

Fund 408 Sewer Bond Construction

| <i>FY 2008 Adopted Budget Plan</i> | |
|---|------------------|
| <i>Fund 408, Sewer Bond Construction</i> | |
| Total Expenditures: | \$0 |
| Revenue: | |
| General Fund Support | \$0 |
| Bond Revenue | \$0 |
| Other Revenue | \$750,000 |
| Total Revenue | \$750,000 |

► Summary of Program

This Sewer Bond Construction Fund was established to fund major treatment plant upgrades. Projects funded by this fund are specifically identified in the Integrated Sewer System's Capital Improvement Program (CIP). The major purposes for these wastewater treatment plant upgrades are to fund Enhance Nutrient Removal (Nitrogen and Phosphorus), equipment renovations and replacements, and projects at Non-County wastewater treatment plants serving the System.

System capital improvements provide for the efficient and effective provision of public facilities to meet long-term service commitments. Programming capital facilities over time promotes better use of the County's limited financial resources, assists in the coordination of public and private development, and increases opportunities for coordination and leveraging of joint planning and development of facilities. By looking beyond year-to-year budgeting and projecting what, where, when and how capital investments should be made, capital programming enables public organizations to maintain an effective level of service for present and future populations.

The result of this continuing programming process is the Capital Improvement Program (CIP), which is a 10-year roadmap for funding future infrastructure requirements. The CIP addresses the Wastewater Management Program's needs relating to the acquisition, expansion, and rehabilitation of facilities and systems. It serves as a planning instrument to identify needed capital projects and coordinate the financing and timing of improvements in a way that utilizes financial resources in a responsive and efficient manner. It serves as a "blueprint" for the future of the community and is a dynamic tool, not a static document.

The underlying strategy of the CIP is to plan for land acquisition, construction, and maintenance of public facilities necessary for the safe and efficient provision of public services in accordance with broad policies and objectives adopted in the County's Comprehensive Plan. In keeping with this strategy, the primary goals of the Wastewater Management Program's CIP may be summarized as follows:

1. Provide treatment facilities that meet applicable effluent discharge standards using state-of-the-art technology in the most cost-effective manner possible.
2. Provide a system of conveyance and treatment facilities that can accommodate projected residential and nonresidential growth over the planning period.

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3. Renovate and improve facilities to maintain a high level of efficiency, ensure cost-effective long-term operations, and provide a sufficient level of service.
4. Extend the sewer service within approved areas to those sections of the County where failed or failing septic systems pose a potential threat to the health of County citizens.

While the CIP serves as a long range plan, it is reviewed semi-annually and revised based on current circumstances and opportunities. Priorities may be changed due to funding opportunities or circumstances that cause a more rapid deterioration of an asset. Projects may be revised for significant costing variances as the needs of the community become more defined and projects move closer to final implementation.

► Funding Availability and Future Considerations

Funds are made available through the sale of Sewer Revenue Bonds and the transfer of funds from Fund 400, Sewer Revenue. Funds generated through Sewer Service Charges are used to support existing customer projects and related debt service payments, while funds generated through Availability Fees are used to support new customer projects and related debt service payments. Bond proceeds are deposited directly into this fund to support major treatment plant projects at the Noman M. Cole, Jr. Pollution Control Plant (NCPCP), the Arlington Wastewater Treatment Plant, the DC Water and Sewage Authority's Blue Plains Plant, the Alexandria Wastewater Treatment Plant, and the Loudoun County Sanitation Authority's Broad Run Wastewater Treatment Plant. Regulatory requirements for the removal of Nitrogen to levels less than 3.0 mg/l are significantly increasing CIP funding needs in this fund.

► Status of Program

Noman M. Cole, Jr. Pollution Control Plant

The NCPCP plant 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 Noman M. Cole, Jr. Plant was put on line 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.

In order to meet the anticipated needs for sanitary sewage service in sheds that contribute to the NCPCP as well as meet new water quality standards for nitrogen control, the program to expand the plant to 67 MGD was initiated in 1992. Construction began in 1997 and was completed in 2005. However, additional facilities will be needed to enhance the removal of nitrogen to current limits of technology. The Noman M. Cole, Jr. Pollution Control Plant is capable of handling anticipated flows from its contributory sheds through 2030. This capacity will meet the future demands until 2030 for the Accotink, Pohick, and Long Branch drainage basins and the City of Fairfax, the Town of Vienna and Fort Belvoir. It is anticipated that approximately \$137 million will be needed during the next ten years to continue the rehabilitation and replacement of the plant's assets. Projects proposed to improve the plant's assets include the following: prepare Master Plan; repair and replace pumps, motors, mixers, chemical feed systems, valves, and other plant equipment; renovate and upgrade

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roads, floors, walls, tank sidewalls & bottoms, and other grounds-, building-, and structure-related facilities; replace or rehabilitate tertiary clarifiers used to remove phosphorous; replace or install additional back-up electrical generators; construct additional odor control facilities; construct site improvements to direct stormwater runoff to wastewater treatment facilities; install bio-filter devices to supplement odor control systems; rehabilitate incinerator hearths; complete replacement of plate and frame dewatering units with centrifuges; pave pond no. 1; and replace elevator in Solids Processing building. It is estimated that \$97.6 million will be required to upgrade the plant to meet the limit of technology (LOI) requirements for nitrogen removal associated with the Chesapeake Bay Program. Proposed project will include construction of new chemical storage and feed facilities to add methanol for improved nitrogen removal, denitrification filters or equivalent technology such as moving bed biofilm reactors; construction of additional equalization tanks; replacement of the existing bar screens; conversion of the gravity thickeners to fermentors; modifications to the activated sludge tanks; and rehabilitation of the monomedia filters.

