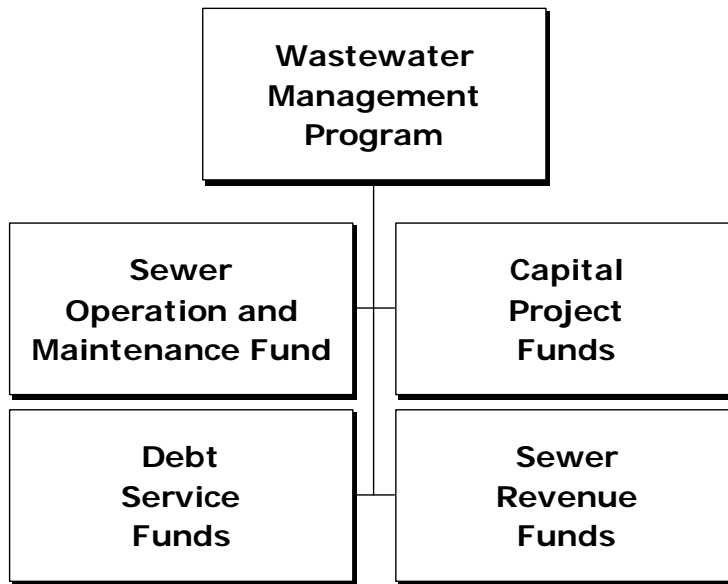


Wastewater Management Program Overview



Focus

The Wastewater Management Program (WWM) is operated, maintained and managed within the Department of Public Works and Environmental Services (DPWES). The program currently includes the County-owned Noman M. Cole, Jr. Pollution Control Plant (67 million gallons per day (mgd) capacity), nearly 3,430 miles of sewer lines, 63 pump stations, 57 flow-metering stations, and covers approximately 234 square miles of the County's 407 square-mile area. Capacity entitlement at the other regional facilities totals 90 mgd. A total of 372,208 households and businesses in Fairfax County are connected to public sewer as of June 30, 2016.

In addition to providing County residents and businesses with sewer service, Fairfax County provides sewer service to other nearby entities through "Sales of Service" agreements with Arlington and Loudoun Counties, the cities of Falls Church and Fairfax, the towns of Herndon and Vienna, and Fort Belvoir. These entities share the capital and operating costs of WWM based on actual wastewater flow and reserved treatment capacity.

Strategic planning and overall business monitoring is the responsibility of the Wastewater Management Leadership Team, whose responsibilities focus on long range planning, strategic thinking, continuous improvement processing, wastewater capacity, and financial management. This team is composed of employees from three divisions within WWM - Collections, Treatment, and Planning and Monitoring.

The Wastewater Collection Division (WCD) is responsible for the County's wastewater collection and conveyance system consisting of sewers, force mains, pumping stations, and metering stations. The WCD has a proactive sewer system maintenance program that facilitates a safe and effective wastewater collection system. In FY 2016, approximately 230 miles of sewer lines were inspected by Closed Circuit Television (CCTV) crews and approximately 450 miles of sewer lines were cleaned to ensure maximum flow carrying capacity and reduce sewer backups and overflows. Over the last six years, WCD has rehabilitated approximately 125 miles of sewer lines to protect the environment and residents of Fairfax County.

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The Wastewater Treatment Division (WTD) is responsible for operating and maintaining the County's wastewater treatment facility, the Noman M. Cole, Jr. Pollution Control Plant (NCPCP). The WTD continues to produce a quality effluent to meet regulatory and permit requirements, despite major construction occurring throughout the plant site. The NCPCP has started the rehabilitation of the plant's bio-solids facilities, which includes additional air pollution control systems, and complete rehabilitation of all four incinerators, which will include energy recovery.

The Wastewater Planning and Monitoring Division (WPMD) is responsible for the agency's fiscal planning, engineering planning, and wastewater monitoring. The WPMD continues to effectively monitor the long-term needs for the Wastewater Management Program in terms of infrastructure upgrades, maintenance, and expansions. The WPMD ensures that all financial requirements are fulfilled by maintaining a rate structure to adequately recover all operating and maintenance costs, capital improvements and debt service obligations. The WPMD also plans for system capacity, both in the conveyance system and treatment facilities, by initiating expansion and improvement projects to keep pace with increased wastewater flows. The WPMD safeguards the environment by ensuring compliance with water quality standards and prevention of toxic discharges into the collection system.

WPMD is currently monitoring the Chesapeake Bay water quality program, which requires reductions in the amount of nutrient pollutants discharged from wastewater treatment facilities. In December 2004, the state notified the County that the renewal of the County's Virginia Pollutant Discharge Elimination System (VPDES) permit includes a requirement that nutrient removal be performed using "State of the Art" technology and meet a waste load allocation (cap) for the nitrogen and phosphorous nutrients. A phased approach was used to renovate and upgrade current plant facilities to accommodate these more stringent nutrient discharge requirements. These renovations and upgrades were completed in FY 2015. Other regional plants serving the County are at various stages of upgrade for compliance with the new requirements.

