Stormwater Management

Takoma Parks' Program, New Requirements and Request For Fee Increase

Presented to the City Council, March 15, 2017

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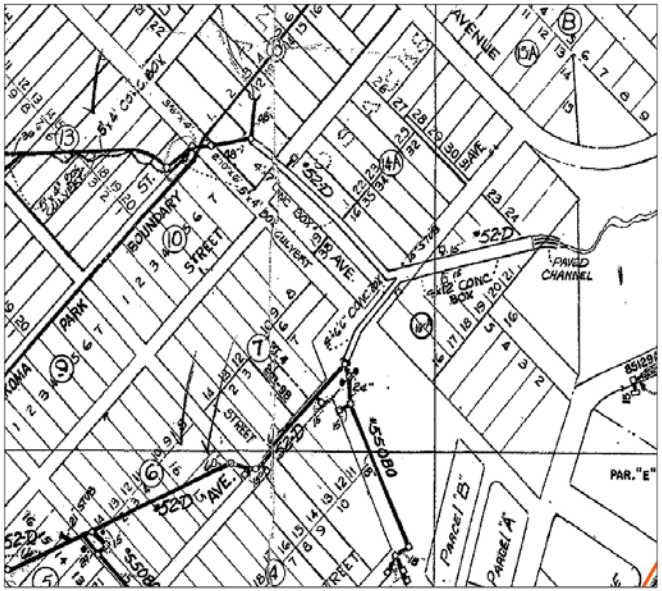
A Brief History of the Stormwater System

Takoma Park inherited the stormwater system in 1990
- Originally owned by WSSC
- MD ruled against utility ownership
- City considered County ownership and decided to manage the program directly

