



**City of Takoma Park**  
**NPDES Phase II Stormwater Program**

Permit Number 03-IM-5500

**Report for**  
**July 1, 2017 – December 31, 2018**

Date: 12/27/2018

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## Background

In response to the notice of intent for general coverage as an MS4 Phase II community by the City of Takoma Park, MDE issued General Permit No. 03-IM-5500 on April 14, 2003. This report is submitted as required by Part IV of the permit. This report covers the period from July 1, 2017 through December 31, 2018. This is the final report for the previous General Permit. The City provided Notice of Intent to the State for the new General Discharge Permit for Small MS4s (Permit No. 13-IM-550) and future annual reports will comply with those permit requirements.

The City of Takoma Park continues to undertake activities and implement projects aimed at minimizing pollutants entering the storm drain pipe network discharging into Sligo Creek, Long Branch Creek and all tributaries within the city limits. During this reporting period public outreach activities were continued through programmatic and implementation strategies outlined in the City's Phase II Watershed Implementation Plan (WIP), as well in the City's NPDES Phase II permit requirements.

Stormwater management programs continue with a goal to provide treatment for 20% of the existing impervious area where runoff is not currently managed using Environmental Site Design (ESD) techniques to the Maximum Extent Practicable (MEP). This objective is concurrent with the City's Watershed Implementation Plan (WIP) strategy of providing treatment to help meet the Total Maximum Daily Load (TMDL) requirements established by the Maryland Department of the Environment by the target year 2025.

The City's MS4 Phase II Permit requirements include participation in watershed restoration in coordination with Montgomery County's County-Wide Coordinated Implementation Strategy. The City of Takoma Park's Watershed Implementation Plan (WIP) was adopted in 2011 to meet Montgomery County's watershed specific restoration goals and water quality standards. The strategies listed in the Takoma Park WIP provide a framework for the City's stormwater management projects and plans. The strategies outlined in the City's WIP include the following:

- Meet the Chesapeake Bay Total Maximum Daily Load (TMDL) through fulfilling the requirements of our original NPDES Municipal Separate Storm Sewer System (MS4) – Phase II Permit.
- Employ Environmental Site Design (ESD) techniques in Capital Improvement Projects (CIP) and Stormwater Management (SWM) projects in order to provide stormwater treatment capacity for 20% of the impervious area for which runoff is not currently managed to the Maximum Extent Practicable (MEP).
- Promote other structural and nonstructural BMPs for retrofit projects.
- Achieve pollution reduction via public education, citizen involvement and outreach campaigns.

## Overview

Based on the requirements set forth by the NPDES Phase II Permit Number 03-IM-5500, this report provides a detailed description of stormwater management projects and programs performed by the City during the reporting period. This report outlines activities undertaken to address each of the six minimum control measures listed in the NPDES permit. These measures include:

- Public Education and Outreach
- Stormwater Management BMP Implementation
- Illicit Discharge Detection and Elimination
- Construction Runoff Control
- Post Construction Stormwater Management
- Pollution Prevention and Good Housekeeping

Descriptions of activities related to each of the above minimum control measures are presented in subsequent sections followed by supporting documents and illustrations in the appendices. In addition, the appendix also includes a fiscal analysis of the annual expenditures for the stormwater program as well as the annual revenue generated through the City's stormwater utility fee and grants.

## **I. PUBLIC EDUCATION AND OUTREACH**

### **1.1 City's Web Page**

The Stormwater Management section of the City's website is regularly updated to facilitate public understanding and awareness of our programs. The stormwater section of our webpage provides educational material as well as information regarding the Stormwater Management permitting process and issued permits. The webpage also highlights specific projects with photographs and construction details. The Stormwater Management section of the webpage can be accessed through:

<http://takomaparkmd.gov/government/public-works/stormwater-management-program/>

In addition to links to the Maryland Department of Environment and the United States Environmental Protection Agency, the website also provides access to the City's NPDES MS-4 compliance reports and Watershed Implementation Plan Phase II reports, including milestone progress reports of Best Management Practices toward achieving target goals.

The table below reflects the number of public views of various segments of our Stormwater Management section of the City's website during the reporting period.

**Table 1: Webpage Views**

<b>Webpage Sections</b>	<b>Number of Views July 2017 - December</b>
Stormwater Management Program	312
Stormwater Management Application	74
Takoma Park Stormwater FAQ	146
Stormwater Management Projects	35
Stormwater Facility Inspection and Maintenance	31

### **1.2 Publications and Newsletter Articles**

The following articles were published about stormwater related programs in Takoma Park. The articles are included in the Appendix, Section I.

- a) Takoma Park Newsletter, May 2018 – Mark A Drain Campaign
- b) Chesapeake Bay Journal, Winter 2017/2018 “Municipalities Turn to Dedicated Fees to Fund Stormwater”

### 1.3 Public Participation/Involvement

#### a. Make a Difference – Plant a Tree, Bi-Annual Planting Program

This program encourages residents to plant over-story trees and is offered twice a year, in the fall and spring. Residents purchase a 1 ½ caliper tree at a discounted price (includes installation and one-year warranty). The City provides an additional \$100 incentive for the first tree purchased. In this reporting period, 50 trees were planted on private property through this program.

#### b. Sweep the Creek Program- Friends of Sligo Creek

Friends of Sligo Creek “Sweep the Creek” events are scheduled twice each year, in spring and fall. Events in this reporting period took place in October, 2017 and on April 22 and September 29, 2018. The events attract over 500 volunteers who collected hundreds of bags of trash, recycling, and invasive plants. The events are coordinated by Friends of Sligo Creek (FOSC) with support from Montgomery Parks. The cleanup area extends along Sligo Creek in Montgomery County, including two work zones within Takoma Park. Section 1: Hillwood Manor Park and Section 2: Flower Ave and Garland Ave. The Friends website - [www.fosc.org/fosc.htm](http://www.fosc.org/fosc.htm), lists historical information on participation and trash removal from each event.



Figure 1: Sweep volunteers in April; Source: <http://www.fosc.org>



Figure 2: A group of the young Sweep volunteers in September, 2018; Source: <http://www.fosc.org>

### c. Mark a Drain Campaign

The City continues efforts to recruit volunteers to install “No Dumping!” decals on stormdrains throughout the City. The campaign is described on City’s website at –

<http://publicworks-takomapark.s3.amazonaws.com/public/stormwater/improving-water-quality-inlet-marking-information-booklet.pdf>



Figure 3: Mark a Drain Decal



Figure 4: Photo showing volunteers installing a decal

During this reporting period two volunteer groups participated in the campaign including students from the University of Maryland in conjunction with Friends of Sligo Creek (FOSC) placed decals on several catch basins around the Washington Adventist Hospital campus, and a team of 10 scouts from Troop 248 joined an Eagle Scott achievement effort installing 54 decals on inlet tops.

### d. Household Hazardous Waste Collection Day

The City’s annual Household Hazardous Waste (HHW) event took place June 2, 2018. Clean Harbors Inc. provided the services. Among the materials collected were over 1,500 pounds of flammable liquid, 2,000 pounds of oil based paints, 450 pounds of liquid pesticides, 500 pounds of solid pesticides, 125 pounds of corrosive liquids, 120 pounds of acid batteries and 15 pounds of fluorescent light bulbs.

