



City of Manassas

MS4 Annual Report

Permit 4/Year 4 MS4 General Permit VAR040063

Reporting Period: July 1, 2021 – June 30, 2022

City of Manassas
Engineering Department
Stormwater Division

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Annual Report Certification per Part III

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print Name: LANCE KILBY

Title: CITY ENGINEER

Signature: 

Date: 10/3/22

Part I- MS4 Program Annual Report

Background

In accordance with the requirements of Permit Number VAR040063, this Annual Report is hereby submitted in compliance with the City of Manassas General Permit for Small Municipal Separate Storm Sewer Systems (MS4). A link to the MS4 Program Plan and latest Annual Report can be found at:

https://www.manassasva.gov/engineering/stormwater/stormwater_documents.php

A copy of the signed certification (Virginia Stormwater Management Program General Permit Registration Statement) and permit is attached in **Appendix 1**. This Annual Report covers all information required by the permit as described in 9VAC25-890, but is not intended to fully describe all activities the City has performed, programs the City has implemented, or plans the City has made or is making. Not all permit activities are required to be reported; therefore, omissions of this information should not be taken as an indication that the City is not fulfilling those requirements.

Key Personnel in MS4 Permit Implementation

Changes in MS4 permit implementation staff occurred during the last reporting period. A summary of key personnel involved with MS4 permit implementation is located below in **Table 1**.

Table 1. MS4 Program Implementation Staff Roster 2021-2022

Name	Contact	Department	Role Summary
Lance Kilby	lkilby@manassasva.gov	Engineering	Engineering Director, VA Stormwater Management Program (VSMP) Administrator
Susie Orndorff	sorndorff@manassasva.gov	Engineering-Stormwater	Responsible for overall program implementation, budgeting, and Total Maximum Daily Load (TMDL) tracking
David Ek	dek@manassasva.gov	Engineering-Stormwater	Program support for all MCMs, MCM 3 and 6 lead
Colleen Burroughs	cburroughs@manassasva.gov	Public Works- Refuse and Recycling	Hazardous household waste and recycling coordinator, Materials Reduction Site coordinator
Christen Fox	cfox@manassasva.gov	Community Development- Parks, Culture, & Recreation	Public Involvement Contributor- Park Cleanups, Pet Waste Stations, Save the Bay Day
Ciaran Lowell	clowell@manassasva.gov	GIS	GIS and Dry Weather Screening Field Application Support
Jim Hanley	jhanley@manassasva.gov	Office of Risk Management and Safety	Illicit discharges/Spill response program support

Table 1. MS4 Program Implementation Staff Roster 2021-2022

Name	Contact	Department	Role Summary
Greg Bokan	gbokan@manassasva.gov	Community Development	Development permitting - VSMP and Virginia Erosion and Sediment Control Program (VESCP) intake and processing
John Keenan	jkeenan@manassasva.gov	Engineering	Stormwater management (SWM Plan) Review
Elden Riffle	eriffle@manassasva.gov	Engineering- Inspection and Compliance	Erosion and Sediment Control (ESC) Plan Review, ESC and SWM Construction Inspections, and Enforcement
Katie Geiger	kgeiger@manassasva.gov	Utilities- Water & Sewer	Public Post-Construction Stormwater management facility (SWMF) Inspections Lead
Mike Nicholson	MNicholson@manassasva.gov	Utilities - Water & Sewer	SMWF repair and maintenance support and drainage CCTV support
Matthew Holloway	mholloway@manassasva.gov	Utilities - Water & Sewer	Drainage CCTV support
Steve Schrank	sschrank@manassasva.gov	Public Works- Streets	Drainage maintenance and pollution prevention (P2) plan implementation support
Doug McCauley	dmccauley@manassasva.gov	Public Works- Streets	P2 Plan Implementation Support
Daniel Spoden	dspoden@manassasva.gov	Public Works- Buildings & Grounds	Nutrient management support

MCM 1: Public Education and Outreach

High-Priority Stormwater Issues

The following is a list of the high-priority stormwater issues that the City continued to address in its public education and outreach program during Permit Year 3:

1. Illicit discharges and illegal dumping
2. Pet Waste and Bacteria Total Maximum Daily Load (TMDL)
3. Sediment pollution

Communication Strategies

The City used a variety of strategies, including newsletters, written material, and online material, to communicate each high-priority stormwater issue to the intended audience as shown in **Table 2** below. Supporting documentation including postcards, magazine blurbs, signs, and brochures is provided **Appendix 2**.

The City's Stormwater Program provides a useful webpage containing educational information on basic stormwater knowledge, the MS4 permit, City reports and plans. There is also guidance for using less salt, grease and oil disposal, cleaning up spills, dumpster management, pet waste management, landscape best practices for nutrient reductions and erosion control, and swimming pool and spa best practices. Refer to MCM #2 for a link to the website. New to the 2021-2022 Permit Year, the City included an illicit discharge informational page in the April edition of the City Newsletter, which is mailed to 17,000 households. In addition, the City's Stormwater Team often uses verbal communication as an effective communication strategy when visiting with residents regarding drainage complaints, projects, and other investigations. During this reporting period, Stormwater Staff also provided stormwater educational guidance, with an emphasis on sediment, to a third-grade class in Weems Elementary School as they prepared and developed a special class project on restoration.

The City also relied on various other departments to help carry out our communication strategies. The Public Works Refuse and Recycling Program distributed multiple informational brochures during events and their webpage included information on yard waste; composting; trash and recycling protocols; events; proper disposal of paint, chemicals, and electronics; and the Keep Manassas Beautiful program. In addition, this webpage hosted the City's Solid Waste Management Plan and Debris Management Plan. All of this information lead to environmental awareness, which leads to less illegal dumping and illicit discharges. Refer to MCM #2 for a link to the website.

