# SEWERS

## Including the Sanitary Sewer Module and Stormwater Utility Module

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# Sewers

| Subsection / Project | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sanitary Sewers Projects | | | | | | | | | | | | |
| ASA Treatment Facility Expansion | $0 | $0 | $0 | $0 | $0 | $0 | $2,000,000 | $0 | $0 | $0 | $0 | $2,000,000 |
| Reclaimed Water System via WTE Plant | 0 | 100,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $100,000 |
| 4 Mile Run Sanitary Sewer Repair | 0 | 0 | 300,000 | 1,500,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $1,800,000 |
| Commonwealth Service Chamber | 370,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Correction of Infiltration & Inflow | 1,000,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Mitigation of CSO's | 1,788,690 | 289,000 | 304,000 | 319,000 | 335,000 | 335,000 | 350,000 | 350,000 | 350,000 | 350,000 | 350,000 | $3,332,000 |
| Reconst. & Extension of Sanitary Sewers | 2,080,050 | 1,600,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | $10,600,000 |
| Sanitary Sewer Capacity Study | 0 | 699,877 | 300,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | $2,599,877 |
| Sewer Separation Projects | 1,025,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | $6,000,000 |
| Holmes Run Trunk Sewer | 2,037,000 | 4,000,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $4,000,000 |
| Holmes Run I & I | 0 | 7,910,000 | 4,360,000 | 4,360,000 | 4,200,000 | 4,200,000 | 0 | 0 | 0 | 0 | 0 | $25,030,000 |
| Total Sanitary Sewers Projects | 8,300,740 | 15,198,877 | 6,864,000 | 7,979,000 | 6,335,000 | 6,335,000 | 4,150,000 | 2,150,000 | 2,150,000 | 2,150,000 | 2,150,000 | $55,461,877 |

| Subsection / Project | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stormwater Utility Projects | | | | | | | | | | | | |
| Miscellaneous Storm Sewer Repairs | 0 | 1,132,000 | 2,210,000 | 2,400,000 | 2,500,000 | 750,000 | 500,000 | 750,000 | 2,100,000 | 100,000 | 100,000 | $12,542,000 |
| Key Drive Flood Mitigation | 0 | 0 | 0 | 0 | 0 | 1,000,000 | 800,000 | 0 | 0 | 0 | 0 | $1,800,000 |
| Taylor's Run at Janney's Lane | 551,250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Oronoco Outfall | 1,510,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Storm & Combined Assessment | 600,000 | 0 | 450,000 | 900,000 | 540,000 | 900,000 | 900,000 | 900,000 | 900,000 | 900,000 | 900,000 | $7,290,000 |
| NPDES / MS4 Permit | 175,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Braddock & West Storm Sewer | 0 | 0 | 0 | 0 | 0 | 0 | 750,000 | 750,000 | 1,000,000 | 2,000,000 | 2,000,000 | $6,500,000 |
| Storm Sewer Capacity Analysis | 1,420,500 | 868,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $868,000 |
| Total Stormwater Utility Projects | $4,256,750 | $2,000,000 | $2,660,000 | $3,300,000 | $3,040,000 | $2,650,000 | $2,950,000 | $2,400,000 | $4,000,000 | $3,000,000 | $3,000,000 | $29,000,000 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Expenditure Requests | $12,557,490 | $17,198,877 | $9,524,000 | $11,279,000 | $9,375,000 | $8,985,000 | $7,100,000 | $4,550,000 | $6,150,000 | $5,150,000 | $5,150,000 | $84,461,877 |
| Less Total Revenues | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Subtotal Requests | $12,557,490 | $17,198,877 | $9,524,000 | $11,279,000 | $9,375,000 | $8,985,000 | $7,100,000 | $4,550,000 | $6,150,000 | $5,150,000 | $5,150,000 | $84,461,877 |

## SANITARY SEWER FUND MODULE

Overview: The FY 2011 – FY 2020 Proposed Sanitary Sewer Module includes $55.5 million in sanitary sewer improvement projects for reducing stormwater inflow and infiltration and expanding capacity in order to prevent sanitary sewer backups and minimize the environmental impacts of sanitary sewer discharge. These improvements are required as part of the City's compliance with state environmental permitting regulations. A sanitary sewer master plan currently under development is likely to identify additional capital needs beyond those contained in the Proposed CIP.

Revenue Generation: The Sanitary Sewer Module is funded by a combination of sewer connection fees charged to developers for tying new structures in to the system and sanitary sewer usage fees charged to existing property owners on the quarterly water bill base on gallons consumed. The sewer connection fees are adjusted annually according to the CPI-U. The sewer usage fee has not been increased since FY 2006, when it was raised from $0.60 per 1,000 gallons to $1.00 in accordance with a multi-year plan to create this separate fund and gradually increase the fee to $1.00. The current rate costs the typical household approximately $70 annually, or $17.50 per quarter. The $0.25 per 1,000 gallon increase currently proposed would cost the typical household approximately $17.50 per year, or $4.38 per quarter.

FY 2011 sanitary sewer-related operating costs, including two new engineering positions, and capital projects are fully funded by revenues generated by the existing fee rate and $28.3 million in new sanitary sewer debt financing. Without the proposed increase of $0.25 per 1,000 gallons, the City would have to either defer future projects (most likely Holmes Run Infiltration and Inflow), or utilize additional borrowing above the planned $28.3 million, which would drive up debt service costs in future years and potentially crowd out funds for additional projects.

Proposed Projects: The projects included in the FY 2011 – FY 2020 Proposed Sanitary Sewer Module address maintenance-related issues necessary at current levels of development in the City. It is likely that future Sanitary Sewer Fund Modules will incorporate new capacity-related projects stemming from projected development and population growth in the City. Additional revenue will likely be required to fund these projects, but utilization of the sewer tap fee, rather than the sewer line maintenance fee, may be a more appropriate method for providing these funds.