## 1.4 Public Work Employee Training

A stormwater pollution prevention training session for Public Works employees was held on November 15, 2017. All employees handling hazardous and non-hazardous material participated in this training session. A training video “Rain Check” was shown, the video included review of the Stormwater Management Program and the Minimum Control Measures required by MS4 Phase II. Also covered were Best Management Practices for Public Works operations. The attendees took a quiz and discussed the answers. A Rain Check pocket reference book for stormwater pollution and prevention was distributed.

## II. STORMWATER MANAGEMENT BMP IMPLEMENTATION

**Table 2: List of Public Stormwater Facilities Installed In this Reporting Period**

	Location	Type	Features	Retrofit- IAE* (Acres)	Completed
1.	Colby Avenue	Permeable Paver	Eco-Pavers (700 Square Foot)	0.04	April, 2018
2	Cherry Ave & Colby Avenue	Two Bio filters	Off-line Filtera®	0.11 & 0.08	April, 2018
4	Kirklynn & Kennewick Avenue	Major rehabilitation of bioretention facility	Underdrain & Overflow	0.14**	May, 2018

\*Retrofit Impervious Area Equivalent Acres \*\* Revised data

## III. ILLICIT DISCHARGE DETECTION AND ELIMINATION

### 3.1 Reporting and Illicit Discharge Enforcement

The City of Takoma Park, through its public outreach program, has encouraged reporting of illicit discharges into the stormwater system or area waterways. Under the City Code section 16.04.270 “Unsafe Condition-Entry onto property”, city staff is authorized to enter onto private property for the purpose of investigating the cause of illicit discharge. During this reporting period, Public Works staff responded to four (4) such incidents. The City’s response involved information gathering, site visits and contacting the Montgomery County Department of Environmental Protection (MCDEP), and informing the Maryland Department of Environment (MDE) as necessary. MCDEP continue to provide enforcement for reported incidents within the City. The table below lists the reported cases and results of investigation in each case.

**Table 3: Summary of Reported Illicit Discharges**

No.	Location	Reported Date	Nature of Discharge	Investigation	Follow up/ Resolution
1	Manor Circle	08/18/2018	Water main breach	Extensive sediment in the roadway and inlets	WSSC provided inlet cleaning and road surface sweeping as well as pavement restoration

2	Heather Ave	12/12/2017	Water main breach – Severe Erosion	Extensive sediment in the roadway	WSSC provided roadway sweeping and resurfacing
3	6501 Poplar Ave	7/ 2018	Water quality test indicate high chlorine levels	WSSC determined water valve leak at property	WSSC repaired meter
4	7777 Maple Avenue outfall	10/03/2018	Muddy water reported	Water main breach at Hodges lane & Chestnut Ave.	WSSC addressed broken pipe, City provided roadway sweeping

### **3.2. Outfall Condition Survey**

In October, 2017, seventy-seven (77) outfalls located throughout the Sligo Creek watershed in the City of Takoma Park were visually inspected. During this period City staff visited all the outfall locations where defective conditions were reported to assess the conditions in order to develop remediation plan. A total of 15 outfall locations were surveyed. One site will be repaired prior to the end of FY19, the remaining repairs will be scheduled based on priority and funding. A spreadsheet identifying the locations and details can be found in the appendix.

### **3.3. Outfall Illicit Discharge Testing**

In October, 2017, active water flow was observed at seventeen (17) distinct outfall locations. This included 13 outfalls that were sampled in 2007, 2010, and 2015, and four additional outfalls which were not sampled during any previous sampling events. City's GIS outfall points have been edited and the four (4) newly identified outfalls were listed as outfalls with active water flow. Water sample from these locations was tested using the methodology included in the Illicit Discharge Detection and Elimination (IDDE) Guidance Manual. Test results indicated elevated level of E. coli and enterococci and high level of chlorine. The City will pursue investigations to locate the source of E. coli and enterococci by upstream flow tracing and mapping of sanitary sewer lines in relation to stormwater lines. The study may help determine if exfiltration pathways are a contributing source of elevated levels detected. Undetected water main leaks, car washing at residential properties and other treated household water discharges will be targeted to lower the chlorine level. Identified sewage and water main leaks and discharges will be monitored and vigorously followed up with WSSC for mitigation and elimination.

### **3.4 Map of the City's storm drain system**

In 2007, to support City's MS4 compliance efforts the City's municipal storm drain system (manholes, pipelines, catch basins, pump stations, etc.) were mapped in the Geographical Information System (GIS). The GIS data includes storm drain pipe diameters, manhole and catch basin depths, and direction of flow in the pipeline network. Each year, when the CCTV inspection and cleaning is performed, any GIS data errors and gaps is identified for correction. A copy of the map of the City's storm drain system is included in the appendix.

## **IV. CONSTRUCTION RUNOFF CONTROL**

During this reporting period, erosion and sediment control plan review and inspection during construction continue to be performed by Montgomery County's Department of Permitting Services. City staff has, however, actively observed and worked closely with Montgomery County inspectors regarding enforcement issues. In addition, City staff routinely observes construction sites for implementation of erosion and sediment control practices and their effectiveness, especially during storm events. Related issues of concern that are identified during storm events are generally handled by City staff through taking necessary action or informing Montgomery County inspectors of potential enforcement required.

## **V. POST CONSTRUCTION STORMWATER MANAGEMENT**

### **5.1 Stormwater Management Plan Review and Inspection**

Post construction stormwater management consisted of review of Stormwater Concept and Final Plans, based on the permitting guidelines outlined in Takoma Park City Code "Title 16 Stormwater Management Program" and MDE Stormwater Design Manual. The City Engineer reviews all stormwater management plans, provides concept approval and issues SWM permits. Staff also performed inspections of permitted permanent stormwater management facilities during, and on completion, of construction. The plan review and permitting services provided for new and redevelopment construction projects during this reporting period are presented in Table 4 below.

**Table 4: Issued Stormwater Permits**

Permit /concept Application Number	Development Address	Type	BMP Facility
SWP-18-08-17	17 Lee Avenue	Residential	Dry well-Permeable Pavers
SWP -18-07-02	7305 Jackson Avenue	Residential	Micro Bioretention
SWP-18-07-03	7303 Jackson Avenue	Residential	Micro Bioretention
SWP-18-01-30	6506 Kansas Lane	Residential	Dry well, Permeable Pavers
SWP-18-02-13	Erskine Avenue	City Sidewalk	Filtera©-Swale
SWP-18-08-01	Seven Eleven Takoma	Commercial	Bioretention
SWC-18-04-23	Takoma Middle School	Institutional	Bioretention
SWC-18-05-07	Neighborhood Development Co	Commercial	Micro Bioretention
SWC-18-01-17	Pierre Viger & Patrice Gilbert	Residential	Micro Bioretention

## **5.2 System Maintenance Projects**

**Table 5: Structural System Maintenance Projects –July 1, 2017 through December 31, 2018**

LOCATION	DESCRIPTION
Tulip Avenue Phase II	Installed 239 linear feet of 15” HDPE, 24.5 linear feet of 15” RCP, 1 inlet and 1 manhole, 2 inlet repairs
Kirklynn Avenue Bioretention Rehab.	Installed 198 linear feet of 15” RCP, 35 linear feet of 12 HDPE, 87 linear feet of 6” PVC pipe, 2 inlets, 1 manhole
Colby Avenue	Installed 135 linear feet of 15” HDPE, 15 linear feet trench, 41.5 linear feet of 6” PVC, 25 linear feet of 15” RCP, 1 inlet, 700 SF of permeable pavement
Cherry Avenue at Colby	Installed 71 linear feet of PVC pipe replacement, 2 Filtera©, 1 inlet repair

## **5.3 Stormwater Management Facility Inspection and Maintenance**

The City inspects all stormwater management (SWM) facilities on a triennial basis. The Department of Public Works staff oversees inspection and maintenance of all SMW facilities that are located on public land and right of way (ROW). There are one hundred and ten (110) stormwater management facilities in the City of Takoma Park. Fifty-seven (57) of them are located on private properties and 53 in the public right of way. A map showing the location of all public and private stormwater management facility is included in the appendices. A database with details of all the public and private BMP as per MDE guidelines is submitted with this report.

