



CITY COUNCIL WORK SESSION – UPDATE AND STATUS REPORT FOR: STAUNTON MS4/TMDL 2018-2023 & 2023-2028 PERMIT CYCLES

February 9, 2023

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MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4 PROGRAM)

PETE KESECKER

ENVIRONMENTAL PROGRAMS ADMINISTRATOR



Environmental Programs Division

The Division is responsible for all aspects of the U.S. Environmental Protection Agency(EPA)/VA Department of Environmental Quality(DEQ) regulatory compliance as it pertains to the MS4/TMDL Program, the VA Erosion and Sediment Control Program and the Stormwater Management Program which include:

- The DEQ/MS4 Program/CBA TMDL Action Plan
- The Virginia Erosion and Sediment Control Program (VESCP)
- The Virginia Stormwater Management Program (VSMP)
- The Stormwater Utility Fee Program



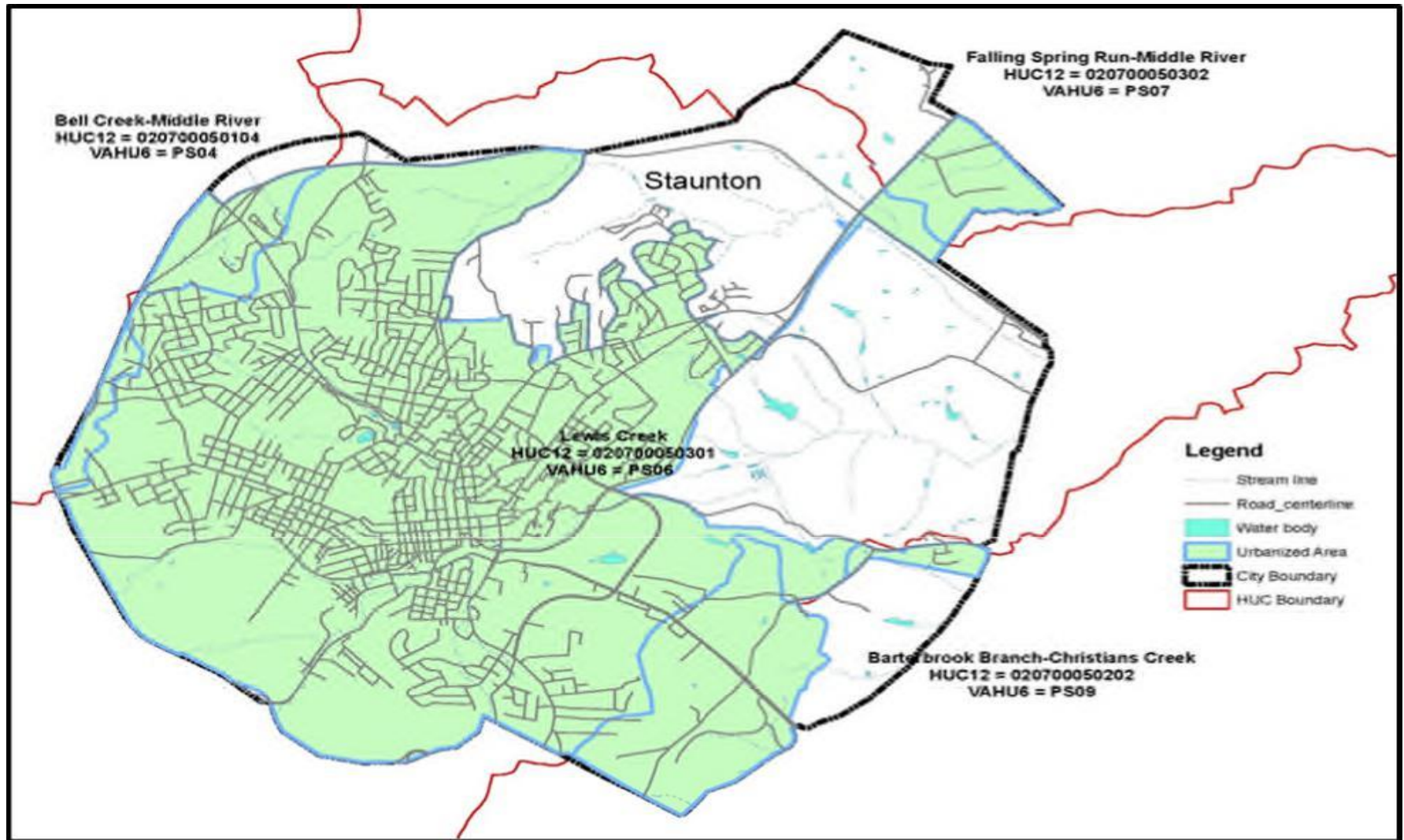
ABOUT STAUNTON



Staunton is an independent city with a population of 24,700 as of the 2020 census, located within Augusta County. Staunton is approximately 19.7 square miles in size. The urbanized area within the City of Staunton is 13.2 square miles as identified in the next slide.



STAUNTON'S URBANIZED (MS4) AREA



HOW THE MS4 PROGRAM CAME TO BE

In 2013 the City was mandated to develop, implement, and enforce an MS4 (Municipal Separate Storm Sewer System) Program to comply with the Chesapeake Bay Act(CBA) through coverage under VDEQ/General Permit No. VAR040132, issued by the Virginia Department of Environmental Quality.

