.50). The Underwriter will be obliged to purchase all such Series 2019 Bonds, if any such Series 2019 Bonds are purchased. The Underwriter intends to offer the Series 2019 Bonds to the public initially at the offering prices or yields set forth on the inside cover page of this Official Statement, which may subsequently change without any requirement of prior notice. The Series 2019 Bonds may be offered and sold to certain dealers (including unit investment trusts and other affiliated portfolios of certain underwriters and other dealers depositing the Series 2019 Bonds into investment trusts) at prices lower than such public offering prices, and such public offering prices may be changed, from time to time, by the Underwriter.

Certain Legal Matters

The approving opinion of Robinson & Cole LLP, Hartford, Connecticut, Bond Counsel to the City, will be furnished upon delivery of the Series 2019 Bonds; the proposed form of such opinion is set forth in Appendix E. Certain legal matters will be passed on for the Underwriter by its counsel, Pullman & Comley, LLC, Hartford, Connecticut. Pullman & Comley, LLC has served as special counsel to the City of Stamford and SWPCA in connection with other matters.

Consulting Engineering

ARCADIS U.S., Inc. (the "Consulting Engineer"), has prepared the Consulting Engineer's Report for the Bonds, dated June 3, 2019, a copy of which is included in Appendix C hereto. The Consulting Engineer's Report provides an overview of the history of and financial projections for the Wastewater System. The Consulting Engineer has performed its services to the level customary for competent and prudent engineers performing such services at the time and place where the services were provided, as described in the Report. The Consulting Engineer makes or intends no other warranty, expressed or implied. The Consulting Engineer's Report contains information not set forth elsewhere in the Official Statement and should be read in its entirety.

The Municipal Advisor

Phoenix Advisors LLC, Milford, Connecticut, is serving as municipal advisor to the City for the issuance of the Series 2019 Bonds. The municipal advisor has assisted in the preparation of this Official Statement and in other matters relating to the planning, structuring and issuance of the Series 2019 Bonds and has provided other advice. It, however, does not assume responsibility for the adequacy of the statements made herein and makes no representation that it has independently verified the same.

Litigation

In the opinion of the City's Director of Legal Affairs, as of the date of this Official Statement, there are no claims or litigation pending or to his knowledge threatened, which would individually or in the aggregate result in final judgments against the City or the SWPCA which would have a material adverse effect on the finances of the SWPCA or which would impact the validity of the Series 2019 Bonds or the power of the SWPCA to assess and collect revenues to pay them.

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MISCELLANEOUS

Availability of Continuing Information

The City prepares, in accordance with State law, annual audited financial statements and files such annual audits with the State Office of Policy and Management. In accordance with the requirements of Rule 15c2-12(b)(5) promulgated by the Securities and Exchange Commission, the City will agree to provide or cause to be provided annual financial information and operating data and notices of certain events with respect to the Series 2019 Bonds pursuant to a Continuing Disclosure Agreement substantially in the form attached as Appendix F to this Official Statement.

The City has previously undertaken in continuing disclosure agreements entered into for the benefit of holders of certain of its general obligation bonds and notes to provide certain annual financial information and event notices pursuant to Rule 15c2-12(b)(5). In the past five years, the City has not failed in any material respects to meet any of its undertakings under such agreements.

Additional Information

Additional information may be obtained upon request from Michael E. Handler, Director of Administration, City of Stamford, Government Center, 888 Washington Boulevard, Stamford, Connecticut 06904-2152, telephone (203) 977-4183 or from Barry J. Bernabe, Managing Director, Phoenix Advisors LLC, 53 River Street, Milford, Connecticut 06460, telephone (203) 283-1110.

The Official Statement is submitted in connection with the sale of the Series 2019 Bonds and may not be reproduced or used in whole or in part for any other purpose. This Official Statement has been duly authorized and approved by the City and the SWPCA and duly executed and delivered on their behalf.

This Official Statement is not to be construed as a contract or agreement between the City and the purchasers or holders of any of the Series 2019 Bonds.

Concluding Statement

To the extent that any statements made in this Official Statement involve matters of opinion or estimates, such statements are made as such and not as representations of fact or certainty, and no representation is made that any of such statements will be realized. Information herein has been derived by the City from official and other sources and is believed by the City to be reliable, but such information other than that obtained from official records of the City has not been independently confirmed or verified by the City and its accuracy is not guaranteed.

This Official Statement has been duly prepared and delivered by the City and executed for and on behalf of the City by the following officials.

CITY OF STAMFORD, CONNECTICUT

By */s/ David R. Martin*
David R. Martin
Mayor

By */s/ Michael E. Handler*
Michael E. Handler
Director of Administration

WATER POLLUTION CONTROL AUTHORITY OF THE CITY OF STAMFORD

By */s/ William P. Brink*
William P. Brink, P.E., BCEE
Executive Director

Dated: June 12, 2019

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APPENDIX A – INFORMATION CONCERNING THE CITY

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History, Location and Other Information

Stamford, first settled in 1641, is Connecticut's third largest city by population. It was named the Town of Stamford in 1642 and was admitted to Connecticut in October 1662. In 1893, the City of Stamford, comprising the central portion of the Town of Stamford, was incorporated. Thereafter, the City of Stamford became a component part of the Town of Stamford resulting in two separate governments. On April 15, 1949, the Town and City were consolidated and named the City of Stamford (the "City"). The City covers an area of approximately 40 square miles located on Long Island Sound between Greenwich to the west and New Canaan and Darien to the east.

The City is less than one hour from New York City by rail or highway transportation. It is on the New Haven line of the Metro-North commuter railroad and also receives service from Shoreline East, Amtrak, and Conrail which provide daily passenger and freight service. It is served by interstate, intrastate, and local bus lines. The Connecticut Turnpike (I-95), the Boston Post Road (U.S. Route 1), and the Merritt Parkway (CT Route 15), traverse the City.

The City has a high concentration of national and international corporate headquarters, and it is the major retail trade center of Fairfield County, yet it maintains its suburban character and residential areas. The City offers its residents a high quality of life including good schools, a broad array of public services, attractive parks and recreational activities, and a safe living environment. Through sound urban planning the City has strengthened its downtown retail core, increased its housing and cultural facilities, and attracted major office development.

Restoration of the Mill River, which includes the creation of a new 28-acre urban park along its banks and a greenway leading from downtown Stamford to Long Island Sound, continues. The Mill River Park is spurring development and real estate tax revenues. Over 2,700 new residential units have been built or are in development around the perimeter of the park.

The second and final construction phase of the Stamford Urban Transitway (SUT), which provides automobile and enhanced bus, bike, and pedestrian connections between the Stamford Transportation Center and the City's East Side, which commenced in the first quarter of 2013, has been completed.

The 82-acre Harbor Point development in the South End continues under active construction. To date, more than 3,200 apartment units have been completed, are under construction, or have received approval to commence construction. The project includes 4,200 residential units of which ten percent are affordable housing; commercial space including office buildings, a grocery store, a waterfront hotel, restaurants, and a marina; more than 11 acres of parks and public spaces; a community school; and publicly accessible waterfront areas.

The University of Connecticut (UCONN) Stamford Branch now includes a new residence hall. Located just two blocks south of the campus, each of the 116 apartments is fully furnished with bedroom, living room and kitchen furniture. In 2018, UCONN expanded into two other apartment buildings and added another 100 beds to the original 350-bed dormitory. Stamford Hospital opened its new state-of-the-art, 650,000 square-foot building, a $450 million expansion that includes a new eleven-story hospital building and a central utility plant.

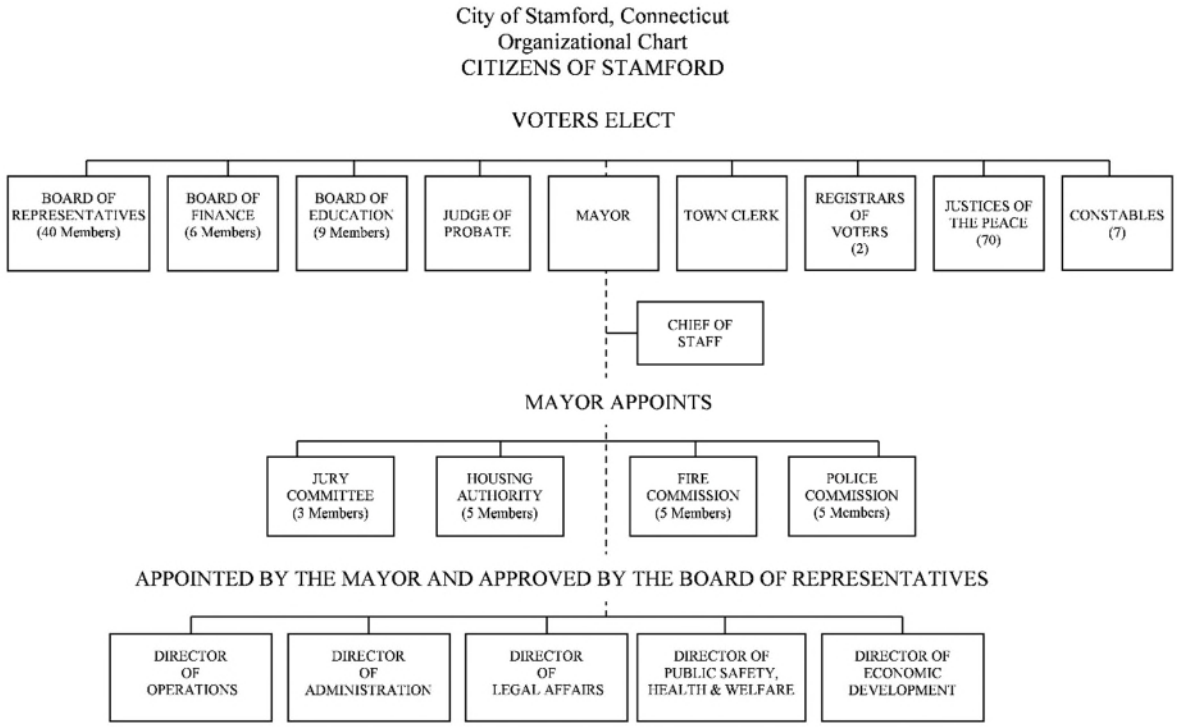
The City is an important residential suburb in one of the highest per capita income areas of the United States. Stamford's 2017 median household income in the Stamford metropolitan area was approximately $84,893 which was higher than the median income of approximately $73,781 for households in Connecticut.

Description of Government

The City operates under a Charter adopted in 1949 and most recently revised in November 2013. The 18th Charter Revision was undertaken in 2013 to correct discrepancies identified by the 2012 decennial charter review. The 2012 revisions mandated a Board of Ethics, created a Historic Preservation Advisory Commission, added a preamble concerning Citizens' Rights, created a single combined fire department consisting of the existing municipal department and the five volunteer companies, and made a number of technical changes to the Charter.

The chief executive officer of the City is the Mayor, who is elected for a four-year term of office. The legislative function is performed by a forty-member Board of Representatives whose members are elected, two from each of twenty districts, for four-year terms. The Board of Representatives adopts ordinances and resolutions and must approve all expenditures of funds. A six-member Board of Finance, elected to staggered three-year terms with provisions for representation of two major political parties, establishes fiscal policy and must approve all expenditures of funds.

The Director of Administration is appointed by the Mayor and confirmed by the Board of Representatives. Under the direction of the Mayor, the Director of Administration has supervision over the Controller's Office, Office of Policy and Management, Purchasing, Central Services, Assessment and Taxation, Community Development, Intergovernmental Grants, Technology Management Services and Risk Management. The Director of Administration is the Chief Fiscal Officer of the City and performs accounting of all funds showing all financial transactions for all commissions, boards, departments, offices, agencies, authorities, and other entities of the City. The Office of Administration provides certain support services for the Board of Education.



Administration

The Mayor, subject to the approval of the Board of Representatives, appoints five Directors to his cabinet: the Director of Operations, Director of Administration, Director of Legal Affairs, Director of Public Safety, Health and Welfare, and Director of Economic Development. The Directors serve at the Mayor's pleasure, and their terms are coterminous with the Mayor's term of office. The Mayor's Executive Aide also serves as a member of the cabinet.

DEMOGRAPHIC AND ECONOMIC DATA

Population Trends and Densities

Year	Actual Population	% Increase	Density [2]
2017 [1]	128,851	5.1%	3,229.3
2010	122,643	4.7%	3,073.8
2000	117,083	8.4%	2,934.4
1990	108,056	5.5%	2,708.2
1980	102,453	-5.8%	2,567.7
1970	108,798	17.3%	2,726.8
1960	92,713	--	2,323.6

[1] *American Community Survey 2013-2017.*

[2] *Per square mile: 39.9 square miles.*

Source: U.S. Department of Commerce, Bureau of Census.

Age Distribution of the Population

	City of Stamford		State of Connecticut	
Age	Number	Percent	Number	Percent
Under 5 years	7,502	5.8%	186,188	5.2%
5 to 9 years	7,444	5.8	206,536	5.7
10 to 14 years	6,987	5.4	225,831	6.3
15 to 19 years	6,973	5.4	249,777	6.9
20 to 24 years	9,030	7.0	245,849	6.8
25 to 34 years	22,005	17.1	439,239	12.2
35 to 44 years	18,186	14.1	433,401	12.1
45 to 54 years	17,157	13.3	535,611	14.9
55 to 59 years	8,495	6.6	266,501	7.4
60 to 64 years	7,267	5.6	229,788	6.4
65 to 74 years	9,776	7.6	318,515	8.9
75 to 84 years	5,049	3.9	167,133	4.6
85 years and over	2,980	2.3	90,109	2.5
Total**.....**	128,851	100%	3,594,478	100%
Median Age (Years) 2017.....	37.0		40.8	
Median Age (Years) 2010.[1].....	37.1		40.0	

[1] *U.S. Department of Commerce, Bureau of Census, 2010.*

Source: American Community Survey 2013-2017

Income Distribution

	City of Stamford		State of Connecticut	
Income	***Families***	***Percent***	***Families***	***Percent***
$ 0 - $ 9,999	575	1.9%	27,787	3.1%
10,000 - 14,999	289	1.0	16,143	1.8
15,000 - 24,999	1,521	5.0	41,072	4.6
25,000 - 34,999	2,012	6.7	52,218	5.8
35,000 - 49,999	2,873	9.5	82,371	9.2
50,000 - 74,999	4,135	13.7	134,356	15.0
75,000 - 99,999	3,404	11.3	122,244	13.6
100,000 - 149,999	4,903	16.2	186,352	20.8
150,000 - 199,999	3,050	10.1	100,359	11.2
200,000 and over	7,448	24.7	132,765	14.8
Total	30,210	100.0%	895,667	100.0%

Source: American Community Survey 2013-2017

Comparative Income Measures

	City of Stamford	State of Connecticut
Per Capita Income, 2017	$ 52,245	$ 41,365
Per Capita Income, 2010	$ 41,227	$ 36,775
Median Family Income, 2017	$ 102,164	$ 93,800
Median Family Income, 2010	$ 84,190	$ 84,170

Source: American Community Survey 2013-2017

Educational Attainment

	City of Stamford		State of Connecticut	
	Number	***Percent***	***Number***	***Percent***
Less than 9th grade	6,086	6.7%	104,623	4.2%
9th to 12th grade	4,183	4.6	137,877	5.6
High School graduate	19,190	21.1	673,582	27.2
Some college, no degree	13,313	14.6	422,535	17.0
Associate's degree	4,858	5.3	188,481	7.6
Bachelor's degree	23,787	26.2	532,055	21.5
Graduate or professional degree	19,498	21.4	421,144	17.0
Total	90,915	100.0%	2,480,297	100.0%
Total high school graduate or higher (%)		88.7%		90.2%
Total bachelor's degree or higher (%)		47.6%		38.4%

Source: American Community Survey 2013-2017

Employment Data

	City of Stamford		Percentage Unemployed		
Period	Employed	Unemployed	City of Stamford	Bridgeport/ Stamford Labor Market	State of Connecticut
March 2019.....	67,755	2,697	3.8	4.1	4.2
Annual Average					
2018.....	68,274	2,609	3.7	4.1	4.1
2017.....	67,672	2,861	4.0	4.7	4.7
2016.....	66,928	3,088	4.4	5.2	5.3
2015.....	65,931	3,225	4.7	5.5	5.6
2014.....	65,088	3,828	5.6	6.2	6.7
2013.....	63,290	4,329	6.4	7.3	7.9
2012.....	63,362	4,764	7.0	8.2	8.3
2011.....	63,868	7,974	7.2	8.2	8.8
2010.....	63,017	5,224	7.7	8.4	9.0
2009.....	62,721	4,972	7.3	7.8	8.2

Source: State of Connecticut, Department of Labor.

Industry Classification

	City of Stamford		State of Connecticut	
Sector	Number	Percent	Number	Percent
Agriculture, forestry, fishing and hunting, and mining.....	186	0.3%	7,166	0.4%
Construction.....	5,140	7.1	104,122	5.8
Manufacturing.....	3,673	5.1	191,519	10.6
Wholesale trade.....	1,128	1.6	44,741	2.5
Retail trade.....	6,614	9.1	193,016	10.7
Transportation warehousing, and utilities.....	2,307	3.2	68,926	3.8
Information.....	2,164	3.0	42,200	2.3
Finance, insurance, real estate, and leasing.....	9,585	13.2	163,810	9.1
Professional, scientific, management, administrative, and waste management.....	14,528	20.0	208,130	11.5
Education, health and social services.....	14,813	20.4	478,083	26.5
Arts, entertainment, recreation, accommodation and food services.....	7,163	9.9	153,679	8.5
Other services (except public admin.).....	3,666	5.1	82,538	4.6
Public Administration.....	1,507	2.1	67,156	3.7
Total Labor Force, Employed.....	72,474	100.0%	1,805,086	100.0%

Source: American Community Survey 2013-2017

Commute to Work

	City of Stamford		*State of Connecticut*	
	Number	***Percent***	***Number***	***Percent***
Drove alone	46,311	65.2%	1,387,093	78.2%
Car pools	6,194	8.7	143,925	8.1
Used public transportation	10,474	14.7	86,778	4.9
Walked	3,653	5.1	51,059	2.9
Used other means	1,023	1.4	19,988	1.1
Worked at home	3,399	4.8	85,156	4.8
***Total	71,054	100.0%	1,773,999	100.0%
Mean travel to work (minutes)	27.3		26.0	

Source: American Community Survey 2013-2017

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Major Employers

There are over 6,000 businesses located in Stamford. Its major employers include the following:

Employer	*Type of Business*
A+E Networks	Television Broadcasting
ABCorp	Payments (HQ)
Access Securities	Investment
Accurate Lock & Hardware Co	Hardware Merchant Wholesalers (HQ)
Adlon Therapeutics	Biotechnology (HQ)
ADP	Data Solutions
Affinion Group	Marketing (HQ)
Aircastle Limited	Aerospace Travel (HQ)
Americares Foundation	Other Individual & Family Services (HQ)
Amphenol Nexus Technologies	Electrical Controls (HQ)
Aon Corp	Insurance
Arcadia Inc	Building Material Dealers
Avant Busines Service	Consulting/Information Services
AXA XL Group Reinsurance	Reinsurance (US HQ)
Bartlett Tree Experts	Tree Services (HQ)
Bank Of America	Finance
Bank Of Ireland USA	Finance (US HQ)
Berkley Re America	Reinsurance (HQ)
BP Gas & Power North America	Commodities Trading
Bridgewater Associates	Investment Banking
Building & Land Technology	Land Development (HQ)
CA Technologies	Software Company
Cara Therapeutics	Biotechnology (HQ)
Castelton Commodities	Commodities Trading (HQ)
CBRE	Real Estate
CBS Interactive	Television Broadcasting
Centerplate/Sodoxo	Other Direct Selling Establishments (HQ)
Cenveo Inc	Commercial Banking (HQ)
Charter Communications Inc.	Cable Television (HQ)
Chelsea Piers CT Athletic Club	Leisure/Sports
Chief Executive Group	Publisher (HQ)
Chubb Tempest Re USA	Reinsurance (HQ)
Citibank, NA	Finance
City of Stamford	Government And Education
Club Quarters Hotels	Hospitality (HQ)
Colliers International	Real Estate
Columbus Circle Investors	Investment (HQ)
Conair Corp	Small Electrical Appliance Manufacturing
Crane Co	Industrial Products (HQ)
Crystal Rock	Food Products
Cummings & Lockwood	Law Firm (HQ)
Cushman & Wakefield	Real Estate
Cytec Solvay Group	Chemicals (Research Laboratories)
Daymon Worldwide	Food Research (HQ)
Deloitte	Public Accounting/Consulting
DeMet's Candy Company	Food Products (HQ)
Design Within Reach	Retail Furniture (HQ)
Deutsch Family Wine & Spirits	Food Products (HQ)
Elizabeth Arden/Revlon	Cosmetics
Empire State Realty Trust	Real Estate
Engelhart Commodities Trading Partners	Commodities Trading (US HQ)
Encompass Digital Media	Television Broadcasting
Equinor	Commodities Trading
Ernst & Young	Public Accounting/Consulting
Fairway Market	Retail Food
First County Bank	Commercial Banking (HQ)
First Reserve	Investment (HQ)
Five Mile Capital Partners	Portfolio Management (HQ)
Forevermark US	Diamond Mining (HQ)

Major Employers (continued)

Employer	*Type of Business*
Freepoint Commodities	Commodities Trading (HQ)
Fujifilm Medical Systems USA	Medical Instruments (HQ And Mfg.)
Gartner, Inc	IT Advisory Services (HQ)
GE Asset Management/State Street	Portfolio Management
Genpact	Professional Services
General Re Corp	Reinsurance (HQ)
Genworth Financial	Insurance
Gerald Metals	Commodity Trading Company (HQ)
Greenwich Associates	Investment (HQ)
GRT Corporation	Consulting/Information Services (HQ)
Guardian Life	Insurance
Grant Thorton	Consulting
Harman International Industries	Audio & Video Manufacturing (HQ)
Harvest Hill Beverage Co	Food Products (HQ)
Hexcel Corp.	Carbon Fiber Industrial Products Manufacturer (HQ)
Henkel North America Consumer Goods	Consumer Products (HQ)
High Ridge Brands	Consumer Products (HQ)
Hoffman Engineering	Equiptment Mfg (HQ)
Holland & Knight	Law Firm
IDW Media Holdings Inc	Marketing Consulting Services
Imbrim Therapeutics	Biotechnology (HQ)
Indeed.com	Online Employment (HQ)
Independence Holding Co.	Life And Health Insurer (HQ)
Informa	Publishing
ISG	Consulting (HQ)
ITV America	Television Production
Jefferies Group LLC	Securities Brokerage
JLL	Real Estate
Kayak.com	Travel Services (HQ)
K2 Advisors LLC	Investment (HQ)
KPMG	Consulting
Legg Mason	Finance
Lockwood Group	Marketing Consulting Services (HQ)
Lord & Taylor	Department Store
Lovesac	Furniture Manufacturer (HQ)
Loxo Oncology	Biotechnology (HQ)
Malkin Properties	Real Estate
Mass Mutual Financial Group	Insurance
Mayborn USA/Tommee Tippee	Consumer Products (US HQ)
McKinsey & Company	Consulting
Merrill Lynch Wealth Mgmt	Investment
MKM Partners LLC	Investment (HQ)
Navigators Group Inc	Insurance (HQ)
NBC Sports Group	Digital Media (HQ)
NBCUniversal	Media
Nielsen Sports	Market Research (HQ)
Nestle Waters North America	Consumer Products (HQ)
Newmark Knight Frank	Real Estate
Northern Trust Co	Portfolio Management
Northwestern Mutual	Finance
Novitex/Exela Technologies	Document Outsourcing (HQ)
Octagon Sports	Public Relations (HQ)
Odyssey Re Holdings Corporation	Reinsurance (HQ)
Omnicom Group	Digital Media
Oracle	Software
Oshaughnessy Asset Mgmt	Investment (HQ)
PartnerRe	Reinsurance (HQ)
Passur Aerospace	Aviation Services (HQ)
Patriot Bank	Finance (HQ)

Major Employers (continued)

Employer	*Type of Business*
PDC Brands	Consumer Products (HQ)
Peppers & Rogers Group	Marketing Consultant (HQ)
Perkins Eastman	Architectural Services
Philip Morris Capital Corporation	Financing Services
Philips North America Consumer Health	Consumer Products (HQ)
Pitney Bowes, Inc.	Technology & Data (HQ)
Point 72 Asset Management, LP	Investment Banking (HQ)
PriceWaterhouseCoopers	Public Accounting/Consulting
Privacyguard	Financial Technology (HQ)
Purdue Pharma LP	Biotechnology (HQ)
Revolution Lighting	Lighting Manufacturing (HQ)
RHONE Apparel	Clothing (HQ)
Rochdale Securities	Finance
Rosco Laboratories Inc	Lighting Manufacturing (HQ)
RBS/Natwest Markets	Investment Banking (US HQ)
RSM US	Public Accountants
Sema4	Biotechnology (HQ)
Shenkman Capital Management, Inc.	Investment
Shipman & Goodwin	Law Firm
Silgan Holdings	Metal Products (HQ)
Soule, Blake & Wechsler	Manufacturing (HQ)
Springworks Therapeutics	Biotechnology (HQ)
Stamford Health Group	Medical Care (HQ)
Stamford Hospital	General Medical & Surgical Hospitals
Stamford Tent & Event Services	Tent Rental HQ)
Stamford Town Center	Retail Stores
Star Group, LP	Liquefied Petroleum Gas Dealers (HQ)
Starwood Hotels/Marriott International	Leisure
Stonehenge Capital	Investment Company
Synapse Group	Marketing (HQ)
Synchrony Financial	Finance (HQ)
Tasty Bite/MARS Foods	Food Manufacturing (HQ)
The Junkluggers	Moving Company (HQ)
The Peoples Court	Television Broadcasting (HQ)
This Old House Ventures	Television Broadcasting (HQ)
Thomson-Reuters	Publishing, Business Information
Tiger Risk Partners	Insurance (HQ)
Tokio Millennium Re	Reinsurance (HQ)
Tradition Energy	Financial (HQ)
Trafigura	Commodities Trading
Tronox Limited	Manufacturing (HQ)
Tudor Investment Corporation	Investment (HQ)
Tweedy Browne	Financial Services (HQ)
U.S. Beverage	Food Products (HQ)
Uber	Transport Company
UBS AG	Investment Banking
United Rentals Inc	Industrial Equipment Rental (HQ)
US Game Systems	Family Game Company (HQ)
US Trust	Banking
Vineyard Vines	Clothing Manufacturing (HQ)
Voyager Aviation	Aviation Services (HQ)
Wiggin & Dana	Law Firm
Willis Towers Watson	Consulting Firm
World Wrestling Entertainment Inc	Professional Wrestling And Television Production
XFL	Sports League (HQ)
Yankee Entertainment & Sports Network	Television Broadcasting
Zimmer Biomet US	Biotechnology

Office Vacancy Rates

Calendar Year	Stamford Central Business District		Stamford Non-Central Business District		Fairfield County	
	Square Feet Existing	Vacancy Percent	Square Feet Existing	Vacancy Percent	Square Feet Existing	Vacancy Percent
2018	7,258,726	30.0%	9,015,096	33.3%	39,433,690	25.3%
2017	7,258,726	26.9	9,039,096	27.6	39,652,863	23.1
2016	7,293,182	28.4	9,404,397	24.2	41,505,969	21.8
2015	7,293,182	21.1	9,210,464	23.3	41,573,889	21.2
2014	6,822,182	24.8	9,201,361	22.6	41,081,786	20.5
2013	6,745,182	26.5	8,809,933	23.5	40,266,524	20.8
2012	6,776,181	21.2	8,873,350	22.4	41,881,271	18.3
2011	6,832,948	23.1	8,405,596	22.7	40,890,889	19.1
2010	6,832,948	23.4	8,027,525	25.1	40,412,871	18.9
2009	6,741,182	16.9	8,061,946	19.1	40,041,515	14.7
2008	6,308,281	14.2	8,243,247	15.8	39,581,321	12.5

Source: Cushman & Wakefield (Includes Class A & B office space)

Value of Building Permits

Fiscal Year Ended 6/30	Residential	Commercial/ Industrial	Apartments/ Condominiums	Total
2019 [2]	$ 48,479,407	$ 182,338,108	$ 114,420,877	$ 345,238,392
2018	52,304,733	214,661,109	113,536,424	380,502,266
2017	68,821,719	184,241,380	88,194,486	341,257,585
2016	56,659,245	142,147,387	194,532,051	393,338,683
2015	87,759,615	159,444,138	73,665,429	320,869,182
2014	65,995,312	135,532,057	150,156,105	351,683,474
2013	59,554,447	380,202,667	N/A[1]	439,757,114
2012	60,861,801	203,491,861	N/A[1]	264,353,662
2011	52,586,486	261,632,862	N/A[1]	314,219,348
2010	48,768,097	143,898,869	N/A[1]	192,666,966

[1] *Included in residential values*

[2] *As of 3/31/19.*

Source: City of Stamford.

Age Distribution of Housing

Year Built	City of Stamford		State of Connecticut	
	Units	Percent	Units	Percent
1939 or earlier	8,026	15.1%	338,011	22.4%
1940 to 1969	19,695	37.0	535,477	35.5
1970 to 1979	6,939	13.0	200,217	13.3
1980 to 1989	7,500	14.1	191,939	12.7
1990 to 1999	3,953	7.4	114,261	7.6
2000 or 2009	4,421	8.3	105,131	7.0
2010 or later	2,723	5.1	22,675	1.5
Total Housing Units	53,257	100.0%	1,507,711	100.0%

Source: American Community Survey 2013-2017

Housing Units by Type of Structure

	City of Stamford		State of Connecticut	
Housing Units	**Units**	**Percent**	**Units**	**Percent**
1-unit, detached	20,476	38.4%	892,621	59.2%
1-unit, attached	3,972	7.5	81,393	5.4
2 units	4,573	8.6	123,040	8.2
3 or 4 units	4,713	8.8	130,914	8.7
5 to 9 units	3,012	5.7	82,787	5.5
10 to 19 units	1,976	3.7	56,540	3.8
20 or more units	14,506	27.2	128,477	8.5
Mobile home	18	0.0	11,564	0.8
Boat, RV, van, etc.	11	0.0	375	0.0
Total Inventory	53,257	100.0%	1,507,711	100.0%

Source: American Community Survey 2013-2017

Housing Vacancy Rates

	City of Stamford		State of Connecticut	
Housing Units	**Units**	**Percent**	**Units**	**Percent**
Occupied Housing Units	48,647	91.3%	1,361,755	90.3%
Vacant Housing Units	4,610	8.7%	145,956	9.7%
Total Units	53,257	100.0%	1,507,711	100.0%
Homeowner Vacancy Rate	–	2.3	–	1.9
Rental Vacancy Rate	–	5.5	–	6.6

Source: American Community Survey 2013-2017

Owner-Occupied Housing Units

	City of Stamford		State of Connecticut	
Specified Owner-Occupied Units	**Number**	**Percent**	**Number**	**Percent**
Less than $50,000	344	1.3%	24,038	2.7%
$50,000 to $99,000	144	0.5	29,789	3.3
$100,000 to $149,999	374	1.4	83,320	9.2
$150,000 to $199,000	866	3.3	141,024	15.6
$200,000 to $299,999	2,884	10.9	244,356	26.9
$300,000 to $499,999	8,070	30.6	236,671	26.1
$500,000 or more	11,166	42.3	106,192	11.7
$1,000,000 or more	2,558	9.7	41,408	4.6
Total	26,406	100.0%	906,798	100.0%
Median Value	$516,000		$270,100	

Source: American Community Survey 2013-2017

Number and Size of Households

Household Characteristics	City of Stamford		State of Connecticut	
	Number	Percent	Number	Percent
Persons in households	127,699	–	3,478,451	–
Persons per household (average)	2.63	–	2.55	–
Persons per family (average)	3.25	–	3.15	–
Family households	30,210	62.1%	895,667	65.8%
Non-family households	18,437	37.9%	466,088	34.2%
All households	48,647	100.0%	1,361,755	100.0%
Family households by type				
Married couple	22,831	75.6%	664,611	74.2%
Female householders, no spouse	5,528	18.3%	171,544	19.2%
Other	1,851	6.1%	59,512	6.6%
Total family households	30,210	100.0%	895,667	100.0%
Non-family households by type				
Householders living alone	13,965	75.7%	383,275	82.2%
Other	4,472	24.3%	82,813	17.8%
Total non-family households	18,437	100.0%	466,088	100.0%

Source: American Community Survey 2013-2017

Land Use Summary

Land Use Category	Total Area	
	Acres	Percent
Zoned for single family	19,664	80.0%
Zoned for multi-family	1,915	7.8%
Zoned for mixed use	494	2.0%
Zoned for business	670	2.7%
Zoned for industry	982	4.0%
Zoned for open space	864	3.5%
Total	24,589	100.0%

Source: City of Stamford.

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APPENDIX B – AUDITED FINANCIAL STATEMENTS OF THE SWPCA FOR THE YEAR ENDED JUNE 30, 2018

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STAMFORD WATER POLLUTION CONTROL AUTHORITY

AN ENTERPRISE FUND OF THE CITY OF STAMFORD, CONNECTICUT

FINANCIAL STATEMENTS

AND SUPPLEMENTARY INFORMATION

FOR THE YEARS ENDED JUNE 30, 2018 AND 2017

STAMFORD WATER POLLUTION CONTROL AUTHORITY
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INTRODUCTORY SECTION

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Letter of Transmittal

December 28, 2018

To: Mayor David R. Martin
Board of Finance
Board of Representatives
SWPCA Board
Citizens of Stamford

Introduction

I am pleased to transmit the audited financial statements of the Stamford Water Pollution Control Authority ("SWPCA") for the fiscal year ended June 30, 2018 in compliance with Connecticut State law. The SWPCA management assumes full responsibility for the completeness and reliability of the information contained in this report. A framework of internal control has been established by the management of the SWPCA. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable rather than absolute assurance that the financial statements are free of any material misstatements.

Blum, Shapiro & Company, P.C., a firm of licensed certified public accountants, has issued an unmodified opinion on the SWPCA's financial statements for the year ended June 30, 2018. The independent auditors' report is located at the front of the financial section of this report.

Management's Discussion and Analysis ("MD&A") immediately follows the independent auditors' report and provides a narrative overview and analysis of the basic financial statements. The MD&A complements this letter of transmittal and should be read in conjunction with it.

The SWPCA adheres to financial policies and procedures adopted by the City of Stamford's Board of Finance. Such policies include procurement, accounts payable, accounts receivable, cash receipts, and capital project funding among others. The SWPCA also adheres to financial policies established by its Board regarding setting rates and charges for sewer use, collection of user charges, and maintenance of cash reserves. These policies and procedures are intended to help the SWPCA maintain a sound financial position and also help ensure that the SWPCA meets all of the requirements set forth by State and federal regulations.

The Stamford Water Pollution Control Authority

Ordinance No. 803, adopted November 6, 1996, established the SWPCA. Prior to that date, wastewater collection and treatment was performed as a function under the City of Stamford's Office of Operations. The SWPCA was established pursuant to Chapter 103, Sections 7-245 through 7-273a inclusive of the Connecticut General Statutes. The Authority was created to operate the Water Pollution Control Facility ("treatment plant"), sanitary sewer system, sanitary

pumping stations, and the Hurricane Barriers ("flood protection system") for the City of Stamford; to use, equip, re-equip, repair, maintain, supervise, manage, operate, and perform any act pertinent to the collection, transportation, treatment, and disposal of wastewater. Wastewater is treated through the processes installed during the treatment plant upgrade and expansion project which was completed in 2006. The treatment plant has capacity to treat an annual average flow of 24 million gallons of wastewater per day ("MGD"). During the fiscal year ended June 30, 2018 the flow to the plant averaged approximately 15.2 MGD. The plant has adequate reserve capacity for the growth that is currently occurring in Stamford.

Service Area

The SWPCA's service area includes residential, commercial, government, and non-profit customers in the City of Stamford, Connecticut ("Stamford") and the adjacent Town of Darien, Connecticut ("Darien"). The customer base served by the SWPCA consists of a diverse mix of residential and commercial customers. In Stamford, approximately 90% of customers are residential (including home owners, condominium owners, and renters) and 10% of customers are commercial, governmental, or industrial in nature. The service area boundaries for Stamford are the Merritt Parkway to the north, the Noroton River on the east, Old Greenwich on the west, and Long Island Sound to the south.

Darien pumps wastewater to the east side of Stamford where the wastewater is then conveyed through the SWPCA collection system to the treatment plant. The service area boundaries for Darien are the City of Norwalk on the east, the Merritt Parkway on the north, and Long Island Sound to the south. Darien is solely responsible for the operation and maintenance of all of its pumping stations, its collection system, and all border crossings.

The Interlocal Agreement between the SWPCA and Darien dated December 3, 2013, which replaced previous agreements dating from 2001 and 1971, provides a formula for compensation to the SWPCA for operation and maintenance costs and for capital improvements of SWPCA's treatment plant and collection sewers which convey Darien's wastewater. Based on this formula, Darien was responsible for 13.3% of such costs in the fiscal year ended June 30, 2018. A portion of the cost of capital improvements to the SWPCA's treatment plant was similarly paid by Darien using the same cost sharing ratio. The total payment by Darien was based on its share of the SWPCA's operating and maintenance costs and capital investment amounts, plus any adjustments to the previous year's bill. The Interlocal Agreement expired on July 1, 2018 and SWPCA and Darien are negotiating its renewal for another 5 year term.

Physical Assets

The physical assets of the SWPCA include 23 wastewater pumping stations, about 250 miles of sanitary sewers, and the wastewater treatment facility.

Management and Organization

The SWPCA Board of Directors (the "Board") consists of nine members. By ordinance, the Board includes the City's Director of Administration and Director of Operations, the Chairman of the Board of Finance (or his/her designee), the President of the Board of Representatives (or his/her designee), and five at-large members, one of whom must be a financial professional and another an engineer.

The Mayor, with the approval of the Board of Representatives, appoints the City's Directors of Administration and Operations. SWPCA Board members from the Board of Finance and the Board of Representatives are elected in citywide elections. The five at-large Board members are

recommended by either the Democratic or Republican Town Committee and interviewed by the Mayor, who then recommends their appointment to the Board of Representatives for its approval. Each of the at-large Board members is appointed for a three-year term. There are no term limits; therefore, at-large members may serve multiple terms.

The members of the Board on June 30, 2018 were:

Michael E. Handler, Director of Administration and Chairman
Daniel E. Capano, At-Large and Vice Chairman
Kieran Ryan, Board of Finance
Monica DiCostanzo, Board of Representatives
Cristina Andreana, At-Large (financial professional)
Merritt Nesin, At-Large (engineer)
Edward Kelly, At-Large

William P. Brink, P.E., BCEE is SWPCA's Executive Director, a position he has held since March of 2013.

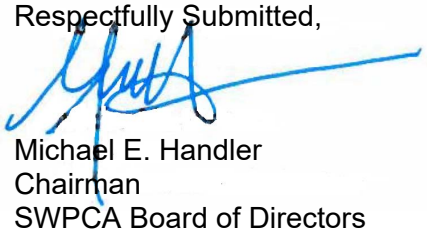
Rates and Charges

The SWPCA, through its Board of Directors, is responsible for setting the sewer use charge billing rate and imposing other fees and charges for all of its customers in Stamford. The Board requires that rates be maintained at levels sufficient to pay for operating and maintenance costs of the collection and treatment system, to pay debt service on outstanding debt, and to provide for appropriate reserves. The SWPCA bills its ratepayers semiannually, in October and April, and it bills Darien annually, typically in November.

Capital Improvement Plan

The SWPCA continues to execute its long-term capital improvement plan and is in the process of conducting engineering studies and designs in conjunction with its construction and equipment upgrade / replacement projects. These are detailed in the Management Discussion and Analysis section of this financial report.

Respectfully Submitted,



Michael E. Handler
Chairman
SWPCA Board of Directors

FINANCIAL SECTION

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Independent Auditors' Report

The City of Stamford
Board of Finance
Stamford Water Pollution Control Authority
Stamford, Connecticut

We have audited the accompanying financial statements of the Stamford Water Pollution Control Authority (the SWPCA) (an Enterprise Fund of the City of Stamford, Connecticut) as of and for the years ended June 30, 2018 and 2017, and the related notes to the financial statements, which collectively comprise the SWPCA's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

Our responsibility is to express 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. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of 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 auditors' 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 auditors consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the SWPCA 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.

An independent member of Baker Tilly International

Change in Accounting Principle

As discussed in Note 13 to the financial statements, during the fiscal year ended June 30, 2018, the SWPCA adopted new accounting guidance, GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other than Pensions.* Due to the adoption of this guidance the SWPCA restated its 2017 financial statements, resulting in a restatement of the June 30, 2016 net position to recognize the net position liability requires in implementing GASB No. 75. Our opinion is not modified with respect to this matter.

Emphasis of Matter

As discussed in Note 1, the financial statements present only the SWPCA and do not purport to, and do not, present fairly the financial position of the City of Stamford, Connecticut, as of June 30, 2018 and 2017, and the changes in its financial position and its cash flows, where applicable, for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

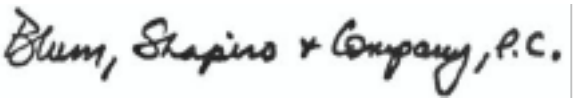
Accounting principles generally accepted in the United States of America require that management's discussion and analysis, as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required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

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the SWPCA's basic financial statements. The letter of transmittal, budgetary comparison information, and the statistical section are presented for purposes of additional analysis and are not a required part of the financial statements.

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

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



West Hartford, Connecticut
December 28, 2018

STAMFORD WATER POLLUTION CONTROL AUTHORITY
Management's Discussion and Analysis
For the Year Ended June 30, 2018

This discussion and analysis of the Stamford Water Pollution Control Authority ("SWPCA") is intended to provide an overview of the SWPCA's financial activities for the fiscal year ended June 30, 2018. Please read it in conjunction with the letter of transmittal and the financial statements that follow this section.

Financial Highlights

- As of June 30, 2018, the SWPCA's total assets and deferred outflows of resources ($191.6 million) exceeded its total liabilities and deferred inflows ($108.3 million), resulting in total net position of $83.3 million. Net position increased $5.5 million versus the prior year-end period (as restated) primarily due to an increase in unrestricted net position ($10.5 million) offset by a decrease in net investment in capital assets ($5.0 million).

- Operating revenues in fiscal 2018 were $24.7 million, compared to $24.1 million in the prior year primarily reflecting an increase in Sewer Use Charges ($.5 million) and Fees and Other Income ($0.1 million). Operating expenses were $19.2 million versus $18.2 million the prior year (as restated). Operating income was $5.5 million as compared to $5.9 million in the prior year (as restated).

- As noted above, total net position increased $5.5 million (7.0%), to $83.3 million. The unrestricted part of net position increased to $26.9 million and represents approximately 109% of operating revenue, compared to approximately 68% in the prior year (as restated).

- Current assets increased by $8.8 million, primarily reflecting an increase in unrestricted cash and investments ($6.1 million) and an increase in due from general fund ($6.2 million) offset by a decrease in sewer connection charges ($3.6 million). Days sales outstanding ("DSO") for the gross usage charges accounts receivable increased by 2 days to 58 days from the prior year.

- Current liabilities decreased by $0.7 million, primarily due to decreases in accounts payable ($.3 million) and accrued liabilities ($.4 million).

- Long term debt outstanding – including general obligation bonds, revenue bonds, and notes payable – decreased by $.4 million to $98.7 million as of June 30, 2018 reflecting debt service payments of $6.8 million offset by a cross over refunding issue including bond premium of $6.4 million. The SWPCA's outstanding debt is rated Aa2 by Moody's Investors Service and AA+ by Standard & Poor's.

- The SWPCA's capital assets, net of accumulated depreciation, decreased by about $.3 million to $135.1 million versus the prior period. Depreciation expense of $6.0 million was offset by capital asset additions of $5.7 million during the fiscal year. The SWPCA's capital assets and available operating capacity are considered sufficient to meet the City of Stamford's (the "City's") currently foreseeable needs for the SWPCA's services. $7.7 million of unexpended bond proceeds from the 2015 and 2013 debt issuance is available to fund authorized capital projects.

- The SWPCA continues to use the City for certain back-office support services such as payroll, accounts payable, procurement, IT tech support, etc., which would not be cost efficient to implement internally at the present time. The City is reimbursed for the cost of these support services.

Overview of the Financial Statements

The SWPCA's financial statements are comprised of: 1) basic financial statements, including a Statement of Net Position; a Statement of Revenues, Expenses and Changes in Net Position; and a Statement of Cash Flows; 2) Notes to Financial Statements; and 3) Required Supplementary Information. The Schedule of Revenues and Expenses on a Budgetary Basis, transmittal letter and statistical section are presented for purposes of additional analysis. The accompanying statistical section provides trend comparisons of selected financial and non-financial information over a number of years.

The SWPCA's financial statements are designed to provide readers with a general understanding of the SWPCA's finances in a manner similar to those for a private-sector business. All the resources which the SWPCA has at its disposal are reported, including major capital assets such as buildings, equipment and infrastructure. In addition, a thorough accounting of the costs of the SWPCA's operations is provided.

Statement of Net Position.
The Statement of Net Position presents information on all of the SWPCA's assets, deferred inflows of resources and liabilities, with the difference reported as net position.

Statement of Revenues, Expenses and Changes in Net Position.
The Statement of Revenues, Expenses and Changes in Net Position present information regarding the SWPCA's changes in net position during the most recent fiscal year on an accrual basis.

Statement of Cash Flows.
The Statement of Cash Flows presents information on where cash came from and how it was used.

The financial statements (Statement of Net Position, Statement of Revenues, Expenses and Changes in Net Position and the Statement of Cash Flows) are presented on pages 13-15 of this report.

Notes to the Financial Statements.
The notes provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes to the financial statements are presented on pages 16-35 of this report.

Annual Revenue and Expense Budgets

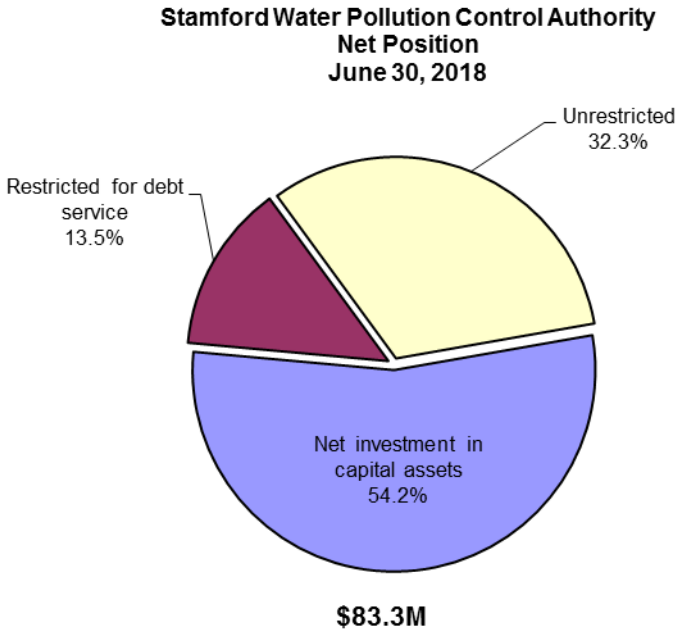
The Board of Directors of SWPCA and the City's Board of Finance and Board of Representatives review and approve annual revenue and expense budgets for the SWPCA. From a reporting standpoint, the SWPCA is reported as an Enterprise Fund. Budgetary comparison statements are provided to demonstrate compliance with the authorized budget and are presented on pages 36-37 of this report.

Financial Analysis

The SWPCA's total net position (excess of assets over liabilities) was $83.3 million at June 30, 2018. The SWPCA's unrestricted net position increased by approximately $10.5 million to approximately $26.9 million at June 30, 2018 and provided additional financial flexibility to meet the needs of the SWPCA's customers and creditors.

Stamford Water Pollution Control Authority
Net Position (in Thousands)

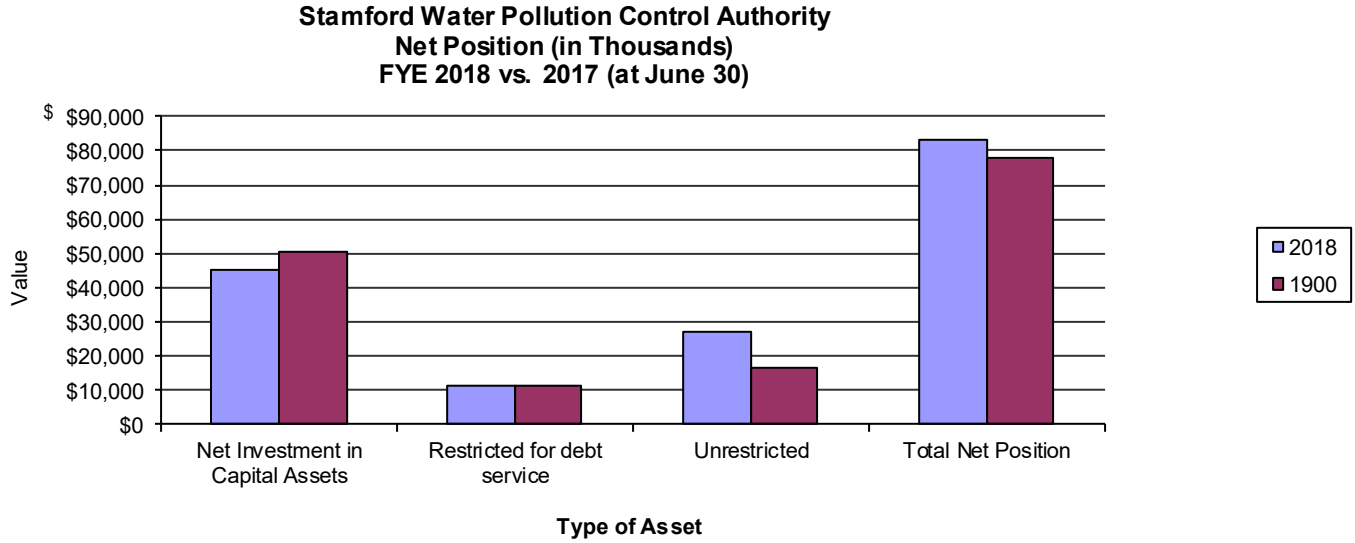
	June 30, 2018	June 30, 2017 (Restated)	$ Change	% Change
Assets:				
Current Assets	$ 27,608	$ 18,766	$ 8,842	
Restricted Cash	18,925	23,980	(5,055)	
Non-Current Assets (special assessments)	7,997	7,047	950	
Capital Assets (net of depreciation)	135,079	135,351	(272)	
Total Assets	189,609	185,144	4,465	
Deferred Outflows of Resources:	2,026	1,826	200	
Current Liabilities	8,840	9,517	(677)	
Long-term Liabilities	98,922	99,160	(238)	
Total Liabilities	107,762	108,677	(915)	
Deferred Inflows of Resources:	527	435	92	
Net Position:				
Net investment in capital assets	45,196	50,217	(5,021)	-10.0%
Restricted for Debt Service	11,247	11,170	77	0.7%
Unrestricted	26,903	16,471	10,432	63.3%
Total Net Position	$ 83,346	$ 77,858	$ 5,488	7.0%



A common measure of liquidity is the current ratio (current assets divided by current liabilities); it helps determine whether, over the next year, the SWPCA will have sufficient cash and readily liquid assets on hand to finance its short term cash requirements. As of June 30, 2018, the SWPCA's current ratio was 3.12 to 1 as compared to 1.97 to 1 at the prior year-end.

In fiscal year 2018, net working capital (current assets minus current liabilities) improved by $9.5 million to $18.8 million, primarily reflecting increases of $6.1 million in unrestricted cash and investments and $6.2 million in amounts due from other funds and decreases in accounts payable ($ .3 million) and accrued liabilities ($.4 million) offset by a decrease in accounts receivable from sewer connection fees ($3.6 million). During the past year, the SWPCA has maintained a positive pooled cash balance and has not required any cash advances from the City to cover short-term cash needs. The SWPCA's goal is to continue to improve its financial position and generate cash flows that are sufficient to meet its infrastructure repair and replacement needs. Steps taken have included:

- Increasing the sewer use charge billing rate for the October 2017 and April 2018 billing cycles
- Budgeting for an increase in cash reserves of $1.0 million in fiscal year 2019



Net Position – Net Investment in Capital Assets.
At June 30, 2018, the largest portion of the SWPCA's $83.3 million in net position (approximately 54%) relates to its investment in capital assets (land, buildings, machinery, equipment, etc.), net of accumulated depreciation, unexpended bond proceeds, and any other outstanding debt used to acquire those assets. The SWPCA uses these capital assets to provide services to its customers; consequently, these assets cannot be readily liquidated and are not available to fund future spending needs and the resources needed to repay this debt must be provided from other sources (sewer use charges, fees and other income, etc.).

Net Position – Restricted.
A portion of the SWPCA net position is restricted for debt service. Cash balances are held in restricted trust accounts in accordance with the indenture requirements related to the 2013 and 2015 Revenue Bond issuances. Of the SWPCA's $83.3 million in total net position as of June 30, 2018, $11.2 million (approximately 14% of the total), was restricted and may not be used to fund the SWPCA's day-to-day operations.

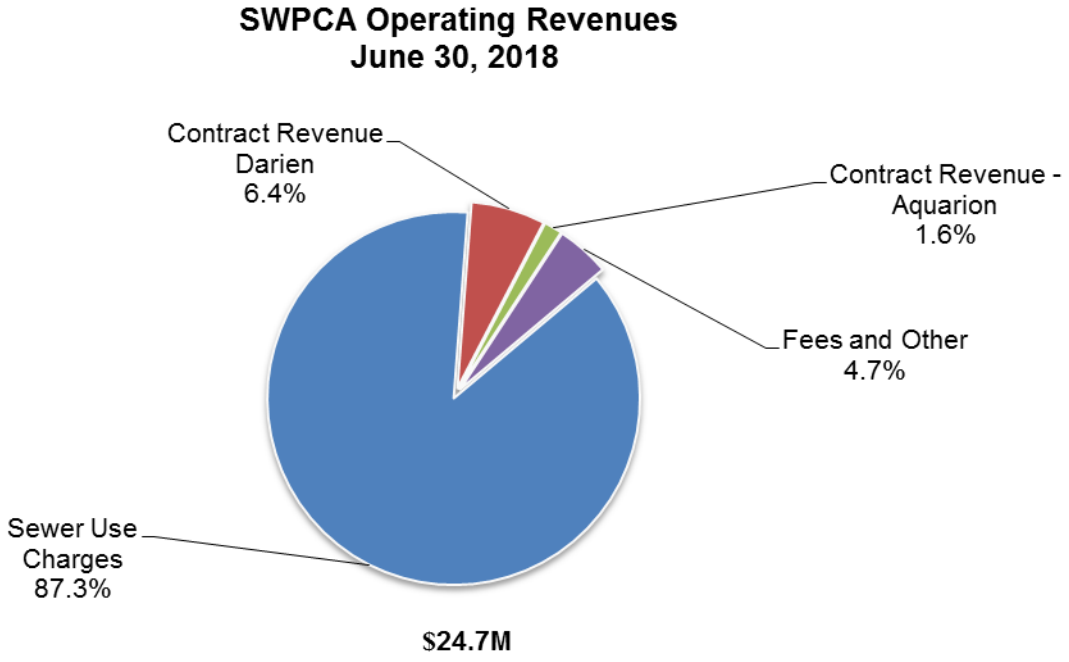
Net Position – Unrestricted.
Of the SWPCA's total net position at June 30, 2018, $26.9 million, or approximately 32%, was unrestricted and available to be used to meet the SWPCA's obligations to customers, creditors, and day-to-day operations.

Statement of Revenues
Expenses and Other Changes
in Net Position (in Thousands)

	Fiscal 2018	Fiscal 2017 (Restated)	$ Change
Operating revenues	$ 24,708	$ 24,135	$ 573
Operating expenses	19,229	18,187	1,042
Net Operating Income	5,480	5,948	(469)
Nonoperating revenue (expenses)	272	669	(397)
Capital contributions - Grant	191	66	125
Transfers out	(455)	(398)	(57)
Change in Net Assets	5,488	6,285	(797)
Net position - beginning of year	77,858	71,573	6,285
Net Position - End of Year	$ 83,346	$ 77,858	$ 5,488

Operating Revenues and Expenses

Revenues.
In fiscal year 2018, the SWPCA's operating revenue included sewer use charges for both City and Town of Darien customers were approximately 94% of total operating revenue and Aquarion contract revenue, fees and other income were approximately 6% of total operating revenue.

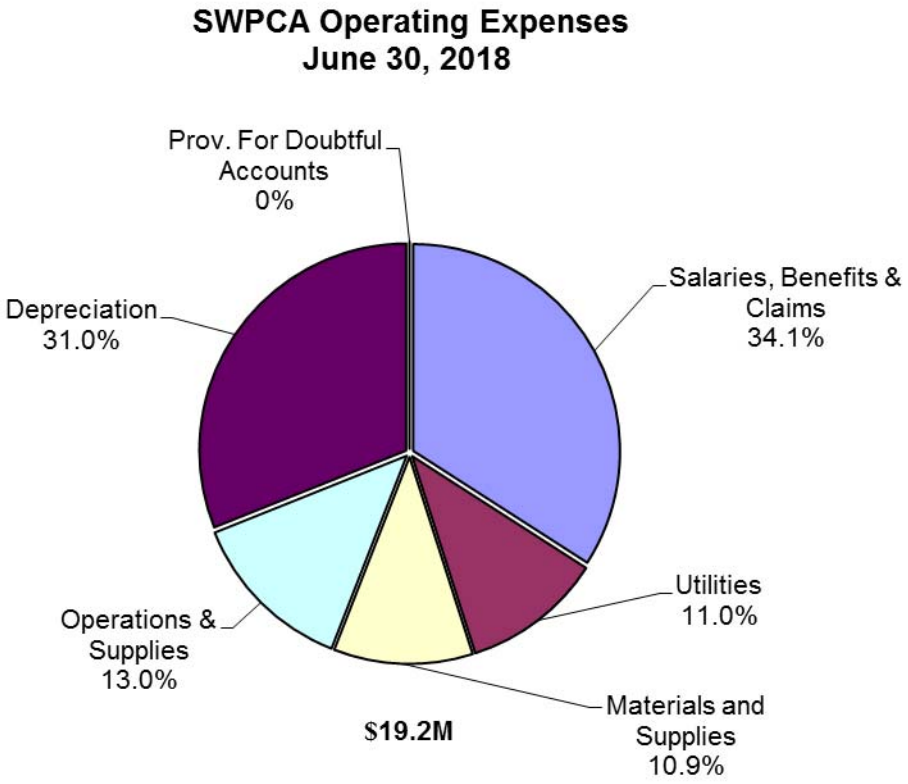


The original fiscal year 2018 revenue estimate for sewer use charges was $19.8 million prior to actual consumption data being available. At the annual rate setting meeting, adjustments were made to account for collection rate assumptions, estimates of other revenue, and indenture requirements for debt service coverage. Based on these adjustments, the sewer use charge billing rate was set at $4.88 per CCF, resulting in an annual billing, and an adjusted original budget, of $20.2 million (based on assumed consumption of 4.23 million CCFs). After adjustments (e.g., off-cycle charges, cancel/rebill charges), the amount of revenue billed in fiscal year 2018 based on actual consumption of 4.17 million CCFs was $20.3 million.

Fiscal year 2018 operating revenues totaled $24.7 million (as compared to $24.1 million the prior year) and included sewer use charges, lien fees and interest ($21.1 million), contract revenues ($1.6 million and $0.4 million, from Darien and Aquarion, respectively), other reimbursements ($.4 million) and fees and other income ($1.2 million, with the largest portion of this amount being attributable to revenue from the State of Connecticut's nitrogen credit trading program).

Despite the challenging economic environment, the collection rate for sewer use charges during fiscal year 2018 was approximately 98% (vs. approximately 97% in the prior year).

Expenses.
In fiscal year 2018 the SWPCA's operating expenses totaled $19.2 million (as compared to $18.2 million the prior year, as restated), and consisted of salaries, employee benefits and claims ($6.6 million), utilities costs ($2.1 million), materials and supplies ($2.1 million), operations and supplies ($2.5 million) and depreciation ($6.0 million).



Net Non-Operating Revenue (Expense), Capital Contributions and Transfers Out.

The SWPCA's fiscal year 2018 non-operating revenue of $3.8 million included special assessments and connection charges ($2.5 million), capital reimbursements from Darien ($.9 million), interest income ($.2 million) and Connecticut Clean Water Grant funds ($.2 million); non-operating expense and transfers out was primarily interest expense ($3.3 million) and transfers to the City ($.5 million). Additional information on revenue and expense budgetary information is contained in the Supplementary and Other Information section of the financial statements.