# Sewers

## SANITARY SEWER FUND MODULE SOURCES AND USES

| Sanitary Sewer Fund Module Expenditures | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Capital Projects | | | | | | | | | | | |
| ASA Treatment Facility Expansion | $0 | $0 | $0 | $0 | $0 | $2,000,000 | $0 | $0 | $0 | $0 | $2,000,000 |
| Reclaimed Water System via WTE Plant | 100,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $100,000 |
| 4 Mile Run Sanitary Sewer Repair | 0 | 300,000 | 1,500,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $1,800,000 |
| Commonwealth Service Chamber | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Correction of Infiltration & Inflow | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Mitigation of CSO's | 289,000 | 304,000 | 319,000 | 335,000 | 335,000 | 350,000 | 350,000 | 350,000 | 350,000 | 350,000 | $3,332,000 |
| Reconst. & Extension of Sanitary Sewers | 1,600,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | $10,600,000 |
| Sanitary Sewer Capacity Study | 699,877 | 300,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | $2,599,877 |
| Sewer Separation Projects | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | $6,000,000 |
| Holmes Run Trunk Sewer | 4,000,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $4,000,000 |
| Holmes Run I & I | 7,910,000 | 4,360,000 | 4,360,000 | 4,200,000 | 4,200,000 | 0 | 0 | 0 | 0 | 0 | $25,030,000 |
| Subtotal Capital Expenditures | $15,198,877 | $6,864,000 | $7,979,000 | $6,335,000 | $6,335,000 | $4,150,000 | $2,150,000 | $2,150,000 | $2,150,000 | $2,150,000 | $55,461,877 |
| Operating Costs | | | | | | | | | | | |
| Personnel | 1,720,149 | 1,755,000 | 1,790,000 | 1,826,000 | 1,863,000 | 1,900,000 | 1,957,000 | 2,015,000 | 2,076,000 | 2,138,000 | $19,040,149 |
| Non-Personnel | 513,113 | 523,000 | 533,000 | 544,000 | 555,000 | 566,000 | 577,000 | 588,000 | 599,000 | 610,000 | $5,608,113 |
| Debt Service - prior debt issuance | 1,200,361 | 1,164,983 | 1,128,697 | 1,045,981 | 988,533 | 934,164 | 882,785 | 834,232 | 788,349 | 744,990 | $9,713,073 |
| Debt Service - planned future debt issuance | 0 | 946,957 | 1,230,626 | 1,627,753 | 1,902,154 | 2,185,742 | 2,292,780 | 2,239,315 | 2,185,665 | 2,131,775 | $16,742,764 |
| Total Operating Expenditures | $3,433,623 | $4,389,940 | $4,682,323 | $5,043,734 | $5,308,687 | $5,585,905 | $5,709,564 | $5,676,546 | $5,649,013 | $5,624,764 | $51,104,100 |
| | | | | | | | | | | | |
| Total Sanitary Sewer Expenditures | $18,632,500 | $11,253,940 | $12,661,323 | $11,378,734 | $11,643,687 | $9,735,905 | $7,859,564 | $7,826,546 | $7,799,013 | $7,774,764 | $106,565,977 |

| Sanitary Sewer Module Funding Sources | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sewer Line Maintenance Fee | $6,562,500 | $6,562,500 | $6,562,500 | $6,562,500 | $6,562,500 | $6,562,500 | $6,562,500 | $6,562,500 | $6,562,500 | $6,562,500 | $65,625,000 |
| Sewer Connection Fee | $1,180,000 | $1,215,400 | $1,251,862 | $1,289,418 | $1,328,100 | $1,367,943 | $1,408,982 | $1,451,251 | $1,494,789 | $1,539,632 | $13,527,378 |
| New Debt Issuance | $10,890,000 | $3,480,000 | $4,850,000 | $3,530,000 | $3,750,000 | $1,800,000 | $0 | $0 | $0 | $0 | $28,300,000 |
| Fund Balance Carryover | $0 | $0 | $3,960 | $6,999 | $10,184 | $7,097 | $1,635 | $113,552 | $300,757 | $559,033 | |
| Total Funding Sources | $18,632,500 | $11,257,900 | $12,668,322 | $11,388,917 | $11,650,784 | $9,737,540 | $7,973,117 | $8,127,303 | $8,358,046 | $8,661,165 | $108,455,595 |
| | | | | | | | | | | | |
| Year-End Fund Balance | $0 | $3,960 | $6,999 | $10,184 | $7,097 | $1,635 | $113,552 | $300,757 | $559,033 | $886,401 | |

## ASA Treatment Facility Expansion

**Subsection:** Sanitary Sewers Module
**Managing Department:** T&ES
**Project Group:** Exempt

**Estimated Useful Life of Improvement:** 40 years
**Priority:** Essential

**Project Summary:** The Alexandria Sanitation Authority is currently in the design process for the expansion of its wastewater treatment facility – current capacity 54 Million Gallons per Day (MGD) - to meet Virginia Nitrogen and Phosphorus requirements. As part of this process, at the City's request, the authority will investigate expanding the facility by up to 9 MGD, which should be sufficient to meet City growth demands until 2050, and also provide additional capacity for wet weather flows. Current development projections indicate that up to 4 MGD will be necessary by 2040. As a first step to implement this project, the consultant currently enlisted to design the expansion will investigate the feasibility of this project. The City will reimburse ASA for the cost of this work. The feasibility study will begin in the spring of 2010.

In the FY 2011 CIP, $2.0 million is budgeted in FY 2016 for preliminary design of the ASA facility expansion. Any additional design costs will be determined when the feasibility study is completed. The current project construction estimate is $200 million. These expenses have been and should be customary expenses of ASA and not the City. How to finance the ASA expansion will need to be worked out with ASA, as the expansion should be financed by ASA issuing the revenue bonds backed by sanitary sewer system user charges.

**Changes from Prior Year:** This is a new project not previously in the CIP. Funding for preliminary design only is included.

**Operating Impact:** This project will not impact the operating budget.

| ASA Treatement Facility Expansion | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 0 |

| ASA Treatement Facility Expansion | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 2,000,000 | 0 | 0 | 0 | 0 | 2,000,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 2,000,000 |

## Reclaimed Water System via Eisenhower Avenue Waste-to-Energy Plant

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt
Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: Reuse is an integral part of water resources management, wastewater management, and ecosystem management. It reduces demands on valuable surface and ground waters used for drinking water sources and may add capacity at the Water Reclamation Facility. Based on growth pressures within the City and current regulatory nutrient constraints at the Alexandria Sanitation Authority's (ASA) Advanced Waste Treatment Facility, ASA and the City are funding a study to evaluate the feasibility, constructability and potential cost benefits of operating a wastewater reuse system to service the Covanta Waste-to-Energy Plant located on Eisenhower Avenue. A market assessment study for a reclaimed water system was completed in FY 2010. Funding for the design phase of this project is not budgeted in the FY 2011 – FY 2020 CIP. Following the completion of the Sanitary Sewer Master Plan, the City will know more about it and when to budget the design funds for this project. After the future study, the economic feasibility of this water reuse option will be more clear.

Changes from Prior Year: $100,000 is requested for FY 2011 as an assumed twenty percent match on a federal earmark ($500,000) for a reuse study. If additional matching funds are needed for this earmark, the City will borrow from existing sanitary sewer balances in FY 2011 and backfill these funds in FY 2012. Funding for the design phase is not included in the Proposed CIP.