The MS4 Program mandates an MS4 Program Plan be developed that specified six Minimum Control Measures (MCMs) and the “special conditions” of the approved Lewis Creek TMDL (Total Maximum Daily Load) per the CBA which requires TMDL reductions.



SIX MINIMUM CONTROL MEASURES (MCMS) OF THE PROGRAM INCLUDE:

MCM1 - Public education and outreach

MCM2 - Public involvement and participation

MCM3 - Illicit discharge detection and elimination

MCM4 - Construction site runoff control

MCM5 - Post-construction runoff control

MCM6 - Pollution prevention and good housekeeping

MCM1 – PUBLIC EDUCATION AND OUTREACH (PE&O)

The public education and outreach (PE&O) BMPs are a critical component of City's MS4 program. The PE&O program helps the citizens of the community to better understand the environmental challenges that they are facing as a community. This new knowledge will encourage the community as a whole to implement changes in their lifestyles that will reduce the negative impacts their daily choices have on the environment. Additionally, this program empowers the citizens to become part of the stormwater solution by developing an understanding of program goals and providing a variety of ways to communicate observed issues to the program administer. There are four main BMPs of the PE&O program.

MCM1 – Public Education and Outreach (PE&O)

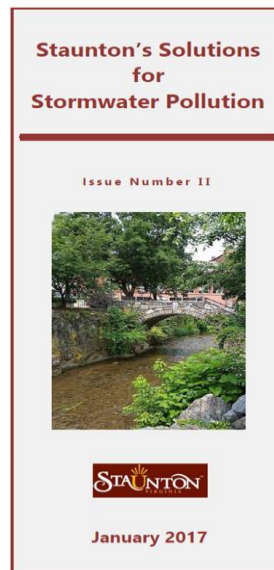
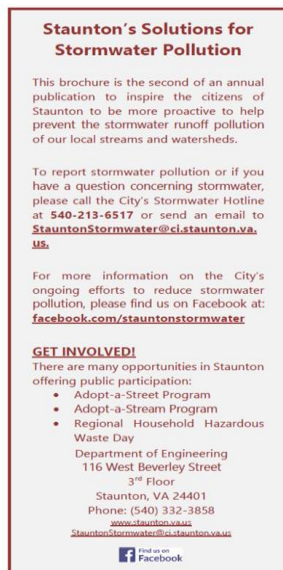
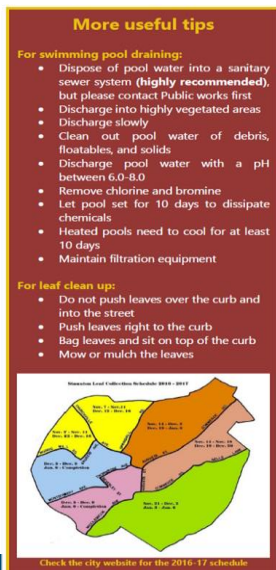
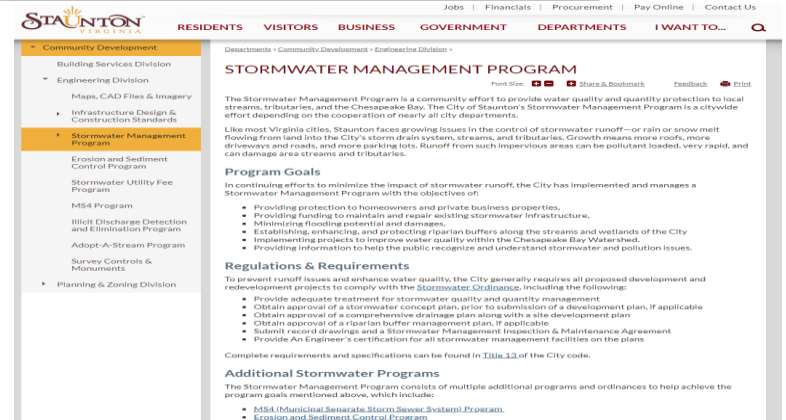
PE&O – 4 BMPs

BMP 1.1 – School Presentations

BMP 1.2 – Stormwater Webpage with link to MS4 Annual Report to DEQ

BMP 1.3 – Stormwater Educational Brochures

BMP 1.4 – Watershed/SW Awareness thru Social Media



MCM2 – PUBLIC INVOLVEMENT & PARTICIPATION (PIP)

The public involvement/participation (PIP) BMP promotes valuable input and assistance from the community. Providing the public opportunities to play an active role in the program is instrumental in a successful program. By promoting the availability of the program to the community, public participation will increase, leading to a reduction in stormwater pollutants and improved water quality. There are five main BMPs of the POP program.

MCM2 – Public Involvement /Participation (PIP)

PIP – 4 BMPS

BMP 2.1 – Tree Planting Program



BMP 2.2 – DEQ/CBF Adopt-A-Stream Program

BMP 2.3 – Adopt-A-Street Program

BMP 2.4 – Stormwater Hotline

BMP 2.5 Stormwater Partnerships/LCWAC/FOMR/ Shenandoah Green



MCM3 – ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)

For the purposes of our permit, an illicit discharge is defined as any discharge to a municipal separate storm sewer that is not composed entirely of storm water, with the exceptions for those pursuant to any other VSMP permit. These discharges can have immediate and long lasting impacts to the ecosystem of your local water bodies. There are three main BMPs of the IDDE Program.