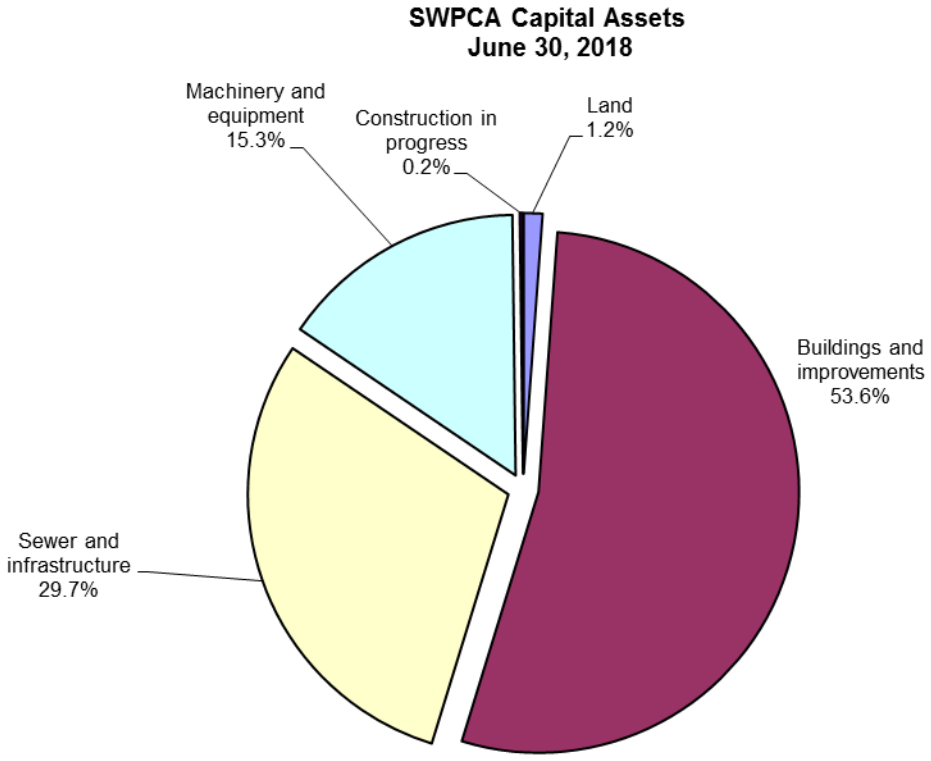
Capital Assets

As of June 30, 2018, the SWPCA had total capital assets, net of accumulated depreciation, of approximately $135.1 million, as follows:

Stamford Water Pollution Control Authority
Capital Assets (in Thousands)

	June 30, 2018	June 30, 2017	$ Change
Land	$ 2,833	$ 2,833	$ -
Buildings and improvements	130,912	125,710	5,202
Sewer and infrastructure	72,603	72,156	447
Machinery and equipment	37,421	37,389	32
Construction in progress	493	475	18
Subtotal	244,262	238,563	5,699
Less accumulated depreciation	(109,183)	(103,212)	(5,971)
Total	$ 135,079	$ 135,351	$ (272)

Additional information on capital assets is presented in Note 4 on page 22 of this report.



SWPCA Capital Projects.
The SWPCA typically manages multiple concurrent capital projects. The projects are categorized as engineering studies, engineering design, building construction and equipment replacement (or upgrades), and sanitary sewer systems repairs or extensions. Capital projects completed or ongoing during the fiscal year ended June 30, 2018 were as follows:

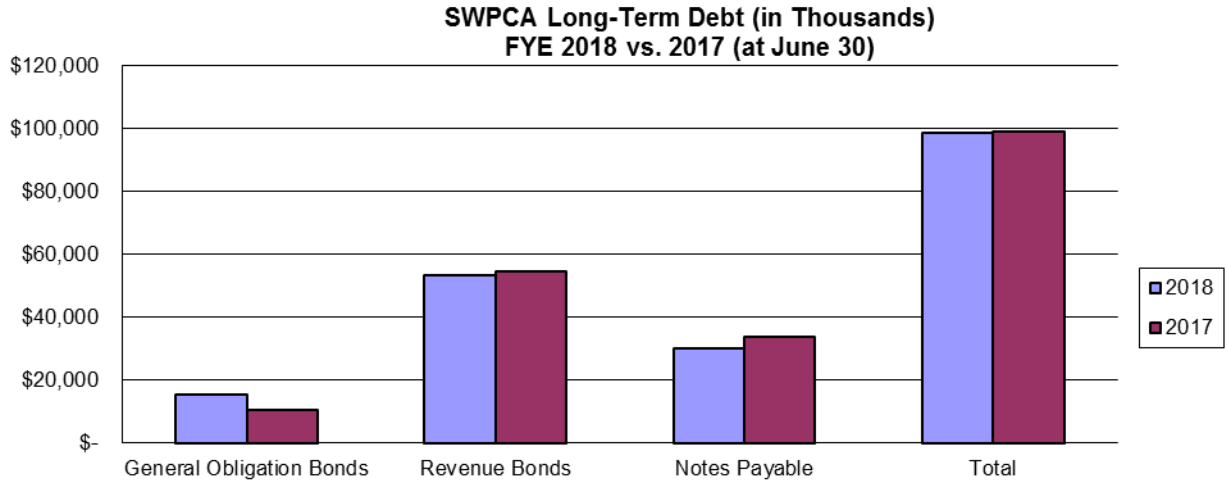
- Engineering design of the extension of the sanitary sewer system to serve the Perna Lane Area was completed, and the sewer project is in the permitting and approval phase. Engineering design of a sewer extension to serve the Wedgemere Road area, which includes White Oak Lane and Emerald Lane, is nearing completion.
- Construction of Flow Distribution Improvements at the Water Pollution Control Facility was completed.
- Construction of the upgrade of the Dyke Lane Storm Water Pump Station is ongoing and scheduled for completion in FY 18-19.
- A program to identify and remove extraneous water entering the sanitary sewer system, known as Infiltration and Inflow (I/I), is ongoing. Sewer system sub-areas having the greatest amount of I/I were identified and prioritized for further evaluation to identify and remove the source(s) of I/I in the next phase of the program. Rehabilitation of sewers and manholes in the pilot sub-area to remove I/I is included.
- Cleaning and inspection of the sanitary sewer system is ongoing, and sanitary sewers identified as needing repair were either replaced or lined.
- Replacement of pumps that have exceeded their useful life in various pumping stations in the sanitary sewer system is ongoing.
- Major equipment including pumps, mixers and motors were replaced at the WPCF as needed.
- Installation of the upgrade of the WPCF's computerized Supervisory Control and Data Acquisition (SCADA) system was completed
- Very importantly, improvements to the Odor Control systems at the WPCF are ongoing and fugitive odors have been significantly reduced.
- Engineering design of the Upgrade of the Raw Sewage Pump Station, Ultra-violet (UV) Disinfection System, and Improvements to the Secondary Treatment Process is ongoing and the projects are scheduled to start construction in FY 18-19.
- About 350 feet of ten (10) inch diameter glass lined ductile iron pipe was installed to replace deteriorated six (6) inch diameter pipe for conveying primary sludge to the sludge degritting system and gravity thickeners at the Water Pollution Control Facility.
- The sludge collection mechanism in Primary Clarifier No. 2 was totally replaced.

Debt Outstanding

As of June 30, 2018, the SWPCA had bonds and notes payable outstanding of approximately $98.7 million, as follows:

Stamford Water Pollution Control Authority
Debt Outstanding (in Thousands)

	2018	% of Total	2017	% of Total
General Obligation Bonds	$ 15,595	15.8%	$ 10,557	10.7%
Revenue Bonds	53,152	53.9%	54,619	55.1%
Notes Payable	29,937	30.3%	33,934	34.2%
Total	$ 98,684	100.0%	$ 99,110	100.0%



The SWPCA'S total debt outstanding – including current and long-term general obligation bonds, revenue bonds, and notes payable – decreased by $.4 million to $98.7 million as of June 30, 2018. This decrease reflects the repayment of bonds and notes payable of $6.8 million offset by a cross over refunding issue including bond premium of $6.4 million. Additional information on debt outstanding is presented in Note 6 of this report on pages 23-28.

Organization of SWPCA Operations

The SWPCA's organization includes three divisions, as follows:

Administration:
Responsible for the overall management of the SWPCA, including technical decisions, operational supervision, financial management (including billing and collections), planning, procurement, management of capital projects and various other administrative duties.

Process:
Responsible for ensuring that the SWPCA's facilities are operated effectively and meet all state and federal requirements. Activities within this division include wastewater treatment, sludge processing and laboratory services.

Maintenance:
Responsible for the maintenance of the SWPCA's facilities, including property and equipment, pumping stations and sanitary sewer maintenance.

As of June 30, 2018, the SWPCA had 43 full time equivalent employees versus 44 in the prior year.

Requests for Information

This financial report is designed to provide a general understanding of the SWPCA's most recent financial statements which will be available on the City web site at www.stamfordct.gov. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to Mr. Michael E. Handler, Chairman of the SWPCA, at 111 Harbor View Ave, Stamford, CT 06902. Mr. Handler is also the City's Director of Administration (MHandler@stamfordct.gov), and maintains an office at 888 Washington Boulevard, Stamford, CT 06901.

BASIC FINANCIAL STATEMENTS

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STAMFORD WATER POLLUTION CONTROL AUTHORITY
COMPARATIVE STATEMENTS OF NET POSITION
JUNE 30, 2018 AND 2017

	2018	2017 (Restated)
Assets:		
Current:		
Cash and cash equivalents	$ 10,661,738	$ 8,084,284
Investments	6,582,312	3,021,799
Accounts receivable:		
Usage charges, net of allowance for doubtful accounts of $2,000,000	1,643,444	1,477,356
Special assessments and connection charges, net of allowance for doubtful accounts of $500,000	1,743,527	5,406,185
Other receivables	785,181	766,220
Due from other funds	6,181,603	
Other current assets	9,902	9,902
Total current assets	27,607,707	18,765,746
Noncurrent:		
Restricted cash and cash equivalents	18,925,036	23,979,821
Special assessments and connection charges, net of allowance for doubtful accounts of $500,000	7,996,588	7,046,936
Capital assets not being depreciated	3,325,455	3,308,562
Capital assets being depreciated, net of depreciation	131,753,605	132,042,927
Total noncurrent assets	162,000,684	166,378,246
Total assets	189,608,391	185,143,992
Deferred Outflows of Resources:		
Deferred amounts on refunding	1,123,048	1,165,888
Deferred outflows related to pension	627,218	660,315
Deferred outflows related to OPEB	275,396	
Total deferred outflows of resources	2,025,662	1,826,203
Liabilities:		
Current:		
Accounts payable	1,237,056	1,584,763
Accrued liabilities	99,807	484,881
Accrued interest payable	470,441	490,636
Unearned revenue	94,974	185,121
Current portion of bonds payable	2,627,797	2,559,859
Current portion of notes payable	4,077,555	3,996,881
Current portion of compensated absences	230,308	214,122
Total current liabilities	8,837,938	9,516,263
Noncurrent liabilities:		
Bonds payable	66,119,397	62,616,338
Notes payable	25,859,155	29,936,710
Compensated absences	126,306	139,894
Net pension liability	3,028,099	2,539,385
Net OPEB liability	3,789,497	3,927,976
Total noncurrent liabilities	98,922,454	99,160,303
Total liabilities	107,760,392	108,676,566
Deferred Inflows of Resources:		
Deferred inflows related to pension	168,467	435,488
Deferred inflows related to OPEB	358,910	
Total deferred inflows of resources	527,377	435,488
Net Position:		
Net investment in capital assets	45,195,754	50,217,370
Restricted for debt service	11,247,486	11,170,040
Unrestricted	26,903,044	16,470,731
Total Net Position	$ 83,346,284	$ 77,858,141

The accompanying notes are an integral part of the financial statements

STAMFORD WATER POLLUTION CONTROL AUTHORITY
COMPARATIVE STATEMENTS OF REVENUES, EXPENSES
AND CHANGES IN NET POSITION
FOR THE YEARS ENDED JUNE 30, 2018 AND 2017

	2018	2017 (Restated)
Operating Revenues:		
Sewer use charges	$ 23,556,163	$ 23,044,678
Fees and other income	1,152,017	1,090,238
Total operating revenues	24,708,180	24,134,916
Operating Expenses:		
Salaries, benefits and claims	6,553,256	6,019,180
Operations and supplies	6,704,378	6,453,729
Depreciation	5,971,043	5,713,812
Total operating expenses	19,228,677	18,186,721
Operating Income	5,479,503	5,948,195
Nonoperating Revenue (Expense):		
Special assessments, connection charges, and other	3,398,245	4,013,718
Interest income and change in investment value	193,801	(29,921)
Gain on sale of assets		8,040
Interest expense	(3,319,771)	(3,322,638)
Net nonoperating revenue	272,275	669,199
Income Before Capital Contributions and Transfers	5,751,778	6,617,394
Capital contributions - Grant	191,031	66,077
Transfers Out	(454,666)	(398,132)
Change in Net Position	5,488,143	6,285,339
Net Position - Beginning of Year, as Restated	77,858,141	71,572,802
Net Position - End of Year	$ 83,346,284	$ 77,858,141

The accompanying notes are an integral part of the financial statements

STAMFORD WATER POLLUTION CONTROL AUTHORITY
COMPARATIVE STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED JUNE 30, 2018 AND 2017

	2018	2017 (Restated)
Cash Flows from Operating Activities:		
Receipts from customers and users	$ 24,432,984	$ 25,452,220
Payments to suppliers	(7,437,160)	(6,504,654)
Payments to employees	(4,216,490)	(4,187,521)
Payments for benefits and claims	(2,091,503)	(1,883,472)
Net cash provided by operating activities	10,687,831	12,876,573
Cash Flows from Noncapital Financing Activities:		
Transfers to other funds	(454,666)	(398,132)
Net cash used in noncapital financing activities	(454,666)	(398,132)
Cash Flows from Capital and Related Financing Activities:		
Proceeds from capital grants	191,031	66,077
Principal payments on debt	(6,391,566)	(6,335,403)
Interest paid on debt and other sources and uses	(3,555,886)	(3,438,035)
Special assessments, connection charges, and other	6,111,251	2,584,475
Purchase of capital assets	(5,698,614)	(3,427,619)
Sale of capital assets		362,364
Net cash provided by (used in) capital and related financing activities	(9,343,784)	(10,188,141)
Cash Flows from Investing Activities:		
Interest received on investments	193,801	(29,921)
Sale (purchase) of investments	(3,560,513)	3,047,083
Net cash provided by (used in) investing activities	(3,366,712)	3,017,162
Net Increase (Decrease) in Cash and Cash Equivalents	(2,477,331)	5,307,462
Cash and Cash Equivalents - Beginning of Year (including restricted cash and cash equivalents)	32,064,105	26,756,643
Cash and Cash Equivalents - End of Year (including restricted cash and cash equivalents)	$ 29,586,774	$ 32,064,105
Reconciliation of Operating Income to Net Cash Provided by Operating Activities:		
Operating income	$ 5,479,503	$ 5,948,195
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation	5,971,043	5,713,812
Changes in assets and liabilities:		
(Increase) decrease in usage charges	(166,088)	278,984
(Increase) decrease in other receivables	(18,961)	1,016,102
(Increase) decrease in deferred outflows of resources	(199,459)	957,344
Increase (decrease) in accounts payable	(347,708)	(50,925)
Increase (decrease) in accrued liabilities	(385,074)	26,226
Increase (decrease) in unearned revenues	(90,147)	22,218
Increase (decrease) in compensated absences	2,598	
Increase (decrease) in net pension liability	488,714	(892,159)
Increase (decrease) in net OPEB liability	(138,479)	(107,618)
Increase (decrease) in deferred inflows of resources	91,889	(35,606)
Net Cash Provided by Operating Activities	$ 10,687,831	$ 12,876,573

The accompanying notes are an integral part of the financial statements

1. NATURE OF BUSINESS AND SIGNIFICANT ACCOUNTING POLICIES

A. Financial Reporting Entity

Ordinance Number 803, adopted November 6, 1996 (the Ordinance), pursuant to Chapter 103, Sections 7-245 through 7-273a, inclusive, of the Connecticut General Statutes created the Stamford Water Pollution Control Authority (the SWPCA) to operate the Water Pollution Control Facility, sanitary sewage system, wastewater pumping stations and hurricane barrier for the City of Stamford, Connecticut (the City). The SWPCA operations are financed primarily through direct charges to the users of its services. The SWPCA is exempt from federal, state and local income taxes. The SWPCA relies on the City for certain administrative and financial support as detailed elsewhere in the notes to the financial statements.

The SWPCA is presented as a business-type activity in the City's basic financial statements. The accompanying financial statements present only the SWPCA fund and do not purport to, and do not, present the financial position of the City or the changes in the City's financial position and cash flows.

B. Basis of Presentation

The accounts of the SWPCA are organized on the basis of an enterprise fund, which is considered a separate accounting entity. The operations of the fund are accounted for through a separate set of self-balancing accounts that comprise its assets, liabilities, net position, revenues and expenses.

C. Basis of Accounting

The SWPCA utilizes the accrual basis of accounting, under which revenues are recognized when earned and expenses are recognized when a liability is incurred.

D. Cash and Cash Equivalents

For purposes of reporting cash flows, the SWPCA considers all highly liquid investments with an original maturity term of three months or less when purchased to be cash equivalents. Under a long-standing arrangement with the City, the SWPCA shares in a pooled cash account controlled by, and in the name of, the City. The SWPCA's share of this pooled cash account was $10,111,882 and $7,573,897 at June 30, 2018 and 2017, respectively. The SWPCA's own unrestricted cash balance was $549,856 and $510,387 at June 30, 2018 and 2017, respectively.

E. Accounts Receivable

Accounts receivable are carried at the original amount billed less an estimate made for doubtful accounts based on a review of all outstanding amounts on a monthly basis. Management determines the allowance for doubtful accounts by identifying troubled accounts and by using historical experience applied to an aging of accounts. Recoveries of accounts receivable previously written off are recorded when received.

F. Capital Assets

Property, plant and equipment are stated at cost. Normal maintenance and repairs that do not add to the value of the asset or materially extend asset lives are not capitalized. Assets being constructed over a period of time are classified as construction in progress. No depreciation is computed on these assets until they are complete and placed into service. Property, plant and equipment are depreciated over the following estimated useful lives:

	Years
Sewer and infrastructure	50-100
Buildings and improvements	25-50
Equipment	5-20

The SWPCA capitalizes interest during the period of construction.

G. Deferred Outflows/Inflows of Resources

In addition to assets, the statement of net position will sometimes report a separate section for deferred outflows of resources. This separate financial statement element represents a consumption of net position that applies to a future period and so will not be recognized as an outflow of resources (expense) until then. The SWPCA reports a deferred amount on refunding and deferred outflows related to pension and OPEB in the statement of net position. A deferred amount on refunding results from the difference in the carrying value of refunded debt and its reacquisition price. This amount is deferred and amortized over the shorter of the life of the refunded or refunding debt. A deferred outflow of resources related to pension and OPEB results from differences between expected and actual experience, changes in assumptions or other inputs. These amounts are deferred and included in pension and OPEB expense in a systematic and rational manner over a period equal to the average of the expected remaining service lives of all employees that are provided with benefits through the pension and OPEB plans (active employees and inactive employees). Difference between projected and actual earnings on pension and OPEB plan investments are recognized in pension and OPEB expense using a systematic and rational method over a closed five-year period, beginning in the current reporting period.

In addition to liabilities, the statement of net position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element represents an acquisition of net position that applies to a future period and so will not be recognized as an inflow of resources (revenue) until that time. Deferred inflows of resources were reported as they related to pension and OPEB. A deferred inflow of resources related to pension and OPEB results from differences between expected and actual experience, changes in assumptions or other inputs. These amounts are deferred and included in pension and OPEB expense in a systematic and rational manner over a period equal to the average of the expected remaining service lives of all employees that are provided with benefits through the pension and OPEB plans (active employees and inactive employees).

H. Compensated Absences

Under terms of the bargaining unit agreements, employees are awarded vacation on July 1 of each year based on years of service, and can accumulate up to 45-60 days of unused vacation, depending upon their specific union contract. Employees are also allowed sick leave, which is earned monthly, and can accumulate up to 150 days. Upon termination of employment without eligibility for retirement, each employee is paid for unused vacation.

Vested sick leave and accumulated vacation leave is recognized as an expense and liability as the benefits accrue to employees. Nonvested sick leave is recognized to the extent it is expected to be paid.

I. Net Pension Liability

The net pension liability is measured as the portion of the actuarial present value of projected benefits that is attributed to past periods of employee service (total pension liability), net of the pension plan's fiduciary net position. The pension plan's fiduciary net position is determined using the same valuation methods that are used by the pension plan for purposes of preparing its statement of fiduciary net position. The net pension liability is measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period.

J. Net OPEB Liability

The net OPEB liability is measured as the portion of the present value of projected benefit payments to be provided to current active and inactive employees that is attributed to those employees' past periods of service (total OPEB liability), less the amount of the OPEB plan's fiduciary net position. The OPEB plan's fiduciary net position is determined using the same valuation methods that are used by the OPEB plan for purposes of preparing its statement of fiduciary net position. The net OPEB liability is measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period.

K. Operating Revenues and Expenses

Revenues are based on the SWPCA's authorized sewer use charge billing rate per hundred cubic feet of customer consumption of water and other fee and charges. The SWPCA accrues an estimate for services delivered but not billed at the end of each fiscal year. The SWPCA distinguishes operating revenues and expenses from nonoperating revenues and expenses. Operating revenues result from charges to customers for sewer treatment and related services. Operating expenses include the cost of operations, consisting of facility employees' salaries and benefits, work related and legal claims, utilities, materials and supplies, maintenance, sales and service, administrative expenses and depreciation. All revenues and expenses not meeting this definition are reported as nonoperating or as transfers.

Interest is levied on accounts that are 30 days past due. The SWPCA has the authority to, and does routinely, file liens on past due accounts. The liens are subordinate only to property taxes upon the transfer of the liened properties.

The SWPCA also has an agreement with the Town of Darien (Darien) for certain sewage treatment services it provides. Darien is billed annually for wastewater conveyance and treatment at the SWPCA's treatment facility.

L. Special Assessments and Connection Charges

Special assessments are fees assessed by the SWPCA for new sewer lines. Interest is charged on the special assessments outstanding receivable balances at an annual rate set by the SWPCA at the time the special assessments are assessed. Connection charges are fees assessed for new connections to existing sewer lines. No interest is charged on connection charges. Accordingly, connection charges are recorded net of an imputed interest charge. Amounts receivable for special assessments and

connection charges are stated net of interest and imputed interest. Interest is recognized as it is earned over the period of collection. The special assessments and the connection charges are generally payable over periods of 10 to 20 years.

M. Net Position

Net position represents the difference between assets plus deferred outflows of resources and liabilities plus deferred inflows of resources. Net investment in capital assets consists of capital assets, net of accumulated depreciation, reduced by any outstanding balances of any borrowings used for the acquisition, construction or improvement of those assets. Net position is reported as restricted when there are limitations imposed on its use either through the enabling legislation adopted by the SWPCA or through external restrictions imposed by creditors, grantors or laws or regulation of other governments.

The SWPCA has cash restricted for debt service requirements in accordance with the terms of the outstanding revenue bonds (see Note 2).

N. Accounting Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets, deferred outflows of resources, liabilities and deferred inflows of resources and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenditures/expenses during the reporting period. Actual results could differ from those estimates.

O. Reclassifications

Certain items relating to the prior year have been reclassified to conform to the current year's financial statement presentation. The reclassifications have no effect on previously reported results.

P. Subsequent Events Evaluation by Management

Management has evaluated subsequent events for disclosure and/or recognition in the financial statements through December 28, 2018, the date that the financial statements were available to be issued.

2. CASH, CASH EQUIVALENTS AND INVESTMENTS

A. Cash Equivalents

As of June 30, 2018 and 2017, cash and cash equivalents, including balances restricted for repayment of principal and interest on state loans and for capital improvements, consist of the following:

	2018	2017
Cash and cash equivalents	$ 10,661,738	$ 8,084,284
Restricted cash and cash equivalents	18,925,036	23,979,821
	$ 29,586,774	$ 32,064,105

Responsibility for custodial credit risks of deposits rests with the City; accordingly, separate disclosure is not possible. Disclosure of the City's custodial credit risk of deposits is contained in the City's basic financial statements.

The restricted cash balance at June 30, 2018 and 2017 was restricted in accordance with the terms of various outstanding debt of the SWPCA (Note 5).

B. Investments

As of June 30, 2018 and 2017, the SWPCA had the following investments:

			Investment Maturities (Years)		
Investment Type	**Credit Rating**	**Fair Value**	**Less Than 1**	**1-10**	**More Than 10**
June 30, 2018					
Interest-bearing investments:					
U.S. Government Securities	Aaa	$ 6,582,312	$ 6,582,312	$ -	$ -
June 30, 2017					
Interest-bearing investments:					
U.S. Government Securities	Aaa	$ 3,021,799	$ 3,021,799	$ -	$ -

The SWPCA categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements); followed by quoted prices in inactive markets or for similar assets or with observable inputs (Level 2 measurements); and the lowest priority to unobservable inputs (Level 3 measurements).

The City has the following recurring fair value measurements as of June 30, 2018 and 2017:

	June 30, 2018	**Fair Value Measurements Using**		
		Level 1	**Level 2**	**Level 3**
Investments by Fair Value Level:				
U.S. Government Securities	$ 6,582,312	$ 6,582,312	$ -	$ -

	June 30, 2017	**Fair Value Measurements Using**		
		Level 1	**Level 2**	**Level 3**
Investments by Fair Value Level:				
U.S. Government Securities	$ 3,021,799	$ 3,021,799	$ -	$ -

Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities.

3. SPECIAL ASSESSMENTS AND CONNECTION CHARGES RECEIVABLE

The following is a summary of special assessments and connection charges receivable at June 30:

	2018			
	New Sewer Line Charges	Connection Charges	Total	Due Within One Year
Due in the year ending June 30:				
2019 *	$ 376,011	$ 1,395,575	$ 1,771,586	$ 1,771,587
2020	169,369	1,012,343	1,181,712	
2021	168,200	1,009,462	1,177,662	
2022	161,948	981,630	1,143,578	
2023	103,205	959,455	1,062,660	
Thereafter	450,854	6,202,227	6,653,081	
	1,429,587	11,560,692	12,990,279	1,771,587
Less imputed interest		(2,722,104)	(2,722,104)	
Receivable Before Interest and Lien Fees Receivable and Allowance for Doubtful Accounts	$ 1,429,587	$ 8,838,588	10,268,175	1,771,587
Plus related interest and lien fees receivable			471,940	471,940
Less allowance for doubtful accounts			(1,000,000)	(500,000)
Special Assessment and Connection Charges Receivable, Net			$ 9,740,115	$ 1,743,527

	2017			
	New Sewer Line Charges	Connection Charges	Total	Due Within One Year
Due in the year ending June 30:				
2018 *	$ 402,814	$ 5,033,432	$ 5,436,246	$ 5,436,246
2019	176,709	828,046	1,004,755	
2020	175,976	826,969	1,002,945	
2021	174,808	824,554	999,362	
2022	169,193	799,876	969,069	
Thereafter	593,854	5,085,883	5,679,737	
	1,693,354	13,398,760	15,092,114	5,436,246
Less imputed interest		(2,108,932)	(2,108,932)	
Receivable Before Interest and Lien Fees Receivable and Allowance for Doubtful Accounts	$ 1,693,354	$ 11,289,828	12,983,182	5,436,246
Plus related interest and lien fees receivable			469,939	469,939
Less allowance for doubtful accounts			(1,000,000)	(500,000)
Special Assessment and Connection Charges Receivable, Net			$ 12,453,121	$ 5,406,185

* Includes past due amounts from prior years.

4. CAPITAL ASSETS

A summary of capital assets is as follows as of June 30:

	2018			
	Beginning Balance	Additions	Disposals/ Transfers	Ending Balance
Capital assets not being depreciated:				
Land	$ 2,833,278	$	$	$ 2,833,278
Construction in progress	475,284	16,893		492,177
Total capital assets not being depreciated	3,308,562	16,893	-	3,325,455
Capital assets being depreciated:				
Buildings and improvements	125,710,134	5,202,031		130,912,165
Sewer and infrastructure	72,155,793	447,376		72,603,169
Equipment	37,388,775	32,314		37,421,089
Total capital assets being depreciated	235,254,702	5,681,721	-	240,936,423
Less accumulated depreciation for:				
Buildings and improvements	49,636,053	4,018,070		53,654,123
Sewer and infrastructure	26,469,205	1,139,618		27,608,823
Equipment	27,106,517	813,355		27,919,872
Total accumulated depreciation	103,211,775	5,971,043	-	109,182,818
Total capital assets being depreciated, net	132,042,927	(289,322)	-	131,753,605
Capital Assets, Net	$ 135,351,489	$ (272,429)	$ -	$ 135,079,060

	2017			
	Beginning Balance	Additions	Disposals/ Transfers	Ending Balance
Capital assets not being depreciated:				
Land	$ 2,833,278	$	$	$ 2,833,278
Construction in progress	369,211	106,073		475,284
Total capital assets not being depreciated	3,202,489	106,073	-	3,308,562
Capital assets being depreciated:				
Buildings and improvements	123,216,585	2,855,913	(362,364)	125,710,134
Sewer and infrastructure	71,706,998	448,795		72,155,793
Equipment	37,439,095	24,332	(74,652)	37,388,775
Total capital assets being depreciated	232,362,678	3,329,040	(437,016)	235,254,702
Less accumulated depreciation for:				
Buildings and improvements	45,873,157	3,762,896		49,636,053
Sewer and infrastructure	25,337,625	1,131,580		26,469,205
Equipment	26,354,339	819,336	(67,158)	27,106,517
Total accumulated depreciation	97,565,121	5,713,812	(67,158)	103,211,775
Total capital assets being depreciated, net	134,797,557	(2,384,772)	(369,858)	132,042,927
Capital Assets, Net	$ 138,000,046	$ (2,278,699)	$ (369,858)	$ 135,351,489

5. RESTRICTED ASSETS

Pursuant to the Revenue Bond Indenture, certain funds are required to be maintained for purposes specified in the applicable agreement. The SWPCA's restricted assets were being maintained for the following purposes as of June 30:

	2018	2017
Clean Water Fund - Debt Service Reserve	$ 4,428,686	$ 4,425,333
2006 Debt Service Reserve Fund	1,989,910	1,976,530
2003 and 2006 Debt Service Funding Accrual	3,178,185	3,127,410
2012 Debt Service Reserve Fund	1,650,705	1,640,767
2013 Debt - unspent bond proceeds	116,434	778,578
2015 Debt - unspent bond proceeds	7,561,116	12,031,203
	$ 18,925,036	$ 23,979,821

6. LONG-TERM OBLIGATIONS

Long-term liability activity was as follows for the years ended June 30:

	2018				
	Beginning Balance	Additions	Reductions	Ending Balance	Due Within One Year
Bonds payable:					
General obligation bonds	$ 10,440,728	$ 5,312,000	$ 1,294,859	$ 14,457,869	$ 1,297,797
Unamortized premium	116,175	1,034,777	13,414	1,137,538	
Revenue bonds	50,505,000		1,265,000	49,240,000	1,330,000
Unamortized premium	4,114,294		202,507	3,911,787	
Total bonds payable	65,176,197	6,346,777	2,775,780	68,747,194	2,627,797
Notes payable:	33,933,591		3,996,881	29,936,710	4,077,555
Total bonds and notes payable	99,109,788	6,346,777	6,772,661	98,683,904	6,705,352
Compensated absences	354,016	216,720	214,122	356,614	230,308
Net OPEB liability	3,927,976		138,479	3,789,497	
Net pension liability	2,539,385	488,714		3,028,099	
Long-Term Liabilities	$ 105,931,165	$ 7,052,211	$ 7,125,262	$ 105,858,114	$ 6,935,660

	2017				
	Beginning Balance	Additions	Reductions	Ending Balance	Due Within One Year
Bonds payable:					
General obligation bonds	$ 11,623,120	$	$ 1,182,392	$ 10,440,728	$ 1,294,859
Unamortized premium	129,589		13,414	116,175	
Revenue bonds	51,715,000		1,210,000	50,505,000	1,265,000
Unamortized premium	4,266,499		152,205	4,114,294	
Total bonds payable	67,734,208		2,558,011	65,176,197	2,559,859
Notes payable:	37,876,602		3,943,011	33,933,591	3,996,881
Total bonds and notes payable	105,610,810	-	6,501,022	99,109,788	6,556,740
Compensated absences	327,790	218,396	192,170	354,016	214,122
Net OPEB liability	4,035,594 *		107,618	3,927,976	
Net pension liability	3,431,544		892,159	2,539,385	
Long-Term Liabilities	$ 113,405,738	$ 218,396	$ 7,692,969	$ 105,931,165	$ 6,770,862

* As restated and further explanation in Note 13

A. General Obligation Bonds

Per Connecticut state law, the SWPCA does not have the authority to directly issue general obligation bonds. General obligation bonds issued on behalf of the SWPCA are considered general obligation debt of the City. The SWPCA pays the principal and interest due on its allocable portion of any City general obligation bonds.

The SWPCA's allocable portion of the City's general obligation bonds outstanding as of June 30, 2018 consisted of the following:

Description	Year of Issue	Amount of Interest Rate (%)	Balance Original Issue	Outstanding June 30, 2018	Outstanding June 30, 2017
Refunding bonds	2004	3.60 - 5.25 %	$ 1,268,429	$	$ 156,400
Refunding bonds	2005	4.00 - 5.00	2,247,600	949,000	1,514,800
Refunding bonds	2009	3.25 - 5.00	1,073,431	483,869	594,328
Public improvement	2010	2.80 - 5.45	10,000,000	6,925,000	7,282,200
Refunding bonds	2010	4.00 - 5.00	408,000	408,000	408,000
Refunding bonds	2011	2.00 - 4.00	430,000	280,000	285,000
Refunding bonds	2013	2.00 - 5.00	1,342,884	100,000	200,000
Crossover Refunding	2018	4.00-5.00	5,312,000	5,312,000	
Total				$ 14,457,869	$ 10,440,728

Aggregate debt service requirements subsequent to June 30, 2018 are as follows:

Fiscal Year	Principal	Interest	Total
2019	$ 1,297,797	$ 422,100	$ 1,719,897
2020 *	6,930,072	371,731	7,301,803
2021	837,000	327,393	1,164,393
2022	596,000	289,140	885,140
2023	614,000	256,088	870,088
2024-2028	2,930,000	787,406	3,717,406
2029-2032	1,253,000	75,564	1,328,564
Debt service requirement	14,457,869	2,529,422	16,987,291
Plus unamortized premium	1,137,538		1,137,538
Total	$ 15,595,407	$ 2,529,422	$ 18,124,829

*Includes principal payments on a crossover refunding in the amount of $5,950,000 for the SWPCA.

The SWPCA's share of interest expense incurred on general obligation bonds was $480,243 and $534,286 for the years ended June 30, 2018 and 2017, respectively.

General Obligation Bonds - Crossover Refunding

On August 1, 2017, the City issued $23,270,000 (2017 Series D) of general obligation refunding bonds with interest rates ranging from 4.0 to 5.0%. The SWPCA's allocable portion of the City's crossover refunding bonds was $5,312,000. The Series D bonds were issued to crossover refinance previously issued Taxable Build America Bonds dated August 12, 2009. The net proceeds of $27,637,125 (including a premium of $4,532,993 and issuance costs of $165,868) were deposited into an escrow account which remains in the City's possession until the crossover date of August 1, 2019. The SWPCA portion is reported as a due from other funds of $6,181,603. At the crossover date, the 2009 Taxable Build America Bonds will be considered defeased and the liability for those bonds as well as the funds deposited into the escrow account will be removed from the statement of net position. The refunding will reduce total debt service payments for the City (including the SWPCA) by $1,939,920 from fiscal year 2020 through 2030 and represents an economic gain (difference between present values of the debt service payments on the old and the new debt) of $1,659,284.

B. Revenue Bonds

Revenue bonds are special limited obligations of the City payable solely from revenues and other receipts of the SWPCA.

Revenue bonds outstanding consisted of the following as of June 30:

	2018	2017
Stamford Water Pollution Control System and Facility Revenue and Revenue Refunding Bonds - 2013. Issued in the aggregate amount of $22,095,000, consisting of $12,770,000 of revenue bonds and $9,325,000 of Refunding Revenue Bonds, in August 2013 at interest rates ranging from 3.0% to 6.0%, due annually, on August 15. Debt service is paid to the trustee monthly, with principal maturity paid from August 2013 through August 2044. The aggregate includes unamortized premiums of $1,929,697 and $2,006,628 at June 30, 2018 and 2017, respectively.	$ 22,179,697	$ 22,801,628
Stamford Water Pollution Control System and Facility Revenue and Revenue Refunding Bonds - 2015. Issued in the aggregate amount of $31,070,000, consisting of $15,610,000 of revenue bonds and $15,460,000 of Refunding Revenue Bonds, in July 2015 at interest rates ranging from 3.0% to 5.0%, due annually, on September 15. Debt service is paid to the trustee monthly, with principal maturity paid from September 2015 through September 2015. The aggregate includes unamortized premiums of $1,982,090 and $2,107,666 at June 30, 2018 and 2017, respectively.	30,972,090	31,817,666
Total revenue bonds outstanding	53,151,787	54,619,294
Less unamortized premium	3,911,787	4,114,294
Total Long-Term Revenue Bonds Outstanding	$ 49,240,000	$ 50,505,000

Aggregate debt service requirements subsequent to June 30, 2018 are as follows:

Fiscal Year	Principal	Interest	Total
2019	$ 1,330,000	$ 2,264,819	$ 3,594,819
2020	1,400,000	2,190,594	3,590,594
2021	1,480,000	2,112,269	3,592,269
2022	1,565,000	2,029,444	3,594,444
2023	1,655,000	2,029,444	3,684,444
2024-2028	9,685,000	8,304,169	17,989,169
2029-2033	12,385,000	5,602,109	17,987,109
2034-2038	9,810,000	3,165,469	12,975,469
2029-2043	7,365,000	1,397,200	8,762,200
2044-2045	2,565,000	87,469	2,652,469
Debt Service Requirement	$ 49,240,000	$ 29,182,986	78,422,986

Interest incurred on revenue bonds was $2,331,719 and $2,388,344 for the years ended June 30, 2018 and 2017, respectively.

C. Notes Payable

In fiscal years 1998 and 2001, the City obtained project loans from the State of Connecticut for various sewer projects of $864,280 and $3,574,208, respectively, of which $-0- and $421,087 was outstanding as of June 30, 2018 and $-0- and $625,403 was outstanding as of June 30, 2017. The repayment on these three loans is not restricted to the funds of the SWPCA. Currently, the SWPCA is repaying these notes on behalf of the City.

The SWPCA completed a $105 million upgrade of the waste water treatment facility in 2006. To fund the upgrade project, the City obtained a Project Loan Obligation from the State of Connecticut for $73,561,481. This loan is a special limited obligation loan of the City that is to be repaid solely from revenues, funds, accounts, moneys and securities of the SWPCA. The project was also funded through grants and a local share. As of June 30, 2018 and 2017, the outstanding balance on the loan was $29,515,623 and $33,308,188, respectively.

The loans bear interest at 2%. The loans are payable in monthly installments ranging from approximately $3,601 to $368,000 through August 2025, plus accrued interest. The combined loan balances were $29,936,710 and $33,933,591 as of June 30, 2018 and 2017, respectively.

Interest expense incurred on these notes payables was $642,166 and $721,412 for the years ended June 30, 2018 and 2017, respectively.

Aggregate debt service requirements subsequent to June 30, 2018 are as follows:

Fiscal Year	Principal	Interest	Total
2019	$ 4,077,555	$ 561,491	$ 4,639,046
2020	4,159,858	479,189	4,639,047
2021	4,026,883	397,206	4,424,089
2022	4,108,163	315,926	4,424,089
2023	4,191,084	233,005	4,424,089
2024-2026	9,373,167	212,360	9,585,527
Debt Service Requirement	$ 29,936,710	$ 2,199,177	$ 32,135,887

7. REVENUE

Sewer use charges are comprised of the following for the years ended June 30:

	2018	2017
Sewer use fees	$ 20,998,785	$ 20,755,100
Contract revenue - Town of Darien, CT	1,593,763	1,450,081
Contract revenue - Aquarion	389,341	283,027
Interest	447,639	420,486
Lien fees	126,635	135,984
	$ 23,556,163	$ 23,044,678

Special assessments, connection charges and other are comprised of the following for the years ended June 30:

	2018	2017
Connection charges	$ 2,126,515	$ 1,740,627
Capital reimbursement - Town of Darien, CT	885,958	833,829
Interest	378,927	1,344,357
Delinquent interest and lien fees	6,845	94,905
	$ 3,398,245	$ 4,013,718

8. COMMITMENTS AND CONTINGENCIES

General Contingencies

The SWPCA is a defendant in a lawsuit. In the opinion of the City's General Counsel and SWPCA's management, the resolution of this matter is not expected to have a material adverse effect on the future financial condition of the SWPCA.

9. RISK MANAGEMENT

The SWPCA is exposed to various risks of loss related to torts, theft or impairment to assets, errors and omissions, injury to employees, employee health insurance and natural disasters.

The SWPCA is insured through the City's internal service insurance fund. The City's self-insurance fund covers the City, including the SWPCA, per claim for up to $1,000,000 for general and auto liability, $1,500,000 for workers' compensation, $100,000 for public officials' liability and $250,000 for property losses. The City purchases commercial insurance for claims in excess of these retentions. Costs associated with these risks are reported in the City's insurance internal service fund in addition to claims incurred but not reported. The SWPCA is charged by the City for its share of premium cost and claims. Settled claims have not exceeded commercial coverage in any of the past three years. For the years ended June 30, 2018 and 2017, the SWPCA paid the City approximately $322,000 and $361,000, respectively, to the City's internal service insurance fund.

10. EMPLOYEE RETIREMENT PLAN

A. Plan Description and Benefits Provided

Nearly all full-time City employees are covered by a pension plan. The employees of the SWPCA are covered under the City's Classified Employees' Retirement Fund (CERF). Eligibility begins at date of hire and vesting occurs in full after 5 years of service. Benefits are payable to an employee who retires at age 60 with a minimum of 10 years of service or an employee who has reached age 58 with at least 15 years of service. Certain contracts allow employees with 25 years of service to retire. Annual benefits equal 2% per year of service with maximums up to 70% of final salary for each year of credited service. Employees contribute 3% of their annual salary until they have reached 33 years of credited service. Some union contracts allow employees to exchange sick or vacation leave for up to 4% additional pension credit (1% for each 25 days exchanged). Interest of 5% is credited to the employees' contribution.

The City uses an independent actuary to determine the allocation of contributions required for the various departments and groups that participate in the retirement plans, including the SWPCA. For the years ended June 30, 2018 and 2017, the SWPCA's contribution to the retirement fund was $358,000 and $317,000, representing approximately 6% and 5%, respectively, of total contributions to the CERF for each year.

The City's basic financial statements contain CERF activity and funding information as of June 30, 2018. At June 30, 2018 and 2017, the CERF had $223.1 million and $210.4 million in net position, respectively.

GASB Statement No. 68 requires certain items to be recorded. The items below provide detail of those items. Refer to the City of Stamford comprehensive annual financial report (CAFR) for the full pension disclosures.

B. Net Pension Liability of the SWPCA

The components of the SWPCA's net pension liability at June 30, 2018 and 2017 were as follows:

	June 30, 2018	June 30, 2017
Total pension liability	$ 15,181,198	$ 13,754,982
Plan fiduciary net position	12,153,099	11,215,597
Net Pension Liability	$ 3,028,099	$ 2,539,385
Plan fiduciary net position as a percentage of the total pension liability	80.05%	81.54%

C. Changes in the Net Pension Liability - SWPCA's Portion of the City's Employee Retirement Plan

2018	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a)-(b)
Balances as of June 30, 2017	$ 13,754,982	$ 11,215,597	$ 2,539,385
Changes for the year:			
Service cost	285,518		285,518
Interest on total pension liability	1,029,172		1,029,172
Change in benefit terms	981		981
Effect of economic/demographic gains or losses	370,193		370,193
Effect of assumptions changes or inputs	388,504		388,504
Employer contributions		358,000	(358,000)
Member contributions		128,388	(128,388)
Net investment income		1,105,767	(1,105,767)
Benefit payments, including refund to employee contributions	(648,152)	(648,152)	-
Administrative expenses		(6,501)	6,501
Net changes	1,426,216	937,502	488,714
Balances as of June 30, 2018	$ 15,181,198	$ 12,153,099	$ 3,028,099

2017	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a)-(b)
Balances as of June 30, 2016	$ 13,364,528	$ 9,932,984	$ 3,431,544
Changes for the year:			
Service cost	317,378		317,378
Interest on total pension liability	1,020,081		1,020,081
Change in benefit terms	(215,835)		(215,835)
Differences between expected and actual experience	(233,718)		(233,718)
Effect of assumptions changes or inputs	121,491		121,491
Employer contributions		317,000	(317,000)
Member contributions		127,074	(127,074)
Net investment income		1,462,803	(1,462,803)
Benefit payments, including refund to employee contributions	(618,943)	(618,943)	-
Administrative expenses		(5,321)	5,321
Net changes	390,454	1,282,613	(892,159)
Balances as of June 30, 2017	$ 13,754,982	$ 11,215,597	$ 2,539,385

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

At June 30, 2018 and 2017, the SWPCA reported deferred outflows of resources and deferred inflows of resources related to pension from the following sources:

June 30, 2018	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 267,362	$ 166,160
Changes of assumptions	359,856	
Net difference between projected and actual earning on pension plan investments		2,307
Total	$ 627,218	$ 168,467

June 30, 2017	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$	$ 435,488
Changes of assumptions	201,527	
Net difference between projected and actual earning on pension plan investments	458,788	
Total	$ 660,315	$ 435,488

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

Recognition Year	
2019	$ 321,171
2020	261,878
2021	(70,141)
2022	(54,157)

11. TRANSACTIONS WITH THE CITY

In the fiscal years 2018 and 2017, the City paid approximately $263,000 and $221,000, respectively, in sewer use charges to the SWPCA. The City reimbursed the SWPCA approximately $435,000 and $409,000 for the City's share of the hurricane barrier maintenance and operations for the years ended June 30, 2018 and 2017, respectively.

For the fiscal years 2018 and 2017, the SWPCA paid the City approximately $455,000 and $398,000, for an allocation of central services costs, respectively, and approximately $932,000 and $764,000 to the City's internal service medical insurance fund for health insurance coverage of active and retired employees, respectively.

In connection with the pooled cash arrangement with the City, the SWPCA earned interest income of approximately $93,000 and $29,000 on balances due from the City during the years ended June 30, 2018 and 2017, respectively.

12. OTHER POST EMPLOYMENT BENEFITS

A. Plan Description and Benefits Provided

The City provides certain health care benefits for retired employees through a single employer defined benefit plan in which the SWPCA participates. The various collective bargaining agreements stipulate the employees' covered and the percentage of contribution, if any, to the cost of health care benefits. Contributions by the City may vary according to length of service. The cost of providing postemployment health care benefits is shared between the City and the retired employee. Substantially all of the City's employees may become eligible for these benefits if they reach normal retirement age while working for the City. The cost of retiree health care benefits is recognized as an expense as claims are paid.

The City uses an independent actuary to determine the allocation of contributions required for the various departments and groups that participate in the retirement plans, including the SWPCA. For the years ended June 30, 2018 and 2017, the SWPCA's contribution to the OPEB fund was $488,000 and $398,270, representing approximately 2% of total contributions to the OPEB fund for each year.

The City's basic financial statements contain OPEB activity and funding information as of June 30, 2018. At June 30, 2018 and 2017, the OPEB fund had $116.3 million and $92.2 million in net position, respectively.

GASB Statement No. 75 requires certain items to be recorded. The items below provide detail of those items. Refer to the City of Stamford comprehensive annual financial report (CAFR) for the full pension disclosures.

B. Net OPEB Liability - SWPCA's Portion of the City's OPEB Plan

The Town's net OPEB liability was measured as of June 30, 2018 and 2017. The components of the net OPEB liability of the Town at June 30, 2018 and 2017 were as follows:

	June 30, 2018	June 30, 2017
Total OPEB liability	$ 5,537,461	$ 5,187,056
Plan fiduciary net position	1,747,964	1,259,080
Net OPEB Liability	$ 3,789,497	$ 3,927,976
Plan fiduciary net position as a percentage of the total OPEB liability	31.57%	24.27%

C. Changes in the Net OPEB Liability - SWPCA's Portion of the City's OPEB Plan

2018

	Increase (Decrease)		
	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a)-(b)
Balances as of June 30, 2017	$ 5,187,056	$ 1,259,080	$ 3,927,976
Changes for the year:			
Service cost	164,658		164,658
Interest on total OPEB liability	393,737		393,737
Effect of economic/demographic gains or losses	(348,342)		(348,342)
Effect of assumptions changes or inputs	347,869		347,869
Employer contributions		488,000	(488,000)
Net investment income		208,673	(208,673)
Benefit payments, including refund to employee contributions	(207,517)	(207,517)	-
Administrative expenses		(272)	272
Net changes	350,405	488,884	(138,479)
Balances as of June 30, 2018	$ 5,537,461	$ 1,747,964	$ 3,789,497

2017

	Increase (Decrease)		
	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a)-(b)
Balances as of June 30, 2016	$ 4,918,690	$ 883,096	$ 4,035,594
Changes for the year:			
Service cost	111,853		111,853
Interest on total OPEB liability	378,131		378,131
Differences between expected and actual experience	(31,114)		(31,114)
Employer contributions		398,270	(398,270)
Member contributions		5,492	(5,492)
Net investment income		162,766	(162,766)
Benefit payments, including refund to employee contributions	(190,504)	(190,504)	-
Administrative expenses		(189)	189
Other changes		149	(149)
Net changes	268,366	375,984	(107,618)
Balances as of June 30, 2017	$ 5,187,056	$ 1,259,080	$ 3,927,976

D. OPEB Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to OPEB

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

June 30, 2018	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$	$ 275,771
Changes of assumptions	275,396	
Net difference between projected and actual earning on pension plan investments		83,139
Total	$ 275,396	$ 358,910

No deferred outflows of resources and deferred inflows of resources related to OPEB for June 30, 2017 were recorded.

Subsequent to June 30, 2018, amounts reported as deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized in pension expense as follows:

Year Ending June 30,	
2019	$ (20,883)
2020	(20,883)
2021	(20,883)
2022	(20,865)

13. PRIOR PERIOD ADJUSTMENT AND RESTATEMENT

The following restatements were recorded to the beginning of year net position of the SWPCA as a result of implementation of GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other than Pensions*:

Net position at June 30, 2016, as previously reported	$ 74,703,396
Adjustment:	
Eliminate net OPEB obligation as reported per GASB No. 45	905,000
Record starting total OPEB liability per GASB No. 75	(4,035,594)
Net Position at July 1, 2016, as Restated	$ 71,572,802

SUPPLEMENTARY AND OTHER INFORMATION

STAMFORD WATER POLLUTION CONTROL AUTHORITY
SCHEDULE OF REVENUES AND OTHER FINANCING SOURCES
BUDGET AND ACTUAL (NON-GAAP BUDGETARY BASIS)
FOR THE YEAR ENDED JUNE 30, 2018

	Budgeted Amounts			Variance - Positive
	Original	Final	Actual	(Negative)
Operating revenues:				
Sewer use charges	$ 20,775,930	$ 20,775,930	$ 21,573,059	$ 797,129
Contract revenue - Town of Darien, CT	1,621,981	1,621,981	1,593,763	(28,218)
Contract revenue - Aquarion Water Company	400,000	400,000	389,341	(10,659)
Fees and other income	648,965	648,965	629,785	(19,180)
Nitrogen trading credit	500,000	500,000	628,488	128,488
Total operating revenues	23,946,876	23,946,876	24,814,436	867,560
Nonoperating revenues:				
Special assessments, connection charges, and other	2,539,636	2,539,636	3,398,245	858,609
Interest income and change in investment value	37,500	37,500	193,801	156,301
Total nonoperating revenues	2,577,136	2,577,136	3,592,046	1,014,910
Capital contributions - grants			191,031	191,031
Total	$ 26,524,012	$ 26,524,012	28,597,513	$ 2,073,501
Budgetary revenues are different than GAAP revenues because:				
Interest subsidy			(106,256)	
Total Revenues and Other Financing Sources as Reported on the Statement of Revenues, Expenses and Changes in Net Position			$ 28,491,257	

STAMFORD WATER POLLUTION CONTROL AUTHORITY
SCHEDULE OF EXPENSES AND OTHER FINANCING USES
BUDGET AND ACTUAL (NON-GAAP BUDGETARY BASIS)
FOR THE YEAR ENDED JUNE 30, 2018

	Budgeted Amounts			Variance - Positive
	Original	Final	Actual	(Negative)
Operating expenses:				
Administration	$ 5,339,979	$ 5,214,637	$ 4,275,472	$ 939,165
Process control	3,286,954	3,195,452	3,073,550	121,902
Laboratory	465,479	423,588	416,841	6,747
Sludge processing	2,638,879	2,769,879	2,710,107	59,772
Regulatory compliance	109,885	104,959	86,158	18,801
Building maintenance	300,500	305,500	260,135	45,365
Equipment maintenance	1,133,390	1,244,506	1,088,835	155,671
Pump station maintenance	847,019	847,019	613,753	233,266
Sanitary sewer maintenance	506,760	523,305	426,377	96,928
Barrier maintenance	260,000	260,000	100,990	159,010
Billing services	462,300	462,300	453,104	9,196
Total operating expenses	15,351,145	15,351,145	13,505,322	1,845,823
Nonoperating expenses:				
Debt service	10,022,867	10,022,867	9,875,048	147,819
Capital reserve funding	1,150,000	1,150,000		1,150,000
Total nonoperating expenses	11,172,867	11,172,867	9,875,048	1,297,819
Total	$ 26,524,012	$ 26,524,012	23,380,370	$ 3,143,642
Budgetary expenses are different than GAAP expenses because:				
Change in net pension liability			488,714	
Change in net OPEB liability			(138,479)	
Change in deferred outflows of resources			(242,299)	
Change in deferred inflows of resources			91,889	
Refunding transactions not budgeted			114,872	
Depreciation			5,971,043	
Interest subsidy			(106,256)	
Principal payments on debt			(6,556,740)	
Total Expenses and Other Financing Uses as Reported on the Statement of Revenues, Expenses and Changes in Net Position			$ 23,003,114	

STATISTICAL SECTION

STATISTICAL SECTION

The objectives of statistical section information are to provide financial statement users with additional historical perspective, context and detail to assist in using the information in the financial statements, notes to financial statements and required supplementary information to understand and assess economic condition

Statistical section information is presented in the following categories:

- Financial trends information is intended to assist users in understanding and assessing how financial position has changed over time.
- Revenue capacity information is intended to assist users in understanding and assessing the factors affecting the ability to generate own-source revenues (property taxes, charges for services, etc.).
- Debt capacity information is intended to assist users in understanding and assessing debt burden and the ability to issue additional debt.
- Operating information is intended to provide contextual information about operations and resources to assist readers in using financial statement information to understand and assess economic condition.

The accompanying tables are presented in the above order. Refer to the Table of Contents for applicable page number locations.

Sources: Unless otherwise noted, the information in the tables is derived from the basic financial statements for the relevant year

TABLE 1

STAMFORD WATER POLLUTION CONTROL AUTHORITY
REVENUES, EXPENSES AND CHANGES IN NET POSITION (in Thousands)
FOR THE YEARS ENDED JUNE 30,

	2018	2017	2016 (Restated)	2015	2014	2013 (Restated)	2012	2011	2010	2009
Operating Revenues:										
Total operating revenues	$ 24,708	$ 24,135	$ 24,469	$ 23,769	$22,355	$ 21,155	$20,305	$18,504	$18,252	$18,645
Operating Expenses:										
Operations and supplies	6,704	6,454	7,152	7,153	7,228	8,131	6,120	6,800	6,946	6,376
Salaries, benefits and claims	6,553	6,019	6,356	5,950	4,541	5,196	5,468	4,773	4,346	4,068
Depreciation	5,971	5,714	5,583	5,507	5,373	5,239	5,055	5,087	6,288	7,106
Total Operating Expenses	19,228	18,187	19,091	18,610	17,141	18,566	16,642	16,660	17,580	17,550
Operating Income	5,480	5,948	5,378	5,159	5,213	2,589	3,663	1,844	672	1,095
Nonoperating Revenue (Expense):										
Special assessments and connection charges	3,398	4,014	2,821	3,911	2,516	2,987	2,703	3,182	2,763	1,738
Provision for doubtful accounts - Special assessments and connection charges						(500)		(100)		
Interest income and change in investment value	194	(30)	83	18	34	95	98	113	104	182
Gain on sale of assets		8	42							
Interest expense	(3,320)	(3,322)	(3,045)	(3,227)	(3,149)	(2,940)	(3,133)	(3,182)	(3,764)	(4,181)
Transfers in					288			1,067		
Net Nonoperating Revenue (Expense)	272	670	(99)	702	(311)	(358)	(332)	1,081	(896)	(2,260)
Capital Grants, Transfers Out and Special Items:										
Capital grants	191	66	390							
Transfers out	(455)	(398)	(324)	(349)						(1,567)
Special item - impairment of assets									(2,226)	
Total	(264)	(332)	66	(349)	-	-	-	-	(2,226)	(1,567)
Change In Net Business	5,488	6,286	5,344	5,513	4,902	2,231	3,330	2,925	(2,450)	(2,732)
Net position - beginning of year	77,858	71,572	69,359	63,846	58,943	59,493	56,163	53,238	55,688	58,420
Restatement for Net Pension Loss per GASB 68						(2,780)				
Restatement for net OPEB Loss per GASB 75			(3,131)							
Net Position - End of Year	$ 83,346	$ 77,858	$ 71,572	$ 69,359	$63,846	$58,943	$59,493	$56,163	$53,238	$55,688

TABLE 2

STAMFORD WATER POLLUTION CONTROL AUTHORITY
NET POSITION (in Thousands)
AS OF JUNE 30,

	2018	2017 (Restated)	2016 (Restated)	2015	2014 (Restated)	2013 (Restated)	2012	2011	2010	2009
Net Position:										
Net investment in capital assets	$ 45,196	$50,217	$49,195	$50,755	$48,395	$50,460	$46,503	$45,613	$44,538	$47,027
Restricted for debt service and capital improvements	11,247	11,170	10,906	9,597	9,532	7,965	7,742	7,811	7,677	7,540
Unrestricted	26,903	16,471	14,602	9,007	5,919	3,299	5,248	2,739	1,023	1,121
Restatement for net pension loss per GASB 68			(3,131)			(2,780)				
Total Net Position	$ 83,346	$77,858	$71,572	$69,359	$63,846	$58,943	$59,493	$56,163	$53,238	$55,688

STAMFORD WATER POLLUTION CONTROL AUTHORITY
REVENUE CAPACITY - CUSTOMER, CONSUMPTION & RATE STATISTICS

For the Year Ended June 30,	Customers	Consumption (CCF)	Annual Consumption Change	Rate per CCF	Annual Rate Change	Average Residential Bill
2018	19,648	4,169,897	(3.60)%	$4.88	3.39%	$497.76
2017	19,598	4,325,661	2.06%	$4.72	1.72%	$481.44
2016	19,619	4,238,192	(3.08)%	$4.64	1.98%	$473.28
2015	19,470	4,372,971	2.27%	$4.55	3.41%	$464.10
2014	19,447	4,276,100	0.14%	$4.40	8.64%	$448.80
2013	19,378	4,270,274	(1.00)%	$4.05	4.92%	$429.42
2012	19,381	4,313,364	0.83%	$3.86	8.43%	$393.72
2011	19,360	4,277,668	(6.50)%	$3.56	2.89%	$391.60
2010	19,066	4,575,000	0.48%	$3.46	2.37%	$380.60
2009	19,084	4,553,000	5.00%	$3.38	11.55%	$371.80

Notes:
Customers as presented reflects the total number of residential, commercial and industrial customers.
Consumption data reflects hundred cubic feet (CCF) of water consumed.
CCF = 100 cubic feet of water, which is equivalent to 748 gallons.

Source: SWPCA records

STAMFORD WATER POLLUTION CONTROL AUTHORITY
REVENUE CAPACITY - PRINCIPAL WATER USERS
CURRENT AND PREVIOUS YEAR (AS OF JUNE 30)

	2018			2017		
	Property Owner	**Annual Billed Consumption (100 CCF)**	**% of Total Consumption**	**Property Owner**	**Annual Billed Consumption (100 CCF)**	**% of Total Consumption**
1	Stamford Hospital	61,470	1.47%	City of Stamford	46,966	1.09%
2	City of Stamford	52,760	1.27%	Rippowan Park Associates LP	45,652	1.06%
3	Stamford Town Center	40,668	0.98%	Stamford Town Center	44,090	1.02%
4	Rippowan Park Associates LP	39,368	0.94%	Stamford Hospital	38,044	0.88%
5	Stamford Housing Authority	33,912	0.81%	Stamford Housing Authority	36,136	0.84%
6	Cornerstone Apartments	28,722	0.69%	Cornerstone Apartments	33,520	0.77%
7	Hilton Stamford Hotel	27,504	0.66%	Hilton Stamford Hotel	27,876	0.64%
8	Hoyt Bedford Apartments	25,106	0.60%	Hoyt Bedford Apartments	25,942	0.60%
9	SLC Operating LP	24,316	0.58%	Saint Johns Towers	24,396	0.56%
10	Stamford Marriott Hotel	21,920	0.53%	Stamford Marriott Hotel	21,066	0.49%
	Total	355,746	8.53%	Total	343,688	7.95%
	Total Consumption Billed in CCF	4,169,897		Total Consumption Billed in CCF	4,325,661	

Notes:
CCF = 100 cubic feet of water, which is equivalent to 748 gallons.

Source: SWPCA records

TABLE 5

STAMFORD WATER POLLUTION CONTROL AUTHORITY
DEBT CAPACITY - DEBT OUTSTANDING BY TYPE (in Thousands)

For the Year Ended June 30,	General Obligation Bonds	Revenue Bonds	Notes Payable	Total Debt	Customers	Debt Per Customer
2018	$ 14,458	$ 49,240	$ 29,937	$ 93,635	19,648	$ 4,766
2017	10,441	50,505	33,934	94,880	19,598	4,841
2016	11,753	55,981	37,877	105,612	19,619	5,383
2015	12,970	40,620	41,760	95,350	19,470	4,897
2014	14,919	41,337	45,625	101,881	19,447	5,239
2013	16,762	27,614	49,494	93,870	19,378	4,844
2012	18,496	28,345	53,291	100,132	19,381	4,829
2011	20,190	29,051	57,016	106,257	19,360	5,488
2010	21,641	29,733	60,671	112,045	19,066	5,877
2009	13,241	30,608	64,257	108,106	19,084	5,665

Source:
Details of the SWPCA's debt outstanding are included in the notes to the financial statements.
Customers as presented reflects the total number of residential, commercial and industrial customers.