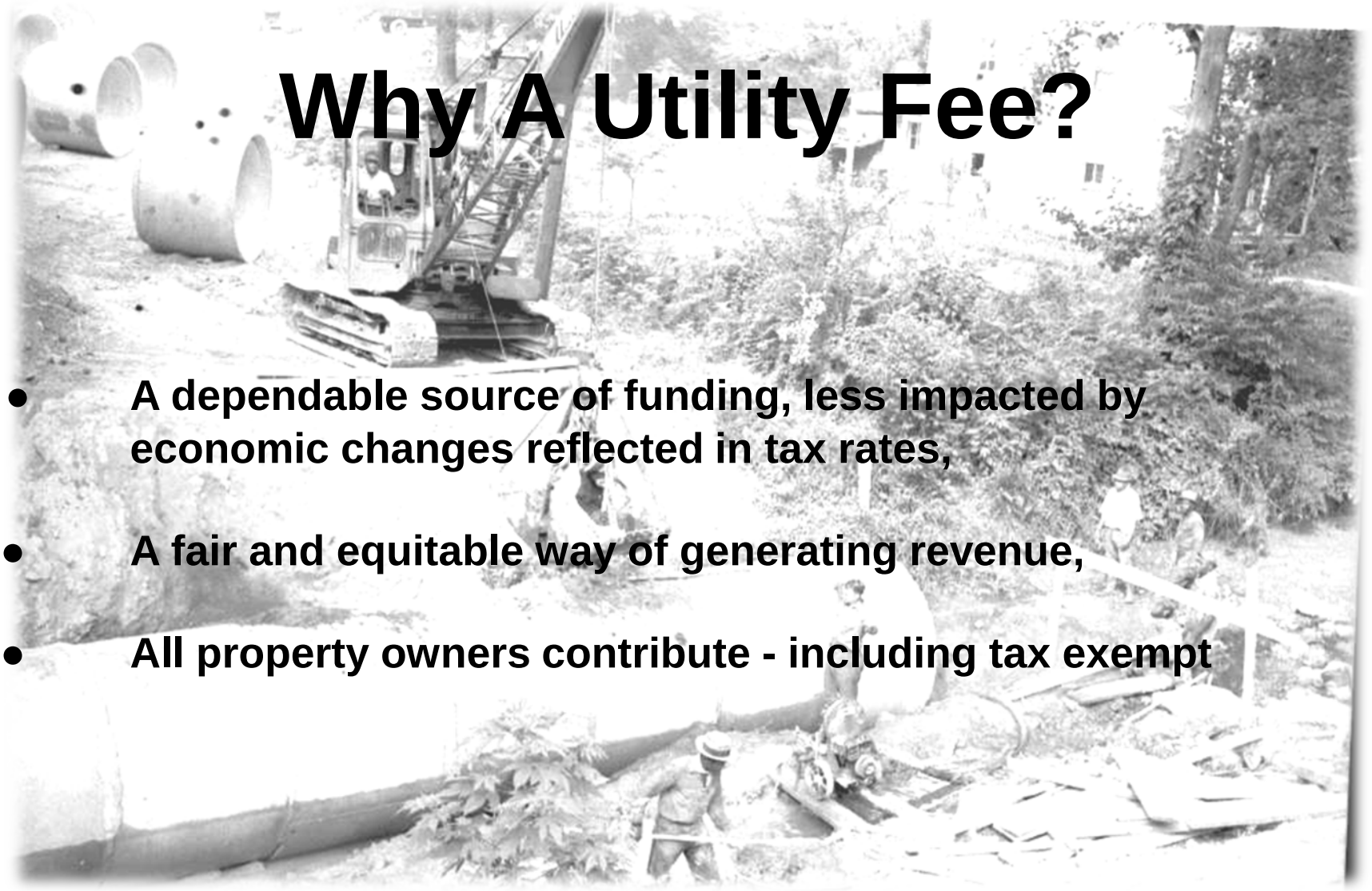


Original system was drawn on rudimentary maps
The City created a GIS layer for the information and had the entire system surveyed to denote pipe size, type, structure locations and outfalls.

Wide variety of pipe and structure types:
Culverts with hand stacked stone and slate tops, brick and cinder-block structures, original clay pipes, corrugated metal pipes, and newer reinforced concrete pipes

Initial Management Activity:
- maintenance and cleaning
- 40%-60% of the budget came from general tax, the remainder through previous years surplus

The Council began considering alternative funding options and established the Stormwater Utility Fee in 1996.



Why A Utility Fee?

- A dependable source of funding, less impacted by economic changes reflected in tax rates,
- A fair and equitable way of generating revenue,
- All property owners contribute - including tax exempt

Stormwater Utility Fee Rate Structure

Single family properties are billed the same amount -

The rate is based on the calculated median impervious area for single family properties which was determined to be 1,228 sq ft
That area is known as the ERU - Equivalent Residential Unit

All other developed properties are billed based on their impervious area

square footage of impervious area (/) ERU (*) the base rate

The original base rate was $24, in FY99 it increased to $28.68, in FY07 to $48 in FY07. The current rate since FY13 is $55.

State Tax database records were used to identify property types.
The amount of impervious area was calculated using digital maps with planimetric information gathered from aerial photographs illustrating building and pavement edges.

Property Types In Takoma Park

- 86% - Single Family Residential
- 14% - Other Developed
  - 5% Multi-family
  - 4% Commercial
  - 5% Tax Exempt Properties

Percentage Of Impervious Area By Property Type

- 37% - Single Family
- 60% - Other Developed Property

Who Pays What ?

In FY17, 3,885 property owners were billed generating about $414,000. 3,442 are single family properties, 443 are other developed properties.

Single Family Properties represent 89% of the properties billed for a total of $189,255 - or 46% of the total.

Other Developed Properties represent 11% of the properties billed for a total of $224,658 - or 54% of the total.

The largest payer, Washington Adventist University, paid $14,290
The second largest payer, Washington Adventist Hospital, paid $11,998
19 commercial properties paid between $2,000 - $7,000 annually

Recently, the City identified 84 additional properties (80 single family and 4 commercial) that have not been billed. These will be added to the next billing bringing the figures to 3,522 single family and 447 other properties.