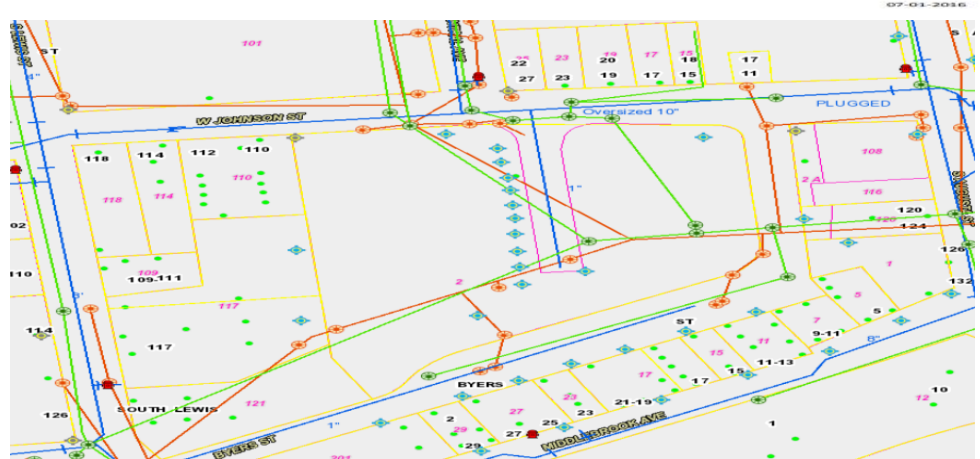
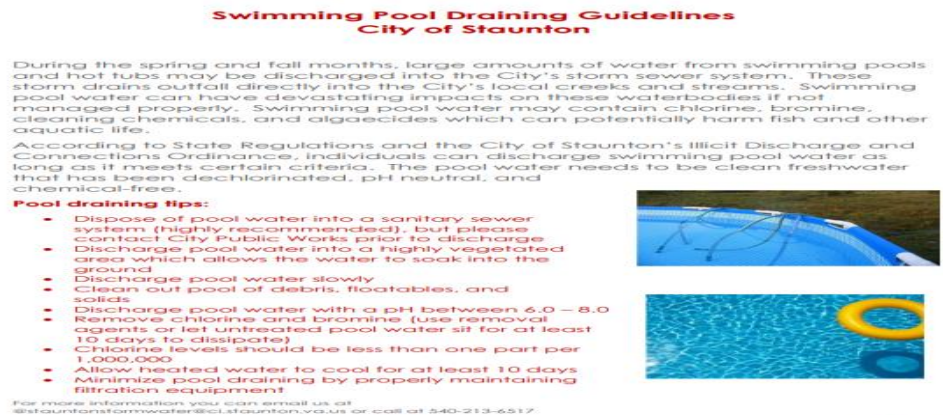
IDDE - 4 BMPS

BMP 3.1 – Hazardous Waste Collection Day

BMP 3.2 – IDDE Detection and Reporting Program (F&R)

BMP 3.3 – Mapping of Stormwater Network

BMP 3.4 – Spill Prevention Control and Countermeasure (SPCC) Training



MCM4 – CONSTRUCTION SITE RUNOFF CONTROL (CSSRC)

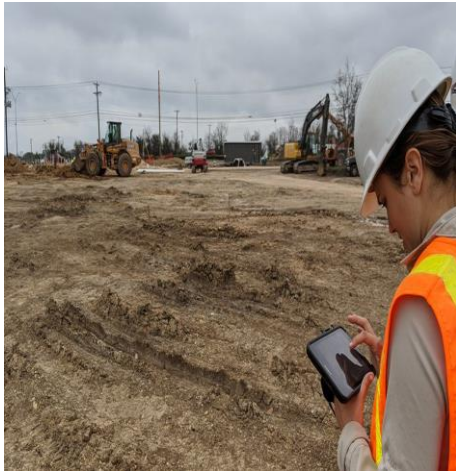
Uncontrolled stormwater runoff from construction sites can significantly impact rivers, lakes and estuaries. Sediment is the main pollutant of concern leaving a construction site. However, there are also other pollutants that commonly discharge from construction sites, including fertilizer, pesticides, oil and grease, concrete truck washout and construction debris. The construction site stormwater runoff control (CSSRC) BMP has been developed to significantly reduce or eliminate construction site pollutants from entering the local water bodies. There are two main BMPs of the CSSRC Program.

CSSRC BMPS

BMP 4.1 – VESCP – VA Erosion and Sediment Control Program

(Inspections by DEQ Certified Inspector every 14 days or reported by the public.)