STAMFORD WATER POLLUTION CONTROL AUTHORITY
DEBT CAPACITY - DEBT COVERAGE (in Thousands)

For the Year Ended June 30,	Operating Revenues plus Special Assessments and Connection Charges	Less - Operating Exps. (Restated) (excluding Depreciation & Amortization)	Net Available Revenues	Revenue Bonds plus Notes Payable Debt Service			
				Principal	Interest	Total	Coverage
2018	$ 28,106	$ 12,473	$ 15,634	$ 5,408	$ 2,826	$ 8,234	1.90
2017	28,149	12,580	15,569	5,262	2,974	8,236	1.89
2016	27,289	13,508	13,782	5,153	3,110	8,263	1.67
2015	27,680	13,103	14,578	4,829	2,690	7,519	1.94
2014	24,870	11,769	13,102	4,499	2,803	7,302	1.79
2013	24,142	16,187	7,956	4,415	2,301	6,716	1.18
2012	23,008	11,645	11,363	4,512	2,305	6,817	1.67
2011	21,686	11,573	10,113	4,415	2,406	6,821	1.48
2010	21,016	11,292	9,724	4,320	2,506	6,826	1.42
2009	20,383	10,444	9,939	4,164	2,673	6,837	1.45

Source: City and SWPCA records

TABLE 7

STAMFORD WATER POLLUTION CONTROL AUTHORITY
OPERATING INFORMATION - FULL-TIME EQUIVALENT EMPLOYEES (FTE'S)
AS OF JUNE 30,

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
FTE's	43	44	44	40	41	36	39	41	42	40

Source: City records

STAMFORD WATER POLLUTION CONTROL AUTHORITY
OPERATING INFORMATION - CAPITAL ASSET STATISTICS BY FUNCTION/PROGRAM
AS OF JUNE 30,

Function/Program	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Treatment Plant										
Pumps and Motors (units)	134	134	134	134	134	134	134	134	134	134
Bioreactor Volume (million gallons per day)	15	15	15	15	15	15	15	15	15	15
Clarifiers (units)	6	6	6	6	6	6	6	6	6	6
Dryer and Pelletizer Equipment (units)	1	1	1	1	1	1	1	1	1	1
Stand-by Generators	2	2	2	2	2	2	2	2	2	2
Pumping Station										
Wastewater Stations (units)	23	23	23	23	23	22	22	22	22	22
Stormwater Stations (units)	4	4	4	4	4	4	4	4	4	4
Portable Generators (units)	4	4	4	4	4	3	3	3	4	4
Stand-by Generators	4	4	4	4	4	4	4	4	4	4
Wastewater										
Sanitary sewers (miles - per GIS data)	250	250	250	250	275	304	304	304	303	300
Treatment capacity (million gallons per day)	24	24	24	24	24	24	24	24	24	24

Source: SWPCA records

APPENDIX C – ENGINEER'S REPORT

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STAMFORDWPCA

ARCADIS Design & Consultancy for natural and built assets

City of Stamford, Connecticut

Water Pollution Control Authority for the City of Stamford

ENGINEER'S REPORT FOR REVENUE BOND ISSUANCE

June 17, 2019

ENGINEER'S REPORT

Catherine Mallon Traynor
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Prepared for:

City of Stamford

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June 17, 2019

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APPENDICES

A. SWPCA Capital Improvement Program FY2020-FY2025
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ACRONYMS AND ABBREVIATIONS

Aquarion	Aquarion Water Company
BFP	Belt Filter Press
BNR	Biological Nutrient Removal
BOD	Biochemical Oxygen Demand
CAFO	Consent Agreement and Final Order
CCF	Hundred Cubic Feet
CFR	Code of Federal Regulations
CGS	Connecticut General Statutes
City	City of Stamford
Clean Water Act	Water Pollution Control Act
CMMS	Computer Maintenance Management System
CMOM	Capacity, Management, Operation and Maintenance
CTDEEP	Connecticut Department of Energy and Environmental Protection
CWF	Clean Water Fund
DMR	Daily Monitoring Report
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
FOG	Fats, Oils and Grease
FPE	Food Preparation Establishment
GAC	Granular Activated Carbon
GBT	Gravity Belt Thickener
GIS	Geographic Information System
GO	General Obligation
HUD	U.S. Department of Housing and Urban Development
I/I	Infiltration and Inflow
LF	Linear Feet
MAA	Municipal Administrators Association
MGD	Million Gallons per Day
MOR	Monthly Operating Report

NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
O&M	Operations & Maintenance
POTW	Publicly Owned Treatment Works
SCADA	Supervisory Control and Data Acquisition
RAS	Return Activated Sludge
RCRA	Resource Conservation and Recovery Act
Sound	Long Island Sound
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary Sewer Overflow
STIF	Short-Term Investment Fund
SWPCA	Stamford Water Pollution Control Authority
SWTP	Stamford Water Treatment Plant
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
UAW	United Automobile, Aerospace, and Agricultural Implement Workers of America
UOE	International Union of Operating Engineers
UV	Ultraviolet
WAS	Waste Activated Sludge
WPCF	Water Pollution Control Facility

1 INTRODUCTION AND PURPOSE

1.1 Introduction and Purpose

Arcadis U.S., Inc. (Arcadis) has been retained by the City of Stamford, Connecticut (City) and the Water Pollution Control Authority for the City of Stamford (SWPCA) to provide Consulting Services for the development of an Engineer's Report in support of the planned issuance of 2019 Revenue Bonds. The Engineer's Report (Report) includes:

- A description and condition summary of the SWPCA wastewater system.
- An overview of the SWPCA's organization and management.
- A summary of the status of current and proposed capital projects and improvements.
- Review of regulatory compliance.
- A summary of historical and projected customer statistics.
- A review of current and projected financial information.
- Conclusions regarding the technical, organizational and financial aspects of the SWPCA.

The technical and financial data reviewed in preparing this Engineer's Report includes existing records and documents provided by the SWPCA. The Report summarizes the work completed up to the date of the issuance of the Engineer's Report. Changed conditions occurring or becoming known after such date could affect the material presented and the conclusions reached herein to the extent of such changes.

Arcadis has not independently verified the accuracy of the information provided by the SWPCA and others. However, we believe such sources are reliable and the information obtained to be appropriate for the analysis undertaken and the conclusions reached herein. To the extent that the information provided to Arcadis by the SWPCA is not accurate, the conclusions and recommendations contained in this Report may vary and are subject to change. In addition, the scope of the Arcadis review did not include any pending or threatened litigation against the SWPCA. The SWPCA has stated that there is no ongoing litigation which they believe would have any material impact on the SWPCA's operations.

In completing this Engineer's Report for the SWPCA, Arcadis is not serving in the role of a "municipal advisor" under the regulations of the Securities and Exchange Commission. As such, Arcadis is not: (a) recommending any action regarding municipal financial products or the issuance of municipal securities; and (b) is not acting as a registered municipal advisor to the SWPCA and does not owe a fiduciary duty to the SWPCA pursuant to Section 15B of the Securities Exchange Act of 1934, as amended by the Dodd-Frank Wall Street Reform and Consumer Protection Act, with respect to the information and material prepared in connection with this Engineer's Report. The SWPCA should discuss any information and material prepared in connection with this Engineer's Report with any and all internal and external financial and other advisors that they may deem appropriate before acting on this information and material.

Accordingly, since Arcadis is not a municipal advisor registered with the Securities and Exchange Commission, SWPCA acknowledges that: (a) it has retained the services of an independent registered

municipal advisor, which, during the past two years, was not associated with Arcadis, and that (b) Arcadis has complied with the requirements set forth in the federal Securities Exchange Act, Municipal Advisor Rule (17 CFR 200, 240, 249), which requires that the engineering company: (i) receive from the municipal entity a representation in writing that it is represented by, and will rely on the advice of, an independent registered municipal advisor; (ii) provide written disclosure to the municipal entity that Arcadis is not serving as a municipal advisor and, with respect to the municipal entity, is not subject to the statutory fiduciary duty applicable to municipal advisors under the federal Exchange Act, and (iii) provide a copy of such disclosure to the municipal entity's independent registered municipal advisor. Arcadis provided such disclosures to SWPCA and its registered municipal advisor. Arcadis does not provide opinions on or advocate for using a financial product (issuing debt) or the choice of financial products employed. As such, Arcadis submitted its work products to SWPCA's independent registered municipal advisor for review and approval.

1.2 Purpose of Engineer's Report

The Engineer's Report is prepared to support the planned issuance of 2019 Revenue Bonds. In preparing this Report, Arcadis has reviewed information and documents prepared by or on behalf of the SWPCA. The purpose of Arcadis' review of such documents is to understand and report on the technical and financial information contained therein as it relates to the 2019 bond issuance. For reference throughout this Report, the SWPCA's fiscal year (FY) runs from July 1 to June 30.

2 ORGANIZATION AND MANAGEMENT

2.1 Water Pollution Control Authority

The SWPCA is an enterprise fund/agency of the City of Stamford (City) that provides retail wastewater collection and treatment services to customers in the City and wholesale treatment services to the Town of Darien (Darien) via an Interlocal Agreement. The SWPCA was established by the City on November 28, 1996, by Ordinance No. 803, pursuant to statutory authority as set forth in Chapter 103, Sections 7-245 through 7-273a inclusive, of the Connecticut General Statutes (CGS). Prior to that date, the functions of the SWPCA operated under the Office of Operations of the City.

In accordance with its governing ordinance, the purpose of the SWPCA is to operate the Water Pollution Control Facility (WPCF), sanitary sewage collection system, sanitary sewer pumping stations and hurricane barrier storm water pumping stations for the City; to repair, maintain, upgrade/replace any component of the system related to the collection, treatment, and disposal of sewage and resulting byproducts, and to assess fees and charges in connection with the operation, maintenance and management of the system. The City provides the SWPCA with administrative, financial management and bond financing support. The SWPCA helps support the City's stormwater management program by providing flood control barrier operation and maintenance for the City and other related services; however, responsibility for stormwater control and management remains with the City.

2.2 Organizational Structure

An overview of the current organizational structure of the SWPCA, as of March 2019, is shown in Figure 2-1. The SWPCA is governed by a nine-member Board of Directors, all of whom are voting members. By ordinance, the Board includes the following City personnel: Director of Operations, Director of Administration, Chairman of the Board of Finance or designee from the Board of Finance, President of the Board of Representatives or designee from Board of Representatives, and five at-large members appointed by the Mayor and approved by the Board of Representatives. One of the at-large Board members must be an accountant or financial manager and one must be an engineer. At-large Board members are appointed for three-year terms and can serve multiple terms as there is no term limit. In addition, by ordinance, no more than three at-large members can be of the same political party. Refer to Section 2.3 and Table 2-1, for a list of the Board of Directors.

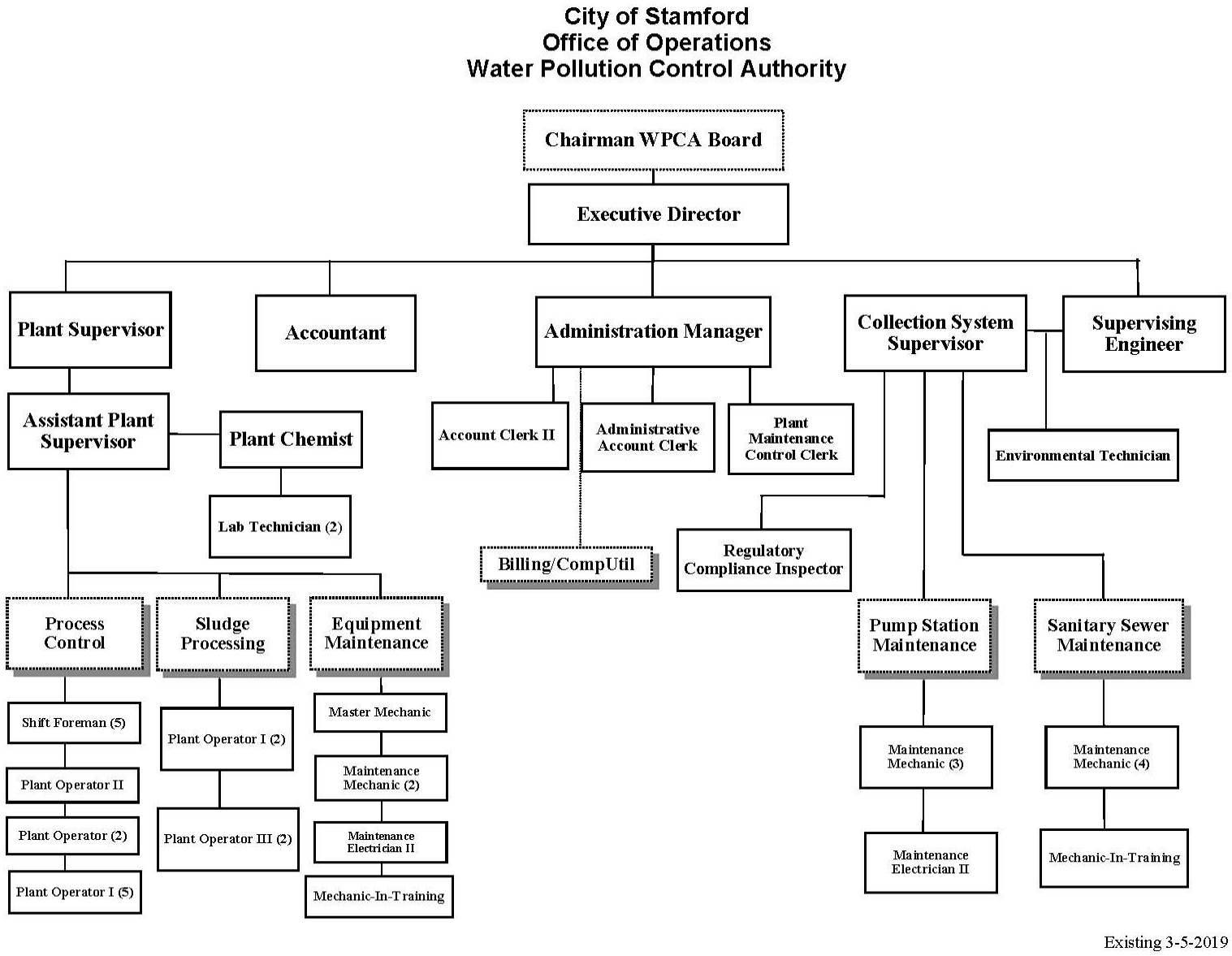


Figure 2-1. SWPCA Organization Chart

The SWPCA is headed by an Executive Director, who is responsible for all technical and administrative operations of the SWPCA and the implementation of programs, policies and procedures at the direction of the Board. Mr. William Brink, P.E., currently serves as the Executive Director of the SWPCA and has served in this position since March 2013.

The SWPCA FY2019 budget includes 48 employees; 47 full-time, and 1 permanent part-time, all of whom are employees of the SWPCA. The number of employees has generally remained consistent since FY2017. In FY2019 the number of employees increased from 45 to 48 employees with the addition of two WPCF Operators (process control) and a new position of Environmental Technician (collection system).

Each of the full-time and part-time employees belongs to one of three collective bargaining units represented within the City. The Municipal Administrators Association (MAA) and United Automobile, Aerospace, and Agricultural Implement Works of America (UAW) collective bargaining contracts are Citywide. The International Union of Operating Engineers (UOE) collective bargaining contract is with the SWPCA. The collective bargaining contracts are negotiated through the City's Office of Legal Affairs.

The collective bargaining agreement between the SWPCA and UOE Local 30 representing the SWPCA operators, mechanics and utility workers expires on June 30, 2021.

The collective bargaining agreement between the City and UAW who represent the SWPCA laboratory and clerical staff and electricians expired on June 30, 2017. The City has been in negotiations with the UAW for a new contract. Based on discussions with the SWPCA, the new agreement is not anticipated to have a significant impact on SWPCA's operations or operating expenses.

The collective bargaining agreement between the City and the Stamford Municipal Supervisory Employees Union Local #2657 of Council #4 of the American Federation of State, County and Municipal Employees, AFL-CIO representing SWPCA administrators and supervisors, including the Executive Director, expired on June 30, 2018, and is currently in negotiations. Based on discussions with the SWPCA, it is not anticipated that the new contract will have a significant impact on SWPCA's operations or operating expenses.

In FY2017, the SWPCA created a new position of Assistant Plant Supervisor to assist the Plant Supervisor with implementing process control policies, procedures and directives; supervising the WPCF operation and maintenance staff; and performing wastewater treatment process control duties to ensure proper operation of the WPCF.

In FY2018, the Plant Supervisor, William Degnan, retired. The Assistant Plant Supervisor, Robert Pudelka, is currently serving as the Acting Plant Supervisor. The SWPCA is discussing plans for the open Plant Supervisor role. However, the SWPCA has reported that the WPCF organizational structure and Department head positions will remain the same with both a Plant Supervisor and Assistant Plant Supervisor. The Plant Supervisor and Assistant Plant Supervisor positions both require a Connecticut Wastewater Operator Class IV (Class IV) license, which is the highest Operator certification level.

In FY2018, the Laboratory Director, Marie Sabo, retired. Upon Ms. Sabo's departure, the Assistant Plant Supervisor assumed some of Ms. Sabo's responsibilities, including, but not limited to regulatory data review and reporting. The SWPCA evaluated the Laboratory Department organizational structure and arrived at the decision to not fill the Laboratory Director position, but, instead, to slightly reorganize the

Department. The reorganization created the new position of Plant Chemist who oversees two (2) Lab Technicians and now reports to the Assistant Plant Supervisor. One of the Lab Technicians was promoted to fill the new Plant Chemist position, and the vacated Lab Technician position will not be filled. Since the Laboratory Director's departure and reorganization, the laboratory has operated successfully, and the SWPCA feels it will continue to do so, but will re-evaluate, if needed.

The organizational structure of the SWPCA is generally consistent with similar-sized wastewater utilities and, it appears that all required functions of the SWPCA are adequately staffed. Currently, there are two open positions at the SWPCA, the Plant Supervisor and Shift Foreman. There are no observed shortcomings in the operation and maintenance of the system due to the open staffing positions.

2.3 Board of Directors

At the time of this Report, the SWPCA Board of Directors currently consists of the following members listed in Table 2-1.

Table 2-1. SWPCA Board of Directors

Board Member Name	Title
Michael Handler	Chairman, City of Stamford Director of Administration
Daniel Capano	Vice Chairman
Mark McGrath	Member, City of Stamford Director of Operations
Monica DiCostanzo	Member, City of Stamford Board of Representatives
Kieran Ryan	Member, City of Stamford Board of Finance
Cristina Andreana	Member (Accountant)
Merritt Nesin	Member (Engineer)
Edward Kelly	Member
Robert Barocas	Member

2.4 Management and Operational Staff

Biographies of key management and operational staff are provided below. In general, there is stability in the organization with key members having longevity and significant experience with the SWPCA.

- William P. Brink, P.E., BCEE, Executive Director – Mr. Brink has more than thirty years progressive experience in engineering and management of large environmental projects, and having a unique combination of skills in business management (MBA in finance from University of Connecticut) leadership, wastewater utility operations, finance and engineering. He holds a P.E. in Connecticut and received his B.S. in Civil Engineering and M.E. in Sanitary Engineering from Drexel University, PA and Cornell University, NY respectively. Prior to the SWPCA, Mr. Brink worked for Stearns and Wheeler (now GHD Inc.) leading multi-disciplinary project teams on large wastewater collection and treatment project including, but not limited to, projects for the Hartford Metropolitan District

Commission, Danbury Water Pollution Control Plant, and Bridgeport Water Pollution Control Authority since 1992.

- Robert Pudelka, Acting Plant Supervisor – Mr. Pudelka supervises the operation and maintenance of the Stamford Water Pollution Control Facility and is responsible for compliance of the facility with its National Pollution Discharge Elimination System (NPDES) discharge permit. He has eleven years' experience in the wastewater industry, joining SWPCA in December 2016 as Assistant Plant Supervisor. He became Acting Plant Supervisor in July 2018 upon the retirement of William Degnan, previous Plant Supervisor. Prior to joining SWPCA, Mr. Pudelka was Superintendent of the New Milford, Connecticut Wastewater Treatment Facility, and was a Plant Operator at the Town of Greenwich Water Pollution Control Facility. He has a Class IV (highest level) Wastewater Treatment Plant Operator's license in Connecticut.
- Prakash Chakravati, P.E., Supervising Engineer – Mr. Chakravarti assists the Executive Director in planning and managing engineering and capital projects including design, preparation and review of contract plans and specifications, plant and pumping station construction management, sanitary sewer repair and construction management. He also supervises staff and contractual support personnel assigned to the construction function. Mr. Chakravarti holds a master's degree in Civil Engineering from Lehigh University and is a registered professional engineer. Since 1987, he worked as an engineer for the City and has compiled and implemented numerous capital projects including water pollution control related projects such as major pump station upgrades, bar screens, pump controls and sanitary sewer projects. He currently supervises the major upgrades at the WPCF and numerous satellite pump stations.
- Rhudean Bull, Administration Manager – Ms. Bull is responsible for planning, developing, analyzing, evaluating and improving various management control systems, policies, work methods and procedures for the efficient operation of the SWPCA as well as day-to-day Plant Management. She assists the Executive Director in identifying its financial, personnel, and material needs and problems. She manages various administrative activities and human resources functions as well as the Billing function for the SWPCA. Ms. Bull received a B.S. Degree from South Carolina State University and a master's degree in Public Administration with a concentration in Human Resources Management from City University of New York – John Jay College. She has been certified as a Professional in Human Resources by the Society of Human Resources Management since 2001 and has over eighteen years' experience in management and human resources management fields.
- Mark Turndahl, Accountant – Mr. Turndahl joined SWPCA in 2012 and is responsible for the financial management of the WPCA - monitoring and recording cash receipts, preparing monthly financial statements including budget variance reports and analysis, reconciling bank accounts, approving invoices for payment and preparing monthly receivable reports. In addition, he ensures monthly debt service payments are made, prepares requests for grant and construction loan funding and works with the Auditors preparing the annual financial statement. Mr. Turndahl earned a B.S. degree from the University of Buffalo in Business Administration, a MBA degree from Pace University concentrating in accounting and passed the CPA exam. He has over thirty years of experience having held audit, financial analysis and controller/treasurer positions in local town and school governments, as well as major metropolitan New York firms.

- Stephen Pietrzyk, Collection System Supervisor – Mr. Pietrzyk has been with the SWPCA for eight years, and serves as the Collection System Supervisor responsible for the SWPCA's Capacity, Management, Operation and Maintenance (CMOM) program via planning, coordinating, and supervising mechanics to operate and maintain the collection system and pumping stations and the hurricane barrier storm water pumping stations, and the Regulatory Compliance Inspector who inspects food preparation establishments for compliance with the Fats, Oil and Grease (FOG) abatement program. Prior to this he owned and operated two environmental consulting businesses for over 18-years participating in numerous residential, commercial and industrial development projects. Mr. Pietrzyk received his MS and BS Degrees from the University of Connecticut and AS Degree in Landscape Development from State University of New York Cobleskill.

2.5 Interactions with the City

The SWPCA is a water pollution control authority established by the City pursuant to Chapter 103, Sections 7-245 through 7-273a of the Connecticut General Statutes. The City provides key administrative and support services to the SWPCA, and the SWPCA is responsible for operating and maintaining the WPCF, sanitary sewage system, wastewater pumping stations, and the City's hurricane barrier. The SWPCA operations are financed primarily through direct charges to the users of its services. The costs of operating and maintaining the City's hurricane barrier are back-charged to the City. Historically, the City has commissioned the firm of Maximus to conduct an annual study that identifies the SWPCA's allocation share of City support services costs.

Additionally, the City can advance funds to the SWPCA to meet operating cash flow requirements and capital expenditures prior to capital improvement bond increases. The City of Stamford specifically provides the following:

- Procurement, accounts payable, and payroll services;
- Budget and capital improvement bond issuance related support;
- Technology Management Services (IT) support for e-mail, voicemail, network services, PC support services, MS Office applications, accounting software including general ledger and fixed asset modules, and SWPCA-specific software applications,
- Human Resources support for hiring, terminations, and retirements;
- Risk Management support for employee safety and workers' compensation claims;
- Legal support, as needed, for agreements by the SWPCA and claims for and against the SWPCA;
- Revenue Services Department support for billing and collection of sewer assessment and sewer connection charges

As noted, the City can provide financial support to the SWPCA from the City pool cash account. The SWPCA can access this account to fund unexpected or not yet funded, but approved capital improvements (capital account) and during periods when its cash on hand balances are not sufficient to meet its operating needs (operating account). The SWPCA reimburses the City from its cash reserves as required, with any unpaid balance subject to interest charges at the City's current quarterly interest

earnings rate for its Short-Term Investment Fund (STIF) account. As discussed in Section 8, currently the SWPCA does not require financial support from the City.

In conjunction with the SWPCA's sewer extension projects, the City can request that the SWPCA make other infrastructure improvements as well, including those related to stormwater and drainage, road widening and alignment, and other curb and sidewalk improvements. The costs of these improvements are paid for by the City or reimbursed to the SWPCA by the City.

Based on the audited financial statements, in FY2017 and FY2018, the City paid approximately $221,000 and $263,000, respectively in sewer use charges to the SWPCA. The City also reimbursed the SWPCA approximately $409,000 and $435,000 for the City's share of the hurricane barrier maintenance and operations for the years ended June 2017 and 2018, respectively.

In FY2017 and FY2018, the SWPCA paid the City approximately $398,000 and $455,000 for an allocation of central services costs, respectively, and approximately $764,000 and $932,000 to the City's internal service medical insurance fund for health insurance coverage of active and retired employees, respectively.

2.6 Overview of Service Contracts and Agreements

The City and the SWPCA have numerous contracts in place for the management and operation of the system. There are several key or major agreements to support delivery of services and to secure revenues, which are pertinent to the financial review summarized in this Report. A summary of these is provided below:

- Sludge Processing Agreement with Synagro – The SWPCA provides sludge thickening and dewatering, and contracts with Synagro for sludge drying, transportation and disposal services. Synagro is responsible for processing the sludge received from the WPCF to produce a marketable product, testing of the product, marketing the product, and disposing of processing residuals. Ultimate disposal of the sludge by Synagro is through land application, incineration at one of Connecticut's permitted facilities (e.g., Naugatuck, Waterbury, or Hartford), or landfill (e.g., York, PA). Sludge processing costs accounted for approximately 16 percent of the SWPCA's annual operating costs for FY2017-2018 and are currently budgeted at 16.1 percent of operating costs for FY2018-2019. As part of the agreement, Synagro is responsible for making a capital contribution in an amount up to $300,000 toward the cost of one or more capital modifications at the sludge drying facility and/or the wastewater treatment plant over the five-year contract term. The agreement with Synagro expired on March 2, 2019. In lieu of initiating a procurement process for a new Sludge Management Contract, the SWPCA negotiated an amendment (Second Amendment) to the contract with Synagro, which was effective March 3, 2019 and extended the contract an additional five years. The driver for this decision was the tightening of the market for sludge management in Connecticut as well as the SWPCA's satisfaction with Synagro's performance under the current agreement. The First Amendment to the contract was executed on September 21, 2016, retroactive to July 1, 2016, which increased the hours of dryer operation from 16-hours, five days a week to 24-hours, five days a week, in addition to an increase in dry tons of sludge per year (4,560 to 6,000 dry tons per year) and the addition of an 'additional base operating charge' ($231,500). There were no public objections to the change in hours of operation. The Second Amendment to the contract increased the following: the

SWPCA's maximum sludge delivery from 6,000 to 6,240 dry tons per year, the cost of disposal of sludge cake from a fixed price of $73.97 per wet ton to a varied price per disposal facility of $84 to 118 per wet ton, and the base operating charge from $1,431,375.00 to $1,776,241.62, but removed the additional base operating charge of $231,500.

- Billing and Collection Agreement with Computil – The SWPCA contracts with Computil to provide billing and collection service assistance as well as consumption data analysis, customer service and reporting. The contract expires on February 9, 2020. According to the terms of the contract, the SWPCA is to pay Computil a lump sum fee of $405,834 for each contract year for the duration of this agreement (including any extensions).
- Darien Interlocal Agreement – The City provides wholesale treatment and discharge services to the Town of Darien via an Interlocal Agreement dated December 3, 2013. The agreement includes both capital reimbursement and operation and maintenance cost share components. The capital reimbursement and operation and maintenance cost share is based primarily on measured wastewater flow contribution (by volume). Under the current agreement, the Town of Darien is limited to an average annual daily flow of not more than 3.0 million gallons per day (MGD) and a combined peak flow of not more than 7.5 MGD. However, if flows from Darien exceed the allowable maximum, the SWPCA shall be held harmless from liability, cost, or expense resulting from any incurred penalties, cleanup, and repair costs. If a regulatory agency takes action against the SWPCA in connection with flow discharges above the limits, payment of costs, fines, penalties, or damages will be apportioned between the SWPCA and Darien. Additionally, the Town of Darien will share nitrogen trading credits generated through the operation of SWPCA's treatment plant, based on the greater of 12.5 percent or the percentage by volume represented by Darien's flow. The Agreement provides a formula for compensation to the SWPCA for operation and maintenance costs and for capital improvements of SWPCA's treatment plant and collection sewers which convey Darien's wastewater. Darien contracted revenue (including both capital and operation and maintenance components) for FY2018, accounts for approximately 8.7 percent of SWPCA's total revenue. The current Darien Interlocal Agreement expired on June 30, 2018. A mutual agreement between the SWPCA and Darien has been reached extending the Darien Interlocal Agreement an additional five years and will include flow metering at two interlocal connections (Heather Lane and Lake Drive) from Darien. The agreement is expected to be executed by June 1, 2019. The two interlocal connections were not metered previously due to reportedly low and/or intermittent flow; however, it was identified during the flow metering program for the Infiltration and Inflow Study that the flows are higher than expected. The FY2019 flow charges to Darien will be retroactive to October 1, 2018. Based upon the total flow increase, the SWPCA estimates a 20% increase in annual revenue from Darien.
- Aquarion Agreement – The City accepts water treatment plant sludge from the Aquarion Water Company's (Aquarion) Stamford Water Treatment Plant (SWTP) pursuant to the terms and conditions of Aquarion's agreement with the SWPCA. Aquarion's residual sludge revenue is approximately $300,000 annually to the SWPCA. Historically, this has represented approximately 1 percent of the SWPCA's total income. In October 2017, the SWPCA identified significant solids buildup in the gravity sewer line to which the SWTP discharges residual sludge, which required the SWPCA to increase collection system inspection and preventative maintenance cleaning. The SWPCA contacted Aquarion to discuss the increase in solids buildup, in addition to aluminum content in the sludge. It was identified that the observed increase in solids buildup occurred during Aquarion's pilot

use of powder activated carbon, and was therefore ceased upon the SWPCA's request. Another item that was discussed was the aluminum content in the SWTP sludge from the use of alum in the water treatment process, which increases the final dewatered sludge aluminum content. According to Synagro, the aluminum content in the dewatered sludge has prevented disposal at, at least, one incineration plant. Incineration is only utilized when the volume of dewatered sludge exceeds the capacity of the sludge dryer, or the sludge dryer is out of service for maintenance or repair. There are other incinerator plants that have accepted the sludge, and disposal at landfills is also an option. In December 2017, the SWPCA sent a letter to Aquarion outlining the solids buildup and aluminum content issues, and requested that Aquarion evaluate alternatives to mitigate these issues. In response, Aquarion hired a consultant to evaluate alternatives for long-term mitigation, and it was recommended that Aquarion install centrifuges at the SWTP. The SWPCA reported that Aquarion agreed to install centrifuges at the SWTP. The SWPCA has notified Aquarion that a condition to Aquarion's General Permit is that the centrifuges are installed and the discharge of SWTP sludge to the SWPCA sanitary sewer be discontinued as soon as possible, but no later than April 1, 2021. The SWPCA noted that Aquarion in on track to meet the deadline. In the meantime, the SWPCA monitors the gravity sewer lines and has implemented preventative maintenance cleaning to mitigate surcharging events, which is billed to Aquarion. In addition, any additional disposal costs to the SWPCA related to aluminum content in the sludge will be charged to Aquarion, but has not occurred at the time of this Report.

- City Pooled Cash Arrangement – Under a long-standing agreement with the City, the SWPCA shares in a pooled cash account controlled by, and in the name of, the City. The SWPCA draws from this account to fund unexpected or not yet funded capital improvements and to cover operating costs during the periods when its on hand cash balances are not sufficient to meet its operating needs. The SWPCA's share of this pooled cash account had historically been in a deficit. The total deficiency in FY2013 was approximately $8.0 million. Pursuant to the MOA dated May 13, 2014 between the City and the SWPCA, the SWPCA agreed to repay the City over a five-year period with interest at the Connecticut State Treasurer's Investment Fund rate. However, the SWPCA accelerated their repayment schedule to the City and effectively paid the City back in FY2016, which was less than three years versus the five year period established in the MOA. In addition to paying back the City, the SWPCA, at the end of FY2018, has approximately $17.2 million in the operating, capital reserve, and surplus fund accounts. In FY2018, the SWPCA maintained a positive pooled cash balance and did not require any cash advances from the City to cover short-term cash needs.

3 SYSTEM DESCRIPTION

3.1 Service Area

The City of Stamford is divided into four geographic taxing districts, based upon municipal services furnished to the jurisdiction. As the City extends sanitary sewer lines into previously unsewered areas, municipal garbage collection is also extended, and the tax district classification is changed accordingly.

The service area of the SWPCA includes the two City taxing districts that are served by sanitary sewer lines, namely taxing districts A (1) and C/S (4). Within the City, the service area is bounded by the Merritt Parkway to the north, the Noroton River (constituting the border line with Darien) to the east, Old Greenwich to the west, and the Long Island Sound to the south. The service area includes residential, commercial, government and non-profit customers. The service area boundaries are shown in Figure 3-1.

The SWPCA also provides transmission and treatment services to areas within the Town of Darien, as noted previously. Pump stations owned and operated by the Town of Darien convey wastewater to the east side of the City where the wastewater is then conveyed through the SWPCA's collection system to Stamford's wastewater treatment plant.

The areas north of the Merritt Parkway are predominantly served by septic systems. The City's current Master Plan (2015-2025) focuses on encouraging new housing units and developments to utilize existing sewer main. Although the current Master Plan makes no mention of extending the sanitary sewer system into areas currently not served by public sewers, the discussions with SWPCA executive staff and a review of the SWPCA capital improvement plan (CIP) (as discussed in Section 5) indicate that a number of sewer extension projects have recently been completed, are currently underway, or are planned for the relatively near future. According to SWPCA staff, once these sewer extension projects are complete, almost all of the service area will be sewered.

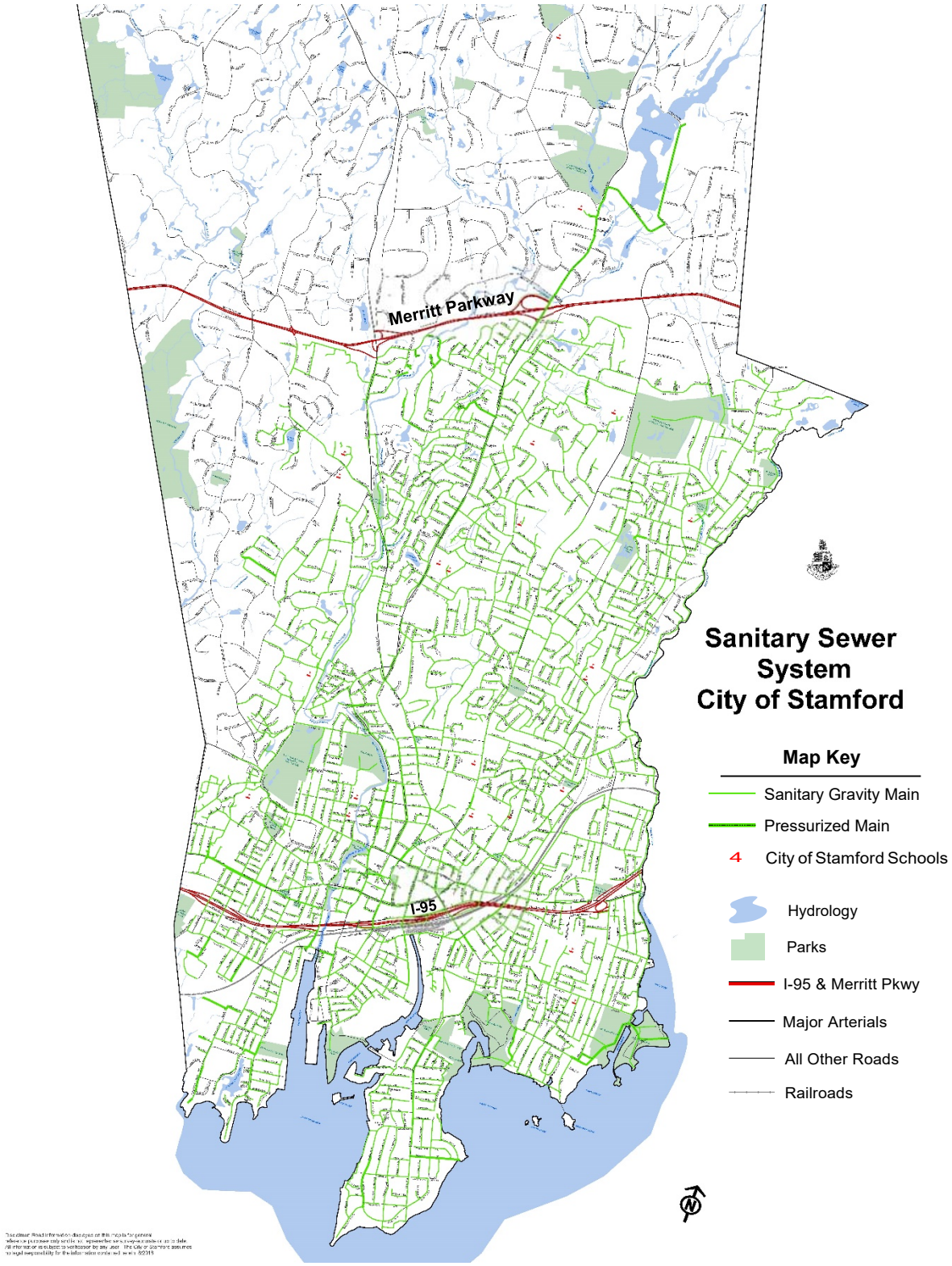


Figure 3-1. SWPCA Service Area

3.2 Wastewater Treatment Plant

At the core of the SWPCA operations is the wastewater treatment plant, located at 111 Harbor View Avenue. There has been wastewater treatment at this site since 1900. The first plant was built in 1943, followed by an upgrade in 1976, and the latest, major upgrade in 2006.

The WPCF's operation is regulated by the U.S. Water Pollution Control Act (Clean Water Act) under the direction of the U.S. Environmental Protection Agency (EPA). The EPA has delegated permitting authority to the Connecticut Department of Energy and Environmental Protection (CTDEEP) which administers the NPDES permit program. The previous NPDES permit for the Stamford WPCF (NPDES No. CT0101087) was issued by the CTDEEP on June 25, 2013 and expired on June 24, 2018. The SWPCA received the draft version of the new NPDES permit on October 23, 2018, and the NPDES permit was finalized and effective on January 1, 2019. Between June 25, 2018 and December 31, 2018, the SWPCA operated under the previous 2013 NPDES permit until the new 2019 NPDES permit was finalized. There were no changes made between the previous 2013 and final 2019 NPDES permit. The WPCF has a permitted capacity of 24 million gallons per day (MGD) annual average flow and provides the following unit processes: screenings, raw wastewater pumping, primary clarification, primary sludge degritting, biological treatment, secondary clarification, gravity thickening and belt filter pressing. The thickened solids are conveyed to the solids drying facility, where they are converted to Class A biosolids. The plant uses ultraviolet disinfection and Supervisory Control and Data Acquisition (SCADA) systems. The plant discharges treated effluent to Stamford Harbor, which is an inlet from Long Island Sound (Sound). As a discharger into Long Island Sound, the plant is subject to nutrient limitations imposed by the Sound's Total Maximum Daily Load (TMDL), which is discussed in further detail later in this Report.

All sanitary sewage collected by the City and the Town of Darien sewer systems passes through the influent collecting well. Stamford has two separate sewer systems; one for wastewater and one for stormwater. From the collecting well, wastewater flow enters the Raw Sewage Pumping Station for preliminary treatment, which consists of three bar screens with 3/4-inch clear bar spacing that are designed to remove large solids. After the bar screens, flow is pumped by five main sewage pumps to two, circular primary clarifiers to remove settleable and floatable solids by gravity settling and flotation. Primary sludge is degritted and sent directly to gravity thickeners. Primary effluent is directed to the suspended growth activated sludge system which consists of three rectangular aeration tanks, or trains, in which microorganisms biologically transform dissolved, colloidal, and non-settleable biodegradable organic materials into energy and settleable solids.

There are two reactor trains, Train 1 and Train 2. Each train has a primary anoxic zone followed by an aerobic zone. Primary effluent, return activated sludge (RAS), and recycled mixed liquor enter the first anoxic zone, in which nitrogen removal begins. The mixture, called mixed liquor, then flows to the aerobic zones. At the discharge end of each of the primary aerobic zones, there are four recycle pumps which return nitrate-rich mixed liquor to the primary anoxic zone for additional denitrification. Some of the activated sludge is wasted as mixed liquor from the end of the first aerobic zone and proceeds to the gravity belt thickeners. The remaining mixed liquor proceeds on to Train 3, where methanol is then added into the secondary anoxic zone to enhance nitrogen removal. Denitrified mixed liquor continues to the final re-aeration zone and exits the biological reactors.

Aeration tank effluent is directed to four, circular secondary clarifiers that provide final clarification of the wastewater. Settled solids are returned to the aeration tanks with a portion of the excess solids wasted. Finally, disinfection is accomplished via ultraviolet (UV) light, that provides inactivation of pathogens. There are two UV channels, each with two banks of lamps. Each bank has 16 modules, and each module has 18 lamps, for a total of 432 UV lamps. During high tide conditions, the effluent is pumped via three effluent pumps before discharge to the East Branch of Stamford Harbor (Harbor). During low tide conditions, the flow is discharged directly by gravity to the Harbor.

Waste mixed liquor from the aeration tanks is thickened via gravity belt thickeners (GBT) that reduce the volume of the sludge. In addition, waste activated sludge from the secondary clarifiers can be directed to the gravity thickeners, where it is combined with primary sludge. Thickened primary sludge from the gravity thickeners and GBTs is combined in two sludge blend tanks prior to delivery to belt filter presses (BFP) for dewatering. The dewatered sludge is then conveyed to the on-site pelletizing facility where it is heat dried to achieve Class A EQ biosolids status and is made into small sludge pellets for beneficial reuse via land application, as a fertilizer, or incineration. The sludge pelletizing operation is managed by Synagro, under contract to the SWPCA. The pelletizer was originally constructed in hopes of also developing an on-site waste-to-energy facility which would use the pellets as a fuel source. The waste-to-energy project, however, was never implemented due to concerns regarding economic viability.

At the end of 2018, the average daily flow at the WPCF was approximately 17.5 MGD, or 73 percent, of design capacity. Hydraulically, the plant has been designed to handle up to 68 MGD under peak conditions.

3.3 Sewage Pump Stations

The City owns, operates and maintains 23 sewage pump stations, which are utilized to transport sanitary wastewater flow where gravity is not a viable transport option. The pump stations range in design capacity from approximately 100,000 gallons per day to 5 MGD. SWPCA mechanics and utility workers operate and maintain the pump station structures and equipment, and perform landscaping activities.

A full listing of the pump stations and discussion of condition is included in Section 4 of this Report.

3.4 Sewage Collection System

The City's wastewater collection system comprises approximately 250 miles of sanitary sewers (ranging in size from 6 to 60 inches in diameter) and 8 miles of sanitary force mains. The SWPCA is responsible for the management and operation of this collection system, which is a completely separate sanitary sewer system. The City's storm sewers are not the responsibility of the SWPCA and are not part of the sewage collection system.

4 CONDITION OF SYSTEM

4.1 Condition Assessment Approach

Arcadis previously conducted condition assessments of the SWPCA system in 2012 and 2015 as part of the 2013 and 2015 Series A Bond issuances, including site visits to the WPCF and 22 of the SWPCA's pump stations. In July and August 2018, a condition review was performed based on the compilation of existing information provided by the SWPCA, discussions with SWPCA staff, and visual observations during limited field visits of the facilities. The key purpose of this condition review was to confirm current and anticipated conditions and assess any significant changes which may have occurred since the 2012 and 2015 inspections. In performing this assessment, the following key documents and information were reviewed:

- Regulatory compliance records
- Operations records and staff accounts
- Renewal and replacement programs
- Capital improvement plans
- 2012 and 2015 condition assessment findings

Based on the type of facilities, available documents related to the facilities and our experience with these facilities, a representative sample of facilities was inspected in 2018 on a limited basis. Such field investigations included the following facilities:

- Stamford WPCF visited on July 17 and August 15, 2018
- 9 sewage pump stations visited on August 15, 2018

During the July 17, 2018 and August 15, 2018 visits to the WPCF and pump stations, issues faced by the SWPCA during and since the 2015 inspections were discussed, including the steps taken to address these issues. The condition of the pump stations and treatment plant equipment was also discussed. Key findings are discussed in the subsequent sections.

For buried infrastructure (i.e., sewer interceptors, laterals, force mains, manholes, etc.), the condition assessment relies on existing information provided by the SWPCA. This includes collection system reports and preliminary Geographic Information System (GIS) information, such as age and materials of sewer pipes to the extent the information is available. No field investigations were conducted by Arcadis of the buried infrastructure.

The condition assessment of the critical assets at each of the above-ground assets was based on numerical ratings within the following categories:

- Reliability
- Operations and maintenance (O&M) performance

- Capacity
- Regulatory Compliance

Based on the evaluations using the above categories, an overall risk rating was assigned to each of the critical assets. The risk ratings for each of the above four categories are outlined in Table 4-1.

Table 4-1. Summary of Rating System

Numerical Rating	Interpretation of Rating	Description
1	Little to no risk	Relatively new and in good physical and operating condition
2	Some risk	Good condition, no known capital requirements
3	Moderate risk	Aged or worn but generally in good operating condition may require capital investment within 5-years
4	Significant risk	Operational but nearing end of life and/or requires investment to bring to full operating condition
5	High risk	Should be on high priority for renewal and/or replacement

When considering the rating assigned to a critical asset, the criticality of that asset was also considered. For assets that are critical to the overall operation and regulatory compliance of the facility, the allowable risk is small. Thus, highly critical assets tend to be given more stringent ratings.

4.2 Condition of Water Pollution Control Facility

4.2.1 Flows

The SWPCA's customer base has generally increased over the past few years with a minor decline in FY2017. Overall the treatment plant flows have generally been trending downwards, until 2018, as summarized in Table 4-2. This decreasing trend in plant flows is most likely attributable to water conservation measures and increased public awareness of water usage, which eventually leads to less wastewater generation; in addition to the SWPCA's efforts to mitigate infiltration and inflow (I/I) from entering the system. In 2018, there was in increase in average flow to 17.5 MGD, which is still below the WPCF's rated capacity of 24 MGD. This increase may be related to a 58% increase in rainfall between 2017 and 2018 (42 to 67 inches, respectively). Although the average flow increased in 2018, the ratio of average annual plant flow compared to total annual rainfall was less than all prior years listed in Table 4-2; therefore, indicating that the I/I removal program has been effective in reducing the amount of extraneous flow from entering the collection system.

Table 4-2. Stamford WPCF Average Annual Flow

Year	Average Flow (MGD)
2006	18.3
2007	17.5
2008	17.2
2009	16.4
2010	16.4
2011	18.5
2012	15.6
2013	15.1
2014	16.0
2015	15.4
2016	14.9
2017	15.1
2018	17.5
2019 [1]	19.5

Notes:

1) Represents the average flow for the period January 1, 2019 through March 31, 2019.

As can be seen from this table, the plant has been well under its rated capacity of 24 MGD, and there is ample capacity for growth in the service area.

4.2.2 Treatment Performance

For the purposes of this Report, Arcadis reviewed Discharge Monitoring Reports (DMRs) and Monthly Operating Reports (MORs) for the Stamford WPCF from July 2015 to March 2019. The plant performance data was compared against the limits established in the two primary regulatory permits governing the discharge of wastewater from the Stamford WPCF: NPDES permit (NPDES No. CT0101087) and the General Permit for Discharge of Nitrogen from Publicly-Owned Treatment Works (POTWs). These permits are discussed in more detail in Section 6.

For comparison purposes, plant operational performance from 2013 through March 2019 is summarized in Table 4-3. While the 2013 NPDES permits eliminated the limit on the average monthly flow rate, this data was included in Table 4-3 for comparison purposes. The SWPCA received the draft version of the new NPDES permit on October 23, 2018, and the NPDES permit was finalized and effective on January 1, 2019. Between June 25, 2018 and December 31, 2018, the SWPCA operated under the previous 2013 NPDES permit until the new 2019 NPDES permit was finalized. However, there were no changes made between the previous 2013 and final 2019 NPDES permit

Table 4-3. Stamford WPCF Performance

Parameter	Limit Type	Permit Limit	Annual Average Value						
			2013 (2)	2014	2015	2016	2017	2018	2019 (8)
Average Daily Flow (MGD)	Monthly Average	--	15.1	16.0	15.4	14.9	15.1	17.5	19.5
BOD_5 – Influent (mg/L)	--	--	225	222	197	207	217	199	177
BOD_5 – Effluent (mg/L)	Monthly Average / Daily Maximum	20 / 40	3.1	5.0	2.5	2.5	2.2	2.6	2.7
BOD_5 (% Removal)	Monthly Average	85	99	98	99	99	99	99	98
TSS – Influent (mg/L)	-	--	328	311	293	322	309	310	250
TSS – Effluent (mg/L)	Monthly Average / Daily Maximum	20 / 40	8.5	7.8	5.1	5.6	4.7	6.0	5.8
TSS (% Removal)	Monthly Average	85	98	97	98	98	98	98	98
Ammonia (as N) – Effluent (mg/L) November - May	Monthly Average	--	0.16	0.35	0.2	0.04	0.17	0.07	0.02
Ammonia (as N) – Effluent (mg/L) June - October	Monthly Average	2	0.1	0.06	0.01	0.06	0.06	0.05	-
Fecal Coliform (CFU/100 mL)	30-day Geometric Mean / Instantaneous	200 (88) / 260 (7)	16.3	5.5	3.2	3.7	4.9	3.9	4.7
Fecal Coliform (CFU/100 mL)	7-day Geometric Mean	400 (7)	70.5	12.7	-	-	-	-	-
Enterococci (CFU/100 mL)	30-day Geometric Mean	35 (7)	15.7	5.8 (4)	5.9	4.2	4.0	4.4	5.5
UV Dose (1) (mW, s/cm^2)	Instantaneous	>30	44	59(5)	46	61	63	57	87
Nitrogen – Effluent (lbs/day)	Monthly Average	926	440	408	278	265	261	293	277
Number of Annual Exceedances (effluent quality / UV dose)	--	--	1 / 57 (3)	3 / 56 (6)	0 / 53 (9)	0 / 22 (10)	0 / 24 (11)	0 / 18 (12)	0 / 4 (13)

Notes:

1) UV Dose is not reported on DMRs. Data is obtained from MORs and includes data from UV Channel Nos. 1 and 2 Low Dose. Average values rounded to nearest whole number.
2) Data only available for January 2013 and July through December 2013.
3) One exceedance related to effluent quality (TSS); however, 57 occurrences noted for low UV dosage.
4) Data only available for September through December 2014.
5) Data only available for July through December 2014.
6) Three exceedances related to effluent quality (1 total coliform, 1 TSS, 1 BOD); however, 56 occurrences noted for low UV dosage.
7) New bacterial limits effective January 1, 2015. Fecal coliform monthly standard decreased from 200 CFU/100 mL to 88 CFU/100 mL. Weekly fecal coliform standard no longer applicable. Implemented instantaneous percentage based fecal

coliform standard (no more than 10% of monthly samples shall exceed 260 CFU/100 mL). Implemented Enterococci standards.
8) Data only available from January 2019 through March 2019. Data subject to change based on receipt of additional data.
9) Zero exceedances related to effluent quality, but 53 occurrences noted for low UV dosage.
10) Zero exceedances related to effluent quality, but 22 occurrences noted for low UV dosage.
11) Zero exceedances related to effluent quality, but 24 occurrences noted for low UV dosage.
12) Zero exceedances related to effluent quality, but 18 occurrences noted for low UV dosage.
13) Zero exceedances related to effluent quality, but 4 occurrences noted for low UV dosage (through March 2019).

In general, the plant is performing very well in comparison to its NPDES and General Permit permit limits. Both biochemical oxygen demand (BOD) and total suspended solids (TSS) removals are, on average, exceeding permit requirements. In addition, the plant is almost completely removing ammonia under most circumstances via its biological nutrient removal (BNR) process.

The following summarizes plant performance observations from July 2015 to March 2019:

- Average Daily Flow – The SWPCA's current NPDES permit does not include limits on flow; however, the previous NPDES permit that expired 2013 had a limit of 24 MGD on a monthly average basis. For comparison purposes, the average daily flows fall well within the previous NPDES permit flow limit and the 24 MGD design flow of the treatment plant.
- Peak Flow – During wet weather, flows to the plant increase significantly. Although the SWPCA's collection system is a separated system, the high flow events during wet weather appear to be an indication of inflow/infiltration, which is also not unusual amongst collection systems in aging, coastal cities, such as Stamford. The SWPCA recently completed a comprehensive I/I study and identified a phased approach and annual program for addressing I/I, which is discussed in more detail in Section 4.4. Hydraulically, the plant has been designed to handle up to 68 MGD under peak conditions. There were five instances of peak flow levels greater than 68 MGD registered at the plant on July 7, 2017 (74 MGD), December 21 to 22, 2017 (76 and 77 MGD), April 16, 2018 (70 MGD), September 25, 2018 (87 MGD), and October 3, 2018 (84 MGD). While there were no operational issues or reported water quality exceedances (e.g. BOD, TSS) directly related to the four peak flow events that occurred in July and December 2017 and April and October 2018, the plant experienced a temporary power bump during the April 16, 2018 storm, which caused one UV channel to shut down for 9-minutes. During the September 25, 2018 wet weather event, rainfall accumulated almost four inches in a 3-hour period causing flow at the WPCF to peak at 87 MGD. During this high flow event, a power disruption occurred causing some of the WPCF's equipment, such as mixers, pumps and blowers, to fault out, and a sewage bypass from the Primary Distribution Box and surcharging of the UV system occurred. These bypasses were reported to CTDEEP and required protocol was followed. Since flows at the plant are measured downstream of the plant's effluent water pumps, the peak flows recorded are affected by the cycling of the effluent pumps, whose flow can exceed the raw sewage flows received by the plant. The raw sewage and treated flows of the plant are believed to be less than 64 MGD, the capacity of the raw sewage pumps.
- BOD – Effluent BOD concentration is well within the NPDES limits, and there were no exceedances recorded during from July 2015 through March 2019. Furthermore, average removal of BOD has remained relatively steady at 98 to 99 percent.
- TSS – Effluent TSS concentration is well within the NPDES limits, and there were no exceedances recorded from July 2015 through March 2019. In addition, the TSS removal percentages have

remained steady at 97 to 98 percent, and the effluent TSS concentrations have decreased overall since 2013 due to improved plant operations and a reduction in high flow events.

- Ammonia – Although the effluent ammonia concentration has fluctuated between 2013 and2019, it is still consistently well below the NPDES limits. There are no reported exceedances for this data set.
- Fecal Coliform – Fecal coliform was generally well within the NPDES limits with no fecal coliform exceedances recorded in this dataset. The new bacteria monitoring requirements were effective on January 1, 2015 (refer to Section 6 for more information). The 30-day geometric mean decreased between, 2013 and 2014, and then has remained relatively steady since 2014. The data indicates that improvements made to the UV system controls in 2014 may have helped to reduce effluent bacteria levels.
- Enterococci – Enterococci was generally well within the NPDES limits with no exceedances occurring since the new bacteria monitoring requirements were effective on January 1, 2015 (refer to Section 6 for more information). The annual 30-day geometric mean decreased significantly from 2013 to 2014, and then has remained relatively steady. The data indicates that improvements made to the UV system controls in 2014 may have helped to reduce effluent bacteria levels.
- UV Dose – Plant performance data indicates that the UV dose frequently drops below the minimum 30 mW, s/cm2 NPDES permit limit. Plant staff are aware of the UV dose issue and have continuously discussed it with the UV system vendor and the CTDEEP. As discussed further in Section 4.2.3., since 2014, the SWPCA has made UV system controls changes, plant improvements, and preventative maintenance changes to address the UV low dose issue. While the data indicates that the improvements have been successful in reducing noncompliance events, there were still 22, 24 and 18 instances in 2016, 2017, and 2018. In July, August, September and December 2018, there were no UV low dose events. It is important to note that not all of these incidences were actually low dose events. With the current system control configuration, any time the UV channel is taken offline for maintenance, a zero dose is recorded. In addition, any time there is power disruption, the current UV system takes approximately 3-minutes to reset, during which the UV system is not active and/or at full power. Although there is some loss of disinfection to the final effluent during this time, it is not related to an operational error or plant performance issue. Discussions with the SWPCA and review of plant performance data indicate that there are numerous occurrences of main power supply loss and instantaneous power bumps. The SWPCA has been in contact with the electrical supplier, Eversource, to discuss their concerns. The SWPCA is also actively discussing the UV dose issues with CTDEEP, and all of these incidences have been recorded and communicated to the CTDEEP along with the DMRs. In addition, as discussed further in Section 4.2.3.1 and 5.2.1, there are capital projects planned to upgrade the UV system and continued plant improvements to mitigate algae growth. In March and April 2019, the SWPCA had four UV low dose occurrences related to the outlet weir gates. The SWPCA identified issues with the gate actuator drive stem and nut, which caused the gate to be unable to fully control the water level in the channel due to a reduction in speed and delayed reaction. The SWPCA has installed a temporary stem and nut, and anticipate the manufacturer replacement stems and nuts by May 2019. In the meantime, the SWPCA has been monitoring the outlet weir gates.
- Nitrogen – The WPCF has historically decreased the total nitrogen discharged each year. Based on the nitrogen limits dictated by the General Permit for Discharge of Nitrogen, municipalities will either

pay or receive money from the Nitrogen Credit Exchange that is managed by the CTDEEP. In 2017, the SWPCA discharged an annual average of just 261 pounds/day of total nitrogen, making them the largest seller of nitrogen credits among all participating treatment facilities in 2017 with revenues from credit sales exceeding $640,000. Although the number of Stamford WPCF nitrogen trading credits has increased, the cost per credit established by CTDEEP had generally decreased until 2018. In 2018, the significant rainfall events and high flows, had an impact on the overall nitrogen removal efficiency at Connecticut POTWs; therefore, resulting in a higher nitrogen credit for buyers. Although the SWPCA discharged a slightly higher annual average of 293 pounds/day of total nitrogen than in 2017, it was still well below the nitrogen limits dictated by the General Permit. For 2018, the SWPCA is the largest seller of nitrogen credits in 2018 with proposed revenues from credit sales exceeding $2.5 million. It is important to note that, while other POTWs in Connecticut likely require major capital investments to remove nitrogen, or are faced with large expenditures to purchase nitrogen credits, the recent WPCF upgrades have placed Stamford in a good position whereby no major upgrades are likely to be necessary to meet the General Permit requirements. However, the SWPCA is evaluating the potential impacts of nitrogen removal related to the planned secondary treatment upgrade, which will require one aeration tank to be offline at a time during construction.

- Bypasses – Besides permit related exceedances, bypass events (e.g. loss of UV disinfections, raw sewage spills) occurring at the WPCF were also reviewed. Bypass events related to loss of UV disinfection bypasses were discussed in the 'UV Dose' bullet section above. From July 2015 through March 2019, there were four bypass events related to sewage spills at the WPCF. In May and August 2016, one of the underground primary sludge lines had an isolated break, which caused sludge to discharge onto the surrounding grass and roadways. In both instances, the break was excavated and repaired. As discussed above in the 'Peak Flow' bullet section, in September 2018 a wet weather event and power disruption caused surcharging of the Primary Distribution Box. Finally, in November 2018, the 42-inch force main vent saddle gasket failed causing raw sewage to surcharge the vault. The saddle connection has been temporarily repaired, and a permanent repair will be made once influent plant flows are low enough to allow for the force main to be shut down. The SWPCA is monitoring the temporary repair. While these four events did not have an impact on final effluent water quality, some raw sewage and/or sludge may have discharged into a nearby storm catch basin. CTDEEP was notified of each bypass and required protocol was followed. Both primary sludge lines between the primary pumps and degritting system have since been fully replaced in 2017.

4.2.3 Condition Assessment

The last major plant upgrade was completed in 2006 by the SWPCA. This upgrade included new aeration tanks with provisions for BNR, a fourth secondary clarifier, a new UV disinfection facility, solids handling facilities, a new standby generator, and other miscellaneous improvements. Facilities constructed under this upgrade are generally in good condition. However, as discussed further in this Report, there have been on-going issues with a few of the plant processes that are planned to be addressed under the SWPCA's CIP. In addition, many of the facilities not upgraded during the 2006 plant upgrade are approaching their estimated useful life and/or have some operational issues. For more details on the SWPCA's CIP, refer to Section 5.

