Utility Services

Solid Waste Goals

- ✓ To provide efficient and economical refuse collection, recycling and disposal services.
- ✓ To provide facilities for the sanitary, efficient and economical reception and transportation of solid waste generated in Fairfax County.
- ✓ To reduce the volume of solid waste stream through the implementation of recycling and waste reduction programs.
- ✓ To provide for the operation of sanitary waste disposal facilities, utilizing the most economically viable and environmentally acceptable methods available.

Sanitary Sewers Goals

- ✓ To provide treatment facilities that meet applicable effluent discharge standards in the most cost-effective manner possible.
- ✓ To provide a system of conveyance and treatment facilities that is responsive to the development goals of the adopted Comprehensive Plan.
- ✓ To carry out the necessary renovation and improvements that will permit the entire system to function at a high level of efficiency.

Stormwater Management Goals

- ✓ To provide a system of drainage facilities that prevents or minimizes property damage, traffic disruption and stream degradation in an efficient, cost-effective and environmentally sound manner.

Water Supply Goals

- ✓ To provide the facilities to treat, transmit, and distribute a safe and adequate water supply.

Solid Waste

PROGRAM DESCRIPTION

The Solid Waste Management Program provides refuse collection, recycling, and disposal services for County businesses and residents.

LINK TO THE COMPREHENSIVE PLAN

Fairfax County's Comprehensive Plan Policy Plan Public Facilities Solid Waste and Recycling Section includes the following established objectives:

- ✓ Provide conveniently located solid waste management facilities and operations, while ensuring that these facilities area compatible with adjacent land uses.
- ✓ Provide an efficient, cost effective, and environmentally sound, comprehensive solid waste management system that meets the current and future needs of the county.
- ✓ Provide a waste reduction and recycling program readily available to all, that meets the current and future needs of the County.

Source: 2017 Edition of the Fairfax County Comprehensive Plan- Public Facilities, Amended through 4-9-2019

PROGRAM INITIATIVES

The County Solid Waste Management Program operates several facilities: The Solid Waste Transfer Station at the I-66 Solid Waste Management Complex on West Ox Road, the I-95 Solid Waste Management Complex in Lorton and the Newington Collection Operations Facility.

Both County and private hauler collection vehicles deposit their waste at the I-66 Solid Waste Transfer Station where it is consolidated into tractor trailers for transfer to the Covanta Fairfax Inc. (CFI) facility in Lorton and other disposal facilities such as the Prince William County Landfill. The I-66 facility also includes a closed municipal landfill and a recycling and disposal center for County residents and businesses.

The I-95 Solid Waste Management Complex contains a functioning ash landfill, a closed municipal waste landfill, and a recycling and disposal center providing services to residents and businesses. The I-95 Ash Landfill is used for the disposal of ash generated by Covanta's waste to energy facilities at the I-95 Landfill and in Alexandria and Arlington. Additionally, ash generated from the combustion of biosolids (sewage sludge) at Fairfax County's Noman Cole wastewater treatment plant is also deposited into the I-95 Ash Landfill.

The Newington Collection Operations Facility provides for refuse and recycling collection vehicles and ancillary equipment. The Newington Complex currently houses the County's collection fleet along with administrative facilities for personnel. Infrastructure costs are paid by refuse collection fees charged to approximately 42,347 residential County customers. About half of the County customers also receive curbside vacuum leaf collection service in the fall for an additional fee of $0.012 per $100 of assessed value of the home and property.

The County's twenty-year Solid Waste Management Plan was adopted by the Board of Supervisors in 2004, updated in 2010, and is due for another update in calendar year 2020. This Plan is required by state regulation administered by the Virginia Department of Environmental Quality and provides a framework for implementing solid waste management programs and facilities and demonstrates how the county will manage waste and recyclables for a 20-year period.

CURRENT PROJECT DESCRIPTIONS

1. **I-66 Basement Drainage Renovation** (Springfield District): $350,000 has been approved to provide for the repair and retrofit of the tipping floor drainage system under the I-66 Transfer Station. This drainage system processes all liquids produced from the tipping floor and any additional substances generated through the transportation of solid waste. Currently, the liquid is collected in floor drains located in the loading area of the basement. These drains are connected to an oil-sand separator located in the floor of the building and then moved to a grinder pump that pumps all collected material to the sewer force main located in front of the Transfer Station. The goal of this project is to assess the condition of the line connecting to the force main, repair if damaged, clean all laterals to the oil-sand separator, and to replace the existing pumping system. In addition, the entire lower roadways within the building will be re-surfaced, as this has never been done during the life of the facility. The long-term goal of this project is to solidify the facility's compliance with Solid Waste Regulations.

2. **I-66 Environmental Compliance** (Springfield District): $750,669 has been approved to fund environmental management activities for the I-66 landfill which was closed in 1982. The work will include repairing areas which have settled due to decomposition of waste, operating and maintaining the landfill gas system that provides fuel for heating at several structures, conducting groundwater corrective action, installing a low-permeability cap on the existing slopes and improving the storm water management system. There are current ongoing projects to remediate landfill gas migration. A groundwater treatment system is also being designed and installed to prevent off-site migration of impacted groundwater.

3. **I-66 Landfill Methane Gas Recovery** (Springfield District): $1,000,000 is estimated to fund the installation and reconstruction of the methane gas extraction system at the I-66 facility, including collection wells, flares, compressor skids, and pipes. This project is a multi-phase project and may run across several fiscal years. During winter months the recovered methane is being utilized to produce heat for several areas on site as well as maintenance garages for DVS and FCDOT. This project is necessary as the current system is aging.

4. **I-66 Permit and Receiving Center Renovation** (Springfield District): $2,402,638 has been approved to fund renovations to the existing building and transfer facility at the I-66 Transfer Station. The renovation work includes replacement of the motor control center, renovation to the bathroom facilities, modifications to the existing permit office and scale house, new high-bay doors and other related modifications necessary to meet present needs and building codes.

5. **I-66 Transport Study/Site Redevelopment** (Springfield District): $2,903,623 has been approved to provide the design, construction, reconstruction, and retrofit of the I-66 Transfer Station's existing traffic flow patterns, citizen's drop-off area, and the Household Hazardous Waste (HHW) Collections Facility. Improvements are needed to help prevent mixing of commercial and citizen's vehicles for safety. The recycling roll-offs prior to the citizen's scales will be moved, and the existing pavement replaced with greenspace, both for aesthetics and stormwater pre-treatment. The HHW facility handles the majority of all household hazardous waste processed within Fairfax County. The current facility is aging and in need of renovation and reconstruction to meet ever increasing Household Hazardous Waste Collection Regulations and to provide safe disposal of substances collected. Additionally, the original use of the facility was to only collect HHW five days a week. Service days have recently been increased to seven days a week due to the ever-growing volume processing demand of HHW within Fairfax County. Initial phases will include areas directly in front of the transfer building and a relocated commercial truck scale facility.

6. **I-95 Landfill Closure** (Mt. Vernon District): $2,440,098 has been approved to meet all state and federal regulations for placing the synthetic cap on the Area Three Lined Landfill unit and repairing or reconstructing the cap on the Municipal Solid Waste (MSW) unit at the I-95 Landfill. Four phases of closure will occur in the Area Three Lined Landfill (ATLL) unit and consist of capping the landfill with a flexible membrane liner and/or low permeability soil to prevent the water infiltration from run-on and other sources. Modifications are proposed to the capped areas of the MSW unit to accommodate modernization of the Residential Disposal and Recycling Center and to make more storage areas available at the site for recyclables and other beneficial uses. This is an ongoing effort as various areas of the landfill are filled to final grades.

7. **I-95 Landfill Environmental Compliance** (Mt. Vernon District): $1,559,536 has been approved to support two environmental initiatives associated with the I-95 complex. The first initiative will provide for the continuation of ground water investigations and remediation efforts in accordance with the ground water Corrective Action Plan for the I-95 Landfill. This initiative will provide funding in the event that additional corrective measures are needed. Investigations and corrective action efforts may involve installation of ground water monitoring wells, injection of products intended to reduce concentrations of constituents of concern, and/or recover and treat ground water, among other alternatives. The second initiative will provide for Stormwater Improvements**.** Most of the existing storm water detention basins that manage stormwater flow at the I-95 landfill will be reconstructed or renovated with retrofits installed to improve stormwater flow and water quality discharge. This initiative includes assessment of the existing stormwater network, recommendations for improvements, design, regulatory support, construction and construction management. These improvements are required to comply with Virginia Pollutant Discharge Elimination System permit requirements.