The Parks, Culture, and Recreation Department (Parks) provided park rules signs that are posted at every City Park. Specifically, the signs state illegal dumping is prohibited and pet owners must pick up their pet waste per City code. In addition, there are 20 pet waste stations for public use at 11 different City Parks. New in fiscal year 2022, in partnership with the Virginia Department of Conservation and Recreation, four "No Mow Zones" were identified in the City of Manassas. In an effort to educate and notify the public of these areas, signs were erected at each location. The Parks staff also worked directly with the pool contractor at Stonewall Park Pool, the City's only municipally-run pool, to educate and ensure cleaning and dewatering are performed correctly. The preferred method to drain pool water was through the filtration trash line to the City's waste water system. If a second method of draining was deemed necessary, the contractor was required to drain the pool water over vegetation that does not

directly flow into City waterways. In addition, the filtration system was cleaned weekly where the dirty water was emptied through the trash line into the City's waste water system. All chemicals located on site are properly stored separately with a protective containment barrier.

The City was also a part of the Northern Virginia Clean Water Partnership (NVCWP) and participated in the "Only Rain Down the Storm Drain" initiative. The City utilized their website information, social media posts, and television commercials (media materials) as part of its public education communication strategy. A summary of their communication strategies is provided in **Appendix 2**.

Review of Effectiveness

While the City has been effective at communicating issues regarding trash, recycling, and illegal dumping, greater emphasis should be placed on both pet waste/bacteria pollution topics and sediment pollution topics. The City has collected and developed sufficient information on these issues to target the appropriate communities; therefore, the City plans to add focus on these topics during the next Permit Cycle, while remaining consistent with illicit discharge/illegal dumping messaging.

Table 2. MCM 1 – Communication Strategies

High-Priority Stormwater Issue	Exhibit Type	Exhibit Description	Lead Department/ Division	Quantity
Illicit Discharges and Illegal Dumping	Electronic & Mailed Newsletter	<i>Illicit discharge in our storm drains</i> page in the City Newsletter (<i>City Connection</i>)	Engineering - Stormwater	Sent to 17,000 households and available online
	Traditional Written	<i>5 Simple Rules for Trash</i> Postcard	Public Works- Refuse & Recycling	1,000 distributed at events and 1,500 magnets provided to HOAs
	Traditional Written	<i>Curbside Composting</i> Postcard	Public Works- Refuse & Recycling	2,000 distributed at events
	Media Material	Refuse and Recycling Website	Public Works- Refuse & Recycling	50,170 views
	Signage	City Park Rules Signs	Community Development- Parks, Culture, & Recreation	23 signs
Pet Waste and Bacteria TMDL	Signage	Pet Waste Stations with Signs	Community Development- Parks, Culture, & Recreation	20 stations with signs
Sediment	Signage	No Mow Signs	Community Development- Parks, Culture, & Recreation	4 signs
	Classroom Outreach	Educational guidance and Q&A provided to a third-grade class in Weems Elementary School as they prepared and developed a special class project on restoration	Engineering - Stormwater	1 packet of 3rd-grade educational/outreach material presented
Illicit Discharges and Illegal Dumping, Pet Waste and Bacteria TMDL, Sediment pollution	Media Material	Stormwater Website	Engineering - Stormwater	1,839 views
	Media Materials	NVCWP and participates in the “Only Rain Down the Storm Drain” initiative	Northern Virginia Clean Water Partnership	See NVCWP summary in Appendix 2.

MCM 2: Public Participation and Involvement

Summary of Public Input

The City used a public reporting tool for stormwater-related issues powered by GoGov. To submit reports through the online tool, citizens either visited the City of Manassas website or the City's stormwater page through the "Report a Concern" feature, or downloaded the City's Go-Gov public reporting tool to submit concerns. In addition, since stormwater staff contact information is provided on the City's stormwater website, stormwater staff received many calls directly relating to drainage and stormwater issues. A summary of public input relating to drainage and stormwater issues is provided below in **Table 3**.

Table 3. MCM 2 – Summary of Public Input Relating to Drainage/Stormwater Issues

Category of Drainage/Stormwater Complaint	Number Received	Number Evaluated	Number Closed
Received during Reporting Year	45	45	35
Rolled-over from previous Reporting Year	17	17	8
Total Complaints worked on in Reporting Year	62	62	43

As shown in the table above, the City always takes the opportunity to evaluate an issue and meet with applicable parties to discuss responsibilities and encourage communication after receiving public input such as a drainage/stormwater complaint. The issues that remain open typically involve damaged stormwater infrastructure repair/replacement, which may take longer to secure funding and typically require engineering calculations/designs.

MS4 Program/Stormwater Website

The City's MS4 Program / Stormwater Website can be found at: <http://www.manassasva.gov/swm>.

The City's Refuse and Recycling website can be found at:

http://www.manassasva.gov/public_works/trash_recycling/index.php.

Public Involvement Activities

The City provided many public involvement activities through events aimed at creating environmental awareness and reducing pollution that may end up in our local waterways.

The City, through our *Keep Manassas Beautiful* and *Adopta! Program*, engaged and empowered residents, businesses, and community groups to undertake litter clean-ups throughout the year. The *Adopta! Program* encouraged them to “adopt” a street, stream, park, ballfield or historic site, and the City provided all the materials needed to facilitate the cleanup activity. This year, the City hosted over 200 *Adopta!* cleanup events, which resulted in approximately 1,000 volunteers picking up over 1,4000 bags of trash, recycling, and yard waste. In addition, the City participated in *Save the Bay Day* through a stream cleanup of Flat Branch at the Liberia House Historic Site.

Through the Refuse and Recycling Program, the City hosted multiple *RecycleFest!* and Household Hazardous Waste and eWaste Drop-off day events throughout the year. These were special drop-off days at the Manassas Transfer Station where residents dropped off antifreeze, fertilizers, gasoline, glues, motor oil, paint, swimming pool chemicals, cell phones, TVs, computers, scanners, small copiers, game consoles, monitors. *RecycleFest!* events also allow for personal documents for shredding . This year the City hosted three *RecycleFest!* events resulting in approximately 1,400 residents dropping off about 20 tons of material, and six and Household Hazardous Waste and eWaste Drop-off days resulting in approximately 1,500 residents dropping off an additional 20 tons of material.