4.2.3.1 Wet Stream

In general, the preliminary treatment equipment, which includes the bar screens and raw sewage pumps, is approaching the end of its estimated useful life and has had some operating issues. There is no grit removal from the headworks, which causes grit to travel to downstream processes, causing pre-mature wear on piping and equipment. The three bar screens are approximately 23 years old and have moderate signs of corrosion, but are functional and have sufficient capacity. However, since the bar screens only provide coarse screening, plant staff have reported that rags and other large debris pass through the bar screens, which create issues in downstream processes. The SPWCA's plan to address these issues are discussed below.

In addition, the plant receives approximately 250,000 gallons of septage per month from septage haulers which results in approximately 12 to 15 deliveries to the treatment plant per day. There is no screening or grit removal of the septage, which flows directly into the influent channel upstream of the bar screens from the haulers' discharge location. This lack of screening is a cause of downstream issues, and the discharge site is a location for potential odor release as well. Modifications were made, approximately five years ago, to address odors, including an automatic closing septage discharge connection and a granular activated carbon-based air treatment system at a manhole near the plant entrance gate, which significantly reduced odors and continues to operate satisfactorily. The downstream issues are largely attributed to added maintenance and operational challenges; however, such issues do not appear to have adversely impacted meeting discharge regulations based on current conditions. The SPWCA's plan to further address these issues are discussed below.

The raw sewage pumps are approximately 40 years old. These pumps continue to function, but have increased repair needs and are worn such that their capacity has been reduced, according to a Raw Sewage Condition Assessment, prepared for the SWPCA in 2015. All five raw sewage pumps are used under peak flow conditions, leaving no redundancy. There are currently two smaller constant speed pumps and three larger variable speed pumps. One of the smaller constant speed pumps was recently replaced, and the other four pumps have been rebuilt numerous times.

The issues identified with the preliminary treatment equipment are being addressed as part of a preliminary treatment upgrade project. The construction project was packaged with the secondary treatment and UV disinfection upgrade projects (discussed later in this section), and awarded in April 2019 for $26.8 million. There is currently approximately $12.3 million budgeted in the 6-year CIP (FY2020 and FY2021) for the preliminary treatment upgrade, start-up services, and engineering services during construction. The major items included in the upgrade are:

- Replacement of the bar screens with enclosed 1/4-inch screens to provide finer screening and odor control
- Installation of a new enclosed shaftless screw conveyor and grinder-washer/compactor to allow for screenings to be disposed of as municipal solid waste rather than as Special Waste
- Replacement of the raw sewage pumps to meet peak flow with required redundancy and maximizing efficiency at average flow conditions
- Installation of new, enclosed septage receiving station to provide septage and holding tank waste screening, rock removal and odor containment

- Modifications to existing odor control and installation of new activated carbon odor control system for RSPS exhaust air treatment

The two primary clarifiers are in fair to good condition, operate well, and provide ample capacity, even if one is taken out of service. The mechanisms and drive for Primary Clarifier #1 were replaced in 2005 and there is light to moderate corrosion throughout with isolated heavy corrosion on the skimmer arm. Repairs to Primary Clarifier #2 were completed in 2017, and included replacement of the mechanisms and drive, which are in good condition. The concrete on both primary clarifiers is reported to be in good condition for their age.

There are five aeration blowers that are approximately 25 years old and reaching the end of their useful lives. Although the blowers are generally reliable, they are oversized and have limited turndown. In addition, the current aeration system has limited dissolved oxygen and airflow monitoring and controls relying primarily on the blower inlet valve to control airflow into the system. Due to limited airflow control and the configuration of the air header piping, the system is unable to operate with less than two blowers in service. These system limitations can result in over aeration and inefficient operation.

Back-up power to three of the blowers is provided by a 900 kW standby generator, which is the original generator for the plant and is reaching the end of its estimated useful life.

There are three aeration tanks that are generally in good condition and function well. Two of the three aeration tanks are new to the 2006 upgrade. Over the years, the SWPCA has added additional dissolved oxygen sensors to allow for more comprehensive system monitoring. In addition, flow meters were recently added to the RAS suction lines to assist with flow and distribution monitoring to the aeration tanks.

The issues identified with the process air equipment and aeration tanks are being addressed as part of a secondary treatment upgrade project. The construction project was packaged with the preliminary treatment and UV disinfection upgrade projects (discussed previously and later in this section) and awarded in April 2019 for $26.8 million. Approximately $9.4 million is budgeted in the 6-year CIP (FY2020 and FY2021) for the secondary treatment upgrade, start-up services, and engineering services during construction. The major items included in the upgrade are:

- Replacement of blowers with more efficient units to provide necessary turndown and modification of piping to allow for flexibility of blower operation
- Modifications to the aeration tanks to optimize the removal of BOD and nitrogen, including expanding/converting zones, adding mixers, and raising baffle walls
- Modifications to the aeration tank control strategy, including the replacement and/or installation of new instrumentation, valves and meters
- Replacement of standby generator

Due to the large size of the two newer aeration tanks, there may be some process impacts when removing these tanks during construction; however, the SWPCA is aware of this potential issue and are discussing internally and working with the design consultant to evaluate options.

Supporting systems for the plant's biological nutrient removal system are generally in good condition. Two of the nutrient recycle (NRCY) pumps, which are only three years old, are being refurbished. Although

these pumps are the same manufacturer and model as the other older NRCY pumps, the manufacturer made material modifications to certain components of the newer pumps, which affected the pump's performance. The older pumps, which are approximately 20 years old, have not had any major issues and operate well. Discussions with the plant staff indicate that this was an isolated incident and the manufacturer has addressed the manufacturing issue and reverted back to the original material. In addition, the SWPCA has a spare pump available, if needed.

There are five RAS pumps with one pump per secondary clarifier and one for redundancy. Additionally, the piping arrangement is such that there is operational flexibility in the pumping. One of the pumps was recently replaced and one was added during the 2006 upgrade. The remaining three pumps are approximately 40 years old, but were rebuilt and the motors were replaced in 2005. The pumps have signs of moderate corrosion, as to be expected for their age, and experience increased vibration during peak flow operation, but are reported to be overall reliable. To account for the fact that the RAS pumps are approaching the end of their useful life, there is currently $1.5 million budgeted in the 6-year CIP (FY2021) to replace the RAS pumps in conjunction with the plant water pumps (discussed in Section 4.2.6).

It is our understanding that the three waste activated sludge (WAS) pumps are currently not in operation, and wasting is performed directly from the aeration tanks. Visually the WAS pumps appear to be in good condition with minor corrosion. The WAS pumps are configured, so that when in operation, there is one pump per Secondary Clarifier #1 through 3 with no dedicated WAS pump for Secondary Clarifier #4 for wasting. The SWPCA is currently evaluating the long-term plan for the WAS pumps. If the WAS system will be utilized again, then the SWPCA should consider evaluating redundancy of the system and addressing, as needed. Also, if the WAS pumps are out of operation for extended periods of time, the SWPCA should consider performing any long-term shutdown maintenance, as recommended by the manufacturer.

There are four secondary clarifiers with various years of installation and repair. Secondary Clarifiers #1 and 2 are original to the plant and underwent repairs in 2012, including replacement of the mechanisms, manifold, and drive and concrete repairs. Both of these secondary clarifiers are in good condition with isolated corrosion on mechanisms and manifold, which the SWPCA reported may be due to spray water. Secondary Clarifier #3 was constructed in the late 1980's and underwent partial repairs in 2017, including replacement of the ducking skimmer and installation of effluent launder covers to mitigate algae growth (which impacts the UV treatment process downstream). While the clarifier operates well from a process perspective, there is minor corrosion on the mechanisms and moderate corrosion on the center manifold. Secondary Clarifier #4 was added as part of the 2006 upgrade and was offline at the time of the site inspection, for replacement of the rubber scrapers. While the concrete is in good condition for its age, there is moderate corrosion on the mechanisms. The SWPCA is currently reviewing the condition of the secondary clarifiers and evaluating repair options. A construction contract for the installation of effluent launder covers on Secondary Clarifier #1, 2, and 4 was awarded in April 2019 for approximately $340,000 with work anticipated to occur in FY2020.

The SWPCA reported that there had previously been overloading issues with the secondary clarifiers due to the aeration tanks having separated and independent effluent channels, which flowed to designated secondary clarifiers. If one of the aeration tanks and/or secondary clarifiers was down, then the system was overloaded. Therefore, in 2017 a distribution box was added to combine effluent flow from each

aeration tank and distribute to the secondary clarifiers via four separate channels with weir gates. The SWPCA reported that the modified system has been operating well with no overloading issues.

Final effluent disinfection is accomplished in two UV channels. While the UV system is generally in good condition and operational, it has experienced periodic problems related to low dosing, as discussed in Section 4.2.2. Both UV system control issues and algae growth were a major contributor to the low dose readings, which the SWPCA has been addressing these issues over the years. In 2014 and 2015, major programming and control changes were made. In 2015, the SWPCA increased the cleaning frequency for the UV screens and installed a brush cleaning system for the weirs, scum baffles, and effluent launders for Secondary Clarifiers #1, #2, and #4 to better control the algae growth. In 2017, the SPWCA installed effluent trough and weir covers to Secondary Clarifier #3 and a temporary cover over the UV system influent channel to control algae. While these modifications have resulted in significant improvements overall, there are still occasional UV dose drops below permit limits. The SWPCA staff note that UV dosage is intentionally kept at 50, above the minimum of 30, so that the minimum required dose can be achieved despite some of these issues. This results in increased energy consumption, but has allowed for increased compliance with permit limits. As previously mentioned, the SWPCA has awarded a contract for the installation of effluent trough covers on the remaining three secondary clarifiers for continued algae control.

The issues identified with the UV system are being addressed as part of an upgrade project. The construction project was packaged with the preliminary and secondary treatment upgrade projects (discussed previously in this section) and awarded in April 2019 for $26.8 million. There is currently $7.7 million budgeted in the 6-year CIP (FY2020 and FY2021) for the UV upgrade, start-up services, and engineering services during construction. The major items included in the upgrade are:

- Construct two new channels and install new UV system and controls consisting of three banks per channel (two banks required for duty service; one bank on standby).
- Retrofit existing two channels and install new UV system and controls in only one channel consisting of three banks (two banks required for duty service; one bank on standby). The other retrofitted channel will be reserved for future expansion, if needed.
- Install two new power panel (one per basin) that shall be electrically connected to provide system redundancy.

In the meantime, before construction commences, the SWPCA has continued to work with the UV system vendor and consultants to address issues with this system, as they arise.

The three plant effluent pumps are approximately 15 years old and run on VFDs. The pumps previously experienced certain operational issues and were only capable of delivering approximately 75 percent of their design capacity; therefore, all three pumps were required to run under peak flow conditions providing no redundancy in the system. These pumps are critical for the proper functioning of the plant during daily high tides, as treated effluent cannot flow by gravity to the outfall during these events. A 2013 study initially identified that the effluent pump motors and VFDs are undersized for operation at full speed, and recommended upgrading the effluent pump motors and VFDs. In lieu of major changes to the pumps and drives, it was determined that a modification could be made to the effluent pump discharge piping to reduce the head that these pumps are required to achieve. In 2017, the discharge header was lowered approximately six-feet to reduce the required discharge head, which increased the capacity of each pump

to approximately 38 MGD. With the additional capacity, only two pumps are required to run during peak flow conditions with the third pump on standby, thereby providing vital redundancy in this critical system. In addition to the discharge header modifications, approximately four years ago, all three motors were rebuilt and two VFDs were replaced. Also, two years ago, pump #2 had vibration issues, so the propeller, seals, and bearings were repaired, and internal metal was sandblasted, filled, and epoxy painted to mitigate corrosion. In 2019, all three pumps experienced issues with the electrical wiring, which was damaged due to excess slack in the pump lifting chains. The cords and grommets were replaced on all three pumps. In addition, pump #2's seals and bearings were replaced, and pump #1 was balanced and the interior metal was sandblasted, filled, and epoxy painted. The SWPCA noted that the pumps are reliable and have been operating well with the recent modifications. As a result, there is currently no project to address these pumps in the CIP, as further modifications and/or upgrades may not be necessary at this time.

4.2.3.2 Solids Handling

Sludge from the primary clarifiers is pumped to cyclone degritters and grit classifiers for grit removal. However, this system is reported to be undersized and not maximizing grit removal, which causes grit to travel to downstream processes leading to premature wear on piping and equipment. Due to heavy wear, the grit system and associated piping needs frequent repairs. In 2016, the primary sludge line from the primary sludge pumps to the degritting system experienced two separate breaks due to wearing from the grit. Therefore, in 2017, the two six-inch glass lined pipes were replaced and upsized with two ten-inch glass lined pipes to handle the increased capacity of the planned grit system upgrade, as discussed below. Also, in 2017, the sludge line from one of the primary clarifiers to the primary pumps was lined to protect the pipe until replacement occurs under the grit system upgrade.

The primary sludge pumps are approximately 30 years old and near the end of their useful lives. In addition, the pumps are undersized in relation to the degritting system.

The issues identified with the grit classifiers and primary sludge pumps are being addressed as part of a sludge degritting system upgrade project. There is currently $4.2 million budgeted in the 6-year CIP (FY2022) for replacement of the sludge degritting equipment and primary sludge pumps and engineering services during construction. Currently, the major items in the scope of work include:

- Replacement of existing cyclone and classifier with new grit separation and dewatering system.
- Replacement of three primary sludge pumps with larger pumps
- Replacement of primary clarifier progressive cavity scum pump with a chopper pump.
- Replacement of primary sludge pump suction and discharge piping with common suction and discharge header to provide system flexibility and redundancy.

The primary clarifier scum pump was replaced during the 2006 upgrade and recently underwent replacement of the rotor and stator and is in good condition.

The three gravity thickeners were constructed in the 1970s, but were upgraded in 2012, including replacement of all mechanical equipment and repairs to the concrete. Typically, only two of the three thickeners need to be operated. At the time of the August 2018 site visit, Gravity Thickener #2 was offline for repairs. While the gravity thickeners were reported by the SWPCA to generally operate well, one of

the scum pipes has clogging issues. A flushing connection and clean-out were installed on the pipe to allow for preventative maintenance and flushing.

The four thickened sludge pumps (gravity thickener underflow), which were installed in the 1970s, were replaced approximately five years ago. Recently the pressure gauges on all the pumps were replaced due to issues since installation. The pumps and new pressure gauges are reported to operate well. The pumps have minor to isolated moderate corrosion.

The gravity thickener scum pump was replaced in 2017 and, at that time, a second pump was added for redundancy. Although the pumps are new, there is minor to isolated moderate corrosion; however, the SWPCA noted that there have not been any issues with operation of the pumps. The thickened sludge and gravity thickener scum pumps are in the same room and are possibly exhibiting signs of premature corrosion. A HVAC system evaluation may help to identify if ventilation modifications are necessary.

The two sludge blend tanks are approximately 15 years old and underwent repairs in 2012. The sludge blend tanks operate well, but occasionally have issues with ragging. Consequently, a StrainPress® coarse material separator was installed approximately five years ago on the feed line to the sludge blend tanks, which has helped, but not fully mitigated the issue. In addition, to reduce particle size entering the sludge blend tanks, there is one grinder on the tank feed line, which recently had the cutter cartridge replaced and operates well. In addition, as part of corrosion preventative maintenance, the tanks and other equipment in the sludge blend tank room (grinder and belt filter press pumps) were painted in 2018.

The two GBTs are approximately 15 years old, and both run under typical operating conditions. GBT #1 was refurbished with new rollers and placed back in service in December 2018, and GBT #2 is anticipated to be refurbished in 2019 after repairs to BFP #1 are completed (see discussion below). Some of the GBT structure and support equipment is in fair condition, including the level sensors for the discharged thickened sludge, thickened sludge pumps, and the GBT effluent basin. The SWPCA is currently evaluating options for replacement and/or repairs. Depending upon the long-term plan for the WAS pumps and overall wasting strategy and subsequent flow rate impacts to the GBTs, the SWPCA should continue to monitor the capacity of the GBTs and evaluate long-term plans for system redundancy, if needed.

The three BFPs are approximately 15 years old. While the BFPs operate well, the belts are replaced frequently due to heavy wear and the rollers have been damaged over time leading to corrosion. At the time of the site visit, BFP #1 was removed from service and undergoing replacement of the rollers. The SWPCA anticipates that BFP #1 will be placed back in service in May 2019. Under normal flow conditions, occasionally only one BFP can be operated, but typically two BFPs are required; therefore, with repairs underway on one BFP there is sometimes no redundancy in the system. The SWPCA is working to complete the repairs on BFP #1 and is monitoring the operation of the other two BFPs, and will evaluate and adjust operating strategy, if needed. There is currently $500,000 budgeted for FY2020 and FY2021 to replace the rollers in the remaining two BFPs.

The three belt filter press pumps are approximately 15 years old and are reported to operate well. As part of corrosion preventative maintenance, the pumps were painted in 2018.

The chemical feed system for the belt filter presses and gravity belt thickeners, include two polymer makeup units and five polymer feed pumps. The chemical feed system is in good condition with only minor corrosion and reported to operate well.

The sludge pelletization facility, operated and managed by Synagro, is approximately 10 years old and operates well. As previously mentioned, Synagro is responsible for a capital contribution up to $300,000 toward the cost of one or more capital modifications at the sludge pelletization facility and/or the wastewater treatment plant over the five-year contract term. A few of the larger capital projects include replacement of the burners, improvements to the dryer drums, and replacement of the conveyor bearings. In addition, a dust hazard analysis was recently completed. Upon receipt and review of the report, Synagro will address issues, as needed. Synagro is also evaluating options for maintenance management systems.

4.2.3.3 Support Systems

The plant has two standby generators. One was installed with the 2006 upgrade and is exercised regularly. This generator is rated for 2,000 kW and can power most plant needs. The plant also maintains a second, older and smaller generator (900 kW) that is used for standby power to the aeration blowers, as previously noted. This generator is original to the plant and is anticipated to be replaced, as part of the secondary treatment upgrade project.

Improvements to the plant water system were made recently to address debris in this system, which was fouling downstream equipment. A strainer system was installed, which is reported to be effective at minimizing debris in the system. However, due to some operational issues and age, the pumps are planned to be replaced with the RAS pumps in FY2020.

The sodium hydroxide (caustic soda) and sodium hypochlorite systems, including the storage tanks and metering pumps, are approximately 15 years old and in good condition. The SWPCA currently utilizes totes for the sodium hydroxide in lieu of the storage tanks.

Historically odor control had been an issue at the Stamford WPCF; however, since 2012, the SWPCA has made various changes to the WPCF's odor control system and protocols, which has resulted in both improved working conditions and no recent odor complaints. As background, during the 2012 Arcadis site visit, the wet scrubber system was previously being operated with no chemicals and was not effectively removing odors. In addition, dewatered sludge and screenings/grit trailers parked on-site for significant periods of time were a major cause of odor issues. During the 2018 site visit very minor to no odor was observed both inside and outside the buildings. Some of the improvements since 2012, include:

- Upgrades to the sodium hypochlorite system, which feeds all plant scrubber systems, were made approximately five years ago to run the scrubbers with sodium hypochlorite. Recently, the scrubbers are also now being run with sodium hydroxide. According to the SWPCA staff, the use of both chemicals has significantly improved odor control and the effectiveness of the system.
- A granular activated carbon (GAC)-based odor control system that was installed approximately five years ago, in which a flexible hose duct is placed in the cargo compartment of the truck and a ventilation fan creates a vacuum to pull odorous air from the vehicles through the GAC vessel. During the 2018 site visit, only minor odor was observed in this area, and the SWPCA reports that the odor control system has been working well with no recent odor complaints.

- Recently the SWPCA requested that Synagro remove overnight sludge hauling trucks from the site within a few hours. The SWPCA reported that since Synagro has altered their overnight truck staging protocol, there have been no recent odor complaints.
- Some exterior piping was recently replaced and heat tracing was added to winterize the system.

The SWPCA has also recently undertaken a comprehensive upgrade of its SCADA system. This project replaced an obsolete SCADA system that was no longer being manufactured and beyond its life cycle, leveraging newer SCADA technologies, and set up a future-ready foundation for process control improvement and optimization. New headend server hardware and client workstations were also installed, and existing historical data was migrated into the new Historian to maintain process history. The SCADA system allows monitoring and control of the WPCF and Sanitary Pump Stations.

4.2.3.4 WPCF Condition Summary

During the July 17 and August 16, 2018 site visit to the Stamford WPCF, major unit processes were observed and compared to the condition assessment ratings from the 2012 and 2015 visual inspections. A comparison of the ratings and summaries for the major equipment and unit processes is provided in Table 4-4.

Table 4-4. Summary of Condition Assessment Ratings for Major Equipment and Unit Processes

Process Area	Rating		
	September 2012	May 2015	August 2018
Headworks	3	3	3
Raw Sewage Pumps	3	3	4
Primary Clarifiers	3	3	3
Primary Sludge Pumps	3	3	3
Degritting System	4	4	4
Aeration Tanks	1	1	2
Process Air Blowers	3	3	3
Secondary Clarifiers	3	1	2
UV Disinfection System	2	2	3
Plant Effluent Pumps	4	4	2
Waste Sludge Pumps	3	2	2
Return Sludge Pumps	2	2	3
Gravity Thickeners	4	1	2
Thickened Sludge Pumps	3	3	2
Sludge Blend Tanks	3	3	2

Process Area	Rating		
	September 2012	May 2015	August 2018
Gravity Belt Thickener	2	2	3
Polymer Feed Skids	4	1	1
Belt Filter Press Feed Pumps	3	3	3
Belt Filter Press	3	3	4
Pelletizer System	2	2	2
Plant Water System	4	2	2
Odor Control Systems	4	1	1
Standby Power Generation	2	2	3

Key:

Numerical Rating	Interpretation of Rating	Description
1	Little to no risk	Relatively new and in good physical and operating condition
2	Some risk	Good condition, no known capital requirements
3	Moderate risk	Aged or worn but generally in good operating condition may require capital investment within 5-years
4	Significant risk	Operational but nearing end of life and/or requires investment to bring to full operating condition
5	High risk	Should be on high priority for renewal and/or replacement

A number of capital projects have recently been completed including improvements to the gravity thickener system, primary and secondary clarifiers, effluent water pumps and odor control systems. For a majority of the WPCF systems that received a rating of 3 or 4 (moderate to significant risk), design projects are currently underway and/or capital projects are identified in the SWPCA 6-year CIP. Details on the various planned and ongoing SWPCA CIP projects are included in Section 5 of this Report.

The above ratings reflect an indication of the condition of each of the mentioned systems. It does not represent any statistical analysis for failure probability. It would be necessary to perform a more detailed criticality review and advanced equipment testing, which is beyond the scope of this Report. Nonetheless, the ratings serve to provide an overview of where capital projects should be prioritized in the coming years.

4.3 Condition of Wastewater Pumping Stations

A field visit to 14 sewage pump stations was conducted in October 2012, and seven of the other nine remaining pump stations were visited in May 2015. As part of the preparation for this Report, 11 pump stations were visited, including the 7 from 2012, three from 2015, and two that had not been visited in

2012 or 2015. Based upon allocated time, the inspections were prioritized based upon date of last inspection (as part of previous Engineer's Report development), capacity, and age.

In general, based on our 2012, 2015, and 2018 site visits, it appears that most of the SWPCA's pumping stations are in acceptable physical condition, are reliable, and have adequate capacity. Beginning in 2016, SWPCA personnel have been equipped with electronic tablets that have been used to log information about each pump station. The tablets provide SWPCA personnel with data about each pump station such as station capacity, flow rates, sewer line mapping, and additional information that assists with maintaining the pump stations themselves. SWPCA indicated that they complete inspections of all wastewater and stormwater pump stations on a weekly basis. In addition to the weekly inspections, there are two personnel on call 24 hours a day, seven days a week for any alarms or issues that come up at any of the pump stations after work hours.

The SWPCA has a variety of different pumping station styles, including fully submersible stations, pre-fabricated "can" stations which include dry pit pumps, and above-grade "custom" stations. Most of the SWPCA's stations are of relatively recent construction and are within the expected design lives for the facilities. A description of each pump station is shown in Table 4-6.

Table 4-5. Summary of Pumping Station Condition Assessments

No.	Pump Station	Capacity (GPM)	Number of Pumps	On-Site Generator	Station Type	Original Installation Date
1.	Bennett Street	125	2	No	Dry Pit (Can Style) Submersible	1966
2.	Knapp Street	220	2	No	Dry Pit (Can Style) Submersible	1967
3.	Clay Hill Road	110	2	No	Submersible	1999
4.	Arden Lane	95	2	No	Submersible	1999
5.	Timber Lane	62	2	No	Submersible	1999
6.	Cedar Heights	58	2	No	Submersible	1999
7.	Maltbie	83	2	No	Submersible	1999
8.	Barry Place	100	2	No	Submersible	1940
9.	Dee Lane	100	2	No	Submersible	1971
10.	Soundview Farms 1	100	2	No	Submersible	1972
11.	Soundview Farms 2	150	2	No	Submersible	1972
12.	Pulaski St	43	2	No	Submersible	1988
13.	Hobson St.	350	2	No	Submersible	1970

No.	Pump Station	Capacity (GPM)	Number of Pumps	On-Site Generator	Station Type	Original Installation Date
14.	Saddle Rock Road	500	2	No	Dry Pit (Can Style) Submersible	1975
15.	Burwood Avenue	800	2	No	Dry Pit (Can Style) Submersible	1962
16.	Carter Drive	450	2	Yes	Submersible	1960
17.	Cove Island	2800	3	Yes	Submersible	2001
18.	Alvord Lane	2200	2	Yes	Dry Pit (Above Grade)	1941
19.	Commerce Road	852	2	No	Dry Pit Submersible	1951
20.	West Avenue	350	2	Yes	Dry Pit Submersible	1985
21.	Bonner Street	250	2	No	Dry Pit Submersible	1961
22.	Greenwich Avenue	410	4	Yes	Dry Pit Submersible	1986
23.	Carriage Drive	56	2	No	Submersible	2014

These stations are generally reliable, and no major issues have been reported with any of the stations. One newer sanitary pump station was added in 2014 as part of the Carriage Drive sewer extension project. Of the older stations, most have had significant upgrades within the last 10 to 20 years. Of notable exception is the Alvord Lane Pump Station, which is nearing the end of its useful life. However, this station has no reported reliability issues, and thus is likely to continue to function for the next few years. The Cove Island Pump Station, which is the largest pump station in the SWPCA's system and delivers the flow from the Town of Darien, recently underwent an extensive upgrade and renovation, and thus is expected to not require any major capital expenditures for many years to come.

Most of the SWPCA's pumping stations have two pumps, only one of which is required for peak conditions. However, a few pumping stations, due to excessive inflow and infiltration and/or inadequate design capacity, require both pumps to handle peak conditions. These stations do not have any redundancy under peak flow conditions. However, the vast majority of pumping stations have adequate, and even excess, capacity and thus run infrequently. Each pump station is equipped with multitrode level control systems and hi/low float control backup. All alarms are connected to SWPCA's SCADA system and alert personnel at the treatment plant of any issues.

A large number of the pumping stations have permanently installed standby generators. However, all of the other stations have receptacles for a portable generator and have a manual transfer switch to allow them to run on generator power. While the SWPCA has a number of portable generators that can be deployed to those stations that are without power, the SWPCA would be vulnerable in the case of a wide-

spread power outage. The SWPCA has stationed portable generators at the more critical pump stations, such as Burwood. The SWPCA is well equipped to handle typical power outages which would only affect a portion of the City. The SWPCA has a maintenance contract in place with Northeast Generator to provide service and repair on all of their generators, and this service contract appears to be effective at maintaining the generators in good working condition.

All of the stations are equipped with radio telemetry and hard-wired phone lines, except for Carriage Drive, which has cellular, to transmit critical signals and alarms to the SWPCA's SCADA system. In this way, the SWPCA is fully modernized and normally has an excellent system for monitoring its remote pumping stations.

While many of the pumping stations are in residential neighborhoods, the SWPCA does not report any significant issue with odors. This is likely due to the fact that the stations' wet wells are reported to have little turbulence (and hence little release of odorous gases) and are well sealed.

A summary of ratings for each pump station is provided in Table 4-6.

Table 4-6. Summary of Pumping Station Condition Assessments

Pump Station		Capacity (GPM)	Original Installation Date	Rating		
				September 2012	May 2015	August 2018
1.	Bennett Street	125	1966	2	*	*
2.	Knapp Street	220	1967	3	*	*
3.	Clay Hill Road	110	1999	2	*	*
4.	Arden Lane	95	1999	2	*	*
5.	Timber Lane	62	1999	2	*	*
6.	Cedar Heights	58	1999	2	*	*
7.	Maltbie	83	1999	2	*	*
8.	Barry Place	100	1940	3	*	2 [1]
9.	Dee Lane	100	1971	2	*	2
10.	Soundview Farms 1	100	1972	3	*	2 [1]
11.	Soundview Farms 2	150	1972	3	*	2 [1]
12.	Pulaski St	43	1988	3	*	3
13.	Hobson St.	350	1970	2	*	2
14.	Saddle Rock Road	500	1975	3	*	3
15.	Burwood Avenue	800	1962	*	*	3
16.	Carter Drive	450	1960	*	2	*
17.	Cove Island	2800	2001	*	2	*

Pump Station		Capacity (GPM)	Original Installation Date	Rating		
				September 2012	May 2015	August 2018
18.	Alvord Lane	2200	1941	*	3	3
19.	Commerce Road	852	1951	*	3	3
20.	West Avenue	350	1985	*	2	2
21.	Bonner Street	250	1961	*	2	*
22.	Greenwich Avenue	410	1986	*	3	*
23.	Carriage Drive	56	2014	*	*	*

* Not inspected

[1] Rating changed due to pump replacement and/or operational improvements.

Key:

Numerical Rating	Interpretation of Rating	Description
1	Little to no risk	Relatively new and in good physical and operating condition
2	Some risk	Good condition, no known capital requirements
3	Moderate risk	Aged or worn but generally in good operating condition. May require capital investment within next five-years
4	Significant risk	Operational but near end of life or requires investment to bring to full operating condition.
5	High risk	Should be on high priority for renewal and/or replacement.

As noted, the above ratings reflect the general condition of the pump stations. For the most part, the pump stations appear to be reliable and in good physical condition, but many of them are aging. The most significant changes to the pump stations since 2015 was the replacement of existing pumps at Soundview, Dee Lane, and Barry Place pump stations in 2016. A complete Sanitary Sewer Evaluation Survey (SSES) was prepared for the SWPCA by a consultant in August 2015. This Report contains comprehensive information pertaining to the condition of the pumping stations.

The discussions provided regarding the plant ratings (see Section 4.2) also apply to the ratings for the pumping stations.

4.4 Condition of Wastewater Collection System

In order to assess the condition of the SWPCA's buried infrastructure (i.e., sewer interceptors, laterals, force mains, manholes, etc.), a desktop study of existing information and reports was performed, in addition to discussions with SWPCA staff. In performing this assessment, the following key documents and information were reviewed:

- Annual CMOM reports (calendar years 2015 through 2018)

- Infiltration and Inflow Study Report (March 2016)
- Sanitary Sewer System Evaluation (August 2015)
- GIS data

The sections below provide an overview of the collection system and status of the CMOM and I/I program initiatives, including preventative maintenance activities.

4.4.1 System Mapping and Tracking

In January 2012, a consultant was retained by the SWPCA to update the SWPCA's GIS sanitary sewer and stormwater collection system mapping. This work began in June 2012, and, as of December 2018, the consultant has mapped approximately 99 percent of the system, including 249.4 miles of sanitary sewer lines, 7,886 manholes, 12,209 service connections, 23 pump stations, and 8.6 miles of force mains.

While most of the collection system has been mapped, approximately 16 percent of the system is missing age data. However, when evaluating only the known age data for the gravity sanitary sewer pipes from GIS, approximately 55 percent of the system is less than 51 years old with over 12 percent of the system less than 26 years old. For an older, northeast city, such as Stamford, the available data indicates that the collection system is within the expected age, if not slightly newer. Thus, based on age alone, it would appear that the system should be in satisfactory condition with some required improvements typical of a sewer collection system.

In 2013, the SWPCA began using asset management software linked to their GIS mapping as the computer maintenance management system (CMMS) for collection system and pump station operations monitoring. This software provides a suite of integrated inspection, maintenance, and asset management solutions using advanced planning, prioritizing, and management tools for all inspection, maintenance, and refurbishment activities. Starting in 2017, the SWPCA moved to a more streamlined approach with the use of a CMMS for the ArcGIS application, which allows for the use of portable handheld devices (e.g. tablets, smart phones) integrated with the CMMS for field data review and collection. The SWPCA has reported that the new system is working well and allows for information to be readily available when in the field.

4.4.2 Sanitary Sewer Complaints and Bypasses

As part of the CMOM program initiatives, the SWPCA has implemented a program to log sanitary sewer complaints and overflow/bypass events. Sewer complaints are received by the SWPCA via calls to the foreman and/or the City's electronic email notification system. Responding crews perform a field investigation and gather information in order to complete an internal report form. Any sanitary sewer bypasses occurring either indoors or outdoors which is confirmed to be caused by a deficiency or issue within the SWPCA sanitary sewer line, initiates the notification process and bypass report filing to CTDEEP. If the cause of the bypass is confirmed to be unrelated to the SWPCA collection system (e.g., private lateral issue), then notification is sent to CTDEEP, Stamford Health Department, and other agencies, as needed. Note that submission of an official bypass report to CTDEEP is not required, but the SWPCA does so as its policy.

Table 4-7 details the number and type of complaints received from 2013 through 2018. Sewer flow complaints are related to decreased and/or no flow to the sanitary sewer mainline, which can be caused by SWPCA mainline or private lateral conditions (e.g. surcharging, blockages). Non-sewer flow complaints include odor, flooding, damaged structures, and/or other complaints. As indicated in the table, the number of complaints is relatively consistent over the past three years, but has decreased since 2013. Also, in 2018, the percentage of sewer flow complaints contributed to SWPCA line conditions was the lowest since information started being recorded in 2014.

Table 4-7. Summary of Sanitary Sewer Complaints Received and Investigated

Complaints Received and Investigated	2013	2014	2015	2016	2017	2018
Sewer Flow (SWPCA line conditions / Private lateral conditions)	56	64 (16 / 48)	56 (19 / 37)	35 (15 / 20)	56 (23 / 34)	61 (15 / 46)
Non-Sewer Flow	38	11	9	23	9	14
Total Received and Investigated	94	75	65	58	65	75

Based on discussions with the SWPCA, there are frequent repeat customer complaints, which are either due to private lateral issues, which continue to not be addressed by the customer, and/or no actual issues identified. In addition, some of the non-sewer flow customer complaints are due to unrelated sewer issues, such as stormwater flooding. The SWPCA has been tracking customer complaints in the CMMS, in order to evaluate and identify problem areas and adjust preventative maintenance and community outreach accordingly.

Sanitary sewer bypasses can result from various causes, such as pipe blockages, structural issues, and/or increased flow due to extraneous infiltration and inflow. The SWPCA maintains an internal emergency sanitary sewer bypass response plan and has trained maintenance crews, foremen, administrators, and associated staff to use this plan. Periodic refresher training is conducted, and bypass details are reported as part of the SWPCA's annual CMOM report. Table 4-8 provides a summary of sanitary sewer bypasses.

Table 4-8. Summary of Sanitary Sewer Bypasses

Bypass Cause	2013	2014	2015	2016	2017	2018
FOG Materials – FPE related	6	1	0	0	1	1
FOG Materials – Non-FPE related	- (information not available)	- (information not available)	4	2	6	1
Other Materials – City related	5	3	8	4	4	1
Other – Non-City related	2	0	0	3	0	2
Total Bypasses	13	4	12	11	10	5

Except for 2014, where some information was not available, the total number of sanitary sewer bypasses has consistently decreased since 2013. The SWPCA indicated that none of the bypass events over the past three years have been related to sewer capacity limitations and/or high flow events, which aligns with the hydraulic model findings, as discussed in Section 4.4.4. The SWPCA has been proactively addressing the causes of the sewer bypasses with both preventative maintenance activities, community outreach, and ongoing programs (FOG and I/I).

4.4.3 Preventative Maintenance, Inspection, and Rehabilitation

The SWPCA has a collection system maintenance crew which regularly implements preventative maintenance activities and measures to mitigate sewer blockages and reduce extraneous flows from sanitary sewer lines. These preventative maintenance activities include FOG abatement, cleaning and inspection of sewer lines and manholes, locating/uncovering manholes, replacing manhole covers, and easement clearing.

In 2010, the SWPCA implemented a FOG abatement program system focused on outreach, education, and enforcement to minimize FOG generated by the approximately 600 Class III and Class IV food preparation establishments (FPEs) discharging into the SWPCA's collection. FOG is a significant collection system concern as it can reduce hydraulic capacity and flow of the collection system and lead to odor issues, surcharging, and bypass events. In 2018, the Connecticut Department of Public Health adopted the Food and Drug Administration Food Code leading to the reclassification of FSEs, which now requires some Class II FSEs to comply with the FOG abatement program.

Over the past three years, the SWPCA has continued to implement new FOG program activities, specifically focused on education and outreach to prevent issues before they arise. Some of these programs and initiatives include:

- Creating a new position, "SWPCA Regulatory Compliance Inspector", to fulfill the requirements of the FOG Abatement Ordinance
- Holding group workshop training for certified food inspectors
- Holding interactive workshops for FPE
- Hosting WPCF open house for Earth Day
- Reaching out to building owners with multiple FPEs to build working relationship to achieve compliance with FOG Abatement Ordinance
- Distributing educational material and sink strainers to new residents located in densely populated areas

In addition to city-wide efforts, the FOG program has focused on specific areas, when necessary. In 2018, the SWPCA observed an increased amount of FOG material in the wet well at the Carter Drive pump station. Educational materials were distributed to the residential houses that discharge to Carter Drive pump station, and, subsequently, a noticeable decrease of FOG material has been observed in the wet well.

Table 4-9 shows the number of site inspections and issuance of violations. As shown, the SWPCA has significantly increased site inspections since 2015, and, meanwhile, the violation percentage has decreased which may be correlated to increased effectiveness of the FOG program.

Table 4-9. Summary of FOG Program Inspections and Violations

FOG Inspections and Violations	2015	2016	2017	2018
FPE Inspection	21	323	270	221
FPE Violation	12	43	12	2
FPE Violation Percentage	57%	13%	4%	<1%

In addition, records indicate that the number of sewer bypasses related to FPE FOG material has reduced from 7 in 2010 to 0 in 2015 and 2016 and only one in 2017 and 2018. Discussions with the SWPCA have indicated that the presence of grease accumulation in the lines appears to have decreased over the years. While there are still areas with grease issues, the SWPCA is addressing these locations and performs preventative maintenance through cleaning and closed-circuit television (CCTV) inspection.

The SWPCA utilizes the CMMS to track cleaning and CCTV monitoring progress as well as to record information about the piping being cleaned (such as line condition, manhole evaluation rating and pipe diameter). Deficiencies observed in the field are reviewed with maintenance staff and supervising engineer to plan and coordinate corrective action. The CMMS allows for monitoring of the collection system and evaluating preventative maintenance for potential modifications, while also helping to forecast short and/or long-term sewer line rehabilitation needs.

One of the CMOM initiatives initiated by the SWPCA was to inspect, and clean as necessary, at least 30 miles (approximately 12 percent) of sanitary sewer pipe per year, which the SWPCA achieved through 2017. In addition, in 2016 and 2017, at least 10 percent of the inspected pipes were inspected for the first time, which has provided vital system information to the SWPCA for both preventative maintenance and rehabilitation needs.

In order to address emergency repairs to the collection system, the SWPCA has an on-call contract. Based on conversations with the SWPCA, the collection system experiences minimal pipe breaks that require emergency response; however, when breaks do occur, the repairs are addressed in a timely manner.

In 2014, the SWPCA retained a consultant to perform a Sanitary Sewer System Evaluation (SSES) of approximately 120,000 LF of interceptor pipelines greater than 24-inches. The pipe defects were rated and categorized into structural and O&M issues. The report noted that although there was some structural, corrosion, and O&M defects, overall the pipes appear to be in generally good condition considering their age. The SSES provided prioritized rehabilitation recommendations, in which the SWPCA has already addressed some of highest priority areas. The SWPCA is evaluating the remaining rehabilitation recommendations, which will be completed in phases and, for cost effectiveness, some of the work may be performed in conjunction with rehabilitation identified through the I/I program (refer to Section 4.4.4 for more detail). The report also provided O&M recommendations, such as areas needing

preventative maintenance due to debris accumulation and roots, and re-inspection schedules for the lower rated/priority structural defects. The SWPCA has been incorporating the O&M recommendations into their CMMS.

In response to the information gathered during both the ongoing sewer condition assessment program and the interceptor SSES, rehabilitation of the sanitary sewer lines and manholes is performed. There is $1.2 million budgeted in the CIP over the next six years for miscellaneous sanitary sewer pipe replacement and repairs and manhole cover replacement. This work is unrelated to the I/I program and associated rehabilitation, which is discussed in more detail in Section 4.4.4.

4.4.4 I/I Identification and Removal Program

In response to a 2014 Notice of Violation, as discussed in Section 6, the SWPCA retained a consultant to perform a comprehensive I/I study to evaluate sources of infiltration and inflow in the collection system and recommend a plan and schedule to implement remedial actions to mitigate I/I. The presence of infiltration and inflow in a collection system is typical, especially for an older, coastal system, which is impacted by aging infrastructure, tidal influence, and private inflow connections possibly made prior to sewer ordinances.

The I/I study was partially funded through a Clean Water Fund planning grant (55 percent of study cost). The initial study began in February 2015 and the final report was submitted to the SWPCA in March 2016. As part of the I/I study, the following was completed:

- Divided the collection system into a total of 44 sewersheds, then further divided some sewersheds into smaller subareas, which resulted in 63 sewersheds or subareas
- Performed approximately 17 months of flow monitoring through the installation of flow meters and rainfall meters at key locations within the collection system to continuously monitor sewer flows and rainfall.
- Evaluated flow monitoring data to prioritize sewersheds/subareas subareas based upon estimated I/I
- Performed a pilot SSES in three sewersheds/subareas.

Overall, the I/I study identified that dry weather infiltration and both rapid and delayed inflow appear to be a major source of extraneous flow in the collection system.

Based upon the results and recommendations from the I/I study, the SWPCA's anticipated plan is to perform a multi-year phased SSES program for the top twenty highest priority sewersheds/sub-areas, which represents approximately 15 percent of the collection system, to investigate and identify I/I sources. Each annual SSES program is anticipated to include three sewersheds/subareas, which averages approximately 5.5 miles of pipeline (2.2 percent of the collection system). Upon analysis of SSES program data, a comprehensive and cost-effective I/I removal program shall be designed and subsequent rehabilitation performed. Upon completion of the highest priority sewersheds/subareas, the SWPCA intends to evaluate the effectiveness of the I/I program to determine the approach for the remaining, lower priority sewersheds/subareas.

Based on the recommendations from the I/I study, a rehabilitation program was designed to remove I/I from the pilot SSES sewersheds/subareas. The sewer rehabilitation contract was awarded in November

2017 (approximately $250,000), and work was completed in January 2019. The rehabilitation work included pipe and manhole lining, lateral grouting, and manhole rehabilitation. Separate from the rehabilitation contract, the SWPCA has removed various sources of identified inflow, such as catch basins directly connected to the sanitary sewer system.

In addition, in August 2017, the second SSES program (Phase 1) was performed in three priority sewersheds/subareas. The final report summarizing the SSES results and recommendations was submitted to the SWPCA in July 2018, and the rehabilitation design is expected to be completed and the project advertised by the end of April 2019.

In October 2018, the next SSES program (Phase 2) commenced in three more priority sewersheds/subareas.

There is approximately $1.6 million budgeted in the CIP over the next six years to perform SSESs and I/I removal design with approximately $2 million allocated in the CIP over the next six years towards rehabilitation to address the I/I. As the highest priority sewersheds/subareas are completed, the SWPCA anticipates that the cost of the rehabilitation contracts will decrease as there should be less I/I in the subsequent areas that needs to be removed. The SWPCA will continue to evaluate the I/I removal program, and adjust capital funding, if needed.

In conjunction with the I/I analysis, a collection system hydraulic model was competed at the end of 2017 to identify locations having excessive I/I, hydraulic limitations, and/or capacity constraints. The model included approximately 35 miles of pipe incorporating all 18-inch and larger sewers and three pump stations (Alvord Lane, Greenwich Avenue, Cove Island), and was calibrated to flow metering data obtained during the I/I study. For all of the design storms that were simulated, no sanitary sewer overflows/bypasses occurred, and only minor surcharging took place at one location. The SWPCA is in the process of reviewing the results in conjunction with information obtained through GIS mapping and I/I investigations to provide a holistic overview of the collection system.

4.5 Conclusions and Recommendations

While the 2006 upgrade to the Stamford WPCF was substantial, some of the WPCF dates to the 1970s and still has key equipment components that are reaching the end of their useful life. Most of these major areas have either recently been addressed by capital projects or are in the process of being addressed through detailed design, and are, subsequently, included in the SWPCA's five-year capital plan. It is recommended that the SWPCA performs the upgrades and improvements identified in the capital plan to further improve plant performance and operations. Refer to Section 5 for details on the recently-completed, ongoing, and planned capital projects.

Based on the July and August 2018 visual inspections, some observations of the system were made that the SWPCA should either continue assessing or may need to evaluate further and consider for future capital improvements. The observations listed below are other items besides the underway and planned capital improvements already discussed:

- Primary Clarifier #1 – The mechanisms are exhibiting signs of moderate corrosion with isolated heavy corrosion on the skimmer arm. The SWPCA reported that the clarifier operates well and plant performance indicates there have been no exceedances related to the primary clarifier. While repairs

to the mechanisms may not be immediately required, the SWPCA should evaluate, continue to monitor the condition, and perform repairs, as necessary.

- Secondary Clarifiers #3 and 4 – Both secondary clarifier mechanisms have either recently undergone or are currently underway with partial repairs. While the SWPCA reported that the clarifiers operate well from a process perspective, there is moderate corrosion on the skimmer arms and/or center manifold. The SWPCA stated that they are currently evaluating options to address the corrosion. It is recommended that the evaluation continue and depending upon the extent of repairs, incorporate the project into the capital plan.

Overall, the wastewater treatment plant appears to have sufficient capacity to meet current and projected future wastewater treatment needs of the service area. Based on the limited visual observations and review of information, the plant appears to be in good condition and functioning well. Plant performance data indicate that the SWPCA is operating well within its permit limits except for UV dose, which is actively being addressed by the SWPCA. Based on our observations, discussions with plant staff, and a review of the DMRs and MORs, treatment plant performance continues to show significant improvement since 2011.

With respect to the pump stations, the SWPCA's pump stations appear to be reliable and have sufficient capacity. Most of the SWPCA's stations are of relatively recent construction and are within the expected design lives for the facilities. Of the older stations, most have had significant upgrades within the last 10 to 20 years. Of notable exception is the Alvord Lane Pump Station. This station, however, does not seem to have reliability issues, and thus is likely to continue to function acceptably in the next five years.

While it is difficult to assess the condition of the collection system, the SWPCA has reported that from the known age data over half is less than 51 years old and approximately 12 percent is over 75 years old. The average age of the collection system therefore appears to be younger than those of other well established major Northeast cities. Many of these cities have a larger portion of the pipes in excess of 75 years in age. The SWPCA has reported that the collection system is in generally good condition for its age with minimal emergency repairs and no capacity related bypass events over the past four years. The SWPCA has an proactive system of cleaning and inspecting the collection system. With the completion of both the recent interceptor and I/I focused SSESs and the planned SSESs, the SWPCA has a comprehensive approach towards inspecting and evaluating the entire collection system to strategically addresses structural, maintenance, and I/I issues within the system.

5 CAPITAL IMPROVEMENT PROGRAM

Arcadis was provided with the 6-year capital plan for the SWPCA, which covers the fiscal years 2020 through 2025. The SWPCA's fiscal year runs from July 1 to June 30. This capital plan is provided as Appendix A. Planned expenditures have been organized into three major categories, as follows:

- Treatment plants
- Pump stations
- Sewer collection system

5.1 Past Capital Improvements

The SWPCA completed a $105 million upgrade of the Treatment Plant in 2006. The upgrade was financed primarily by grants and loans under the Clean Water Fund program of the State of Connecticut.

Many of the recently-completed and ongoing CIP projects were and are currently being funded through proceeds from the 2015 bond issue. In total, approximately $11.2 million of the 2015 bond issue have been used to fund a variety of SWPCA CIP projects. Some of the larger, recently-completed CIP projects are highlighted below.

- Primary Clarifier – Replaced the mechanisms, drives and valves on Primary Clarifier #2. The project was completed in 2017 and cost approximately $325,000, which was completely funded through 2015 bond proceeds.
- Degritting – Replaced and increased the size of the two 6-inch glass lined discharge pipes from the primary pumps to degritting system with two10-inch glass lined pipes to account for planned degritting system capacity upgrade project. The pipe replacement was completed in 2017 and cost approximately $300,000, which was mostly funded through 2015 bond proceeds.
- Aeration Tanks/Secondary Clarifiers – Added a common distribution box to combine effluent flow from the aeration tanks and distribute to the secondary clarifiers via four separate weir gates. The project was completed in November 2017 and cost approximately $4.3 million, which was completely funded through 2015 bond proceeds. This project also included the effluent water pump discharge piping modifications and secondary clarifier effluent launder cover installation described below.
- Effluent Water Pumps – Modified configuration of discharge piping to increase pump capacity and provide system redundancy during peak flow conditions. This project was completed in conjunction with the aeration/secondary clarifier distribution box project.
- Secondary Clarifier – Installed effluent launder cover in secondary clarifier #3 to reduce algae growth, as part of the aeration/secondary clarifier distribution box project. The ducking skimmer system was also replaced on secondary clarifier #3 in 2017 and cost approximately $75,000, which was partially funded through 2015 bond proceeds.

- SCADA – Comprehensive SCADA system upgrade and integration of WPCF and collection system into new platform. The upgrade was competed in 2017 and cost approximately $1.1 million, which was completely funded through 2015 bond proceeds.
- Thickener System Motor Controls – Replaced the outdated motor control centers in the thickener building. The project was completed in 2016 and cost approximately $100,000, which was completely funded through 2015 bond proceeds.

In addition, as discussed above, the SWPCA's current CIP includes a number of planning and ongoing projects in various stages of completion. Ongoing CIP projects are discussed in detail in Section 5.2. and include the following:

- Mapping - Citywide computerized mapping of the sanitary sewer systems using GIS – ongoing, sanitary sewers are reported 99 percent mapped as of end of calendar year 2018 (approximately $275,000 funded through 2013 bond proceeds).
- CMOM – Continuation of CMOM program, with a variety of initiatives as discussed in Section 4 and 6. (approximately $1.5 million and $230,000 funded through 2013 and 215 bond proceeds, respectively).
- Sewer Rehabilitation and I/I Program – Work includes the rehabilitation and replacement of sanitary sewer lines and manholes as part of annual sewer work and I/I program to reduce I/I in the system (approximately $3.3 and $1.4 million funded through 2013 and 2015 bond proceeds, respectively.
- Preliminary Treatment/Headworks – Engineering design for the preliminary treatment upgrade was completed in December 2018(approximately $790,000 funded through 2015 bond proceeds).
- Secondary Treatment – Engineering design for the aeration system upgrades was completed in December 2018(approximately $660,000 funded through 2015 bond proceeds).
- UV System – Engineering design for the UV system was completed in December 2018 (approximately $50,000 and $580,000 funded through 2013 and 2015 bond proceeds, respectively).
- Grit System – Engineering design for the grit system upgrade is ongoing and is anticipated to be completed in June 2019 (approximately $380000 funded through 2015 bond proceeds).
- Sewer Extensions – Sewer extensions for Perna Lane and Wedgemere Road areas have been designed (approximately $250,000 and $350,000 funded through 2013 and 2015 bond proceeds, respectively). Perna Lane sewer extension project was recently put out to bid, but the received bids were higher than expected. Therefore, project construction is being postponed at least a year in order to evaluate design options.

5.2 Current and Future Capital Improvement Planning

Based upon the six-year CIP included in the 2015 Engineer's Report, the SWPCA's projected FY2015 through FY2020 CIP investment into the system was approximately $8 million per year, on average. The FY2020 through FY2025 CIP increases the planned level of investment to approximately $10.3 million annually, on average. A summary of the SWPCA's 6-year capital plan is provided in Table 5-1. The full

plan is included in Appendix A. In general, a majority of the plan is dedicated to the treatment plant and collection system, and only a small proportion is provided for the pump stations.

Table 5-1. Summary of Six-Year Capital Plan by Category ($ Millions)*

Category	Annual Capital Cash Flow Forecast (FY, $ Millions)						Total (M)	Avg. per FY (M)	% of Total
	FY20	FY21	FY22	FY23	FY24	FY25			
Treatment Plants	$18.5	$13.9	$4.5	$0.3	$0.3	$0.3	$37.8	$6.3	61.1%
Pump Stations	$0.6	$0.4	$0.6	$2.6	$0.1	$0.1	$4.3	$0.7	7.0%
Collection System	$1.0	$6.6	$4.6	$3.3	$3.3	$0.7	$19.5	$3.3	31.4%
Total	$20.1	$20.9	$9.7	$6.3	$3.8	$1.2	$61.9	$10.3	100%

*Totals may not add due to rounding.

It should be noted that Arcadis also obtained the City of Stamford's proposed Capital Budget for FY2019-FY2020. The SWPCA reported that the requirements for additional projects has been discussed with the City and is in the process of securing such approvals from the City. The 6-year capital plan represents the SWPCA's anticipated plan based on the information available as of March 2019, and is subject to change as additional information becomes available.

5.2.1 Treatment Plant

A total of $37.8 million is dedicated to treatment plant capital projects from FY2020 through FY2025. This is an average of $6.3 million per year over a six-year period. While a large portion of the plant was upgraded in 2006 and may not require additional capital expenditures for many years, there are also sections of the plant that are reaching the ends of their useful lives.

Of this $37.8 million allocated for treatment plant capital improvements, approximately $33.6 million, or 89 percent, is dedicated to four major upgrade projects, as discussed below:

- Preliminary Treatment/Headworks System – Work includes replacing raw sewage pumps and bar screens and upgrades to septage receiving. The upgrade project was packaged with the secondary treatment and UV system upgrade projects and was awarded for $26.8 million in April 2019. The Notice to Proceed for construction is anticipated to be issued in May 2019 (construction phase costs specific to the preliminary treatment upgrade are estimated at approximately $12.3 million and anticipated to funded through 2015 and 2019 bond proceeds and future bond issues).
- Secondary Treatment System – Upgrade includes replacing blowers, modifying process air piping, adding DO controls, expanding pre-anoxic zone and replacing standby generator. The upgrade project was packaged with the preliminary treatment and UV system upgrade projects and was awarded for $26.8 million in April 2019. The Notice to Proceed for construction is anticipated to be issued in May 2019 (construction phase costs specific to the secondary treatment upgrade are

estimated at approximately $9.4 million and anticipated to funded through 2015 and 2019 bond proceeds and future bond issues).

- UV System – Upgrade of UV disinfection equipment. The upgrade project was packaged with the preliminary and secondary treatment upgrade projects and was awarded for $26.8 million in April 2019. The Notice to Proceed for construction is anticipated to be issued in May 2019 (construction phase costs specific to the UV system upgrade are estimated at approximately $7.7 million and anticipated to funded through 2015 and 2019 bond proceeds and future bond issues).
- Degritting System – Project includes replacing the primary sludge pumps and sludge degritting equipment. Design is anticipated to be completed in June 2019 with construction anticipated to begin in FY2022 (construction phase costs are estimated at approximately $4.2 million and anticipated to funded through miscellaneous funds to-be-determined, such as future bond issues, capital reserves, and/or grants/loans.

The other planned treatment plant capital improvements include:

- Gravity Belt Thickeners – Full refurbishment of GBTs. Work was recently completed on the first GBT (approximately $115,000 funded through 2015 bond proceeds), and it is anticipated that the second GBT refurbishment will be completed in FY2019 with funding from 2015 bond proceeds.
- Belt Filter Presses – Replacement of BFP rollers. Work is currently underway on the first BFP (approximately $200,000 funded through 2015 bond proceeds) with anticipated funding for the remaining two BFPs through capital reserves.
- Secondary Clarifiers – The addition of effluent launder covers to secondary clarifier #1, 2 and 4 for algae growth mitigation. Work is anticipated to occur in FY2020 with funding from 2015 bond proceeds.
- Pump Replacements – Replacement of the plant water pumps and return activated sludge pumps. Work is anticipated to occur in FY2021 with funding from future bond issues.

As part of the six-year CIP, the SWPCA also allocated upwards to $350,000 annually to address miscellaneous treatment plant equipment replacement, such as pumps, motor/drives, and/or mixers.

The SWPCA expects to fund approximately $2.8 million (8 percent), of the treatment plant capital projects through the remaining 2015 bond proceeds, and approximately $15.4 million (41 percent), through proceeds from the 2019 revenue bond issue. The remaining $19.6 million (52 percent) is to be funded with either capital reserves, CWF grants and loans, or future bond issues.

The following additional observations are made regarding the capital plan for the Stamford WPCF:

- Odor Control – Various odor control upgrades and modifications have been made recently, which has improved odor control and reduced odor complaints. Previously, the SWPCA had planned a capital project to address odor complaints related to the overnight screening, grit, and sludge trailers by constructing a truck storage shed. However, the SWPCA requested that Synagro alter their overnight truck staging protocol and since then there have been no recent odor complaints The SWPCA should continue to monitor Synagro’s overnight trailer activity and if complaints recommence, then the SWPCA should re-evaluate constructing the storage shed.

- Primary Clarifier #1 – The mechanisms are exhibiting signs of moderate corrosion with isolated heavy corrosion on the skimmer arm. The SWPCA reported that the clarifier operates well and plant performance indicates there have been no exceedances related to the primary clarifier. While repairs to the mechanisms may not be immediately required, the SWPCA should evaluate and, if needed, incorporate any capital projects into the CIP.
- Secondary Clarifiers #3 and 4 – Both secondary clarifier mechanisms have either recently undergone or are currently underway with partial repairs. While the SWPCA reported that the clarifiers operate well from a process perspective, there is moderate corrosion on the skimmer arms and/or center manifold. The SWPCA stated that they are currently evaluating options to address the corrosion. It is recommended that the evaluation continue and depending upon the extent of repairs, incorporate the project into the CIP.
- Effluent Water Pumps – The effluent pumps are critical to the WPCF and required every day during high tide. Although piping modifications were made to increase the capacity of these pumps, which provided vital system redundancy, and components of the system have been rebuilt or replaced, the system should be closely monitored, especially the pumps and components that have not undergone recent improvements.
- Pumps – There is currently upwards to $350,000 earmarked each year in capital funding over the next six years for miscellaneous WPCF equipment replacement, which includes pumps and mixers. While this allocation of funding may be reasonable and align with previous expenditures, the SWPCA should continue to evaluate and perform condition assessments of both the main process and support pumps to determine if the fund allocation should be adjusted.

5.2.2 Pump Stations

A total of $4.3 million is budgeted for pump station upgrades over the next six years. As mentioned, most of the pump stations are in good condition, and are either relatively new or recently upgraded. Alvord Lane is the only older pump station that has not recently underwent significant upgrades. While the SWPCA has reported that this pump station is currently reliable, it is in need of an upgrade. Therefore, the SWPCA has budgeted $2.8 million for Alvord Lane pump station upgrades between FY2021 and FY2023.

Other planned and/or ongoing pump station capital projects include:

- Pump Station Standby Generators – Replace generator at Greenwich Avenue Pump Station above flood elevation, and install permanent generator at Clay Hill Pump Station. Work is anticipated to occur in FY2020 with funding from 2015 and 2019 bond proceeds.
- Pump Station Electrical Upgrades – Remove existing below-grade power and control panels at six pump stations and replace with new panels above-grade. Work is underway at Commerce Street Pump Station. Work on the remaining five pump stations is anticipated to occur in FY2020 through FY2022 with funding from 2019 bond proceeds and future bond issues

An additional $585,000 is dedicated to miscellaneous pump station upgrades between FY2020 and FY2025.

The SWPCA expects that $190,000 from the 2015 bond proceeds and $300,000 from the 2019 revenue bond proceeds will be used to fund the various pump station improvements in FY2020 through FY2025. Currently, the Alvord Lane pump station upgrades will not be funded through 2019 bond proceeds, but is anticipated to be funded with a future bond issuance.

As the wastewater pump stations are generally in good condition, the $100,000 currently earmarked each year in capital funding over the next six years for miscellaneous pump station equipment replacements should be reasonable. However, the SWPCA should continue to evaluate and perform condition assessments of the pump stations, and budget additional funds, as appropriate, for major upgrades to specific pump stations in the near future.