I-95 Energy/Resource Recovery Facility

8. **I-95 Landfill Leachate Facility** (Mt. Vernon District): $4,160,478 to date has been approved for the leachate collection system. A major project was completed in FY 2017 that included additional force mains, controls, upgraded pumping, landfill de-watering efforts, pretreatment, treatment and storage facilities to process fluids collected in the leachate collection system installed at the Municipal Solid Waste (MSW) and ash disposal areas of the landfill. This project continues to address minor improvements to the system.

9. **I-95 Landfill Lot B Redesign** (Mt. Vernon District): $1,750,000 has been approved for design, construction, reconstruction and retrofit of the I-95 landfill's existing Lot B area which is used for various residential solid waste drop-off activities. The area currently handles recyclables, solid waste, mulch/yard waste, household hazardous waste, white goods, and also encompasses other site activities such as vehicle fueling, washing, and maintenance. The goal of this project is to expand the paved area and re-arrange activities to allow for safer unloading and loading activities. A longer term future goal is to implement a covered structure within Lot B to further improve conditions for the residents, minimize operational nuisances such as contact stormwater and wind-blown dust and litter, and to provide for new waste processing equipment and methods (baler, sorting system, etc.) to maximize recycling revenue and diversion rates.

10. **I-95 Landfill Methane Gas Recovery** (Mt. Vernon District): $2,309,232 has been approved for the installation and reconstruction of the methane gas extraction system at the I-95 Landfill, including collection wells and pipes. This project is a multi-phase project. All of the recovered methane is being utilized to produce electricity for sale to Dominion Virginia Power, to replace natural gas used as fuel to combust hydrocarbons created during thermal treatment of biosolids at the Noman M. Cole, Jr. Pollution Control Plant, and to replace propane used to heat the I-95 Landfill maintenance shop during the winter. The major landfill gas piping replacement project that began in FY 2015 has been completed.

11. **I-95 Landfill New Service Road** (Mt. Vernon District): $1,500,000 is estimated to be required for the redesign and rebuilding of I-95 Landfill's existing entrance road which is the primary access point for residential disposal and recycling customers and commercial haulers. This project will separate public and commercial customer traffic to address safety concerns and improve the operational flow of traffic through the facility.

12. **I-95 Operations Building Renovations** (Mt. Vernon District): $98,952 has been approved to fund infrastructure improvements to the existing I-95 Landfill Operations facility. These improvements include replacing worn and leaking roofing, upgrading faulty HVAC controls, replacing entrance doors, adding entry security features, improving the locker rooms, rearranging interior walls/offices, and replacing flooring. The project is a multi-phase project over several years that will not expand the footprint of the existing site.

13. **I-95 Transfer/Materials Recovery Facility** (Mt. Vernon District): $2,500,000 has been approved for the design and construction of an enclosed facility to handle general waste and recycling efforts at the I-95 Complex. This building will include two major components: a concrete based floor and walls/a fabric structure to enclose the facility. The base of the structure provides push walls for dumping and loading activities as well as sound suppression. The fabric structure provides protection from the elements, natural lighting and dumping clearance inside the structure.

14. **Newington Refuse Facility Enhancements** (Mt. Vernon District): $2,355,630 has been approved to fund infrastructure improvements to the existing Newington Operations facility. These improvements include replacing worn and leaking roofing, metal siding and gutters on the main building and the pole barn, upgrading faulty HVAC controls, replacing four obsolete garage doors, improving the men's locker room and replacing tile flooring in the main building. The project is a multi-phase project over several years that will not expand the footprint of the existing site.

PROJECT COST SUMMARIES
SOLID WASTE
($000's)

	Project Title Project Number	Source of Funds	Budgeted or Expended Through FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY2021-FY2025	Total FY2026-FY2030	Total Project Estimate
1	I-66 Basement Drainage Renovation SW-000023	X	***$350***						$0		$350
2	I-66 Environmental Compliance SW-000013	X	***$751***						$0		$751
3	I-66 Landfill Methane Gas Recovery SW-000029	X	***$0***	***$1,000***					$1,000		$1,000
4	I-66 Permit/Receiving Center Renovation SW-000011	X	***$2,403***						$0		$2,403
5	I-66 Transport Study/Site Redevelopment SW-000024	X	***$2,154***	***$750***					$750		$2,904
6	I-95 Landfill Closure SW-000019	X	***$1,840***	***$600***					$600		$2,440
7	I-95 Landfill Environmental Compliance SW-000016	X	***$1,060***	***$500***					$500		$1,560
8	I-95 Landfill Leachate Facility SW-000018	X	***$3,860***	***$300***					$300		$4,160
9	I-95 Landfill Lot B Redesign SW-000020	X	***$1,250***	***$500***					$500		$1,750
10	I-95 Landfill Methane Gas Recovery SW-000014	X	***$2,259***	***$50***					$50		$2,309
11	I-95 Landfill New Service Road SW-000027	X	***$1,000***	***$500***					$500		$1,500
12	I-95 Operations Building Renovations SW-000015	X	***$49***	***$50***					$50		$99
13	I-95 Transfer/Materials Recovery Facility SW-000022	X	***$2,200***	***$300***					$300		$2,500
14	Newington Refuse Facility Enhancements SW-000001	X	***$1,856***	***$500***					$500		$2,356
	Total		$21,032	$5,050	$0	$0	$0	$0	$5,050	$0	$26,082

Notes: Numbers in ***bold italics*** represent funded amounts. A "C" in the 'Budgeted or Expended' column denotes a continuing project.

Key: Source of Funds

B	Bonds
G	General Fund
S	State
F	Federal
X	Other
U	Undetermined

Sanitary Sewers

PROGRAM DESCRIPTION

Fairfax County provides sewer service to its residents and businesses through a system of approximately 3,250 miles of sewer lines, 63 pumping stations, 57 metering stations and one treatment plant owned and operated by the County. Additional treatment plant capacity is provided by contractual agreements with the District of Columbia Water (DC Water), Alexandria Renew Enterprises (AlexRenew), Arlington County, Upper Occoquan Service Authority (UOSA), Loudoun Water, Prince William County Service Authority and Colchester Utilities.

LINK TO THE COMPREHENSIVE PLAN

Fairfax County's Comprehensive Plan Policy Plan Public Facilities Sanitary Sewer Section includes the following established objectives:

- ✓ Provide public sewer in accord with the approved sewer service area and in support of the county's land use objectives.
- ✓ Maintain a system of conveyance and treatment facilities that is responsive and compatible with the development and environmental goals of the county and provide necessary renovations and improvements that will permit the entire system to function at a high level of efficiency.

Source: 2017 Edition of the Fairfax County Comprehensive Plan- Public Facilities, Amended through 4-9-2019

PROGRAM INITIATIVES

The current capital program generally supports the following County initiatives:

- ➢ Providing sufficient treatment plant capacity to ensure that projected residential and nonresidential growth can be accommodated over the planning period.
- ➢ Improving the effluent quality of County-owned and treatment by contract wastewater treatment facilities to comply with increasingly stringent discharge limitations, such as those mandated by the Chesapeake Bay Program.
- ➢ Ensuring a sufficient capital re-investment rate for the rehabilitation and replacement of existing County assets to ensure cost effective long-term operations and provision of adequate service levels.

Financing of the capital program for the sanitary sewer system has historically been derived from three sources: system revenues, the sale of revenue bonds and grant funding. The County has generally used system revenues on a “pay as you go” basis to fund the majority of capital improvements. This has particularly been true for “recurring” capital projects, such as capital replacement and rehabilitation projects, extension and improvement (E&I) projects and general system improvements. For major capital initiatives, such as system expansion and regulatory compliance projects, the County has funded the projects through the use of sewer revenue bonds, payable solely from the revenues of the Integrated Sewer System and hence not general obligations of Fairfax County. The County actively manages its outstanding debt, refinancing to take advantage of lower interest rates or retiring debt to manage its debt coverage. While federal and state grants were extensively utilized to fund the construction programs of the 1970's and 1980’s, the financial burden of current programs fall heavily on the County due to scarcity of federal and

state grant funds. The County has received limited state grant funding to help offset the cost of compliance with the Chesapeake Bay Program.

Approximately 95 percent of the System's revenues are derived from charges to new and existing customers through availability charges, base charges and sewer service charges. New customers to the System are charged a one-time availability charge per new connection for access to the System. Existing customers pay sewer service charges, which are based upon the actual water consumption during the winter quarter, and base charges, which are assessed quarterly and provide for a more equitable rate structure by recovering a portion of the program's costs. Availability charges, base charges and sewer service charges are established by the Fairfax County Board of Supervisors. Since 1979, the Board has used the five-year financial projection of system expenses, revenues and available cash balances to determine the appropriate level of availability charges and sewer service charges. The available cash balance reflects the projected sources and uses of funds by new and existing customers. The system allocates operating revenues and expenses, debt service and capital outlay between existing users and new users of the System. The remaining 5 percent of system revenues are derived primarily from sale of service to wholesale users such as Arlington County, Loudoun Water, the Cities of Fairfax and Falls Church, the Towns of Herndon and Vienna and Ft. Belvoir.