A summary of these activities, including metrics, is provided below in **Table 4**. Supporting documentation including event flyers and event data is provided **Appendix 3**.

The City strongly believes that these activities, which focus on citywide cleanups and proper disposal of solid wastes, had a beneficial effect on local water quality. However, the City also believes that a greater emphasis can be placed on creating involvement opportunities focusing on both pet waste/bacteria pollution and sediment pollution.

Collaboration with other Permittees

The City partnered with the NVCWP and participated in the “Only Rain Down the Storm Drain” initiative, which distributed surveys for public involvement. The 2022 NVCWP survey can be found in **Appendix 4**. In addition, stormwater staff also collaborated with the stormwater and environmental staff within Prince William County PWC to discuss or solicit program/implementation input and ideas.

Table 4. MCM 2 – Public Participation Events

Activity Description	Lead Department/Division	Number of Events/Locations	Number of Participants	Metrics
<i>Save the Bay Day</i> Cleanup event	Community Development- Parks, Culture, & Recreation	1	6	20 bags of material collected
<i>Adopta!</i> Park Cleanup events	Community Development- Parks, Culture, & Recreation	53	502	108 bags of material collected
<i>RecycleFest!</i>	Public Works- Refuse and Recycling	3	~1,400	20 tons of material properly recycled
Household Hazardous Waste and eWaste Drop-off days	Public Works- Refuse and Recycling	6	~1,500	20 tons of material properly recycled
<i>Adopta!</i> Street Cleanup events	Public Works- Refuse and Recycling	184	523	198.55 hours of cleanups 55.5 bags of recycling collected 241 bags of trash collected 1250.5 bags of yard waste collected

MCM 3: Illicit Discharge Detection and Elimination

MS4 Map Updates

The City confirms that the MS4 map and information table have been updated to reflect any changes to the MS4 occurring on or before June 30 of the reporting year. The City’s current outfall map is provided in **Appendix 5**.

Dry Weather Screening

The City is required to screen at least 50% of its MS4 outfalls each permit year. During this reporting period, the City screened 62% of its outfalls, or 270 of 438 MS4 outfalls. A summary of the annual dry weather screening is provided below in **Table 5**. A map displaying the locations of the screened outfalls and a more detailed table with the outfall screening results can be found in **Appendix 6**.

Table 5. MCM 3 – Dry Weather Screening Summary

Illicit Discharge Category	Total No. Outfalls Screened	% of Screened Outfalls	Referred for Investigation	% investigations of Screened Outfalls
Unlikely	234	86.6%	3	1.1%
Potential (presence of two or more indicators)	1	0.4%	0	0%
Suspect (one or more indicators were ranked with a severity of 2 or 3)	35	13.0%	15	5.6%
Total	270	100%	18	6.7%

The City categorized the outfalls into “unlikely, potential, or suspect” based on illicit discharge indicators collected during the outfall screening. These illicit discharge indicators included the presence of deposits, stains, flow, and flow characteristics (e.g., color, turbidity, odor, sheen, etc.), which were then given a severity ranking of 1-3. An outfall was categorized as “unlikely” if no flow was observed or only one indicator was present. An outfall was categorized as “potential” if two or more indicators were present. An outfall was categorized as “suspect” if one or more indicators were ranked with a severity of 2 or 3. During screening, if follow-up in the form of an Illicit Discharge and Detection Elimination (IDDE) investigation was needed, City contractors contacted stormwater staff who then started an IDDE investigation as soon as possible. In addition, at the conclusion of the dry weather screening, City staff reviewed all results and determined if additional follow-up was needed. During this reporting period, the City flagged 18 outfalls for further investigation, which are discussed in the next section and shown in **Table 6**.

Illicit Discharges to the MS4

During this reporting period there were 31 IDDE investigations, 20 of which were confirmed as illicit discharges. Of these 20 confirmed illicit discharges, 12 were resolved and closed and four are still active as open investigations. In addition, four are open with designations of “Watch” so the City can continue to monitor potential intermittent discharges. A summary of these illicit discharge investigations is provided below in **Tables 6 and 7**.

Table 6. MCM 3 – Dry Weather Screening-initiated Illicit Discharge Investigations

Date	Name	Address	Outfall	Notes	Status
8/25/21	Plantation/Sudley	8741 Plantation Ln	59834	This intermittent discharge occurs approx. once per year. Traced the water carrying the pollutants to a leaking chlorinated water line near Piedmont/Stuart intersection. However, finding the source of the pollutants somewhere downstream from there has been elusive. We continue to monitor.	Watch
2/10/22	Corporate Circle	9297 Corporate Cir	90422	Spent days remapping the stormwater pipe network in this area, fixing significant errors. Traced the intermittent discharge to somewhere within this many-unit building. Completed a down-pipe CCTV camera inspection (it shows unidentified pipe connections). We continue to monitor.	Watch
2/10/22	Corporate Circle	9297 Corporate Cir	90420		
2/16/22	Shriners	9520 Technology Dr	59923	The issue identified during DWS turned out not to be an IDDE; however, the owner had been stockpiling pea-gravel on the slope above the stream, and gravel was sloughing into the stream. City issued verbal warning to remove the gravel pile.	Closed 8/2/22
2/17/22	Micron	9600 Godwin Dr	89818	Determined not to be an illicit discharge	n/a
2/17/22	Micron	9600 Godwin Dr	89936	Determined not to be an illicit discharge	n/a
2/21/22	Metz Middle School	9950 Wellington Rd	91215	Determined not to be an illicit discharge	n/a
2/21/22	Metz Middle School	9950 Wellington Rd	59501	Determined not to be an illicit discharge	n/a
3/2/22	Site One Ltd.	10405 Nokesville Rd	89827	Determined not to be an illicit discharge	n/a
3/2/22	Colonel Court	10405 Nokesville Rd	59651	Spent days tracing the intermittent discharge to somewhere within this industrial property building. We camera inspected (CCTV) all the pipes in this vicinity. We continue to monitor.	Watch
3/2/22	Colonel Court	10407 Nokesville Rd	59633		
3/15/22	Speiden Trail	10629 Speiden Trail	89766	Investigation on-going	Open
3/30/22	Beech Place	9700 Beech Pl	91328	Investigation on-going	Open
3/30/22	Bragg Lane	9715 Bragg Ln	59382	Investigation on-going	Open
3/30/22	Rolling Oaks Condo	9214 Runalduie St	59487	Determined not to be an illicit discharge	n/a
4/4/22	Pulte Pond	10589 Redoubt Rd	59468	Determined not to be an illicit discharge	n/a
4/4/22	Airport	10481 Observation Rd	94082	Determined not to be an illicit discharge	n/a
4/4/22	Airport	10481 Observation Rd	89751	Determined not to be an illicit discharge. Note: This specific site has been one of the City's stream/pond water quality (and water chemistry) monitoring sampling sites for the last three years. It is referred to as the "Airport" site.	n/a