Federal Requirements – NPDES for Phase II MS4s

National Pollution Discharge and Elimination System - NPDES

Municipal Separate Storm Sewer System (MS4) - Phase II (Smaller Jurisdictions)

- The City received its first NPDES MS4 permit in 2003. The permit required implementation of 6 minimum control measures. The permit was for a 5 year period, but was extended administratively as the State developed the next permit requirements.
- In December 2016, MDE issued a new proposed permit for municipalities.

- PERMIT REQUIREMENTS:
  - **Public Education and Outreach** - distribute educational materials, develop a hotline for reporting water complaints and establish employee training programs
  - **Public Involvement and Participation** - provide public participation opportunities, publicize jurisdictions reports, incorporate public comments into program
  - **Illicit Discharge Detection and Elimination** - maintain a map of the system, adopt Ordinance prohibiting illicit discharge, develop outfall screening programs and illicit discharge investigation procedures, develop a system for the public to report illegal dumping, document investigations and remedial actions taken related to illicit discharges
  - **Construction Runoff Control** - Establish an erosion and sediment control program and train personnel, develop program to receive, investigate and resolve complaints, perform construction site inspections and report any violations to State.
  - **Post Construction Stormwater Management** - Adopt an MDE approved stormwater permit process for projects that disturb more than 5,000 square feet, inspect permitted facilities every 3 years, perform routine maintenance and ensure performance of stormwater facilities, ensure staff is appropriately trained
  - **Pollution Prevention and Good Housekeeping** - Implement procedures to reduce pollution from municipal facilities, ensure staff are trained in pollution prevention and implement prevention plans, document any spills and track efforts to reduce use of pollutants such as fertilizer, pesticides and deicing materials.
  - The new permit requires **Impervious Area Restoration** - To provide treatment for run-off from 20% of impervious areas not currently treated. The City anticipated this requirement and has been actively developing our program since 2006. Additionally, the new permit will require greater levels of documentation to show compliance with requirements, system inspection and maintenance.

Maryland Regulatory Requirements – WIP

The City's Stormwater Management program is built around achieving compliance with State and Federal laws related to the Chesapeake Bay clean up and the Clean Water Act. These laws have created a regulatory framework for compliance. The City's Stormwater Permit system for construction disturbing 5,000 square feet or more is one aspect of the program and stormwater system maintenance and enhancement is the other.

State Regulation: Phase II WIP (Watershed Implementation Plan)

The WIP is a planning process to achieve nutrient and sediment clean-up goals for the Chesapeake Bay. This initiative is overseen by the Maryland Department of the Environment. Jurisdictions submit an implementation plan and regular progress reports. The WIP establishes a Total Maximum Daily Load (TMDL) requirement for Nitrogen, Phosphorus, Sediments and trash. Those limits have been established for the Counties.

Takoma Park's programmatic goal for compliance is to provide stormwater treatment for run-off from 20% of existing impervious areas not treated. The State has set an expectation that jurisdictions meet ***70% of their goal by 2017*** and ***100% by 2025***.

The City's program to meet the goal includes installing bioretention and filtration facilities, stream restoration, continuing a robust street sweeping program, removing debris from the stormwater pipes and inlets, and tree planting.

WHAT IS OUR 20% TREATMENT REQUIREMENT?