The FY 2021 proposed increases to both the Sewer Service Charge and Base Charge will change the annual average customer bill from $655.80 in FY 2020 to $686.32, a cost increase of $30.52 per year or 4.7 percent. The Sewer Service Charge will increase from $7.28 to $7.56 per 1,000 gallons of water consumed, based on Fairfax County's residential winter quarter average consumption of 18,000 gallons. The Base Charge will increase from $32.91 per quarter to $35.50 per quarter.

The County has issued sewer revenue bonds to provide funds for expanding treatment facility capacity at both County-owned and County-contracted facilities. Specifically, the County issued revenue bond debt for the following treatment plant expansions and upgrades:

- In June 2001 and June 2002, a total of $90 million in State Revolving Fund/Virginia Resources Authority debt to support the County's share of plant upgrades at the Alexandria Renew Enterprises treatment plant.

- In June 2009, $152.3 million in revenue bond debt to support the County's share of the plant upgrades at DC Water, Arlington County, Alexandria Renew Enterprise as well as the County owned treatment plant to comply with the nitrogen discharge limits as defined in the Chesapeake Bay Program.

- In August 2012, $90.7 million in revenue bond debt to support the County's share of the plant upgrades at DC Water, Alexandria Renew Enterprises as well as the County owned treatment plant to comply with the enhanced nutrient discharge limits as defined in the Chesapeake Bay Program.

- In April 2014, the remaining $61.8 million revenue refunding bonds to take advantage of the lower interest rates to refund $69.8 million outstanding 2004 bonds.

- In May 2016, $164.5 million revenue refunding bonds to take advantage of the lower interest rates to refund $123.1 million outstanding 2009 bonds and $46.7 million outstanding 2012 bonds.

- In June 2017, $85.8 million in revenue bond debt to provide funds for additions, extensions and improvements to the Fairfax County's sewage collection, and treatment systems including the County's Noman M. Cole, Jr. Pollution Control Plant, paying capital improvement costs allocable to the County at other regional treatment facilities that provide service to the County and, if necessary purchasing additional capacity.

In addition to this County-issued debt, as of June 30, 2019, the County is responsible for $220.7 million in debt to support the expansion and upgrade of the UOSA treatment plant. A regional facility, UOSA issues its own bonds that are used to finance the expansion and upgrade projects. The participating members of UOSA, (Fairfax County, Prince William County Service Authority, City of Manassas, and Manassas Park) are responsible for the debt service on the UOSA bonds based on capacity owned at the facility.

Looking to the future, a balance must be found between the following three major issues facing the integrated sewer system: (1) the necessity of maintaining high levels of water quality (including meeting more stringent nutrient limits) and (2) maintaining capacity to accommodate growth within the County, and (3) achieving these two goals within financial resources. To a similar end, consideration must be given to inspecting, repairing and maintaining the system at acceptable service levels. In most instances, annual expenditures for system upkeep will enable the County to avoid costly, major rehabilitation in the future.

SUMMARY OF TREATMENT CAPACITY STATUS AND SUFFICIENCY

Fairfax County's current treatment capacity is projected to be sufficient through 2045. The following summarizes the status of the County's treatment capacity.

Noman M. Cole, Jr. Pollution Control Plant

The Noman M. Cole, Jr., Pollution Control Plant (NCPCP) serves the Accotink, Pohick, Long Branch, Little Hunting and Dogue Creek drainage basins. In addition to flows originating within the County, the plant also treats sewage from the City of Fairfax, Fort Belvoir and part of the Town of Vienna. The NCPCP was put online in 1970 with an initial design capacity of 18 million gallons daily (MGD), which was subsequently increased to a rating of 36 MGD of advanced treatment in 1978, 54 MGD in 1995 and again increased to a rating of 67 MGD in 2005. The Chesapeake Bay water quality program 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 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 phosphorus nutrients. A phased approach was used to renovate and upgrade current plant facilities to accommodate these more stringent nutrient discharge requirements.

Blue Plains

With a current capacity of 370 MGD, the District of Columbia Water (DC Water) treatment plant at Blue Plains is the largest plant in the area. In addition to the District of Columbia, it treats flows from Maryland, Virginia and several federal installations. Wastewater flows originating in the Sugarland Run, Horsepen Creek, Difficult Run, Scotts Run, Dead Run, Turkey Run and Pimmit Run watersheds are treated at Blue Plains. Fairfax County is presently allocated 31 MGD at the plant. Blue Plains has gone through a major renovation of the chemical addition, nitrogen removal and sludge disposal systems over the past several years. The County's flows to Blue Plains will be continually monitored to see if any additional capacity will be required at Blue Plains or from Loudoun Water; or if the diverting of flow from the Blue Plains service area with the Difficult Run Pump Station to the NCPCP service area will be sufficient to stay within the County's allocation of 31 MGD.

Alexandria Renew Enterprises (AlexRenew)

The Cameron Run and Belle Haven watersheds and a portion of the City of Falls Church are served by the Alexandria treatment plant. The Alexandria plant is owned and operated by Alexandria Renew Enterprises. Fairfax County is allotted 32.4 MGD of total capacity of 54 MGD. By activating the Braddock Road and Keene Mill Road pumping stations, the County has the capability to divert flow from the Accotink watershed (currently served by the Noman Cole Plant) to AlexRenew. These diversions will increase the County's wastewater management alternatives in the entire eastern portion of the County by off-loading flows from the NCPCP and Blue Plains Treatment Plant to the AlexRenew plant. As with other treatment plants in the area, additional facilities have been constructed at AlexRenew to enhance the removal of nitrogen using "State of the Art" technology. AlexRenew will be constructing new facilities to process wet weather flows during heavy storms to avoid sanitary sewer overflows. Fairfax County will be responsible for its pro rata share of these costs.

Arlington County Pollution Control Plant

The Arlington County pollution control plant serves the portion of Fairfax County within the Four Mile Run watershed. The plant has been upgraded to comply with the water quality standards for nitrogen removal and expanded to 40 MGD. The Arlington plant currently receives approximately 2.0 MGD of flow from Fairfax County. The County's contractual capacity is 3.0 MGD.

Upper Occoquan Service Authority

The southwestern part of Fairfax County is served by a regional plant owned and operated by the Upper Occoquan Service Authority (UOSA). This plant became operational in 1978 and replaced five small treatment plants in Fairfax County (Greenbriar, Big Rocky Run, Flatlick Run, Upper Cub Run and Middle Cub Run) and six in Prince William County. This plant was originally certified to operate at 15 MGD. Fairfax County's initial 30.83 percent share of the plant was increased to 36.33 percent in 1978 with the purchase of additional capacity from Manassas Park. When the plant expanded to 54 MGD, the County's share increased to 51.1 percent. However, the County has sold some of its capacity to other UOSA users and decreased its share to 40.9 percent. The following summarizes the County's capacity in the plant:

- Original plant capacity of 15 MGD- County capacity of 5.45 MGD.
- Plant capacity expansion to 27 MGD- County capacity of 9.915 MGD.
- Additional plant capacity expansion to 54 MGD- County capacity of 27.6 MGD.
- The County sold 3.0 MGD of capacity to other UOSA users in January 2008, which reduced County capacity to 24.6 MGD.
- The County sold 2.0 MGD of capacity to other UOSA users in January 2010, which reduced County capacity to 22.6 MGD.
- The County sold 0.5 MGD of capacity to other UOSA users in January 2019, which reduced County capacity to 22.1 MGD.

Even with the sale of County capacity, the UOSA Plant is capable of handling anticipated flows from its contributory sheds through 2045.

Loudoun Water

The northwestern part of Fairfax County is currently served by Blue Plains and NCPCP. To provide sufficient capacity for the anticipated growth in this area, the County purchased 1.0 MGD of capacity from the Loudoun Water in March of 2011. The flows in Blue Plains will be continually monitored to see if any additional capacity will be required from Loudoun Water in the planning period. Currently, the County is not utilizing its capacity at Loudoun Water. However, the use of this capacity is anticipated in the future as the County's flows approach its allocation at Blue Plains.

CURRENT PROJECT DESCRIPTIONS

1. **Alexandria Renew Enterprises (AlexRenew) Treatment Plant Improvements** (Countywide): This is a continuing project that supports the County's estimated share of improvements at the AlexRenew treatment plant. Fairfax County's share is estimated to be $92,802,000 through FY 2030. This project includes the replacement and rehabilitation of existing treatment process facilities and facilities to handle wet weather flows in order to avoid sanitary sewer overflows.