Table 7. MCM 3 – Other Illicit Discharge Investigations

Date	Name	Address	Notes	Closed
5/21/21	Dias Concrete	8516 Bucyrus Ct	[Outfall 89808] On-going investigation of an IDDE from last reporting year; DEQ issued Notice of Violation (NoV); City continues to monitor.	Watch
8/27/21	Wellington Antifreeze Spill	9950 Wellington Rd	Public Works cleaned the site	Closed 8/27/21
8/28/21	Leidos Foam	10661 Frank Marshal Ln	Fire Marshal investigation	Closed 9/30/21
9/2/21	Public Works Antifreeze Spill	8500 Public Works Dr	Public Works cleaned the site	Closed 9/2/21
12/30/21	Landscaper Discharge	10550 Gateway Blvd	Verbal warning presented	Closed 1/15/22
3/4/22	Sill's Warehouse	9813 Cockrell Rd	Fire Marshal issued NoV 3/21/22	Closed 4/12/22
3/14/22	Champion Ct.	8702-8724 Sudley Rd	This was initially reported directly to DEQ, the City did not find out about the spill until much later.	Closed 5/20/22
3/25/22	Pet Waste	8920 Quarry Rd	Issued warning letter 4/7/22	Closed 4/7/22
3/30/22	Grant Ave./Byrd Dr. Spill	9664 Grant Ave	[Inlet 67160] Public Works cleaned the intersection with clean sand and a vacuum truck	Closed 3/30/22
4/1/22	Stonewall Court	9295 Sumner Lake Blvd	Multiple site inspections, investigations, and CCTV camera inspections found the issue was that chlorinated city-water from a leaking fire hydrant saturated the soil under the road, which then entered the stormwater pipe through a hole in the pipe. So, this was not an illicit discharge, but the leak has been fixed.	Closed 6/9/22
5/5/22	Mexico Lindo Restaurant (#1)	8630 Mathis Ave	Fire Marshal issued NoV 5/5/22	Closed 5/11/22
6/9/22	Sumner Lake HOA Brush	8554 Stonewall Rd	Verbal warning presented	Closed 6/20/22
6/10/22	Nagle Brush	8683 Nagle St	Warning letter issued 6/10/22	Open

MCM 4: Construction Site Runoff Control

Confirmation Statement

The City confirms that all land disturbing projects that occurred during the reporting period were conducted in accordance with the City's approved Virginia Erosion and Sediment Control Program (VESCP).

VESCP Inspections and Enforcement Actions

The City conducted 209 erosion and sediment control inspections for development projects conducted within the MS4 area during the reporting period. Thirty-six of them were marked as non-compliant. All but four were resolved without further written action. The City issued two written violations and two Notice-to Comply statements.

All inspections were conducted and saved within the City's ArcGIS Online Construction Inspection Database. Reports for the thirty-six inspections marked as noncompliant, including those with written follow-up, have been exported and included in **Appendix 7**. All data and reports are available upon request.

MCM 5: Post-Construction Stormwater Management

Privately Owned Stormwater Management Facility (SWMF) Inspections and Enforcement

During this reporting period the City conducted inspections on 25 of the City's 53 privately-owned stormwater management facilities, including four wet ponds, eight dry ponds, and 14 underground systems, as shown below in **Table 8**. This accounts for 47% of our current inventory. The City aims to inspect the private facilities in our inventory once every five years, and roughly 25% each permit year.

Table 8. MCM 5 – Privately Owned SWMF Inspections

SWMF Name	SWMF Type	Recent Inspection	Previous Inspection
Browns Manassas Kia	Underground Infiltration	4/11/2022	9/28/2018
Clarksmill	Dry Detention Pond	4/21/2022	9/26/2018
Cloverhill Court	Wet Pond	8/6/2021	9/26/2018
Davis Ford Crossing	Dry Detention Pond	8/6/2021	9/26/2018
Fairview Square Shopping Ctr. #1	Underground Infiltration	4/13/2022	9/28/2018
Fairview Square Shopping Ctr. #2	Underground Infiltration	4/13/2022	9/28/2018
Home Depot	Dry Detention Pond	3/13/2022	7/30/2021
Liberty Commons North	Underground Infiltration	4/11/2022	9/28/2018
Liberty Commons South	Underground Infiltration	4/11/2022	9/28/2018
Manassas Junction	Dry Detention Pond	7/30/2021	9/26/2018
Manassas Learning Center DW-1	Dry Well	4/11/2022	9/28/2018
Manassas Learning Center DW-2	Dry Well	4/11/2022	9/28/2018
Manassas Learning Center DW-3	Dry Well	4/11/2022	9/28/2018
Manassas Learning Center DW-4	Dry Well	4/11/2022	9/28/2018
Manassas Learning Center DW-5	Dry Well	4/11/2022	9/28/2018