### 5.3.1. City owned SMW facilities, inspection and maintenance

The Department of Public Works (DPW) oversees the inspection of all SMW facilities located within the public right of way. Inspection and maintenance is performed by DPW staff and a contractor i.e. Down To Earth Landscaping Inc. During this reporting period, Down To Earth Landscaping Inc. inspected and performed maintenance in 2017 in August, October and November and in 2018 in February, June, July, August and October. The contractor's efforts were augmented by the City's gardening staff who perform plant replacement as well as structural repairs as needed.

### 5.3.2. Privately owned SMW facilities, inspection and maintenance

In June, 2017, the City notified all property owners of private permitted facilities of their responsibilities for maintenance and inspection. An inspection form was included with the letter. Property owners could access, fill and officially sign the form online as well. The City has received completed inspection reports from 21 of the 26 property owners notified. The City is following up with those owners who have not yet responded. The table below lists the location, type, address and status of all the privately owned SMW within the City.

**Table 6: Private stormwater facility inspection**

No.	Address	Land use	No.	Type of facility	Inspection form-status
1	36 Philadelphia Avenue	Residential	1	1 Micro - Bioretention	Not Due
2	Sligo Mill Overlook playground	Park (MNCPPC)	1	1 Micro - Bioretention	Not Due
3	7600 Carroll Avenue.	Washington Adventist University	1	1 Bio swale	Not Received
4	Ethan Allen Gateway project	Right of Way (MDSHA)	2	2 Micro - Bioretention	Not Due
5	7600 Carroll Avenue- WAU	Institutional (Adventist Healthcare)	2	1 Infiltration Trench	Not Received
6	7681 New Hampshire Ave.	Commercial	1	1 Micro - Bioretention	Not Due
7	Colby Avenue Park	Park	1	1 Micro - Bioretention	Not Received
8	121 Grant Ave.	Single Family Home	1	1 Landscape Infiltration	Received
9	7020 New Hampshire Ave.	Single Family Home	1	1 Dry well	Received
10	609 New York Ave.	Institutional (Montgomery College)	1	1 Bioretention	Received
11	6822 New Hampshire Ave.	Commercial	1	1 Biortetention	Received
12	127 Ritchie Ave.	Single family Home	2	2 Drywells	Received
13	6068 Poplar Avenue	Single family Home	3	2 Dry well 1 Trench	Not Received
14	7411 Aspen Court	Multi-Family Residence (MHP)	5	4 stone drywells and 1 rain tank drywell	Received
15	7515 Hancock Ave.	Park (MNCPPC)	1	Playground Infiltration Base	Received

16	6507 Highland Ave.	Single Family Home	3	2 Recharge Chambers and 1 Permeable Pavers	Received
17	1010 Larch Ave.	Institutional (Cristo Rey H.S.)	1	1 Bio-Filtration & 1 Infiltration trench	Received
18	8435 Piney Branch Rd.	Commercial	1	Porous concrete driveway	Received
19	1329 University Blvd.	Commercial	1	Green roof	Received
20	31 Oswego Avenue	Institutional/Community Facility	3	Abtech sponge and filter and an infiltration trench	Received
21	7610 Maple Ave.	Multi-Family Residence (MHP)	3	3 Filteras®	Not Received
22	7707 Greenwood	Washington Adventist University)	1	stormfilter® (72" diameter)	Received
23	7511 Holly Ave.	Takoma Park Elementary	4	4 Bay Saver™ Separators	Not received
24	6907 Laurel Ave.	Commercial (Urciolo Properties)	2	2 Filteras™	Received
25	1010 Larch Ave.	Institutional (Cristo Rey H.S.)	2	2 Micro Bioretention	Received
26	2 Darwin Ave.	Piney Branch Park (MNCPPC)	5	1 wet stormwater pond and 4 dry swale	Received
27	121 Ritchie Ave.	Single Family Home	2	3 Drywells	Received
28	6432 5th Ave.	Single Family Home	1	1 Drywell	Received
29	6428 5th Ave.	Single Family Home	1	1 Drywell	Inspected
30	123 Ritchie Ave.	Single Family Home	2	2 Drywells	Received
31	6411 Orchard Avenue	Single Family Home	1	1 Micro Bioretention	Not Received
32	7201 Carroll Ave.	Fire Station (Montgomery County)	1	Sand Filter	Not Received

**Total Number of Facilities**

**57**

Onsite inspection as well with responsible parties will be scheduled when issues regarding the key structural components, storage capacity, and maintenance status are raised. Any defects and required maintenance needs that are identified during the inspection will be communicated to the property owner and a period of sixty (60) days allowed for the repairs.

## **5.4 Conduit Condition Survey and Cleaning**

Every year, Department of Public Works obtains contractual support to conduct closed circuit television (CCTV) investigations and cleaning of its stormwater infrastructure. During this reporting period the CCTV inspection and cleaning took place in a section of Sub-basin 3. The remaining half of the sub-basin 3 will be completed in Fiscal Year 18. Increasing cost of the video inspection and cleaning services has resulted in less linear feet of pipe being evaluated annually. The annual funding available for this work is \$55,000. Previously, the City was able to complete the full cycle through each sub-basin in 4 years. It is now expected to require 7 years. Figure 5 shows the location of sub-basins within Takoma Park.