The City is 1,280 acres, 397 acres of which are impervious *(roads 138 ac; buildings 158 ac; parking lots 85 ac; and sidewalks 16 ac)*

20% of 397 acres = 79.4 acres

Treatment credit to date:
- Provided treatment for 13.13 acres (53 facilities in place - bioretention, filtration, etc)
- Completed stream restoration projects that provides 5.84 acres of treatment
- Outfall stabilization for 1.25 acres
- Street sweeping provides an equivalent credit of 4.7 acres
- Tree planting provides a cumulative credit of 8.38 acres to date

Since 2006, we have achieved credit for 33.3 acres of treatment or 42% of our goal

Takoma Parks' Minimum Control Measures

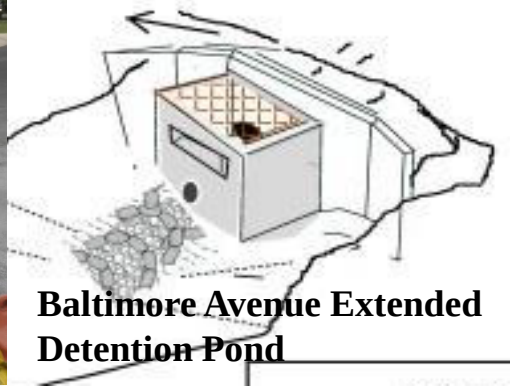
- **Public Education and Outreach**
  - Regular Newsletter articles
  - City Stormwater Information on website
  - Community Meetings
- **Public Involvement and Participation**
  - Bi-annual bulk buy program for tree planting
  - Mark a drain campaign
  - Sweep the Creek Program- Partnership with Friends of Sligo Creek
- **Illicit Discharge Detection and Elimination**
  - Through an MOU, enforcement authority was transferred to Montgomery County, July, 2006
  - City staff responds to reports, investigates and informs County and MDE
  - Center For Watershed Protection investigated discharges into system along Maple Avenue to outfall in Sligo Creek
  - Dry-weather testing of 15 outfall locations - 2007, 2010 and 2015
- **Construction Site Runoff Control**
  - Sediment and erosion control program is implemented by Montgomery County, Department of Permitting Services.
  - City staff observe construction sites for erosion and sediment issues and follow up directly or notify the County
- **Post Construction SW Management**
  - City provides Stormwater Management Plan Review for Stormwater Permits and post-construction nspection
  - System Maintenance includes annual video inspection cleaning and system repairs & maintenance
- **Pollution Prevention and Good Housekeeping**
  - Street Sweeping: 40 Acres per Year provides Equivalent Impervious Acre treatment of 4.7 acres
  - Tree Planting: 100 – 200 trees annually yields up to 2 Acres equivalent annually
  - Vacuum Leaf Collection plays a significant role in keeping leaf debris out of the system, the City has requested approval from MDE to establish credit for this measure.
  - Public Works developed a Pollution Prevention Program for the facility and does regular staff training
  - Safe Grow Law - reduces pesticide use citywide from cosmetic lawn care
  - Polystyrene Ban – reduces trash

Takoma Parks' Impervious Area Restoration Program

- Since 2006, Takoma Park has planned, designed and installed 53 Stormwater Best Management Practices (BMPs):
  - **46 Bioretention Facilities**
  - **2 wetland modular systems**
  - **2 filtration basins**
  - **1 wet pond and 2 traffic circles with filtration and underdrain**
- Additionally, 550 linear feet of stream restoration has been completed.