BMP 4.2 – VSMP – VA Stormwater Management Program/Enforce the Requirements of VSMP Permits



MCM5 – POST CONSTRUCTION RUNOFF CONTROL (PCRS)

Post-construction stormwater impacts, are increases in the type and quantity of pollutants entering the receiving streams. An increase in the quantity of runoff can cause stream bank scouring and downstream flooding. Implementing a combination of structural and non-structural BMPs improve the water quality impacts of increased impervious areas and are crucial elements of MS4 programs. Procedures have been developed and implemented to inspect and maintain all permanent structural BMPs for both City and privately maintained facilities. There are three main BMPs of the PCRS Program.



INSPECTION AND MAINTENANCE POLICY FOR CITY OWNED STORMWATER MANAGEMENT FACILITIES

Per General Permit VAR04 for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4), Section II-B-5-c-(2), for stormwater management facilities owned by the MS4 operator, the following conditions apply:

- The operator shall provide for adequate long-term operation and maintenance of its stormwater management facilities in accordance with written inspection and maintenance procedures included in the MS4 Program Plan;
- The operator shall inspect these stormwater management facilities annually. The operator may choose to implement an alternative schedule to inspect these stormwater facilities based on facility type and expected maintenance needs provided that the alternative schedule is included in the MS4 Program Plan; and
- The operator shall conduct maintenance on its stormwater management facilities as necessary.

Accordingly, the City of Staunton has developed an Inspection and Maintenance Program for City owned stormwater management facilities. The program is implemented through a joint effort between the City's engineering, public works and parks and recreation departments. The engineering department is responsible for inspecting each facility with the aid, if necessary from the other departments. If any facility is found to be in need of maintenance, the necessary work is performed by the public works or parks and recreation departments. The engineering department has developed a BMP Database for all city owned facilities that will be utilized in tracking the annual inspections and maintenance efforts.

PCRS BMPS

BMP 5.1 – Structural BMP Maintenance

BMP 5.2 – Structural BMP Inspections

BMP 5.3 – Structural BMP Database

Share View

> This PC > stormwater5 (\\cssnv24) (U) > MS4 > BMPs > BMP Databases

Name	Date modified	Type	Size
Misc	10/3/2017 8:53 AM	File folder	
4CC5E02F.tmp	12/7/2017 4:55 PM	TMP File	24,777 KB
BMP Facilities Database GIS ONLY_Private2	4/3/2018 1:08 PM	Microsoft Excel C...	12 KB
BMP Facilities Database_LID	9/28/2015 2:21 PM	Microsoft Excel W...	19 KB
BMP Facilities Database_Misc	9/28/2015 3:08 PM	Microsoft Excel W...	13 KB
BMP Facilities Database_Private	3/23/2018 11:10 AM	Microsoft Excel W...	24,779 KB
BMP Facilities Database_Public	4/12/2018 2:00 PM	Microsoft Excel W...	22 KB
BMP Facilities Database_State	8/10/2017 12:04 PM	Microsoft Excel W...	19 KB
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BMP SWM agreements	10/23/2017 11:59 ...	Microsoft Excel 97...	41 KB
GIS ONLY DR-----BMP Facilities Database_Private2	2/27/2018 4:42 PM	Microsoft Excel C...	12 KB



MCM6 – POLLUTION PREVENTION/GOOD HOUSEKEEPING

The Pollution Prevention/Good Housekeeping BMPs allow the City to examine and alter their own actions in an effort to reduce the amount of pollutant that collects on streets, parking lots, and open spaces as a result of runoff from vehicle maintenance areas and poor stormwater maintenance. There are seven main BMPs used for pollution prevention/good housekeeping.

POLLUTION PREVENTION/GOOD HOUSEKEEPING BMPS

BMP 6.1 – Street Sweeping

BMP 6.2 – Pollution Prevention Training

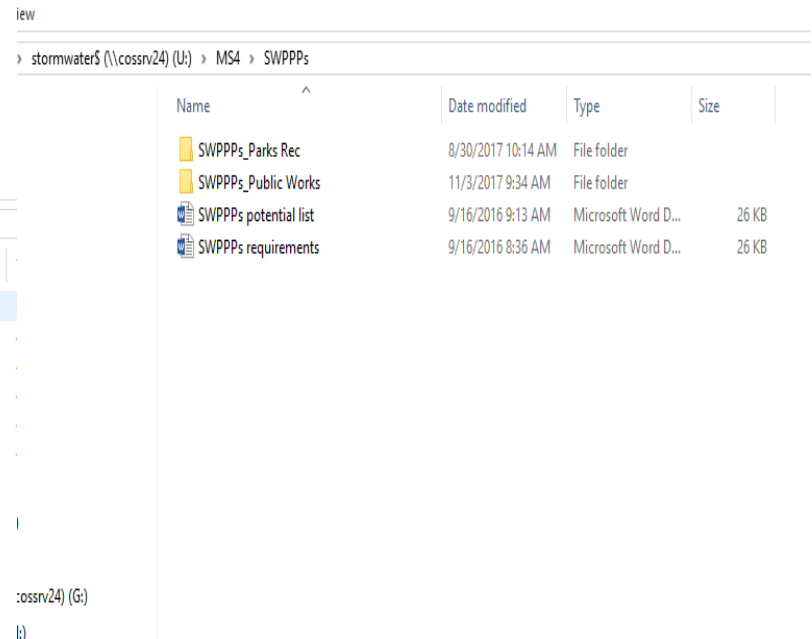
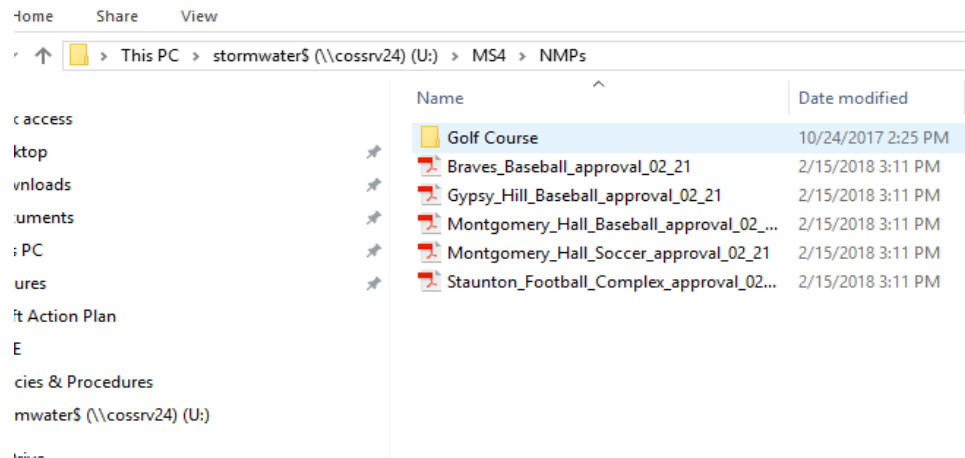
BMP 6.3 – Yard Debris Collection Program