Table 8. MCM 5 – Privately Owned SWMF Inspections

SWMF Name	SWMF Type	Recent Inspection	Previous Inspection
Manassas Learning Center DW-6	Dry Well	4/11/2022	9/28/2018
Merchants Tire	Wet Pond	7/30/2021	1/2/2020
Pulte Warehouse	Dry Detention Pond	7/15/2021	9/27/2018
Sudley Professional Center, North	Dry Well	4/11/2022	9/28/2018
Sudley Professional Center, South	Dry Well	4/11/2022	9/28/2018
Tudor Oaks	Dry Detention Pond	7/15/2021	9/27/2018
Van Metre at Old Town	Underground Infiltration	4/11/2022	9/28/2018
Villages at Manassas	Wet Pond	7/15/2021	9/27/2018
Waste Management	Dry Detention Pond	8/24/2021	7/30/2021
Waterford Drive	Wet Pond	8/6/2021	9/26/2018

A copy of all City-inspected private SWMF inspection reports are provided in **Appendix 8**.

In addition, the following SWMFs inspections, located within the City’s boundaries, were initiated and paid for by the private owner. In each case, a copy of the inspection report was shared with the City.

- Lockheed Martin Pond (Dry Detention) on July 14, 2021.
- Home Depot Pond (Dry Detention) on March 13, 2022. Note: this is an additional inspection from the one the City initiated during this same reporting period.
- Waste Management Pond (Dry Detention) on August 24, 2021. Note: this is an additional inspection from the one the City initiated during this same reporting period.

The City did not issued any new VSMP enforcement actions regarding privately-owned stormwater management facilities. However, the City worked with a small homeowner’s association (HOA) to ensure maintenance on the Waterford Drive wet pond. The HOA did not have the funds to complete all required maintenance, so the City agreed to a phased approach over three fiscal years. The City approved their implementation plan, where the identified higher priority failures were addressed the first fiscal year (MS4 Permit Year 3). During this reporting period, the City verified completion of identified tasks within this second year. Upon completion of the tasks in the third year, the facility will be back in compliance.

City Owned/Operated SWMF Inspections and Maintenance

During the reporting period, the City conducted annual inspections on 10 of its 26 stormwater management facilities, including three wet ponds, six dry ponds, and one infiltration trench, as shown below in **Table 9**. A copy of these City-owned/operated SWMF inspection reports are provided in **Appendix 9**. Although the City did not perform an official annual inspection on all 26 facilities, staff from the City’s Stormwater Program performed a site visit and informal inspection at least three times per year, on all 26 City-owned stormwater SWMFs. In addition, the City’s Public Works department performed routine maintenance checks at least one a month, or after every heavy rain event for each facility. The routine maintenance inspection template and example maintenance inspection data for one month is provided in **Appendix 10**.

Table 9. MCM 5 – City-Owned and Operated SWMF Inspections

SWMF Name	SWMF Type	Recent Inspection	Previous Inspection
Cannon Industrial Park	Dry Detention Pond	12/22/2021	3/19/2021
Fairview Bainbridge	Dry Detention Pond	3/29/2022	2/24/2021
Fairview Riverdale	Infiltration Trench	3/29/2022	3/5/2021
Jackson Manor	Dry Detention Pond	2/23/2022	1/22/2021
Kinsley Mill	Dry Detention Pond	12/21/2021	4/19/2021
Lee Manor	Dry Detention Pond	2/23/2022	2/24/2021
Owens Brooke Downstream	Wet Pond	1/10/2022	12/22/2020
Owens Brooke Upstream	Wet Pond	1/10/2022	12/22/2020
Sumner Lake	Wet Pond	5/19/2022	12/23/2020
Wintersect Hastings	Dry Detention Pond	12/22/2021	4/26/2021
Wintersect Poe	Dry Detention Pond	4/21/2022	1/22/2021

In addition to the routine maintenance described above, the City’s MS4 stormwater staff also routinely performed maintenance work on all City-owned SWMFs; however, within the last reporting period an extra-level of effort was spent, which the City considered non-routine maintenance. Other non-routine maintenance is typically contracted out or completed internally by the Public Works Department. All non-routine maintenance on City-owned or operated SWMFs is summarized below in **Table 10**.

Table 10. MCM 5 – City-Owned and Operated SWMF Non-Routine Maintenance

SWMF Name	SWMF Type	Maintenance Date		Description of Maintenance
Cannon Industrial Park	Dry Detention Pond	October 2021	Contractor	Dewatering, debris and sediment removal, riprap installation, erosion repair, vegetation clearing, tree removal (x4)
Fairview Bainbridge	Dry Detention Pond	October 2021	Public Works Department	Debris removal, erosion repair, vegetation clearing, sign repair
Fairview Riverdale	Infiltration Trench	October 2021	Public Works Department	vegetation clearing, sign repair
Jackson Manor	Dry Detention Pond	September 2021	Public Works Department	Debris removal, erosion repair, vegetation clearing
Jackson Manor	Dry Detention Pond	Fall 2021	Engineering Department (Stormwater staff)	Lower pond level multiple times due to blocked riser. Hand-dug sediment around riser to aid the drainage.
Kinsley Mill	Dry Detention Pond	September 2021	Public Works Department	Debris removal, erosion repair, vegetation clearing
Lee Manor	Dry Detention Pond	September 2021	Public Works Department	Debris removal, erosion repair, vegetation clearing, sign and fencing repair
Lee Manor	Dry Detention Pond	Fall and Winter 2021/22	Engineering Department (Stormwater staff)	Lower pond level multiple times due to blocked riser. Hand-dug sediment around riser to aid the drainage.
Oakenshaw Downstream	Dry Detention Pond	Fall, Winter, Spring	Engineering Department (Stormwater staff)	Debris removal, sediment removal from riser and trickle ditch to aid the drainage.
Owens Brooke Downstream	Wet Pond	September 2021	Public Works Department	Debris removal, erosion repair, vegetation clearing, sign and fencing repair
Owens Brooke Downstream	Wet Pond	Spring 2022	Engineering Department (Stormwater staff)	Extensive pond fountain maintenance (due to clogged emitters)
Owens Brooke Upstream	Wet Pond	October 2021	Public Works Department	Debris removal, erosion repair, vegetation clearing, sign and fencing repair