Wetland Modular

Roanoke Avenue Permeable Paver Filtration Basin



Baltimore Avenue Extended Detention Pond

Impervious Area Restoration Program

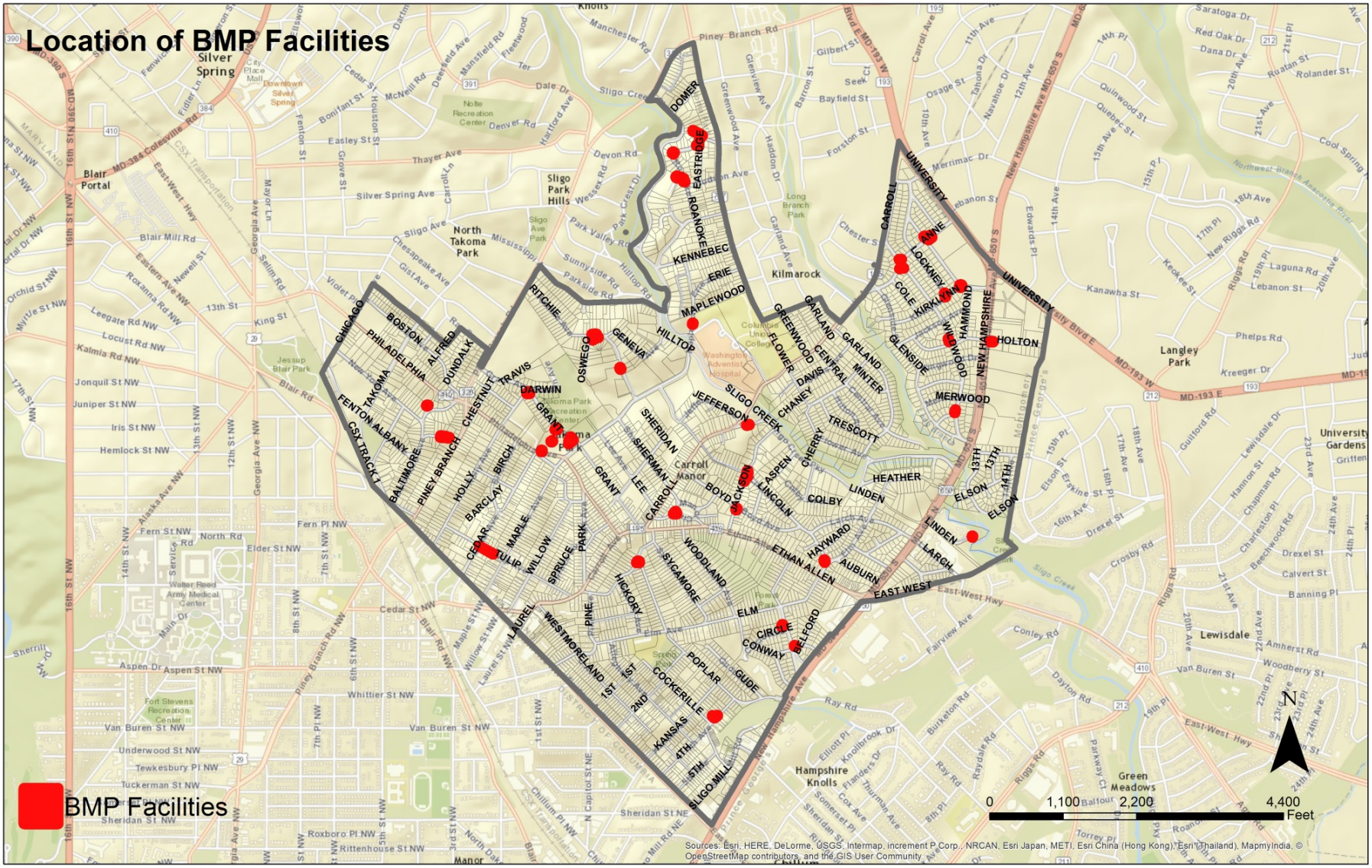
Community Center
Parking Lot Bioretention

Ritchie Avenue Bioretention

Prince George & Circle
Bioretention

Kennewick Ave & Kirklynn Ave Traffic Circle

Stormwater Treatment Locations



Stormwater Program Budget

FY 1990

- **$200,000**
- $60,000 capital
- $140,000 maintenance & services

FY 2016

- **$507,700 ***
- $130,000 capital
- $244,500 maintenance & services
- $133,200 personnel

FY 2018 Proposed

- **$696,600 ***
- $240,600 capital
- $310,500 maintenance & services
- $145,500 personnel

* Figure does not include grant funding for Flower Ave Green Street Project

Capital includes construction costs for new facilities

Maintenance and Services includes office supplies, outside labor, engineering services, subcontract work, and bank charges.