Figure 5: Sub-Basin Boundary

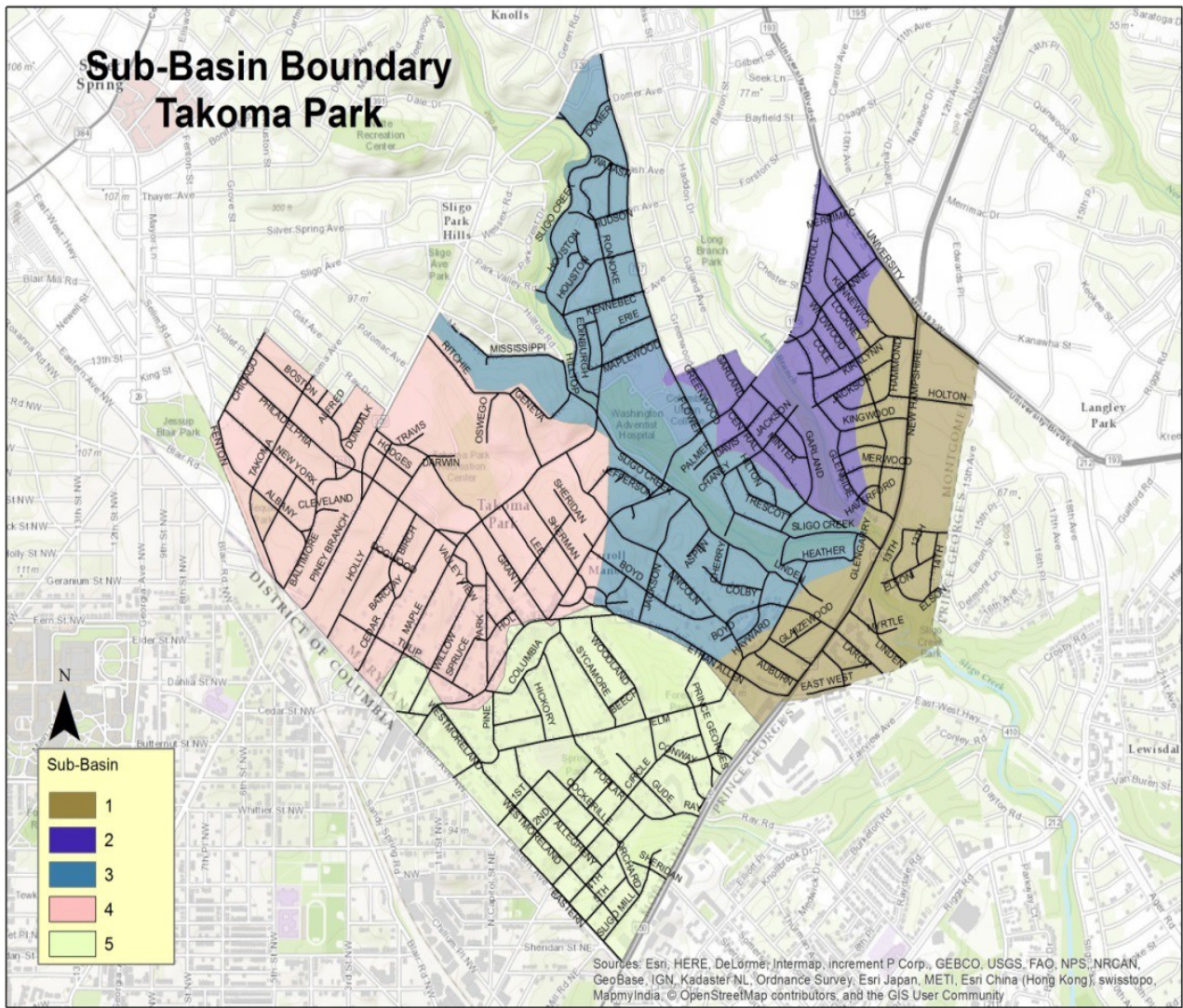


Table 6 presents a record of the CCTV inspection and cleaning during fiscal year 2017.

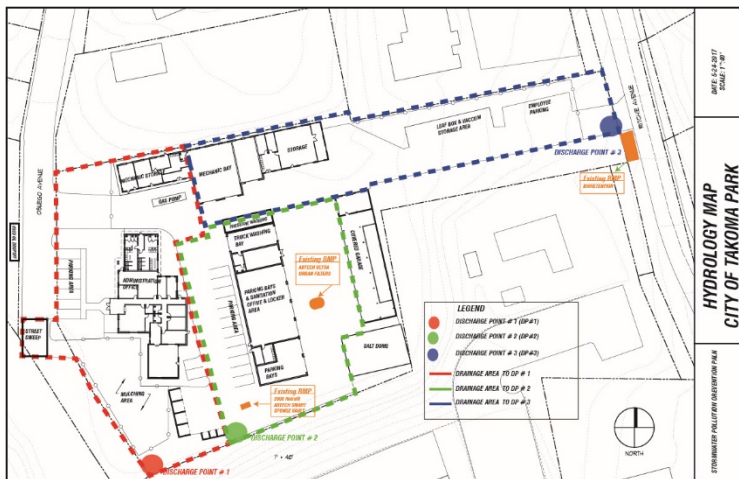
Table 7: CCTV Inspection Summary

Type	Location	Drain Pipe Cleared (Ln ft)	# of Inlets Cleaned
Heavy Cleaning	Sub-basin #3	1194	21
Light Cleaning	Sub-basin #3	898	20
Inspection	Sub-basin #3	203	76

## VI. POLLUTION PREVENTION AND GOOD HOUSEKEEPING

### **6.1 Stormwater Pollution Prevention Plan for the Takoma Park Public Works Facility**

All outdoor vehicle washing ceased as of last period and vehicles and trucks are washed within designated enclosed bay with a floor drain connected to the sanitary system. Other activities in conjunction with implementation of this plan included regular site assessments for good housekeeping and proper storage and handling of material. A spill prevention and clean up response plan was developed for on and off site incidents, as well as record keeping and annual employee training. Outfalls from the facility were sampled and visually evaluated after qualifying rain events.



### **6.2 Street Sweeping and Vacuum Leaf Collection**

Takoma Park maintains a street sweeping program that covers all residential streets and city parking lots. The sweeping cycle runs from March through October each year. The City operates a TYMCO Model 600 BAH sweeper mounted on a 2011 International 4300 DT10m Truck. The sweeper is operated by in-house staff. In addition to the sweeping route, storm drain pipes and inlets are also regularly inspected during and after rain, snow and storm events to ensure proper drainage. The City also operates a 5 week program for vacuum leaf collection. This program plays a significant role in keeping leaf debris out of the storm drain system and deserves to be considered as a BMP.

In the reporting period of FY 2018, streets throughout the City were swept on average 16 cycles. Business districts received more frequent sweeping after special events. The city's parking lots were also cleaned several times a year.

Table 7 provides the value of Equivalent Impervious Area Reduction for street sweeping BMP in

accordance with MDE Guidelines, 2014 (Table 3.E. Alternative Urban BMPs, page 4)

**Table 8: Equivalent Impervious Area Reduction (EIAR) For Street Sweeping**

<b>Fiscal Year</b>	<b>Regenerative Sweeping</b>	<b>Lane Miles (linear feet of street x 10 ft)</b>	<b>Acres swept ((lane miles swept) x (5,280 ft./mile) ) / 43,560</b>	<b>Impervious Acre Equivalent (IAE )* (acres x efficiency)</b>
2017	13%	300	36 acres	4.68 IAE

### **6.3 Other Initiatives**

#### **Plastic Bag Ban**

In keeping up with 2016, ban on single-use, and plastic bags at the point of sale the City continues outreach efforts via our website:

<https://takomaparkmd.gov/initiatives/plastic-bag-ban/>.

## **VII. LOOKING FORWARD**

The City has been proactive in implementing new Stormwater Management BMPs. A few highlights of future BMP projects are listed below:

- A significant intersection reconfiguration has been designed for Flower Avenue at Sligo Creek Parkway. The project will remove significant asphalt as well as a bioretention pond to treat run-off directly entering Sligo Creek. This project was a joint effort of the City and Maryland national Capital Park and Planning Commission.
- Design for installation of three Modular Wetland systems on Lincoln Avenue is completed, installation is anticipated in 2019.
- Flower Avenue Green Street project will begin construction in the spring of 2019. The project includes seven (7) bioretention facilities.
- The City has initiated the final design of 100 feet of stream restoration at Takoma Branch. The project will include reconstruction of the large outfall, installations of ponds and use of natural stone to shore up the stream bank. The City will pursue funding to address the remaining 600 feet of stream to be restored in that area.
- Design and construction of two (2) bioretention ponds at Devonshire and Glaiewood Avenues are designed and planned for completion in FY19.
- Design is underway for facilities along Glenside Drive to address street run-off that enters into Long Branch Creek.