2. **Arlington Wastewater Treatment Plant Upgrade** (Countywide): This is a continuing project that supports the County's estimated share of the Arlington Wastewater Treatment Plant upgrade costs. Fairfax County's share is estimated to be $17,286,000 through FY 2030. Funding will provide for Fairfax's portion for non-expansion capital improvements, technology enhancements, clarifier upgrades, a Bio-solids Master Plan, and the relining of a large diameter sewer line for the Four Mile Run interceptor which runs from Fairfax County to the Arlington plant.

3. **DC Water Blue Plains Treatment Plant Improvements** (Countywide): This is a continuing project that supports the County's estimated share of upgrading the 370 MGD of capacity at the Blue Plains treatment plant. Fairfax County's share is estimated to be $165,290,000 through FY 2030. This upgrade includes major plant renovations, including the chemical addition, flow control tunnels, and sludge disposal systems to meet the enhanced total nitrogen standards.

4. **Extension and Improvements Projects** (Countywide): This is a continuing project to support the extension of sanitary sewer to homes with failing septic systems located within the approved sewer service area. Failing septic systems can be a health hazard and to mitigate this hazard, the County extends sanitary sewer to these homes. An amount of $19,000,000 is estimated to be required through FY 2030 and it is anticipated that $2,000,000 will be required annually in the future.

5. **Gravity Sewer Capacity Improvements** (Countywide): This is a continuing project to support increasing the size of existing sewer lines and installing new sewer lines to serve development within the County. This is a proactive program to manage the strain placed on the current sewer system due to additional load as areas develop. An amount of $163,524,000 is estimated to be required through FY 2030.

6. **Noman M. Cole, Jr. Pollution Control Plant Rehabilitation and Replacement** (Mt. Vernon District): This is a continuing project supporting the rehabilitation of the Noman Cole Pollution Control Plan. An amount of $738,372,000 is estimated to be required to continue the rehabilitation and replacement of the plant's assets through FY 2030. Projects proposed to improve the plant's assets include the following: replacement of and improvements to the existing biosolid facilities; replacement and upgrades to the facility's electrical system including the motor control centers and electrical distribution centers; rehabilitation and upgrades to disinfection facilities; HVAC upgrades to the laboratory and administration buildings; rehabilitation and replacement of miscellaneous pumps, gates, and valves; rehabilitation of the various facilities; facility pilots, improvements, and additions to improve processes and facilities aimed at improving environmental compliance optimization and reliability, facility safety and security, operations and maintenance costs, and sustainability of the facility; Facility storm water improvements; and other rehabilitation and replacement projects related to the maintenance of the wastewater treatment facility assets.

7. **Noman M. Cole, Jr. Pollution Control Plant Upgrades** (Mt. Vernon District): $164,555,000 is required to replace and rehabilitate existing treatment process facilities at the Noman Cole Pollution Control Plant. This project will include filtration facilities, equalization basin improvements, solid thickening facilities, and various other facilities at the wastewater treatment facility.

8. **Pumping Station Improvements** (Countywide): This is a continuing project to support the replacement, rehabilitation and upgrade of the System's pumping stations. An amount of $129,000,000 is estimated to be required through FY 2030. These improvements do not increase capacity of the stations but are related to addressing system upkeep or improving the stations to address service issues such as odor control.

9. **Sanitary Sewer Replacement, Rehabilitation and Reinvestment Program** (Countywide): This is a continuing project to support the replacement, rehabilitation and reinvestment of sewer lines. An amount of $297,825,000 is estimated to be required for through FY 2030. A continued increased effort to address large diameter sewer lines continues in order to prevent future pipe failures.

10. **Sewer Metering Projects** (Countywide): $5,032,000 to install and rehabilitate sewer meters. These meters support billing for actual flows, help identify excessive Inflow and Infiltration (I/I) and provide data required for billing other jurisdictions.

11. **Sewer System Capital Renewal** (Countywide): $2,425,000 has been approved to date for renovation and improvements to the Robert P. McMath facility. This facility houses the Sewer collection system maintenance staff and equipment. Improvements include reconfiguring office space, HVAC maintenance and miscellaneous facility rehabilitation. Other improvements will include the Supervisory Control and Data Acquisition (SCADA) Backup System, various safety improvements at all collection facilities and smaller miscellaneous improvements.

12. **Upper Occoquan Service Authority Treatment Plant Upgrade** (Countywide): This is a continuing project to support the County's share of plant upgrades associated with the Upper Occoquan Service Authority (UOSA). An amount of $47,851,000 is estimated to be required through FY 2030. Fund 69040, Sewer Bond Subordinate Debt Service, provides debt service funding for the UOSA Bond Series. The UOSA Bond Series is based on the County's portion of the UOSA plant's expansion and upgrades. Upgrade include plant renovations, specifically the nutrient cap project, filter press replacement, and re-carbonation clarifier improvements.

PROJECT COST SUMMARIES
SANITARY SEWERS
($000's)

	Project Title Project Number	Source of Funds	Budgeted or Expended Through FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY2021-FY2025	Total FY2026-FY2030	Total Project Estimate
1	Alexandria Renew Enterprises (AlexRenew) Treatment Plant Improvements WW-000021	SR, B	***C***	***$12,707***	$11,882	$14,939	$11,359	$9,915	$60,802	$32,000	$92,802
2	Arlington Wastewater Treatment Plant Upgrade WW-000020	SR, B	***C***	***$1,173***	$1,469	$1,577	$2,465	$4,102	$10,786	$6,500	$17,286
3	DC Water Blue Plains Treatment Plant Improvements WW-000022	SR, B	***C***	***$13,379***	$22,546	$16,899	$11,900	$15,566	$80,290	$85,000	$165,290
4	Extension & Improvement Projects WW-000006	SR	***C***	***$1,000***	$2,000	$2,000	$2,000	$2,000	$9,000	$10,000	$19,000
5	Gravity Sewer Capacity Improvements WW-000028, WW-000027	SR	***C***	***$15,612***	$13,454	$14,424	$14,470	$20,431	$78,391	$85,133	$163,524
6	Noman M. Cole, Jr. Pollution Control Plant Rehabilitation and Replacement WW-000009, WW-000017	SR, B	***C***	***$65,653***	$66,159	$70,355	$80,185	$80,500	$362,852	$375,520	$738,372
7	Noman M. Cole, Jr. Pollution Control Plant Upgrades WW-000016	SR, B, F, S	***$127,955***	***$2,800***	$3,000				$5,800	$30,800	$164,555
8	Pumping Station Improvements WW-000001	SR	***C***	***$10,631***	$15,500	$20,445	$20,176	$11,342	$78,094	$50,906	$129,000
9	Sanitary Sewer Replacement, Rehabilitation and Reinvestment Program WW-000007, WW-000008, WW-000024, WW-000026	SR	***C***	***$17,167***	$18,418	$20,361	$23,445	$29,144	$108,535	$189,290	$297,825
10	Sewer Metering Projects WW-000005	SR	***$2,582***	***$1,878***	$572				$2,450		$5,032
11	Sewer System Capital Renewal WW-000004	SR	***$2,425***						$0		$2,425
12	Upper Occoquan Service Authority Treatment Plant Upgrade Fund 69040	SR, X	***C***	***$8,000***	$10,000	$9,000	$9,000	$2,000	$38,000	$9,851	$47,851
	TOTAL		$132,962	$150,000	$165,000	$170,000	$175,000	$175,000	$835,000	$875,000	$1,842,962

Notes: Numbers in ***bold italics*** represent funded amounts. A "C" in the 'Budgeted or Expended' column denotes a continuing project.

Key: Source of Funds

B	Bonds
G	General Fund
S	State
F	Federal
X	Other
U	Undetermined
SR	Sewer Revenues

Stormwater Management

PROGRAM DESCRIPTION

Fairfax County's Stormwater Management program is managed on a comprehensive watershed basis and consists of: Regulatory Compliance, Dam Safety and Facility Rehabilitation, Stream and Water Quality, Emergency and Flood Control, Conveyance System Rehabilitation, contributory funding requirements and Operational Support.

LINK TO THE COMPREHENSIVE PLAN

Fairfax County's Comprehensive Plan Policy Plan Public Facilities Drainage and Stormwater Management Section and Environment Section includes the following established objectives:

- ✓ Provide for a comprehensive drainage improvement and stormwater management program to maximize property protection and environmental benefits throughout the watershed.
- ✓ Provide a system of drainage facilities that prevents or minimizes structure flooding, stream degradation and traffic disruption in an efficient, cost effective and environmentally sound manner.
- ✓ Prevent and reduce pollution of surface and groundwater resources. Protect and restore the ecological integrity of streams in Fairfax County.
- ✓ Protect the Potomac Estuary and the Chesapeake Bay from the avoidable impacts of land use activities in Fairfax County
- ✓ Identify, protect and enhance an integrated network of ecologically valuable land and surface waters for present and future residents of Fairfax County.