Operating Impact: The project will have no impact on operating cost at this time.

| Reclaimed Water System via WTE | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 100,000 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 100,000 | 0 | 0 | 0 | 0 |

| Reclaimed Water System via WTE | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 100,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 100,000 |

## Four Mile Run Sanitary Sewer Repair

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt

Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: This project will fund the rehabilitation of the Four Mile Run sanitary sewer. During field inspections of the Four Mile Run Inflow and Infiltration project in FY 2001, surcharged manholes with significant solids were encountered along the 36-inch diameter truck sewer upstream of the Four Mile Run pump station. Efforts to clean the trunk sewer were unsuccessful due to the heavy solids volume and compaction in the sewer. In FY 2008, a specialty contractor successfully removed the solids and an inspection and condition assessment was completed. Based on the condition assessment of the trunk sewer following the removal of the solids, rehabilitation is necessary. $1.8 million is budgeted for this project with $300,000 for design in FY 2012 and $1.5 million for construction in FY 2013. ASA will be upgrading the existing 4-Mile Run Pump station and the City is coordinating the trunk sewer rehabilitation with ASA's improvements.

Changes from Prior Year: Design funding of $300,000 has been moved from FY 2011 to FY 2012.

Operating Impact: This project will have no impact on the operating budget

| Four Mile Run Sanitary Sewer Repair | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 300,000 | 1,500,000 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 300,000 | 1,500,000 | 0 | 0 |

| Four Mile Run Sanitary Sewer Repair | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 1,800,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 1,800,000 |

## Commonwealth Service Chamber

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt

Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: This project will fund the construction of a service chamber on the Commonwealth Interceptor. The service chamber will act to prevent sewer backups during wet weather flows from the combined sewer area when the combined sewer outfall at Hooff's Run is submerged. The service chamber may be similar to two located on the Holmes Run Trunk Sewer that protect the low lying developed areas in the Eisenhower Valley. A study was begun in FY 2010, and is scheduled for completion in FY 2011 using the remaining unallocated balance of $370,000. Construction costs and schedule will be determined at the completion of the study.

Changes from Prior Year: $2.7 million was eliminated for construction from FY 2012 until the study results are known in FY 2011.

Operating Impact: This project will have no impact on the operating budget

| Commonwealth Service Chamber | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 370,000 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 370,000 | 0 | 0 | 0 | 0 | 0 |

| Commonwealth Service Chamber | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 0 |

## Correction of Infiltration/Inflow

Subsection: Sanitary Sewers
Managing Department: T&ES
Phase: Phase IV (Construction)
Project Group: Exempt

Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: This project provides for the evaluation and remediation of infiltration/inflow conditions in older parts of the City's separate sanitary sewer system. These areas include the sanitary sewer systems tributary to the Commonwealth Interceptor and areas in the Holmes Run sewer service area. During wet weather, infiltration and inflow into these older sanitary sewers have created overload conditions causing basement back-ups. This project will identify leaking sewers and connections (which allow excessive infiltration/inflow to enter sewers) and correct the problem through the repair of the sewers and removal of direct storm water sources such as down spouts.

Changes from Prior Year: There are no changes in funding for this capital project.

Project History: This correction program was started in FY 1999 when studies were conducted in the Four Mile Run sewer service area. This area is a tributary to the Four Mile Run Pumping Station and comprises the upper part of the City served by the Commonwealth Interceptor. As a result of these studies, the City conducted field inspections and flow monitoring of the existing sewers. Field inspections included street by street TV investigations of sewers, followed by visual investigations of connections employing nondestructive methods such as dye and smoke testing to identify the sources of connections to the existing sewers. The fieldwork and monitoring was performed by dividing sewer service areas into sections and proceeding through each section sequentially. Fieldwork was completed in the sanitary sewer system's tributary to the Commonwealth Interceptor. Construction on the Commonwealth Interceptor sewer shed began in fall 2005 and was completed in the spring of 2007. Field work in the Taylor Run sub-shed of the Holmes Run sewer service area was completed in summer 2007. The studies show the sanitary sewers require substantial repairs to correct broken and cracked pipe, root intrusion, leaking joints, damaged connections between street sewers and laterals (house sewer connections), and leaking manholes. Most of the conditions can be remediated by internal repair methods such as installation of an internal lining in the pipe. However, some conditions such as broken pipes require excavation and replacement to restore the structural integrity of the sewer. The information from the field work completed to date shows that the relining and repairs required to reduce inflow and infiltration to non-excessive quantities and restore structural integrity are substantially greater than previously anticipated. Construction began in Summer 2008 and will be completed in Summer 2010, and post construction flow monitoring will be completed in Winter 2011. To date, approximately $11 million has been spent on this project.

Schedule: This project is currently in the construction phase (Phase 4). Construction began in the summer of 2008. Construction is expected to be completed during summer 2010 and post-construction flow monitoring will be completed in winter 2011 utilizing remaining balances.

Customer Service Level Impact: This project will reduce infiltration and inflow in sanitary sewer lines as well as reduce the need for emergency repairs. Some reduction in Average Daily Flow at the Alexandria Sanitation Authority Advanced Waste Water Treatment Facility is anticipated, resulting in a small amount of future capacity availability.

Operating Impact: This project will have no impact on the operating budget.

| Correction of Infiltration/ Inflow | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 1,000,000 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 1,000,000 | 0 | 0 | 0 | 0 | 0 |

| Correction of Infiltration/ Inflow | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 0 |

| Capital Performance Measures |
|---|
| On-time (within projected time period) |
| On-budget (within projected range of costs) |
| Reduction in Inflow and infiltration in the sanitary sewer systems |

## Mitigation of Combined Sewer Overflows (CSO's)

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt

Estimated Useful Life of Improvement: 40 Years
Priority: Essential

Project Summary: This project category funds the mitigation projects related to combined sewer overflows. The City's combined storm and sanitary sewer system is comprised of areas east of the railroad corridor (primarily Old Town), which includes an area of approximately 560 acres. Combined sewer outfalls (discharge points for wet weather overflows) are located at the foot of Pendleton and Royal Streets and under Duke Street at Hooff's Run. Approximately $1.8 million in prior year unallocated funds remains to be used for the program required by the existing permit. In addition, a total of $3.3 million has been planned over ten years (FY 2011 through FY 2020). These funds will be used to continue the implementation of permit conditions through FY 2020. A total mitigation of the CSO system would require significantly more funds than planned in this CIP.

Changes from Prior Year: Annual funding of $350,000 has been added to FY 2016 and extended to FY 2020.