## **List of Appendices**

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- Articles in the Newsletter

- Maps showing the location of the marked inlets

- Presentation to the City Council on Stormwater Management Fee Increase

### Section III. Illicit Discharge Detection and Elimination

- Reported Illicit DischargesDry Weather Water Analysis & Outfall Evaluation Report

- Map of the City's storm drain system

### Section IV. Post-Construction Stormwater Management

- Certifications

- City owned SMW facilities, inspection and maintenance log

- Private stormwater facility inspection form

### Section V. Financial Analysis

Appendix I. Public Education and Outreach  
Articles in the Newsletter

# Mark a Drain Campaign

By Ali Khalilian, Takoma Park City Engineer

Dr. Norma Jean McKay, PE, the current president of the American Society of Civil Engineers, wrote, “As civil engineers, we carry a significant weight in our solemn responsibility to the public” (*Civil Engineer*, June 2017).

Every four years the American Society of Civil Engineers (ASCE) is tasked with presenting a grade for America’s infrastructure, such as bridges, dams, energy, highways, and aviation. In all, 16 different sectors are evaluated to form America’s infrastructure report card. In 2017, America received a D+ in the status of infrastructure (water/wastewater systems).

“The shift toward an urban population

will place unprecedented demands on the world’s cities for land, energy, transportation, waste disposal and healthcare,” Dr. McKay said when describing an ASCE policy statement and commitment to contributing to a global culture of sustainability marked by a partnership formed between the American Public Works Association and the American Council of Engineering Consultants to form the Institute for Sustainable Infrastructure.

Sustainability, simply stated, is “protection and efficient use of our resources.” She wrote, “A lot has come to the public’s attention these days about the climate change and the prospect of a pending crisis regarding the availability of clean wa-



Darwin/Grant/Holly Avenues *Bio-retention*



Linden Avenue Project *(before)*

ter as a resource.” Sustainable practices in conservation of our water resource will impact “our quality of life for generations to come.”

Takoma Park enjoys a well-deserved reputation as being a forward-looking community regarding sustainability and stewardship of natural resources. Our obligation, as a community, is to live up to that image. The photos shared here are admittedly few and far between and endorse the perceived progressive image. One might assume that not many need to be advised as to why it is important to stop dumping pollutants into the street drain system in Takoma Park. However, now it is time to take the next quantum leap.

We are working hard and engaging the City’s resources to achieve Clean Water Act goals by eliminating non-point source pollution by 2025, ensuring a sustainable future for increasingly scarce water resources. One way for everyone in the community to help is by participating in our “Mark a Drain” campaign. There is always a need for volunteers to engage in the simple task of installing stickers on catch basins as a constant reminder that catch basins and street gutters are conduits that discharge into our rivers; hence, no other substance should be permitted down the drain – just rainwater.

To participate, contact the City Engineer at the Department of Public Works. Student (boys/girls of all ages and grade levels), scouts, and other civic groups or individuals, are encouraged to volunteer.

We supply markers, equipment and instructions.

On a closing note, please watch the Sligo Creek and report any substances other than rainwater that are discharging in it or flowing through it. This includes construction muddy water runoff, foam from washing, paints, swimming pool discharges, and so on. As you walk or drive along the path or on the parkway, watch the flow of water.

The City expends many resources to upgrade the community’s stormwater infrastructure. Drain pipe cleaning, in addition to other improvements, is vital to maintaining such a resource. Often drain pipes clog to a point where heavy washing becomes necessary to remove the debris. Such debris contains contamination of various kinds and will have to be disposed of in landfills. Otherwise it winds up in the creek and the bay mudding the water, destroying the plants and suffocating the aquatic life. Let’s protect the Chesapeake Bay.



Linden Avenue Project *-after retrofit & Wetland Modular Installation*

## RECREATION

■ From page 7

### Line Dancing

Line Dancing is great physical and mental exercise, and an enjoyable social activity that leads to meeting new people and making new friends. Strengthening of bones and muscles, weight loss, increased stamina and flexibility, and stress reduction are just some of the benefits of dancing. Learn how exercise can be fun with music. No experience necessary. Instructor: Barbara Brown

Takoma Park Community Center  
Dance Room  
7500 Maple Avenue  
55 and older

Wednesdays, through June 27  
(No class 5/30 & 6/6)  
11:45 a.m.–12:45 p.m.  
Free

### Tennis Fun and Fitness

This class blends exercise with learning or reviewing tennis skills utilizing special equipment for indoor play. All equipment provided, but you can bring your own racket. Instructor Coach SJ

Takoma Park Recreation Center  
Gymnasium  
7315 New Hampshire Avenue  
55 and older  
Thursdays, through June 14  
12–1:00 p.m.  
Free

## RECREATION *Special Events*

### Celebrate Takoma

This family festival will celebrate the cultural diversity of Takoma Park and its residents. Bring a lawn chair or blanket and spend the afternoon with your neighbors. All vendors and entertainers are local to the Takoma Park area.

Maple Avenue, between Philadelphia & Lee Avenues  
Saturday, May 19  
4–7 p.m.  
Event held rain or shine  
For more information please call: 301-891-7290 or visit: [takomaparkmd.gov/recreation/celebrate-takoma](http://takomaparkmd.gov/recreation/celebrate-takoma)



### Family Outdoor Movie Night

Get ready for another Family Outdoor Movie Night. The movie will start at dusk at Ed Wilhelm Field (behind Piney Branch Elementary School). Bring your lawn chair or blanket and enjoy a movie under the stars with your family! The movie will be a family friendly “PG” rated hit. Bring snacks and your own water. The Recreation Department will provide one small bag of popcorn and water per person. Due to limited parking, walking is encouraged. Visit our website [takomaparkmd.gov/recreation](http://takomaparkmd.gov/recreation) to vote on the movie. For more information please call 301-891-7290

Ed Wilhelm Field  
Behind Piney Branch Elementary School  
Saturday, June 2  
Movie starts at dusk  
Free



## Join the low waste living movement

“Living low waste has become a worldwide phenomenon as awareness grows about problems such as plastic in our oceans and bulging landfills,” according to Lori Hill of green lifestyle company Sister Eden. “Our fast-moving world has made us too dependent upon disposable items that are wreaking havoc on our planet. We need to return to reusables and avoid so many disposables.”

Hill, a Takoma Park resident, is teaming with the City’s Neighborhood Services Division to present a workshop, *Trash Talk with Lori Hill: Tips for Living a Low Waste Life in Takoma Park*, on Saturday, May 12 at 10 a.m. in the auditorium of the Takoma Park Community Center.

The free hour-long session will include easy tips for living low waste (many of which cost little or no money), tricks to



avoid plastic bags when purchasing produce, baked goods, and more; details about the City’s Adopt-A-Spot program, door prizes, discounts from Earth-friendly companies, a copy of “The Sister Eden Citizen Action Plan: 31 Daily Tips to Take Care of Yourself and Take Care of the Planet.”

“Neighborhood Services is responsible for enforcing the city’s plastic bag and polystyrene bans and for overseeing the city’s anti-litter initiative,” said Rick Baravechia, supervisor of the Neighborhood Services Division. “We hope this workshop will be the beginning of a series of free educational opportunities for all the citizens of our city.”

Registration is not required. For more information, visit [www.SisterEden.com/LowWaste](http://www.SisterEden.com/LowWaste).

# CHESAPEAKE BAY JOURNAL

WINTER/2017-18 VOLUME 1 NUMBER 2

LOCAL GOVERNMENT EDITION

## Municipalities turn to dedicated fees to fund stormwater systems

*Dozens of municipalities in the Chesapeake Bay region, and hundreds nationwide, have turned to establishing “stormwater utilities” to raise money for the maintenance of runoff control systems for developed lands. Though sometimes derided as a “rain tax,” communities that have established such fees say they have helped their municipalities keep pace with regulatory requirements and provide citizens with improved service.*

**By Karl Blankenship**

On a whirlwind tour up and down the hilly streets of Takoma Park, Daryl Braithwaite was showing off how the city has been working to slow rain that rushes down the roads by instead allowing it to slowly soak into the landscape.