Source: 2017 Edition of the Fairfax County Comprehensive Plan- Public Facilities, Amended through 4-9-2019; Environment (amended through 12-3-2019)

PROGRAM INITIATIVES

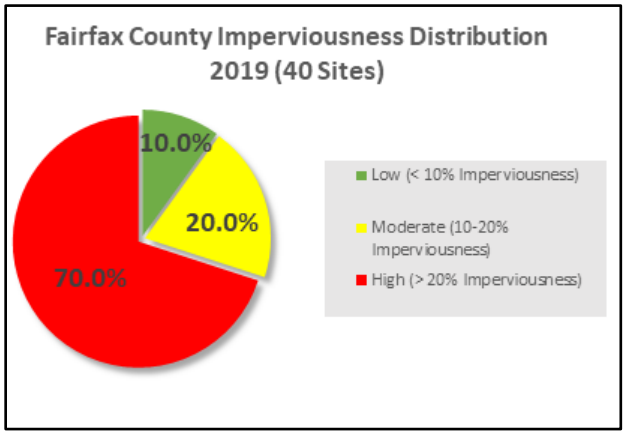
The long-range goal or mission for the stormwater program is dictated by the County's need to preserve and restore the natural environment and water resources, while being in full compliance with all applicable federal and state laws and mandates. Many of the requirements are derived from the State's Chesapeake Bay Initiatives, Municipal Separate Storm Sewer System Permit (MS4), and other Clean Water Act requirements and County ordinance and policies, such as the Water Supply Protection Overlay District. In order to comprehensively address program requirements and strategies for restoring water quality on a holistic basis, updated watershed management plans have been completed.

Watershed Planning and Implementation

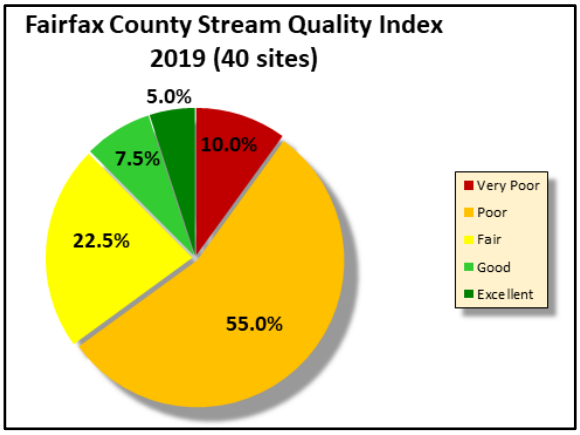
Plans for all 30 County watersheds have been completed. Previously prepared watershed master plans developed during the 1970s did not reflect changes in stream conditions resulting from land use practices, water quality standards and environmental goals, most of which have evolved over the last 30 years. The watershed plans provide targeted strategies for addressing stream health given current and future land use practices and relative stream conditions.

Stream physical and biological degradation becomes apparent when the extent of impervious surfaces within a watershed area approaches 10 to 20 percent. High levels of degradation occur as imperviousness exceeds 20 percent. During previous decades, prior to implementation of modern stormwater controls, the County's percent of imperviousness increased drastically which contributed to the current degraded conditions of many County streams. As depicted on graph A below, 70 percent of County stream monitoring sites in 2019 had impervious levels at or above 20 percent (high). In addition, 22.5 percent of the 40 sites monitored were between 10-20 percent impervious (medium). As depicted on the graph B below, and based on the same 2019 stream monitoring, just 12.5 percent of the County's streams are in good to excellent biological health condition. This condition is determined using an Index of Biological Integrity (IBI) which evaluates stream ecological health based on the community structure of bottom-dwelling aquatic invertebrates inhabiting the streams.

A



B



The Federal Clean Water Act and Virginia state laws require Fairfax County to meet water quality standards for surface streams. The County discharges stormwater from its storm drainage network into the waters of the state and must comply with all pertinent water quality standards and conditions established by the MS4 permit. The permit conditions require that the County have a comprehensive stormwater management program that includes inspection of existing stormwater facilities, watershed planning, public outreach, monitoring and implementation of practices to improve stormwater quality.

In addition to the MS4 permit requirements, Virginia and other signatory states to the Chesapeake Bay 2000 Agreement prepared "The Potomac River Tributary Strategies" in 2005 to set specific targets for reduction and capping of nutrients and sediment pollutants entering the Bay through its various tributaries and from both point source (e.g. wastewater treatment plants) and non-point source pollution. However, the Tributary Strategies are now replaced by the State's Watershed Improvement Plans (WIP) in response to requirements for a Chesapeake Bay-wide Total Maximum Daily Load (TMDL), established by the EPA in December 2010. The TMDL for the Chesapeake Bay has established a "pollution diet", or pollution load reduction targets needed to remove the Bay from the impaired waters list. The requirements for Bay states and localities are also being driven by a Presidential Executive Order number 13508 of May 2009 that called for more stringent actions, increased accountability and firm deadlines. The implementation phase of the TMDL is well on the way and Bay states have developed a Phase III WIP which was submitted to EPA in August 2019. The WIP involves increased measures tied to firmly established milestones and an ultimate implementation deadline of 2025. Through the stormwater program and other efforts, the County is doing its part to increase water pollution control measures in order to effectively improve local stream conditions, comply with increasing regulations and help restore the Chesapeake Bay.

While every effort has been made to accurately reflect the 5-year capital improvement plan for the stormwater program, there are currently multiple issues that are in various stages of the regulatory and permitting processes that will possibly have significant funding impacts on the Stormwater

program. Increases in regulatory requirements associated with the reissuance of the next 5-year MS4 permit anticipated later this year, updates to Chesapeake Bay-wide TMDL requirements as a result of the 2017 program assessment, the Phase III WIP and State stormwater regulations impact the funding requirements on a continual basis. Unforeseen flood mitigation efforts resulting from County-wide flooding events require a significant investment to implement corrective actions and correct failing and deficient storm drainage systems that are impacting county residential and commercial properties. In addition to these funding impacts to the stormwater program, the transfer of the Fairfax County Public Schools MS4 permit program to the County represents added funding requirements to the stormwater program as well.

Additional, funding impacts to the stormwater program include long term stormwater management maintenance requirements of County facilities that are designed and built using innovative stormwater management systems, such as Low Impact Development Systems (LIDS), also called Green Stormwater Infrastructure (GSI). Past stormwater maintenance at County-owned and operated facilities traditionally consisted of maintenance of catch basins, storm pipes and surface ponds. However, to meet current stormwater quality requirements, more extensive and complex stormwater management systems are being implemented for the treatment of stormwater runoff. These water quality systems continue to require more routine and more complex operational and maintenance efforts to function properly and comply with the stormwater permit requirements. Without the proper on-going operation and maintenance, the systems will likely fail, requiring more extensive costs to reconstruct the systems to function as designed. As these water quality systems and stormwater facilities come on-line, funding will be needed to meet the recurring maintenance requirements.

Financing the Stormwater Program

The Board of Supervisors approved a special service district to support the Stormwater Management Program as part of the FY 2010 Adopted Budget Plan. This service district provides a dedicated funding source for both operating and capital project requirements, by levying a service rate per $100 of assessed real estate value, as authorized by Code of Virginia Ann. Sections 15.2-2400. In FY 2014, a five-year spending plan was approved to gradually increase both funding and staffing for the Stormwater Program. The five-year plan was developed to support anticipated regulatory increases through a phased approach and was supported by increasing the service district rate by $0.0025 per year, a little over $1 per month for the median single-family house. Since FY 2010, staff has made significant progress in the implementation of watershed master plans, public outreach efforts, stormwater monitoring activities and operational maintenance programs related to existing storm drainage infrastructure including stormwater conveyance, quality improvements, and regulatory requirements. Therefore, staff is recommending that the FY 2021 stormwater service rate remain at the current rate of $0.0325 per $100 of assessed real estate value.

Staff continues to evaluate the success of the five-year program, analyzing future stormwater rate requirements, and developing Stormwater operational and capital resource needs. Actual revenue collected in recent years has been higher than projected, and it is anticipated that this amount will continue to increase as property values rise throughout the County. Although, the FY 2021 rate will remain at the $0.0325, it is anticipated that in the next several years, incremental rate increases will be required based on continued growth of stormwater facilities and infrastructure that must be inspected and maintained by the county, additional requirements in the new 2020 Municipal Separate Storm Sewer System (MS4) permit and several of the enhancements.

The FY 2021 levy of $0.0325 will generate $85,089,976, supporting $26,700,776 for staff and operational costs; $57,264,200 for capital project implementation including, infrastructure reinvestment, regulatory requirements, dam safety, and contributory funding requirements; and $1,125,000 transferred to the General Fund to partially offset central support services such as Human Resources, Purchasing, Budget and other administrative services supported by the General Fund, which benefit this fund.