Table 10. MCM 5 – City-Owned and Operated SWMF Non-Routine Maintenance

SWMF Name	SWMF Type	Maintenance Date		Description of Maintenance
Owens Brooke Upstream	Wet Pond	Spring 2022	Engineering Department (Stormwater staff)	Extensive pond fountain maintenance (due to clogged emitters)
Point of Woods	Wet Pond	Fall 2021	Engineering Department (Stormwater staff)	Hand removal of invasive water chestnut
Public Works	Wet Pond	All Year	Engineering Department (Stormwater staff)	At least once a week, throughout the entire reporting year, unclog blocked riser; litter removal
Round Elementary	Dry Pond	Winter 2021/22	Engineering Department (Stormwater staff)	Lower pond level multiple times due to blocked riser. Hand-dug sediment around riser to aid the drainage.
Sumner Lake	Wet Pond	August 2021	Contractor	Riprap and flowable fill installation, reseeding, debris removal, clearing and grubbing
Winters Branch	Wet Pond	Spring 2022	Engineering Department (Stormwater staff)	Unclogged riser and serviced pond fountains
Wintersect Hastings	Dry Detention Pond	September 2021	Public Works Department	Erosion repair, vegetation clearing

During this reporting period, the City also secured funding and introduced a new Capital Maintenance Project, *D-029 SWMF Annual/Deferred Maintenance*. With this project, the City set aside \$900,000 in fiscal year (FY) 2023 for SWMF annual/deferred maintenance, and \$375,000 in FY2024 and FY2025. This demonstrates the City's commitment to improving and investing in our stormwater management facilities. Details regarding our stormwater capital improvement and maintenance projects can be found in the link below:

https://www.manassasva.gov/finance/budget_division/capital_improvement_program.php#outer-1933.

Virginia Construction Stormwater General Permit Database

The City confirms that it submitted stormwater management facility information through the Virginia Construction Stormwater General Permit database for those land disturbing activities for which the City was required to obtain coverage under the General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Stormwater from Construction Activities.

Virginia Department of Environmental Quality (DEQ) BMP Warehouse

The City confirms that it electronically reported SWMFs using the DEQ BMP Warehouse in accordance with Part I E 5 g. The information was submitted in September 2022.

MCM 6: Pollution Prevention and Good Housekeeping for Municipal Operations

Summary of Any Operational Procedures Developed or Modified

During this reporting period, the City developed a new series of pollution prevention and good housekeeping procedures. Topics covered in these new procedures are listed below:

- Non-Stormwater Discharges
- Landscaping and Grounds Maintenance
- Land Disturbance
- Vehicle/Equipment Maintenance and Repair
- Vehicle/Equipment Fueling
- Vehicle/Equipment Parking and Storage
- Vehicle/Equipment Washing
- Road, Street, & Parking Lot Maintenance
- Loading & Unloading Operations
- Storm Sewer System Cleaning/Maintenance
- Waste Management
- Material Storage
- Pool Operation and Maintenance
- Salt and Brine Storage Management

These procedures are provided in **Appendix 11**.

Stormwater Pollution Prevention Plans (SWPPPs)

No new SWPPS were developed during this reporting period. The City only has one active high-priority site within the MS4 service area - the Materials Reduction Site managed the Public Works Department. No modification to the SWPPP were made during this reporting period; however, the City plans to update this SWPPP during the next reporting period (July 1, 2022 – June 30, 2023).

The City also has an Industrial SWPPP at the Public Works and Utility Maintenance Facility; however, this facility is not located within our MS4 service area. Previously reported high-priority sites (police vehicle impound yard, fire stations, and water storage facilities) were delisted during Permit Year 3 (July 1, 2020 – June 30, 2021).

Turf and Landscape Nutrient Management Plans (NMPs)

The City did not develop any new NMPs during this reporting period. The City currently implements five NMPs as shown in **Table 11**, which are administratively extended until the City can update them, which is planned for Permit Year 5: July 1, 2022 – June 30, 2023. The City is currently in the process of finding a contractor to update the NMPs as the original planner’s company no longer provides this service. In addition, the City is planning to develop two new NMPs for Osbourn High School and Metz Middle School during Permit Year 5. The City already has soil sample reports for all properties needing updates and for the two new plans.

Table 11. MCM 6 – Current and Future Nutrient Management Plans

Site	Acreage	Expiration Date
E.G. Smith Ball Fields	16.43	9/9/2021
Manassas Museum	3.55	9/9/2021
Jennie Dean Ball Fields	5.73	9/9/2021
Byrd Park Ball Fields	2.62	9/9/2021
Public Works Hillside	2.41	9/9/2021
Osbourn High School	9.80	n/a
Metz Middle School	7.80	n/a

As required by the NMPs, the City tracked how much fertilizer and other chemicals were applied, as shown below in **Tables 12 and 13**. Note: the approved NMPs call for application of both nitrogen and phosphorus, but due to the anticipated uses of these fields, and the City’s attempts to reduce unneeded phosphorus use, the City’s Arborist only applied the nitrogen fertilization called for in the NMP.

Table 12. MCM 6 – Nitrogen Applied through Fertilizer to Nutrient Management Plan Areas

Watershed	Pounds Nitrogen Applied
Rocky Branch-Broad Run	851.95
Middle Bull Run	131.47
Lower Bull Run	0
Occoquan River-Occoquan Reservoir-Lake Jackson	116.50
Total:	1,099.92

Table 13. MCM 6 – Other Chemical Applications to Nutrient Management Plan Areas

Chemical Application	Gallons Applied	Pounds Applied
Herbicide	4,250.39	5.0
Regulator	3.0	0
Surfactant	0.75	0
Fungicide	95	0
Insecticide	264	0
Total:	4,613.14	5.0

Training Events

The City Stormwater Staff held a stormwater management awareness and pollution prevention training for municipal employees on October 27, 2021. Topics included general stormwater management, illicit discharge detection, and pollution prevention. Materials used in training included a PowerPoint presentation and a video on illicit discharges. A summary of attendance is provided below in **Table 14**, and supporting document including sign-in sheets and the training material is provided in **Appendix 12**.