Project History: The City, through its engineering consultant, began studies in the early 1990's to seek alternative approaches to control combined sewer overflows and in 1995 submitted a Long Term Control Plan (LTCP) to the Virginia Department of Environmental Quality (VADEQ). The VADEQ first issued the City a permit for its combined sewer system in 1995. Based on the City's studies, the permit calls for the City to operate and maintain the combined sewer system according to the United States Environmental Protection Agency's (USEPA) technology-based best management practices. The practices are known as the Nine Minimum Controls (NMCs) and are part of the National CSO Control Policy. The NMCs that the City implemented for controlling CSO discharges comprise the following:

1. Proper operation and regular maintenance programs for the sewer system and the combined sewer overflows;
2. Maximum use of the collection system for storage;
3. Review and modification of the pretreatment program to assure CSO impacts are minimized;
4. Maximization of flow to the publicly owned and treated works (POTW) for treatment;
5. Prohibition of CSOs during dry weather;
6. Control of solid and floatable materials in CSOs;
7. Pollution prevention programs that focus on containment reduction activities;
8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and
9. Monitoring and reporting to effectively characterize CSO impacts and the efficacy of CSO controls.

The City reapplied for its permit during FY 2006 and the permit was re-issued in FY 2007. The new permit requires additional monitoring, modeling, and reporting requirements, including:

- A five year bacteria monitoring for Hunting Creek to assess impacts of CSO discharges from Royal Street and Duke Street (via Hooff's Run) outfalls and additional monitoring at Oronoco Bay.
- Additional monitoring, modeling, reporting, and evaluation throughout the permit term of the discharges from all CSO outfalls.
- More frequent inspections, increased maintenance activities, and more detailed record keeping and performance reporting for all parts of the combined sewer system.

Currently, TMDLs (Total Maximum Daily Loads) for various pollutants are being developed by USEPA and VA Department of Environmental Quality for the receiving waters. Depending on the future regulations, permits may require the City to revise its LTCP, which may include partial separation, detention, or end of pipe technologies. An "Area Reduction Plan" study identifies areas within the combined system shed that can be potentially separated as part of new development or re-developments.

Operating Impact: This project will have no impact on the operating budget.

| Mitigation of CSOs | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 1,788,690 | 289,000 | 304,000 | 319,000 | 335,000 | 335,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 1,788,690 | 289,000 | 304,000 | 319,000 | 335,000 | 335,000 |

| Mitigation of CSOs | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 350,000 | 350,000 | 350,000 | 350,000 | 350,000 | 3,332,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 350,000 | 350,000 | 350,000 | 350,000 | 350,000 | 3,332,000 |

## Reconstructions & Extensions of Sanitary Sewers

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt

Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: This project provides for the construction of new sewer mains and the replacement and rehabilitation of old lines as needed. The project also includes funds for the City's share of the cost of sewer extensions required for development. This is an essential infrastructure project.

A total of $10.6 million is planned over ten years (FY 2011-FY 2020). This project also fund repairs to city streets disturbed by construction.

Changes from Prior Year: Annual funding of $1 million per year has been budgeted for FY 2012 to FY 2020. $600,000 additional is budgeted for FY 2011 for anticipated sanitary sewer street repairs. This project is now combined with Street Reconstructions for Sanitary Sewers.

Project History: In FY 1987, the City initiated an on-going program to reline existing leaking sewers in the City. In the FY 2009 Approved CIP, a total of $500,000 was added to complete delayed sanitary sewer projects. Projects include West Uhler Avenue between Commonwealth Avenue and Sanford Street; Forrest Street and Groves Ave. between Commonwealth Avenue and Hickory Street, Hickory Street; Diagonal Road between King Street and Daingerfield Road; Sycamore Street, between Mt. Ida Street and Kennedy Street; Hoof's Run from E. Chapman to E. Maple Streets, and a sewer located in the alley between East Monroe Avenue and East Nelson Avenue. The City's share of the Four Mile Run Force Main is also paid out of this project.

Operating Impact: This project will have no impact on the operating budget.

| Recon. and Extentions of San Sewers | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 2,080,050 | 1,600,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 2,080,050 | 1,600,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 |

| Recon. and Extentions of San Sewers | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 10,600,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 10,600,000 |

## Sanitary Sewer Capacity Studies

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt

Estimated Useful Life of Improvement: As Updated
Priority: Essential

Project Summary: This project provides for an ongoing sanitary sewer capacity study to assess the sanitary sewer's systems ability to support existing flows and ongoing development.

Changes from Prior Year: $100,000 has been added to FY 2012 and $200,000 each year from FY 2012 through FY 2020 to this project. A total of $2.6 million is planned over ten years for this project.

Project History: This project was added to the CIP in FY 2009. A study was begun in Fall 2007 and is expected to be completed in Winter 2012. Flow metering of the Alexandria Sanitation Authority's trunk sewers and interceptors will begin in FY 2010 and will be continuous. Sewer Master Plan and Renegotiation of the City/ASA agreement are included in this project funding.

Operating Impact: This project will have no impact on the operating budget.

| Sanitary Sewer Capacity Studies | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 699,877 | 300,000 | 200,000 | 200,000 | 200,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 699,877 | 300,000 | 200,000 | 200,000 | 200,000 |

| Sanitary Sewer Capacity Studies | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 2,599,877 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 | 2,599,877 |

## Sewer Separation Projects

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt

Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: This project provides for small projects to separate areas of combined sewers. Areas of opportunity exist for separation of combined sewer systems where construction of additional sewers in a few blocks may result in completing the separation of a larger area. Opportunities may also arise in conjunction with redevelopment in the combined sewer area.

Changes from Prior Year: A total of $6.0 million has been planned (FY 2011 - FY2020) for this project. Total sewer separation costs would be significantly more than this amount, which is why an incremental, opportunistic program is recommended.

Project History: This project was added to the CIP in FY 2009. Projects are being identified first for design.

Operating Impact: This project will have no impact on the operating budget.

| Sewer Separation Projects | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 1,025,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 1,025,000 | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 |

| Sewer Separation Projects | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 6,000,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 600,000 | 600,000 | 600,000 | 600,000 | 600,000 | 6,000,000 |

## Holmes Run Trunk Sewer

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt

Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: This project provides for an increase in capacity in the Holmes Run trunk sewer line, required to support rapid development occurring in the Eisenhower Valley, as well as future development and redevelopment in the West End. Engineering studies indicated that lining the existing sewer with specialized materials would provide the needed capacity increase with minimal environmental disruption. Relining will increase the capacity in the western portion of the sewer from Van Dorn Street to Eisenhower Avenue at Cameron Run.