Personnel includes 50% of an engineer, 40% special project coordinator and 25% construction manager

REVENUE: in FY 17 about $414,000 generated by the utility fee; less than $1,000 from permit fees.

FY18 Budget Request - $696,600*

CATEGORY	FY 18	FY17
• PERSONNEL:	$145,500	$133,200
• MAINTENANCE & SERVICES:		
• Office Supplies:	$ 4,000	$ 3,000
• Outside Labor & Parts: • Willow Ave and Valley View area system repairs $60,000 • Cherry Ave and Colby Ave Filteras $45,000 • Mississippi and Hilltop Ave repairs $20,000 • Miscellaneous inlet repairs $20,000	$145,000	$130,000
• Engineering Services: • Evaluation in impervious areas and ERU calculations $30,000 • Design, inspection support $20,000	$ 50,000	$ 30,000
• Sub-Contract Work: • Video inspection of ¼ of the system $55,000 • Contract maintenance of bio-retention facilities $30,000 • Water quality testing $15,000	$100,000	$ 70,000
• Bank Charges:	$ 11,500	$ 11,500
• CAPITAL PROJECTS: • Takoma Branch Stream Restoration Design $100,000 • Grant Ave and Holly Ave Bio-Retention $30,000 • Devonshire and Glaizewood Ave Bio-Retention $40,000 • Tulip Avenue storm pipe installation, Phase 2 $65,600 • Truck Scale (partial) $5,000	$240,600	$130,000
TOTAL	**$696,600**	**$507,700**

Proposed Rate Increase

- The base rate of $55 provided $414,000 in revenue.
- To achieve the annual funding level of $700,000, the base rate would need to increase to $92.
- Every $1 of utility fee generates $7,600.
- The number of billed single family properties has increased to 3,522 and other properties to 447.
- The Stormwater Fund has a fund balance of $173,128 at the end of FY16. These funds could be used to cover increased costs in lieu of the full proposed rate increase for a limited period of time or it could be retained to cover unexpected expenditures or dips in revenue.

New Permit Requirements and Impact on Annual Budget

- Require ***annual water quality testing*** of outfalls - $15,000 per year
- ***Evaluation of Impervious Area*** and ERU calculation - $30,000 (one time cost)
- ***Video Inspection and System Cleaning*** requires additional funding to stay on 4 year cycle - $55,000. Previously spent $25,000 to $35,000 annaully. This program will enable us to claim credit for treatment of an additional 4 to 8 acres toward our 20% goal.
- Increase funding for ***system maintenance and enhancements*** to address known system defects and improvements which will add treatment credit of 1.7 acres. Projected to require $145,000 annually, previous funding level was $130,000.
- ***Contractual support*** required for upkeep and maintenance of bioretention facilities of $30,000 annually, included in previous budget, will likely increase as new facilities are added. Documentation of system inspection and maintenance for both private and public facilities is required to ensure functionality.
- Increase funding for ***Capital Projects*** to provide an estimated 8 acres of treatment credit by 2025. Based on identified project list, the cost for design and construction is anticipated to require annual funding of $240,000 over the next 6 years, previous annual amount was $130,000.
- Purchase of ***truck scale*** to enable measurement and documentation of street sweeping debris weight as well as debris removed during inlet and pipe cleaning. Credit for treatment may be higher if actual materials removed is weighed rather than calculated by roadway miles. (one time only cost)

Can We Meet the 20% Treatment Goal?