5.2.3 Collection System

A total of $19.5 million is dedicated over the next six years towards the collection system, which is an average of $3.3 million per year. Approximately $14.7 million, or 76 percent of the total funding for the collection system is dedicated to the construction of new sewers, and comprised of two projects:

- Wedgemere Road – Design is complete for extension of sewer service to 66 homes with anticipated construction occurring in FY2022 (estimated construction is $3.7 million and funded through available capital reserves and/or future bond issues)
- Perna Lane – Design is complete for extension of sewer service to 210 homes. The project was recently bid, but the received bids were higher than expected, so construction is being postponed at least a year in order to evaluate other design options. However, it is anticipated that construction will occur in three phases in FY2021, FY2023, and FY2024 (estimated construction is $10.9 million with funding through 2015 and 2019 bond proceeds and available capital reserves and/or future bond issues)

The remaining collection system capital projects include:

- I/I Studies – SSESs and design for removal of I/I is anticipated to occur over FY2020 through FY2025 ($1.6 million with funding from 2015 and future bond issues and Clean Water Fund grant)
- I/I Removal – Rehabilitation of collection system to remove I/I to occur FY2020 through FY2025 ($2.0 million with funding from 2015 bond proceeds, capital reserves and/or future bond issues)
- Miscellaneous System Repairs – Replacement of manhole covers and sewer lines as identified through the SWPCA's ongoing collection system condition assessment program to occur FY2020 through FY2025 ($1.2 million with funding from 2015 bond proceeds, capital reserves and/or future bond issues)

The collection system allocation of capital funding decreased almost 20 percent since the 2015 Engineers Report evaluation of the 5-year CIP (FY2016-2020) with most of that portion being reallocated towards the WPCF improvements. In addition, between the FY2016-2020 and the FY2020-2025 CIP, the funding budgeted towards sewer repairs (SWPCA and I/I program initiated) decreased from $6.3 million (27 percent of collection system capital improvements) to $3.2 million (16 percent of collection system capital improvements). As discussed in Section 4.4 and 4.5, the collection system is in generally good condition for its age with minimal emergency repairs and no capacity related bypass events. In addition, the SWPCA has an established preventative maintenance program and a comprehensive and strategic plan

to inspect, evaluate, and rehabilitate the collection system starting with the highest priority areas. As the priority areas with highest I/I are completed, the SWPCA anticipates that the rehabilitation contract costs to decrease as less I/I sources need to be addressed. Based upon the outcome of each individual SSES program and depending upon the SWPCA's long-term approach to the removal of I/I and rehabilitation of the collection system, the SWPCA may need to adjust and re-prioritize the collection system capital funding to reflect the resulting recommendations of each study and appropriately address rehabilitation and I/I removal to ensure integrity of the collection system.

5.3 Conclusions and Recommendations

As illustrated in Table 5-1, the SWPCA has identified a capital program for the continued improvement of its wastewater infrastructure and many of the proposed capital projects are in alignment with our observations.

It appears that the SWPCA is currently aware of the condition of the system and capital projects needed to address shortcomings. As with any large wastewater utility, there is a need to prioritize capital projects given limited funds. It may be necessary for the SWPCA to further analyze underperforming systems to best determine how to maximize existing available funds and properly identify future funding needs. It is recommended that the SWPCA update its 6-year capital plan as soon as the current project designs are completed, when any new studies are completed, and in no event less than once per year. Changes to the capital plan should be readily communicated to the City, so as to not delay the acquisition of funding to support the required capital projects.

6 REGULATORY STATUS

The following section describes the review of federal and state wastewater and water quality requirements as they relate to current and potential future operation of the SWPCA's wastewater system.

6.1 Existing Regulations

Regulations affecting the discharge of wastewater from the Stamford WPCF are reflected in its NPDES permit (NPDES No. CT0101087) and the General Permit for Discharge of Nitrogen from POTWs, which are both issued by the CTDEEP.

The NPDES permit regulates bacteria, TSS, BOD, ammonia-nitrogen and UV dose, in addition to other parameters such as inorganic compound concentrations. The previous NPDES permit for the Stamford WPCF was issued on June 25, 2013 and expired on June 24, 2018. The SWPCA received the draft version of the new NPDES permit on October 23, 2018, and the NPDES permit was finalized and effective on January 1, 2019. Between June 25, 2018 and December 31, 2018, the SWPCA operated under the previous 2013 NPDES permit until the new 2019 NPDES permit was finalized. However, there were no changes made between the previous 2013 and final 2019 NPDES permit.

Although there were no changes between the 2013 and 2019 permit, the 2013 NPDES eliminated the limit on the average monthly flow rate of 24 mgd, but added testing for chronic aquatic toxicity. In addition, the following bacteria limit changes became effective on January 1, 2015:

- Fecal coliform
  - Decreased monthly geometric mean limit from 200 colonies per 100 ml to 88 colonies per 100 ml
  - Removed weekly geometric mean limit of 400 colonies per 100 ml
  - Added instantaneous limit of no more than 10 percent of samples can have more than 260 colonies per 100 ml
- Enterococci
  - Added monthly geometric mean limit of 35 colonies per 10 ml
  - Added instantaneous limit of 500 colonies per 100 ml

Table 6-1 highlights the current permit limits of the major parameters evaluated in the preparation of this Report.

Table 6-1. 2019 NPDES Permit Requirements

Parameter	Limit Type	2019 NPDES Limit
BOD5 – Effluent (mg/L)	Monthly Average	20
BOD5 – Effluent (mg/L)	Daily Maximum	40
BOD5 – % Removal	Monthly Average	85
TSS – Effluent (mg/L)	Monthly Average	20
TSS - % Removal	Monthly Average	85
Ammonia (as N) – Effluent (mg/L) June – October	Monthly Average	2
Fecal Coliform (CFU/100 mL)	30-day geometric mean	88
Fecal Coliform (CFU/100 mL)	Instantaneous Limit (for no more than 10% of samples)	260
Enterococci (CFU/100 mL)	30-day geometric mean	35
Enterococci (CFU/100 mL) [2]	Instantaneous Limit	500
UV Dose (mW, s/cm^2)	Instantaneous Limit	>30

In addition to the NPDES limits described above, the SWPCA is also subject to the General Permit for Discharge of Nitrogen from POTWs in Connecticut. As is the case with all POTWs in Connecticut, the limits for total nitrogen discharge decreased each year until the year 2014. Stamford's total nitrogen limits as dictated by the General Permit are summarized in Table 6-2. The 2019 limit for total nitrogen discharge for the SWPCA is 926 pounds/day.

Table 6-2. Total Nitrogen Limits from General Permit

Year	Total Nitrogen Discharge Limit (lbs/day)
2011	1017
2012	970
2013	947
2014	926
2015	926
2016	926
2017	926
2018	926
2019	926

As discussed in Section 4.2.2, the Stamford WPCF has consistently met nitrogen discharge requirements and received nitrogen credits.

CTDEEP evaluated the Nitrogen Credit Exchange Program in 2013 and, at that time, determined that the program should be continued. While it is anticipated that the WPCF will continue to perform well and receive nitrogen credit revenue under typical operating conditions, the SWPCA is evaluating the potential impacts of nitrogen removal related to the planned secondary treatment upgrade, which will require one aeration tank to be offline at a time.

Regulations affecting the disposal of residuals from influent screening, grit removal, primary clarification, and secondary treatment are listed in Table 6-3.

Table 6-3. Regulations Governing Residuals Disposal

Waste Stream	Governing Regulation
Screenings and Grit (nonhazardous sludge)	RCRA 40 CFR 258 “Subtitle D”
Primary and Secondary Sludges	40 CFR Part 503

The SWPCA is also subject to the CT DEEP New Source Review Permit for Process Equipment, which specifies the terms and conditions for the operation of the sludge drying and pelletization facility to comply with state and federal air quality standards and emission limits. The New Source Review Permit was originally issued on June 21, 2006 and does not have an expiration date, but was most recently modified on November 12, 2013. The 2013 modification added stack testing of the pellet storage silo, in addition

to adding requirements for operation and maintenance of the equipment and additional requirements for reporting and record keeping.

6.2 Administrative Orders

Currently, the SWPCA is under a USEPA Region-I issued Consent Agreement and Final Order (CAFO) dated August 18, 2011 related to a failure to report collection system bypasses and a failure to submit annual CMOM reports in accordance with USEPA guidelines.

The CAFO identified a number of infractions with necessary corrections to be made; all of which are CMOM-focused and/or would serve to enhance CMOM-readiness. As part of their response, the SWPCA has implemented a CMOM program with numerous initiatives that are reported annually to the USEPA. These initiatives include:

- Documenting sewer complaints and reporting sewer bypass incidences
- City line preventative maintenance and reduction of extraneous flow activities
- Sanitary sewer pump station maintenance activities
- Sanitary sewer rehabilitation and pump station evaluation activities
- Responses to emergency sanitary sewer overflow (SSO) incidences
- FOG abatement program
- Sanitary sewer GIS mapping system and CMMS
- I/I removal program

As part of the CMOM implementation, the SWPCA has undertaken the following:

- Implemented a FOG abatement program (refer to Section 4.4 for details).
- Initiated a GIS collection system inventory and mapping program, which has mapped and digitized approximately 99 percent of the collection system as of the end of 2017.
- Initiated a program to logs areas of sewer cleaning, CCTV investigation and any sewer complaints, such as backups.
- Implemented a program to regularly inspect, clean, and assess the sanitary collection system using industry-standard CCTV inspection practices.
- Acquired and implemented a CMMS.
- Established a goal of inspecting (and cleaning as appropriate) thirty to forty miles of collection system sanitary sewer per year.

For detailed information on the condition of the collection system, refer to Section 4.4.

6.3 Notices of Violation

The SWPCA has one open NOV issued by the CTDEEP. A wet weather event from April 30 to May 1, 2014 caused flow at the WPCF to peak at 73 MGD. This high flow event caused several failures at the treatment plant and resulted in a violation of the SWPCA's NPDES permit. NOV #14-003 was issued on May 13, 2014.

Issues that caused the NOV include:

- Failure to prevent a bypass
- Failure to meet final effluent requirements for TSS and minimum UV dosage
- Failure to provide continuous disinfection to protect shellfish resources

Pursuant to the requirements of the NOV, the SWPCA has implemented the following actions, which addresses all requirements of the NOV:

- Retained a consultant to oversee the required actions for this NOV.
- Utilized a qualified Connecticut-licensed professional engineer to develop a scope of work for a comprehensive I/I evaluation of the city's wastewater collection system, including a timeline for the completion of the I/I evaluation.
- Initiated the I/I evaluation in accordance with the DEEP-approved SOW at the earliest opportunity possible and when conditions were deemed most conducive for yielding acceptable I/I evaluation results.
- Submitted I/I evaluation to CTDEEP
- Continues to submit SSES reports and I/I Removal Program updates describing actions taken to fulfill the NOV mandates.

The SWPCA also developed a written Standard Operating Procedure (SOP) for WPCF operations during wet-weather, high flow events. More details on the I/I program are located in Section 4.4.

6.4 Future Regulations

There are no other regulations forecasted to be promulgated in the near future which would have a significant impact on the plant's processes or would require significant capital expenditures.

Although not necessarily related to new regulations, it is recommended that resiliency studies, especially with regards to flooding, be conducted. As the City already has a hurricane barrier in place and was affected by several recent storms hurricanes, the SWPCA and the City would greatly benefit from a greater understanding of the ability of their systems to respond to a 100-year or worse flood. The SWPCA can then take appropriate actions to improve collection system and treatment plant resiliency and thus decrease the effects of future hurricanes and floods.

6.5 Conclusions

The SWPCA is currently under a consent order to address CMOM-related issues in its collection system. Based on progress reports provided by and discussions with the SWPCA, it is evident that the SWPCA is making substantial strides towards achieving the requirements of this consent order. The SWPCA has invested significant funds in increasing its CMOM-readiness and has continued their focus and investment in CMOM activities through its current CIP.

Treatment performance at the Stamford WPCF has generally been good and well within permit limits. The SWPCA has addressed all requirements of the single open NOV, and continues to submit I/I Removal Program updates to CTDEEP. The SWPCA addressed the NOV requirements through both a collection system and WPCF approach, including the initiation of preventative activities and replacement and/or improvements to equipment at the WPCF, and completion of an I/I study and implementation of a multi-year SSES program for the collection system. Additional improvements to the WPCF are both ongoing and have been incorporated in the current CIP. The SWPCA has been pro-actively addressing issues based on its ongoing and planned capital investment, and there have been no effluent water quality exceedances since 2015, besides UV low dose occurrences. The SWPCA continues to evaluate and take numerous steps to address the UV low dose occurrences, which they are actively discussing with the CTDEEP and have planned for a UV system upgrade in the CIP. The SWPCA has represented that it is committed to meeting all regulatory requirements and implementing system improvements.

7 CUSTOMER STATISTICS AND SEWER USE RATES

7.1 Customer Base

According to 2017 U.S. Census Bureau statistics, the City has a population of approximately 130,000 and the Town of Darien has a population of approximately 21,000 (based on 2010 Census Bureau statistics which is the most recent data available). The SWPCA provides services to approximately 19,600 customer accounts which represent a population of approximately 112,300 in the City and approximately 16,700 in Darien, including residential, commercial, and industrial, government and non-profit customers. The remaining 40 percent of City population and 20 percent of Darien population are served by septic systems.

Similar to most municipalities, the largest percentage of SWPCA customers are residential (including homeowners, condominium owners and renters) at approximately 88 percent, while the remaining 12 percent of customers are primarily commercial (10 percent) and governmental, well users and industrial accounts (2 percent). Table 7-1 illustrates the historic trend in number of customers and billed consumption over the past five years. As illustrated in this table, the values have varied from year to year but overall have generally increased over the past five years.

For FY2018, the number of billed customer accounts increased slightly compared to FY2017 and FY2016. The City indicates that it has been experiencing growth related to redevelopment in the downtown area where new multi-family housing (homeowner's associations and apartment buildings), which count as one customer, has replaced a number of single family homes.

For FY2018 the billed consumption was approximately 4,169,897, which is slightly lower compared with the historical consumption amounts shown below in Table 7-1. It is expected that some growth in consumption will occur as the City continues to redevelop parts of the downtown area.

Table 7-1. Historical Customer Accounts and Consumption

Description	FY2014	FY2015	FY2016	FY2017	FY2018
Customer Accounts[1]	19,447	19,470	19,619	19,598	19,648
Annual Increase in Customers	0.36%	0.12%	0.77%	-0.11%	0.25%
Consumption (CCF)[2]	4,276,100	4,372,971	4,238,192	4,325,661	4,169,897
Annual Consumption Change	0.14%	2.27%	-3.08%	2.06%	-3.60%

Notes:

1) Source: Financial Statements and Supplementary Information for the Years Ended June 30, 2016, 2017, and 2018.
2) CCF represents hundred cubic feet (equivalent to 748 gallons).

Between FY2019 and FY2024, it is estimated that the number of customer accounts will grow from approximately 19,794 to 20,293 or 0.5 percent per year based on recent trends and discussions with SWPCA. Billed consumption is expected to increase at a higher rate similar to population growth projections provided by the City. It is expected that billed consumption will increase from approximately

4.2 million CCF in FY2019 to 4.55 million CCF by FY2024. The growth in customer accounts is lower as it is projected that many of the accounts will be condominium-type dwellings that house multiple dwelling units per account. In addition, while consumption will likely increase with the addition of new units, it remains unknown how much this increase may be offset by future water conservation efforts. Therefore, Arcadis is assuming a conservative consumption rate of approximately 70 gallons per day per person for the additional consumption related to population growth. A summary of the projected customer accounts and consumption forecast is shown in Table 7-2.

Table 7-2. Projected Customer Accounts and Consumption

Description	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024
Customer Accounts	19,794	19,893	19,992	20,092	20,192	20,293
Annual Increase in Customer Accounts		0.50%	0.50%	0.50%	0.50%	0.50%
Consumption (CCF)	4,256,900	4,314,680	4,373,206	4,432,487	4,492,532	4,553,352
Annual Consumption Change		1.4%	1.4%	1.4%	1.4%	1.4%

Table 7-3 illustrates the City's top ten customers, not including Darien and Aquarion, whose revenue is derived via contracts.

Table 7-3. Overall Top Ten Customers in FY 2018

Property Owner	Billed Water Consumption (CCF)	Percent of Total Consumption
Stamford Hospital	61,470	1.47%
City of Stamford	52,760	1.27%
Stamford Town Center	40,668	0.98%
Rippowan Park Associates LP	39,368	0.94%
Stamford Housing Authority	33,912	0.81%
Cornerstone Apartments	28,722	0.69%
Hilton Stamford Hotel	27,504	0.66%
Hoyt Bedford Apartments	25,106	0.60%
SLC Operating LP	24,316	0.58%
Stamford Marriott Hotel	21,920	0.53%
Total	**355,746**	**8.53%**

As illustrated in Table 7-3, the largest single customer is Stamford Hospital, which represents approximately 1.47 percent of the total billed consumption. The top ten customers represent only approximately 8.53 percent of the total billed consumption, which generally reflects good diversity from a revenue perspective as a significant portion of the revenue stream is not linked to a single, or small number of accounts. Additionally, Stamford has the lowest unemployment rate in the State at approximately 4.3 percent. The Stamford median household income of $84,893 per household also remains significantly higher than State median household income of $72,780 per household (US Census Bureau Average).

7.2 User Rates and Charges

The SWPCA Board of Directors is responsible for setting and imposing sewer rates and other fees and charges for its customers. The Board requires that the rates are set at sufficient levels to pay for operating and maintenance costs of the collection and treatment system, debt service on outstanding debt, and to provide for appropriate reserves. The Board of Directors sets the user charge rates after accounting for other revenue, collection rate assumptions, and Indenture of Trust (Indenture) requirements for debt service coverage.

According to SWPCA's FY2017 audited financial statements, approximately 86.6 percent of the sewer operating revenues are from usage charges from Stamford customers, 6.0 percent are from usage charges and capital reimbursement fees from customers located in Darien, 6.2 percent are from fees and other operating income, and 1.2 percent is from contracted revenue from Aquarion.

Table 7-4 shows the adopted user rate for the SWPCA for FY2014 through FY2019. As shown in the table, unit sewer rates have increased by approximately 13.6 percent since FY2014.

Table 7-4. Sewer Rate Structure

Description	FY2014[2]	FY2015[2]	FY2016[2]	FY2017[2]	FY2018[2]	FY2019[3]
Rate per CCF of Billed Water Use	$4.40	$4.55	$4.64	$4.72	$4.88	$5.00
Annual Rate Increase	8.64%	3.41%	1.98%	1.72%	3.39%	2.46%
Average Annual Residential Bill	$448.80	$464.10	$473.28	$481.44	$497.76	$510.00
Average Annual Residential CCF	102	102	102	102	102	102

Notes:
1) Bills are issued twice per year, once in October and once in May.
2) Source: Financial Statements and Supplementary Information for the Years Ended June 30, 2016, 2017, and 2018.
3) Source: Stamford Water Pollution Control Authority.

7.3 Billing and Collection

In accordance with the SWPCA's billing policies, customers are billed semi-annually. Bills are issued once in October and once in April, based on winter water consumption data (six months of usage during the

winter season). During July of each year, the SWPCA obtains water meter readings measured by a private water company (Aquarion Water Company) for the period of the last quarter of the previous year and the first quarter of the current year. Computil is under contract to provide billing and accounts receivable services for the SWPCA. The SWPCA typically anticipates an annual billing collection rate of approximately 97 percent, which reflects the aggregate cash collected compared to the billed amount. The FY2018 audited financial statements reported a collection rate of 97 percent for FY2017 and 98 percent for FY2018.

The SWPCA bills the Town of Darien annually and the Town of Darien is allowed to pay the bill in 12 monthly installments. The SWPCA bills Aquarion based on the terms and conditions of the agreement with Aquarion.

Computil has been assisting the SWPCA with a more aggressive campaign to collect aged accounts. This campaign includes, but is not limited to, automatic mailing of late payment notification letters, referral of delinquent accounts owing more than $500 to a third-party collector (Ackerly and Ward), notifying mortgage companies of liens, and charging the maximum allowed by law for incurred interest and collection fees of delinquent accounts.

Computil manages the initial collections process. Thirty days after each bill is mailed, Computil automatically mails late payment notification and assesses a penalty interest (1.5 percent) and late interest (1.5 percent). At the 45-day and 60-day intervals, Computil mails Demand Letters in addition to periodic reminder telephone calls. An Intent to Lien letter is mailed when bills reach the 90-day aging interval, and liens are filed with the addition of a $60.00 Lien Fee. It should be noted that liens and lien fees are issued for each individual 6-month billing. Unpaid balances in excess of $500 and over 120-days old are referred to Ackerly and Ward for further collection efforts

Ackerly and Ward’s collection efforts include the mailing of a series of “Demand Letters”. Foreclosure proceedings can begin when outstanding balances reach $5,000. Intent to Foreclose letters are mailed to the property owner and the mortgagee. After all other collection efforts fail, Ackerly and Ward produce a list of owners they intend to foreclose on for presentation to SWPCA. Ackerly and Ward’s charges for services are charged back to the delinquent customer.

After the Board reviews and approves this list, the foreclosure process begins. Often, before the foreclosure is finalized, this effort results in payment coming from the mortgagee, the owner, or the owner agrees to a payment plan. Another very effective collection process is initiated by the SWPCA at the Government Center. To secure any Building Permit, the owner is required to get a “Sign Off” from the SWPCA verifying all unpaid sewer use balances less than 30 days old are paid in full.

7.4 Rate Comparison

A comparison of SWPCA’s sewer rates and rate structure with other sewer service providers in Connecticut is provided in Table 7-5 and Figure 7-1. As illustrated in Table 7-5 and Figure 7-1, the SWPCA rates are comparable and within the range of the sewer rates charged by the other utilities that were surveyed. It is also important to note that the SWPCA has recently completed major plant upgrades, which have placed upward pressure on sewer rates, whereas several of the regional communities listed still require significant investment to meet regulatory requirements, including nitrogen reduction and combined sewer overflows.

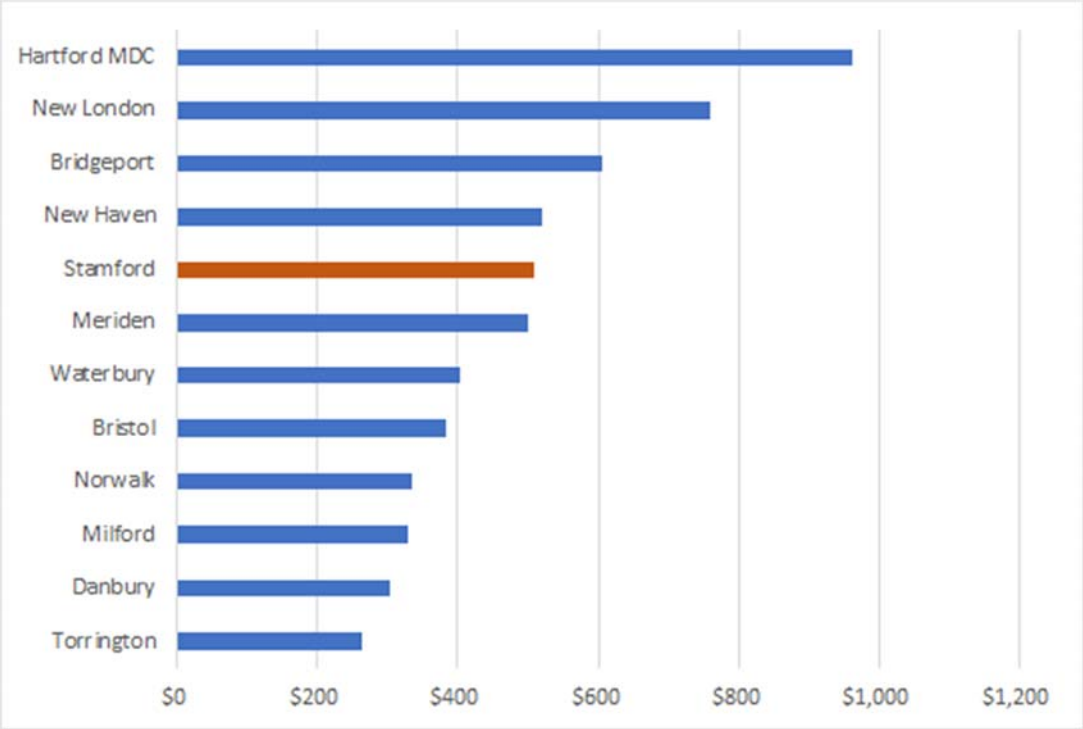
Table 7-5. Sewer Service Rate Comparisons[1]

City	Fixed Rate	Usage Rate (per CCF)	Estimated Annual Bill (based on 102 CCF)
Torrington (2)	$262.00	-	$262.00
Danbury (3)	$31.22	$3.30	$302.94
Milford (4)	$328.80	-	$328.80
Norwalk (5)	$335.00	-	$335.00
Bristol (6)	$23.97	$2.82	$383.52
Waterbury (7)	$20.00	$3.95	$403.21
Meriden (8)	$10.75	$4.49	$500.98
Stamford	-	$5.00	$510.00
New Haven (9)	$82.40	$4.56	$521.12
Bridgeport	-	$5.95	$606.39
New London (10)	$4.00	$6.99	$760.65
Hartford MDC (11)	$6.00	$8.74	$963.48

Notes:
1) Based on publicly-available documents for each community's sewer rates as of April 2019.
2) Annual flat sewer fee for a residential customer.
3) The fixed rate is a minimum bill per quarter. The usage rate includes O&M and debt service components.
4) Annual cost per single family residences as of June 2018.
5) Annual Sewer Fee for a Residential Customer for FY2017/2018 reported by Norwalk WPCA.
6) Fixed Rate represents Quarterly Meter Charge for a 5/8" Meter.
7) Annual minimum bill is $20. User rate includes capital recovery fee of $1.481 per CCF.
8) Fixed Rate represents Quarterly Meter Charge for a 5/8" Meter.
9) Fixed Rate for Quarterly Administration Fee plus usage rate and minimum bill of 15 CCF.
10) Fixed Rate is per monthly bill.
11) Fixed Rate represents Quarterly Meter Charge for a 5/8" Meter.

Furthermore, the SWPCA has already completed its nitrogen reduction improvements and does not have any combined sewer overflows. Therefore, it is likely the SWPCA will not be subject to the significant capital upgrade reinvestment requirements that other combined systems in Connecticut currently face. At approximately $510 per year, the SWPCA annual sewer bill is less than one percent of the City's median household income (MHI) and is well within sewer affordability thresholds commonly mentioned in the industry (e.g., total annual sewer bill less than 2.0 percent of MHI).

Figure 7-1. Annual Sewer Bill Comparison (102 CCF)



8 FINANCIAL FEASIBILITY

8.1 Overview

As part of this Report, Arcadis prepared a financial plan and forecast for the SWPCA for FY2019 through FY2024. The SWPCA's fiscal year runs from July 1 to June 30. The purpose of this section is to present the financial plan and forecast, the projection of revenues and expenses, and debt service coverage, and document the assumptions used in the preparation of the forecast in order to provide an engineer's opinion as to the financial feasibility of the Series 2019 Revenue Bonds.

The financial forecast represents an estimate of the probable results of operations and reflects SWPCA's judgment as to the most likely set of conditions and course of action based upon present circumstances. Arcadis worked closely with the SWPCA to obtain the information necessary to prepare the financial forecast, and various financial and system information was provided by the SWPCA to support its development.

8.2 Historical and Projected Revenues

Historical billed consumption, customer accounts, and sewer revenues from FY2014 through FY2018 were reviewed along with budget projections prepared and provided by the SWPCA for FY2019 and FY 2020 to develop projections of revenues to FY2024. The System revenues include revenues derived from user charges, special assessments, contract customers and other miscellaneous revenue sources.

- User Charges – User charges are primarily based on a unit rate per CCF of billable water consumption as metered by the Aquarion Water Company. Residential and commercial customers are generally billed semi-annually. There is no minimum bill charge or administrative fee per bill. SWPCA does use metered water use that is reflective of winter period usage. This excludes summer irrigation uses from the billed units.
- Special Assessments and Connection Fees – The SWPCA is continuing to expand its collection system. Customers that benefit from the expansion pay for the expansion through a special assessment. The special assessment revenues also include connection charges associated with customers that increase discharges to the system as determined through upgrades to water service lines and in the case of residential customers, through a review of the number of water-use fixtures.
- Contract Customers – As previously discussed, the SWPCA has an interlocal agreement with the Town of Darien for provision of wastewater transport and treatment services. In addition, the SWPCA has an agreement with Aquarion Water Company for water treatment plant sludge processing.
- Other Revenue – Other revenue includes interest income, nitrogen credits, reimbursements from the City, and other miscellaneous revenue.

Table 8-1 presents historical financial results, including historical revenues, for FY2015 through FY2018. As illustrated in Table 8-1, SWPCA revenues have been sufficient to meet its debt obligations and Indenture debt service coverage requirements over the past five years.

Table 8-1. Historical Financial Performance

Description	FY2015 [1]	FY2016 [1]	FY2017 [1]	FY2018 [1]
Revenues				
Sewer Use Charges	$21,736,649	$22,175,292	$23,044,678	$23,556,163
Other Revenue	$5,593,227	$5,114,192	$5,103,956	$4,550,262
Interest Income	$17,789	$83,011	($29,921)	$193,801
Total Revenue [(2)]	$27,347,665	$27,372,495	$28,118,713	$28,300,226
Expenses				
Operation & Maintenance [(2)]	$13,102,666	$13,507,919	$12,472,909	$13,257,634
Total Debt Service	$9,769,092	$9,265,929	$9,893,657	$9,875,048
Total Expenses	$22,871,758	$22,773,848	$22,366,566	$23,132,682
Senior Lien DS Coverage [(3)]	1.89	1.68	1.90	1.83
Total Debt Service Coverage[(3)]	1.46	1.50	1.58	1.52

Notes:
1) FY2015, FY2016, FY2017, and FY2018 based on audited financial statements prepared by Blum Shapiro & Company, P.C.
2) The revenues and expenses presented above do not include depreciation expense, provision for bad debts or prior year revenues that may have been used for rate stabilization.
3) Measured as the ratio of net revenues (total revenue including special assessment and connection charge revenue, less operating expenses) divided by debt service. The senior lien debt service includes all revenue bonds and CWF notes. The total debt service includes both the senior lien debt service plus the general obligation bond debt service. The Debt Service Coverage Requirement pursuant to the Indenture of Trust is 1.15 for senior lien debt, and 1.0 for aggregate debt service.

Projections of future revenues were made based upon historical information, discussions of revenue trends with SWPCA, and the projection of customer growth rates. Customer growth rates and growth rate assumptions were discussed in Section 7. The projected sewer rate revenue over the forecast period is provided at the end of this section in Table 8-9.

8.3 Historical and Projected O&M Expenses

SWPCA O&M expenses are expenses incurred through the functions of operating and maintaining the wastewater collection and treatment system, which include personnel (includes salaries, fringe benefits, including overtime), supplies (general office miscellaneous supplies and sewer material supplies), utilities, equipment and vehicles, travel, contracted sludge handling and disposal, other contracted services (i.e., billing services, auditing services, legal services, insurance, collection fees, etc.), and administrative expenses. The projection of O&M expenses is based on historical expense levels and SWPCA budgeted O&M for FY2019 and FY2020.

The assumptions used to project O&M expense are summarized in Table 8-2. These projections were developed based Arcadis' analysis of SWPCA O&M cost trends and other relevant industry cost information.

Table 8-2. O&M Expense Projection Assumptions

Expense Category	Annual Percent Increase	Basis/Rationale
Personnel	3.0%	Historical changes in SWPCA salaries and wages, and historical data for state and local government workers as published by the U.S. Department of Labor's Bureau of Labor Statistics.
Benefits	4.0%	Historical changes in SWPCA benefit costs, and historical data for state and local government workers as published by the U.S. Department of Labor's Bureau of Labor Statistics.
Electricity	4.0%	Guidance from SWPCA.
Chemicals	4.5%	Projected cost inflation.
All Other	2.5%	Conservative estimate based on historical changes in prices as published by the U.S. Department of Labor's Bureau of Labor Statistics.

8.4 Existing Debt Service

The SWPCA has historically funded its capital program through the issuance of revenue bonds, general obligation bonds and State Clean Water Fund (CWF) grants and loans. Table 8-3 summarizes the principal amount of debt outstanding in FY2018.

Table 8-3. Existing Bond Debt and Clean Water Fund Obligations as of June 30, 2018

Revenue Bond Debt		General Obligation Bond Debt		Clean Water Fund Obligations	
Issue	**Balance**	**Issue**	**Balance**	**Issue**	**Balance**
2013 Series A	$20,250,000	GO	$2,220,869	CWF 414-D	$421,087
2015 Series A	$28,990,000	2009 BABs	$6,925,000	CWF 414-C	$29,515,623
Totals	$49,240,000		$9,145,869		$29,936,710
Total Amount of Principal Outstanding as of 6-30-18					**$88,322,579**

Notes:
1) Debt Obligation Totals begin in FY2019.
2) Source: SWPCA Breakout Data

In prior years, the SWPCA owed the City funds to reimburse borrowings from the City's pooled cash account. SWPCA staff indicates that this obligation has been met, and that it does not anticipate any future payments to the City's pooled cash account.

The following Table 8-4 presents the existing debt service related to the debt obligations shown in Table 8-3.

Table 8-4. Existing Debt Service

Period Ending	Senior Lien Parity Debt			Subordinated Debt [1]	Total Existing Debt Service
	Existing Revenue Bond Debt Service (2013)	Existing Revenue Bond Debt Service (2015)	Existing CWF Debt Service (414-C, 414-D)	Existing General Obligation Bond Debt Service	
6/30/2019	$1,635,300	$1,959,519	$4,639,047	$1,719,897	$9,953,763
6/30/2020	$1,634,450	$1,956,144	$4,639,047	$1,325,266	$9,554,907
6/30/2021	$1,631,500	$1,960,769	$4,424,089	$1,112,520	$9,128,878
6/30/2022	$1,631,300	$1,963,144	$4,424,089	$835,820	$8,854,353
6/30/2023	$1,633,550	$1,963,269	$4,424,089	$823,645	$8,844,553
6/30/2024	$1,635,050	$1,961,144	$4,424,089	$765,145	$8,785,428
6/30/2025	$1,637,975	$1,961,644	$4,424,089	$803,345	$8,827,053
6/30/2026	$1,635,725	$1,964,519	$737,348	$658,295	$4,995,887
6/30/2027	$1,636,350	$1,959,769	$0	$655,820	$4,251,939
6/30/2028	$1,639,600	$1,957,394	$0	$657,945	$4,254,939
6/30/2029	$1,635,475	$1,962,019	$0	$652,820	$4,250,314
6/30/2030	$1,633,975	$1,963,394	$0	$650,760	$4,248,129
6/30/2031	$1,634,850	$1,961,519	$0	$0	$3,596,369
6/30/2032	$1,637,850	$1,959,113	$0	$0	$3,596,963
6/30/2033	$1,637,850	$1,961,066	$0	$0	$3,598,916
6/30/2034	$849,975	$1,959,488	$0	$0	$2,809,463
6/30/2035	$848,825	$1,955,238	$0	$0	$2,804,063
6/30/2036	$849,950	$1,959,063	$0	$0	$2,809,013
6/30/2037	$849,425	$1,954,819	$0	$0	$2,804,244
6/30/2038	$847,250	$901,438	$0	$0	$1,748,688
6/30/2039	$848,288	$905,375	$0	$0	$1,753,663
6/30/2040	$848,238	$903,281	$0	$0	$1,751,519
6/30/2041	$847,144	$905,156	$0	$0	$1,752,300
6/30/2042	$849,081	$901,000	$0	$0	$1,750,081
6/30/2043	$848,919	$905,719	$0	$0	$1,754,638
6/30/2044	$846,656	$904,219	$0	$0	$1,750,875
6/30/2045	$0	$901,594	$0	$0	$901,594
6/30/2046	0	0	0	0	0
TOTAL	**$33,864,550**	**$44,470,810**	**$32,135,887**	**$10,661,278**	**$121,132,525**

Notes:

[1] Includes the 2009 Taxable Build America Bonds for FY2019, which are then replaced with 2017 Series D Subordinated General Obligation Bonds per SWPCA.

The financial projection presented in Table 8-9 of this Report presents the existing debt service on Lines 38-40 (senior lien debt service) and Line 46 (subordinate General Obligation Bond debt service).

According to the Indenture of Trust Among the City of Stamford, Connecticut and the Water Pollution Control Authority of the City of Stamford and U.S. Bank, National Association as Trustee, dated December 21, 2001 and amended by the First through Sixth Supplemental Indentures, dated as of October 1, 2003, February 28, 2006, September 1, 2006, August 1, 2009, August 1, 2013, and August 1, 2015, respectively, (the "Indenture"), the SWPCA is required to maintain a debt service reserve fund for the 2013 and 2015 Revenue Bonds and the Clean Water Fund obligations. The monies maintained in these funds as of April 2019 are shown in Table 8-5, and the aggregate reserve amount is shown on Line 3 as required pursuant to the Indenture. There are no debt service reserve requirements for the General Obligation (GO) Bonds payable from the subordinated indebtedness fund established pursuant to the Indenture (which includes the SWPCA's 2009 Taxable Build America Bonds). The GO Bonds are subordinated debt.

Table 8-5. Current SWPCA Debt Service Reserve Levels

Line No.	Description	April 2019 Balance	Required	Net
1	Clean Water Fund – Debt Service Reserve	$4,424,089	$4,424,089	$0
2	Debt Service Reserve (Series 2013 and 2015)	$3,689,460	$3,604,119	$85,341
3	**Total on Deposit in Common Fund**	**$8,113,549**	**$8,028,208**	**$85,341**

Source: SWPCA Summary of Debt Service Reserve Fund as of April 2019 provided by U.S. Bank.

8.5 Capital Improvement Plan Funding

The SWPCA plans to fund approximately $15.7 million in sewer utility projects with the proceeds of the Series 2019 Revenue Bonds. This represents approximately 78 percent of the total amount of the sewer CIP in FY2020. The remaining amount of planned capital improvements in FY2020 are anticipated to be funded with remaining bond proceeds from the Series 2015 Revenue Bonds and CWF grant funds.

In FY2021 through FY2024, the SWPCA anticipates funding the majority of the sewer CIP with funds from additional revenue bond issuances in calendar years 2020, 2021, and 2024 or CWF grants and loans. To the extent the SWPCA can secure CWF grants and loans this will offset the need to issue additional revenue bonds following the Series 2019 issuance. The SWPCA also plans on funding certain renewal and replacement projects on a pay-as-you-go basis with available cash in excess of their capital and operating reserve goals. Table 8-6 provides a summary of the annual capital expenditures and anticipated sources of funding.

Table 8-6. Summary of Capital Plan Sources of Funding ($1,000s)

Source of Funding	Annual Capital Cash Flow Forecast ($1,000s)							
	FY19	FY20	FY21	FY22	FY23	FY24	Total**	% of Total
2015 Bonds	2,851	3,825	0	0	0	0	6,676	10.49%
2019 Bonds	0	15,700	0	0	0	0	15,700	24.66%
2020 Bonds	0	0	20,000	0	0	0	20,000	31.41%
Future Bonds	0	0	0	9,050	5,650	3,150	17,850	28.03%
CWF Grant	115	115	115	115	115	115	690	1.08%
Cash Reserves	0	455	800	500	500	500	2,755	4.33%
Total **	**2,966**	**20,095**	**20,915**	**9,665**	**6,265**	**3,765**	**63,671**	**100.00%**

* Capital project costs per SWPCA CIP for FY2020 through FY2025.
** Minor variances in summations due to rounding.

As illustrated in Table 8-6, it is expected that approximately $0.69 million (1.08 percent) in funding will be provided by the State CWF Grant. Capital reserves including excess cash will make up approximately $2.8 million (4.33 percent) of capital improvements. The remaining $60.2 million or 94.59 percent of the CIP in these years will be funded with revenue bond proceeds from the Series 2015 ($6.7 million, 10.49 percent), Series 2019 ($15.7 million, 24.66 percent), Series 2020 ($20.0 million, 31.41 percent), and future bond issuances ($17.9 million, 28.03 percent).

8.6 Projected Debt Service

The proceeds of the Series 2019 revenue bonds will be used to fund a portion of the CIP noted above for FY2019 through FY2024. For more information on the Series 2019 issuance, refer to the sources and uses section of the Official Statement.

Table 8-7 presents the projected debt service related to future debt issuances as provided by SWPCA. This includes the debt service related to the Series 2019 issuance, as well as estimated debt service for anticipated revenue bond issuances in FY2020, FY2021, and FY2024. The debt service for the FY2024 issuance is projected to impact SWPCA beyond the financial projection period for this Report. The par amounts for these projected debt issuances is as follows, and the corresponding debt service is determined using a 30-year repayment term with an annual interest rate of 5.0 percent.

- Series 2019 - $15,700,000
- Series 2020 - $20,000,000
- Series 2021 - $9,050,000
- Series 2024 - $9,350,000

Table 8-7. Projected New Debt Service During Projection Period

Period Ending	Series 2019 Principal & Interest	Series 2020 Principal & Interest	Series 2021 Principal & Interest	Series 2024 Principal & Interest	Total New Debt Service
6/30/2019	0	0	0	0	0
6/30/2020	$1,027,347				$1,027,347
6/30/2021	$1,028,600	$1,288,889			$2,317,489
6/30/2022	$1,029,000	$1,283,750	$580,660		$2,893,410
6/30/2023	$1,028,800	$1,288,250	$580,750		$2,897,800
6/30/2024	$1,028,000	$1,286,750	$583,750		$2,898,500
6/30/2025	$1,026,600	$1,284,500	$581,250	$602,118	$3,494,468
6/30/2026	$1,029,600	$1,286,500	$583,500	$600,250	$3,499,850
6/30/2027	$1,027,350	$1,287,500	$580,250	$603,000	$3,498,100
6/30/2028	$1,029,100	$1,287,500	$581,750	$600,250	$3,498,600
6/30/2029	$1,029,600	$1,286,500	$582,750	$602,250	$3,501,100
6/30/2030	$1,028,850	$1,284,500	$583,250	$603,750	$3,500,350
6/30/2031	$1,026,850	$1,286,500	$583,250	$599,750	$3,496,350
6/30/2032	$1,028,600	$1,287,250	$582,750	$600,500	$3,499,100
6/30/2033	$1,028,850	$1,286,750	$581,750	$600,750	$3,498,100
6/30/2034	$1,027,600	$1,285,000	$580,250	$600,500	$3,493,350
6/30/2035	$1,024,850	$1,287,000	$583,250	$599,750	$3,494,850
6/30/2036	$1,025,600	$1,287,500	$580,500	$603,500	$3,497,100
6/30/2037	$1,026,800	$1,286,500	$582,250	$601,500	$3,497,050
6/30/2038	$1,026,800	$1,284,000	$583,250	$599,000	$3,493,050
6/30/2039	$1,025,600	$1,285,000	$583,500	$601,000	$3,495,100
6/30/2040	$1,028,200	$1,284,250	$583,000	$602,250	$3,497,700
6/30/2041	$1,029,400	$1,286,750	$581,750	$602,750	$3,500,650
6/30/2042	$1,029,200	$1,287,250	$579,750	$602,500	$3,498,700
6/30/2043	$1,027,600	$1,285,750	$582,000	$601,500	$3,496,850
6/30/2044	$1,029,600	$1,287,250	$583,250	$599,750	$3,499,850

Period Ending	Series 2019 Principal & Interest	Series 2020 Principal & Interest	Series 2021 Principal & Interest	Series 2024 Principal & Interest	Total New Debt Service
6/30/2045		$1,286,500	$583,500	$602,250	$2,472,250
6/30/2046		$1,288,500	$582,750	$603,750	$2,475,000
6/30/2047		$1,288,000	$581,000	$599,250	$2,468,250
6/30/2048		$1,285,000	$583,250	$599,000	$2,467,250
6/30/2049		$1,284,500	$584,250	$602,750	$2,471,500
6/30/2050		$1,286,250	$579,000	$600,250	$2,465,500
6/30/2051			$582,750	$601,750	$1,184,500
6/30/2052				$602,000	$602,000
6/30/2053				$601,000	$601,000
6/30/2054				$603,750	$603,750
Total	**$25,698,397**	**$38,590,139**	**$17,464,910**	**$18,042,368**	**$99,795,814**

Notes: Projected debt service provided by SWPCA.

The projected debt service reflected in Table 8-7 is again presented in the financial projection shown on Table 8-9 of this Report (see Lines 41 through 44).

Associated with each projected issuance is a transfer to the Debt Service Reserve. SWPCA provided transfers to the Debt Service Reserve Fund for each projected issuance as follows:

- Series 2019 - $1,029,600
- Series 2020 - $1,288,889
- Series 2021 - $584,250
- Series 2024 - $603,750

These amounts reflect the projected maximum annual debt service for each issuance per SWPCA.

8.6.1 Debt Service Coverage Requirements

SWPCA provided a copy of the Indenture of Trust Among the City of Stamford, CT and the Water Pollution Control Authority to Arcadis for this Report. The Indenture contains specific debt service coverage requirements that must be met by the SWPCA. The provisions related to debt service coverage are included in Rate Covenant (Section 713) included in the Indenture. Specifically, the Rate Covenant requires a minimum level of coverage equal to or greater than 115 percent of the annual debt service associated with the SWPCA's outstanding parity debt. For the SWPCA, parity debt includes the 2013 and 2015 Revenue Bond issues and all outstanding Clean Water Fund obligations. The Rate Covenant also includes a debt service coverage ratio for aggregate debt service of at least 100 percent, which includes parity debt and subordinated debt. The SWPCA's subordinated debt includes its share of the City's General Obligation bonds.

The specific provisions associated with the debt service requirements under the Rate Covenant included in the Indenture are included below.

> *Section 713. Rate Covenant*
>
> *"(a) (i) The Authority covenants that it will fix, charge and collect rates, charges, rents, fees and assessments, including but not limited to use and connection charges and benefit assessments, which shall produce Revenues which, together with amounts capitalized from proceeds of Bonds or otherwise made available and reserved and not already taken into account hereunder by reduction of the obligations which are to be paid from Revenues, and the amount to be withdrawn from the Surplus Fund other than to pay Capital Costs for such Fiscal Year, shall be sufficient in each Fiscal Year to provide for:*
>
> > *(A) a Debt Service Coverage Ratio at least equal to the Debt Service Coverage Ratio Requirement;*
> >
> > *(B) any amount necessary to restore any Account within the Debt Service Reserve Fund to its required deposit level; and*
> >
> > *(C) any amount necessary to restore any debt service reserve fund for Parity Indebtedness to its required deposit level; and*
>
> *(ii) The Authority covenants that each Fiscal Year, it will budget rates, charges, rents, fees and assessments, including but not limited to use and connection charges and benefit assessments, which shall produce Revenues which, together with amounts capitalized from proceeds of Bonds or otherwise made available and reserved and not already taken into account hereunder by reduction of the obligations which are to be paid from Revenues and the amount to be withdrawn from the Surplus Fund other than to pay Capital Costs for such Fiscal Year, to provide for an amount equal to 100% of aggregate debt service for such Fiscal Year with respect to Subordinated Indebtedness, which aggregate debt service shall be computed on the same basis and with the same assumptions as "Aggregate Debt Service" for Bonds hereunder; provided however, that failure to collect such Revenues and other amounts under this clause (ii) shall under no circumstances be treated as an Event of Default."*

According to the Indenture, the following definitions apply:

> *"Aggregate Debt Service" shall mean for any Fiscal Year as of any date of calculation, the sum of the Debt Service for all Bonds Outstanding and Parity Indebtedness outstanding during such Fiscal Year.*
>
> *"Debt Service Coverage Ratio" shall mean, for the Fiscal Year specified, the ratio of (a) the Revenues for such Fiscal Year (adjusted as provided in Section 206(d)), plus the amount withdrawn from the Surplus Fund (or to be withdrawn from the Surplus Fund in a subsequent Fiscal Year as certified by an Authorized Representative of the Municipality) other than to pay Capital Costs for such Fiscal Year, less the total Operating Expenses for such Fiscal Year; compared to (b) the Aggregate Debt Service on the Bonds then Outstanding and all Parity Indebtedness then outstanding and, for the purposes of Section 206(d), the maximum Aggregate Debt Service on the additional Bonds then proposed to be issued.*

"Debt Service Coverage Ratio Requirement" shall mean a Debt Service Coverage Ratio of one hundred and fifteen percent (115%)."

The issuance of future debt (revenue bonds and Clean Water Fund borrowings) is subject to conditions prior to the delivery of a series of additional bonds as per the Indenture. This provision requires that the SWPCA produce:

1) A schedule showing that for the last full Fiscal Year prior to the Fiscal Year in which a new Series of Bonds is issued, the system produced net revenues of at least 115 percent of the annual debt service associated with all parity indebtedness, including the maximum aggregate debt service related to the additional bonds to be issued.
2) A six-year forecast showing the system is capable of producing annual net revenues of at least 115 percent of the annual debt service associated with all parity indebtedness, including the additional revenue bonds expected to be issued by the SWPCA.

Specifically, the Indenture requires the following, as included under Section 206:

"(d) except in the case of any Series of Bonds issued hereunder prior to the completion of one full Fiscal Year following the execution and delivery of this Indenture and any Series of Refunding Bonds issued pursuant to Section 207, a Certificate of an Authorized Representative of the Municipality and the Authority setting forth for the last full Fiscal Year immediately preceding the Fiscal Year in which such Bonds are to be issued, (i) the Revenues adjusted as hereinafter provided, (ii) the Aggregate Debt Service on the Bonds then Outstanding and all Parity Indebtedness then outstanding and the maximum Aggregate Debt Service on the additional Bonds then proposed to be issued, (iii) the total Operating Expenses for such Fiscal Year, (iv) the amount withdrawn from the Surplus Fund other than to pay Capital Costs, and (v) showing that the Debt Service Coverage Ratio is at least equal to the Debt Service Coverage Ratio Requirement; provided that (A) if an increase in the rates, fees and charges for services of the Sewerage System shall have been approved prior to the delivery of such Certificate, such that no further legal requirements need be met to effectuate such increase, the Revenues calculated under clause (d)(i) shall be adjusted to the amount of Revenues which would have been derived from the Sewerage System for said full Fiscal Year if such increased rates, fees and charges for services of the Sewerage System had been in effect for the full Fiscal Year, and (B) if the Authority shall have obtained one or more new customers after such Fiscal Year but before the delivery of such certificate, such that the Revenues for the last full Fiscal Year should, in the opinion of the Authority, be adjusted to reflect such additional customer or customers, then the Revenues of the Sewerage System for the full Fiscal Year immediately preceding the issuance of said additional Bonds shall be increased by the least amount which said customer or customers are legally obligated to pay in any one year for the furnishing of said services by the Sewerage System, after deducting therefrom the Operating Expenses estimated by the Authority as attributable in such year to such customer or customers."

"(e) except in the case of any Series of Refunding Bonds issued pursuant to Section 207, a Certificate of an Authorized Representative of the Municipality and the Authority setting forth for each of the five (5) Fiscal Years following the issuance of such Series of Bonds, plus the Fiscal Year in which such Bonds are issued, (i) the estimated Revenues after giving effect to any increases or decreases in rates, fees and charges projected, (ii) the estimated Operating

Expenses, (iii) the estimated amount to be withdrawn from the Surplus Fund other than to pay Capital Costs, (iv) the projected Aggregate Debt Service on the Bonds then Outstanding, all Parity Indebtedness then outstanding and the additional Bonds then proposed to be issued, and (v) showing that the Debt Service Coverage Ratio will be at least equal to the Debt Service Coverage Ratio Requirement;"

Table 8-8 serves to satisfy the requirement of Section 206 (d). It provides an assessment of SWPCA's FY2018 financial results, adjusted for the rate increase approved in FY2019, for meeting the Debt Service Coverage Ratio Requirement on outstanding senior lien debt service, plus the maximum aggregate debt service for the proposed Series 2019 Bonds.

The projections provided in Table 8-9 as part of this Report serve to satisfy the requirements of Section 206 (e) and assumes the SWPCA will implement the annual rate increases shown in this table at the beginning of each fiscal year.

8.6.2 SWPCA Fiscal Policies

Since its Series 2015 Revenue Bond issuance, SWPCA has instituted Fiscal Policies as a means for guiding the financial management of the utility. The Financial Policies were adopted on March 21, 2016. There are several key items outlined in the Financial Policies including:

- Governance Philosophy – This outlines the commitment of SWPCA to efficient management of the utility's finances.
- Budgeting and Capital Planning – This section outlines SWPCA's commitment to undertaking annual operating and capital budgeting to anticipate the utility's financial revenue requirements. Additionally, this section outlines SWPCA's intent to engage a Consulting Engineer to provide an opinion on the reasonableness of SWPCA's five-year financial forecast, including capital improvement plan and associated operating forecast.
- Monitoring Financial Performance – This section commits to providing the utility's Board with an assessment of financial performance at least quarterly during the fiscal year.
- Annual Audit and Comprehensive Annual Financial Reports – SWPCA outlines its commitment to producing annual financial statements and associated audits on an annual basis.
- Rate Setting Policy – This commits SWPCA to implementing regular rate increases to meet bond covenants, provide a reliable and predictable stream of revenue, provide for public review, and other associated items.
- Financing Policies – This outlines several items including the issuance of debt obligations, including general obligation bonds. It also includes its intent to maintain high public credit ratings and manage its overall debt load.
- Other – There are additional policies that include the management of SWPCA's cash including a commitment to maintain a cash reserve of at least 120 days of annual O&M; a commitment to regularly use pay-go cash funding of the capital improvement plan; and maintain the utility's collection rate at a minimum of 95 percent.

8.7 Additional Bonds Calculation and Cash Flow Projection

8.7.1 Additional Bonds Calculation

The following Table 8-8 presents the analysis related to Section 206 (d) of the Indenture. Lines 1 through 8 are derived from audited financial statements for FY 2018. The Sewer User Fees in Line 1 reflect SWPCA revenue from retail customers and are adjusted in Line 2 to reflect an estimated collection factor of 97.5 percent. Column 2 reflects the estimated additional revenue from the rate increase approved by SWPCA in FY 2019 that increased the sewer user rate from $4.88 per Ccf to $5.00 per Ccf. Other revenue includes fees from the Town of Darien, miscellaneous revenue, and revenue from special assessments and connection charges. The adjusted FY 2018 revenue is $28.3 million.

Operating expenses consist of salaries and wages, materials and supplies and other operating expenses related to the SWPCA system and exclude depreciation. There are no adjustments and the resulting operating expenses are $13.3 million as seen on Line 11. The net revenue available for debt service reflects the subtraction of operating expenses from total revenue and is seen on Line 12. The net revenue available for debt service is $15.0 million.

To meet the requirement of Section 206 (d) of the Indenture, the net revenue needs to be at least 115% of the outstanding senior lien debt service, plus the maximum aggregate debt service on the Series 2019 Bonds. The FY2018 outstanding senior lien debt service is $8.2 million seen on Line 13. The maximum aggregate debt service for the Series 2019 Bonds was derived from the debt service schedule provided by SWPCA and is $1.012 million, resulting in total senior lien debt service of $9.2 million. The Debt Service Coverage Ratio is seen on Line 16 and reflects the net revenue divided by the senior lien debt service, including the maximum aggregate debt service on the Series 2019 Bonds. The resulting Debt Service Coverage Ratio is 162% which exceeds the Debt Service Coverage Ratio Requirement of 115%.

Table 8-8. FY2018 Debt Service Coverage Including Series 2019 Maximum Annual Debt Service ($1,000s)

Line No.	Description	(1) FY 2018	(2) Adjustment	(3) FY 2018 Adjusted
	Revenue			
1	Sewer Use Fees	$20,564	$506	$21,070
2	Sewer Use Fee Collection Adjustment	($514)	($13)	($527)
3	Darien Treatment and Capital Reimbursement	$2,480		$2,480
4	Other Charges for Services	$1,398		$1,398
5	Interest	$194		$194
6	Other Revenue	$1,152		$1,152
7	Special Assessments and Connection Charges	$2,512		$2,512
8	**Total Revenue**	**$27,786**	**$493**	**$28,279**

Line No.	Description	(1) FY 2018	(2) Adjustment	(3) FY 2018 Adjusted
	Operating Expenses			
9	Salaries, Benefits and Claims	$6,553		$6,553
10	Operations and Supplies	$6,704		$6,704
11	**Total Operating Expenses**	**$13,258**	**$0**	**$13,258**
12	**Net Revenue for Debt Service (Ln 8 – Ln 11)**	**$14,528**	**$493**	**$15,021**
	Senior Lien Debt Service			
13	Outstanding Aggregate Debt Service (FY 2018)	$8,234		$8,234
14	Maximum Aggregate Debt Service (Series 2019 Bonds)	$1,030		$1,030
15	**Total Senior Lien Debt Service**	**$9,264**	**$0**	**$9,264**
16	**Debt Service Coverage Ratio (Ln 12 / Ln 15)**			**1.62**

Note: Minor variances in summations due to rounding.

8.7.2 Cash Flow Projection

Presented in Table 8-9 are financial projections for the SWPCA for the period of FY2019 through FY2024. These financial projections were prepared based on a review of historic performance, audited financial statements, SWPCA budgets, and guidance provided by SWPCA staff, including a review of capital financing requirements.

Based on the projection of revenues, O&M expenses, existing and projected debt service, and associated assumptions, it is anticipated that the SWPCA will achieve its debt service coverage requirements over the forecast period with the adoption of the identified sewer user rate increases seen on Line 4. SWPCA implemented a sewer rate increase in FY2019 of approximately 2.46 percent (from $4.88 per CCF to $5.00 per CCF) consistent with its adopted Financial Policies to provide rate payers with predictable rates and moderate increases in rates on an annual basis. For FY2020 through FY2024, Arcadis projects that SWPCA would then continue to implement moderate rate increases to build sufficient reserves in anticipation of future capital projects.

These projections reflect the SWPCA's views and assumptions with respect to future events as of the date of this Report and are subject to future economic conditions and other risks and uncertainties. However, actual and future results and trends could differ materially from those presented herein. Accordingly, Arcadis makes no warranty or representation that any of the projected values or results contained in this document will actually be achieved. In the event that the anticipated costs and funding levels differ from the projections presented herein, the SWPCA will need to adjust the rates accordingly.

Including the projected rate increases herein, SWPCA appears to be in a strong financial position and capable of undertaking cash funded capital improvements while maintaining strong operating reserves.