Project History: Phase I of this project included relining the western portion of the trunk sewer and was completed in summer 2008. Additional engineering and analysis has determined that pipe lining alone will not increase capacity sufficiently in the Phase II – East Eisenhower section. Additional engineering analysis is underway to evaluate other capacity relief options, including constructing a relief sewer from Eisenhower Avenue to the Alexandria Sanitation Authority plant, and potential wet weather sewer storage and treatment in the Holmes Run Service Area. Construction costs are estimated at $5.3M and total additional consultant costs for design and construction management are estimated at $700,000. Alexandria Sanitary Authority maintains this trunk sewer. A total of $2.0 million in prior year unallocated monies remains for this project.

Changes from Prior Year: A total of $4 million is requested in FY 2011.

Operating Impact: This project does not have an impact on the City's operating budget, since it is maintained by the Alexandria Sanitation Authority.

| Holmes Run Trunk Sewer | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 2,037,000 | 4,000,000 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 2,037,000 | 4,000,000 | 0 | 0 | 0 | 0 |

| Holmes Run Trunk Sewer | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 4,000,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 4,000,000 |

## Holmes Run Sewershed Inflow and Infiltration

Subsection: Sanitary Sewers
Managing Department: T&ES
Project Group: Exempt

Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: This project provides for the evaluation and remediation of infiltration/inflow conditions for the sanitary sewer system in the Holmes Run sewershed. During wet weather, infiltration and inflow into the sanitary sewers have created overload conditions causing basement backups. The field work and monitoring will be performed by dividing the 4,600 acre sewer shed into sections and proceeding through each section sequentially. Leaking sewers and connections (which allow excessive infiltration/inflow to enter sewers) will be identified via street by street CCTV inspection of sewers. The results of this field work will be evaluated to develop remediation projects that are expected to include the relining of sewers and manhole repairs. Construction costs will be more accurately determined based on the results of field evaluations. In the FY 2011 – FY 2020 Proposed CIP, the construction costs are estimated at $25 million.

Changes from Prior Year: A total of $ 25 million is planned over five years (FY 2011– FY 2015) for this project. Funding in the FY 2010 – 2015 CIP shown for FY 2012 was moved to FY 2013 and funding in FY 2014 was moved to FY 2015. There is no change in overall funding for the project over the Approved FY 2010 – 2015 CIP.

Project History: In June 2007, $631,440 was allocated to begin an assessment of the Holmes Run Infiltration/Inflow. During FY 2010, initial flow metering at 23 locations was completed and CCTV field inspections began with rehabilitation design following.

Operating Impact: This project will have no impact on the operating budget.

| Holmes Run I & I | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 7,910,000 | 4,360,000 | 4,360,000 | 4,200,000 | 4,200,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 7,910,000 | 4,360,000 | 4,360,000 | 4,200,000 | 4,200,000 |

| Holmes Run I & I | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 25,030,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 25,030,000 |

| Capital Performance Measures |
|---|
| On-time (within projected time period) |
| On-budget (within projected range of costs) |
| Reduction in Inflow and infiltration in the sanitary sewer systems |

## STORMWATER UTILITY MODULE

Overview: The overall Proposed Stormwater Utility Module would include funding from three separate sources and would encompass both capital and operating costs associated with the storm sewer system. In keeping with City Council guidance restricting the use of a Stormwater Utility to supplant existing operating and capital levels of effort, the Fund would collect an annual transfer in of $0.9 million from the City's General Fund for operating maintenance and $1.0 million from the Capital Fund for capital maintenance. These maintain the current level of effort in these areas and establish a baseline moving into the future. Additionally, this Fund would gather revenues from the proposed Stormwater Utility Fee, estimated at $2.25 million annually. The fees from the Proposed Stormwater Utility Fee would be used primarily for capital projects (about $2 million per year), but would also support some expanded operating costs ($250,000 per year) needed to help design and manage the expanded capital program. The total ten-year spending for this Module would be $40.9 million ($29.0 million capital and $11.9 million operating).

Stormwater Utility Capital: The FY 2011 – FY 2020 Proposed CIP includes an average of $2.9 million per year for stormwater improvement projects necessary to reduce flooding and the environmental impacts of stormwater pollutants entering streams and rivers. Approximately $2.25 million of annual project funding is proposed to come from a new stormwater utility fee. A stormwater utility fee is similar to other utilities such as water, sanitary sewers, and electricity in that it would provide revenue dedicated entirely to stormwater management, and that the fee rate would be set at a level to collect no more than the cost of the stormwater program. This would provide a reliable on-going source of funding for maintaining and improving the City's stormwater infrastructure. It would also establish a more equitable means of allocating costs to users based on impervious surface, the primary contributor to stormwater runoff, than real estate property values.

Stormwater utilities are a common instrument for funding stormwater management and have been adopted locally and regionally in Montgomery County, MD; Prince William County, VA; Gaithersburg and Tacoma Park, MD; and Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, Richmond, and Virginia Beach, VA. The rate structure proposed for a City of Alexandria stormwater utility would be based on Equivalent Residential Units (ERU) of 1,971 square feet of impervious surface, the average for single family homes in Alexandria. Commercial and multi-family properties would be based on actual square feet of impervious surface.

New Revenue Generation: The proposed fee rate is $48 per ERU per Year, or $24 per ERU in FY 2011 and $48 in FY 2012. Current revenue estimates, assuming this rate, show the City generating approximately $2,250,000 annually. However, it is also anticipated that this fee would only apply to the second tax payment in FY 2011, which would reduce those revenues by 50% for FY 2011. The table below shows how this fee would be applied to the different types of property located in the City of Alexandria:

Proposed Rate = $48 per ERU per Year

| Property Type | ERUs | Annual Fee | Number of Properties Affected |
|---|---|---|---|
| Single Family Detached (Typical) | 1.00 | $48.00 | 8,570 |
| Single Family Detached (Large) | 2.00 | $96.00 | 546 |
| Townhouses & Duplexes | 0.43 | $20.64 | 11,707 |
| Commercial/Multi-family | 1 per 1,971 SF | $48/ERU | 3,578 |

Proposed Uses: Examples of some of the projects that would be initiated in the first few years of stormwater utility fee revenue would address street, property, and/or basement flooding problems in the areas of Commonwealth Ave. and Glebe Rd. (Auburn Village), Hoof's Run Park, Beverly Dr., N. Paxton St. and N. Pegram St., and Templeton Place. A description of proposed projects can be found on the following pages of the Sewers section. Most of the individual projects specifically attached to the new fee are currently included under the Miscellaneous Storm Sewers CIP Project. The exception is the Braddock and West Flood Mitigation Project, which would also require this fee if the City is to plan for implementation in this FY 2011 – FY 2020 CIP.