As of FY17, 33.3 acres of treatment added, of the 79 acres required - 45.7 acres remain

	TO DATE	FY18 - 2025 (at higher funding level)
Impervious Area Restoration:	13.13 acres	9 additional acres
Stream Restoration:	5.84 acres	6 additional acres
Outfall Stabilization:	1.25 acres	1 additional acre
Street Sweeping:	4.7 acres	Maximum credit (requires 18 cycles per year)
Tree Planting:	8.38 acres	2 acres/year = 16 acres
Leaf Collection:	0 acres claimed	.5 acre maximum credit
Inlet & Pipe Cleaning	0 acres claimed	8 acres maximum credit
Total To Date:	**33.3 acres**	**40.5 acres**

Based on current calculations, the City projects 73.8 acres of treatment by 2025 – 5.2 acres short

How To Meet The 20% Treatment Goal

- The new permit requirements and formulas to determine treatment credit are still a work in progress.
- It is likely that the City (and State) will refine the calculations as we better understand the new permit requirements.
- The City will be working to identify additional programs to add credit towards treatment, like erosion control and slope stabilization projects.
- The original impervious area calculation will be evaluated and may be adjusted up or down. (Uses data from 2002)
- The credit for street sweeping and pipe cleaning may increase once we document the actual weights of materials removed.
- Additional funding may be required to enable completion of additional projects to meet the treatment goal by 2025.

PROPOSED STORMWATER PROJECT LIST

SYSTEM REPAIRS AND IMPROVEMENTS: FY18 - FY23

	PROJECT NAME	Type	DESIGN COST	CONSTRUCTIONCOST	EIA	REMARKS	∑ $ PROJECT	
FY18	Willow Avenue and Vally View	culvert repairs		$ 60,000	0.00	CCTV Defects Base CMU Sinkholes	$ 60,000	
	Colby at Cherry Ave	Filteras up to 2	$ 5,000	$ 40,000	0.08	Design in house & inspect	$ 45,000	
	Sligo Creek at Mississippi	Filtera / wet land pipe inlet adjustment	$ 5,000	$ 15,000	0.06	Design in house & inspect	$ 20,000	
	Miscelleous repairs	inlets, etc		$ 20,000	0.00		$ 20,000	**$ 145,000**
					0.14			
FY19								
	Birch -Cedar- Barclay	Pipe Realignment	$ 10,000	$ 55,000	0.00	Cedar Inlet issues, Private property	$ 65,000	
	Aspen & Lincoln	bio filter/ curb extension	$ 5,000	$ 30,000	0.50	Design in house & inspect	$ 35,000	
	Miscelleous repairs	inlets, etc		$ 20,000	0.00		$ 20,000	
	Larch and Lincoln	bio filter/ curb extension	$ 5,000	$ 30,000	0.05	Design in house & inspect	$ 35,000	**$ 155,000**
					0.55			
FY20								
	Kennebec Ave	Filteras up to 2	$ 5,000	$ 40,000	0.20	Design in house & inspect	$ 45,000	
	Elm & Prince Georges 6 inch pipe replacement	Pipe Realignment-upgrade	$ 5,000	$ 30,000	0.00	Design in house & inspect	$ 35,000	
	Miscelleous repairs	inlets, etc		$ 20,000	0.00		$ 20,000	
	Flower & Cherry Outfall Stablization	erosion control/ step pool	$ 15,000	$ 40,000	0.03	MNPPC PERMIT-	$ 55,000	**$ 155,000**
					0.23			
FY21								
	Allegheny -Circle- Cockerille Culvert	culvert repairs	$ 5,000	$ 60,000	0.00		$ 65,000	
	Elson St Dead End	pavers, bio-swale	$ 10,000	$ 30,000	0.20	Design in house & inspect	$ 40,000	
	Miscelleous repairs	inlets, etc		$ 20,000	0.00		$ 20,000	
	Houston Court	Filteras up to 2	$ 5,000	$ 40,000	0.08	Design in house & inspect	$ 45,000	**$ 170,000**
					0.28			
FY22								
	Sycamore Poplar Pipe Realignment	pipe realignment	$ 10,000	$ 80,000	0.00	Design in house & inspect	$ 90,000	
	Miscelleous repairs	inlets, etc		$ 20,000	0.00		$ 20,000	
	Houston Avenue Filteras	Filteras up to 5	$ 10,000	$ 100,000	0.50	Design in house & inspect	$ 110,000	**$ 220,000**
					0.50			
FY23								
	Miscelleous repairs	inlets, etc		$ 20,000	0.00		$ 20,000	
	Circle- Conway area	pipe realignment- bio filter	$ 30,000	$ 70,000	0.20	Design in house & inspect	$ 100,000	**$ 120,000**
					0.20			
					0.32	**Average annual EIA**		

Projects listed above have been identified as candidates for repair or system improvement. This list may change over time.