BMP 6.4 – Dedicated Vehicle Wash Facility

BMP 6.5 – Storm Sewer Inspection and Maintenance

BMP 6.6 - SWPPPs for required City Facilities

BMP 6.7 – NMPs for required City Facilities



QUESTIONS?





TMDL ACTION PLAN

- DEQ Permit cycles (TMDL) Load reduction requirements
- Public projects identified in 2016 study
- 2018 plan
- Existing plan progress (Rev 2022)
- 2023 – 2028 Permit cycle 100% reduction required
- Purchase of nutrient credits?
- Recommended Next Steps
- Stormwater Fee Study
- Average Monthly SW Fee Statewide
- Statistics
- Questions?

LOAD(TMDL) REDUCTION BY PERMIT CYCLE

- Staunton became an MS4 in 2013 (First permit cycle ran from 2013-2018)
 - 5% load(TMDL) reduction by 2018 waived due to date of MS4

- Current permit cycle (L2) ends June 30, 2023
 - Need to have achieve 40% load(TMDL) reduction this permit cycle

- Next permit cycle (L3) begins July 1, 2023 and ends June 30, 2028
 - Need to achieve 100% load (TMDL) reduction

PUBLIC PROJECTS IDENTIFIED IN 2016 STUDY

Parcel	Description	Parcel Address	BMP Type	Normalized Ranking P	Normalized Ranking N	Normalized Ranking TSS
9135	City Library	1 Churchville Ave	Filter Strip	9	7	7
11734	Fire Station 2	302 Grubert Ave	Pond Retrofit	10	5	26
12412	WSH 25% MS4	1249 Richmond Ave	Stream Restoration	11	56	24
9117	Firehouse Parking Lot	203 N Lewis St	Bio Retrofit 3	12	18	21
9115	Gypsy Hill Park	600 Churchville Ave	Bioretention	13	9	11
12380	Green Hills Industrial Park Detention Basin	4 Technology Dr	Sediment Forebay + Wet Pond	14	22	12
9204	Staunton-Augusta Health Department	1426 N Augusta St	Filterra	15	30	18
9135	City Library	1 Churchville Ave	Permeable pavement 1	16	26	30
9118	New St. Parking Lot	17 N Augusta St	Filterra Option 1	17	31	19
9136	Shelburne Middle & Ware Elem	300 Grubert Ave	Pond Retrofit 1	18	6	13
10755	Green Hills Industrial Park Detention Basin	106 Industry Way	Forebay + Wet Pond	19	12	27
9135	City Library	1 Churchville Ave	Permeable Pavement 2	20	19	15
9121	Wharf Parking Lot	2 W Johnson St	Permeable Pavement 2	21	20	20
11001	Water Fountain Park	205 Greenville Ave	Bioretention	22	4	16
9121	Wharf Parking Lot	2 W Johnson St	Permeable Pavement 3	23	24	29
9153	Fire Station 1	500 N Augusta St	Filterra/Tree Box	24	41	34
9123	Salt Storage	866 Middlebrook Ave	Bioretention	25	16	25
9116	Montgomery Hall Park	1000 Montgomery Ave	Vegetated Swale	26	11	23