Table 8-9. Cash Flow Projection (FY2019 through FY2024)

Projected Revenue and Expenses
Fiscal Years 2019 through 2024

		FY19	FY20	FY21	FY22	FY23	FY24
	I. SYSTEM REVENUES:						
	A. BILLING REVENUES						
1	Number of Customers	**19,794**	**19,893**	**19,992**	**20,092**	**20,192**	**20,293**
2	Billable Metered Water Use (Ccf)	**4,256,900**	**4,314,680**	**4,373,206**	**4,432,487**	**4,492,532**	**4,553,352**
	Wastewater User Charge Revenue						
3	Sewer Use Rate ($/Ccf)	5.00	5.05	5.18	5.28	5.33	5.38
4	Annual Rate Increase (%)	2.46%	1.00%	2.50%	2.00%	1.00%	1.00%
5	***TOTAL BILLING REVENUES***	$ 21,284,498	$ 21,789,134	$ 22,636,808	$ 23,402,534	$ 23,956,754	$ 24,523,892
	B. MISCELLANEOUS REVENUES						
6	Interest Income	$ 201,000	$ 208,000	$ 224,000	$ 246,000	$ 268,000	$ 291,000
7	Special Assessment and Connection Fees	2,229,000	2,229,000	2,229,000	2,229,000	2,229,000	2,229,000
8	Interlocal Agreement (Darien) User Charges	1,787,262	1,830,110	2,245,997	2,327,751	2,411,933	2,490,198
9	Darien Capital Reimbursement	1,069,314	1,127,408	1,198,594	1,296,467	1,330,604	1,329,992
10	Septic Tank Revenue	341,000	341,000	341,000	341,000	341,000	341,000
11	Regional Lab Revenue	38,000	38,000	38,000	38,000	38,000	38,000
12	Groundwater Fees	1,000	1,000	1,000	1,000	1,000	1,000
13	Permit Fees	1,000	1,000	1,000	1,000	1,000	1,000
14	Sewer Use - Lien Fees	125,000	125,000	125,000	125,000	125,000	125,000
15	Sewer Use - Delinquent Interest	448,000	448,000	448,000	448,000	448,000	448,000
16	Aquarion User Charges	305,000	305,000	305,000	305,000	305,000	305,000
17	Rebates - Build America Bonds	110,221	0	0	0	0	0
18	Miscellaneous/Other	82,000	82,000	82,000	82,000	82,000	82,000
19	Nitrogen Trading Exchange Credits	600,000	2,545,733	500,000	450,000	400,000	400,000
20	City Stormwater Reimbursement	448,000	461,000	475,000	489,000	504,000	519,000
21	***TOTAL MISCELLANEOUS REVENUES***	7,785,797	9,742,251	8,213,591	8,379,218	8,484,537	8,600,190
22	***C. RECEIVABLE MANAGEMENT COSTS***	(532,000)	(545,000)	(566,000)	(585,000)	(599,000)	(613,000)
23	Billing Collection Rate	97.5%	97.5%	97.5%	97.5%	97.5%	97.5%
24	**TOTAL SYSTEM REVENUES**	$ 28,538,295	$ 30,986,385	$ 30,284,398	$ 31,196,752	$ 31,842,291	$ 32,511,081
	II. SYSTEM EXPENSES:						
	D. OPERATIONS & MAINTENANCE						
25	WPCA Admin (Less Depreciation and Interest)	$ 4,672,074	$ 4,851,887	$ 5,006,290	$ 5,165,812	$ 5,330,630	$ 5,500,925
26	Process Control	3,293,888	3,459,099	3,578,284	3,701,700	3,829,501	3,961,847
27	Laboratories	465,479	362,731	373,098	383,763	394,735	406,022
28	Sludge Process	2,779,077	2,927,503	3,011,843	3,098,814	3,188,507	3,281,017
29	Regulatory Compliance	93,639	95,936	98,674	101,491	104,388	107,369
30	Building Maintenance	288,000	297,225	308,711	320,687	333,176	346,200
31	Equipment Maintenance	1,155,515	1,221,528	1,254,113	1,287,574	1,321,935	1,357,220
32	Pump Station Maintenance	760,171	779,180	803,098	827,776	853,240	879,515
33	Sewer Maintenance	467,841	486,695	500,704	515,118	529,950	545,212
34	Barrier Maintenance	135,100	136,955	141,758	146,737	151,897	157,246
35	Billing Services	453,054	543,802	557,397	571,332	585,615	600,256
36	**TOTAL SYSTEM O&M EXPENSES**	$ 14,563,837	$ 15,162,540	$ 15,633,970	$ 16,120,805	$ 16,623,574	$ 17,142,828
37	**TOTAL NET REVENUES FOR DEBT SERVICE**	$ 13,974,458	$ 15,823,845	$ 14,650,428	$ 15,075,947	$ 15,218,717	$ 15,368,253
	III. DEBT SERVICE PAYMENTS:						
38	Series 2013 Revenue Bonds	$ 1,635,300	$ 1,634,450	$ 1,631,500	$ 1,631,300	$ 1,633,550	$ 1,635,050
39	Series 2015 Revenue Bonds	1,959,519	1,956,144	1,960,769	1,963,144	1,963,269	1,961,144
40	Repayment of Existing CWF Loans	4,639,047	4,639,047	4,424,089	4,424,089	4,424,089	4,424,089
41	Series 2019 Revenue Bonds	0	1,027,347	1,028,600	1,029,000	1,028,800	1,028,000
42	Projected Series 2020 Revenue Bonds	0	0	1,288,889	1,283,750	1,288,250	1,286,750
43	Projected Series 2021 Revenue Bonds	0	0	0	580,660	580,750	583,750
44	Projected Series 2024 Revenue Bonds	0	0	0	0	0	0
45	*Subtotal Senior Lien Debt*	$ 8,233,866	$ 9,256,988	$ 10,333,847	$ 10,911,943	$ 10,918,708	$ 10,918,783
46	Existing GO Bonds	1,719,897	1,325,266	1,112,520	835,820	823,645	765,145
47	***TOTAL DEBT SERVICE***	$ 9,953,763	$ 10,582,254	$ 11,446,367	$ 11,747,763	$ 11,742,353	$ 11,683,928
48	**SENIOR LIEN DS COVERAGE**	1.69	1.70	1.41	1.38	1.39	1.40
49	**TOTAL DS COVERAGE FROM NET REVENUES**	1.40	1.49	1.27	1.28	1.29	1.31
	IV. SWPCA OPERATING CASH FUND SUMMARY						
50	Beginning Balance	$ 10,116,456	$ 13,137,151	$ 18,378,742	$ 20,282,804	$ 22,310,988	$ 24,487,352
51	Transfers In	4,020,695	5,241,591	3,204,062	3,328,185	3,476,364	3,684,325
52	Transfers Out to Capital Reserve	(1,000,000)	0	(1,300,000)	(1,300,000)	(1,300,000)	(1,300,000)
53	Transfers Out to DSRF	0	0	0	0	0	0
54	Ending Balance	$ 13,137,151	$ 18,378,742	$ 20,282,804	$ 22,310,988	$ 24,487,352	$ 26,871,678
	V. CAPITAL RESERVE FUND SUMMARY						
55	Beginning Balance	$ 7,127,594	$ 8,127,594	$ 7,672,594	$ 8,172,594	$ 8,972,594	$ 9,772,594
56	Transfers In	1,000,000	0	1,300,000	1,300,000	1,300,000	1,300,000
57	Cash Capital Projects	0	(455,000)	(800,000)	(500,000)	(500,000)	(500,000)
58	Other Transfers Out	0	0	0	0	0	0
59	Capital Reserve Ending Balance	$ 8,127,594	$ 7,672,594	$ 8,172,594	$ 8,972,594	$ 9,772,594	$ 10,572,594
60	***TOTAL DS COVERAGE INCLUDING OPERATING AND CAPITAL RESERVE FUNDS***	3.54	3.95	3.76	3.94	4.21	4.52

9 CONCLUSION

9.1 Considerations and Assumptions

In preparation of this Engineer's Report, Arcadis has relied upon financial, engineering and operational data and assumptions prepared by and/or provided by the City and the SWPCA. In addition, information and projections have been provided by other entities working on behalf of the SWPCA. We believe such sources are reliable and the information obtained to be appropriate for the review undertaken and the conclusions reached in this Report. To the best of our knowledge, information and belief, the information does not omit material facts necessary to make the statements herein. However, Arcadis has not independently verified the accuracy of the information provided by the City, SWPCA and others. In addition, the scope of the Arcadis review did not include any pending or threatened litigation against the SWPCA. To the extent that the information is not accurate, the findings and conclusions contained in this Report and in particular the results shown on Table 8-8 and Table 8-9, may vary and are subject to change.

The principal considerations and assumptions are provided throughout this Report, some of which are as follows:

- We have made no determination as to the validity and enforceability of any contracts, agreement, existing law, rule, or regulation applicable to the SWPCA and its operations. However, for purposes of this Engineer's Report, we have assumed that all such contracts, agreements, laws, rules and regulations will be fully enforceable and complied with in accordance with their terms.
- The City/SWPCA will continue its policies of employing qualified and competent personnel; properly operate and maintain the System in accordance with generally accepted engineering practices; and operate the System in a prudent and sound businesslike manner.
- The proposed CIP reflects the immediate requirements of the System and the CIP is expected to be largely implemented by the SWPCA as planned. Additional capital projects have been identified and may be implemented after completion of the existing five-year plan or could be implemented sooner if additional capital funding is made available. If required, the SWPCA can accelerate the implementation of such improvements and fund such improvements through potentially available reserves or through the City via the self-supporting debt fund or pooled cash account.
- In the event that unforeseen expenses occur, which may include items such as O&M expenses and capital expenditures to address a change in law, increased priority or uninsured catastrophic event, the SWPCA would embark upon internally driven actions such as reducing non-essential programs and implementing cost reduction measures to cover costs associated with these expenses.
- SWPCA will implement timely and consistent rate increases at least consistent with the projections in this Report to meet its operating and capital needs, as well as provide sufficient debt service coverage for existing and proposed debt service.

This Report was prepared solely for the benefit of and use by the City and SWPCA for the discrete purposes set forth herein. The City did not request Arcadis to provide, and the Report does not provide

any advice to or on behalf of the City with respect to municipal financial products or the issuance of municipal securities, including advice with respect to the structure, timing, terms, and other similar matters concerning such financial products or issues. Therefore, in providing the Report to the City, Arcadis is not a “municipal advisor” as defined in Section 15B of the Securities and Exchange Act of 1934. Accordingly, Arcadis is not registered or regulated as a municipal advisor by the U.S. Securities and Exchange Commission or the Municipal Securities Rulemaking Board.

In the performance of its services on behalf of the City and SWPCA, Arcadis did not intend to create, and hereby expressly denies the creation of, any right on the part of any third party to rely upon this Report. All such reliance shall be at the third party’s sole discretion and upon its own, independent review of any and all facts contained herein. Distribution of this Report to a third party is solely for informational purposes, and may not be relied upon by such third party for any other purpose.

Arcadis’ effort in the construction and preparation of this Report is consistent with (i) the degree of care and skill ordinarily exercised by members of the same profession currently practicing under same or similar circumstances and (ii) the time and budget available for its work in its endeavor to ensure that the data contained in the Report is accurate as of the date of its preparation. This analysis was based on estimates, assumptions and other information developed by Arcadis from its independent research effort, general knowledge of the industry, and information provided by, and consultations with, the City, SWPCA and its agents, representatives, and consultants. While we believe such sources are reliable, and the information obtained to be accurate and appropriate for the analysis undertaken and the conclusions reached herein, as is often the case, there may be differences between actual and projected results. Accordingly, some of the estimates used in this Report will not be realized, and unanticipated events and circumstances may occur. To the extent the information provided to Arcadis by the City, SWPCA and others is not accurate, or not inclusive of all details, the conclusions and recommendations contained in this Report may vary, and are subject to change. Moreover, there are likely to be differences between the data and results projected in this Report and actual results achieved, and those differences may be material. Arcadis assumes no responsibility or liability for inaccuracies in Reporting and data provided by the City, SWPCA and its agents, representatives and consultants, or in any third-party data source used in preparing or presenting this Report.

Additionally, Arcadis relied on assumptions, forecasts, data and statistics provided by the City and others. Forward-looking statements included in this Report, which may be identified by the use of words like “anticipate”, “believe”, “estimate”, “expect”, “intend”, “may”, “plan”, “project”, “will”, “should”, “seek”, and similar expressions, refer to Arcadis’ views and assumptions with respect to future events as of the date of this document, and are subject to future economic conditions, results, and other risks and uncertainties. Actual and future results and trends could differ materially from those set forth in such statements due to various factors, including, without limitation, those mentioned in this Report. These factors are beyond Arcadis’ ability to control or predict. Accordingly, Arcadis makes no warranty or representation that any of the projected values or results contained in this Report will actually be achieved.

Arcadis’ findings represent its professional judgment. Neither Arcadis, nor its parent corporation, or their respective subsidiaries and affiliates, makes any warranty, expressed or implied, with respect to any information or methods disclosed in this Report. No recipient of the Report shall have any claim against Arcadis, its parent corporation, and/or its and their subsidiaries and affiliates, for any liability for direct,

indirect, consequential, or special loss or damage arising out of its receipt and use of this document whether arising in contract, warranty (express or implied), tort or otherwise, and irrespective of fault, negligence and strict liability.

No recipient of this Report may abstract, excerpt, or summarize this document without the prior written consent of Arcadis. Any changes made to this Report, or any use of this document not specifically identified or otherwise expressly approved in writing by Arcadis, shall be at the sole risk of the party making such changes or adopting such use.

This Report is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

9.2 Conclusions

Set forth below are the principal opinions which Arcadis has reached regarding our review of the System and the SWPCA-prepared budget forecasts. For a complete understanding of these opinions, the Report should be read in its entirety.

1. The System is being maintained and operated in accordance with generally accepted utility standards, and overall the System is in good repair and operating condition. The SWPCA has taken a number of steps and is working diligently to improve the condition of the collection system and the treatment plant and the results are evident in improved treatment plant performance. Additionally, the SWPCA has made significant efforts to both conduct studies in-house and retain consultants to conduct studies to better understand the condition of the treatment plant and collection system. The recommendations made by these studies are carefully considered and the majority of them are incorporated into the CIP or the operations budget.
2. The System had previously experienced some Notice of Violations (NOV) primarily as a result of high flow events. The one, open NOV appears to be taken seriously and responses have been initiated in a timely manner. The SWPCA is also under a USEPA Consent Agreement and Final Order related to reporting collection system bypasses and submitting CMOM reports and has implemented a variety of programs and initiatives to enhance and facilitate CMOM readiness, which also served to address the majority of the past violations.
3. The estimated costs of the CIP developed by the SWPCA have been prepared using sound estimating practices and methods. The identified capital projects are in general alignment with many of our observed requirements for the system. It appears that the SWPCA has a good understanding of additional capital projects needed and it should endeavor to refine the list of projects based on ongoing engineering analysis.
4. The financial forecasts are based upon revenue and expense projections that appear to be reasonable. The SWPCA has adopted Financial Policies as of March 21, 2016 that reflect good industry practice for managing utility finances. The forecast in Table 8-9 reflects no borrowings from the City's pooled cash account, and relies on funds generated from SWPCA's operations.
5. The forecast indicates that debt service coverage ratios are expected to be achieved over the Forecast Period that meet or exceed those required by the Indenture, i.e., the 115 percent Debt Service Coverage Ratio Requirement.

Arcadis devoted effort in making such opinions consistent with (i) that degree of care and skill ordinarily exercised by members of the same profession currently practicing under same or similar circumstances and (ii) the time and budget available for its work in its efforts to endeavor to provide such opinions. The opinions are based on information provided by and consultations with the SWPCA. No responsibility was assumed for inaccuracies in reporting by the SWPCA or any third-party data source used in preparing such opinions. Arcadis' opinions represent its professional judgment. Neither Arcadis-US nor its parent corporation, or their respective subsidiaries and affiliates, makes any warranty, expressed or implied, with respect to such opinions.

APPENDIX A

SWPCA Capital Improvement Program FY2020 - FY2025

Appendix A. SWPCA Capital Improvement Program FY2020-FY2025

DESCRIPTION	ESTIMATED COST	FY19-20	FY20-21	FY21-22	FY22-23	FY23-24	FY24-25	FUNDED BY 2015 REVENUE BONDS	FUNDED BY 2019 REVENUE BONDS	FUNDED BY 2020 REVENUE BONDS	FUNDED BY CASH RESERVES	FUNDED BY FUTURE BONDS
Treatment Plant												
WPCF MAJOR REPLACEMENT AND REPAIRS												
MISC WPCF EQUIPMENT REPLACEMENTS	$ 1,900,000	$ 350,000	$ 350,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	**$ 350,000**		**$ 350,000**		**$ 1,200,000**
REHAB BFP's	$ 500,000	$ 250,000	$ 250,000								**$ 500,000**	
REPLACE PLANT WATER PUMPS	$ 1,500,000		$ 1,500,000							**$ 1,500,000**		
FINAL CLARIFIER LAUNDER COVERS	$ 340,000	$ 340,000						**$ 340,000**				
SUBTOTAL WPCF MAJOR REPLACEMENT AND REPAIRS	$ 4,240,000	$ 940,000	$ 2,100,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	**$ 690,000**	**$ -**	**$ 1,850,000**	**$ 500,000**	**$ 1,200,000**
UPGRADE PLANT HEADWORKS												
b Construction phase engineering servcices	$ 1,000,000	$ 500,000	$ 500,000						**$ 500,000**	**$ 500,000**		
c Construction costs	$ 11,280,000	$ 4,880,000	$ 6,400,000					**$ 80,000**	**$ 4,800,000**	**$ 6,400,000**		
AERATION BLOWERS AND EMERGENCY POWER GENERATOR												
b Construction phase engineering sevices	$ 800,000	$ 400,000	$ 400,000						**$ 400,000**	**$ 400,000**		
c Construction costs	$ 8,615,000	$ 5,515,000	$ 3,100,000					**$ 15,000**	**$ 5,500,000**	**$ 3,100,000**		
REPLACE UV SYSTEM												
b Construction Phase Engineering	$ 500,000	$ 400,000	$ 100,000						**$ 400,000**	**$ 100,000**		
b Construction costs	$ 7,155,000	$ 5,855,000	$ 1,300,000					**$ 2,055,000**	**$ 3,800,000**	**$ 1,300,000**		
SLUDGE DEGRITTING SYSTEM UPGRADE												
b Construction Phase Engineering	$ 400,000			$ 400,000								**$ 400,000**
b Construction costs	$ 3,800,000			$ 3,800,000								**$ 3,800,000**
SUBTOTAL WPCF MAJOR REPAIRS AND UPGRADE PROJECTS	$ 33,550,000	$ 17,550,000	$ 11,800,000	$ 4,200,000	$ -	$ -	$ -	**$ 2,150,000**	**$ 15,400,000**	**$ 11,800,000**	**$ -**	**$ 4,200,000**
SUBTOTAL TREATMENT PLANT	$ 37,790,000	$ 18,490,000	$ 13,900,000	$ 4,500,000	$ 300,000	$ 300,000	$ 300,000	**$ 2,840,000**	**$ 15,400,000**	**$ 13,650,000**	**$ 500,000**	**$ 5,400,000**
Pump Station Upgrades												
ELECTRICAL UPGRADES AT PUMP STATIONS	$ 620,000	$ 120,000	$ 250,000	$ 250,000					**$ 120,000**	**$ 250,000**		**$ 250,000**
ALVORD LANE PUMP STATION UPGRADE	$ 2,750,000		$ 50,000	$ 200,000	$ 2,500,000						**$ 50,000**	**$ 2,700,000**
GREENWICH AVE PUMP STATION UPGRADE	$ 370,000	$ 370,000						**$ 190,000**	**$ 180,000**			
MISC PUMP STATION EQUIP REPLACEMENTS	$ 585,000	$ 85,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000				**$ 585,000**	
SUBTOTAL PUMP STATION UPGRADES	$ 4,325,000	$ 575,000	$ 400,000	$ 550,000	$ 2,600,000	$ 100,000	$ 100,000	**$ 190,000**	**$ 300,000**	**$ 250,000**	**$ 635,000**	**$ 2,950,000**
VEHICAL REPLACEMENTS	$ 300,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000				**$ 300,000**	
Sewer Rehabilitation												
MISC SEWER REPLACEMENT AND REPAIRS	$ 900,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	**$ 150,000**			**$ 750,000**	
MANHOLE COVERS	$ 300,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	**$ 50,000**			**$ 250,000**	
SEWER LINING, JOINT SEALING AND POINT REPAIRS	$ 1,950,000	$ 400,000	$ 400,000	$ 400,000	$ 250,000	$ 250,000	$ 250,000	**$ 400,000**		**$ 400,000**		**$ 1,150,000**
New Sewer Extension												
WEDGEMERE ROAD SEWERS	$ 3,700,000			$ 3,700,000								**$ 3,700,000**
PERNA LANE AREA SEWERS	$ 11,015,000	$ 115,000	$ 5,700,000		$ 2,600,000	$ 2,600,000		**$ 115,000**		**$ 5,700,000**		**$ 5,200,000**
CMOM (45% SSES and 100% design funded by rev bonds)	$ 900,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	**$ 80,000**			**$ 820,000**	
CMOM (55% SSES funded by CWF grant)	$ 690,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000					
SUBTOTAL COLLECTION SYSTEM	$ 19,455,000	$ 980,000	$ 6,565,000	$ 4,565,000	$ 3,315,000	$ 3,315,000	$ 715,000	**$ 795,000**	**$ -**	**$ 6,100,000**	**$ 1,820,000**	**$ 10,050,000**
TOTAL	**$ 61,870,000**	**$ 20,095,000**	**$ 20,915,000**	**$ 9,665,000**	**$ 6,265,000**	**$ 3,765,000**	**$ 1,165,000**	**$ 3,825,000**	**$ 15,700,000**	**$ 20,000,000**	**$ 3,255,000**	**$ 18,400,000**
FUNDED BY:												
Cash	$ 3,255,000.00	$ 455,000	$ 800,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000					
2015 Revenue Bonds	$ 3,825,000.00	$ 3,825,000										
2019 Revenue Bonds	$ 15,700,000.00	$ 15,700,000										
2020 Revenue Bonds	$ 20,000,000.00		$ 20,000,000									
Future Revenue Bonds	$ 18,400,000.00			$ 9,050,000	$ 5,650,000	$ 3,150,000	$ 550,000					
CWF Grant	$ 690,000.00	$ 115,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000	$ 115,000					
TOTAL	**$ 61,870,000.00**	**$ 20,095,000**	**$ 20,915,000**	**$ 9,665,000**	**$ 6,265,000**	**$ 3,765,000**	**$ 1,165,000**					

APPENDIX B

Significant Assumptions

Appendix B. Significant Assumptions

Summary of Significant Forecast Assumptions and Notes to the SWPCA Financial Forecast

The accompanying Forecast, consisting of Table 8-9, "Cash Flow Projection (FY2019 through FY2024)", presents the SWPCA's calculations of the Debt Service Coverage Ratio Requirement and the financial results of operations on a cash basis for FY2019 and the subsequent five fiscal years ending June 30, 2024 (collectively referred to as the Forecast Period). It should be noted that projected revenues and expenses for FY2019 were based on amounts included in the SWPCA's Proposed Operating Budget for FY2019.

This summary of significant assumptions provides information regarding the basis of the Forecast and support for the underlying assumptions. Arcadis has reviewed these underlying assumptions for purposes of providing an opinion and making certain conclusions regarding the reasonableness of the Forecast, as shown in Section 9.2 of this Report. The Forecast has been prepared based on assumptions concerning future events and circumstances and the SWPCA's most likely courses of action and best estimate of the financial results of operations during the Forecast Period.

Significant Assumptions SWPCA

I. System Revenues:

A. Billing Revenues

1. Number of Customers – Based on historical trends in customer accounts, as shown in the statistical section of the SWPCA's audited financial statements, and information provided by the City in regard to account growth in future years.

2. Billable Metered Water Use – Based on historical trends in total annual billed consumption, as shown in the statistical section of SWPCA's audited financial statements, and guidance received by the SWPCA in regard to future changes in billed consumption. For the purpose of these projections, the billed metered water use was projected to increase approximately 1.4 percent per year based on population growth projections and assumed usage rates of 70 gallons per person per day.

3. Wastewater User Charge Total Billing Revenues – Based on the estimated unit Wastewater User Charge rate in dollars per hundred cubic feet (CCF) multiplied by the estimated Billable Metered Water Use.

B. Miscellaneous Revenues

4. Interest Income – Interest earnings were estimated based on the average annual available cash balance within the Operating Cash Fund and Capital Reserve Fund and multiplied by an annual interest earnings rate of 0.3 percent and 2.0 percent, respectively based on feedback from SWPCA.

5. The Special Assessments and Connection Fees are derived from payments from new customers that connect to SWPCA's newly installed, extended sewers or from payments from existing customers that request an increase in capacity. The projected annual cash received from these customers is based on a conservative historical amount received for 2018 that is in line historical amounts received by SWPCA.

6. Interlocal Agreement (Darien) User Charges – Based on guidance from SWPCA per the pending revised agreement with Darien. The user charge is based on a percentage of certain SWPCA O&M cost elements over the projection period.

7. Darien Capital Reimbursement – Based on guidance from SWPCA per the pending revised agreement with Darien. The capital reimbursement is based on a percentage of SWPCA total debt service over the projection period.

8. Septic Tank Revenues – Based on FY2018 amount and estimated to remain at this level for the projection period.

9. Regional Lab Revenues – Based on FY2018 amount and estimated to remain at this level for the projection period.

10. Sewer Use - Lien Fees **-** Based on FY2018 amount and estimated to remain at this level for the projection period.

11. Sewer Use – Interest Charge **-** Based on FY2018 amount and estimated to remain at this level for the projection period.

12. Aquarion User Charges **-** Based on historical annual average of payments received from Aquarion and projected to remain stable for the projection period.

13. Rebates – B.A.B.s – Based on the schedule of annual interest subsidies to be received by the SWPCA that was provided by SWPCA. This rebate is only reflected in FY2019 as SWPCA indicates that the Series 2009 Bonds will be replaced by the City's 2017 Series D Bonds for FY2020.

14. City Reimbursement / Other – Based on FY2018 preliminary amount and estimated to remain at this level for the projection period.

15. Nitrogen Trading Exchange Credit Revenues – Reflects a higher than typical amount of $2,545,733 to be realized in FY2020, with subsequent annual amounts returning to historically comparable levels afterward. Based on feedback from SWPCA, this revenue is projected to steadily decrease to approximately $400,000 per year by FY2024.

C. Receivable Management Costs

16. Billing and Collection Rate - Receivable Management Costs represent the cost of unpaid account balances. Information provided by SWPCA indicates that approximately 97 percent to 98 percent of billings is collected on an annual basis. Arcadis used a rate of 97.5 percent for the projection period.

II. System Expenses:

E. Operations & Maintenance (Items 25. through 36.)

17. Operation & Maintenance (O&M) expenses were based on an analysis of historical and budged data for FY2018, FY2019, and FY2020 provided by SWPCA. Actual, projected O&M is estimated to be approximately 91.6 percent of the projected budget based on an analysis of actual annual O&M to the budgeted O&M for the same fiscal year. O&M is projected using inflation factors noted in the report related labor, benefits, electricity, chemicals, and other categories.

III. Debt Service Payments:

18. Existing Debt Service Payments – Existing Debt Service is determined from projected payment schedules provided by SWPCA for outstanding revenue bonds (2013 and 2015 Series), outstanding Clean Water Fund loans (CWF 414-C and CWF 414-D); and subordinated General Obligation debt service. The Build America Bonds subsidy related to a series of the G.O. Bonds is not included in the existing debt service for FY2019.

19. Projected Debt Service Payments – There are projected debt issuances with par amounts of $15.7 million (Series 2019); $20.0 million (Series 2020); $9.050 million (Series 2021); and $9.350 million (Series 2024). The projected debt issuances and associated debt service was provided by SWPCA and its municipal advisor to Arcadis.

IV. SWPCA Operating Cash Fund Balance Summary:

20. Beginning Balance – The beginning cash balance is provided by SWPCA and reflects the SWPCA's cash balance at the end of FY2018 of approximately $10.1 million.

21. Transfers In – Transfers into the fund reflect the projected annual amounts after Total System Revenue is used to meet annual O&M and debt service amounts.

22. Cash Capital Projects – This reflects transfers to SWPCA's Capital Reserve Fund to provide for a capital reserve that is used to cash fund a certain portion of SWPCA's annual CIP. Per SWPCA, an annual transfer of $1.0 million was made in FY2019. No annual transfer is budgeted to made in FY2020. Annual transfers of $1.3 million are projected for FY2021 through FY2024.

23. Other Transfers Out – This is a placeholder line item for any necessary, other transfers to made at the discretion of SWPCA. For the projection period there are no projected transfers and funding of debt service reserve or other requirements are projected to be met as part of the debt issuances.

24. Ending Balance – This reflects the Beginning Balance, plus Transfers In, and less any Transfers to the Capital Reserve Fund or other Transfers.

V. Capital Reserve Fund:

25. Beginning Balance – The beginning cash balance is provided by SWPCA and reflects the SWPCA's cash balance at the end of FY2018 of approximately $7.1 million (includes approximately $545,282 related to SWPCA's Surplus Fund).

26. Transfers In – Transfers into the fund are from the Operating Cash Fund for the purposes of providing cash for a portion of the SWPCA's CIP.

27. Cash Capital Projects – This reflects use of Capital Reserve Fund amounts for a portion of SWPCA's annual CIP and is based on feedback provided by SWPCA.

28. Ending Balance – This reflects the Beginning Cash Balance and the net amount of Transfers In and Cash Capital Projects.

Other Assumptions / Calculations:

29. Net Revenues – Calculated as the Total System Revenues, less Total System Expenses (excluding depreciation).

30. Senior Lien Debt Service Coverage – Calculated by dividing Net Revenues by the sum of the Debt Service associated with the Senior Lien Debt Service (Series 2013, Series 2015, CWF Loans, and Projected Revenue Bond issuances) as summarized on Lines 38-44 of Table 8-9.

31. Total Debt Service Coverage – Calculated by dividing Net Revenues by Total Debt Service (including Senior Lien and General Obligation Bond debt service) as seen on Line 47 of Table 8-9.

32. Debt Service Coverage From All Available Funds – Calculated as the sum of Net Revenues and Ending Balances for Operating Fund and Capital Reserve Fund, divided by Total Debt Service.

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APPENDIX D – SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE

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APPENDIX D

SUMMARY OF CERTAIN PROVISIONS OF THE INDENTURE

The following is a brief summary of certain provisions of the Indenture of Trust, dated as of December 21, 2001 (the "Original Indenture") among the City of Stamford (the "City") and the Water Pollution Control Authority of the City of Stamford (the "Authority") and U.S. Bank National Association (successor to Wachovia Bank, National Association), as trustee (the "Trustee"), as amended by the First Supplemental Indenture, dated as of October 1, 2003 (the "First Supplemental Indenture"), and the Second Supplemental Indenture, dated as of February 28, 2006 (the "Second Supplemental Indenture"), each by and among the City, the Authority and the Trustee (the Original Indenture, as amended by the First Supplemental Indenture and the Second Supplemental Indenture, are referred to collectively herein as the "Indenture"), including certain terms used in the Indenture and used but not elsewhere defined in the Official Statement. This summary does not purport to be complete and reference is made to the Indenture for full and complete statements of their terms and provisions.

Definitions (Section 101)

The following terms shall have the following meanings unless the context otherwise requires:

"2001 Series A Bonds" shall mean the 2001 Series A IFO, the Series 2001 PLO and any other Bond issued pursuant to the terms of the Indenture to finance the 2001 Series A Project.

"2001 Series A IFO" shall mean the Municipality's Interim Funding Obligation in the principal amount of $74,121,115 issued on December 21, 2001, pursuant to the terms of Sections 211 and 212 of the Indenture and the Clean Water Fund Act, to finance the 2001 Series A Project.

"2001 Series A PLO" shall mean the Municipality's Project Loan Obligation to be issued pursuant to the terms of a Supplemental Indenture and the Clean Water Fund Act to finance the 2001 Series A Project.

"2001 Series A Project" shall have the meaning set forth in the recitals to the Indenture.

"2001 Series A Special Account " shall mean the 2001 Series A Special Account established pursuant to Section 502(a) of the Indenture.

"2001 Series A Special Account Deposit Amounts" shall mean the amounts set forth on Schedule B hereto.

"Account" shall mean one of the special accounts created and established pursuant to the Indenture.

"Accountant" shall mean an independent certified public accountant (or a firm thereof) of recognized standing, selected by the Municipality and satisfactory to the Trustee and may be the accountant regularly auditing the books of the Municipality or the Authority or both.

"Accreted Value" shall mean, with respect to any Capital Appreciation Bond, the initial principal amount at which such Capital Appreciation Bond is sold to the initial purchaser by the Municipality without reduction to reflect underwriter's discount, plus interest accrued thereon at the rate and compounded at the times set forth in a Supplemental Indenture authorizing the issuance of such Capital Appreciation Bonds.

"Accrued Aggregate Debt Service" shall mean, as of any time, Aggregate Debt Service accrued or to accrue and unpaid through the end of the month.

"Affiliate" shall mean as to any person, any other person which directly or indirectly controls, or is under common control with, or is controlled by, such person. As used in this definition, "control" (and the correlative terms, "controlled by" and "under common control with") shall mean possession, directly or indirectly, of power to

direct or cause the direction of management or policies (whether through ownership of securities or partnership or other ownership interests, by contract or otherwise).

"Aggregate Debt Service" shall mean for any Fiscal Year as of any date of calculation, the sum of the Debt Service for all Bonds Outstanding and Parity Indebtedness outstanding during such Fiscal Year.

"Authority" shall mean the Water Pollution Control Authority of the City of Stamford, acting in its capacity as the manager and operator of the Sewerage System pursuant to the Charter.

"Authorized Newspaper" shall mean "The Bond Buyer" or such other newspaper or financial journal which is customarily published (except in the case of legal holidays) at least once a day for at least five days in each calendar week, printed in the English language, containing financial news, and of general circulation in the Borough of Manhattan, City and State of New York.

"Authorized Representative" shall mean (i) in the case of the Authority, the Executive Director or such other person or persons so designated by resolution of the Authority, and (ii) in the case of the Municipality, the Mayor, the Director of Administration or the Controller, unless a different municipal official is designated in the Indenture or in a Supplemental Indenture to perform the act or sign the document in question.

"Authorizing Resolution" shall have the meaning given to it in the Recitals of the Indenture.

"Bond" or "Bonds" shall mean any Clean Water Fund Obligations and Other Sewerage System Indebtedness, including the 2001 Series A Bonds.

"Bond Anticipation Notes" shall mean any of the notes issued pursuant to Section 208 of the Indenture.

"Bond Counsel's Opinion" shall mean an opinion signed by Robinson & Cole LLP or by any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to revenue bonds of municipalities and public agencies, selected by the Municipality and satisfactory to the State and the Trustee.

"Bond Payment Date" shall mean with respect to the 2001 Series A PLO, the first day of each calendar month, and with respect to the other Bonds issued hereunder, such date on which interest or both a Principal Installment and interest shall be due and payable on any of the Outstanding Bonds according to their respective terms as provided in a Supplemental Indenture.

"Bondholder", "owner" or "holder" or words of similar import shall mean, when used with reference to an Bond, the person in whose name the Bond is registered.

"Capital Appreciation Bonds" shall mean Bonds which provide for the addition of all or any part of accrued and unpaid interest thereon to the principal due thereon upon such terms and for such periods of time as may be determined by the applicable Supplemental Indenture.

"Capital Costs" shall mean and include all costs of acquisition, construction or completion of any part of the Sewerage System, including Costs of Issuance of any Bonds issued to provide funds to pay the cost thereof, the costs of any demolitions or relocations necessary in connection therewith and any extensions, renewals, replacements, equipment, alterations, improvements, additions, machinery and equipment, betterments, paving, grading, excavation, blasting or removals and of all or any property, rights, easements and franchises deemed by the Authority to be necessary or useful or convenient therefor and may include, to the extent properly attributable to such acquisition, construction and completion:

(a) obligations incurred for labor and materials and payments made to contractors, builders and materialmen in connection with construction or acquisition of any part of the Sewerage System, and for the restoration of property damaged or destroyed in connection with such construction;

(b) fees and expenses of any Fiduciary or of the issuer of any Credit Facility during construction, payments, taxes or other governmental charges lawfully levied or assessed during construction or on any property acquired, and premiums for insurance (if any) during such construction or acquisition;

(c) fees and expenses for studies, surveys and reports, engineering, borings, testings, estimates of costs and revenues, preparation of plans and specifications and inspecting or supervising construction or acquisition, as well as for the performance of all other duties of engineers or architects in connection with the acquisition, construction, extension, renewal or improvement of the Sewerage System or required by the Indenture;

(d) expenses of administration properly chargeable to the acquisition, construction, reconstruction, renewal, extension, or improvement of the Sewerage System, including legal expenses and fees, financing charges, costs of audits and fiscal advice and all other items of expense not elsewhere in this definition specified, incident to the acquisition, construction, reconstruction, renewal, extension or improvement of the Sewerage System, including the acquisition of real estate, franchises and rights-of-way therefor, including abstracts of title and title insurance, and including interest accruing on any Series of Bonds to and including the date of scheduled completion of any improvement of the Sewerage System financed by such Series of Bonds, if so provided in the Indenture or in the Supplemental Indenture authorizing such Series, and any charges of the Trustee and Paying Agents with respect to the payment of such interest;

(e) the cost and expense of acquiring by purchase or condemnations or by leasing such property, lands, rights-of-way, franchises, easements, and other interest in land as may be deemed necessary or convenient for the acquisition, construction or completion of any part of the Sewerage System and options and partial payments thereon, and the amount of any damages incident to or consequent upon the same; and

(f) any obligation or expense heretofore or hereafter expended or incurred by the Municipality or the Authority and any amounts heretofore or hereafter advanced by the Municipality or the Authority for any of the foregoing purposes.

"Capitalized Interest" shall mean, for any particular Series of Bonds, that portion of the proceeds of the Bonds of such Series, if any, which (i) in the case of Other Sewerage System Indebtedness, is required by the Supplemental Indenture authorizing such Series of Bonds to be deposited in a sub-account established for such Series of Bonds in the Capitalized Interest Account in the Debt Service Fund, for the purpose of funding the payment of a portion of the interest on the Bonds of such Series and (ii) in the case of Clean Water Fund Obligations, is to be applied for the purpose of funding the payment of a portion of the interest on the Bonds of such Series pursuant to a Project Loan and Grant Agreement.

"Capitalized Interest Account" shall mean the Account by that name established in the Debt Service Fund pursuant to 502(c) of the Indenture.

"Certificate" shall mean, as the context indicates, either (i) a signed document attesting to or acknowledging the matters therein stated or setting forth matters to be determined pursuant to the Indenture, (ii) the report of an Accountant as to an audit or compliance called for by the Indenture, or (iii) any report of the Consulting Engineer as to any matter called for by the Indenture.

"Charter" shall mean the Charter of the City of Stamford, as amended from time to time.

"Chief Financial Officer" shall mean, as of any date, the duly appointed and acting chief financial officer of the Municipality, or of the Authority, as the context indicates, or such other person duly appointed and authorized to act on behalf of the chief financial officer, or, if there shall no longer be a chief financial officer, the duly appointed official succeeding to the duties and functions of the chief financial officer.

"Clean Water Fund" shall mean the clean water fund created under Section 22a-477 of the Clean Water Fund Act.

"Clean Water Fund Act" shall mean Sections 22a-475 to 22a-483 inclusive of the Connecticut General Statutes, as amended.

"Clean Water Fund Obligations" shall mean any Interim Funding Obligation or Project Loan Obligation, and any other obligation of the Municipality issued by the Municipality evidencing an obligation to repay money to the State pursuant to the Clean Water Fund Act, in each case authenticated and delivered pursuant to the Indenture.

"Code" shall mean the Internal Revenue Code of 1986, as amended.

"Common Account" shall mean the Common Account established in the Debt Service Reserve Fund pursuant to Section 502(b) of the Indenture.

"Connecticut General Statutes" shall mean the General Statutes of Connecticut, Revision of 1958, as amended.

"Construction Fund" shall mean the Construction Fund established pursuant to Section 502(a) of the Indenture.

"Consulting Engineer" shall mean such independent licensed professional engineer or firm of engineers of recognized standing selected by the Authority or the Municipality and may include an independent engineer or firm of engineers retained by the Municipality or the Authority in one or more other capacities.

"Continuing Disclosure Agreements" means the agreements of the Municipality and the Authority executed in connection with the issuance of Bonds in order to comply with the Rule.

"Controller" shall mean the Controller of the Municipality.

"Costs of Issuance" shall mean all items of expense, directly or indirectly payable or reimbursable and related to authorization, sale and issuance of Bonds, including but not limited to printing costs, costs of preparation and reproduction of documents, filing and recording fees, initial fees and charges of any Fiduciary or issuer of any Credit Facility, legal fees and charges, fees and disbursements of consultants and professionals, costs of credit ratings, fees and charges for preparation, execution, transportation and safekeeping of Bonds, costs and expenses of refunding, premiums for the insurance of the payment of the Bonds and any other cost, charge or fee in connection with the original issuance of Bonds.

"Credit Facility" shall mean a letter of credit, revolving credit agreement, standby purchase agreement, surety bond, insurance policy or similar obligation, arrangement or instrument issued by a bank, insurance company or other financial institution which provides for payment of all or a portion of the Principal Installments or interest due on any Bonds or Series of Bonds or provides funds for the purchase of such Bonds or portions thereof.

"Debt Service" for any Fiscal Year or part thereof shall mean, as of any date of calculation and with respect to any Series of Bonds, an amount equal to the sum of (i) interest payable during such Fiscal Year or part thereof on Bonds of such Series (including interest on Parity Bond Anticipation Notes), except to the extent that such interest is to be paid from amounts representing Capitalized Interest, and provided that for purposes of this definition interest shall not include any portion of the Accreted Value of Capital Appreciation Bonds, (ii) the Principal Installments of the Bonds of such Series payable during such Fiscal Year or part thereof (but excluding principal of Parity Bond Anticipation Notes), and provided that for purposes of this definition the Accreted Value of Capital Appreciation Bonds (including the portion constituting interest) shall be treated as principal, and (iii) any Parity Reimbursement Obligation. Such interest and Principal Installment for such Series shall be calculated on the assumption that (x) no Bonds of such Series Outstanding at the date of calculation will cease to be Outstanding except by reason of the payment thereof upon stated maturity or upon mandatory redemption by application of Sinking Fund Installments, (y) Variable Rate Bonds will bear interest at the greater of (A) the rate or rates which were assumed by the Authority in the Authority Budget for such Fiscal Year to be borne by Variable Rate Bonds during such Fiscal Year or (B) the actual rate or rates borne by such Variable Rate Bonds on such date of calculation and (z) the Principal Installment of the Bonds of any such Series which constitutes an Interim Funding Obligation or Bond Anticipation Notes shall be due and payable in equal debt service installments over a period of 20 years, commencing on the date on which payment of the Interim Funding Obligation or Bond Anticipation Notes must begin to be repaid. Debt Service on Parity Indebtedness shall be calculated in accordance with the foregoing definition.

"Debt Service Coverage Ratio" shall mean, for the Fiscal Year specified, the ratio of: (a) the Revenues for such Fiscal Year (adjusted as provided in Section 206(d)), plus the amount withdrawn from the Surplus Fund (or to be withdrawn from the Surplus Fund in a subsequent Fiscal Year as certified by an Authorized Representative of the Municipality) other than to pay Capital Costs for such Fiscal Year, less the total Operating Expenses for such Fiscal Year; compared to (b) the Aggregate Debt Service on the Bonds then Outstanding and all Parity Indebtedness then

outstanding and, for purposes of Section 206(d), the maximum Aggregate Debt Service on the additional Bonds then proposed to be issued.

"Debt Service Coverage Ratio Certificate" shall have the meaning set forth in Section 713(a) of the Indenture.

"Debt Service Coverage Ratio Requirement" shall have the meaning set forth in Section 713(a) of the Indenture.

"Debt Service Fund" shall mean the Debt Service Fund established pursuant to Section 502(a) of the Indenture.

"Debt Service Reserve Fund" shall mean the Debt Service Reserve Fund, and the Accounts therein established pursuant to Section 502(a) of the Indenture.

"Debt Service Reserve Fund Requirement" shall mean, as of any date of calculation, and for any Fiscal Year, the aggregate of: (a) with respect to the 2001 Series A Bonds, the aggregate of the 2001 Series A Special Account Deposit Amounts scheduled to have deposited to the 2001 Series A Special Account as of the date of calculation; provided that, as of the date of issuance of the 2001 Series A PLO, the Debt Service Reserve Fund Requirement shall mean the lesser of: (i) the maximum annual Debt Service on the 2001 Series A PLO (excluding any one-twentieth (1/20th) principal payment required by the Project Loan and Grant Agreement), or (ii) ten percent (10%) of the Stated Principal Amount of the 2001 Series A PLO; (b) with respect to any other Clean Water Fund Obligations issued pursuant to the Indenture, the lesser of: (i) the maximum annual Debt Service on such other Clean Water Fund Obligations (excluding any one-twentieth (1/20th) principal payment required by any Project Loan and Grant Agreement and excluding any interest accrued but unpaid as a result of the extension or refinancing of Interim Funding Obligations pursuant to the provisions of the Clean Water Fund Act), or (ii) ten percent (10%) of the Stated Principal Amount of such other Clean Water Fund Obligations; and (c) with respect to any other Bonds issued pursuant to the Indenture which are not Clean Water Fund Obligations, either: (A) the lesser of: (i) the maximum annual Debt Service on such Bonds; (ii) ten percent (10%) of the Stated Principal Amount of such Bonds; or (iii) 125% of the average annual Debt Service on such Bonds, or (B) an amount specified for such Bonds pursuant to a Supplemental Indenture adopted hereunder; provided, however, if pursuant to such Supplemental Indenture, the Debt Service Reserve Fund for any other Bonds which are not Clean Water Fund Obligations, is anticipated to be less than the Minimum Reserve, the Municipality shall provide the State with Notice of such fact at least 120 days prior to the issuance of such other Bonds and the State, if it objects to the funding level of the Debt Service Reserve Fund for such other Bonds, shall provide the Municipality and the Authority with Notice of such objection within 30 days of the date of the Municipality's Notice. Failure to receive Notice of such objection within such 30 day period shall constitute consent by the State to the proposed funding level of the Debt Service Reserve Fund for such other Bonds. Upon receipt of Notice of objection from the State, the Municipality and the State shall meet in a timely fashion to resolve the objection for such other Bonds to their mutual agreement, and in any event at least 90 days prior to the issuance of such other Bonds. Debt Service Reserve Fund Requirements may be satisfied in whole or in part by a Reserve Fund Credit Facility meeting the requirements of Section 509 of the Indenture. For the purpose of calculating the Debt Service Reserve Fund Requirement for any Series of Variable Rate Bonds, the maximum Debt Service on such Series shall be determined by reference to the Pro Forma Bond Issue for such Series as set forth in the Supplemental Indenture authorizing such Series.

"Defeasance Obligations" shall mean (A) any bonds or other obligations which as to principal and interest constitute direct obligations of, or are guaranteed by, the United States of America, including obligations of any agency thereof or corporation which has been or may hereafter be created pursuant to an act of Congress as an agency or instrumentality of the United States of America to the extent unconditionally guaranteed as to timely payment of principal and interest by the United States of America or (B) any other receipt, certificate or other evidence of an ownership interest in obligations or in specified portions thereof (which may consist of specified portions of the interest thereon) of the character described in subclause (A).

"Depositary" shall mean any Qualified Public Depository as defined in Section 36a-330 of the Connecticut General Statutes, or a bank or trust company which otherwise meets the requirements of Section 7-402 of the Connecticut General Statutes with respect to the deposit of public funds, as selected by the Municipality as a depositary of moneys to be held under the provisions of the Indenture.

"Depository Institution" shall mean The Depository Trust Company, a limited purpose trust company organized under the laws of the State of New York or any other depository institution appointed by the Municipality to act as depository for Bonds in connection with a book-entry-only system of distributing Bonds.

"Disbursement Request" shall mean the written request signed by an Authorized Representative of the Municipality and required to be delivered pursuant to a Project Loan and Grant Agreement to effect disbursements thereunder or required to be delivered pursuant to Section 503 of the Indenture to effect disbursements from the Construction Fund and (i) if such disbursement is for proceeds of Clean Water Fund Obligations shall be in substantially the form required under the applicable Project Loan and Grant Agreement and (ii) if such disbursement is for proceeds of Other Sewerage System Indebtedness, shall be in substantially the form set forth in Exhibit A hereto.

"Event of Default" shall mean any event specified in Section 1001 of the Indenture.

"Executive Director" shall mean the Executive Director of the Authority appointed in accordance with the Authority's bylaws.

"Fiduciary" shall mean the Trustee or any Paying Agent or Depositary.

"Fiscal Year" shall mean the fiscal year of the Municipality.

"Fixed Rate Bond" shall mean, as of any date of determination, any Bond bearing interest at a fixed rate for the remainder of its term.

"Fund" shall mean any fund established pursuant to Section 502 of the Indenture.

"Indenture" shall mean the Indenture of Trust, authorized to be entered into by the Municipality pursuant to the terms of the Authorizing Resolution, as the same may be amended or supplemented by a Supplemental Indenture.

"Independent Consultant" shall mean any person with a favorable reputation for skill and experience in the determination of the economic feasibility, and the operation, maintenance and supervision of sewerage facilities, who is independent (although such person may be regularly retained by the Municipality and/or the Authority) and who is appointed by the Authority, with the consent of the Municipality. If such Independent Consultant is an individual, such person shall not be a [member] of the Authority or the Municipality's Board of Representatives or Board of Finance or an employee of the Authority or the Municipality or related to a member of the Authority or the Municipality's Board of Representatives or Board of Finance or an employee of the Authority or the Municipality. If the Independent Consultant is other than an individual, such person shall not have as an owner, director, officer or employee a member of the Authority or the Municipality's Board of Representatives or Board of Finance or a relative who is a member of the Authority or the Municipality's Board of Representatives or Board of Finance.

"Interim Funding Obligation" shall have the meaning set forth in the Clean Water Fund Act.

"Interest Payment Date" shall mean the date interest payment is due on Bonds.

"Investment Securities" shall mean and include any of the securities and investments permitted under Section 7-400 of the Connecticut General Statutes and any other investment permitted by any provision of the Connecticut General Statutes for the Municipality; provided that if said securities and investments are not also at the time legal investments of the State under Section 3-20 of the Connecticut General Statutes, the Controller on behalf of the Municipality, shall obtain the written consent of the State prior to making or directing the Trustee to make any such investment, as long as the State owns any Bonds. The State shall respond to the Municipality as soon as practicable following receipt of a written request to consent to any such investment for which consent is required. Notwithstanding the foregoing, Investment Securities shall mean and include the securities and investments permitted under Section 7-400 of the Connecticut General Statutes on the date of adoption of the Indenture without any requirement that the State consent thereto, as long as the Municipality can invest in such securities and investments under the Connecticut General Statutes on the date such investment will be made.

"Issue Price" means the first price at which at least ten percent (10%) of Bonds are sold to the public (not including bond houses or brokers, or similar persons or organizations acting in the capacity of underwriters or wholesalers), or if privately placed, the price paid by the first buyer of such Bonds. The Issue Price of Bonds which are not substantially identical is determined separately.

"Minimum Reserve" means the lesser of (i) the maximum annual Debt Service on such Bonds, (ii) ten percent (10%) of the Stated Principal Amount of such Bonds or (iii) 125% of the average annual Debt Service on such Bonds.

"Municipality" shall mean the City of Stamford, Connecticut.

"NRMSIR" means any nationally recognized municipal securities information repository recognized by the SEC pursuant to the Rule.

"Notice" shall mean, pursuant to the definition of Debt Service Reserve Fund Requirement, written notice given by the State, the Municipality, the Authority or its legal counsel, and shall be deemed sufficient and properly given (i) when personally delivered, or (ii) upon delivery by United States Express Mail or similar overnight courier service which provides evidence of delivery, or if refused upon the first date of attempted delivery, or (iii) when three (3) days have elapsed after its transmittal by registered or certified mail, postage prepaid, return receipt requested. If to the State, such notice shall be addressed to the Office of the Treasurer, 55 Elm Street, 6th Floor, Hartford, Connecticut 06106, Attn: Clean Water Fund Financial Administrator. If to the Municipality or the Authority, such notice shall be addressed to the City of Stamford, 888 Washington Boulevard, 10th Floor, Government Center, Stamford, Connecticut 06901, Attn: Director of Administration. Such addresses may be amended by the State and the Municipality from time to time by delivery of a notice to the other party.

"Operating Expenses" shall mean all reasonable or necessary current expenses of maintaining, repairing, operating and managing the Sewerage System, including all salaries, administrative, general, commercial, architectural, engineering, advertising, auditing and legal expenses, insurance and surety bond premiums, consultants' fees and charges, payments to pension, retirement, health and hospitalization funds or in connection with any other employee benefit program, any taxes which may lawfully be imposed on the Sewerage System or the income or operation thereof, payments by the Municipality in lieu of taxes, payments required by the Charter, costs of public hearings, ordinary and current rentals of equipment or other property, ordinary lease payments for real property or interest therein, usual expenses of maintenance and repair (including replacements), total aggregate capital lease payments per year not exceeding ten percent (10%) of the Authority's total Operating Expenses for said year as shown on the Authority's budget for such year, customary and ordinary personnel and overhead expenses incurred by the Municipality for the benefit of the Authority, the amount of which is not determined to be unreasonable by the State in accordance with the foregoing standard, expenses, liabilities and compensation of any Fiduciary or of any issuer of a Credit Facility or fiduciary for any obligation issued by the Municipality other than under the Indenture, reasonable reserves for maintenance and repair, and all other expenses necessary, incidental or convenient for the efficient operation of the Sewerage System, but only to the extent properly attributable to the Sewerage System.

"Operating Fund" shall mean the Operating Fund established pursuant to Section 502(a) of the Indenture.

"Other Sewerage System Indebtedness" shall mean any bonds, notes, or other evidences of indebtedness, as the case may be, other than Clean Water Fund Obligations, authenticated and delivered pursuant to the Indenture or a Supplemental Indenture, including any Parity Reimbursement Obligation.

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

(a) any Bonds cancelled by the Trustee at or prior to such date;

(b) any Bond (or portion thereof) for the payment or redemption of which there shall be set aside and held in trust hereunder either:

(i) moneys in an amount sufficient to pay when due the Principal Installments or Redemption Price thereof, together with all interest accrued or to accrue on each Interest Payment Date to the maturity or redemption date,

(ii) Defeasance Obligations in such principal amounts, of such maturities, bearing such interest and otherwise having such terms and qualifications, as are necessary to provide moneys (whether as principal or interest) in an amount sufficient to pay when due the Principal Installments or Redemption Price thereof, together with all interest accrued or to accrue on each Interest Payment Date to the maturity or redemption date, or

(iii) any combination of (i) and (ii) above,

and, if such Bond or portion thereof is to be redeemed, for which notice of redemption has been given as provided in Article VI of the Indenture, or the applicable Supplemental Indenture, or provision satisfactory to the Trustee has been made for the giving of such notice;

(c) any bond in lieu of or in substitution for which other Bonds have been authenticated and delivered; and

(d) any Bond deemed to have been paid as provided in Section 1201(b).

"Parity Bond Anticipation Notes" shall mean Bond Anticipation Notes the interest on which is payable from and secured by a pledge of the Revenues on a parity with all other Bonds.

"Parity Indebtedness" shall mean (a) indebtedness of the Municipality or (b) indebtedness incurred by a person other than the Municipality or any portion thereof for which debt service is a direct or indirect obligation of the Municipality; provided that such indebtedness set forth in (a) and (b) is incurred other than as Bonds, Parity Bond Anticipation Notes or Parity Reimbursement Obligations, and the payment of which is secured by a pledge of all or any portion of the Revenues on a parity with the Bonds, including the Project Loan Obligations set forth in Schedule C hereto. For purposes of the preceding sentence "any portion of the Revenues" means without limitation, any specific assessment, service charge, connection charge, user fee, supplemental fee or other charge levied on Sewerage System users or property and pledged to secure Parity Indebtedness.

"Parity Reimbursement Obligation" shall mean a Reimbursement Obligation, the payment of which is secured by a pledge of, and a lien on, the Trust Estate created by the Indenture.

"Paying Agent" shall mean any paying agent for the Bonds of any Series, and its successor or successors and any other person which may at any time be substituted in its place pursuant to the Indenture.

"Pre-Issuance Accrued Interest" means amounts representing interest that accrues on Bonds for a period not greater than one year before the issue date of such Bonds and is paid within one year after the issue date.

"Principal Installment" shall mean, as of any date of calculation and with respect to any Series, so long as any Bonds thereof are Outstanding, (i) the principal amount of Bonds (including (x) any amount designated in, or determined pursuant to, the applicable Supplemental Indenture, as the "principal amount" with respect to any Bonds which do not pay full current interest for all or any part of their term, and (y) the principal amount of any Parity Reimbursement Obligation) of such Series due (or so tendered for purchase or payment) on a certain future date for which no Sinking Fund Installments have been established, or (ii) the unsatisfied balance of any Sinking Fund Installments due on a certain future date for Bonds of such Series, or (iii) if such future dates coincide as to different Bonds of such Series, the sum of such principal amount of Bonds and of such unsatisfied balance of Sinking Fund Installments due on such future date; provided, however, that Principal Installment shall not include the principal of Parity Bond Anticipation Notes.

"Pro Forma Bond Issue" shall mean, when used with reference to the Debt Service Reserve Fund Requirement for a Series of Variable Rate Bonds, the hypothetical fixed rate long term bond issue set forth in the Supplemental Indenture authorizing such Series, having (i) the same maturities (and sinking fund provisions, if any) as the Series of Variable Rate Bonds to which it relates and (ii) such interest rate or rates as the Municipality shall reasonably deem to be the equivalent of the rates which would have been borne by such Series of Variable Rate Bonds if such Series had been issued as a Series of Fixed Rate Bonds.

"Project" have the meaning set forth in the recitals of the Indenture, including the 2001 Series A Project.

"Project Loan and Grant Agreement" shall mean any Project Loan and Project Grant Agreement entered into by the Municipality pursuant to the Clean Water Fund Act pursuant to which Bonds have been issued and are outstanding under the Indenture.

"Project Loan Obligation" shall have the meaning set forth in the Clean Water Fund Act.

"Rating Agency" shall mean Moody's Investors Service Inc., Standard & Poor's Corporation or any other rating agency nationally recognized for rating municipal debt and their respective successors and assigns.

"Rebate Fund" shall mean any Rebate Fund and the Accounts therein established pursuant to the Indenture.

"Record Date" shall mean, unless otherwise determined by a Supplemental Indenture for a particular Series of Bonds or by the Trustee upon the occurrence of an Event of Default, the first day of any calendar month in which there occurs a Bond Payment Date.

"Redemption Price" shall mean, when used with respect to a Bond or portion thereof, the principal amount thereof plus the applicable premium, if any, payable upon either optional or mandatory redemption thereof pursuant to the terms of the Indenture or a Supplemental Indenture.

"Refunding Bond" shall mean any Bond authenticated and delivered on original issuance pursuant to Section 206 or Section 207 for the purpose of refunding any Outstanding Bonds, or thereafter authenticated and delivered in lieu of or substitution for such Bond pursuant to the Indenture.

"Reimbursement Obligation" shall mean the obligation of the Municipality described in Section 209(b) of the Indenture to directly reimburse the issuer of a Credit Facility for amounts paid by such issuer thereunder, whether or not such obligation to so reimburse is evidenced by a promissory note or other similar instrument.

"Reserve Fund Credit Facility" shall mean a Credit Facility meeting the requirements of Section 509 of the Indenture.

"Revenue Fund" shall mean the Revenue Fund established pursuant to Section 502(a).

"Revenues" shall mean all rates, charges, rents, fees, assessments and other realized income derived or to be derived from or for the ownership, operation, use or services of the Sewerage System, including but not limited to all Sewerage System connection and use charges and benefit assessments pertaining to the Sewerage System, including all investment proceeds and proceeds of insurance received by the Municipality or the Authority (other than the proceeds of insurance with respect to damage or destruction of all or any portion of the Sewerage System), but does not include (i) any amounts received or receivable from the State or United States (or any agency of either thereof) or from any source as or on account of a grant or contribution for or with respect to the (a) construction, acquisition, improvement, extension, renewal, or other development of any part of the Sewerage System or (b) the financing of any of the foregoing, (ii) any amounts received by or paid by the Municipality or the Authority under the terms of any grant agreement with the State or the United States (or any agency of either thereof) and which are received by or paid to the Municipality in an agency capacity under such grant agreement in relation to the Sewerage System, or (iii) any property taxes levied by a special taxing district or the Municipality for the purpose of financing the acquisition or construction of Sewerage System improvements, which financing is not secured by a pledge of Revenues.

"Rule" means Section 15c2-12(b)(5) of the Securities Exchange Act of 1934, as amended from time to time.

"SEC" means the Securities and Exchange Commission.

"Series" or "Series of Bonds" shall mean all of the Bonds authenticated and delivered on original issuance identified pursuant to Section 211 of the Indenture and any Supplemental Indenture authorizing such Bonds as a separate Series of Bonds and any Bonds thereafter authenticated and delivered in lieu of or in substitution therefor pursuant to the Indenture regardless of variations in maturity, interest rate or other provisions.

"Sewer Budget" shall mean the annual budget of the Authority, as amended or supplemented, adopted or in effect for a particular Fiscal Year, as provided in Section 712 of the Indenture, as separately accounted for pursuant to Chapter 98 of the Charter.

"Sewerage System" shall mean the "sewerage system" serving the Municipality as such term is defined in Section 7-245 of the Connecticut General Statutes, including without limitation, all other assets utilized by the Municipality or the Authority for the storage, collection, reduction, recycling, reclamation, disposal, separation or treatment of water, wastes or sewage.

"SID" means any state information depository established or designated by the State and recognized by the Securities and Exchange Commission.

"Sinking Fund Installment" shall mean, as of any particular date of calculation, the amount required by the Indenture or a Supplemental Indenture to be paid on a future date for the retirement of Outstanding Bonds which are stated to mature subsequent to such future date, but does not include any amount payable by reason only of the maturity of a Bond.

"Special Account" shall mean one or more of the Special Accounts established in the Debt Service Reserve Fund pursuant to Section 502(b), including the 2001 Series A Special Account.

"Special Credit Facility" shall mean, with respect to any Series of Bonds or portion thereof, a Credit Facility (a) which provides funds for (i) the direct payment of the Principal Installments of and interest on or purchase price of such Bonds when due or (ii) the payment of the Principal Installments of and interest on or purchase price of such Bonds in the event amounts otherwise pledged to the payment thereof are not available when due and (b) which (i) requires the Municipality or the Authority to directly reimburse the issuer of such Credit Facility for amounts paid thereunder and (ii) provides that such obligation pursuant to a Parity Reimbursement Obligation.

"Start of Project Operation" shall mean the date upon which the planning, design and construction phases of the facility enterprise or other undertaking which constitutes the Project or any phase thereof shall have been completed and normal operation thereof begun as certified by the Consulting Engineer.

"State" shall mean the State of Connecticut.

"Stated Principal Amount" means par amount, unless the Bonds are issued with original issue discount or premium of more than two percent (2%) of such par amount, in which case Stated Principal Amount shall mean Issue Price excluding Pre-Issuance Accrued Interest.

"Subordinated Indebtedness" shall mean any bond, note or other evidence of indebtedness issued by the Municipality or the Authority in furtherance of the Municipality's or the Authority's corporate purposes under the Connecticut General Statutes and payable from the Subordinated Indebtedness Fund, including but not limited to any borrowings entered into between the Municipality and the Authority and the Municipality's general obligation bonds set forth on Schedule D hereto.

"Subordinated Indebtedness Fund" shall mean the Subordinated Indebtedness Fund established pursuant to Section 502.

"Subordinated Indebtedness Requirement" shall mean any amount required to be deposited in the Subordinated Indebtedness Fund by resolution of the Municipality and/or the Authority including all payments with respect to Subordinated Indebtedness payable out of, or secured by a pledge of, amounts held in the Subordinated Indebtedness Fund.

"Supplemental Indenture" shall mean a written agreement of the Municipality and the Authority authorizing the issuance of a Series of Bonds and/or otherwise amending or supplementing the Indenture, adopted in accordance with Article VIII of the Indenture.

"Surplus Fund" shall mean the Surplus Fund established pursuant to Section 502.

"Tax Regulatory Agreement" shall mean an agreement, certificate or other document entered into by the issuer of a Bond for purposes of maintaining the exemption of the interest on such Series of Bonds from gross income for purposes of the Code.

"Trust Estate" shall mean all Revenues, Funds, Accounts, moneys, securities and any other collateral pledged pursuant to Section 501 of the Indenture (other than the Rebate Fund and the Operating Fund) and subject to the continuing lien of the Indenture.

"Trustee" shall mean Wachovia Bank, National Association (as successor to First Union National Bank) and its successor or successors and any other person which may at any time be substituted in its place pursuant to the Indenture.

"Variable Rate Bond" shall mean, as of any date of determination, any Bond on which the interest rate borne thereby may vary during any part of its remaining term.

Authorization of Indenture (Section 201)

The Indenture is entered into by virtue of the Charter and the Clean Water Fund Act and pursuant to their provisions. The Municipality and the Authority have each ascertained and hereby determine and declare that execution of the Indenture is necessary to carry out its purposes under the Clean Water Fund Act, that each and every act, matter, thing or course of conduct as to which provision is made in the Indenture is necessary in order to carry out and effectuate the corporate purposes of the Municipality and the Authority in accordance with the Clean Water Fund Act and the Charter, respectively, and to exercise the powers given thereby and that each and every covenant or agreement in the Indenture contained and made is necessary, useful or convenient in order to better secure the Bonds and are contracts or agreements necessary, useful and convenient to carry out and effectuate its purposes under the Clean Water Fund Act.