# Sewers

## STORMWATER UTILITY SOURCES AND USES

| Stormwater Utility Module Expenditures | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Capital Projects | | | | | | | | | | | |
| Miscellaneous Storm Sewer Repairs | 1,132,000 | 2,210,000 | 2,400,000 | 2,500,000 | 750,000 | 500,000 | 750,000 | 2,100,000 | 100,000 | 100,000 | $12,542,000 |
| Key Drive Flood Mitigation | 0 | 0 | 0 | 0 | 1,000,000 | 800,000 | 0 | 0 | 0 | 0 | $1,800,000 |
| Taylor's Run at Janney's Lane | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Oronoco Outfall | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Storm & Combined Assessment | 0 | 450,000 | 900,000 | 540,000 | 900,000 | 900,000 | 900,000 | 900,000 | 900,000 | 900,000 | $7,290,000 |
| NPDES / MS4 Permit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| Braddock & West Storm Sewer | 0 | 0 | 0 | 0 | 0 | 750,000 | 750,000 | 1,000,000 | 2,000,000 | 2,000,000 | $6,500,000 |
| Storm Sewer Capacity Analysis | 868,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $868,000 |
| Subtotal Capital Expenditures | $2,000,000 | $2,660,000 | $3,300,000 | $3,040,000 | $2,650,000 | $2,950,000 | $2,400,000 | $4,000,000 | $3,000,000 | $3,000,000 | $29,000,000 |
| Operating Costs | | | | | | | | | | | |
| Current Operating Support[1] | 938,084 | 938,084 | 938,084 | 938,084 | 938,084 | 938,084 | 938,084 | 938,084 | 938,084 | 938,084 | $9,380,840 |
| Expanded Operating Support | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | 250,000 | $2,500,000 |
| Total Operating Expenditures | $1,188,084 | $1,188,084 | $1,188,084 | $1,188,084 | $1,188,084 | $1,188,084 | $1,188,084 | $1,188,084 | $1,188,084 | $1,188,084 | $11,880,840 |
| | | | | | | | | | | | |
| Total Stormwater Utility Expenditures | $3,188,084 | $3,848,084 | $4,488,084 | $4,228,084 | $3,838,084 | $4,138,084 | $3,588,084 | $5,188,084 | $4,188,084 | $4,188,084 | $40,880,840 |

| Storwater Utility Module Funding Sources | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Transfer from General Fund (Current Operating)[1] | $938,084 | $938,084 | $938,084 | $938,084 | $938,084 | $938,084 | $938,084 | $938,084 | $938,084 | $938,084 | $9,380,840 |
| Transfer from Capital Fund (Base Capital) | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | $1,000,000 | $10,000,000 |
| Stormwater Utility Fee Revenues | $1,250,000 | $2,250,000 | $2,250,000 | $2,250,000 | $2,250,000 | $2,250,000 | $2,250,000 | $2,250,000 | $2,250,000 | $2,250,000 | $21,500,000 |
| Fund Balance Carryover | $0 | $0 | $340,000 | $40,000 | $0 | $350,000 | $400,000 | $1,000,000 | $0 | $0 | |
| Total Funding Sources | $3,188,084 | $4,188,084 | $4,528,084 | $4,228,084 | $4,188,084 | $4,538,084 | $4,588,084 | $5,188,084 | $4,188,084 | $4,188,084 | $43,010,840 |
| | | | | | | | | | | | |
| Year-End Fund Balance | $0 | $340,000 | $40,000 | $0 | $350,000 | $400,000 | $1,000,000 | $0 | $0 | $0 | |

[1] Current Operating Costs are defined as the Storm Sewer Cleaning and Inspection Activity in the FY 2011 Proposed T&ES Operating Budget and define that as the baseline level of funding moving in to the future. These do not reflect the total current operating costs of maintaining the City's Storm Sewer System. This definition could be expanded to include more Storm Sewer System operating costs, but the corresponding General Fund budget authority would need to be identified and transferred to this Stormwater Utility Module if those costs are to be represented here.

## Miscellaneous Extension and Replacement of Storm Sewers

Subsection: Storm Sewers
Managing Department: T&ES
Project Group: 3
Estimated Useful Life of Improvement: 25 years
Priority: Highly Desirable

Project Summary: $12.5 million in Stormwater Utility fee revenue is planned over ten years (FY 2011-FY 2020) for this continuing essential infrastructure maintenance project, used for tasks identified throughout the year and also for scheduled projects. In addition, $572,650 in prior year unallocated monies remains budgeted.

A portion of this budget will be used for the replacement of the 72-inch corrugated metal (CM) pipe at Edsall Road and Cameron Station that has shown signs of potential structural failure and for several other projects related to deteriorating conditions and new developments, including DASH-Witter Storm Water Improvements and Upland/Braxton storm sewer. Auburn Village Condominiums, located near the intersection of Glebe Rd and Commonwealth Ave, has experienced frequent street and building flooding. Preliminary analysis indicates that this flooding is due to lack of capacity in the City's storm sewer system. Upgrades to improve the storm sewer capacity are programmed as $100,000 in FY 2011 for design, and $550,000 in FY 2013 for construction. Commonwealth Ave & Glebe Rd drainage improvements, located along Commonwealth Ave from Mt. Vernon Ave to the West and Montrose Ave to the East, has a series of sag points in the roadway profile that facilitates flooding.

Additional project locations that have been identified for possible implementation in FY 2012 – FY 2015 include Pickett Street, North Paxton and North Pegram, the Potomac Waterfront, Commonwealth Avenue at Hoofs Run Park, Beverly Drive, and Calhoun Avenue. Stream Restoration work at Templeton Place is also a possibility. This project will also fund other drainage improvement projects identified on an as needed basis.

In the FY 2011 – FY 2020 Proposed CIP, the funding source ($12.5 million) for this project is the Stormwater Utility Fee. If that fee is not approved by Council, other funds would need to be identified if the City is to continue to assume these projects will be implemented in this ten-year plan.

Changes from Prior Year: Miscellaneous Storm Sewers now plans the inclusion of numerous improvement projects associated with the Stormwater Utility Fee. $287,000 in funding is budgeted for FY 2011. $250,000 is budgeted for FY 2012 and FY 2013, $250,000 in annual funding from FY 2015 to FY 2017, and $100,000 annual funding from FY 2018 to FY 2020.

Project History: Recently completed projects include East Maple Street Storm Sewer reconstruction. Funds were also used for a hydraulic study of the storm watershed to determine capacity inadequacies in various locations for the Commonwealth Avenue/Glebe Road storm water outfall.