Parcel	Description	Parcel Address	BMP Type	Normalized Ranking P	Normalized Ranking N	Normalized Ranking TSS
9130	Thomas Dixon Elem	1763 Shutterlee Mill Rd	Rainwater Harvesting	27	27	42
9131	Bessie Weller Elem	600 Greenville Ave	Pond Retrofit 1	28	15	22
9130	Thomas Dixon Elem	1763 Shutterlee Mill Rd	Bioretention 1	29	23	28
9120	Hardy Parking Lot	1 N Market St	Permeable Pavement 1	30	28	31
9111	Adjacent to Gypsy Hill	325 Canaan St	Infiltration Basin	31	10	9
9118	New St. Parking Lot	17 N Augusta St	Filterra Option 2	32	46	38
9130	Thomas Dixon Elem	1763 Shutterlee Mill Rd	Bioretention 2	33	25	33
9116	Montgomery Hall Park	1000 Montgomery Ave	Bioretention	34	14	35
9117	Firehouse Parking Lot	203 N Lewis St	Bio Retrofit 2	35	34	43
9121	Wharf Parking Lot	2 W Johnson St	Permeable Pavement 1	36	32	39
9118	New St. Parking Lot	17 N Augusta St	Permeable Pavement	37	29	37
9120	Hardy Parking Lot	1 N Market St	Permeable Pavement 3	38	33	36
9117	Firehouse Parking Lot	203 N Lewis St	Bioretrofit 1	39	39	44
9120	Hardy Parking Lot	1 N Market St	Permeable Pavement 2	40	37	40
9153	Fire Station 1	500 N Augusta St	Permeable Pavement	41	38	41
9132	Robert E Lee High	1301 N Coalter St	Bioretention 2	42	13	14
9118	New St. Parking Lot	17 N Augusta St	Filterra Option 3	43	51	49
9131	Bessie Weller Elem	600 Greenville Ave	Bioretention 2	44	40	47
9110-9108	Augusta St. Parking Lot	2A W Johnson St	Permeable Pavement	45	44	45
9153	Fire Station 1	500 N Augusta St	Urban Bioretention 1	46	42	46

2018 PLAN

Table 1 - Load Reduction Calculation (2018 Plan)

SITE	BMP TYPE	POLLUTANT REDUCTIONS (lbs/ac/yr)		
		TN	TP	TSS
Existing Load Reduction		3,272	1,201	378,350
Peyton Creek Stream Restoration 1	Stream Restoration	63	57	37,523
Peyton Creek Stream Restoration 2	Stream Restoration	26	24	15,659
Green Hills Wet Pond 1	BMP Retrofit	115	11	7,713
Green Hills Wet Pond 2	BMP Retrofit	347	44	34,996
Green Hills Wet Pond 3	BMP Retrofit	188	21	15,855
Wharf Pavers	Permeable Pavers	0.80	0.11	728
Central Avenue Streetscape	Redevelopment	8	1	567
Anticipated Projects Subtotal		748	158	113,041
Total Reductions to be Implemented by 2023		4,020	1,359	491,391
Required 2nd Cycle Reductions		1,799	210	173,409
Excess Load Reductions		2,221	1,149	317,982

EXISTING PLAN PROGRESS (REV 2022)

Table 2 - Load Reduction Calculation (Updated 2022)

SITE	BMP TYPE	POLLUTANT REDUCTIONS (lbs/ac/yr)		
		TN	TP	TSS
Existing Load Reduction ¹		421	53	50,481
		3,272	1,201	378,350
Gypsy Hill Park Stream Restoration	Stream Restoration	367	57	19,659
Green Hills Wet Pond 1	BMP Retrofit	115	11	7,713
Green Hills Wet Pond 2	BMP Retrofit	347	44	34,996
Green Hills Wet Pond 3	BMP Retrofit	188	21	15,855
Wharf Pavers	Permeable Pavers	0.80	0.11	728
Central Avenue Streetscape	Redevelopment	8	1	567
Cole Avenue Stream Restoration	Stream Restoration	50	25	100,000
Green Thumb Park Bio-Retention	Bio-Retention	13	1	782
Western State Land Conversion	Land Use Change	1,064	0	20,460
Anticipated Projects Subtotal		1,494	83	140,901
Total Reductions to be Implemented by 2023		1,915	136	191,382
Required 2nd Cycle Reductions ²		1,798	209	173,409
Excess Load Reductions		117	-73	17,973

1. VA DEQ Guidance Memo No. 20-2003 revised the load reduction calculations which reduced effectiveness of Street Sweeping by 97%.
2. Guidance Memo clarified L2 and L3 required reduction calculations. Change is minimal relative to required load reductions calculated with 2015 Guidance Memo.

2023 – 2028 PERMIT CYCLE 100% REDUCTION REQUIRED

Table 4 - Load Reduction Calculation (L3 2023-2028 Permit Cycle)

SITE	BMP TYPE	POLLUTANT REDUCTIONS (lbs/ac/yr)			COST (2022\$)
		TN	TP	TSS	
Excess Load Reduction Carry Over from L2		117	-73	17,973	
Staunton High School Stream Restoration	Stream Restoration	367	57	19,659	\$ 1,135,745
Western State Hospital 100% MS4	Stream Restoration	150	136	89,760	\$ 1,615,282
Green Hills Wet Pond 1 - Level 1	BMP Retrofit	189	72	26,179	\$ 1,203,899
Green Hills Wet Pond 2 - Level 2	BMP Retrofit	41	148	6,001	\$ 912,774
Green Hills Wet Pond 3 - Level 2	BMP Retrofit	66	14	4,038	\$ 580,778
Anticipated 2023-2028 Projects Subtotal		813	427	145,637	\$ 5,448,478
Total Reductions to be Implemented by 2028		930	354	231,828	
Required 3rd Cycle Reductions		4,495	522	433,524	
Excess Load Reductions		-3,565	-168	-201,696	
Nutrient Credit		3,565	280	Varies	\$ 6,250,000
Total Cost					\$ 11,600,000+