The Stormwater spending plan supports a number of goals. First, it will provide for constructing and operating stormwater management facilities, including stream restoration, new and retrofitted ponds, and installation of Low Impact Development (LID) techniques, required to comply with the federally mandated Chesapeake Bay Program. The Chesapeake Bay Program requires the County to reduce Phosphorus, Nitrogen, and sediment loads to the Potomac River and Chesapeake Bay. MS4 Permit holders must achieve five percent of the required reductions within the current five year permit cycle; 35 percent of the required reductions in the second five year permit cycle; and 60 percent of the required reductions in the third five year permit cycle. The Capital Improvement Program includes a gradual increase that will help meet these requirements. Second, the funding will aid in the planning, construction, and operation of stormwater management facilities required to comply with state established local stream standards by reducing bacteria, sediments, and Polychlorinated Biphenyl (PCB) entering local streams. It is estimated that between 70 and 80 percent of the streams in the County will likely be considered impaired by Department of Environmental Quality. Third, the increase will support the federally mandated inspection, mapping, monitoring, maintaining, and retrofitting of existing stormwater facilities. The County currently owns and maintains over 2,350 stormwater management facilities that are valued at over $500 million and inspects approximately 4,900 private facilities. Fourth, the funding will aid in collecting stormwater data and reporting the findings; providing community outreach and education, supporting new training programs for employees; and developing new Total Maximum Daily Loads (TMDL) Action Plans for impaired streams related to the MS4 Permit requirements. Fifth, the increase will improve dam safety by supporting annual inspections of 20 state-regulated dams in the County and by developing Emergency Action Plans required by the state. The Emergency Action Plans are updated annually. In addition, these plans include annual emergency drills and exercises, and flood monitoring for each dam. Finally, the increase will facilitate maintaining, rehabilitating, and reinvesting in the County's conveyance system. The County's conveyance system includes 65,000 structures and 1,500 miles of pipes and improved channels, valued at more than $1 billion.

DPWES has also identified the need for a new facility for office staff and field maintenance operations to address the inadequate and outdated current space and accommodate the future positions required to support the increased scope of the stormwater program. Expansion to the current West Drive site is hampered by strict City of Fairfax zoning ordinances that do not allow expansion of the buildings or any exterior improvements to the property. Consolidation of Stormwater and Wastewater Divisions will combine functions and operations, and maximize efficiencies. It is anticipated that EDA bonds will finance this Stormwater/Wastewater consolidated facility and the Stormwater Fund and the Wastewater fund will proportionately provide for the annual debt service requirements associated with this $98 million facility.

In summary, Stormwater funding is essential to protect public safety, preserve property values and support environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local jurisdictional waterways. Projects include: repairs to stormwater infrastructure, measures to improve water quality, such as stream stabilization, rehabilitation and safety upgrades of dams, repair and replacement of underground pipe systems and surface channels, structural flood proofing and Best Management Practices (BMP) site retrofits. This funding also supports increased public outreach efforts and stormwater monitoring activities. The approach to capital investment in stormwater management will be to improve infrastructure reinvestment cycles and increase capital project implementation schedules to responsibly manage stormwater runoff within Fairfax County, while maintaining compliance with increasing regulatory requirements and operational requirements. Focus will be provided to balance effectiveness and efficiencies through management of staff resources balanced with delivery of services through outsourced opportunities.

CURRENT PROJECT DESCRIPTIONS

1. **Conveyance System Inspection and Development** (Countywide): This program provides inventory inspection and assessment services for storm drainage conveyance systems and stormwater drainage structures in the County. The County owns and operates approximately 1,500 miles of underground stormwater pipes and paved channels with an estimated replacement value of over $1 billion dollars. The County began performing internal inspections of the pipes in FY 2006. The initial results showed that more than 5 percent of the pipes were in complete failure and an additional 15 percent of them required immediate repair. The goal of this program is to inspect pipes on a 20-year cycle. Funding in the amount of $2,000,000 is included for Conveyance System Rehabilitation in FY 2021.

2. **Conveyance System Rehabilitation** (Countywide): This program provides repair and rehabilitation of storm drainage conveyance systems and stormwater drainage structures in the County. The County owns and operates approximately 1,500 miles of underground stormwater pipes and paved channels with an estimated replacement value of over $1 billion dollars. The County began performing internal inspections of the pipes in FY 2006. The initial results showed that more than 5 percent of the pipes were in complete failure and an additional 15 percent required maintenance or repair. Acceptable industry standards indicate that one dollar re-invested in infrastructure saves seven dollars in the asset's life and $70 dollars if asset failure occurs. Funding in the amount of $7,000,000 is included for Conveyance System Rehabilitation in FY 2021.

3. **Dam and Facility Maintenance** (Countywide): This program provides for inventory, inspections, operations and maintenance of all stormwater facilities within the County. There are currently more than 7,250 stormwater management structures in service that range in size from small rain gardens to large state regulated flood control dams. The County is responsible for inspecting both County owned and privately owned facilities and for maintaining County owned facilities. This inventory increases yearly and is projected to continually increase as new development and redevelopment sites are required to install stormwater management controls. This program maintains the control structures and dams that control and treat the water flowing through County owned facilities. This initiative also includes the removal of sediment that occurs in both wet and dry stormwater management facilities to ensure that adequate capacity is maintained to treat the stormwater. Funding in the amount of $5,000,000 is included for Dam Maintenance in FY 2021.

4. **Dam Safety and Facility Rehabilitation** (Countywide): This program provides for capital repair and rehabilitation of stormwater management facilities in the County. The County currently owns and operates approximately 1,451 dams, 564 green infrastructure facilities, and 334 various types of other facilities such as underground detention and proprietary systems with an estimated replacement value of over $500 million. Funding in the amount of $6,000,000 is included for Dam Safety and Facility Rehabilitation in FY 2021.

5. **Emergency and Flood Response Projects** (Countywide): This program supports flood control projects for unanticipated flooding events that impact storm systems and structural floodings. The program provides annual funding for scoping, design, and construction activities related to flood mitigation projects. Funding in the amount of $5,000,000 is included for the Emergency and Flood Response Projects in FY 2021.

6. **Flood Prevention-Huntington Area-2012** (Mt. Vernon District): $44,050,000 for storm drainage improvements to prevent flooding in the Huntington community. During the past 15 years, three floods have damaged homes, vehicles and other property in the Huntington neighborhood. Today, there are 180 homes in the FEMA-designated floodplain that are at risk. Homes in the area were built in the 1940s and 50s before regulations were enacted that prevented them from being sited in floodplains. At Fairfax County's request, the U.S. Army Corps of Engineers studied the best ways to protect Huntington from future floods. The study examined a number of options, including dredging Cameron Run, buying the flood-prone properties and flood proofing individual homes. The study found that building a levee and a pumping station is the most cost-effective way to reduce flooding in the neighborhood. Funds have been approved to purchase land, design and build a 2,800-foot-long levee and pumping station. While the levee can prevent flooding of houses from the types of storms that have happened in the past, it is not designed to offer protection from flooding that is caused by storms that are greater than a 100-year event. During major storms, street flooding may continue to occur in the Huntington area after the levee is built. Construction began in early 2017 with substantial completion achieved in June 2019. The current, updated total project estimate is $44,050,000. Funding of $30,000,000 was approved for this project as part of the fall 2012 Stormwater Bond Referendum. To accommodate

funding beyond that currently approved, a strategy was developed using a portion of revenue from the Stormwater Service District allocated to the Stream and Water Quality Improvements Program. The strategy reallocates a total of $10,000,000 over a four-year period. Use of the Stormwater Service District for this project is consistent with the goals of the program to address structural flooding and other critical community stormwater needs. In addition, funding of $4,050,000 has been applied from bond premium associated with the sale of the bonds between 2015 and 2018. At the conclusion of the project, any remaining funds associated with service district revenues will be redirected back to the Stormwater projects.

7. **Pro Rata Share Drainage Improvements** (Countywide): This is a continuing Program which utilizes Pro Rata funds received from developer to support watershed planning, regional pond development and other drainage improvement projects. Contributions are received in accordance with the Pro Rata Share Program approved by the Board of Supervisors on December 16, 1991. The Pro Rata Share Program provides a funding source to correct drainage deficiencies by collecting a proportionate share of the total estimated cost of drainage improvements from the developers of the land. As projects are identified and prioritized during scheduled budgetary reviews, Pro Rata funds on deposit are appropriated.