Indenture to Constitute Contract (Section 202)

In consideration of the purchase and acceptance of the Bonds by those who shall hold the same from time to time, the provisions of the Indenture shall constitute a contract among the Municipality, the Authority, the Trustee, the holders from time to time of the Bonds and, to the extent set forth in a Supplemental Indenture authorizing the issuance of Bonds secured by a Special Credit Facility, the issuer of such Special Credit Facility. The pledge of the Indenture and the provisions, covenants and agreements in the Indenture set forth to be performed by or on behalf of the Municipality and the Authority shall be for the equal benefit, protection and security of the holders of any and all such Bonds each of which, regardless of the time or times of its issue or maturity, shall be of equal rank without preference, priority or distinction over any other thereof except as expressly provided in the Indenture and, to the extent set forth in a Supplemental Indenture authorizing the issuance of Bonds secured by a Special Credit Facility, the issuer of such Special Credit Facility.

Obligation of Bonds (Section 203)

The Indenture creates an issue of Bonds of the Municipality to be designated as "Clean Water Fund Obligations" and creates a continuing pledge and lien on the Trust Estate to secure the full and final payment of the principal or Redemption Price of and interest on all the Bonds. The aggregate principal amount of the Bonds which may be executed, authenticated and delivered under the Indenture is not limited except as provided in the Indenture or as may be limited by law. It is hereby expressly provided that the Bonds shall be special, limited obligations payable from, and the Municipality hereby grants a security interest in, pledges and assigns to the Trustee and its successors and assigns for the equal and ratable benefit of the holders and all future holders of the Bonds and, to the extent set forth in a Supplemental Indenture authorizing the issuance of Bonds secured by a Special Credit Facility, the issuer of such Special Credit Facility, as their interests may appear, all right, title and interest in and to the Trust Estate.

The Bonds issued hereunder shall be payable solely out of the Revenues and other receipts, funds and moneys pledged therefor pursuant to the Indenture and are secured by the liens created hereby, including the Trust Estate The Bonds shall not be obligations of the Authority, the Municipality nor the State, except as provided in the Indenture and, to the extent applicable, a Project Loan and Grant Agreement. The Bonds shall not constitute indebtedness of the Municipality or the State within the meaning of any statutory or constitutional provision.

Neither the faith and credit nor the taxing power of the Municipality or the State is pledged to pay the Bonds. The Authority has no power to tax.

Authorization of Bonds in Series (Section 204)

In order to provide sufficient funds for the purposes of financing Projects or for the purpose of refunding any Bonds or any bonds, notes or other obligations issued by the Municipality for the purposes of financing Projects, Bonds of the Municipality are hereby authorized to be issued from time to time without limitation as to amount except as provided in the Indenture or as may be limited by law and such Bonds shall be issued subject to the terms, conditions and limitations established in the Indenture and in one or more series as provided in the Indenture.

Bonds issued pursuant to the Indenture shall be special, limited obligations of the Municipality and shall not be payable from nor charged upon any funds other than Revenues or other receipts, funds or moneys pledged therefor pursuant to the Indenture, nor shall the Municipality be subject to any liability thereon except to the extent of such Revenues, or other receipts, fund and moneys pledged therefor pursuant to the Indenture. The issuance of Bonds pursuant hereto shall not directly or contingently obligate the Municipality to levy or to pledge any form of taxation whatever therefor, or to make any additional appropriation for their payment. The Bonds shall not constitute a charge, lien or encumbrance, legal or equitable, upon any property of the Municipality, other than Revenues or other receipts, funds or moneys pledged therefor as provided in the Indenture. The substance of such limitation shall be plainly stated on the face of each Bond.

Conditions Precedent to Delivery of a Series of Bonds (Section 206)

The Bonds of a Series shall be executed by the Municipality for issuance and delivered to the Trustee and thereupon shall be authenticated by the Trustee and delivered to a Depository Institution or upon the Municipality's order, but only upon the receipt by the Trustee of:

(a) a Bond Counsel's opinion to the effect that (i) the Municipality has the right and power to adopt the Indenture under the Connecticut General Statutes, including the Clean Water Fund Act, and the Charter; (ii) the Indenture has been duly and lawfully adopted, by the Municipality and is enforceable against the Municipality except as may be limited by bankruptcy, insolvency or other laws affecting creditors' rights and the unavailability of equitable remedies; (iii) the Indenture creates the valid pledge which it purports to create of the Trust Estate, subject to the application thereof to the purposes and on the conditions permitted by the Indenture, the Clean Water Fund Act and the Charter; (iv) the Bonds of such Series are valid and binding special, limited obligations secured by the Trust Estate and are enforceable in accordance with their terms and the terms of the Indenture except as limited by bankruptcy, insolvency or other laws affecting creditors' rights and the application of equitable principles; and (v) all conditions required by the Indenture precedent to the issuance of the Bonds have been met and upon the execution, authentication and delivery thereof, the Bonds of such Series will have been duly and validly authorized and issued in accordance with the Clean Water Fund Act, if applicable, and the Indenture;

(b) a written order as to the delivery of such Bonds, signed by an Authorized Representative of the Municipality;

(c) a copy of the Indenture or Supplemental Indenture authorizing such Series, certified by an Authorized Representative of the Municipality, which shall specify:

(i) the authorized principal amount and Series designation of such Bonds and the Credit Facility, if any, related thereto, and if such Credit Facility is a Special Credit Facility;

(ii) the purposes for which such Series is being issued, which shall be one or more of the following: (1) the funding of any costs that relate to a Project for which Bonds can be issued under the Connecticut General Statutes, (2) the funding of Capitalized Interest, (3) the making of deposits in the amounts, if any, required by the Indenture or such Supplemental Indenture into any of the Funds and Accounts established pursuant to Article V of the Indenture, or (4) the refunding of any Outstanding Bonds, Bond Anticipation Notes, Subordinated Indebtedness, or outstanding bonds of the Municipality issued to pay Capital Costs of a Project;

(iii) the date, and the maturity date or dates of the Bonds of such Series;

(iv) if such Bonds will pay current interest for all or any part of their term, the interest rate or rates of the Bonds of such Series, or the manner of determining such rate or rates, the Bond Payment Dates therefor and the method of payment thereof and, if such Bonds will not pay full current interest for all or any part of their term, the rate or rates to be borne by, the method of accrual or compounding, if any, and the other terms and conditions of such Bonds including the designation, or manner of determining, the "principal amount" of such Bonds;

(v) if any Bonds of such Series are Variable Rate Bonds, the limitation, if any, on the numerical rate or rates of interest which such Bonds may bear at any time and the terms of the Pro Forma Bond Issue applicable thereto;

(vi) the minimum denomination of, and the manner of dating, numbering and lettering, the Bonds of such Series, but such Bonds shall be in denominations equal to the minimum denomination or any multiple thereof;

(vii) the place or places of payment of the Bonds of such Series or the manner of appointing and designating the same;

(viii) if any Bonds of such Series are redeemable the Redemption Prices and the redemption terms for the Bonds of such Series;

(ix) the amount and due date of each Sinking Fund Installment, if any, for Bonds of like maturity of such Series;

(x) provisions for the sale of the Bonds of such Series;

(xi) the terms and conditions of the exercise by the owners thereof of any payment options granted thereby and the authorization of the Credit Facility, if any, relating thereto;

(xii) the forms of the Bonds of such Series and of the Trustee's certificate of authentication;

(xiii) the respective amounts, if any, to be deposited from the proceeds of such Series, in the subaccount for such Series established in the Capitalized Interest Account in the Debt Service Fund, and in the Debt Service Reserve Fund, including the Reserve Fund Credit Facility, if any, therefore; and

(xiv) any other provisions deemed advisable by the Municipality as shall not conflict with the provisions of the Indenture;

(d) except in the case of any Series of Bonds issued hereunder prior to the completion of one full Fiscal Year following the execution and delivery of the Indenture and any Series of Refunding Bonds issued pursuant to Section 207, a Certificate of an Authorized Representative of the Municipality and the Authority setting forth for the last full Fiscal Year immediately preceding the Fiscal Year in which such Bonds are to be issued, (i) the Revenues adjusted as provided in the Indenture, (ii) the Aggregate Debt Service on the Bonds then Outstanding and all Parity Indebtedness then outstanding and the maximum Aggregate Debt Service on the additional Bonds then proposed to be issued, (iii) the total Operating Expenses for such Fiscal Year, (iv) the amount withdrawn from the Surplus Fund other than to pay Capital Costs, and (v) showing that the Debt Service Coverage Ratio is at least equal to the Debt Service Coverage Ratio Requirement; provided that (A) if an increase in the rates, fees and charges for services of the Sewerage System shall have been approved prior to the delivery of such Certificate, such that no further legal requirements need be met to effectuate such increase, the Revenues calculated under clause (d)(i) shall be adjusted to the amount of Revenues which would have been derived from the Sewerage System for said full Fiscal Year if such increased rates, fees and charges for services of the Sewerage System had been in effect for the full Fiscal Year, and (B) if the Authority shall have obtained one or more new customers after such Fiscal Year but before the delivery of such certificate, such that the Revenues for the last full

Fiscal Year should, in the opinion of the Authority, be adjusted to reflect such additional customer or customers, then the Revenues of the Sewerage System for the full Fiscal Year immediately preceding the issuance of said additional Bonds shall be increased by the least amount which said customer or customers are legally obligated to pay in any one year for the furnishing of said services by the Sewerage System, after deducting therefrom the Operating Expenses estimated by the Authority as attributable in such year to such customer or customers.

(e) except in the case of any Series of Refunding Bonds issued pursuant to Section 207, a Certificate of an Authorized Representative of the Municipality and the Authority setting forth for each of the five (5) Fiscal Years following the issuance of such Series of Bonds, plus the Fiscal Year in which such Bonds are issued, (i) the estimated Revenues after giving effect to any increases or decreases in rates, fees and charges projected, (ii) the estimated Operating Expenses, (iii) the estimated amount to be withdrawn from the Surplus Fund other than to pay Capital Costs, (iv) the projected Aggregate Debt Service on the Bonds then Outstanding, all Parity Indebtedness then outstanding and the additional Bonds then proposed to be issued, and (v) showing that the Debt Service Coverage Ratio will be at least equal to the Debt Service Coverage Ratio Requirement;

(f) except in the case of Refunding Bonds issued pursuant to Section 207, (i) a Certificate of an Authorized Representative of the Authority, dated as of the date of such delivery, stating that the Authority is not in default in the performance of any of the covenants, conditions, agreements or provisions contained in the Indenture and in any documents pertaining to Parity Indebtedness outstanding and (ii) a Certificate of an Authorized Representative of the Municipality, dated as of the date of such delivery, stating that the Municipality is not in default in the performance of any of the covenants, conditions, agreements or provisions contained in the Indenture and in any documents pertaining to Parity Indebtedness outstanding;

(g) in the case of any Series of Bonds which constitute Other Sewerage System Indebtedness and for which Capitalized Interest has been provided by the Supplemental Indenture authorizing such Series (i) the written direction of an Authorized Representative of the Municipality to establish the sub-account for such Series in the Capitalized Interest Account in the Debt Service Fund and (ii) the amount of the proceeds of such Series to be deposited therein;

(h) such further documents and moneys as are required by the provisions of Article VIII of the Indenture or any Supplemental Indenture adopted pursuant to Article VIII of the Indenture; and

(i) in connection with the delivery of the certificate of an Authorized Representative set forth in clause (e) above, the Authority and the Municipality shall deliver to the State a report containing such assumptions and expectations with respect to projected Revenues and Operating Expenses for the term of any Clean Water Fund Obligations Outstanding and the capital and operating needs of the Authority and the Municipality for such period in such form as the State may reasonably require to assist it in preparing its own projections.

Conditions Precedent to Delivery of Refunding Bonds (Section 207)

(a) One or more Series of Refunding Bonds may be issued pursuant to Section 207 of the Indenture at any time to refund any Outstanding Bonds or outstanding Parity Indebtedness provided that (i) average annual Debt Service on such Series of Refunding Bonds or outstanding Parity Indebtedness (excluding any interest accrued but unpaid pursuant to the provisions of the Clean Water Fund Act from such Debt Service in the case of Clean Water Fund Obligations issued to refund outstanding Clean Water Fund Obligations) shall not exceed the average annual Debt Service on the Bonds to be refunded and (ii) the maximum Debt Service in any Fiscal Year on such Series of Refunding Bonds or Parity Indebtedness (excluding any one-twentieth (1/20th) principal payment required by the Project Loan and Grant Agreement), shall not exceed the maximum Debt Service in any Fiscal Year on the Bonds or Parity Indebtedness to be refunded, (excluding any one-twentieth (1/20th) principal payment on Clean Water Obligations required by the Project Loan and Grant Agreement and excluding any interest accrued but unpaid pursuant to the provisions of the Clean Water Fund Act from such Debt Service in the case of Clean Water Fund Obligations issued to refund outstanding Clean Water Fund Obligations) all as shown in a Certificate signed by an Authorized Representative of the Municipality and delivered to the Trustee prior to the authentication and delivery of such Series of Refunding Bonds. Refunding Bonds shall be issued in a principal amount sufficient, together with other moneys available therefor, to accomplish such refunding and to make the deposits in the Funds and Accounts

required by the provisions of the Supplemental Indenture authorizing such Bonds. Refunding Bonds that do not meet the requirements of Section 207(a) may be issued by meeting the requirements of Section 206.

(b) All Refunding Bonds of a Series issued under Section 207 or Section 206 of the Indenture shall be executed by the Municipality for and delivered to the Trustee and thereupon shall be authenticated by the Trustee and delivered to a Depository Institution or upon the Municipality's order, but only upon the receipt by the Trustee (in addition to the documents required by Section 206(a), (b) and (c) of the Indenture in the case of Refunding Bonds issued under Section 206 or Section 207 of the Indenture and subsection (a) of Section 207 of the Indenture in the case of Refunding Bonds issued under Section 207 of the Indenture) of:

(i) irrevocable instructions to the Trustee, satisfactory to it, to give due notice of redemption of all the Bonds to be redeemed on a redemption date or dates specified in such instructions;

(ii) if the Bonds to be refunded are not to be redeemed within the next succeeding sixty (60) days, irrevocable instructions to the Trustee, satisfactory to it, to give due notice of any refunding of such Bonds on a specified date prior to their maturity, as provided in Article VI of the Indenture and Section 1201 of the Indenture;

(iii) either (A) moneys (which may include all or a portion of the proceeds of the Refunding Bonds to be issued) in an amount sufficient to effect payment of the Principal Installments and the applicable Redemption Price, if any, of the Bonds to be refunded, together with accrued interest on such Bonds to the maturity or redemption date thereof, as the case may be, or (B) Defeasance Obligations in such principal amounts, of such maturities, bearing such interest and otherwise having such terms and qualifications and any moneys, as shall be necessary to comply with the provisions of Section 1201, which Defeasance Obligations and moneys shall be held in trust and used only as provided in Section 1201; and

(iv) such further documents and moneys as are required by the provisions of Article VIII of the Indenture or any Supplemental Indenture adopted pursuant to Article VIII of the Indenture.

Bond Anticipation Notes (Section 208)

Whenever the Municipality shall authorize the issuance of a Series of Bonds, the Municipality may, by resolution, authorize the issuance of notes (and renewals thereof) in anticipation of such Series. The principal of and interest on such notes and renewals thereof shall be payable from the proceeds of such notes or from the proceeds of the sale of the Series of Bonds in anticipation of which such notes are issued. The proceeds of such Bonds may be pledged for the payment of the principal of and interest on such notes and any such pledge shall have a priority over any other pledge of such proceeds created by the Indenture. The Municipality and the Authority may also pledge the Revenues to the payment of the interest on, and subject to Section 707, the principal of such notes. A copy of the resolution of the Municipality authorizing such notes, certified by an Authorized Representative of the Municipality, shall be delivered to the Trustee following its adoption, together with such other information concerning such notes as the Trustee may reasonably request.

Credit Facilities (Section 209)

(a) In connection with the issuance of any Series of Bonds hereunder, the Municipality may obtain or cause to be obtained one or more Credit Facilities providing for payment of all or a portion of the Principal Installments, or Redemption Price or interest due or to become due on such Bonds, providing for the purchase of such Bonds by the issuer of such Credit Facility or providing funds for the purchase of such Bonds by the Municipality. In connection therewith the Municipality may enter into such agreements with the issuer of such Credit Facility providing for, inter alia: (i) the payment of fees and expenses to such issuer for the issuance of such Credit Facility; (ii) the terms and conditions of such Credit Facility and the Series of Bonds affected thereby; and (iii) the security, if any, to be provided for the issuance of such Credit Facility.

(b) The Municipality may secure such Credit Facility by an agreement providing for the purchase of the Series of Bonds secured thereby with such adjustments to the rate of interest, method of determining interest, maturity, or redemption provisions as specified by the Municipality in the applicable Supplemental Indenture. The Municipality may also in an agreement with the issuer of such Credit Facility agree to directly reimburse such issuer for amounts paid under the terms of such Credit Facility, together with interest thereon (a "Reimbursement

Obligation"); provided, however, that no Reimbursement Obligation shall be credited, for purposes of the Indenture, until amounts are paid under such Credit Facility. Any such Reimbursement Obligation (a "Parity Reimbursement Obligation") may be secured by a pledge of, and a lien on the Trust Estate on a parity with the lien created by Section 501 of the Indenture. Any such Parity Reimbursement Obligation shall be deemed to be a part of the Series of Bonds to which the Credit Facility which gave rise to such Parity Reimbursement Obligation relates.

(c) Any such Credit Facility shall be for the benefit of and secure such Series of Bonds or portion thereof as specified in the applicable Supplemental Indenture.

Parity Indebtedness (Section 210)

The Municipality or the Authority may issue or incur Parity Indebtedness for any lawful purpose relating to the Sewerage System; provided that the Parity Indebtedness shall be deemed to be Bonds issued under Section 206 or 207 of the Indenture for the purpose of complying with the requirements of Section 206 or 207. All such Parity Indebtedness and the Bonds shall be secured equally, without preference of priority, by the Revenues pledged hereunder. There shall be included in any agreement for the repayment of Parity Indebtedness provisions that: (1) any Event of Default hereunder shall be an event of default under such agreement; and (2) if the Municipality is in default in respect of such Parity Indebtedness, the holder or holders thereof and/or any trustee therefor shall take no action which shall be inconsistent with any action taken by the Trustee hereunder and that all remedies exercised by the Trustee hereunder and by the holder or holders of such Parity Indebtedness and/or any trustee therefor are to be exercised for the equal and ratable benefit of all Bondholders and holders of Parity Indebtedness. The Trustee and the holders of any Parity Indebtedness and any trustee therefor may enter into any agreement regarding rights and remedies following an Event of Default hereunder and an event of default under any agreement for the repayment of Parity Indebtedness, which is not inconsistent with the foregoing. A listing of Parity Indebtedness outstanding as of the date of the Indenture is set forth on Schedule C of the Indenture.

Funding of Debt Service Reserve Fund (Section 213)

The Debt Service Reserve Fund Requirement for the 2001 Series A Bonds will be met by depositing in the 2001 Series A Special Account the 2001 Series A Special Account Deposit Amounts.

Application of Bond Proceeds; Deposits to the Debt Service Reserve Fund (Section 401)

(a) The proceeds (including accrued interest) from the sale of the Bonds of each Series shall be applied simultaneously with the delivery of such Bonds for the purposes of making deposits in the Funds and Accounts, as shall be provided by the Supplemental Indenture authorizing such Series and all amounts not otherwise deposited shall be deposited in the Construction Fund; provided, however, that (i) in the case of Clean Water Fund Obligations, the proceeds of the sale of such Bonds shall be applied as provided in the Project Loan and Grant Agreement and no proceeds shall be deposited in the Construction Fund and (ii) in the case of Refunding Bonds, all such amounts not otherwise deposited shall be applied to the refunding purposes thereof in the manner provided in such Supplemental Indenture.

(b) Unless otherwise provided in the Supplemental Indenture pertaining to any Series of Bonds, no proceeds of the sale of a Series of Bonds shall be deposited in the Debt Service Reserve Fund. The amount, if any, necessary to make the amount on deposit in the Debt Service Reserve Fund equal to the Debt Service Reserve Fund Requirement, after giving effect to the issuance of a Series of Bonds, shall be funded from Revenues deposited in the applicable Special Account of the Debt Service Reserve Fund. Unless a later date is specifically provided by a Supplemental Indenture and the State consents to such later date and the terms of such funding, the Debt Service Reserve Fund Requirement for a Series of Bonds shall be fully funded not later than: (i) the date of issuance of the Project Loan Obligation for a Project financed by Clean Water Fund Obligations, or (ii) the date of issuance of any other Bond issued pursuant to the terms of the Indenture.

If a Supplemental Indenture shall provide that on the date of issuance of the particular Series of Bonds authorized thereby, the Debt Service Reserve Fund Requirement for such Series of Bonds shall be fully funded on the same basis as all other Series of Bonds secured by the Common Account of the Debt Service Reserve Fund, such Series of Bonds shall also be secured by the Common Account of the Debt Service Reserve Fund once such funding shall have occurred. Unless and until the full funding of such Debt Service Reserve Fund Requirement on the same basis as all other Series of Bonds secured by the Common Account has occurred, each Series of Bonds shall be

secured only by the applicable Special Account of the Debt Service Reserve Fund which has been established for such Series.

Any Supplemental Indenture may set forth the amount of the proceeds, if any, of any Series of Bonds to be deposited in a Special Account for such Series or the amount, if any, to be deposited in the Common Account for such Series.

The Pledge Effected by the Indenture (Section 501)

All Bonds issued pursuant to the Indenture shall be special limited obligations of the Municipality. Pursuant to the Granting Clauses set forth in the Indenture, the Municipality and the Authority have pledged the Trust Estate as security for the payment of the Bonds and the performance of any other obligation of the Municipality and the Authority under the Indenture or any Supplemental Indenture, in accordance with the terms and the provisions of the Indenture, subject only to the provisions of the Indenture permitting the application thereof for or to the purposes and on the terms and conditions set forth in the Indenture. It is the intention of the Municipality and the Authority that, to the fullest extent permitted by law, including, but not limited to, the Clean Water Fund Act and the Uniform Commercial Code, this pledge shall be valid and binding from the time when it is made, that the Revenues, moneys, securities and other funds so pledged and then or thereafter received by the Municipality or the Authority shall immediately be subject to the lien of such pledge without physical delivery thereof or further act and the lien of such pledge and obligation to perform the contractual provisions contained in the Indenture shall be valid and binding as against all parties having claims of any kind in tort, contract or otherwise against the Municipality or the Authority, irrespective of whether such parties have notice thereof.

Establishment of Funds and Accounts (Section 502)

(a) The following Funds are hereby established:

(1) Construction Fund;
(2) Revenue Fund;
(3) Debt Service Fund;
  (i) 2001 Series A Debt Service Account;
(4) Debt Service Reserve Fund;
  (i) 2001 Series A Special Account;
(5) Operating Fund;
(6) Subordinated Indebtedness Fund; and
(7) Surplus Fund.

(b) There is hereby established in the Debt Service Reserve Fund a separate Account to be known as the "Common Account". In addition, any Supplemental Indenture, which provides for a Credit Facility to secure the payment of the Principal Installments of and interest on a Series of Bonds authorized thereby or to secure the payment of the purchase price of a Series of Bonds authorized thereby, can provide for one or more separate Accounts to be known as "Special Accounts" relating thereto. In addition, unless otherwise established by Supplemental Indenture, Special Accounts shall be established for each Series of Bonds unless and until the Debt Service Reserve Fund Requirement for all Outstanding Bonds shall have been fully funded on the same basis, as provided in Section 401(b). Upon the full funding of the Debt Service Reserve Fund Requirement for a Series of Bonds on the same basis, any moneys and securities deposited in any Special Account for such Series of Bonds which has been established to accommodate any funding of the Debt Service Reserve Fund Requirement over time, shall be transferred to the Common Account of the Debt Service Reserve Fund, and from such time of transfer, the Common Account shall secure all such Series of Bonds.

(c) There is hereby established in the Debt Service Fund a separate account for each Series of Bonds to be known as a "Debt Service Account" with such additional designation as shall identify such Debt Service Account to the Series of Bonds as shall be necessary, and a separate Account to be known as the "Capitalized Interest Account". The Trustee shall, upon receipt of a written direction signed by an Authorized Representative of the Municipality, establish, in the Capitalized Interest Account, a sub-account for each Series of Bonds (other than Clean Water Fund Obligations) for which Capitalized Interest has been provided by the Supplemental Indenture authorizing such Series.

(d) In addition to the Accounts established in subsections (a), (b) and (c) above, the Trustee shall, at the request of the Municipality, establish within any Fund held by the Trustee such Accounts as shall be designated in the written instructions of an Authorized Representative of the Municipality and shall in like manner establish within any Account such subaccounts for the purposes of such Accounts as shall be so designated.

(e) In addition to the Funds and Accounts established above, the Trustee shall, at the request of the Municipality, establish a Rebate Fund and Accounts therein, to the extent so provided in a Supplemental Indenture, into which Rebate Fund and Accounts the Municipality shall be required to deposit the amount of any earnings under the Indenture required to be rebated to the United States. Amounts on deposit in the Rebate Fund and Accounts therein shall be invested and applied by the Trustee as provided in a Supplemental Indenture.

(f) Unless otherwise expressly provided in the Indenture, including without limitation Section 517, all of the Funds and Accounts except the Operating Fund shall be held by the Trustee.

Construction Fund (Section 503)

(a) Subject to the second succeeding sentence, the Municipality shall establish within the Construction Fund a separate Account for each Project for which a Series of Bonds is issued. There shall be deposited from time to time in the applicable Account of the Construction Fund any amount required to be deposited therein pursuant to the Indenture and any Supplemental Indenture and any other amounts received and determined to be deposited therein from time to time which are not otherwise required to be applied in accordance with the Indenture. The Municipality may, pursuant to a Project Loan and Grant Agreement, authorize alternate means of deposit and disbursement of proceeds of Clean Water Fund Obligations, and such means set forth in such Project Loan and Grant Agreement shall be effective as if fully set forth in the Indenture, provided no funds held by the Clean Water Fund prior to disbursement shall be part of the Trust Estate.

(b) Amounts in each separate Account of the Construction Fund shall be expended only (i) to pay Capital Costs of the Project for which such account was established or (ii) to the extent that the amounts in any other Fund or Account are insufficient or unavailable therefor, to pay the principal of and interest on the Bonds when due, but in the case of this clause (ii), only in the event that there shall have been filed with the Trustee (a) a Certificate of an Authorized Representative of the Municipality or the Authority in form and substance satisfactory to the Trustee stating that the Revenues expected to be received thereafter together with such other specified amounts as are expected to be made available therefor by the Municipality will be sufficient to pay in full all Outstanding Bonds when and as the same shall become due in accordance with their terms and in reasonable detail, the basis for such certification, and (b) an opinion of counsel satisfactory to the Trustee that such payment will not result in a violation of any existing law.

(c) The Municipality or the Authority shall submit on a monthly basis to the Trustee or, with respect to Clean Water Fund Obligations, to the Clean Water Fund Administrator, a Disbursement Request setting forth the amount and, in reasonable detail, itemizing the Capital Costs of any Project expenses to be paid in the following month from the Account in the Construction Fund established for such Project or pursuant to a Project Loan and Grant Agreement, together with a Certificate of an Authorized Representative of the Municipality or the Authority identifying such Disbursement Request and stating that the amount to be withdrawn pursuant to such requisition is a proper charge thereon. The Trustee or the Clean Water Fund Administrator, as applicable, shall thereafter advance to the Municipality at the beginning of each month, or at such other time as is provided in a Project Loan and Grant Agreement with respect to Clean Water Fund Obligations, the amount shown in such Disbursement Request, subject to such rights as the Clean Water Fund Administrator has to withhold disbursements as provided in the Project Loan and Grant Agreement. The Municipality or the Authority may at any time or from time to time as necessary submit to the Trustee or the Clean Water Fund Administrator, as applicable, a supplemental Disbursement Request and Certificate of an Authorized Representative in conformity with the foregoing requirements to revise a previously submitted Disbursement Request, and upon receipt thereof the Trustee or the Clean Water Fund Administrator, as applicable, shall promptly, or at such other time as provided in a Project Loan and Grant Agreement with respect to Clean Water Fund Obligations, advance to the Municipality the amount specified in such supplemental Disbursement Request, subject to such rights as the Clean Water Fund has to withhold disbursements as provided in the Project Loan and Grant Agreement. All moneys so received by the Municipality shall be applied to the payment of the Capital Costs of the Project for which such moneys were disbursed.

(d) The Trustee shall, upon written instruction of an Authorized Representative of the Municipality or the Authority, transfer any amount of the proceeds of Bonds remaining in any Account of the Construction Fund to the Special Account, if any, of the Debt Service Reserve Fund for such Series of Bonds to the extent of any deficiency in the Debt Service Reserve Fund Requirement for such Series of Bonds, or to the Common Account of the Debt Service Reserve Fund to the extent of any deficiency therein for Bonds secured thereby, (provided that any such proceeds from Clean Water Fund Obligations shall be transferred to the Debt Service Fund for payment of Clean Water Fund Obligations), but only upon receipt of the Certificate of an Authorized Representative stating that all Capital Costs theretofore incurred in connection with the Project for which such Account was established have been paid or duly provided for. In lieu of making such transfers, the Municipality or the Authority may, by delivering to the Trustee written instructions of any Authorized Representative, direct the Trustee to apply such amounts to the redemption of Bonds in accordance with the provisions of Article VI of the Indenture.

(e) Notwithstanding anything in the Indenture to the contrary, the disbursement procedure relating to the Construction Fund can be varied for any Project as may be provided in any Supplemental Indenture that relates to the Bonds issued for such Project.

Revenue Fund (Section 504)

Subject to Section 517 of the Indenture, the Municipality and the Authority shall cause all Revenues received by them to be paid to the Trustee who shall promptly upon receipt deposit the same in the Revenue Fund. There shall also be deposited in the Revenue Fund all other amounts required by the Indenture to be so deposited.

Payments Into Certain Funds (Section 505)

Subject to Section 517 of the Indenture, on the third Business Day preceding the end of each month, the Trustee shall, from the amounts in the Revenue Fund, make the following deposits in the following order of priority:

FIRST: to the Operating Fund, the amount set forth in a Certificate of an Authorized Representative of the Municipality or the Authority as being deemed necessary to provide for (taking into account amounts on deposit therein and expenses incurred and unpaid for the current month) the payment of the next succeeding month's Operating Expenses;

SECOND: to each Debt Service Account, the amount necessary so that the total on deposit therein at the end of such month equals the Accrued Aggregate Debt Service on the applicable Series of Bonds for such month, and to such payees as are designated in writing to the Trustee by the Municipality, an amount equal to the Accrued Aggregate Debt Service on all Parity Indebtedness for such month; provided however, if Revenues are insufficient for such purpose, then pro rata to each such Debt Service Account and payee;

THIRD: from the balance, if any, remaining after making the deposits required by paragraphs FIRST and SECOND, to the Debt Service Reserve Fund, first, to the credit of the Common Account therein, the amount, if any, necessary to make the total on deposit in the Common Account equal to the Debt Service Reserve Fund Requirement for the Bonds secured by the Common Account, or the entire balance if less than sufficient, second, from the balance of such deposit, if any, remaining after crediting the Common Account as aforesaid, to the credit of each Special Account, the amount, if any, necessary to make the total amount on deposit in each such Special Account equal to the portion of the Debt Service Reserve Fund Requirement for the Series of Bonds to which such Special Account relates that is required to be funded as of that month as set forth in Section 401(b); provided, however, that if the balance remaining is less than sufficient to credit in full each Special Account, credit shall be made pro rata among all Special Accounts in the same ratio as the portion of the Debt Service Reserve Fund Requirement related to each Special Account and required to be funded as of that month bears to the sum of the Debt Service Reserve Fund Requirements for all the Bonds related to Special Accounts, and third, from the balance of such deposit, if any, remaining after crediting the Common Account and the Special Accounts as aforesaid, to the credit of each debt service reserve fund as are designated in writing to the Trustee by the Municipality for Parity Indebtedness, the amount, if any, necessary to make the total amount on deposit in each such debt service reserve fund equal to the portion of the debt service reserve fund requirement for the series of Parity Indebtedness to which such debt service reserve fund relates that is required to be funded as of that month; provided, however, that if the balance remaining is less than sufficient to credit in full each debt service reserve fund, credit shall be made pro rata among all debt service reserve funds in the same ratio as the

portion of the debt service reserve fund requirement related to each debt service reserve fund and required to be funded as of that month bears to the sum of the debt service reserve fund requirements for all Parity Indebtedness related to such debt service reserve funds;

FOURTH: from the balance, if any, remaining after making the deposits required by paragraphs FIRST, SECOND and THIRD, to the Rebate Fund the amount, if any, set forth in a Certificate of an Authorized Representative of the Municipality as being required to be deposited in such Fund and the Accounts thereunder in accordance with the Indenture or a Tax Regulatory Agreement;

FIFTH: from the balance, if any, remaining after making the deposits required by paragraphs FIRST, SECOND, THIRD and FOURTH, to the Subordinated Indebtedness Fund amounts required to be deposited in such Fund for such month in accordance with the Sewer Budget or the entire balance if less than sufficient;

SIXTH: from the balance, if any, remaining after making the deposits required by paragraphs FIRST, SECOND, THIRD, FOURTH and FIFTH, to the Surplus Fund, the balance.

Debt Service Fund (Section 506)

Subject to Section 517 of the Indenture:

(a) The Trustee shall for each Series of Bonds Outstanding, pay from the moneys or deposits in the respective Debt Service Account for such Series of Bonds (i) on each Bond Payment Date, (1) the amounts required for the payment of the Principal Installments, if any, due on such date and (2) the amounts required for the payment of interest due on such date, provided that with respect to any Series of Bonds for which amounts have been deposited in a Capitalized Interest Account, the unexpended balance in such account shall be applied to pay interest on such Series of Bonds prior to use of other amounts in the Debt Service Fund for such purpose and (ii) on any redemption date or date of purchase, the amounts required for the payment of accrued interest on Bonds to be redeemed or purchased on such date unless the payment of such accrued interest shall be otherwise provided.

(b) The amounts accumulated in the Debt Service Fund for each Sinking Fund Installment may, and if so directed by an Authorized Representative of the Municipality shall, be applied (together with amounts with respect to interest on the Bonds for which such Sinking Fund Installment was established) by the Trustee prior to the forty-fifth day preceding the due date of such Sinking Fund Installment to the purchase of Bonds of the Series and maturity for which such Sinking Fund Installment was established, at prices (including any brokerage and other charges) not exceeding the Redemption Price payable for such Bonds when such Bonds are redeemable by application of such Sinking Fund Installment plus unpaid interest accrued to the date of purchase, such purchases to be made by the Trustee as directed in writing by an Authorized Representative of the Municipality.

(c) Upon the purchase of any Bond pursuant to subsection (b) of Section 506 of the Indenture, an amount equal to the principal amount of the Bond so purchased or redeemed shall be credited toward the next Sinking Fund Installment thereafter to become due and the amount of any excess of the amounts so credited over the amount of such Sinking Fund Installment shall be credited against future Sinking Fund Installments in direct chronological order.

(d) As soon as practicable after the forty-fifth day preceding the due date of any such Sinking Fund Installment, the Trustee shall proceed to call for redemption, pursuant to Section 603, on such due date, Bonds of the Series and maturity for which such Sinking Fund Installment was established in such amount as shall be necessary to complete the retirement of the principal amount specified for such Sinking Fund Installment of the Bonds of such Series and maturity. The Trustee shall so call such Bonds for redemption whether or not it then has moneys in the Debt Service Fund sufficient to pay the applicable Redemption Price thereof on the redemption date. The Trustee shall apply to the redemption of the Bonds an each such redemption date, the amount required for the redemption of such Bonds.

Operating Fund (Section 507)

Subject to Section 517 of the Indenture:

(a) Amounts credited to the Operating Fund shall be applied by the Authority, from time to time, to the payment of Operating Expenses in accordance with the Sewer Budget.

(b) Amounts credited to the Operating Fund which the Authority at any time determines to be in excess of an amount equal to the unpaid Operating Expenses for such Fiscal Year shall be applied to make up any deficiencies in the following funds and accounts in the order stated: the Debt Service Accounts on a pro rata basis; any debt service funds established for Parity Indebtedness the existence of which and any deficiencies therein which have been identified in writing to the Trustee by the Municipality on a pro rata basis; the Common Account of the Debt Service Reserve Fund; the Special Accounts of the Debt Service Reserve Fund on a pro rata basis; any debt service reserve funds established for Parity Indebtedness the existence of which and any deficiencies therein which have been identified in writing to the Trustee by the Municipality on a pro rata basis; and the Subordinated Indebtedness Fund. Any balance of such excess not so applied shall be transferred by the Municipality to the Trustee for credit to the Surplus Fund.

(c) If and to the extent provided in a Supplemental Indenture authorizing Bonds of a Series, amounts from the proceeds of such Bonds may be credited to the Operating Fund and set aside therein as specified in the Supplemental Indenture for any purpose of such Fund.

(d) Any amount remaining on deposit in the Operating Fund on the last day of each Fiscal Year (except any reserves for Operating Expenses, if any) shall be transferred by the Municipality to the Trustee for deposit in the Revenue Fund.

Debt Service Reserve Fund (Section 509)

Subject to Section 517 of the Indenture:

(a) Amounts on deposit in the Common Account of the Debt Service Reserve Fund shall be applied, to the extent other funds are not available therefor pursuant to the Indenture, to pay the Principal Installments of, and interest on the Bonds secured by the Common Account pursuant to Section 401(b) of the Indenture when due. Amounts on deposit in Special Accounts in the Debt Service Reserve Fund shall be applied solely to the Bonds for which such Accounts have been established and such Bonds shall not be entitled to amounts on deposit in the Common Account. Amounts on deposit in debt service reserve funds for Parity Indebtedness shall be applied solely to the Parity Indebtedness for which such funds have been established and such Parity Indebtedness shall not be entitled to amounts on deposit in the Common Account.

(b) If, as of January 1 or July 1 of each year or on any date on which the Trustee receives the written direction of the Municipality under Section 509(e) of the Indenture, the amount in any Account in the Debt Service Reserve Fund exceeds the applicable Debt Service Reserve Fund Requirement, the Trustee shall withdraw from such Account the amount of any excess therein over the applicable Debt Service Reserve Fund Requirement as of the date of such withdrawal and deposit the moneys so withdrawn into the Surplus Fund. If, as of January 1 or July 1 of each year the amount in any Account in the Debt Service Reserve Fund is less than the applicable Debt Service Reserve Fund Requirement and, to the extent that such deficiency has not been made up by the date of adoption of the Sewer Budget for the next Fiscal Year by deposits pursuant to Section 505, the Authority shall, in its Sewer Budget for the ensuing Fiscal Year, include the amount necessary to fund such deficiency.

(c) Whenever the amount in the Accounts in the Debt Service Reserve Fund and the Debt Service Fund~~,~~ is sufficient to pay the remaining Principal Requirements and interest on any Outstanding Series of Bonds in accordance with their respective terms, the funds on deposit in such Debt Service Reserve Fund shall be transferred to such Debt Service Fund and applied to the redemption or payment of such Bonds.

(d) The Municipality may elect to satisfy in whole or in part the Debt Service Reserve Fund Requirement by means of a Reserve Fund Credit Facility, subject to the following requirements:

(i) The Reserve Fund Credit Facility provider must have a credit rating issued by a Rating Agency in one of the two highest rating categories of such rating agency;

(ii) The Municipality shall not secure any Reimbursement Obligation to the Reserve Fund Credit Facility provider by a lien on the Trust Estate equal or superior to the lien on the Trust Estate granted to the Bondholders;

(iii) Each Reserve Fund Credit Facility shall have a term of at least one (1) year (or, if less, the remaining term of the related Series of Bonds) and shall entitle the Trustee to draw upon or demand payment at such times and for such purposes as the Trustee would be entitled to claim the funds and investments that would be on deposit in the applicable Account of the Debt Service Reserve Fund were there no such Reserve Fund Credit Facility and receive the amount so requested in immediately available funds not later than one (1) business day after such draw or demand;

(iv) The Reserve Fund Credit Facility shall permit a drawing by the Trustee for the full stated amount in the event (1) the Reserve Fund Credit Facility expires or terminates for any reason prior to the final maturity of the related Series of Bonds, and (2) the Municipality fails to satisfy the Debt Service Reserve Fund Requirement by the delivery to the Trustee of cash, obligations, a substitute Reserve Fund Credit Facility, or any combination thereof, for deposit in the Debt Service Reserve Fund on or before the date of such expiration or termination;

(v) The Reserve Fund Credit Facility shall permit a drawing by the Trustee for the full stated amount in the event (i) the rating issued by the Rating Agencies to the Reserve Fund Credit Facility Provider is withdrawn or reduced below the minimum rating permitted in clause (i) above, and (ii) the Municipality has not satisfied the requirements of clause (vi) below;

(vi) If the rating issued by the Rating Agencies to the Reserve Fund Credit Facility provider is withdrawn or reduced below the minimum rating permitted in clause (i) above, the Municipality shall provide a substitute Reserve Fund Credit Facility within sixty (60) days after said rating change, and, if no substitute Reserve Fund Credit Facility is delivered to the Trustee by such date, shall immediately fund the Debt Service Reserve Fund Requirement; and

(vii) If the Reserve Fund Credit Facility provider commences any insolvency proceedings or is determined to be insolvent or fails to make payments when due on its obligations, the Municipality shall provide a substitute Reserve Fund Credit Facility within sixty (60) days thereafter, and, if no substitute Reserve Fund Credit Facility is delivered to the Trustee by such date, shall immediately fund the Debt Service Reserve Fund Requirement. If the events described in either (v) or (vi) above occur, the Trustee shall not relinquish the Reserve Fund Credit Facility at issue until after the Debt Service Reserve Fund Requirement is fully satisfied by the provision of cash, obligations, or a substitute Reserve Fund Credit Facility or any combination thereof. The Trustee is hereby authorized and directed to draw upon or demand payment from any such Reserve Fund Credit Facility in accordance with its terms in the event funds are needed from the Debt Service Reserve Fund. Any amount received from the Reserve Fund Credit Facility shall be deposited directly into the Debt Service Fund and such deposit shall constitute the application of amounts in the Debt Service Reserve Fund.

(e) In the event of the refunding of any Bonds, the Trustee shall, upon the written direction of the Municipality, withdraw from the Account of the Debt Service Reserve Fund related to the Bonds to be refunded all or any portion of amounts accumulated therein with respect to the Bonds to be refunded and deposit such amounts as provided in such written direction provided that such withdrawal shall not be made unless (i) immediately thereafter the Bonds being refunded shall be deemed to have been paid pursuant to Section 1201, and (ii), after giving effect to any amounts being simultaneously deposited therein the amount remaining in each Account after such withdrawal shall not be less than the applicable Debt Service Reserve Fund Requirement.

Subordinated Indebtedness Fund (Section 510)

(a) Subject to (b) below, amounts on deposit in the Subordinated Indebtedness Fund shall be applied by the Trustee solely to the maintenance of reserves for, or the payment of, Subordinated Indebtedness, or as otherwise provided by the resolution of the Municipality authorizing each issue of Subordinated Indebtedness.

(b) If at any time the amounts in any Debt Service Account, any debt service fund for Parity Indebtedness (the deficiency in which is identified in writing to the Trustee by the Municipality) or in any Account

in the Debt Service Reserve Fund or any debt service reserve fund for Parity Indebtedness (the deficiency in which is identified in writing to the Trustee by the Municipality) shall be less than the current requirements thereof (after any transfers thereto made pursuant to Section 511 of the Indenture), the Trustee shall withdraw from the Subordinated Indebtedness Fund and deposit in such Debt Service Account, debt service fund for Parity Indebtedness, Account of the Debt Service Reserve Fund or debt service reserve fund for Parity Indebtedness, as the case may be, the amount necessary (or all the moneys in said Fund on a pro rata basis, if less than the amount necessary) to make up such deficiency.

Surplus Fund (Section 511)

The Trustee shall, on each Bond Payment Date, apply moneys credited to the Surplus Fund in the following amounts: (i) on a pro rata basis, to the Debt Service Fund the amount, if any, necessary (or all the moneys in the Surplus Fund if less than the amount necessary) to make up any deficiency in the amount required to be on deposit in such Fund and to any debt service fund for Parity Indebtedness identified in writing to the Trustee by the Municipality the amount, if any, necessary (or all the moneys in the Surplus Fund if less than the amount necessary) to make up any deficiency in the amount required to be on deposit in such fund, as identified in writing to the Trustee by the Municipality, (ii) to the Debt Service Reserve Fund the amount, if any, necessary (or all the moneys in the Surplus Fund if less than the amount necessary) to make up any deficiency in the amount required to be on deposit in any Account in such Fund and (iii) on a pro rata basis, to any debt service reserve funds for Parity Indebtedness identified in writing to the Trustee by the Municipality the amount, if any, necessary (or all the moneys in the Surplus Fund if less than the amount necessary) to make up any deficiency in the amount required to be on deposit in such funds, as identified in writing to the Trustee by the Municipality. Such transfer shall be made notwithstanding any other provisions of the Indenture requiring deposits in such Funds. Moneys remaining on deposit in the Surplus Fund after the transfers set forth in Section 511 of the Indenture may also be transferred by the Trustee to the Municipality or the Authority, at the direction of the Municipality or the Authority, to pay Operating Expenses or for any other lawful purpose related to the Authority or the Sewerage System, including but not limited to the funding of a capital fund from which the Municipality or the Authority may pay for capital improvements to the Sewerage System, Rebate Amounts pursuant to any Tax Regulatory Agreement or payment to the Municipality to reimburse the Municipality for expenses relating to the Authority; following any such transfer, the moneys transferred shall not be considered pledged moneys hereunder.

Subordinated Indebtedness (Section 512)

The Municipality and/or the Authority may, at any time, or from time to time, issue Subordinated Indebtedness payable out of, and which may be secured by a pledge of and lien on such amounts in the Subordinated Indebtedness Fund as may from time to time be available for the purpose of payment thereof as provided in Section 510; provided, however, that (i) such Subordinated Indebtedness shall be issued only for purposes consistent with the operation and maintenance of the Sewerage System and the proceeds of such Subordinated Indebtedness shall be applied only for such purpose or purposes, and (ii) any pledge of or lien on amounts held by the Trustee shall be, and shall be expressed to be, subordinate in all respects to the pledge created by the Indenture as security for the Bonds and Parity Indebtedness. A listing of Subordinated Indebtedness outstanding as of the date of the Indenture is set forth on Schedule D of the Indenture.

Depositories (Section 513)

(a) All moneys or securities held by the Trustee under the provisions of the Indenture (other than moneys or securities on deposit in the Rebate Fund and the Operating Fund) shall constitute trust funds and the Trustee may, and shall, if directed in writing by an Authorized Representative of the Municipality, deposit such moneys or securities with one or more Depositaries in trust for the Trustee. All moneys or securities deposited under the provisions of the Indenture with the Trustee or any Depositary shall be held in trust and applied only in accordance with the provisions of the Indenture, and each of such Funds established by the Indenture shall be a trust fund for the purposes thereof. The Municipality and the Trustee shall instruct each Depositary that any moneys or securities credited to a Fund or an Account (other than moneys or securities on deposit in the Rebate Fund and the Operating Fund) hereunder which are deposited with such Depositary shall be identified to be part of such Fund or Account and subject to the pledge in favor of the Trustee created under the Indenture. Prior to the first deposit of any moneys or securities with each Depositary, the Municipality and the Trustee shall obtain from such Depositary its agreement to serve as agent of the Trustee in holding such moneys or securities in trust in favor of the Trustee and the contract or other written instrument between the Municipality and such Depositary governing the

establishment and operation of such account shall provide that the moneys or securities from time to time deposited with such Depositary shall be held by such Depositary as such agent in trust in favor of the Trustee; provided that, except as otherwise expressly provided in the Indenture, the Municipality shall be permitted at any time to make withdrawals from and write checks or other drafts against any account held by the Municipality and established with such Depositary and apply the same for the purposes specified in the Indenture and, subject to Section 515 of the Indenture, the Municipality shall be permitted to invest amounts in any such account in Investment Securities.

(b) Each Depositary holding moneys or securities in trust for the Trustee shall be willing and able to accept the office on reasonable and customary terms and authorized by law to act in accordance with the provisions of the Indenture.

(c) (Intentionally left blank.)

(d) Moneys and securities credited to any Fund or Account may be commingled with moneys and securities credited to other Funds or Accounts for the purposes of establishing checking or other bank accounts for purposes of investing funds or otherwise, provided, however, the Trustee, the Municipality and the Authority shall at all times maintain or cause to be maintained accurate books and records reflecting the amounts credited to the respective Funds and Accounts held by them. All withdrawals from any commingled moneys or securities shall be charged against the proper Fund or Account and no moneys shall be withdrawn from commingled moneys if there is not on credit to the Fund or Account to be charged sufficient funds to cover such withdrawal.

Deposits (Section 514)

(a) All Revenues and other moneys held by any Depositary under the Indenture may be invested in demand deposits or time deposits, if and as directed by the Municipality, provided that such deposits shall permit the moneys so held to be available for use at the time when needed. All such moneys deposited with a Fiduciary, acting as a Depositary, may be invested by the commercial banking department of any Fiduciary which shall honor checks and drafts on such deposits with the same force and effect as if it were not such Fiduciary. All moneys held by any Fiduciary, as such, may be invested by such Fiduciary by its banking department in deposits demand or, if and to the extent directed by the Municipality and acceptable to such Fiduciary, in time deposits, provided that such moneys on deposit be available for use at the time when needed. Such Fiduciary shall allow and credit on such moneys such interest, if any, as it customarily allows upon similar funds of similar size and under similar condition or as required by law.

(b) All moneys deposited with the Trustee and each Depositary shall be credited to the particular Fund or Account to which such moneys belong.

Investment of Certain Funds (Section 515)

(a) Moneys held in the Funds and Accounts established hereunder shall be invested and reinvested by the Trustee or the Authorized Representative of the Municipality as applicable, to the fullest extent practicable in Investment Securities which mature not later than at such times as shall be necessary to provide moneys when needed for payments to be made from such Funds and Accounts. The Trustee shall make all such investments of moneys held by it in accordance with written instructions from any Authorized Representative of the Municipality. In making any investment in any Investment Securities with moneys in any Fund or Account established under the Indenture, the Controller may, and may instruct the Trustee to, combine such moneys with moneys in any other Fund or Account, but solely for purposes of making such investment in such Investment Securities.

(b) Interest (net of that which represents a return of accrued interest paid in connection with the purchase of any investment) and other investment earnings (but not profits or losses) on any moneys or investments in the Funds and Accounts, other than the Construction Fund and the Debt Service Reserve Fund, shall be paid into the Revenue Fund as and when received. Interest (net of that which represents a return of accrued interest paid in connection with the purchase of any investment) and other investment earnings (but not profits or losses) on any moneys or investments in (i) the Debt Service Reserve Fund shall be paid into the Surplus Fund, as provided in Section 509(b), and (ii) the Construction Fund shall be held in the Construction Fund (unless otherwise specified in the applicable Supplemental Indenture).

(c) All Investment Securities acquired with moneys in any Fund or Account, including the Operating Fund, shall be held by the Trustee in pledge or by a Depositary as agent in pledge in favor of the Trustee in accordance with Section 514 of the Indenture.

(d) Nothing in the Indenture shall prevent any Investment Securities acquired as investments for Funds or Accounts held under the Indenture from being issued or held in book-entry form on the books of the United States Treasury.

Valuation and Sale of Investments (Section 516)

Obligations purchased as an investment of moneys in any Fund or Account created under the provisions of the Indenture shall be deemed at all times to be a part of such Fund or Account and 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 such Fund or Account.

In computing the amount in any Fund or Account created under the provisions of the Indenture for any purpose provided in the Indenture, obligations purchased as an investment of moneys therein shall be valued at the cost of such obligations or the market value thereof, whichever is lower. The accrued interest paid in connection with the purchase of any obligation shall be included in the value thereof until interest on such obligation is paid. Such computation shall be made not less than ten days prior to July 1 of each year and on the date of the refunding of any Bonds and at such other times as the Municipality shall determine or as may be required by the Indenture.

Except as otherwise provided in the Indenture, the Trustee shall sell at the best price obtainable, or present for redemption, any obligation so purchased as an investment whenever it shall be requested in writing by an Authorized Representative of the Municipality so to do. Whenever it shall be necessary in order to provide moneys to meet any payment or transfer from any Fund or Account held by the Trustee, the Trustee shall sell at the best price obtainable or present for redemption such obligation or obligations designated by an Authorized Representative of the Municipality necessary to provide sufficient moneys for such payment or transfer; provided, however, that if the Municipality fails to provide such designation promptly after request thereof by the Trustee, the Trustee may in its discretion select the obligation or obligations to be sold or presented for redemption. The Trustee shall not be liable or responsible for any loss resulting from the making of any such investment or the sale of any obligation in the manner provided above.

Flow of Funds Prior to Event of Default; Financial and Other Reporting (Section 517)

Notwithstanding the provisions of Sections 504 through and 507 of the Indenture, so long as no Event of Default hereunder shall have occurred and be continuing, the Municipality or Authority may, in lieu of the requirements of Sections 504 through 507, maintain control and possession of the Revenue Fund, the Operating Fund, the Rebate Fund and the Surplus Fund and make the transfers required hereunder. While the Municipality or Authority maintains control of the Revenue Fund, all Revenues shall be transferred to the Revenue Fund as soon as practicable and shall not be used for any purpose prior to their transfer to the Revenue Fund.

(a) While the Municipality or Authority maintains control of the Revenue Fund, the Operating Fund, the Rebate Fund and the Surplus Fund, the Authority shall deliver to the Trustee on or before the last day of each month, an accounting of all Revenues and accounts received by the Authority during the preceding month.

(b) The Authority shall provide on or before March 1st of each year financial statements audited by an independent accounting firm reasonably acceptable to the State of all of its Revenues, expenses and accounts for the preceding Fiscal Year which shall be prepared in accordance with the provisions of generally accepted accounting principles related to accounting, auditing and financial reporting.

(c) The Authority shall deliver to the Trustee on or before the last business day of each month a certificate of an Authorized Representative indicating that it has complied with each of the foregoing conditions for the preceding month.

The Trustee may, upon becoming aware of a failure of the Authority or Municipality to comply with any of the above-referenced conditions, which determination of noncompliance shall be in its sole, absolute discretion, give notice to the Authority and Municipality that each shall comply with the provisions of Section 517 of the Indenture

which compliance shall commence as soon as practicable but no later than thirty (30) days after receipt thereof by the Authority and the Municipality.

(d) (i) The Municipality and the Authority shall furnish, in a timely manner, to the Trustee, each NRMSIR approved by the SEC for purposes of the Rule, the Municipal Securities Rulemaking Board and the appropriate SID, if any, (A) notice of any of the events, if material, described in the Rule, and (B) notice of the failure of the Municipality, the Authority or any other "obligated person" to provide the annual financial information in the manner and as described in the next subsection.

(ii) The Municipality and the Authority shall furnish, and shall cause each "obligated person" as defined in the Rule to furnish to the Trustee, each NRMSIR approved by the SEC for purposes of the Rule and the appropriate SID, if any, on or before March 1st after the end of each Fiscal Year, annual financial information (including operating data) of the Municipality and the Authority, of the type included in the final Official Statement for Bonds subject to the Rule, including the financial statements referred to in subsection (b) for the preceding Fiscal Year and the information set forth in the Continuing Disclosure Agreements. The Municipality and the Authority shall take all actions and furnish any other information necessary to comply with the Rule and the Continuing Disclosure Agreements.

Payment of Bonds (Section 701)

The Municipality shall duly and punctually pay or cause to be paid, solely from the Trust Estate pledged hereunder for such payments, the Principal Installment or Redemption Price of every Bond and the interest thereon and the principal of and interest and redemption premium on any Parity Indebtedness, at the dates and places and in the manner stated in the Bonds and such Parity Indebtedness.

Power to Issue Bonds and Pledge Revenues (Section 704)

The Municipality is duly authorized under all applicable laws to authorize and issue the Bonds. The Municipality and the Authority is each duly authorized to execute and enter into the Indenture and to pledge the Revenues and assets purported to be pledged and assigned hereby in the manner and to the extent provided in the Indenture. Except to the extent permitted under the Indenture, the Revenues and assets so pledged and assigned are and will be free and clear of any pledge, lien, charge or encumbrance thereon or with respect thereto prior to, or of equal rank with, the pledge created hereby and all corporate or other action on the part of the Municipality and the Authority to that end has been and will be duly and validly taken. The Bonds are and will be the valid and legally enforceable obligations of the Municipality in accordance with their terms and the terms of the Indenture. The Municipality and the Authority shall at all times, to the extent permitted by law, defend, preserve and protect the pledge of the Revenues and other assets, including rights pledged in the Indenture and assigned under the Indenture and all the rights of the Bondholders under the Indenture against all claims and demands of all persons whomsoever.

Tax Covenants (Section 705)

(a) The Municipality and the Authority shall not permit at any time or times any of the proceeds of the Bonds or any other funds of the Municipality or the Authority to be used directly or indirectly to acquire any securities or obligations the acquisition of which would cause any Bond, the interest on which was intended on the date of issuance thereof to be excluded from gross income for federal income tax purposes, to be an "arbitrage bond" as defined in Section 148 of the Internal Revenue Code of 1986, as amended (in Section 705 of the Indenture called the "Code").

(b) The Municipality and the Authority shall not, except as permitted in a Supplemental Indenture with respect to a Series of Bonds authorized thereby, permit at any time or times any proceeds of any Series of Bonds or any other funds of the Municipality or the Authority to be used, directly or indirectly, in a manner which would result in the loss of the exclusion of interest on any Bond from gross income for federal income tax purposes, the interest on which was intended on the date of issuance of such Bond to be excluded from gross income for federal income purposes.

Accounts and Periodical Reports and Certificates (Section 706)

The Municipality and the Authority 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 under the Indenture and which, together with all other books and papers of the Authority, shall at all reasonable times be subject to the inspection of the Trustee, the State or the representative, duly authorized in writing, of the holder or holders of not less than 25% in principal amount of the Bonds then Outstanding.

Indebtedness and Liens (Section 707)

The Municipality shall not issue any bonds, notes or other evidences of indebtedness, other than the Bonds, Parity Bond Anticipation Notes, Parity Reimbursement Obligations and Parity Indebtedness (issued or incurred in accordance with Section 210 of the Indenture), secured by a pledge of or other lien or charge on the Revenues and shall not create or cause to be created any lien or charge on such Revenues or on any amounts held by any Fiduciary, under the Indenture; but Section 707 of the Indenture shall not prevent the Municipality or the Authority from issuing notes payable from the proceeds of Bonds or bonds or notes or other obligations for the corporate purposes of the Municipality or the Authority payable out of, or secured by a pledge of, Revenues to be derived on and after such date as the pledge of the Revenues provided in the Indenture shall be discharged and satisfied as provided in Section 1201 of the Indenture, or from issuing Subordinated Indebtedness for the corporate purposes of the Municipality or the Authority which are payable out of or secured by the pledge of amounts available therefor in the Subordinate Indebtedness Fund and which recite on their face that such pledge of said amounts is and shall be in all respects subordinate to the provisions of the Indenture and the lien and pledge created by the Indenture.

Project Loan and Grant Agreement (Section 709)

Each and every covenant set forth in any Project Loan and Grant Agreement is incorporated in the Indenture by reference, shall have the same force and effect as if set forth fully in the Indenture and in the event of a conflict between the covenants contained in the Indenture and in any Project Loan and Grant Agreement, the covenants contained in the Project Loan and Grant Agreement shall control.

Municipal Payments (Section 711)

The Authority shall not make payments to the Municipality from Revenues or any portion of the Trust Estate except: (i) with respect to amounts due on the Municipality's Bonds pursuant to the terms and conditions of the Indenture, (ii) with respect to borrowings between them which constitute Subordinated Indebtedness hereunder, (iii) to reimburse the Municipality for the actual cost of services provided by the Municipality to the Authority with respect to operation of the Sewerage System, (iv) payments constituting Operating Expenses and (v) from the Surplus Fund in accordance with Section 511 of the Indenture.

Authority Budget (Section 712)

(a) The Authority shall, on or before June 30, in each Fiscal Year, adopt and file with the Trustee, a copy of the Sewer Budget, duly certified by an Authorized Representative of the Authority, showing the estimated Operating Expenses (including Aggregate Debt Service), capital requirements and Revenues for the ensuing Fiscal Year, together with any other information required to be set forth therein by the Indenture. Such Sewer Budget may set forth such additional information as the Authority may determine.

(b) If for any reason the Authority shall not have adopted the Sewer Budget before such June 30, the Sewer Budget for the then current Fiscal Year shall be deemed to be the Sewer Budget for the ensuing Fiscal Year until a new Sewer Budget is adopted.

(c) The Authority may at any time adopt an amended Sewer Budget for the then current or ensuing Fiscal Year, but no such amended Sewer Budget shall supersede any prior Sewer Budget until the Authority shall have filed with the Trustee and the Municipality a copy of such amended Sewer Budget.