PURCHASE OF NUTRIENT CREDITS

- Nutrient Credits for nitrogen, phosphorus, and total suspended solids can be purchased for non-point source applications
- DEQ Certified Virginia Nutrient Banks
 - Buy credits in units of pounds of Phosphorus (TP)
 - Purchase will also include some amount of Nitrogen (TN) and Total Suspended Solids (TSS) depending on the sites used by the Bank
- Example: TP need in Table 2 (previous slide) is 73 lbs @ \$17,700.00/lb./TP = \$1,292,100.00
 - Cost: \$1.3 million
 - Includes: 73 lb TP and 1700 lb TN
 - If TP need halves, cost halves.
- Staunton has a greater need for TN than for TP, so credit purchase will exceed TP goal to achieve TN goal.
- Need to consider the prospect of possible credit purchase ASAP in order to meet the mandate of the current permit cycle which ends June 30, 2023.



RECOMMENDED NEXT STEPS

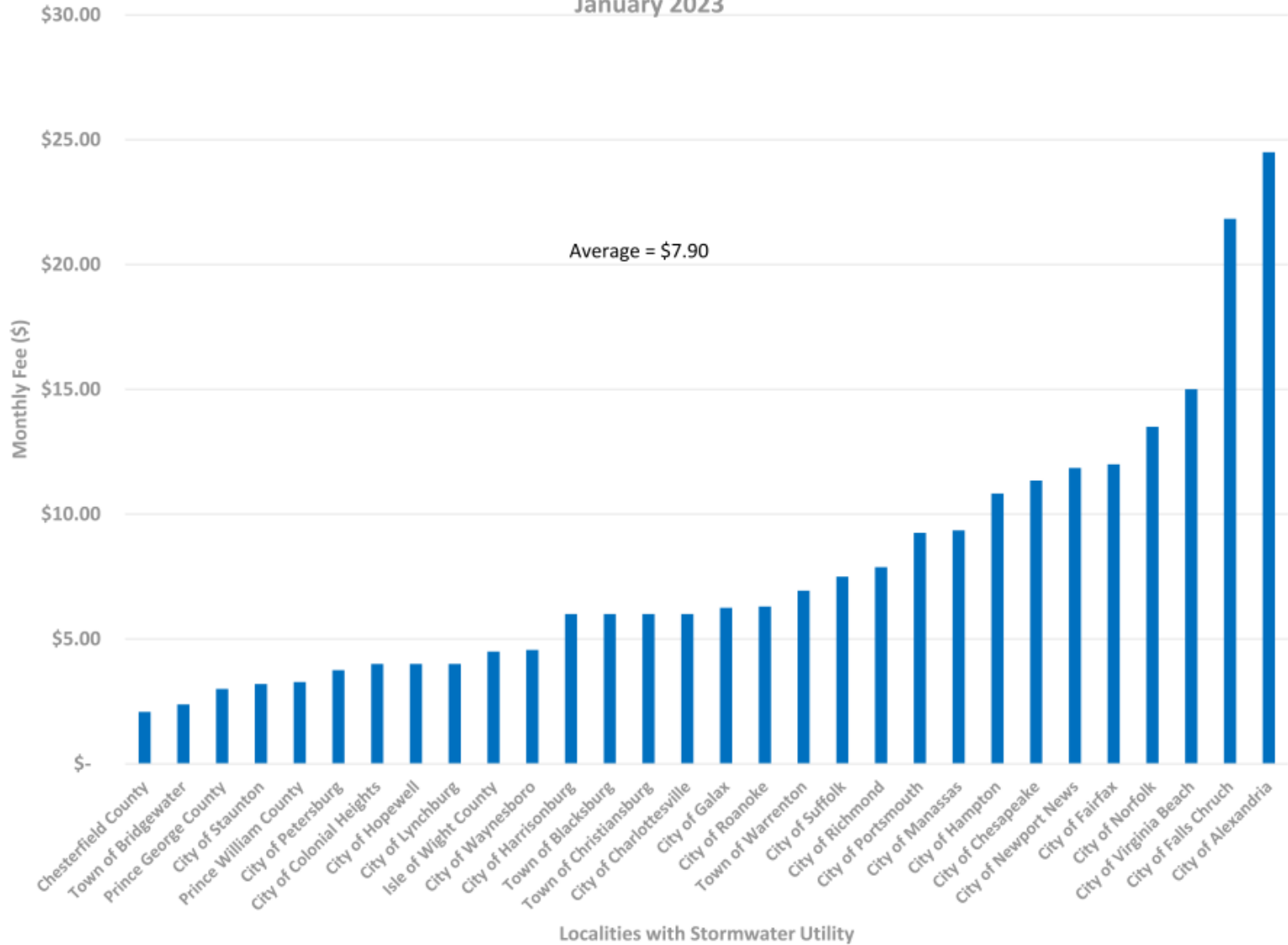
- Implementation of current TMDL Action Plan
 - Cole Avenue Stream Restoration Project
 - Gypsy Hill Park Stream Restoration Project Final Plans and Bidding