8. **Stormwater Allocation to Towns** (Countywide): This project is a continuing project which provides for allocations to the Towns of Vienna and Herndon. On April 18, 2012, the State Legislature passed SB 227, which entitles the Towns of Herndon and Vienna to all revenues collected within their boundaries by Fairfax County's stormwater service district. An agreement was developed for a coordinated program whereby the Towns remain part of the County's service district and the County returns 25 percent of the revenue collected from properties within each town. This allows for the towns to provide services independently such as maintenance and operation of stormwater pipes, manholes, and catch basins. The remaining 75 percent remains with the County and the County takes on the responsibility for the Towns' Chesapeake Bay TMDL requirements as well as other TMDL and MS4 requirements. This provides for an approach that is based on watersheds rather than on jurisdictional lines. Funding in the amount of $800,000 is included for the Stormwater Allocations to Towns project in FY 2021.

9. **Stormwater Regulatory Program** (Countywide): This is a continuing program to support the required federal law to operate under the conditions of a state issued MS4 Permit. Stormwater staff annually evaluates funding required to meet the increasing federal and state regulatory requirements pertaining to the MS4 Permit requirements, and State and Federal mandates associated with controlling water pollution delivered to local streams and the Chesapeake Bay. The MS4 Permit allows the County to discharge stormwater from its stormwater systems into state and federal waters. The County currently owns and/or operates approximately 15,000 outfalls, and 7,000 of these outfalls are regulated outfalls within the stormwater system that are governed by the permit. The current permit was issued to the County in April 2015. The permit requires the County to document the stormwater management facility inventory, enhance public outreach and education efforts, increase water quality monitoring efforts, provide stormwater management and stormwater control training to all County employees, and thoroughly document all of these enhanced efforts. The permit also requires the County to implement sufficient stormwater projects that will reduce the nutrients and sediment delivered to the Chesapeake Bay in compliance with the Chesapeake Bay TMDL implementation plan adopted by the State. Funding in the amount of $4,000,000 is included for the Stormwater Regulatory Program in FY 2021.

10. **Stormwater Related Contributories** (Countywide): This project provides funding for contributions associated with the Northern Virginia Soil and Water Conservation District (NVSWCD), and the Occoquan Watershed Monitoring Program (OWMP). The NVSWCD is an independent subdivision of the Commonwealth of Virginia that provides leadership in the conservation and protection of Fairfax County's soil and water resources. It is governed by a five-member Board of Directors - three members are elected every four years by the voters of Fairfax County and two members are appointed by the Virginia Soil and Water Conservation Board. Accordingly, the work of NVSWCD supports many of the environmental efforts set forth in the Board of Supervisors' Environmental Excellence 20-year Vision Plan. The goal of the NVSWCD is to continue to improve the quality of the environment and general welfare of the citizens of Fairfax County by providing them with a means of dealing with soil, water conservation and related natural resource problems. It provides County agencies with comprehensive environmental evaluations for proposed land use changes with particular attention to the properties of soils, erosion potential, drainage and the impact on the surrounding environment. NVSWCD has consistently been able to create partnerships and leverage state, federal and private resources to benefit natural resources protection in Fairfax County. The OWMP and the Occoquan Watershed Monitoring Laboratory (OWML) were established to ensure that water quality is monitored and

protected in the Occoquan Watershed. Given the many diverse uses of the land and water resources in the Occoquan Watershed (agriculture, urban residential development, commercial and industrial activity, water supply, and wastewater disposal), the OWMP plays a critical role as the unbiased interpreter of basin water quality information. FY 2021 funding of $554,811 is included for the County contribution to the NVSWCD and $172,138 is included for the County contribution to the OWMP.

11. **Stormwater/Wastewater Facility** (Braddock District): $98,000,000 for a Public Works complex to consolidate functions and operations and maximize efficiencies between Stormwater and Wastewater Divisions. The Stormwater business area provides essential watershed planning, engineering design, project management, contracting, monitoring, and maintenance services for stormwater management, storm drainage, flood control, snow removal, water quality, commercial revitalization, county-maintained roads and walkways, trails, public street name signs, and other designated county infrastructure. Current program operations are conducted from various locations throughout the County, with the majority of staff at the West Drive facility. Current facilities for field maintenance operations and for field/office based staff are inadequate and outdated for the increased scope of the stormwater program, and inadequate to accommodate additional required future positions. The West Drive site is restricted by City of Fairfax zoning ordinances which do not allow expansion of the buildings or any exterior improvements to the property. The Wastewater Collection Division operating out of Freds Oak, provides for the sewer collection and conveyance system for the County. This project is currently in design with construction anticipated to begin in fall 2020. It is anticipated that the facility will be financed by EDA bonds with the Stormwater Services Fund and Wastewater Fund supporting the debt service.

12. **Stream and Water Quality Improvements** (Countywide): This project supports the implementation of projects generated by the 30 watershed master plans as well as citizen response projects and other special project needs meeting the established project implementation criteria. This program funds water quality improvement projects necessary to mitigate the impacts to local streams and the Chesapeake Bay resulting from urban stormwater runoff. This includes water quality projects such as construction and retrofit of stormwater management ponds, implementation of low impact development techniques on stormwater facilities, stream restoration, and approximately 1,900 water quality projects identified in the completed countywide Watershed Management Plans. In addition, Total Maximum Daily Load (TMDL) requirements for local streams and the Chesapeake Bay are the regulatory process by which pollutants entering impaired water bodies are reduced. The Chesapeake Bay TMDL was established by the EPA and requires that MS4 communities as well as other dischargers implement measures to significantly reduce the nitrogen, phosphorous and sediment loads entering waters draining to the Bay by 2025. Compliance with the Chesapeake Bay TMDL requires that the County should undertake construction of new stormwater facilities, retrofit existing facilities and properties, and increase maintenance. The EPA is currently updating the Chesapeake Bay compliance requirements and it is anticipated that the update will result in changes to both the assigned targets as well as how projects are credited, which will likely impact future compliance estimates. In addition to being required to meet the Chesapeake Bay TMDL targets, the current MS4 Permit requires the County to develop and implement action plans to address local impairments. Most of the 1,900 watershed management plan projects contribute toward achieving the Chesapeake Bay and local stream TMDL requirements. Funding in the amount of $26,737,251 is included for Stream and Water Quality Improvements in FY 2021.

13. **Tree Preservation and Plantings** (Countywide): This is a continuing project which provides for tree plantings throughout the County. Revenues collected through the land development process are appropriated at year end to support the tree preservation and planting program.

PROJECT COST SUMMARIES
STORMWATER MANAGEMENT
($000's)

	Project Title Project Number	Source of Funds	Budgeted or Expended Through FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY2021-FY2025	Total FY2026-FY2030	Total Project Estimate
1	Conveyance System Inspection and Dev. 2G25-028-000	S	***C***	***$2,000***	$2,000	$3,000	$3,000	$3,000	$13,000	$15,000	$28,000
2	Conveyance System Rehabilitation SD-000034	S	***C***	***$7,000***	$8,000	$11,500	$13,000	$13,000	$52,500	$65,000	$117,500
3	Dam and Facility Maintenance 2G25-031-000	S	C	***$5,000***	$5,000	$5,000	$5,000	$5,000	$25,000	$25,000	$50,000
4	Dam Safety and Facility Rehabilitation SD-000033	S	***C***	***$6,000***	$7,000	$10,500	$11,600	$11,600	$46,700	$58,000	$104,700
5	Emergency and Flood Response Projects SD-000032	S	***C***	***$5,000***	$5,000	$5,000	$5,000	$5,000	$25,000	$25,000	$50,000
6	Flood Prevention -Huntington Area-2012 SD-000037	B, S	***$43,350***	***$700***					$700		$44,050
7	Pro Rata Share Drainage Improvements Fund 30090	***X***	***$2,811***						$0		$2,811
8	Stormwater Allocation to Towns 2G25-027-000	S	***C***	***$800***	$900	$1,000	$1,000	$1,000	$4,700	$5,000	$9,700
9	Stormwater Regulatory Program 2G25-006-000	S	***C***	***$4,000***	$4,000	$4,000	$4,000	$4,000	$20,000	$20,000	$40,000
10	Stormwater Related Contributories 2G25-007-000, 2G25-008-000	S	***C***	***$727***	$727	$727	$727	$727	$3,635	$3,635	$7,270
11	Stormwater/Wastewater Facility SD-000039	B, S	***$10,000***	$30,000	$30,000	$28,000			$88,000		$98,000
12	Stream and Water Quality Improvements SD-000031	S	***C***	***$26,737***	$26,737	$26,737	$26,737	$26,737	$133,685	$133,685	$267,370
13	Tree Preservation and Plantings 2G25-030-000	***X***	***$105***						$0		$105
	Total		$56,266	$87,964	$89,364	$95,464	$70,064	$70,064	$412,920	$350,320	$819,506

Notes: Numbers in ***bold italics*** represent funded amounts. A "C" in the 'Budgeted or Expended' column denotes a continuing project.