PROPOSED STORMWATER PROJECT LIST

CAPITAL PROJECTS: FY18 - FY 24

	PROJECT NAME	Type	DESIGN COST	CONSTRUCTION COST	EIA	REMARKS	∑ $ PROJECT	
FY18	Devonshire @ Glaizewood	Bioretention	$ 10,000	$ 30,000	0.30	ROW curb side	$ 40,000	
	Grant & Holly	Retrofit Bio	$ 10,000	$ 20,000	0.08	Existing ROW landscape	$ 30,000	
	Tulip Avenue Phase II	PIPE Replacement Inlet Instal.		$ 65,000	0.00	Design in house & inspect	$ 65,000	
	Truck Scale			$ 5,000	0.00	Half of cost, other half in 9100-80000	$ 5,000	
	Takoma Branch design for stream restoration	Stream Restoration Design		$ 100,000	0.00		$ 100,000	**$ 240,000**
					0.38			
FY19								
	Glenside & Ann Street	ROW Bioretention	$ 5,000	$ 30,000	0.18	Curbside Bio drains Ann	$ 35,000	
	Franklin Apt Bio Swale	Bio/swale	$ 20,000	$ 65,000	0.50	Private Partner/DESIGN IN HOUSE	$ 85,000	
	Parkview Apt Parking at Maple	Bioretention/swale	$ 15,000	$ 40,000	1.00	Private Partner/DESIGN IN HOUSE	$ 55,000	
	Glenside @Jackson	Bioretention /Filter	$ 5,000	$ 30,000	0.10	ROW Filter Parkside	$ 35,000	
	End of Colby Ave	Permeable pavement	$ 5,000	$ 30,000	0.05	Design in house & inspect	$ 35,000	**$ 245,000**
					1.83			
FY20								
	Sligo Mill Poplar Mill Park	Debris Removal /Stream Restoration		$ 250,000	2.50		$ 250,000	**$ 250,000**
					2.50			
FY21								
	Sligo Mill Poplar Mill Park	Debris Removal /Stream Restoration		$ 250,000	2.50		$ 250,000	**$ 250,000**
					2.50			
FY22								
	Street Sweeper Replacement	Equipment Purchase		$ 263,766	0.00		$ 263,766	**$ 263,766**
					0.00			
FY 23								
	Glenside & Carroll	Bio retention at Triangle	$ 5,000	$ 30,000	0.18	Triangle Bio drains	$ 35,000	
	Essex Parking at Maple	Bioretention/swale	$ 15,000	$ 45,000	0.30	Private Partner	$ 60,000	
	Gude @ Poplar	ROW Bioretention	$ 5,000	$ 30,000	0.05	ROW curb side	$ 35,000	
	13th @ Hillwood Manor Playground	Bioretention	$ 20,000	$ 30,000	0.20	Park and Planning Property	$ 50,000	**$ 180,000**
					0.73			
FY24								
	Albany at Baltimore Curbside	Filtera/Bio	$ 5,000	$ 30,000	0.15	ROW curb side	$ 35,000	
	Albany at Baltimore Triangle	Filtera	$ 5,000	$ 30,000	0.15	Triangle Bio drains Albany / Baltimore	$ 35,000	**$ 70,000**
					0.30			

1.18	**Average annual EIA**

Projects listed above have been identified as good candidates for construction. This list may change over time.