The Wastewater Management Program is primarily supported by Sewer Service Charges received from existing customers, which are used to fully recover program operation and maintenance costs, debt service payments and capital project requirements attributable to improving wastewater treatment effluent quality as mandated by state and federal agencies. The five-year sewer rate plan approved by the Board of Supervisors as part of the FY 2017 Adopted Budget Plan proposed to increase the sewer charges by 2.9 percent in FY 2018. After a careful review, the Wastewater Management staff recommended no change from the FY 2018 rate, which will result in an annual increase of \$16.80 to the typical household. The Sewer Service Charge will increase from \$6.68 to \$6.75 per 1,000 gallons of water consumed, based on Fairfax County's winter quarter average consumption of 18,000 gallons.

The Base Charge will increase from \$24.68 per quarter to \$27.62 per quarter. The Base Charge provides for a more equitable rate structure by recovering a portion of the program's fixed costs. The industry practice for a fix charge revenue rate is 25 percent of operating revenues. In order to strive towards this level of recovery, a phased-in approach has been proposed with a fixed charge revenue rate in FY 2018 of 19.1 percent. The current system, including sewer lines, facilities, purchased capacity and equipment, is valued at approximately \$2.0 billion. Based on the age and required maintenance of the system, it is imperative that reinvestment continues to be addressed. The implementation of the increases to the Base Charge will help ensure that all users of the system share in the fixed costs associated with reinvestment and operations.

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Increases to both the Sewer Service Charge and Base Charge will change the annual average customer bill from \$579.68 in FY 2017 to \$596.48 in FY 2018, a cost increase of \$16.80 or 2.9 percent. The FY 2018 average bill in Fairfax County is one of the lowest compared to the average bill in other regional jurisdictions even with the approved increases. The increases in the Sewer Service Charge and Base Charge will partially offset the increased costs associated with capital project construction, system operation and maintenance, debt service and upgrades to meet new, more stringent nitrogen discharge limitations from wastewater treatment plants.

Year	Sewer Service Charge Per 1,000 gallons water	Base Charge Per Quarterly Bill	Sewer Charges Percentage Increase	Percent Fixed Charge Revenue
2017	\$6.68	\$24.68	NA	17.2%
2018	\$6.75	\$27.62	2.9%	19.1%
2019	\$7.00	\$30.38	4.9%	20.1%
2020	\$7.34	\$33.42	5.9%	21.1%
2021	\$7.70	\$36.76	5.9%	22.0%
2022	\$8.08	\$40.44	6.0%	22.8%

The Wastewater Management Program is also supported by the Availability Charge, which is a one-time charge to new customers for initial connection to the system. The revenue from the Availability Charge is used to offset the costs of expanding treatment facilities. In FY 2018, the Availability Charge will increase to \$8,100 for single-family homes based on current projections of capital requirements. Rates are based on requirements associated with treatment plant upgrades and interjurisdictional payments that result from population growth, more stringent treatment requirements and inflation. The FY 2018 rate is consistent with the recommendations of the Department of Public Works and Environmental Services and the analysis included in the Wastewater Revenue Sufficiency and Rate Study Forecasted Period Fiscal Year 2017 through Fiscal Year 2022. Rates are expected to remain at the FY 2018 level through FY 2022. The following table displays the rates by category:

Category	FY 2017 Availability Charge	FY 2018 Availability Charge
Single Family	\$7,750	\$8,100
Townhouses and Apartments	\$6,200	\$6,480
Hotels/Motels	\$1,938	\$2,025
Nonresidential	\$401/fixture unit	\$405/fixture unit

This level of revenue in FY 2018 will allow the system to meet permit conditions, meet and maintain all of the required financial targets through FY 2022, maintain competitive rates with neighboring utilities, continue to preserve its AAA bond rating, and require less debt to support capital projects.

The table on the following page reflects the Wastewater Management Program's projected fiscal health in FY 2018 and FY 2019. The financial planning process incorporates the following indicators that are interrelated and structured to identify the adequacy of rates from a cash flow, business, and compliance standpoint. These indicators are used by the rating agencies to determine the Program's credit rating.