Operating Impact: This project will have no impact on the operating budget.

| Miscellaneous Stormwater Utility | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 1,132,000 | 2,210,000 | 2,400,000 | 2,500,000 | 750,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 1,132,000 | 2,210,000 | 2,400,000 | 2,500,000 | 750,000 |

| Miscellaneous Stormwater Utility | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 500,000 | 750,000 | 2,100,000 | 100,000 | 100,000 | 12,542,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 500,000 | 750,000 | 2,100,000 | 100,000 | 100,000 | 12,542,000 |

## Key Drive Flood Mitigation

Subsection: Storm Sewers
Managing Department: T&ES
Project Group: 3

Estimated Useful Life of Improvement: 25 years
Priority: Highly Desirable

Project Summary: This project provides for the design and construction of a storm sewer bypass to alleviate drainage problems on Key Drive and Francis Hammond Parkway and to prevent flooding in residential areas with lower elevations.

Changes from Prior Year: $1.0 million is budgeted for FY 2015 and $800,000 for FY 2016.

Operating Impact: This project will have no impact on the operating budget.

Project History: $1.0 million has been allocated to date for this project. Design is currently underway.

| Key Drive Flood Mitigation | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 1,000,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 1,000,000 |

| Key Drive Flood Mitigation | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 800,000 | 0 | 0 | 0 | 0 | 1,800,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 800,000 | 0 | 0 | 0 | 0 | 1,800,000 |

## Taylor's Run at Janney's Lane

Subsection: Storm Sewers
Managing Department: T&ES
Project Group: 2

Estimated Useful Life of Improvement: 25 years
Priority: Essential

Project Summary: This project provides for the replacement of a deteriorating culvert at Taylor Run and Janney's Lane. During the replacement, the culvert will also be enlarged to alleviate flooding that occurs during major storm events. $500,000 was allocated in FY 2009 to begin this project. $551,250 of prior year unallocated funds will fund the construction.

Changes from Prior Year: There is no change in funding for this CIP project.

Operating Impact: This project will have no impact on the operating budget.

| Taylor's Run at Janney's Lane | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 551,250 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 551,250 | 0 | 0 | 0 | 0 | 0 |

| Taylor's Run at Janney's Lane | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 0 |

## Oronoco Outfall

Subsection: Storm Sewers
Managing Department: T&ES
Project Group: 1

Estimated Useful Life of Improvement: 25 years
Priority: Essential

Project Summary: $1.5 million in prior year unallocated monies remain to address ground contamination at the Potomac River Oronoco Street Outfall, caused by coal tar contaminants from the former City (and then Washington Gas) owned Alexandria Gas Works that operated in the 19th and 20th centuries. The City has been accepted into the Virginia Voluntary Remediation Program for the site with the Virginia Department of Environmental Quality (VDEQ). The City has retained an environmental consultant to study the extent of contamination and to develop and implement a remediation program to clean up the site. Washington Gas is working cooperatively with the City on this matter.

Work involving relining the storm sewer was completed in FY 2007. As a result of the success of the relining, the City is evaluating an alternative in-situ biological remediation method. The City initiated a pilot study of this in-situ method in FY 2008 and one remediation option included installing a hydraulic control and treatment system or bioremediation. The City completed a bioremediation bench study in FY 2008 and completed a biosparging pilot study in FY 2009. The environmental consultant continues to recover free product collected in the sump adjacent to the Oronoco Street storm sewer pipe. The City is exploring methods to improve the effectiveness of this recovery system. At the end of FY 2009 the existing sump area was rehabilitated in conjunction with a hydraulic assessment. The results of this assessment in conjunction with biosparging analysis will be reviewed in FY 2010. A final decision on the remedial method and its initial design are expected in FY 2010. At the conclusion of the design phase of the chosen system, construction costs will be more clearly defined, and funding needs will be more clearly identified. Once the system is functioning effectively, the City intends to dredge and remove the most contaminated sediment near the outfall. The City received additional funding from a settlement with Washington Gas Light Company, totaling $926,505, which has been used to fund clean-up, monitoring, and maintenance costs.

Changes from Prior Year: There has been no change in funding for this project.

Project History: The preliminary site investigation was completed in FY 2001and a Site Characterization/Risk Assessment and Remedial Alternative Screening Report was completed. The additional sampling needed for the risk analysis and remedial screening has been completed. The City performed extensive air monitoring in FY 2003 and FY 2004 and initiated short-term corrective actions in FY 2004. The final Site Characterization/Risk Assessment and Remedial Alternative Screening Report was submitted to VDEQ in FY 2004 and VDEQ reviewed and accepted the report. In FY 2006, VDEQ requested additional data be collected, which was completed in FY 2007. With VDEQ input, the City has developed a Corrective Action Plan (CAP) and is continuing its community outreach efforts. Implementation of the CAP began in FY 2004 with the installation of the free product recovery system.

Operating Impact: If the installation of the hydraulic control and treatment system is the selected remedial action, funds to maintain and operate that system may be needed beginning as early as FY 2011. Estimated costs equal $175,000 per year. If the alternative in-situ method is selected, annual maintenance costs are expected to be lower. A better estimate of annual operating costs of the in-situ method will be determined if that system is chosen and implemented.

| Oronoco Outfall | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 1,510,000 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 1,510,000 | 0 | 0 | 0 | 0 | 0 |

| Oronoco Outfall | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 0 |

## Storm/Combined Sewer Assessment and Renovation

Subsection: Storm Sewers
Managing Department: T&ES
Project Group: 2

Estimated Useful Life of Improvement: 40 years
Priority: Essential

Project Summary: This project provides for the City-wide condition assessment of the existing 14 miles of combined sewers and 185 miles of storm sewers. The field evaluation will include cleaning and CCTV inspection of sewers. The field work will be performed by dividing the City into sewer sheds and proceeding through each section sequentially. Structurally deficient sewers will be identified and the results of the field work will be evaluated to develop remediation projects, which are expected to include the relining of sewers and manhole repairs. Work will be coordinated with the Storm Sewer Capacity Analysis project. The City will use the $600,000 in prior year balance to continue work through FY 2011.

Changes from Prior Year: A total of $7,290,000 is planned over nine years. This includes $450,000 for FY 2012, $900,000 for FY 2013, $540,000 for FY 2014, and $900,000 each year from FY 2015 - FY 2020 for this project.

Project History: $600,000 was reprogrammed from unallocated monies from Storm Sewer Reconstructions and Extension for this project. Approximately 4,600 feet of sewers to be remediated in various locations throughout the City have been identified.