Rate Covenant (Section 713)

(a) (i) The Authority covenants that it will fix, charge and collect rates, charges, rents, fees and assessments, including but not limited to use and connection charges and benefit assessments, which shall

produce Revenues which, together with amounts capitalized from proceeds of Bonds or otherwise made available and reserved and not already taken into account hereunder by reduction of the obligations which are to be paid from Revenues and the amount to be withdrawn from the Surplus Fund other than to pay Capital Costs for such Fiscal Year, shall be sufficient in each Fiscal Year to provide for:

(A) a Debt Service Coverage Ratio at least equal to the Debt Service Coverage Ratio Requirement;

(B) any amount necessary to restore any Account within the Debt Service Reserve Fund to its required deposit level; and

(C) any amount necessary to restore any debt service reserve fund for Parity Indebtedness to its required deposit level; and

(ii) The Authority covenants that each Fiscal Year, it will budget rates, charges, rents, fees and assessments, including but not limited to use and connection charges and benefit assessments, which shall produce Revenues which, together with amounts capitalized from proceeds of Bonds or otherwise made available and reserved and not already taken into account under the Indenture by reduction of the obligations which are to be paid from Revenues and the amount to be withdrawn from the Surplus Fund other than to pay Capital Costs for such Fiscal Year, to provide for an amount equal to 100% of aggregate debt service for such Fiscal Year with respect to Subordinated Indebtedness, which aggregate debt service shall be computed on the same basis and with the same assumptions as "Aggregate Debt Service" for Bonds under the Indenture; provided however, that failure to collect such Revenues and other amounts under this clause (ii) shall under no circumstances be treated as an Event of Default.

(b) The Authority shall provide to the Trustee and any Credit Facility Provider for a Series of Bonds, before March 1st, a Certificate, signed by an Authorized Representative, setting forth: (i) the Revenues, (ii) the amount on hand in the Surplus Fund, (iii) the Operating Expenses, (iv) the Aggregate Debt Service of Bonds and Parity Indebtedness, and (v) the Debt Service Coverage Ratio, for the preceding Fiscal Year (the "Debt Service Coverage Ratio Certificate"). In the event a Debt Service Coverage Ratio Certificate indicates that the Debt Service Coverage Ratio Requirement is not met, the Authority shall retain an Independent Consultant within ninety (90) days of the delivery of the Debt Service Coverage Ratio Certificate. The Independent Consultant shall prepare a written report, a copy of which shall be delivered to the Authority, the Municipality, the Credit Facility Provider and the Trustee within sixty (60) days of the selection of the Independent Consultant, making recommendations with respect to rates, Operating Expenses and management of the Sewerage System and any other matters so as to generate additional Revenues and/or reduce Operating Expenses in order to meet the Debt Service Coverage Ratio Requirement. The Municipality and the Authority shall adopt such Independent Consultant's report and act promptly and diligently to fully implement all such recommendations except to the extent limited by law or existing contracts. For any recommendations not adopted, the Municipality shall file a written statement with the Credit Facility Provider and the Trustee setting forth the reasons why the Municipality or the Authority have failed to implement such recommendations. Copies of resolutions of the Municipality and the Authority adopting such recommendations shall be filed with the Authority, the Municipality, the Credit Facility Provider and the Trustee immediately after adoption thereof. Subject to subsection (f) below, if the Municipality and the Authority take the actions prescribed in this subsection (b), failure to meet the Debt Service Coverage Ratio Requirement shall not be treated as an Event of Default.

(c) Subject to subsection (f) below, if the Debt Service Coverage Ratio Requirement is not met by the close of the second Fiscal Year after receipt of the Independent Consultant's report specified in subsection (b) above, such event shall be considered an Event of Default under Section 1001 of the Indenture unless the Municipality engages new management for the Authority in accordance with the provisions of subsection (d) below or complies with the requirements of subsection (e) below.

(d) In the event that the Debt Service Coverage Ratio Requirement is not met by the close of the second Fiscal Year after receipt of the report set forth in subsection (b) above, the Municipality shall promptly engage an Independent Consultant who shall, within ten (10) days after being engaged by the Municipality, submit to the Municipality, the Trustee and the Credit Facility Provider a list of three or more persons, each of which shall be (1) experienced in the management of sewerage facilities of a type and size similar to the Sewerage System, (2) approved by the Credit Facility Provider of not less than a majority in aggregate principal amount of Bonds

Outstanding or the holders of not less than a majority in aggregate principal amount of Bonds Outstanding with the consent of the Credit Facility Provider thereof, if any, and (3) not an Affiliate of the Municipality, the Authority, any elected official of the Municipality or any member of the Authority. The Municipality shall engage a person on such list as Executive Director of the Authority as soon as practicable but not later than thirty (30) days after the Credit Facility Provider or such holders approve such list of persons. In the event that a new Executive Director is engaged pursuant to this paragraph, the provisions of this paragraph shall not be applied to require the further appointment of a new Executive Director and an Event of Default shall not be declared until the new Executive Director has managed the Sewerage System for at least two (2) full Fiscal Years.

(e) Notwithstanding the provisions of subsection (c) above, the Municipality shall not be required to engage a new Executive Director for the Authority and an Event of Default shall not be declared if the Trustee and the Credit Facility Provider receive: (1) a written report of an Independent Consultant stating that, in the judgment of such Independent Consultant, the present Executive Director of the Authority should be retained; and (2) certified copies of resolutions adopted by the Municipality and the Authority's Board stating that the Executive Director's performance of his/her duties is satisfactory and setting forth the reasons supporting retention of the present Executive Director notwithstanding the failure to meet the Debt Service Coverage Ratio Requirement.

(f) Notwithstanding any provision contained in this Section 7.13 to the contrary, if the Debt Service Coverage Ratio Certificate indicates a Debt Service Coverage Ratio of less than 100%, such event shall be treated as an Event of Default under Section 1001 of the Indenture."

Agreement of Municipality and the Authority (Section 714)

The Municipality and the Authority agree that they will not in any way impair the rights and remedies of Bondholders, until the Bonds, together with the interest thereon, and all costs and expenses in connection with any action or proceeding by or on behalf of such holders, are fully met and discharged.

Maintenance of Sewerage System (Section 715)

The Authority covenants that it will establish and enforce reasonable rules and regulations governing the use of the Sewerage System and the operation thereof, that all compensation, salaries, fees and wages paid by it in connection with the maintenance, repair and operation of said Sewerage System will be reasonable, that no more persons will be employed by it than are necessary, that it will operate said Sewerage System or cause the Sewerage System to be operated in an efficient and economical manner, that it will at all times maintain said Sewerage System or cause said Sewerage System to be maintained in good repair and in sound operating condition and will make or cause to be made all necessary repairs, renewals and replacements, and that it will comply and cause compliance with all valid acts, rules, regulations, orders and directions of any legislative, executive, administrative or judicial body applicable to said Sewerage System. Nothing in this Agreement shall prevent the Municipality or the Authority from transferring, to the extent permitted by law, the day-to-day operations of the Sewerage System to another entity or any program that would be carried out by the Municipality or the Authority; provided that the Authority shall cause such other entity to undertake such operations or programs so that the Authority does not violate the terms of the Indenture and so that the Authority is not rendered unable to observe their covenants under the Indenture.

Payment of Lawful Charges (Section 716)

The Authority further covenants that, from the Revenues, they will pay all municipal or governmental charges lawfully levied or assessed upon the Sewerage System or any part thereof or upon any Revenues when the same shall become due, that it will duly observe and comply with all valid requirements of any municipal or governmental authority relative to the Sewerage System, and that, from the Revenues, it will pay or cause to be discharged, or will make adequate provisions to satisfy and discharge, within sixty (60) days after the same shall accrue, all lawful claims and demands for labor, materials, supplies or other objects which, if unpaid might by law become a lien upon the Sewerage System or any part thereof or the Revenues; provided, however, that nothing contained in Section 716 of the Indenture shall require the Authority to pay or cause to be discharged, or make provision for, any such lien or charge so long as the validity thereof shall be contested in good faith and by appropriate legal proceedings.

Insurance (Section 717)

The Authority covenants that it will maintain the Sewerage System fully insured with one or more responsible insurance companies authorized and qualified under the Connecticut General Statutes to assume the risk thereof, and/or through self insurance, all as shall be approved by an independent insurance consultant acceptable to the Trustee and the State (which approval shall be delivered upon the issuance of each Series of Bonds to be owned by the State and thereafter upon the State's or the Trustee's written request (which request shall be made not more than once in any two year period), such insurance to cover such properties belonging to the Sewerage System as are customarily insured, and against loss or damage from such causes as are customarily insured against by other public instrumentalities engaged in similar activities.

All insurance policies shall be to the extent practicable for the benefit of the Municipality and the Authority, the Trustee (on behalf of the State and all other Bond Holders) and other interested parties, as their interests may appear, shall be made payable to the Municipality and the Authority and shall be deposited with the Municipality or Authority. The proceeds of any and all such insurance shall be deposited by the Municipality and the Authority in the name of the Municipality and the Authority with a Depositary.

The Municipality and Authority covenant that, immediately after any loss or damage to any properties of the Sewerage System resulting from any cause, whether or not such loss or damage shall be covered by insurance, the Authority will cause its engineers to prepare plans and specifications for repairing, replacing or reconstructing (either in accordance with the original or a different design) the damaged or destroyed property, and that it will forthwith commence or cause to be commenced and diligently prosecute or cause to be diligently prosecuted the repair, replacement or reconstruction of the damaged or destroyed property unless it shall determine that the repair, replacement or reconstruction of such property is not essential to the efficient operation of the Sewerage System.

Except as provided in the foregoing paragraph, the proceeds of all insurance referred to in Section 717 of the Indenture shall be available for, and shall to the extent necessary be applied to, the repair, replacement or reconstruction of the damaged or destroyed property, and shall be paid out in the same manner provided in the Indenture for payments from the Construction Fund. If such proceeds are more than sufficient for such purpose, the balance remaining shall be deposited to the credit of the Debt Service Fund, the Debt Service Reserve Fund or the Operating Fund as directed by the Municipality. If such proceeds shall be insufficient for such purposes, the deficiency may be supplied out of moneys in the Surplus Fund.

Supplemental Indentures Effective Upon Filing with the Trustee (Section 801)

For any one or more of the following purposes and at any time or from time to time, a Supplemental Indenture may be authorized by the Municipality and the Authority, (and approved by the Mayor and Director of Administration in the case of Supplemental Indentures described in clause (5) of Section 801 of the Indenture) which, upon the filing with the Trustee of a copy thereof certified by an Authorized Representative, and without the consent of the Trustee or any Bondholder shall be fully effective in accordance with its terms:

(1) to close the Indenture against, or provide limitations and restrictions in addition to the limitations and restrictions contained in the Indenture on, the authentication and delivery of Bonds or the issuance of other evidences of indebtedness;

(2) to add to the covenants and agreements of the Municipality and the Authority in the Indenture other covenants and agreements to be observed by the Municipality and/or the Authority which are not contrary to or inconsistent with the Indenture as theretofore in effect;

(3) to add to the limitations and restrictions in the Indenture other limitations and restrictions to be observed by the Municipality and/or the Authority which are not contrary to or inconsistent with the Indenture as theretofore in effect;

(4) to surrender any right, power or privilege reserved to or conferred upon the Municipality and/or the Authority by the terms of the Indenture, but only if the surrender of such right, power or privilege is not contrary to or inconsistent with the covenants and agreements of the Municipality and the Authority contained in the Indenture;

(5) to authorize Bonds of a Series and, in connection therewith specify and determine the matters and things referred to in Section 206, and also any other matters and things relative to such Bonds

which are not contrary to or inconsistent with the Indenture as theretofore in effect, or to amend, modify or rescind any such authorization, specification or determination at any time prior to the first authentication and delivery of such Bonds including, without limiting the generality of the foregoing, provisions amending or modifying the Indenture to provide for the issuance of Bonds to the general public or by private placement, in book-entry form or in coupon form payable to bearer, to issue Subordinated Indebtedness, Parity Indebtedness and to implement provisions relating to Parity Reimbursement Obligations;

(6) to confirm, as further assurance, any pledge under, and the subjection to any lien or pledge created or to be created by, the Indenture, of the Revenues or of any other moneys, securities or funds;

(7) to modify any of the provisions of the Indenture to permit compliance with any amendment to the Code if, in the opinion of Bond Counsel failure to so modify the Indenture would adversely affect the ability of the Municipality or the Authority to issue Bonds the interest on which is excluded from gross income for federal income tax purposes; or

(8) to modify any of the provisions of the Indenture in any respect whatsoever, provided that (i) such modification shall be, and be expressed to be, effective only after all Bonds of any Series Outstanding at the date of the adoption of such Supplemental Indenture shall cease to be Outstanding, and (ii) such Supplemental Indenture 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 Indenture and of Bonds issued in exchange therefor or in place thereof.

Supplemental Indentures Effective Upon Consent of Trustee (Section 802)

(a) For any one or more of the following purposes and at any time or from time to time, a Supplemental Indenture may be adopted without the consent of Bondholders, which, upon (i) the filing with the Trustee of a copy thereof certified by an Authorized Representative of the Municipality, and (ii) the filing with the Municipality of an instrument in writing made by the Trustee consenting thereto shall be fully effective in accordance with its terms:

(1) to cure any ambiguity, supply any omission, or cure or correct any defect or inconsistent provision in the Indenture; or

(2) to insert such provisions clarifying matters or questions arising under the Indenture as are necessary or desirable and are not contrary to or inconsistent with the Indenture as theretofore in effect; or

(3) to provide for additional duties of the Trustee.

(b) Any such Supplemental Indenture may also contain one or more of the purposes specified in Section 801, and in that event, the consent of the Trustee required by Section 802 of the Indenture shall be applicable only with respect to those provisions of such Supplemental Indenture as shall contain one or more of the purposes set forth in subsection (a) of Section 802 of the Indenture.

Supplemental Indentures Effective With Consent of Bondholders (Section 803)

At any time or from time to time, a Supplemental Indenture may be adopted subject to consent by Bondholders in accordance with and subject to the provisions of Article IX of the Indenture, which Supplemental Indenture, upon the filing with the Trustee of a copy thereof certified by an Authorized Representative of the Municipality and the Authority and upon compliance with the provisions of Article IX of the Indenture, shall become fully effective in accordance with its terms as provided in said Article.

General Provisions (Section 804)

(a) The Indenture shall not be modified or amended in any respect except as provided in and in accordance with and subject to the provisions of Article VIII and Article IX of the Indenture. Nothing in Article VIII or Article IX of the Indenture contained shall affect or limit the right or obligation of the Municipality and the

Authority to adopt, make, do, execute, acknowledge or deliver any Indenture, act or other instrument pursuant to the provisions of Section 703 of the Indenture or the right or obligation of the Municipality or the Authority to execute and deliver to any Fiduciary any instrument which elsewhere in the Indenture it is provided shall be delivered to said Fiduciary.

(b) Any Supplemental Indenture referred to and permitted or authorized by Sections 801 and 802 may be adopted by the Municipality and the Authority without the consent of any of the Bondholders, but shall become effective only on the conditions, to the extent and at the time provided in said Sections, respectively. The copy of every Supplemental Indenture filed with the Trustee shall be accompanied by a Bond Counsel's Opinion stating that such Supplemental Indenture has been duly and lawfully adopted in accordance with the provisions of the Indenture, is authorized or permitted by the Indenture, and is valid and binding upon the Municipality and the Authority.

(c) The Trustee is hereby authorized to accept the delivery of a certified copy of any Supplemental Indenture referred to and permitted or authorized by Section 801, 802 or 803 and to make all further agreements and stipulations which may be therein contained, and the Trustee, in taking such action, shall be fully protected in relying on an opinion of counsel (which may be a Bond Counsel's Opinion) that such Supplemental Indenture is authorized or permitted by the provisions of the Indenture.

(d) No Supplemental Indenture shall change or modify any of the rights or obligations of any Fiduciary without its written consent thereto.

Powers of Amendment (Section 902)

Any modification or amendment of the Indenture or of the rights and obligations of the Municipality or the Authority and of the holders of the Bonds hereunder, in any particular, may be made by a Supplemental Indenture, with the written consent given as provided in Section 903, (i) of the holders of at least a majority in principal amount of the Bonds Outstanding at the time such consent is given and (ii) in case less than all of the several Series of Bonds then Outstanding are affected by the modification or amendment, of the holders of at least a majority in principal amount of the Bonds of such Series so affected and Outstanding at the time such consent is given; except 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 Section 902 of the Indenture. No such modification or amendment shall permit a change in the terms of redemption 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 thereon 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 consent thereto. For the purposes of Section 902 of the Indenture, a Series shall be deemed to be affected by a modification or amendment of the Indenture if the same adversely affects or diminishes the rights of the holders of Bonds of such Series. The Trustee may in its 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 Indenture and any such determination shall be binding and conclusive on the Municipality and all holders of Bonds. For the purposes of Section 902 of the Indenture, the holders of the Bonds may include the initial holders hereof, regardless of whether such Bonds are being held for immediate resale.

Consent of Bondholders (Section 903)

(a) The Municipality and the Authority may at any time adopt a Supplemental Indenture making a modification or amendment permitted by the provisions of Section 902, to take effect when and as provided in Section 903 of the Indenture. A copy of such Supplemental Indenture (or brief summary thereof or reference thereto in form approved by the Trustee), together with a request to Bondholders for their consent thereto in form satisfactory to the Trustee, shall be mailed by the Municipality and the Authority to Bondholders and shall be published in the Authorized Newspapers at least once a week for two successive weeks (but failure to mail such copy and request shall not affect the validity of the Supplemental Indenture when consented to as in Section 903 of the Indenture). Such Supplemental Indenture shall not be effective unless and until (i) there shall have been filed with the Trustee (a) the written consents of holders of the percentages of Outstanding Bonds specified in Section 902 and (b) a Bond Counsel's Opinion stating that such Supplemental Indenture has been duly and lawfully adopted

and filed in accordance with the provisions of the Indenture, is authorized or permitted hereby and is valid and binding upon the Municipality and the Authority, and (ii) a notice shall have been published as provided in Section 903 of the Indenture. The Municipality and the Authority may fix a record date for purposes of determining Bondholders entitled to consent to a proposed Supplemental Indenture.

(b) Any such consent shall be binding upon the holder of the Bonds giving such consent and upon any subsequent holder of such Bond or any Bonds issued in exchange therefor (whether or not such subsequent holder thereof has notice thereof).

(c) At any time after the holders of the required percentages of Bonds shall have filed their consents to the Supplemental Indenture, the Trustee shall mail to the Municipality and the Authority a written statement that holders of such required percentages of Bonds have filed such consents. Such written statements shall be conclusive that such consents have been so filed. At any time thereafter notice, stating in substance that the Supplemental Indenture (which may be referred to as a Supplemental Indenture adopted by the Municipality on a stated date, a copy of which is on file with the Trustee) has been consented to by the holders of the required percentages of Bonds and will be effective as provided in Article IX of the Indenture, shall be given to Bondholders by the Municipality by mailing such notice to Bondholders and, if at the time any of such Bonds are in coupon form payable to bearer, by publishing the same in the Authorized Newspapers at least once not more than ninety days after the holders of the required percentages of Bonds shall have filed their consents to the Supplemental Indenture and the written statement of the Trustee provided for in the Indenture is filed. The Municipality and the Authority shall file with the Trustee proof of the giving of such notice. A record, consisting of the papers required or permitted by Section 903 of the Indenture to be filed with the Trustee, shall be proof of the matters therein stated. Such Supplemental Indenture making such amendment or modification shall be deemed conclusively binding upon the Municipality and the Authority, the Fiduciaries and the holders of all Bonds upon the filing with the Trustee of the proof of the giving of such last mentioned notice.

Modifications by Unanimous Consent (Section 904)

The terms and provisions of the Indenture and the rights and obligations of the Municipality and the Authority and of the holders of the Bonds may be modified or amended in any respect upon the adopting and filing of a Supplemental Indenture and the consent of the holders of all the Bonds then Outstanding, such consent to be given as provided in Section 903 except that no notice to Bondholders either by mailing or publication shall be required; but no such modification or amendment shall change or modify any of the rights or obligations of any Fiduciary without the filing with the Trustee of the written consent thereto of such Fiduciary in addition to the consent of the Bondholders.

Exclusion of Bonds (Section 905)

Bonds owned or held by or for the account of the Municipality or the Authority shall not be deemed Outstanding for the purpose of consent or other action or any calculation of Outstanding Bonds provided for in Article IX of the Indenture, or Article X of the Indenture and the Municipality shall not be entitled with respect to such Bonds to give any consent or take any other action provided for in this Article or Article X. At the time of any consent or other action taken under Article IX or Article X of the Indenture, the Municipality and the Authority shall furnish the Trustee a Certificate of an Authorized Representative, upon which the Trustee may rely, describing all Bonds so to be excluded.

Events of Default (Section 1001)

If one or more of the following events (in the Indenture called "Events of Default") shall occur:

(1) a default in the due and punctual payment of a Principal Installment or the Redemption Price of any Bond when and as the same shall become due and payable, whether at maturity or upon call for redemption, or otherwise; or

(2) a default in the due and punctual payment of any installment of interest on any Bond, when and as such interest installment shall become due and payable; or

(3) an event of default of the Municipality or Authority shall occur on any Parity Indebtedness or under any documents relating to such Parity Indebtedness; or

(4) default by the Municipality or the Authority in the performance or observance of any other of the covenants, agreements or conditions on its part or on the part of the Municipality or the Authority in the Indenture, any Supplemental Indenture, the Bonds or a Project Loan and Grant Agreement, and such default shall continue for a period of thirty days after the giving of written notice thereof stating that such notice is a "Notice of Default" to the Municipality and the Authority by the Trustee or to the Municipality, the Authority and to the Trustee by the State or the holders of not less than a majority in principal amount of the Bonds Outstanding; or

(5) if the Municipality or the Authority shall (i) apply for or consent to the appointment of a receiver, trustee or liquidator of all or a substantial part of the Sewerage System; (ii) be unable, or admit in writing its inability to pay debts as they mature; (iii) file a petition, arrangement, reorganization, or the like under any insolvency or bankruptcy law, or the adjudication as a bankrupt or the making of an assignment for the satisfaction, settlement or delay of debt or the appointment of a receiver of all or any part of its properties; or (iv) take any action for the purpose of effecting any of the foregoing,

then, upon the happening and continuance of any Event of Default, the Trustee may, and upon the written request of the holders of not less than a majority in principal amount of the Bonds Outstanding the Trustee shall, in any such case, unless the principal of all the Bonds then Outstanding shall already have become due and payable, declare the principal of all the Bonds then Outstanding, and the interest accrued thereon, to be due and payable immediately, and upon any such declaration the same shall become and be immediately due and payable, anything in the Indenture or in any of the Bonds contained to the contrary notwithstanding. The right of the Trustee to make any such declaration as aforesaid, however, is subject to the condition that if, at any time after such declaration, but before the Bonds shall have matured by their terms, all overdue installments of principal and interest upon the Bonds, together with the reasonable and proper charges, expenses and liabilities of the Trustee, and all other sums then payable by the Municipality and the Authority under the Indenture (except the interest accrued since the next preceding interest date on, the Bonds due and payable solely by virtue of such declaration) shall either be paid by or for the account of the Municipality or provision satisfactory to the Trustee shall be made for such payment, and all defaults under the Bonds or under the Indenture (other than the payment of principal and interest due and payable solely by reason of such declaration) shall be made good or be secured to the satisfaction of the Trustee or provision deemed by the Trustee to be adequate shall be made therefor, then and in every such case the holders of a majority in principal amount of the Bonds Outstanding, by written notice to the Municipality, the Authority and to the Trustee, may rescind such declaration and annul such default in its entirety, or, if the Trustee shall have acted without a direction from the holders of the Bonds as aforesaid at the time of such request, and if there shall not have been theretofore delivered to the Trustee written direction to the contrary by the holders of a majority in principal amount of the Bonds then Outstanding, then any such declaration shall ipso facto be deemed to be rescinded and any such default and its consequences shall ipso facto be deemed to be annulled, but no such rescission and annulment shall extend to or affect any subsequent default or impair or exhaust any right or power consequent thereon.

Accounting and Examination of Records After Default (Section 1002)

(a) The Municipality and the Authority covenant that if an Event of Default shall have happened and shall not have been remedied, the books of record and account of the Municipality and the Authority shall at all times be subject to the inspection and use of the Trustee and of its agents and attorneys.

(b) The Municipality and the Authority covenant that if an Event of Default shall happen and shall not have been remedied, the Municipality and the Authority, upon demand of the Trustee, will account, as if they were the trustee of an express trust, for all Revenues and other moneys, securities and funds pledged or held under the Indenture for such period as shall be stated in such demand.

Application of Revenues and Other Moneys After Default (Section 1003)

(a) The Municipality and the Authority covenant that if an Event of Default shall occur and shall not have been remedied, the Municipality and the Authority, upon demand of the Trustee, shall pay over or cause to be paid over to the Trustee (i) forthwith, any moneys, securities and funds then held by the Municipality or the Authority or a Depositary in any Fund or Account established under the Indenture (other than the Rebate Fund and

the Operating Fund), and (ii) as promptly as practicable after receipt thereof, the Revenues. Amounts on deposit in the Special Accounts of the Debt Service Reserve Fund shall be applied solely to the Series of Bonds for which such Special Account was established and such Bonds shall not be entitled to amounts on deposit in the Common Fund of the Debt Service Reserve Fund.

(b) During the continuance of an Event of Default, unless otherwise directed (with respect to order) by the owners of a majority in principal amount of the Bonds at the time Outstanding, the Trustee shall apply such Revenues and the income therefrom as follows and in the following order:

(1) to the payment of the reasonable and proper charges and expenses of the Trustee and any trustee for Parity Indebtedness;

(2) to the payment of the interest and principal or Redemption Price then due on the Bonds and Parity Indebtedness as follows:

(i) unless the principal of all of the Bonds shall be due and payable,

First: To the payment to the persons entitled thereto of all installments of interest then due in the order of the maturity of such installments, and, if the amount available shall not be sufficient to pay in full any installment or installments maturing on the same date, then to the payment thereof ratably, according to the amounts due thereon, to the persons entitled thereto, without any discrimination or preference; and

Second: To the payment to the persons entitled thereto of the unpaid principal or Redemption Price of any Bonds and Parity Indebtedness which shall have become due, whether at maturity or by call for redemption, in the order of their due dates, and, if the amount available shall not be sufficient to pay in full all the Bonds and Parity Indebtedness due on any date, then to the payment thereof ratably, according to the amounts of principal or Redemption Price due on such date, to the persons entitled thereto, without any discrimination or preference.

(ii) If the principal of all of the Bonds and Parity Indebtedness shall be due and payable, to the payment of the principal and interest then due and unpaid upon the Bonds and Parity Indebtedness without preference or priority of principal over interest or of interest over principal, or of any installment of interest over any other installment of interest, or of any Bond or Parity Indebtedness over any other Bond or Parity Indebtedness, ratably, according to the amounts due respectively for principal and interest, to the persons entitled thereto, without any discrimination or preference.

(c) if and when all overdue installments of interest on all Bonds and Parity Indebtedness, together with the reasonable and proper charges and expenses of the Trustee and any trustee for Parity Indebtedness, and all other sums payable by the Municipality under the Indenture, including the principal and Redemption Price of and accrued unpaid interest on all Bonds and Parity Indebtedness which shall then be payable by declaration or otherwise, shall either be paid by or for the account of the Municipality, or provision satisfactory to the Trustee shall be made for such payment, and all defaults under the Indenture or the Bonds and Parity Indebtedness shall be made good or secured to the satisfaction of the Trustee or provision deemed by the Trustee to be adequate shall be made therefor, the Trustee shall pay over to the Municipality all such Revenues then remaining unexpended in the hands of the Trustee (except Revenues deposited or pledged, or required by the terms of the Indenture to be deposited or pledged, with the Trustee), and thereupon the Municipality and the Trustee shall be restored, respectively, to their former positions and rights under the Indenture, and all Revenues shall thereafter be applied as provided in Article V of the Indenture. No such payment over to the Municipality by the Trustee or resumption of the application of Revenues as provided in Article V of the Indenture shall extend to or affect any subsequent default under the Indenture or impair any right consequent thereon.

The Trustee shall be entitled to rely conclusively on information and certificates provided by the Municipality or the Authority or the trustee for or holders of Parity Indebtedness in making any payments required by Section 1003 of the Indenture.

Proceedings Brought by Trustee (Section 1004)

(a) If an Event of Default shall occur and shall not have been remedied, then and in every such case, the Trustee, by its agents and attorneys, if the Trustee shall deem it advisable, may proceed to protect and enforce its rights and the rights of the holders of the Bonds under the Indenture forthwith by a suit or suits in equity or at law, whether for the specific performance of any covenant contained in the Indenture, or in aid of the execution of any power granted in the Indenture, or for an accounting against the Municipality or the Authority as if it were the trustee of an express trust, or in the enforcement of any other legal or equitable right as the Trustee, being advised by counsel, shall deem most effectual to enforce any of its rights or to perform any of its duties under the Indenture.

(b) All rights of action under the Indenture may be enforced by the Trustee without the possession of any of the Bonds or the production thereof at the trial or other proceedings, and any such suit or proceedings instituted by the Trustee shall be brought in its name.

(c) The holders of a majority in principal amount of the Bonds at the time Outstanding, may direct by instrument in writing the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, provided that the Trustee shall have the right to decline to follow any such direction if the Trustee shall be advised by counsel that the action or proceeding so directed may not lawfully be taken, or if the Trustee in good faith shall determine that the action or proceeding so directed would subject the Trustee to personal liability or be unjustly prejudicial to the Bondholders not parties to such direction.

(d) Upon commencing a suit in equity or upon other commencement of judicial proceedings by the Trustee to enforce any right under the Indenture, the Trustee shall be entitled to exercise any and all rights and powers conferred in the Indenture and provided to be exercised by the Trustee upon the occurrence of an Event of Default; and, as a matter of right against the Municipality and the Authority, without notice or demand and without regard to the adequacy of the security for the Bonds, the Trustee shall, to the extent permitted by law, be entitled to the appointment of a receiver of the moneys, securities and funds then held by the Municipality or the Authority in any Fund or Account established under the Indenture (other than the Rebate Fund and the Operating Fund) and, subject to application of the Revenues, with all such powers as the court or courts making such appointment shall confer; but notwithstanding the appointment of any receiver, the Trustee shall be entitled to retain possession and control of and to collect and receive income from, any moneys, securities and funds deposited or pledged with it under the Indenture or agreed or provided to be delivered or pledged with it under the Indenture.

(e) Regardless of the happening of an Event of Default, the Trustee shall have the power to, but (unless requested in writing by the holders of a majority in principal amount of the Bonds then Outstanding, and furnished with reasonable security and indemnity) shall be under no obligation to, institute and maintain such suits and proceedings as it may be advised shall be necessary or expedient to prevent any impairment of the security under the Indenture by any acts which may be unlawful or in violation of the Indenture, and such suits and proceedings as the Trustee may be advised shall be necessary or expedient to preserve or protect its interests and the interests of the Bondholders.

Restriction on Bondholders' Action (Section 1005)

(a) No holder of any Bond shall have any right to institute any suit, action or proceeding at law or in equity for the enforcement of any provision of the Indenture or the execution of any trust under the Indenture or for any remedy under the Indenture, unless such holder shall have previously given to the Trustee written notice of the happening of an Event of Default, as provided in Article X of the Indenture, and the holders of at least a majority in principal amount of the Bonds then Outstanding shall have filed a written request with the Trustee, and shall have offered it reasonable opportunity, either to exercise the powers granted in Section 1005 of the Indenture or to institute such action, suit or proceeding in its own name, and unless such holders shall have offered to the Trustee adequate security and indemnity against the costs, expenses and liabilities to be incurred therein or thereby, and the Trustee shall have refused to comply with such request within a reasonable time; it being understood and intended that no one or more holders of Bonds shall have any right in any manner whatever by his or their action to affect,

disturb or prejudice the pledge created by the Indenture, or to enforce any right under the Indenture, except in the manner therein provided; and that all proceedings at law or in equity to enforce any provision of the Indenture shall be instituted, had and maintained in the manner provided in the Indenture and for the equal benefit of all holders of the Outstanding Bonds.

(b) Nothing in the Indenture or in the Bonds contained shall affect or impair the obligation of the Municipality, which is absolute and unconditional, to pay at the respective dates of maturity and places therein expressed the principal of and interest on the Bonds to the respective holders thereof from the Trust Estate, or affect or impair the right of action, which is also absolute and unconditional, of any holder to enforce such payment of this Bond. Notwithstanding the preceding sentence and anything in the Indenture or in the Bonds contained, the Authority and the Municipality shall not be required to advance any moneys derived from any source other than the Revenues and assets pledged under the Indenture for any of the purposes in the Indenture mentioned whether for the payment of the principal of or the Redemption Price, if any, or interest on the Bonds or for any other purpose of the Indenture.

Effect of Waiver and Other Circumstances (Section 1007)

(a) No delay or omission of the Trustee or of any Bondholder to exercise any right or power arising upon the happening of an Event of Default shall impair any right or power or shall be construed to be a waiver of any such default or to be an acquiescence therein; and every power and remedy given by Article X of the Indenture to the Trustee or to the Bondholders may be exercised from time to time and as often as may be deemed expedient by the Trustee or by the Bondholders.

(b) Prior to the declaration of maturity of the Bonds as provided in Section 1201 of the Indenture, the holders of a majority in principal amount of the Bonds at the time Outstanding, or their attorneys-in-fact duly authorized, may on behalf of the holders of all of the Bonds waive any past default under the Indenture and its consequences, except a default in the payment of interest on or principal or Redemption Price of the Bonds. No such waiver shall extend to any subsequent or other default or impair any right consequent thereon.

Defeasance (Section 1201)

(a) If the Municipality shall pay or cause to be paid to the holders of all Bonds then Outstanding, the Principal Installments and interest and Redemption Price, if any, to become due thereon, at the times and in the manner stipulated therein and in the Indenture, then at the option of the Municipality and the Authority, expressed in an instrument in writing signed by an Authorized Representative of each and delivered to the Trustee, the covenants, agreements and other obligations of the Municipality and the Authority to the Bondholders shall be discharged and satisfied. In such event, the Trustee shall, upon the request of the Municipality, execute and deliver to the Municipality all such instruments as may be desirable to evidence such discharge and satisfaction and the Fiduciaries shall pay over or deliver to the Municipality all moneys, securities and funds held by them pursuant to the Indenture which are not required for the payment or redemption of Bonds not theretofore surrendered for such payment or redemption.

(b) Bonds for the payment or redemption of which moneys shall have been set aside and shall be held in trust by the Trustee (through deposit by the Municipality or the Authority 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 paragraph (a) of Section 1201 of the Indenture. Subject to the provisions of subsection (c) of Section 1201 of the Indenture, all 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 subsection (a) of Section 1201 of the Indenture if (i) in case any of said Bonds are to be redeemed on any date prior to their maturity, the Municipality shall have given to the Trustee irrevocable instructions accepted in writing by the Trustee to publish as provided in Article VI of the Indenture notice of redemption of such Bonds (other than Bonds which have been purchased by the Trustee at the direction of the Municipality as provided in the Indenture prior to the publication of such notice of redemption) on said date, (ii) there shall have been deposited with the Trustee either moneys in an amount which shall be sufficient, or Defeasance Obligations the principal installments of and/or the interest on which when due, without reinvestment, will provide moneys which, together with the moneys, if any, deposited with the Trustee at the same time, shall be sufficient, to pay when due the Principal Installments or Redemption Price, if applicable, and interest due and to become due on said Bonds or prior to the redemption date or maturity date thereof, as the case may be, and (iii) in the event said Bonds are not to be redeemed within the next

succeeding 60 days, the Municipality shall have given the Trustee in form satisfactory to it irrevocable instructions to publish, as soon as practicable, at least twice, at an interval of not less than seven days between publications, in the Authorized Newspapers a notice to the holders of such Bonds that the deposit required by (ii) above has been made with the Trustee and that said Bonds are deemed to have been paid in accordance with Section 1201 of the Indenture and stating such maturity or redemption date upon which moneys are to be available for the payment of the Principal Installments or Redemption Price, if applicable, on said Bonds (other than Bonds which have been purchased by the Trustee at the direction of the Municipality as provided in the Indenture prior to the publication of the notice of redemption referred to in clause (i) hereof). The Trustee shall, as and to the extent necessary, apply moneys held by it pursuant to Section 1201 of the Indenture to the retirement of said Bonds in the manner provided in the Indenture.

The Trustee shall, if so directed by the Municipality (x) prior to the maturity date of Bonds deemed to have been paid in accordance with Section 1201 of the Indenture which are not to be redeemed prior to their maturity date or (y) prior to the publication of the notice of redemption referred to in clause (i) above with respect to any Bonds deemed to have been paid in accordance with Section 1201 of the Indenture which are to be redeemed on any date prior to their maturity, apply moneys deposited with the Trustee in respect of such Bonds and redeem or sell Defeasance Obligations so deposited with the Trustee and apply the proceeds thereof to the purchase of such Bonds and the Trustee shall immediately thereafter cancel all such Bonds so purchased; provided, however that the Trustee shall receive an Accountant's Certificate showing that the moneys and Defeasance Obligations remaining on deposit with the Trustee after the purchase and cancellation of such Bonds shall be sufficient to pay when due the Principal Installment or Redemption Price, if applicable, and interest due or to become due on all Bonds, in respect of which such moneys and Defeasance Obligations are being held by the Trustee on or prior to the redemption date or maturity date thereof, as the case may be and a Bond Counsel's Opinion to the effect that such redemption or sale of such Defeasance Obligations will not adversely affect the exclusion of the interest on such Bonds from gross income for federal income tax purposes and that such redemption or sale otherwise complies with the provisions of the Indenture. The directions given by the Municipality to the Trustee referred to in the preceding sentence shall also specify the portion, if any, of such Bonds so purchased and cancelled to be applied against the obligation of the Trustee to pay Bonds deemed paid in accordance with Section 1201 of the Indenture upon their maturity date or dates and the portion, if any, of such Bonds so purchased and canceled to be applied against the obligation of the Trustee to redeem Bonds deemed paid in accordance with Section 1201 of the Indenture on any date or dates prior to their maturity. In the event that on any date as a result of any purchases and cancellations of Bonds as provided in Section 1201 of the Indenture the total amount of moneys and Defeasance Obligations remaining on deposit with the Trustee under Section 1201 of the Indenture is in excess of the total amount which would have been required to be deposited with the Trustee on such date in respect of the remaining Bonds in order to satisfy clause (ii) of subsection (b) of Section 1201 of the Indenture, the Trustee shall, if requested by the Municipality, pay the amount of such excess to the Municipality free and clear of any lien or pledge securing said Bonds or otherwise existing under the Indenture. Except as otherwise provided in subsection (b) of Section 1201 of the Indenture and subsection (c) of Section 1201 of the Indenture, neither Defeasance Obligations nor moneys deposited with the Trustee pursuant to Section 1201 of the Indenture 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, if applicable, and interest on said Bonds; provided that any cash received from such principal or interest payments on such Defeasance Obligations deposited with the Trustee, (A) to the extent such cash will not be required at any time for such purpose, shall be paid over to the Municipality as received by the Trustee, free and clear of any trust, lien or pledge securing said Bonds or otherwise existing under the Indenture, and (B) to the extent such cash will be required for such purpose at a later date, shall, to the extent practicable, be reinvested at the written direction of an Authorized Representative of the Municipality in Defeasance Obligations maturing at times and in amounts sufficient to pay when due the principal or Redemption Price, if applicable, and interest to become due on said Bonds on or prior to such redemption date or maturity date thereof, as the case may be, and interest earned from such reinvestments shall be paid over to the Municipality, as received by the Trustee, free and clear of any lien or pledge securing said Bonds or otherwise existing under the Indenture.

(c) For purposes of determining whether Variable Rate Bonds shall be deemed to have been paid prior to the maturity or Redemption date thereof, as the case may be, by the deposit of moneys, or Defeasance Obligations and moneys, if any, in accordance with the second sentence of subsection (b) of Section 1201, the interest to come due on such Variable Rate Bonds on or prior to the maturity date or redemption date thereof, as the case may be, shall be calculated at the maximum rate permitted by the terms thereof; provided, however that if on any date, as a result of such Variable Rate Bonds having borne interest at less than such maximum rate for any period, the total amount of moneys and Investment Securities on deposit with the Trustee for the payment of interest on such

Variable Rate Bonds is in excess of the total amount which would have been required to be deposited with the Trustee on such date in respect of such Variable Rate Bonds in order to satisfy the second sentence of subsection (b) of Section 1201, the Trustee shall, if requested by the Municipality, pay the amount of such excess to the Municipality free and clear of any lien or pledge securing the Bonds or otherwise existing under the Indenture.

(d) Anything in the Indenture to the contrary notwithstanding, any moneys held by a Fiduciary in trust for the payment and discharge of any of the Bonds which remain unclaimed for two years after the date when such Bonds have become due and payable, either at their stated maturity dates or by call for earlier redemption, if such moneys were held by the Fiduciary at such date, or for two years after the date of deposit of such moneys if deposited with the Fiduciary after the said date when such Bonds become due and payable, shall, at the written request of the Municipality, be repaid by the Fiduciary to the Municipality, as its absolute property and free from trust, and the Fiduciary shall thereupon be released and discharged with respect thereto and the Bondholders shall look only to the Municipality for the payment of such Bonds; provided, however, that before being required to make any such payment to the Municipality, the Fiduciary may, at the expense of the Municipality, cause to be published at least twice, at an interval of not less than 7 days between publications, in the Authorized Newspapers, a notice that said moneys remain unclaimed and that, after a date named in said notice, which date shall be not less than 30 days after the date of the first publication such notice, the balance of such moneys then unclaimed will be returned to the Municipality.

Moneys Held for Particular Bonds (Section 1203)

The amounts held by any Fiduciary for the payment due on any date with respect to particular Bonds shall, on and after such date and pending such payment, be set aside on its books and held in trust by it for the holders of the Bonds entitled thereto.

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APPENDIX E – FORM OF BOND COUNSEL OPINION

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280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
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June 26, 2019

City of Stamford
Stamford, Connecticut 06901

Water Pollution Control Authority
for the City of Stamford
Stamford, Connecticut 06904

U.S. Bank National Association
Hartford, Connecticut 06103

Ladies and Gentlemen:

We have examined a record of proceedings relating to the issuance by the City of Stamford (the "Municipality") of $15,700,000 aggregate principal amount of City of Stamford, Connecticut Water Pollution Control System and Facility Revenue Bonds, Issue of 2019 (the "Bonds"). The Bonds are issued pursuant to Chapter 103 of the General Statutes of Connecticut, Revision of 1958, as amended (the "Bond Act"), the Charter of the Municipality (the "Charter"), resolutions of the Board of Representatives of the Municipality adopted on July 2, 2001, the Board of Finance of the Municipality adopted on June 27, 2001 and by the Water Pollution Control Authority of the City of Stamford (the "Authority") adopted on October 9, 2001 (together, the "Authorizing Resolutions"), authorizing the execution and delivery of an Indenture of Trust, dated as of December 21, 2001 (the "Original Indenture"), by and among the Municipality, the Authority, and U.S. Bank National Association (successor to Wachovia Bank, National Association), as Trustee (the "Trustee"), resolutions of the Board of Representatives of the Municipality (together, the "Project Resolutions"), and resolutions adopted by the Board of Finance of the Municipality on April 11, 2019, the Board of Representatives of the Municipality on May 6, 2019 and the Authority on April 8, 2019 (together, the "Financing Resolutions"), authorizing the execution and delivery of the Seventh Supplemental Indenture, dated as of June 1, 2019 (the "Seventh Supplemental Indenture"), by and among the Municipality, the Authority and the Trustee, amending and supplementing the Original Indenture (the Original Indenture, as amended and supplemented, is referred to hereinafter as the "Indenture"). Capitalized terms used herein and not otherwise defined shall have the meaning ascribed to such terms in the Indenture.

The Bonds delivered on the date hereof are dated and bear interest from the date of delivery, payable semiannually on April 1 and October 1 in each year until maturity or earlier redemption, commencing October 1, 2019. The Bonds are issuable only in fully registered form in denominations of $5,000 or any integral multiple thereof. The Bonds bear interest at the interest rates per annum and mature on April 1 in each of the years and principal amounts as follows:

Maturity Date	Principal Amount	Interest Rate Per Annum	Maturity Date	Principal Amount	Interest Rate Per Annum
2020	$505,000	4.000%	2031	$565,000	5.000%
2021	365,000	4.000	2032	595,000	5.000
2022	380,000	4.000	2033	625,000	5.000
2023	395,000	4.000	2034	655,000	5.000
2024	410,000	4.000	2035	685,000	5.000
2025	425,000	4.000	2036	720,000	4.000
2026	445,000	5.000	2037	750,000	4.000
2027	465,000	5.000	2038	780,000	4.000
2028	490,000	5.000	2039	810,000	4.000
2029	515,000	5.000	2044*	4,580,000	4.000
2030	540,000	5.000			

*Term Bond

The Bonds are subject to optional and mandatory redemption prior to maturity in the manner and upon the terms and conditions described in the Indenture.

We have examined certified copies of the Authorizing Resolutions, the Project Resolutions, the Financing Resolutions, and executed copies of the Original Indenture and the Seventh Supplemental Indenture. We have also examined an executed copy of the Tax Regulatory Agreement, dated as of the date hereof (the "Tax Regulatory Agreement"), by and among the Municipality, the Authority and the Trustee, including the appendices, certificates and attachments thereto. We have examined one of the Bonds as executed.

As to questions of fact material to our opinion, we have relied upon representations of the Municipality contained in the Indenture and the Tax Regulatory Agreement, the record of proceedings and other certifications furnished to us, and certifications by officers of the Municipality, the Authority and the Trustee without undertaking to verify the same by independent investigations. In rendering this opinion, we have assumed the power to enter into and perform, and the due authorization, execution and delivery by all parties (other than the Municipality and the Authority) of the documents and agreements to which the Municipality and the Authority are a party.

The Internal Revenue Code of 1986, as amended (the "Code"), establishes certain requirements that must be met at and subsequent to the issuance and delivery of the Bonds in order that interest on the Bonds be and remain excluded from gross income for federal income tax purposes. Pursuant to the Indenture and the Tax Regulatory Agreement, the Municipality, the Authority and the Trustee have made certain representations and covenants relating to compliance with such requirements of the Code to ensure that interest paid on the Bonds shall be excluded from gross income for federal income tax purposes under the Code.

Based upon and subject to the foregoing, we are of the opinion that:

1. The Municipality is a validly existing body politic and corporate of the State of Connecticut and has good right and lawful authority to adopt the Authorizing Resolutions, the Project Resolutions and the Financing Resolutions adopted by it and to issue the Bonds pursuant to the Bond Act and the Indenture.

2. The Authority is a validly existing water pollution control authority pursuant to the Bond Act and has good right and lawful authority to adopt the Authorizing Resolution and the Financing Resolution adopted by it.

3. The Indenture has been duly authorized, executed and delivered by the Municipality and the Authority, is in full force and effect as to the Municipality and the Authority, and constitutes a valid and binding agreement of the Municipality and the Authority, enforceable against the Municipality and the Authority in accordance with its terms, except to the extent that the enforceability thereof may be limited by bankruptcy,

insolvency or other laws affecting creditors' rights generally or application of principles of equity or with respect to actions commenced against municipalities or state agencies and authorities.

4. The Bonds have been duly authorized and issued by the Municipality in accordance with law and the terms of the Indenture, and are valid and binding special limited obligations of the Municipality payable solely out of the Revenues and other receipts, funds or moneys pledged therefor pursuant to the Indenture, and from any amounts otherwise available under the Indenture for the payment thereof. The Bonds are enforceable in accordance with their terms and the terms of the Indenture and are entitled to the benefit of the Bond Act and the Indenture, except to the extent that the enforceability thereof may be limited by bankruptcy, insolvency or other laws affecting creditors' rights generally or application of principles of equity or with respect to actions commenced against municipalities or state agencies and authorities.

5. The Indenture creates the valid pledge and assignment which it purports to create of all of the Municipality's right, title and interest in the Revenues and all moneys and securities held by the Trustee in the Funds and Accounts (as defined in the Indenture) under the Indenture (except for moneys and securities held in the Rebate Fund and the Operating Fund created under the Indenture), subject only to the provisions of the Indenture permitting the application thereof for or to the purposes and on the terms and conditions set forth therein. No opinion is rendered herein regarding the perfection or priority of such pledge.

6. The Bonds are not general obligations of the Municipality, and the full faith and credit of the Municipality are not pledged for the payment of the Bonds. Neither the State of Connecticut (the "State"), the Municipality (other than pursuant to the Indenture), the Authority nor any other political subdivision of the State is obligated to pay the principal of, premium or interest on any of the Bonds and neither the faith and credit nor the taxing power of the State, the Municipality or any other political subdivision of the State is pledged to the payment of the principal of or premium or interest on the Bonds. The Authority has no taxing power.

7. Assuming the accuracy of the representations and compliance with the aforementioned tax covenants in the Indenture and the Tax Regulatory Agreement, under existing statutes and court decisions, interest on the Bonds is excluded from gross income for federal income tax purposes and is not treated as an item of tax preference for purposes of computing the federal alternative minimum tax. We express no opinion regarding any other federal income tax consequences caused by ownership or disposition of, or receipt of interest on, the Bonds.

In rendering the foregoing opinions regarding the federal tax treatment of interest on the Bonds, we have relied upon and assumed (i) the material accuracy of the representations, statements of intention and expectations, and certifications of fact contained in the Indenture and Tax Regulatory Agreement, and (ii) the compliance by each of the Municipality, the Authority and the Trustee with the representations, covenants and procedures set forth in the Indenture and Tax Regulatory Agreement as to such tax matters.

We are further of the opinion that, under existing statutes, interest on the Bonds is excluded from Connecticut taxable income for purposes of the Connecticut income tax on individuals, trusts and estates and is excluded from amounts on which the net Connecticut minimum tax is based in the case of individuals, trusts and estates required to pay the federal alternative minimum tax. We express no opinion regarding any other State or local tax consequences caused by the ownership or disposition of the Bonds.

Except as stated in the preceding paragraphs, we express no opinion as to any federal, state or local tax consequences with respect to the Bonds or the interest thereon. Furthermore, we express no opinion as to any federal, state or local tax law consequences with respect to the Bonds or the interest thereon, if any action is taken with respect to the Bonds, or any changes are made in the requirements or procedures contained or referred to in the Indenture, the Tax Regulatory Agreement and other relevant documents, upon the advice or with the approving opinion of other bond counsel.

We express no opinion herein as to the accuracy, adequacy or completeness of the Official Statement related to the Bonds.

Legislation affecting the exclusion from gross income of interest on State or local bonds, such as the Bonds, is regularly under consideration by the United States Congress. There can be no assurance that legislation enacted or proposed after the date of issuance of the Bonds will not reduce or eliminate the benefit of the exclusion from gross income of interest on the Bonds or adversely affect the market price of the Bonds.

These opinions are rendered as of the date hereof and are based on existing law, which is subject to change. We assume no obligation to update or supplement these opinions to reflect any facts or circumstances that may come to our attention, or to reflect any changes in law that may hereafter occur or become effective.

The rights of owners of the Bonds and the enforceability of the Bonds, the Indenture and the Tax Regulatory Agreement may be limited by bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights generally and by application of equitable principles, whether considered at law or in equity

Respectfully,

APPENDIX F – FORM OF CONTINUING DISCLOSURE AGREEMENT

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CONTINUING DISCLOSURE AGREEMENT

City of Stamford, Connecticut
$15,700,000 Water Pollution Control System and Facility Revenue Bonds, Issue of 2019
Dated June 26, 2019

June 26, 2019

WHEREAS, the City of Stamford, Connecticut (the "City") and the Water Pollution Control Authority of the City of Stamford, Connecticut (the "SWPCA") have heretofore authorized the issuance of $15,700,000 in aggregate principal amount of their Water Pollution Control System and Facility Revenue Bonds, Issue of 2019, dated June 26, 2019 (the "Bonds"), maturing on the dates and in the amounts set forth in the City's and SWPCA's Official Statement dated June 12, 2019 describing the Bonds (the "Official Statement"); and

WHEREAS, the Bonds have been sold by a negotiated sale pursuant to a Bond Purchase Agreement, dated June 12, 2019 (the "Bond Purchase Agreement"); and

WHEREAS, in the Bond Purchase Agreement, the City and the SWPCA have heretofore acknowledged that an underwriter may not purchase or sell the Bonds unless it has reasonably determined that the City and the SWPCA have undertaken in a written agreement for the benefit of the beneficial owners of the Bonds to provide certain continuing disclosure information as required by Securities and Exchange Commission Rule 15c2-12(b)(5), as amended from time to time (the "Rule"), and the City and the SWPCA desire to assist the underwriter of the Bonds in complying with the Rule; and

WHEREAS, the City and the SWPCA are authorized pursuant to Section 3-20e of the General Statutes of Connecticut to make such representations and agreements for the benefit of the beneficial owners of the Bonds to meet the requirements of the Rule; and

WHEREAS, in order to assist the underwriter of the Bonds in complying with the Rule, this Continuing Disclosure Agreement (this "Agreement") is to be made, executed and delivered by the City and the SWPCA in connection with the issuance of the Bonds and to be described in the Official Statement, all for the benefit of the beneficial owners of the Bonds, as they may be from time to time;

NOW, THEREFORE, the City and the SWPCA hereby represent, covenant and agree as follows:

Section 1. Definitions. In addition to the terms defined above, the following capitalized terms shall have the meanings ascribed thereto:

"Annual Report" shall mean any Annual Report provided by the City and the SWPCA pursuant to, and as described in, Sections 2 and 3 of this Agreement.

"Financial Obligation" shall mean any (i) debt obligation, (ii) derivative instrument entered into in connection with, or pledged as security or source of payment for, an existing or planned debt obligation, or (iii) guarantee of (i) or (ii). Municipal securities as to which a final official statement has been filed with the Repository, consistent with the Rule, shall not be considered a Financial Obligation. "Fiscal Year End" shall mean the last day of the City's and the SWPCA's fiscal year, currently June 30.

"Listed Events" shall mean any of the events listed in Section 4 of this Agreement.

"MSRB" shall mean the Municipal Securities Rulemaking Board established pursuant to Section 15B(b)(1) of the Securities Exchange Act of 1934, as amended, or any successor thereto.

"Repository" shall mean the Electronic Municipal Market Access (EMMA) system as described in 1934 Act Release No. 57577 for purposes of the Rule, the MSRB or any other nationally recognized municipal securities information repository or organization recognized by the SEC from time to time for purposes of the Rule.

"SEC" shall mean the Securities and Exchange Commission of the United States or any successor thereto.

Section 2. Annual Reports.

(a) The City and the SWPCA shall provide or cause to be provided to the Repository in electronic format, accompanied by identifying information, as prescribed by the MSRB, the following annual financial information and operating data regarding the SWPCA:

(i) Audited financial statements of the SWPCA as of and for the year ending on its Fiscal Year End prepared in accordance with accounting principles generally accepted in the United States, as promulgated by the Governmental Accounting Standards Board from time to time or mandated state statutory principles as in effect from time to time. As of the date of this Agreement, the City is required to prepare audited financial statements of its various funds and accounts. The modified accrual basis of accounting is followed for the SWPCA with major revenues recorded when measurable and available and expenditures recorded when incurred; and

(ii) Financial information and operating data as of and for the year ending on its Fiscal Year End of the following type to the extent not included in the audited financial statements described in (i) above:

(A) number of customers;

(B) Table 1, Overall Top Ten Customers;

(C) any update on service contracts and agreements;

(D) changes in the average annual daily wastewater flow volume;

(E) Table 4, Summary of Projected Results; and

(F) changes in rates.

(b) The above-referenced information is expected to be provided by the filing of and cross reference to the City's and the SWPCA's audited financial statements. The information may be provided in whole or in part by cross-reference to other documents previously provided to the Repository, including official statements of the City and the SWPCA which will be available from the MSRB.

(c) Subject to the requirements of Section 8 hereof, the City and the SWPCA reserve the right to modify from time to time the type of financial information and operating data provided or the format of the presentation of such financial information and operating data, to the extent necessary or appropriate; provided that the City and the SWPCA agree that any such modification will be done in a manner consistent with the Rule. The City and the SWPCA also reserve the right to modify the

preparation and presentation of financial statements described herein as may be required to conform with changes in Connecticut law applicable to municipalities or any changes in generally accepted accounting principles, as promulgated by the Governmental Accounting Standards Board from time to time.

Section 3. Timing. The City and the SWPCA shall provide the financial information and operating data referenced in Section 2(a) not later than eight months after each Fiscal Year End subsequent to the date of issuance of the Bonds, provided, however, that if such financial information and operating data for the Fiscal Year End preceding the date of issuance of the Bonds is not contained in the Official Statement for the Bonds or has not otherwise been previously provided, the City and the SWPCA shall provide such financial information and operating data no later than eight months after the close of such preceding Fiscal Year End. The City and the SWPCA agree that if audited financial statements are not available eight months after the close of any Fiscal Year End, it shall submit unaudited financial statements by such time and will submit audited financial statements information when and if available.

Section 4. Event Notices. The City and the SWPCA agree to provide, or cause to be provided, in a timely manner not in excess of ten (10) business days after the occurrence of the event, notice to the Repository in electronic format, accompanied by identifying information, as prescribed by the MSRB, of the occurrence of any of the following events:

(i) principal and interest payment delinquencies;

(ii) non-payment related defaults, if material;

(iii) unscheduled draws on debt service reserves reflecting financial difficulties;

(iv) unscheduled draws on credit enhancements reflecting financial difficulties;

(v) substitution of credit or liquidity providers, or their failure to perform;

(vi) 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 Bonds, or other material events affecting the tax status of the Bonds;

(vii) modifications to rights of Bondholders, if material;

(viii) Bond calls, if material, and tender offers;

(ix) defeasances;

(x) release, substitution, or sale of property securing repayment of the Bonds, if material;

(xi) rating changes;

(xii) bankruptcy, insolvency, receivership, or similar event of any obligated person;

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

(xiv) appointment of a successor or additional trustee or the change of name of a trustee, if any, if material;

(xv) incurrence of a Financial Obligation by any obligated person, if material, or agreement to covenants, events of default, remedies, priority rights, or other similar terms of a Financial Obligation of any obligated person, any of which affect Bondholders, if material; and

(xvi) default, event of acceleration, termination event, modification of terms, or other similar events under the terms of a Financial Obligation of any obligated person, any of which reflect financial difficulties.

Section 5. Notice of Failure. The City and the SWPCA agree to provide, or cause to be provided, in a timely manner to the Repository in electronic format, accompanied by identifying information, as prescribed by the MSRB, notice of any failure by the City and the SWPCA to provide the annual financial information described in Section 2(a) of this Agreement on or before the date described in Section 3 of this Agreement.

Section 6. Termination of Reporting Obligation. The City's and the SWPCA's obligations under this Agreement shall terminate upon the defeasance, prior redemption or payment in full of all of the Bonds.

Section 7. Agent. The City and the SWPCA may, from time to time, appoint or engage an agent to assist it in carrying out its obligations under this Agreement, and may discharge any such agent, with or without appointing a successor agent.

Section 8. Amendment; Waiver. Notwithstanding any other provision of this Agreement, the City and the SWPCA may amend this Agreement, and any provision of this Agreement may be waived, if such amendment or waiver is made in connection with a change in circumstances that arises from a change in legal requirements, a change in law, or a change in the identity, nature or status of the City and the SWPCA, and is supported by an opinion of counsel expert in federal securities laws, to the effect that (i) such amendment or waiver would not materially adversely affect the beneficial owners of the Bonds and (ii) this Agreement, as so amended, would have complied with the requirements of the Rule as of the date of this Agreement, taking into account any amendments or interpretations of the Rule as well as any changes in circumstances. A copy of any such amendment will be filed in a timely manner with the Repository in electronic format. The Annual Report provided on the first date following adoption of any such amendment will explain, in narrative form, the reasons for the amendment and the impact of the change in the type of financial information or operating data provided.

Section 9. Additional Information. Nothing in this Agreement shall be deemed to prevent the City and the SWPCA from disseminating any other information, using the means of dissemination set forth in this Agreement or any other means of communication, or including any other information in any Annual Report or providing notice of the occurrence of any other event, in addition to that which is required by this Agreement. If the City and the SWPCA choose to include any other information in any Annual Report or provide notice of the occurrence of any other event in addition to that which is specifically required by this Agreement, the City and the SWPCA shall have no obligation under this Agreement to update such information or include or provide such information or notice of the occurrence of such event in the future.

Section 10. Indemnification. The City and the SWPCA agree, pursuant to applicable law, to indemnify and save its officials, officers and employees harmless against any loss, expense or liability

which they may incur arising out of or in the exercise or performance of its powers and duties hereunder, including the costs and expenses (including attorney's fees) of defending against any claim of liability hereunder, but excluding any loss, expense or liability due to any such person's malicious, wanton, or willful act. The obligations of the City and the SWPCA under this Section shall survive termination of this Agreement.

Section 11. Enforceability. The City and the SWPCA agree that its undertaking pursuant to the Rule set forth in this Agreement is intended to be for the benefit of and enforceable by the beneficial owners of the Bonds. In the event the City and the SWPCA shall fail to perform its duties hereunder, the City and the SWPCA shall have the option to cure such failure after its receipt of written notice from any beneficial owner of the Bonds of such failure. In the event the City and the SWPCA do not cure such failure, the right of any beneficial owner of the Bonds to enforce the provisions of this undertaking shall be limited to a right to obtain specific performance of the City's and the SWPCA's obligations hereunder. No monetary damages shall arise or be payable hereunder, nor shall any failure to comply with this Agreement constitute a default of the City and the SWPCA with respect to the Bonds.

IN WITNESS WHEREOF, the City and the SWPCA has caused this Continuing Disclosure Agreement to be executed in its name by its undersigned officers, duly authorized, all as of the date first above written.

CITY OF STAMFORD, CONNECTICUT

By: _____
Michael E. Handler
Director of Administration

By: _____
William P. Brink
Executive Director of the SWPCA

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