Street roundabouts have been re-engineered to capture runoff while plants soak up the water. Other projects have been worked in along sidewalks, a path that connects a school with the city’s recreational center, and tiny plots of undeveloped land. Each of these acts like a tiny sponge every time it rains, soaking up excess rainfall and — when it’s not raining — they add to the community’s aesthetics.

Officials in the 2.2-square-mile Maryland city have many more projects on the drawing board, but they’ll all come at a cost, not only to install,



*A roundabout in Takoma Park, MD, is designed to help absorb stormwater runoff. Photo / Karl Blankenship*

but also to make sure they keep working — and remain good-looking community assets and not weed-filled ditches — over time.

“One of the things we’ve had to figure out is the maintenance schedule because those can easily get overgrown with weeds and filled with litter,” Braithwaite said at one of the sites, noting

that the city had hired a landscape company to remove sediment, trash, weeds and do basic maintenance.

The city of 17,000 is able to do that because two decades ago it became the state’s first municipality to enact a “stormwater utility” — a fee

**Utility continues on page 12**

## DIG ONCE helps communities streamline stormwater reduction process

*A smooth path to green infrastructure is built on relationships. Just like installing pipes and culverts, these projects are excavating ground that is probably underlain with pipes and other utilities. Including all parties before a shovel hits the ground can help local governments save time, money and lots of frustration.*

**By Donna Morelli**

Along the streets of Carlisle, PA, Mark Malarich looks for opportu-

**“When scheduling maintenance projects or beginning any municipal public works project, we automatically look for the potential to incorporate some type of green infrastructure.”**

— Mark Malarich, Public works director Carlisle, PA,

nities to squeeze in some green. The borough is home to 18,500 people concentrated in a 5.5-square-mile area filled with historic homes and paved spaces.

Malarich, the borough public

works director, manages stormwater in a community that has been steadily gaining hardened surfaces since it was settled in 1751. In everything his department does, from repaving parking lots to tearing up

streets, his staff is trained to think about where a nice swale or a rain garden can be installed.

“It is part of our requirements now, to think that way,” Malarich said. “When scheduling maintenance projects or beginning any municipal public works project, we automatically look for the potential to incorporate some type of green infrastructure.”

Carlisle has found that integrating green infrastructure into

**Streamline continues on page 10**

**Utility** from page 1

on properties to help fund stormwater management projects that now generates nearly a half-million dollars a year.

It's a relatively new tool in the long-running battle to manage what happens to rain once it hits pavement. Urbanization fundamentally changes natural systems where rainfall once soaked into the ground or was absorbed by plants. Instead, the pavement that replaces trees and meadows shunts it into stream channels — often picking up a variety of contaminants along the way.

This has often created its own problems. In some places, it led to downstream flooding and degraded streams that suddenly were subjected to periodic bursts of eroding water after each rain event. Indeed, scientists have established a direct relationship between land cover and the biological condition of local streams. Typically, the higher the level of urbanization, the lower the biological health of a stream.

**Early stormwater measures**

To minimize the flooding problems, many states and municipalities began requiring the construction of stormwater detention ponds by the 1960s, though their performance was often poor. In the early 1990s, the U.S. Environmental Protection Agency stepped in, requiring municipalities with more than 100,000 people to have discharge permits for stormwater.

*The amount of impervious surfaces, such as pavement and rooftops, is clearly related to degraded stream health. Here, a roundabout planting helps to allay some runoff.*

*Photo / Karl Blankenship*



*A sign at a bioretention project in Takoma Park, MD, helps to educate the public about stormwater control. Photo / Karl Blankenship*

Smaller systems were covered starting in 1999.

Previously, discharge permits have been required for industries and wastewater treatment plants, but not stormwater. The new permits set forth expectations for stormwater control, monitoring, public education and other items, putting new burdens on local governments. They were criticized by some as a costly new unfunded mandate from Washington, DC, while environmental groups saw them as an initial effort to regulate a long-overlooked problem that was polluting, and destroying, the nation's streams.

When the regulations came,

Takoma Park took a different tack. The regulatory responsibility actually fell on Montgomery County, not the city. But city officials nonetheless decided to take over the stormwater management program themselves.

"We want to do the best we can," said Bruce Williams, who was a member of the city council in the 1990s and is now mayor. "There is always a willingness to push the envelope. That is what our residents want. That is what the elected officials want. And that is what the staff tries to do."

It established the state's first stormwater utility in 1996 to fund that aspiration. Since then, it's not only helped them install and maintain new runoff controls but also to undertake such fundamental tasks as mapping their stormwater system — which dates to the 1800s — to understand where everything is.

"There are stacked slate-stone trenches underground for some of our stormwater systems where they basically channelized a stream," Williams said. Some even run under houses. Now, he said, "we know the system inside and out."

The entire system is inspected every few years using video cameras to help identify current — and likely future — problems.

A stormwater utility, or authority, is a mechanism that raises

money specifically for maintaining a municipality's stormwater, generally through some type of fee on properties. Nationwide, stormwater utilities have been used to help maintain systems since at least 1974 when the city of Bellevue, WA, began assessing a fee. Many more popped up after the EPA's stormwater regulations in the early 1990s. The number has more than doubled in the last decade to more than 1,600, according to a survey conducted last year by Western Kentucky University.

In the Chesapeake Bay region as of 2016, there were 18 stormwater utilities in Maryland; 28 in Virginia, seven in Pennsylvania; nine in West Virginia, two in Delaware, and one in the District of Columbia, according to a survey by the Choose Clean Water Coalition, a group of grassroots organizations working on water quality issues in the Bay watershed.

**Fighting the 'rain tax' label**

That's not to say utilities are without controversy: Critics deride them as a "rain tax." The Maryland General Assembly required the 10 largest jurisdictions to charge fees to cover stormwater costs in 2013, causing a backlash — "When it rains, it pours tax dollars in

**Utility continues on page 13**

## Utility from page 12

Maryland” chided one headline. Lawmakers later backed off the fee requirement, but said that municipalities still had to come up with ways to show they are funding stormwater obligations under the federal Clean Water Act.

Proponents of such utilities, though, say the “rain tax” label is unfair. After it hits the ground, rain picks up pollution as it runs off paved surfaces, damaging the health of receiving streams. Local governments end up spending money to manage that runoff and clean it up.

“Just as a property owner pays a water bill that covers municipal costs to provide potable water, including the costs of building out and maintaining underground infrastructure, private property owners must also contribute to the cost of managing the pollution and flood risk created by the impervious areas they own,” Choose Clean Water said in a recent white paper about stormwater utilities.

And in some of the municipalities that have had utilities the longest — including many of the cities in the Hampton Roads area near the mouth of the Bay — officials say the fees have helped their communities grapple with stormwater management.

When Virginia took over responsibility for overseeing the federal stormwater program in the early 1990s, the state General Assembly recognized it could be a burden for many communities. So they authorized, but did not require, them to establish stormwater utilities.

“The state basically said, ‘we’ll give you the tool, the stormwater utility, to meet the financial obligation, but you guys figure out the details on how much money you need and how are you going to collect it and how are you going to manage it,’” said Eric Martin, public works director for the City of Chesapeake.

But even then, it was controversial, at least for some places, said Martin, who was working in another Hampton Roads community at the time. “It was the ‘rain tax,’” he said. “‘Why am I paying for cleaning up the rain?’ They used that even then.”