Operating Impact: This project will have no impact on the operating budget.

| Storm and Combined Syst. Assess. & Remed. | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 600,000 | 0 | 450,000 | 900,000 | 540,000 | 900,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 600,000 | 0 | 450,000 | 900,000 | 540,000 | 900,000 |

| Storm and Combined Syst. Assess. & Remed. | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 900,000 | 900,000 | 900,000 | 900,000 | 900,000 | 7,290,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 900,000 | 900,000 | 900,000 | 900,000 | 900,000 | 7,290,000 |

## Municipal Separate Storm Sewer System Permit Program, NPDES Permit

Subsection: Storm Sewers
Managing Department: T&ES
Project Group: 1
Estimated Useful Life of Improvement: 5 years
Priority: Essential

Project Summary: This project provides for the data collection, reporting activities, public education, outreach, involvement and citizen participation associated with implementation of any program changes of the programs required by the National Pollution Discharge Elimination System (NPDES) Permit. A total of $175,000 in prior year unallocated monies remains for this purpose.

Changes from Prior Year: There has been no change in funding for this project.

Project History: The Federal Water Quality Act of 1987 required that small municipalities obtain storm water discharge permits for their municipal separate storm sewer system (MS4) under Phase II of the National Storm Water Program. The City submitted an application for a MS4 permit to the Virginia Department of Environmental Quality (VDEQ) and received its first permit effective July 8, 2003. The permit required that the City develop, implement, and enforce a storm water management program designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), protect the water quality and satisfy the appropriate water quality requirements of the Clean Water Act. The permit required the City to develop and implement the Stormwater Management program The City was issued the new MS4 permit effective July 9, 2008 and subsequently it has successfully negotiated a Program Plan with the Virginia DCR. The new permit has extensity new regulatory requirements that will require significantly enhances monitoring and sampling. The MS4 Permit has numerous requirements including an illicit discharge detection and elimination program and associated concept designs; preliminary concept designs of structural and non-structural floatable controls; and best management practices. Identifying needs and conducting preliminary concept designs for post-construction storm water management are included. It also includes requirements related to TMDL (Total Maximum Daily Loads) requirements related to PCB s for Potomac River and Bacteria for the Four Mile Run. Additional TMDL's are currently being developed for various other pollutants by USEPA and VA Department of Environmental Quality for the receiving waters. Depending on the future regulations, the future permits may contain even more stringent requirements resulting in new requirements ranging from additional monitoring and evaluation to improvements in infrastructure that may require significant capital expenditure.

Operating Impact: This project will have no impact on the operating budget.

| NPDES / NS4 Permit | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 175,000 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 175,000 | 0 | 0 | 0 | 0 | 0 |

| NPDES / NS4 Permit | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 0 |

## Braddock Rd. and West St. Storm Sewer Drainage Improvements

Subsection: Storm Sewers
Managing Department: T&ES
Project Group: 3
Estimated Useful Life of Improvement: 40 years
Priority: Highly Desirable

Project Summary: This project addresses flooding at the intersection of Braddock Road and West Street, adjacent to the Braddock Road Metro Station. The adjacent properties and streets drain to the intersection, which is a low point (sump condition). Stormwater is collected at the low points and conveyed beneath the rail corridor to the Hooff's Run storm culvert adjacent to Commonwealth Avenue. The conveyance system is inadequate to convey the stormwater in a timely fashion, resulting in flooding of the intersection. The City hired a consultant to investigate various alternatives to alleviate the problem.

In the FY 2011 – FY 2020 Proposed CIP, the funding source ($6.5 million) for this project would likely be the Stormwater Utility Fee. If that fee is not approved by Council, other funds would need to be identified if the City is to continue to plan for project implementation in the ten-year plan.

Changes from Prior Year: $750,000 is budgeted in FY 2016 and FY 2017 for preliminary design for a total of $1.5 million. Construction costs will be determined based on the preliminary design. $1.0 million is budgeted for FY 2018 and $2.0 million is budgeted for FY 2019 and FY 2020. Additional funding will likely be needed beyond FY 2020.

Project History: Based on a drainage study completed in FY 2004, the storm sewers at the intersection of Braddock Road and West Street were found to be inadequate to relieve the frequent flooding of this critical rail crossing. A feasibility study was completed in fall 2008 with engineering alternatives ranging from $18.0 million to $64.0 million. Several alternatives will be further evaluated during the preliminary design to address constructability issues and further refine construction costs, as well as to undertake a thorough cost-benefit analysis. The total cost reflects the feasibility study's cost estimates to collect and convey the storm water to the Potomac River by means of a large (approximately five foot diameter) storm sewer pipe down Wythe Street through Oronoco Park.

Operating Impact: This project will have no impact on the operating budget.

| Braddock and West | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 0 |

| Braddock and West | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 750,000 | 750,000 | 1,000,000 | 2,000,000 | 2,000,000 | 6,500,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 6,500,000 |

## Storm Sewer Capacity Analysis

Subsection: Storm Sewers
Managing Department: T&ES
Project Group: 2

Estimated Useful Life of Improvement: As Updated
Priority: Essential

Project Summary: This project will provide for a multi-year City-wide storm sewer analysis to determine the stormwater system's capacity. Field verification and metering to verify computations will be part of this project, which will be completed over a four year timeframe. This study complements the Phase 1 work started in FY 2007 to study the feasibility of implementing a stormwater utility and determining the methodology for setting stormwater rates. A total of $2.5 million has been budgeted ($787,500 in FY 2009, $826,875 in FY 2010, and $868,000 in FY 2011) for this project. This analysis is scheduled to be completed in FY 2012.

Changes from Prior Year: There has been no change in funding in this CIP project.

Project History: This study is budgeted as a response to several large magnitude storms in 2003 and 2006 that caused flooding in low lying areas of the City.

Operating Impact: This project will have no impact on the operating budget.

| Storm Sewer Capacity Analysis | Unallocated Balance | FY 2011 | FY 2012 | FY 2013 | FY 2014 | FY 2015 |
|---|---|---|---|---|---|---|
| Expenditures | 1,420,500 | 868,000 | 0 | 0 | 0 | 0 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 1,420,500 | 868,000 | 0 | 0 | 0 | 0 |

| Storm Sewer Capacity Analysis | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Total FY2011-FY2020 |
|---|---|---|---|---|---|---|
| Expenditures | 0 | 0 | 0 | 0 | 0 | 868,000 |
| Less Revenues | 0 | 0 | 0 | 0 | 0 | 0 |
| Net City Share | 0 | 0 | 0 | 0 | 0 | 868,000 |

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