Alexandria Sanitation Authority

The Cameron Run and Belle Haven watersheds and the City of Falls Church are served by the Alexandria treatment plant. The Alexandria plant is owned and operated by the Alexandria Sanitation Authority (ASA). Sixty percent of its capacity is contractually allocated to Fairfax County. The ASA plant has been expanded and upgraded to provide 54 MGD of advanced secondary treatment capacity. Fairfax County is allotted 32.4 MGD of capacity. By 2005, flows from Cameron Run, Belle Haven and Falls Church should approach 23 MGD which will leave Fairfax County with unused capacity of several years beyond that time. By reactivating the Braddock Road and Keene Mill Road pumping stations, the County has the capability to divert flow from the Accotink watershed to ASA. These diversions will increase the County's wastewater management alternatives in the entire eastern portion of the County by off loading the NCPCP and Blue Plains Treatment Plant to the ASA plant. The ASA plant completed a major rehabilitation project in 2005 to meet water quality standards for nitrogen removal. As with other treatment plants in the area, additional facilities will be needed to enhance the removal of nitrogen to current limits of technology. The County's existing capacity at the ASA plant is capable of handling anticipated flows from its contributory sheds through 2030. Preliminary estimates indicate that the County requirement is anticipated to be \$50 million during FY 2008 through FY 2017 for the County's share of improvements at the Alexandria wastewater treatment plant. Included is renovation of the carbon absorption system, scum collection system, the dechlorination system and the nitrogen removal system to meet the enhanced total nitrogen standard of three parts per million, which includes the purchase of land for equalization tanks.

Blue Plains

With a current capacity of 370 MGD, the District of Columbia Water and Sewer Authority (DCWASA) 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 will be undergoing a major renovation of the chemical additions and sludge disposal systems over the next several years. The County's existing capacity at the Blue Plains plant is now capable of handling anticipated flows from its contributory sheds through 2030. Preliminary estimates indicate that the County requirement is anticipated to be \$109 million during FY 2008 through FY 2017 for the County's share of upgrading the 370 MGD of capacity at the Blue Plains treatment plant. This upgrade includes major plant renovations,

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specifically including the chemical addition, Enhanced Nitrogen Removal (ENR) facilities, and sludge disposal systems.

Arlington County Pollution Control Plant

The Arlington County pollution control plant serves that portion of Fairfax County within the Four Mile Run watershed. The plant has been expanded and upgraded to 30 MGD of advanced secondary capacity. Over the next five to ten years, the Plant will be upgraded again to comply with the water quality standards for nitrogen removal, and expanded to 40 MGD, which should be completed by the end of 2010. The Arlington plant currently receives approximately 2.1 MGD of flow from Fairfax County. The County's contractual capacity is 3.0 MGD. The County's existing capacity at the Arlington plant is capable of handling anticipated flows from its contributory sheds through 2030. The County's estimated share of the plant upgrade costs is anticipated to be approximately \$45 million during FY 2008 through FY 2017 for these upgrades. This project is the result of a new Interjurisdictional Sewer Service Agreement which requires funding from participating jurisdictions, on the basis of their share of sewerage capacity and to meet the one part per million ammonia-nitrogen discharge standard.

Upper Occoquan Sewage Treatment Authority

The southwestern part of Fairfax County is served by a regional plant owned and operated by the Upper Occoquan Sewage 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. The following summarizes the County's capacity in the plant:

- Original plant capacity of 15 MGD- County capacity of 5.45 MGD
- Plant capacity expansions to 27 MGD- County capacity of 9.915 MGD
- Additional plant capacity expansions to 54 MGD- County capacity of 27.6 MGD
- The County is considering the sale of 3.0 MGD of capacity to other UOSA users, which will reduce County capacity to 24.6 MGD in FY 2008
- UOSA is planning for major plant improvements during the next 10 years, and will issue additional debt to finance the capital improvements.

Even with the sale of County capacity, the UOSA Plant is capable of handling anticipated flows from the Fairfax County contributory sheds through 2030. Although the County has funded UOSA projects in the past, currently, UOSA prefers to issue bonds for capital improvements at the UOSA treatment facility and bill Fairfax County for its share of debt service.

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Loudoun County Sanitation Authority

The western part of Fairfax County is currently served by Blue Plains and Noman Cole Pollution Control Plants. To provide sufficient capacity for the western service area of Fairfax County, the County is considering the purchase of 1.0 MGD of capacity from the Loudoun County Sanitation Authority (LCSA) by 2010 and may need up to an additional 2.0 MGD by 2025. Because lower growth resulting in reduced wastewater generation in the Blue Plains pump-over may occur, the County is only committing to 1.0 MGD of capacity. The flows in Blue Plains will be continually monitored to see if any additional capacity will be required from the LCSA in the planning period. Fairfax County anticipates spending \$20 million for the purchase of 1.0 MGD at Loudoun County's new wastewater treatment plant.

► **Mandate Information**

This LOB is federally or state mandated, and is required to satisfy Chesapeake Bay Agreements for Enhanced Nutrient Removal. The percentage of this LOB resources utilized to satisfy the mandate is in the range of 50-60 percent. See the January 2007 Mandate Study, reference page 65 for specific state code and a brief description.