## KEY STEPS FOR CREATING A STORMWATER UTILITY

### Establish the method for assessing fees

The vast majority of municipalities establish a fee based on an “Equivalent Residential Unit” or ERU, which is based on the average amount of impervious cover associated with a home in a community. Commercial developments are assessed multiples of that rate based on their amount of impervious cover — a convenience store may be 2 ERUs, a grocery store 10.

Other methods used in some places establish a fee based on the actual amount of imperviousness per parcel, or by trying to estimate the combined stormwater contribution from both pervious and impervious surfaces. Those are tied more directly to actual impacts, but also are more difficult to calculate.

### Adopt an ordinance

The ordinance provides the legal authority for a municipality to establish a utility.

### Determine how much the fee should be

Although stormwater utilities are increasingly common, many do not fully cover the cost of maintaining stormwater programs. Cities considering a utility need to carefully assess costs associated

with stormwater needs that include capital expenses, maintenance, regulatory compliance, flood control and other related goals to ensure the fee collects enough revenue. Nationwide, the average stormwater fee was \$5.14 per month in 2016.

### Provide credits/Exemptions

Many municipalities offer credits that reduce stormwater fees for landowners who voluntarily install runoff control practices, usually from a list clearly described by the community. Exemptions are often given for properties with no development.

### Provide adequate public information

Stormwater fees are sometimes derided as a “rain tax.” Communities considering a fee need to carefully craft outreach efforts up front that make the case to the public about the need for the fee, its benefits and that the rationale for the fee structure is fair.

— Sources: “Funding Stormwater Programs,” US EPA; “Paying for Stormwater Management in Chesapeake Bay Communities: Policy Recommendations,” Choose Clean Water Coalition

But ultimately, most of the major cities in the Hampton Roads area opted to establish stormwater utilities in the early 1990s. Martin said it has led to a dedicated budget and sustainable staffing that is not subject to year-to-year battles to secure general fund revenue. Without the fee, he said, “you’d be in direct competition with public safety and schools, which is never a good place to be because those are certainly very important programs.”

### Tied to source of pollution

Another benefit of stormwater utilities, advocates say, is they are more directly tied to the source of pollution than general fund revenues. The Choose Clean Water white paper pointed out that if a community is funding stormwater work out of its general fund, a private property owner with a high assessed value but a small impervious footprint pays a disproportionate amount for stormwater maintenance, while tax-exempt properties may pay nothing at all even though they may have large amounts of

impervious surfaces.

There’s a variety of ways to establish fees based on impacts. A widely used method is to establish a fee for residential units based on the average amount of impervious cover for a dwelling in the municipality. That rate can be expanded to commercial operations based on their amount of impervious cover: If they have four times the imperviousness of an average home, their fee would be four times greater.

Other methods are used as well, such as estimating the actual amount of impervious cover for each property, which can also encourage developers to reduce impervious cover on new projects. But that also requires a more intense data collection to be set up.

Tricky issues need to be sorted out as well. How will the stormwater fee be billed — with other bills such as sewer and water, or separately? Should religious institutions, colleges or government agencies be assessed?

“The details are challenging,” said John White, stormwater

engineer with the City of Norfolk, which has had a stormwater utility since 1996. “The key is to develop a program that is fair and can be shown as fair and equitable to the entire citizenry.”

One key for public acceptance is making sure that people recognize they are getting something for the fee. In Norfolk, for instance, the fee has allowed the city to ramp up the popular — and highly visible — street-sweeping program.

“Everything that gets swept up doesn’t go down to the rivers and streams around the city. But it also is a popular program that has a lot of visibility,” White said, “to the point that people now perceive it as an entitlement. If the weather prevents us from sweeping, we hear about it.”





























### Provide incentives

A common element for many stormwater utilities is that they can incentivize action by landowners. In many places, businesses can

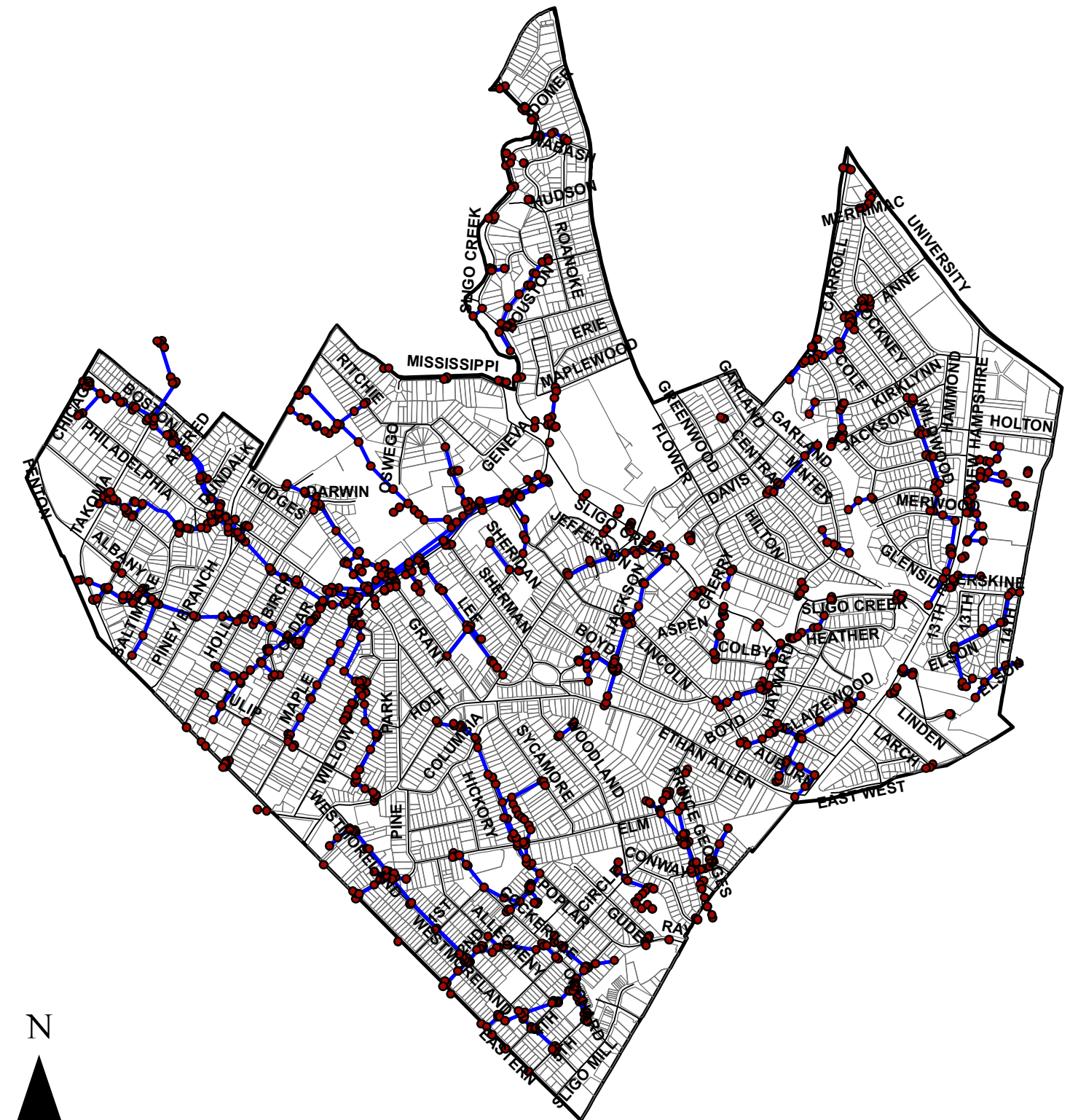
Utility continues on page 15

Appendix II. Illicit Discharge Detection and Elimination  
Outfall Condition Survey Spreadsheet  
Map of the City's storm drain system