- Additional study to determine cost effective project opportunities
 - 2016 previous study on City owned lands
 - More effective options if not limited by City ownership

- Possible Nutrient Credit Purchase

- Evaluate current Stormwater Fund Program for possible rate increase

Average Monthly Residential Stormwater Fee January 2023

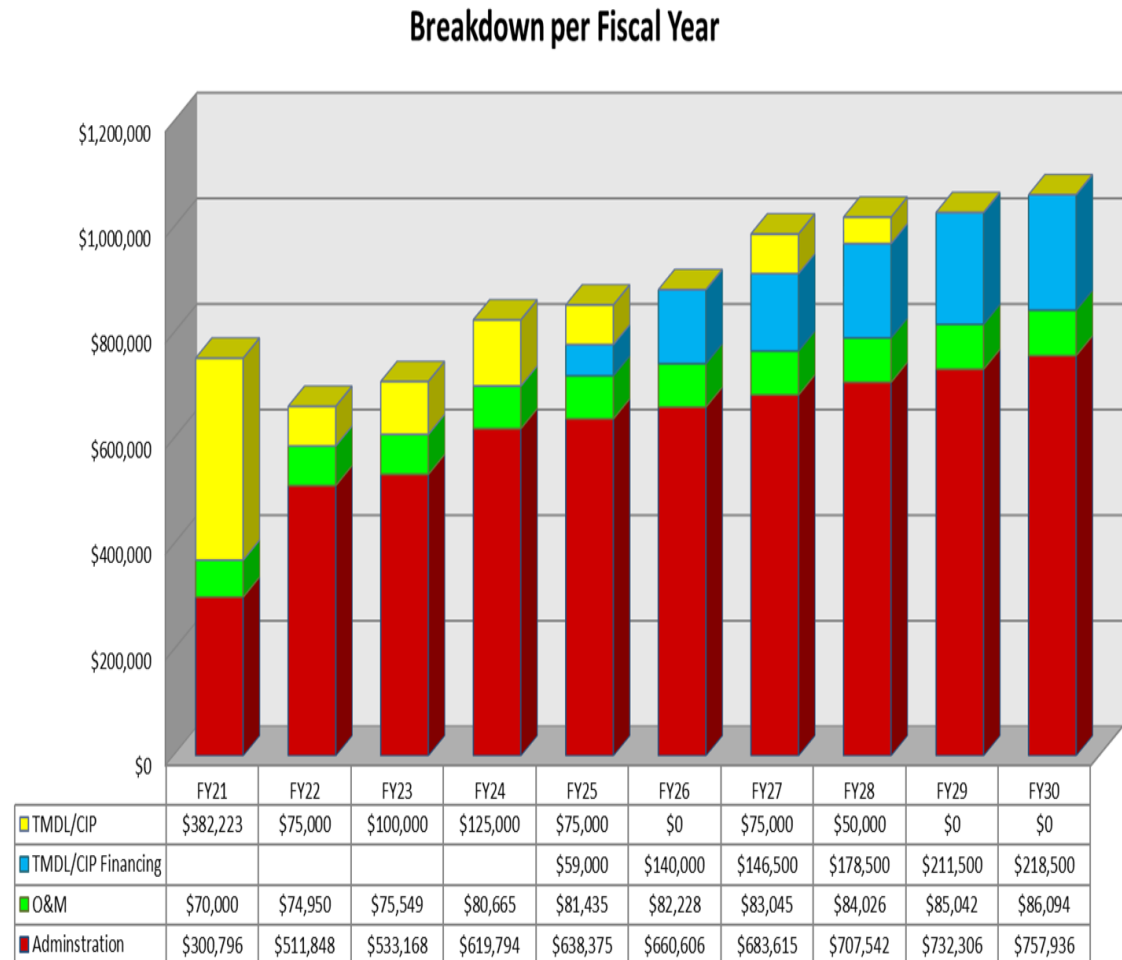


STATEWIDE SW FUND STATISTICS

- 28 Virginia Communities (2 Districts)
- 18 Phase II Communities
- 3 Towns
- Smallest Population – 14,700 (Falls Church)
- Largest Population – 460,000 (Prince William)
- Use Fees to Fund O&M – 27
- Use Fees to Fund CIP - 27
- Highest Residential Monthly Rate - \$20.67 (Falls Church)
- Lowest Residential Monthly Rate - \$2.07 (Bridgewater)
- Median Residential Monthly Rate - \$4.95
- Average ERU – 2,478
- Localities Using Billing Unity – 5
- 18 Utilities Started Since 2010
- 4 Localities Raised Rates Since 2016

RECOMMEND STORMWATER FEE STUDY TO EVALUATE:

- Current Structure
 - 18 Tier System
 - Crediting w/o Verification
 - Insufficient Fund Generation
- Fee Study
 - Expenses
 - Flood mitigation BMPs
 - MS4 Program Administration
 - MS4 Program Implementation
 - Fee Structure Impacts
 - Performance comparison
 - Impact of current Fee Structure
 - Impact of current Crediting



QUESTIONS?