Table 14. MCM 6 – Stormwater Training Summary

Department - Division	Attendees	Date
Public Works – Streets Department	14	10/27/21
Public Works – Traffic Control	6	
Utilities – Water & Sewer	12	
Engineering – Stormwater	3	
Total:	35	

In addition, stormwater staff held a meeting on December 13, 2021, titled “City of Manassas Public Works SWPPP Inspection and Pollutant Reductions,” during which City consultants GKY & Associates presented findings as a result their SWPPP site inspection for the Public Works VPDES site. Although this site is outside of the MS4 service area, the Public Works Yard immediately discharges into the MS4 area and the City's SWM pond. General SWPPP awareness and pollution prevention/good housekeeping procedures were discussed with Public Works and Water and Sewer staff.

The City’s Risk and Safety Analyst also held several Hazard Communication trainings throughout the reporting period for staff in Public Works who performed fleet maintenance, as shown below in **Table 15**. These training discussed proper storage and disposal of hazardous chemicals as well as spill response procedures.

Table 15. MCM 6 – Spill Response Training Summary

Department - Division	Attendees	Date
Public Works – Fleet Maintenance Division	7	7/19/21
	5	8/24/21
	14	8/24/21
Total:	26	

Many City staff hold certifications related to stormwater and/or the reduction of pollutants into stormwater. As such, these staff members took stormwater-related courses and training for continuing education credits to keep their certifications up-to-date. Staff certifications related to stormwater and pollution prevention are summarized below in **Table 16**.

Table 16. MCM 6 – Staff Certifications

Staff Certifications	Number of FY 21-22 Staff Certifications
DEQ Stormwater Inspector	7
DEQ Stormwater Plan Reviewer	6
DEQ Stormwater Program Administrator	6
DEQ Erosion and Sediment Control Inspector	7
DEQ Erosion and Sediment Control Plan Reviewer	6
DEQ Erosion and Sediment Control Program Administrator	6
DCR Nutrient Management Planner	1
Certified Pesticide/Fertilizer Applicator	3
Certified Registered Pesticide/Fertilizer Technician	15

Part II- TMDL Special Conditions

Chesapeake Bay TMDL Action Plan

The City recently reviewed its schedule of best management practices as listed in the Chesapeake Bay TMDL Action Plan document and updated project information, including updated pollutant reduction calculations.

No new structural stormwater best management practices were implemented during the reporting period. However, the City continues to evaluate practices in meeting its TMDL nutrient reduction goals as shown below in **Table 17**. The following best management practices are projected to be implemented during the next reporting period:

- Construction of Lucasville Regional SWMF Retrofit to Level 2 Wet Pond
- Construction of Sills Warehouse SWMF Retrofit to Level 1 Extended Detention Pond
- Complete Design for Liberia Plantation Stream Restoration and start of construction
- Concept Design for Round Elementary Stream Restoration
- Concept Design for New Britain (Public Works) Regional Pond Retrofit

Table 17. Chesapeake Bay TMDL Progress Summary

	Total Nitrogen (TN) lbs/yr	Total Phosphorus (TP) lbs/yr	Total Suspended Solids (TSS) lbs/yr
Bay Required Nutrient Reduction by 2023:	1,685.00	240.00	206,300.00
Bay Required Nutrient Reduction by 2028:	4,212.50	600.00	515,750.00
Credit Received prior to July 1, 2018:	TN	TP	TSS
Manassas Station Redevelopment	2.11	0.31	143.3
Hospital Pond	641.87	146.95	86,977.51
Total Prior Credit:	643.98	146.95	86,977.51
Chesapeake Bay and Local TMDL Projects in progress	TN	TP	TSS
Euclid/Sills Warehouse Facility Retrofit (in design - construction 2023)	56.31	6.45	27,345.98
Liberia House Stream Restoration (in design - construction 2023)	1,014.00	363.00	125,120.00
Lucasville Regional SWMF Retrofit (in design - construction 2023)	1,251.00	131.25	44,976.00
UOSA Credits	TN	TP	TSS
2021	5,050.00	583.00	-
Total prior and In-progress projects:	8,015.29	1,230.96	284,562.79
Total reductions still needed by 2023:	(6,330.29)	(990.96)	(78,262.79)
Total reductions still needed by 2028:	(3,802.79)	(630.96)	231,187.21
Evaluated / Identified	TN	TP	TSS
Wintersect Poe Dry Pond Retrofit (evaluated FY22 - potential project)	114.12	11.46	8,929.00
Clarksmill Gravel Wetland/Dry Pond Retrofit (evaluated FY22 - not feasible)	-	-	-
Oakenshaw Upstream Pond Retrofit (re-evaluated FY2022 - proposed project)	180.43	54.55	23,522.20
Oakenshaw Downstream Pond retrofit (re-evaluated FY2022 - proposed project)	90.29	16.13	13,839.40
Round Elementary School Dry Pond Retrofit (re-evaluated FY2022/23 - not feasible)	-	-	-
Round Elementary/Dumfries Rd Stream Restoration - Private Parcels (evaluated FY2022/23 - potential project)	97.33	113.07	286,260.00
Round Elementary/Dumfries Rd Stream Restoration - Public Parcels (evaluated FY2022/23 - potential project)	161.80	112.35	355,200.00
Winters Branch/Cannon Branch Stream Restoration (re-evaluated FY2022 - not feasible)	-	-	-
Stonewall North - New Wet Pond (evaluated FY2022- potential project)	163.95	38.20	29,997.70
New Britain (Public Works) Pond Retrofit (feasibility study in progress)	TBD	TBD	TBD
Total including all feasible evaluated projects:	8,823.21	1,576.72	1,002,311.09
Total including all feasible evaluated projects still needed by 2023:	(7,138.21)	(1,336.72)	(796,011.09)
Total including all feasible evaluated projects still needed by 2028:	(4,610.71)	(976.72)	(486,561.09)

Local TMDL Action Plans

The City has a Local TMDL for Bacteria and Sediment for the Bull Run Watershed. In 2021, the City reviewed its schedule of best management practices as listed in the Local TMDL Action Plan document and has updated project information, including updated pollutant reduction calculations. The local TMDL Action Plan document can be found on the City's stormwater website:

https://www.manassasva.gov/engineering/stormwater/stormwater_documents.php#outer-1332.