# **OUTFALL CONDITION SURVEY - MAY 2018**

Structure ID No.	Location	Description of Defect	Map	Photo	Recommendation
Structure #60	7107-7105 Woodland	Outfall ditch apron and wing wall are broken. Intermittent 400 linear feet of stream need to be stabilized.			Remove brick & Replace with rip-rap Clean up and reinforce Outfall with Rock
Structure #1028	7113 Garland Avenue	Severe erosion at the end of the concrete drainage ditch.			Potential grouting
Structure #1026	7241 Garland Avenue	Outfall structure looked fine			
Structure #1080	7600 Glenside Drive	Issues have been resolved by MNCPPC.			Open the out fall passage
Structure #1072	7612 Glenside Court	Structure is failing and some portion has collapsed. Outfall pipe has washed off, concrete structure are visible and sink hole is present above the structure. Due to slope and access issues, may need to redo the entire pipe.			Sinkhole Stabilization
Structure#1077	7901 Carroll Ave.				Wrong Photo
Structure#767	7517 Hancock Ave.	Outfall and step pool appeared in satisfactory conditions. Adjacent Bioretention requires inspection			The out fall is in sound condition
Structure # 1092	7514 Glenside Drive	Apparent Erosion			Sinkhole on top
Structure #1221	7101 New Hampshire Ave.	Apparent under mining of the outfall apron			Clear and place Rip-Rap
Structure #1220	7101 New Hampshire Ave.	Apparent erosion			Clear and place Rip-Rap
Structure #877	7216 New Hampshire Ave.	No wing wall, pipe exposed			Install Wing Walls and pour Rip- Rap
Structure #85	85 not an out fall CB 7427 Aspen Avenue	Partially clogged with sediment			Clear the outfall
Structure #983	7700 Sligo Creek	Rusted and eroded base			CPM Replacement
Structure #941	7411 New Hampshire Ave.	Outfall Apron has eroded			Stabilize the Outfall

# Stormwater Drainage System City of Takoma Park, Maryland



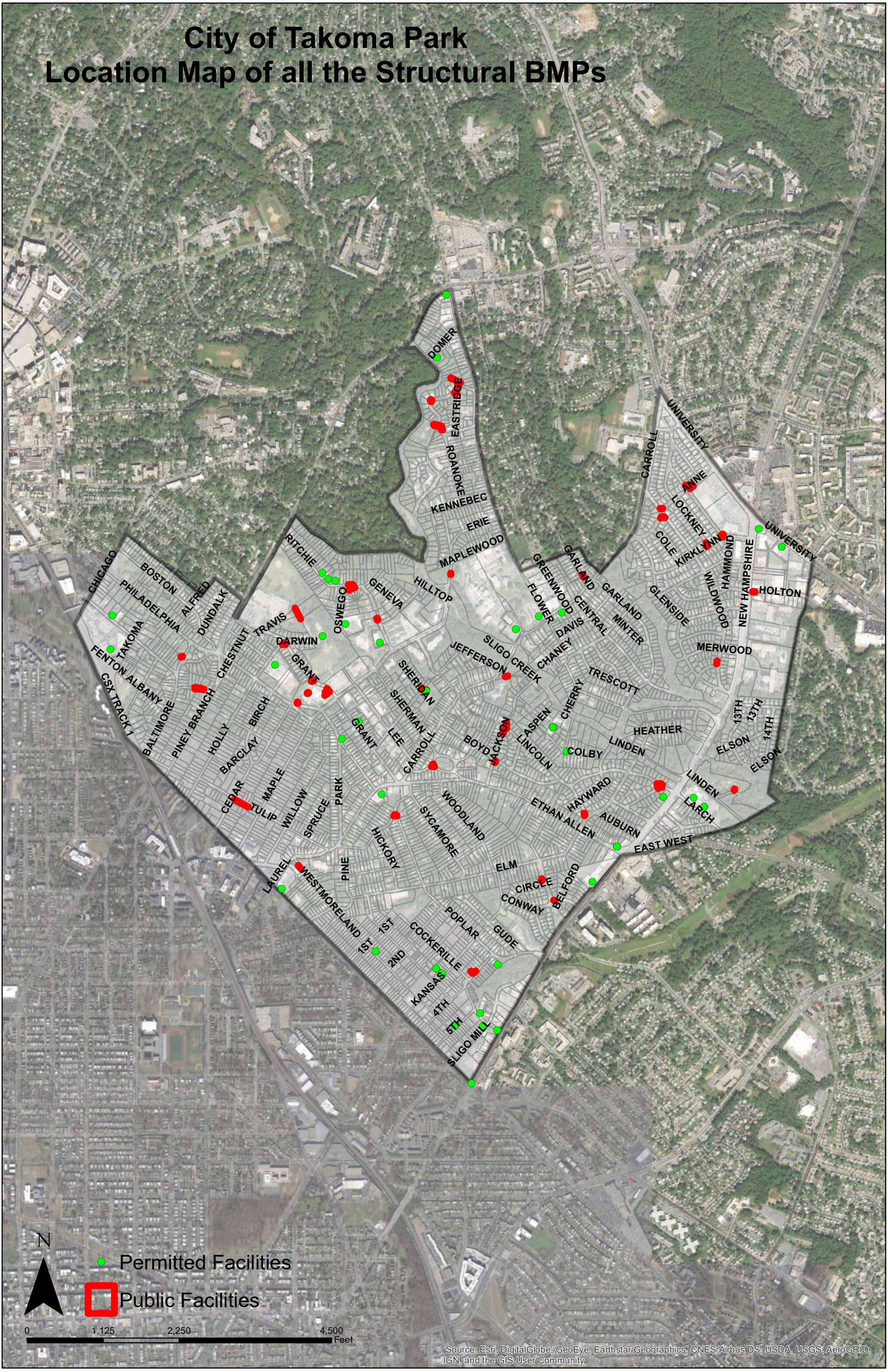
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Miles

- Structures
- Conveyance

Appendix III. Post-Construction Stormwater Management  
Location map of private and public stormwater management facilities

# City of Takoma Park

## Location Map of all the Structural BMPs



#### Section IV. Financial Analysis

City of Takoma Park. MD  
STORMWATER MANAGEMENT FUND

Budget Report for Fiscal Year 2018 (7/1/17 - 6/30/18)

REVENUE:

Penalties and Interest	\$	9,654
Stormwater Permit Fees	\$	3,050
Stormwater Utility Fees	\$	<u>712,395</u>
<i>Total</i>	\$	725,099

EXPENSES:

Personnel	\$	140,970
Supplies & Services	\$	308,538
Capital Outlay	\$	<u>272,918</u>
<i>Total</i>	\$	722,426

Budget Report for First Half of Fiscal Year 2019 (7/1/17 - 12/31/18)

REVENUE:

Penalties and Interest	\$	93
Stormwater Permit Fees	\$	1,000
Stormwater Utility Fees	\$	<u>705,420</u>
<i>Total</i>	\$	706,513

EXPENSES:

Personnel	\$	28,424
Supplies & Services	\$	41,241
Capital Outlay	\$	<u>2,458</u>
<i>Total</i>	\$	72,123