B	Bonds
G	General Fund
F	Federal
X	Other
U	Undetermined
S	Service District

Water Supply

PROGRAM DESCRIPTION

Residents of Fairfax County receive public water service from one of three water agencies: Fairfax Water, the Town of Vienna or the Town of Herndon. Fairfax Water owns and operates a full production and distribution system; the towns purchase water wholesale from Fairfax Water and operate their own distribution systems. Using recent estimated averages, Fairfax Water serves 97 percent of Fairfax County residents, the towns serve one percent, and the remaining two percent receive water from their own individual, private wells.

LINK TO THE COMPREHENSIVE PLAN

Fairfax County's Comprehensive Plan Policy Plan Public Facilities Water Supply Section includes the following established objectives:

- ✓ Locate sites, for adequate and appropriate facilities to treat, transmit and distribute a safe and adequate potable water supply, which conform to the land use goals of the Comprehensive Plan.
- ✓ Plan and provide for facilities to treat, transmit and distribute a safe and adequate potable water supply.

Source: 2017 Edition of the Fairfax County Comprehensive Plan- Public Facilities, Amended through 4-9-2019

PROGRAM INITIATIVES

While Fairfax County has neither direct administrative nor budgetary control over water suppliers, the importance of water facilities to County planning is recognized. The Board of Supervisors has entered into an agreement with Fairfax Water which requires Board approval of all capital projects undertaken by Fairfax Water. Fairfax Water projects included in this CIP represent a program guided by the objectives of the Comprehensive Plan and endorsed by the Board of Supervisors. Additional information can be found in Fairfax Water's 2020 Ten Year Capital Improvement Program, which is available directly from Fairfax Water.

Fairfax Water

The principal sources of water for Fairfax Water are the Occoquan Reservoir and the Potomac River. The Occoquan Reservoir is impounded by a gravity-type concrete dam across the Occoquan River, a few miles upstream of its confluence with the Potomac River. The dam was constructed in 1957. The drainage area of the Occoquan River above the dam is approximately 590 square miles. The dam impounds approximately 8.3 billion gallons of water when filled to the crest of the dam at Elevation 122 feet, mean sea level. The present Occoquan Reservoir supply has a safe yield of about 82.5 million gallons per day (MGD).

Treatment of water from the Occoquan Reservoir is provided by the 120 MGD Griffith Water Treatment Plant in Laurel Hill, placed in service in 2006. This facility applies various chemicals for coagulation, the control of taste and odors, fluoridation and disinfection. Construction of the intake structure on the Potomac River, raw water pumping station and the initial phase of the Corbalis Treatment Plant commenced in 1978 and was placed into operation in 1982. During 2008, construction of Stage III was completed, bringing total treatment capacity for this treatment plant to 225 MGD. Facilities are available for applying various chemicals for coagulation, control of taste and odors, fluoridation and disinfection.

Picture of the Occoquan Reservoir, one of Fairfax County's two principal sources of water.

On January 3, 2014, Fairfax Water purchased the water systems previously owned and operated by the cities of Falls Church and Fairfax. As part of the agreement, Fairfax Water acquired Falls Church's existing water supply contract with the Washington Aqueduct. Up to 31 MGD of finished water can be supplied to Fairfax Water by the Washington Aqueduct.

Thirty booster pumping stations are located within the distribution system to provide adequate pressure. A total of 56 million gallons (MG) of distribution system storage is provided at 21 locations throughout Fairfax County, the City of Falls Church and the City of Fairfax; an additional 37 MG of treatment plant clear well storage is also available between the Corbalis and Griffith facilities. There are approximately 4,000 miles of water main up to 54 inches in diameter in the system.

Development of Fairfax Water's supply, treatment, transmission and distribution facilities is conducted in accordance with a Ten Year Capital Improvement Program. Highlights of the current program include:

- **Distribution System Sustainability:** Increased reinvestment in the distribution system infrastructure to maintain a high level of service to customers.

- **Construction of various Transmission Improvements**: Transmission mains include, the Tysons East Transmission Main and the Lewinsville Connector Transmission Main. Various pumping station and storage improvements are also planned, including replacement storage tanks at the George Mason University campus in Fairfax, and the Seven Corners and Poplar Heights areas.

- **Central and Willard Road Maintenance Facilities:** Design and construction of replacement maintenance facilities to meet the existing and future public water service requirements of customers located in the central/eastern portion of Fairfax County, including McLean, Tysons, Merrifield, Baileys Crossroads, Seven Corners, and the Cities of Fairfax and Falls Church (Central) and western Fairfax County (Willard).

- **Source Water Protection Activities:** Fairfax Water continues to advocate for source water protection through support of the Occoquan Watershed Monitoring Program, Occoquan Nonpoint Source Program, the Potomac River Basin Drinking Water Source Protection Partnership, study of critical watershed areas, increased involvement in watershed and water quality issues and analysis of ongoing activities in the watershed.

CURRENT PROJECT DESCRIPTIONS

1. **Additions, Extensions and Betterments**: $111,136,000 for improvement and betterment of existing supply, treatment, transmission, distribution and general plant facilities associated with a specific project.

2. **Extraordinary Maintenance and Repairs**: $419,848,000 for maintenance and repairs, including $170,848,000 for extraordinary maintenance and major repair of supply, treatment, transmission and general plant facilities associated with a specific project, which includes the acquisition of property for and construction of a replacement central maintenance facility, and $249,000,000 to provide a sustainable distribution system through infrastructure reinvestment.

3. **General and Administrative**: $198,260,000 for expenses associated with administration and overhead. These expenses include materials and supplies; refund of advances; and costs associated with net revenue funded projects, but not attributed to a single project or program.

4. **General Studies and Programs**: $27,841,000 for general studies, programs, engineering and research pertaining to water quality, water supply and system development.

5. **Potomac Stage IV General Plant Facilities**: $3,880,000 for annual expenses attributed to administration, overhead and bond financing associated with development of the future Potomac River Water Supply Facilities funded by future bond issue and funds on hand.

6. **Potomac Stage IV Transmission Facilities**: $10,372,000 for the design and construction of the Tysons East Transmission Main from the Tysons Corner Pumping Station to the existing 24-inch water main in Magarity Road.

7. **Subdivision and Other Development Projects**: $10,750,000 for expenses associated with the review and approval of plans for water main installation associated with land development activities. This project also includes provisions for Fairfax Water inspection of water mains installed by land development contractors.

8. **System Integration – City of Falls Church & City of Fairfax**: $48,571,000 for transmission, distribution, pumping, and storage improvements to fully integrate the water system assets previously owned by the cities of Falls Church and Fairfax that became part of the Fairfax Water system on January 3, 2014.

PROJECT COST SUMMARIES
WATER SUPPLY
($000's)

	Project Title Project Number	Source of Funds	Budgeted or Expended Through FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total FY2021-FY2025	Total FY2026-FY2030	Total Project Estimate
1	Additions, Extensions and Betterments	SR	***C***	***$16,528***	***$19,751***	***$25,198***	***$13,620***	***$5,296***	$80,393	$30,743	$111,136
2	Extraordinary Maintenance and Repairs	SR	***C***	***$42,528***	***$46,850***	***$51,721***	***$51,575***	***$38,924***	$231,598	$188,250	$419,848
3	General and Administrative	SR	***C***	***$18,880***	***$19,100***	***$19,340***	***$19,600***	***$19,880***	$96,800	$101,460	$198,260
4	General Studies and Programs	SR	***C***	***$3,086***	***$5,818***	***$2,968***	***$2,390***	***$2,623***	$16,885	$10,956	$27,841
5	Potomac Stage IV General Plant Facilities	SR/B	***$2,090***	***$0***	***$30***	***$40***	***$30***		$100	$1,690	$3,880
6	Potomac Stage IV Transmission Facilities	SR/B	***$6,112***	***$0***	***$111***	***$167***	***$111***		$389	$3,871	$10,372
7	Subdivision and Other Development Projects	SR	***C***	***$1,030***	***$1,040***	***$1,050***	***$1,060***	***$1,070***	$5,250	$5,500	$10,750
8	System Integration (Falls Church/Fairfax)	SR	***C***	***$5,390***	***$3,728***	***$6,744***	***$15,178***	***$8,788***	$39,828	$8,743	$48,571
	Total		$8,202	$87,442	$96,428	$107,228	$103,564	$76,581	$471,243	$351,213	$830,658

Notes: Numbers in ***bold italics*** represent funded amounts. A "C" in the 'Budgeted or Expended' column denotes a continuing project.

Key: Source of Funds

B	Bonds
G	General Fund
S	State
F	Federal
X	Other