Bull Run Benthic (Sediment) TMDL

In order to meet the required sediment load reductions, the City evaluated several SWMF retrofits and stream restoration projects. **Table 18** below shows a summary of the City's progress to meet its sediment reductions goals, including current and proposed projects.

In addition to MS4 Program Plan requirements that reduce the discharge of sediment to Bull Run, the City also implemented the following BMPs:

- Implementation of VESCP requiring land disturbing permits for the land disturbing activities exceeding 2,500 square feet;
- Situational stream assessments investigating stream bank conditions;
- Pond retrofit assessments;
- Street Sweeping within the City;
- A Sanitary Sewer Overflow (SSO) and cross connection elimination program;
- A robust hazardous waste and recycling program; and
- Signage for materials handling areas reminding staff of good housekeeping procedures.

Table 18. Local Sediment TMDL Progress Summary

	Total Suspended Solids (TSS) lbs/yr (Sediment)
Local TMDL Required Sediment Reduction:	396,816.00
Credit Received prior to July 1, 2018:	
Hospital Pond	86,977.00
Total Prior Credit:	86,977.00
Local TMDL Projects in Progress	
Euclid/Sills Warehouse Facility Retrofit (in design - construction 2024)	27,345.98
Liberia House Stream Restoration (in design - construction 2024)	125,120.00
Total prior and In-progress projects:	239,442.98
Total reductions still needed:	157,373.02
Projects Evaluated / Identified	
Oakenshaw Upstream Pond Retrofit (evaluated - proposed project)	23,522.20
Oakenshaw Downstream Pond Retrofit (evaluated - proposed project)	13,839.40
Stonewall North - New Wet Pond (evaluated - potential project)	29,997.70
New Britain (Public Works) Pond Retrofit (feasibility study in progress)	-
Total including all evaluated projects:	306,802.28
Total reductions yet to be identified:	90,013.72

Bull Run Bacteria TMDL

In order to reduce bacteria loads to the Bull run watershed, the City evaluated its BMPs described in its Local Bacteria TMDL Action Plan. A summary of these Action Plan BMPs is provide below in **Table 19**.

Table 19. Local Bacteria TMDL Summary

Action Plan Implementation Item	Description	Status
MS4 Program Plan	The City will continue to implement the MS4 Program Plan, including elements related to E. coli, in accordance with the schedule provided for in the MS4 Program Plan.	Ongoing – completed current reporting period.
Pet Waste Programs	The City will assess the trail system within the MS4 portion of affected watersheds for opportunities to install signage reminding pet owners to clean up pet waste.	The City completed the assessment during Permit Year 3 (July 1, 2020 – June 20 – 2021), and as of June 20, 2022, standard park rules signs are placed at every City park. These signs state that illegal dumping is prohibited and per City code owners must pick up after their dogs. At 11 of the 23 parks pet waste stations are provided for public use. All of the parks have trash receptacles for park users to dispose of their trash and pet waste.
Wildlife Management Programs	Perform monitoring program for the Public Works and Point of Woods stormwater ponds.	Evaluation was completed by during Permit Year 2 (July 1, 2019 – June 30, 2020). The assessment determined that the waterfowl population within certain stormwater BMPs (especially within the Bull Run Watershed) were high enough to warrant a strategic population reduction program and strategy. To date, no reduction plan has been implemented, but the City continues to monitor population trends.
Sanitary Sewer Management	The City will implement their Sanitary Sewer Overflow (SSO) and cross connection elimination program, which includes sewer inspections, maintenance, and repair	Ongoing – completed current reporting period.
Enhanced Education, Outreach, and Training.	City will become an active member of the Northern Virginia Clean Waters Partnership. The educational material provided through this forum to be distributed to appropriate City residents.	The City became a member during Permit Year 3 and continued this membership during the current reporting period.
Enhanced Education, Outreach, and Training.	The City will update the stormwater webpage to include an education guide to reducing bacteria.	The City updated its website during Permit Year 3 to include tips for residents (https://www.manassasva.gov/public_works/stormwater/tips_for_residents.php).

Self-Evaluation of MS4 Program Implementation

During this Permit Cycle and Permit Year, the City made great strides to secure funding and build its MS4 program for future success. In the past four years, the City developed and funded ten stormwater capital improvement projects and four stormwater capital maintenance projects. These projects have and will continue to help the City meet their TMDL goals and inspect, maintain, and repair stormwater infrastructure, including structural SWMFs.

During this reporting period, the City also made great strides regarding the City's Stormwater Database and integrating ArcGIS into our MS4 program. During this reporting period, the City developed applications to perform and track our erosion and sediment control inspections, annual dry weather screening, stormwater infrastructure inspections, maintenance, and cleaning. Between new applications and secured funding through our capital improvement program, the City believes the MS4 Program will continue to make significant improvements in terms of MS4 and environmental compliance.

The City does note, however, that the MS4 Program Plan requires updating. Due to staff turnover, the MS4 Program Plan was not updated during this reporting period, as stated in the last Annual Report. The City plans to update this MS4 Annual Report to reflect current implementation conditions during the next reporting period.