Wastewater Management Program Overview

Calculated Financial Indicators

Financial Indicator	Target	Achieved	FY 2018	FY 2019
Net Revenue Margin	37.0% to 50.0%	Yes	49.5%	50.1%
Days Working Capital ¹	150 to 200 days	Yes	157	155
Debt Coverage Senior	Min. 3.00x	Yes	3.99x	3.88x
Debt Coverage All-in	1.80x to 2.20x	Yes	1.97x	1.81x
Affordability (% of median income spent on sewer bill)	Less than 1.2%	Yes	0.5%	0.5%
Debt to Net Plant in Service	Below 40.0% Never above 50.0%	Yes	36.2%	37.9%
Outstanding Debt per Connection	Max \$3,000	Yes	\$1,705	\$1,900
Anticipated Sewer Bond Sales Through FY 2018				\$110.0 M

(1) The Days Working Capital financial indicator is exclusive of Availability Charges in Fund 69000, Sewer Revenue, and Fund 69300, Sewer Construction Improvements. It is calculated based on Operating Expenses and 360 days.

It is anticipated that the rates in FY 2018 will support the County's ability to maintain high bond ratings (AAA by Fitch Investor Service and Standard and Poor's Corporation and Aaa by Moody's Investors Service, Inc.) from the rating agencies. These high credit ratings have enabled the County to sell bonds on behalf of the Program at interest rates lower than those obtained by most sewer authorities, thereby achieving savings throughout the life of the bonds. The Wastewater Management Program has issued debt to fund major expansion and upgrade projects for both its own plant and its portion at the "Treatment by Contract" facilities.

In FY 2018, the County is projected to provide for the treatment of 103.9 million gallons of wastewater per day. Approximately 38 percent of this flow is treated at the NCPCP. The flow is distributed between the NCPCP and the interjurisdictional facilities as detailed in the table below. The table also includes the capacity utilization percentage and the available (unused) capacity for each plant.

Treatment Plant	Capacity (MGD)	FY 2018 Projected Daily Average (MGD)	Capacity Utilization (%)	Available Capacity (MGD)
DCWASA Blue Plains	31.0	26.5	85.5%	4.5
Noman M. Cole, Jr.	67.0	39.0	58.2%	28.0
Alexandria Renew Enterprises	32.4	23.2	71.6%	9.2
Arlington County	3.0	2.0	66.7%	1.0
Upper Occoquan Service Authority	22.6	13.2	58.4%	9.4
Loudoun Water	1.0	0.0	0.0%	1.0
Total	157.0	103.9	66.2%	53.1

Wastewater Management Program Overview

To ensure that WWM remains competitive and provides a high performance operation including improvements to the technical and managerial capacities that will continue to enhance service quality, customer service and financial planning, WWM closely monitors the following areas:

	FY 2016 (Actual)	FY 2017 (Adopted)	FY 2018 (Adopted)
Sewer Service Charge, \$/1,000 gallons	\$6.65	\$6.68	\$6.75
Treatment Costs, \$/MGD	\$1,538	\$1,542	\$1,550
Number of Sewer System Overflows (5-year rolling average)	23	15	15
Odor Complaints per year	10	15	15

The WWM comprises seven separate funds under a self-supporting fund structure (Enterprise Funds) consistent with the Sewer Bond Resolution adopted by the Board of Supervisors in July 1985. For more detailed information of the operational aspects of the various programs, refer to the narrative of Fund 69010, Sewer Operation and Maintenance, which immediately follows this Overview. The following is a brief description of the seven active funds:

- ◆ **Fund 69000** - Sewer Revenue is used to credit all operating revenues of the system, as well as most of the interest on invested fund balances. Revenues recorded in this fund are transferred to the various funds to meet their operational requirements. The remaining fund balances are used to set aside funds for various reserves and future system requirements.
- ◆ **Fund 69010** - Sewer Operation and Maintenance provides funding for the three divisions responsible for the management and operation of the program, supported by a transfer from Fund 69000.
- ◆ **Fund 69020** - Sewer Bond Parity Debt Service is used to record principal, interest, and fiscal agent fees for the 2009, 2012, 2014 and the planned 2017 Sewer Revenue Bonds in accordance with the current Sewer Bond Resolution, supported by a transfer from Fund 69000.
- ◆ **Fund 69030** - Sewer Bond Debt Reserve provides debt reserve funds for the 2009, 2012, 2014 and the planned 2017 Sewer Revenue Bonds in accordance with the current Sewer Bond Resolution, which are funded from the issuance of sewer revenue bonds and/or program revenues.
- ◆ **Fund 69040** - Sewer Bond Subordinate Debt Service records all debt service payments on the Upper Occoquan Service Authority (UOSA) revenue bonds and Virginia Resources Authority (VRA) loans. All future issues or refinancing of debt arising from interjurisdictional capacity rights may be treated as subordinate obligations of the system as provided by the General Bond Resolution for Sewer Revenue Bonds. Funding is supported by a transfer from Fund 69000.
- ◆ **Fund 69300** - Sewer Construction Improvements provides funding for the repair, rehabilitation and improvement requirements of the entire program's infrastructure, supported by a transfer from Fund 69000.
- ◆ **Fund 69310** - Sewer Bond Construction provides for major program construction projects, which are funded from the issuance of sewer revenue bonds and/or program revenues.